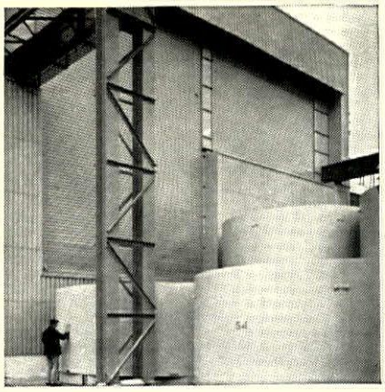
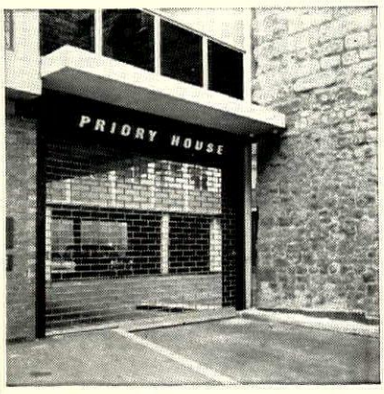
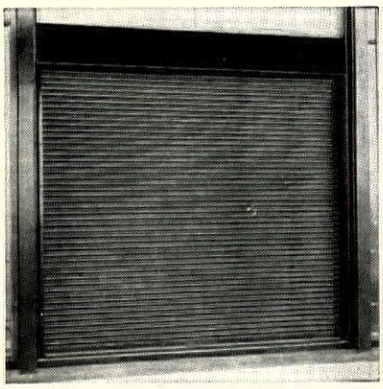
THE ARCHITECTURAL REVIEW VOLUME CXLI NUMBER 844 JUNE 1967 FIVE SHILLINGS



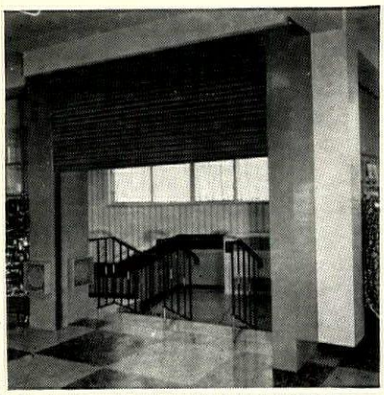
'Rolador' rolling shutters. List Ad. 699/64



'Portcullis' rolling grilles. List Ad. 523/60



Interlocking shutters. List Ad. 521/60



'Firola' fire shutters List Ad. 960/66

'Shutterdoors'. List Ad. 831/64

Refer to Barbour Index (SfB32) or **write for list** (number against each heading).

Standard 'Rol-over-dor' List Ad. 912/65

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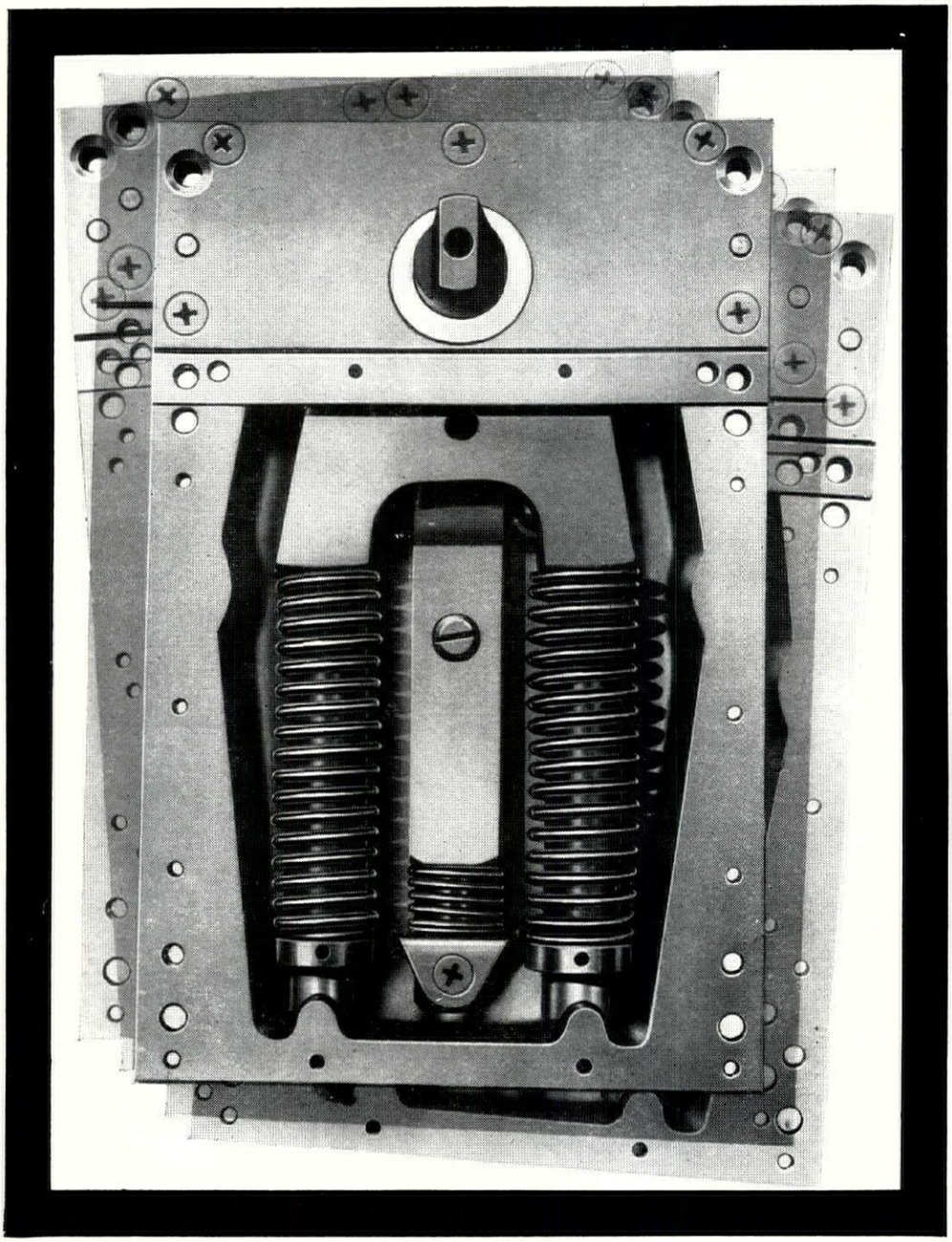
Continental 'Rol-over-dor' List Ad. 1157/67



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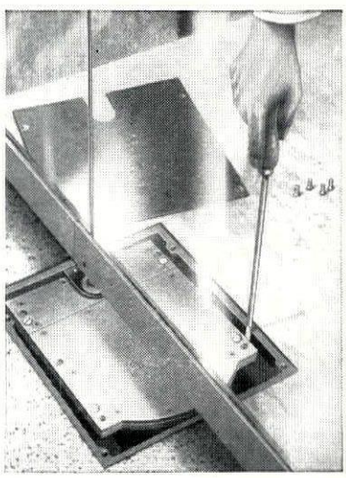

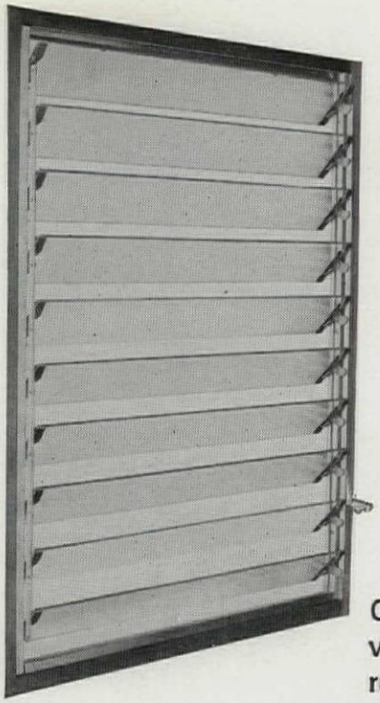

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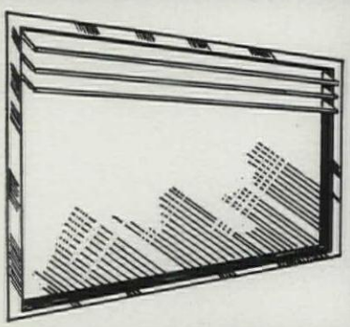

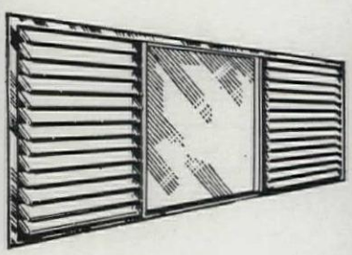

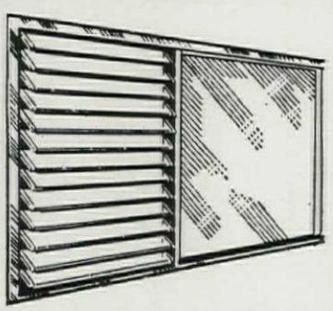

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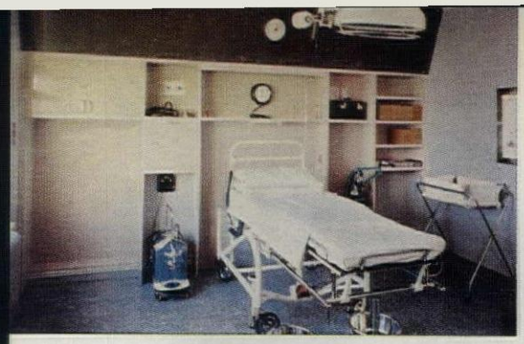
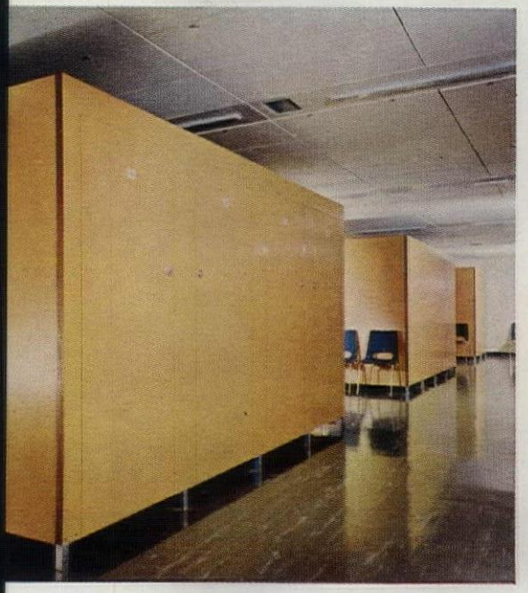
The professional decorative laminat





ney're talking about Arborite...

Top left: Delivery-room bedhead unit at Cambridge University Maternity Hospital. (*Architectural adviser to Cambridge University: B. A. Calinescu.*)
Bottom left: Changing Cubicles.
Top right: Reception Hall. Both at Hull Royal Infirmary. *Architect: Yorke, Rosenberg & Mardall. Builder: Trollope & Colls Ltd.*
Centre: Nurses' Study-bedroom at Queen Mary's Nurses' Home, St. Bartholomew's. *Architect: James Knowles, FRIBA, FRICS, AMTPI.*
Bottom right: Ward Cubicle with Arborite Laminlight Door. *Shapland & Petter Ltd., (Barnstaple, Devon).*

e simple answer to their problem is Arborite orative laminate. Obviously. Arborite is perfect cladding for walls, doors and rking surfaces in hospital wards, surgeries l laboratories. Because it's tough. Durable. sy and hygienic to maintain. And that's not Arborite's wide range of colours (51 of m plain colours), woodgrains, marbles and iting graphic patterns make hospital inter- s warm, cheerful and attractive in appear- ce—ideal surroundings for both patients l staff. Altogether, Arborite has many cial advantages in a variety of applica- ns that make it the architect's natural ice for modern hospital interiors.

Other advantages of Arborite:

Plain colours 51 plain colours (41 of them exact or close match to BS colours). Only Arborite offer so many.

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What else can we do? Apart from special features Arborite meets all normal specification needs. Variety of thicknesses and grades from 1/32″ to 1¼″. Standard sheet sizes 10′ x 4′ and 8′ x 4′ with others including 12′ x 5′ available. Edge Trim—flexible lengths of bending grade Arborite for neat edging. Twin-Trim—aluminium extrusions become exclusive to Arborite when coated with a matching laminate. Cove, corner, counter-nosing, cap and divider profiles can match many colours and patterns.

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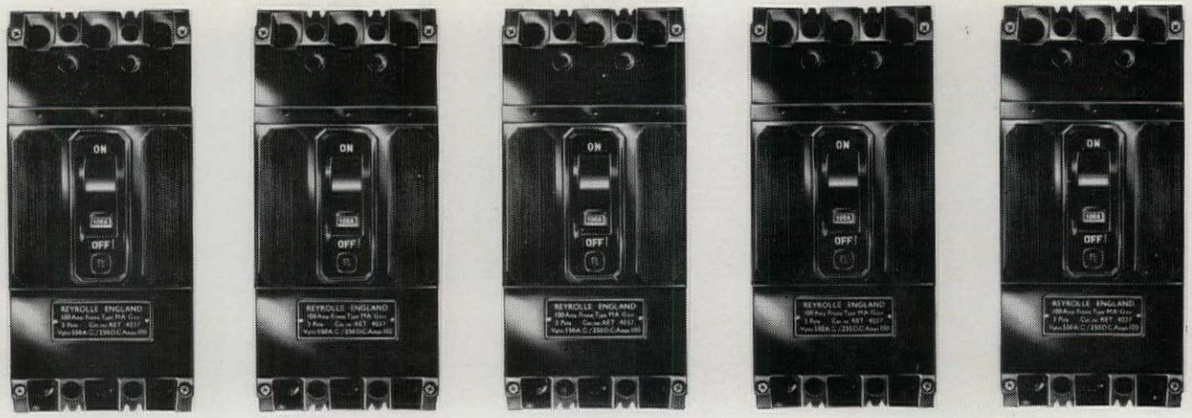
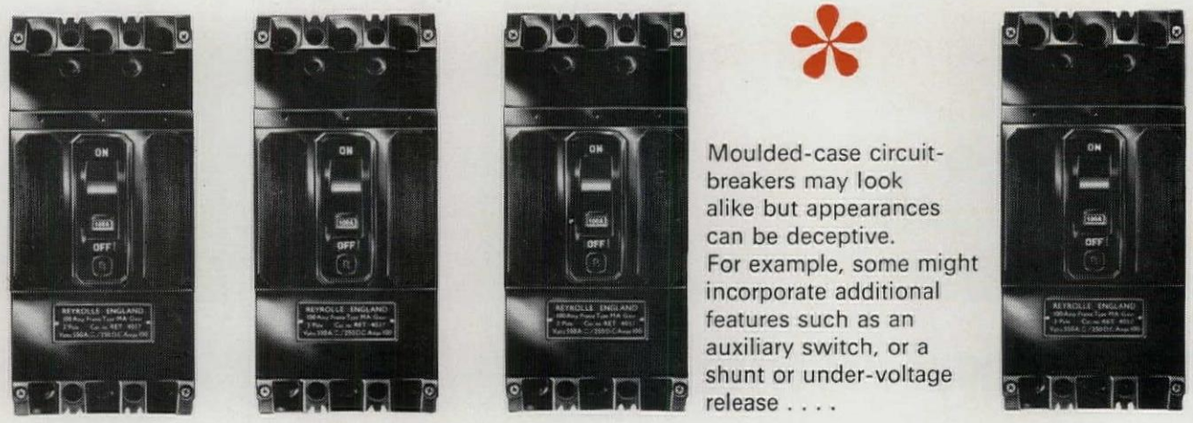
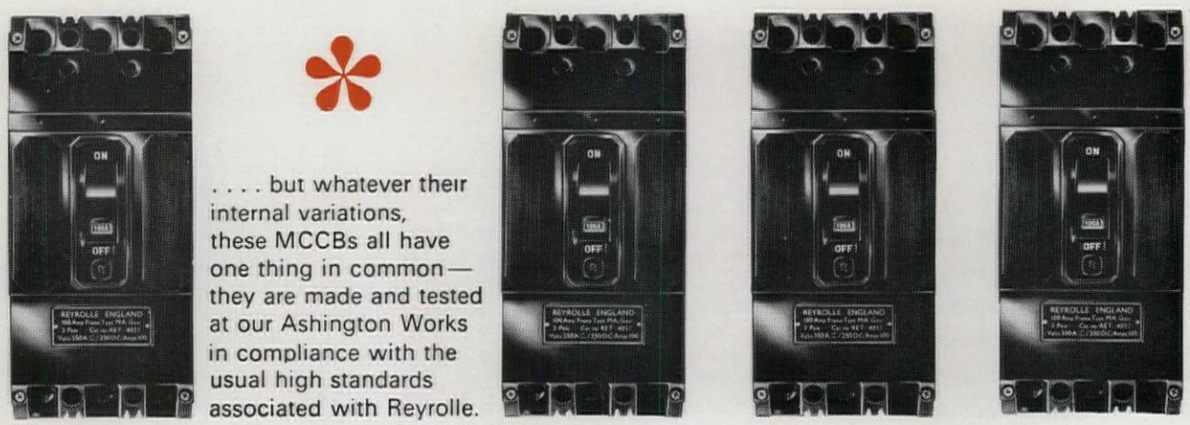
WCW2



Moulded-case circuit-breakers may look alike but appearances can be deceptive. For example, some might incorporate additional features such as an auxiliary switch, or a shunt or under-voltage release . . . .



. . . . but whatever their internal variations, these MCCBs all have one thing in common — they are made and tested at our Ashington Works in compliance with the usual high standards associated with Reyrolle.



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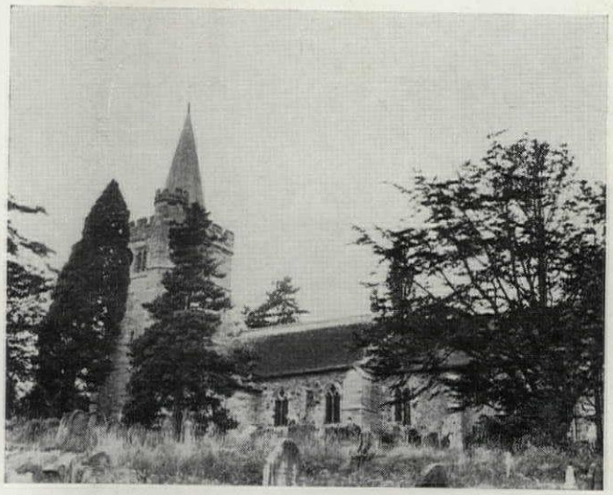

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This 600-years-old church, weakened by weathering of masonry and subsidence of the foundations has been strengthened with a new technique already applied successfully to many old Italian monuments.
The remedial works, both to fabric and foundations, have been carried out **without disturbance** to the precarious equilibrium of the old fabric and **preserving** entirely its original æsthetic.

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'A Town Called Alcan'

(1)

notation

The observant layman's code for his environment

Our previous broadsheet on Rotterdam raised the problem of the difficulties arising from rapid expansion. Now Gordon Cullen introduces Notation, which is an attempt to optimise humanism in the face of expediency. Our business at Alcan is not, of course, town planning but making and selling aluminium. Nevertheless, the traffic in *ideas* between industry, planners, architects, sociologists and builders is a very real part of this business.

Architectural Consultants:
Alun Jones, Ward and Partners.

For a reprint of this study, and previous 'A Town Called Alcan' studies—unofficial and sponsored solely by Alcan—write to Alcan Industries Ltd., Banbury, Oxon.

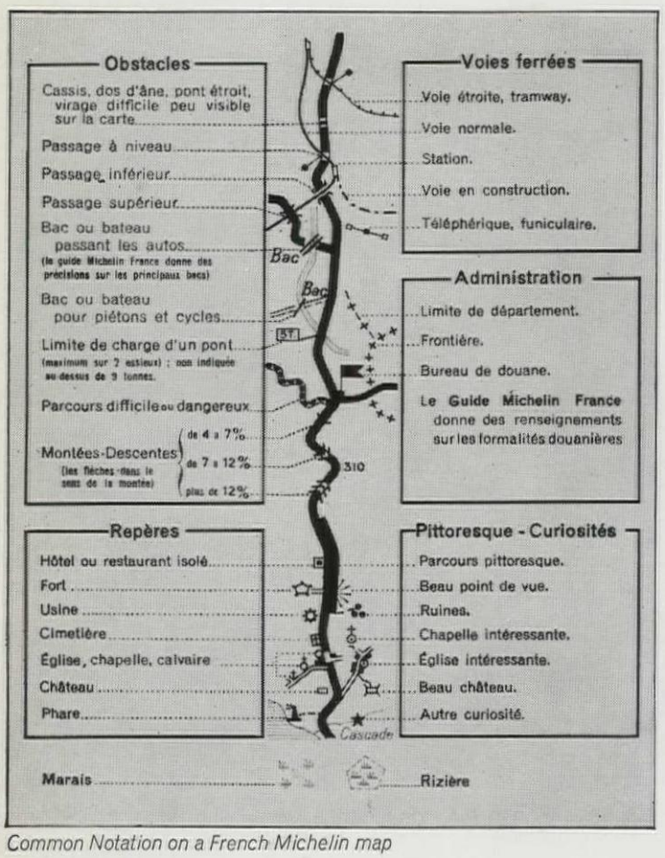
The lesson that emerged from our broadsheet on Rotterdam was that the pleasant complexity, sophistication and depth that we experience in an old town seem to elude the new centres and this is probably due to the speed of modern development. The present study concentrates on this problem.

In these days the observant layman is concerned about the apparent loss of control over the physical environment. There may be a hundred reasons for this but the principal one seems to be the speed of development, the rate of change, which is outstripping the capacity of the human mind to absorb, digest and subsequently incorporate discoveries, new products and fresh social patterns into a coherent environment.

Let us postulate that in 1750, for example, the rate of change was such that the mind could comprehend it and sublimate all the factors into a humanised landscape. With the increased speed of change this perfection or sublimation receded and its alternative, which we may call end-gaining, obtained part possession of the field. An example of the difference between the two? Sublimation: if the child cries you find out why it is crying and put it right; to do this you use experience, intelligence, compassion and patience. End-gaining: if the child cries hit it till it stops. The application of the latter attitude to problems of traffic, housing, power supplies and so on is not difficult to observe around us.

The progressive increase of end-gaining at the expense of human values is the chief worry. And this is not something temporary that will pass like a headache if we lie down. It will increase at the rate by which technology itself increases. Unless . . .

As a first step in turning the tables, consider Notation. Think of any village not a hundred miles from London which is developing into chaos. We have the typical conditions: a ready market for houses, end-gaining developers, a vastly overworked Planning Office and in the village itself, local opinion which gets hopelessly bogged down on irrelevant points of detail. (The English genius for arguing about the colour of the socks of their executioners.)



Common Notation on a French Michelin map

Architects and planners are too few, and their time is too much taken up with urban development schemes, for them to have any significant impact on the village scene; architects are only responsible for about 30% or so of the nation's building anyway. Even so some are chosen because of their reliability, i.e. they play safe and produce emasculated schemes. Developers vary but on the whole they are in it for the money and this means maximum development of sites and the construction of houses which can be bought and resold so that any eccentricity or individuality of design or layout is ironed out in the name of Mr. Average. *The opportunity is lost by default.*

If there is a shortage of competent planners how, we have to ask, can their abilities be properly maximised ? The skill needed to analyse a problem and draft a conception of redevelopment is an art, and those in possession of it should not have to pilot the scheme painfully and frustratingly through committees nor get bogged down in the detailed working out of the scheme.They should pass on their ideas to a local agency and then go on to fresh problems. Having written the music, let the local band play it. But how to pass on the conception ? For not only should there be a plan of sorts but *the intention behind the plan* should be made clear also.

There is nothing new in a Notation system. Most maps have conventional signs; and, for example, on land-use maps W means Worship. What we propose

here is a system of Notation which is wide enough in range to cope with the 'crying child.' We have to probe the emotional springs of environmental situations.

There appear to be four primary divisions: Humanity, Artifacts, Mood and Space—that is to say the study of people, of buildings and objects, of the character of place and of the physical space in which they all exist. We can also distinguish four secondary parameters which concern first, the range or gamut of the particular category, second its usefulness, third its behaviour and fourth its relationships. To give examples, we could say that the scale of Humanity, for our purpose, would be types of Communities varying from a croft to a great city. Or that the *use* of Space is to tell a person where he is and this would range from Hereness to Thereness. In fact all the parameters define the basic qualities in scales which we can number from 1 to 9.

This gives us a rudimentary box containing one gross of environment-building bricks.

There would be three references to any given Notation. First the division involved, H or A or M or S. Second, the aspect of that division, be it Range, Use, Behaviour or Relation, and this could be indicated by an agreed symbol such as a square, semi-circle or triangle. And third the degree of intensity of that aspect which would be a number from the scale 1 to 9. For the purpose of indicating Humanity, for instance, a place of intense social meeting, a pub or a market place, would be indicated thus: H(1), whilst a lonely hillside would be indicated in this way: H(9).*

The second aspect of Notation is Indication. By this is meant the isolated instruction which appears to exist in its own right. Thus if one is travelling from A to B there is a scale of miles but suddenly there is an isolated sign saying 'Caution—humpbacked bridge.' Indicators would act in this way to give one-off instructions. They would be used to explain levels and heights, to mark boundaries between different kinds of space or to show spatial links, to point out essential connections and so forth.

The value of such a Notation would not be confined to the use already indicated. It would give the student a greater fluency and insight into the reading of plans which, if accurately annotated, would virtually come to life. This in its turn would assist in the construction of meaningful plans. It puts the whole range of planning into a practical and usable form so that the delicate, refined and sophisticated qualities are equally available with the more direct and common values. It is also the required intermediate step between the hand-made environment and the emerging machine-made environment.

From a practical point of view it is clear that there would have to be a Code Book which, in the first place, would contain a gross of references. From this would develop a sophisticated Pattern Book which would include sub-titles down to such detail as, for instance, the range of plant material from ground cover to forest tree. The Indicators similarly would grow in sophistication.

*See next page

Long Lent

We now come to an exercise—in two parts—demonstrating this Notation or HAMS CODE.

This, the first part, states the problem. The next broadsheet will suggest a possible solution.

Long Lent is a village standing in need of development and we are assuming that a planner has been asked to analyse the village, to take into account the outstanding planning permissions and to prepare a sketch plan which he will then annotate so that the work can be carried out locally.

Long Lent is situated some fifty minutes' travelling time by train from London. It has a population of 1,200. There are six shops, two garages, a primary school, a village hall with provision for visiting clinic and library. There are four places of worship and three public houses.

Apart from agricultural work the only employment to be found locally is a small brick and tile works and most of the working population commute either to the county town six miles away or to London.

The Parish Church is mainly Perpendicular having a Norman porch and font. There is a fine tithe barn owned by the National Trust. The village was constructed mainly in the 18th century on a medieval pattern and a few original buildings survive such as the almshouses in the High Street and the old Grammar School, now a private residence.

Lent Park, which lies to the north of the village, was the seat of the now defunct Addle family and is at present used as a remand school for delinquent girls.

The village is situated in good agricultural land and surrounded by mainly run-down orchards. It lies between the Easterbrook river and twin hills, North Cap and South Cap, which rise to an elevation of about 450 feet and the southern slopes of which have medieval cultivation terraces or linchets.

The village decreased in population from 1,600 in 1905 to 1,000 in 1955 but it is now expanding. There is a Rural District Council housing development to the south of the village at Longbridge Close built in 1958 to house twenty-five families. Six elderly people's houses have recently been erected off the High Street. Outline planning permission has been given in respect of a total of twelve acres, mainly orchard, to private developers; and there are outstanding applications to develop a further fourteen acres to the north-east of the High Street.

County policy is to confine growth to around 1,750, allowing, after that, for natural increase only and absorbing further general demand by an expanded towns policy.

Notation

SCALES

Primary divisions / Secondary divisions	H humanity	A artifacts	M mood	S space
RANGE	Scales COMMUNITIES (1-) croft (2-) hamlet (3-) village (4-) estate (5-) town (6-) county town (7-) suburb (8-) city (9-) megalopolis	Scales STOCK OF PARTS (1-) sky (2-) water (3-) land (4-) plants (5-) animals (6-) objects (7-) structures (uninhab) (8-) structures (inhab) (9-) complexes	Scales STIMULI (1-) touch/size (2-) texture (3-) colour (4-) pattern (5-) key (6-) tempo (7-) rhythm (8-) meaning (9-) intellect	Scales CLAUSTRO (1-) exposure (9-) enclosure
USE	EMPLOYMENT (1-) work (9-) leisure	TENURE (1-) natural life (2-) commercial value (3-) (4-) positional value (5-) (6-) group value (7-) (8-) preservation value (9-) canonisation	CONDITIONING (1-) factory (9-) fairground	WHERE AM I? (1-) here (9-) there
BEHAVIOUR	ZESTS (1-) conventional (9-) revolt	STYLE (1-) functional (9-) romantic	PASSION (1-) propriety (9-) outrage	FORMALITY (1-) formal/axial (2-) axial/sloping (3-) asymmetrical (4-) logical complex (5-) continuous persp. (6-) random complex (7-) overlapping (8-) osmotic (9-) irregular
RELATION	ASSOCIATION (1-) opting in (9-) opting out	LOCATION (1-) hidden (numinous) (2-) glimpsed (3-) recessed (4-) merged (5-) particular (6-) incident (7-) closing (8-) blocking (9-) axial feature	FOILS (1-) simple (9-) complex	SERIAL VISION (1-) known (9-) unknown

An example of the use of scales and indicators

From the plan on the opposite page we learn that the ground slopes down from north to south, +230, that the church tower is 150 ft. high, ⏃150, and that the statue faces east, →•. There is a glimpse up Mark Street which ends in sky, [G]→∞, and the view along John Street commands the sea, [V]→ sea. We learn the height of the buildings in Trinity Square, ⊕[IV], and also the proportions of Matthew Street, P/1.2.1. The south wall of the square consists of an architecturally homogeneous group which is worthy of preservation, A(8), whilst the west wall consists of a random group of picturesque or romantic quality, A(3).

There is a good view from the churchyard into the square, ------>, which should be preserved whilst the square itself is sober in character, M[6.2]. From a reference point near the monument the spatial entity embraces the northern part of the square but stops at the change of level, (*), whilst from a point in the south of the square the whole space reads as a unity. There is an interesting sequence of views along Luke Street, into the square and back into the churchyard, ①→→②→→, where a complex of buildings is discovered, A[9]. And so on.

Notation

INDICATORS

CONNECTORS

pedestrian access

essential sight line

POINT OF REFERENCE

SPACE ENTITY

AMBIENCE
(using typical building as example)

LINKED SPACE

SPACE BARRIER

access

vision

VISTAS

panorama

vista

glimpse

SERIAL VISION SEQUENCE

INFINITY

WATER

GROUPS

random

architectural

GROWTH

PROPORTION
cross section

P/1.2.1

LEVELS

spot + 250

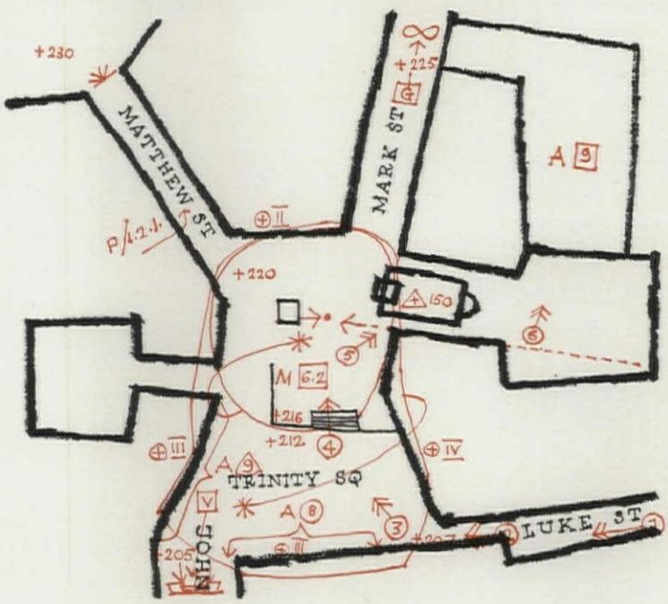
building ⊕ 60

height

storeys ⊕ IV

towers etc. 150

FACING DIRECTION
(statue etc.)



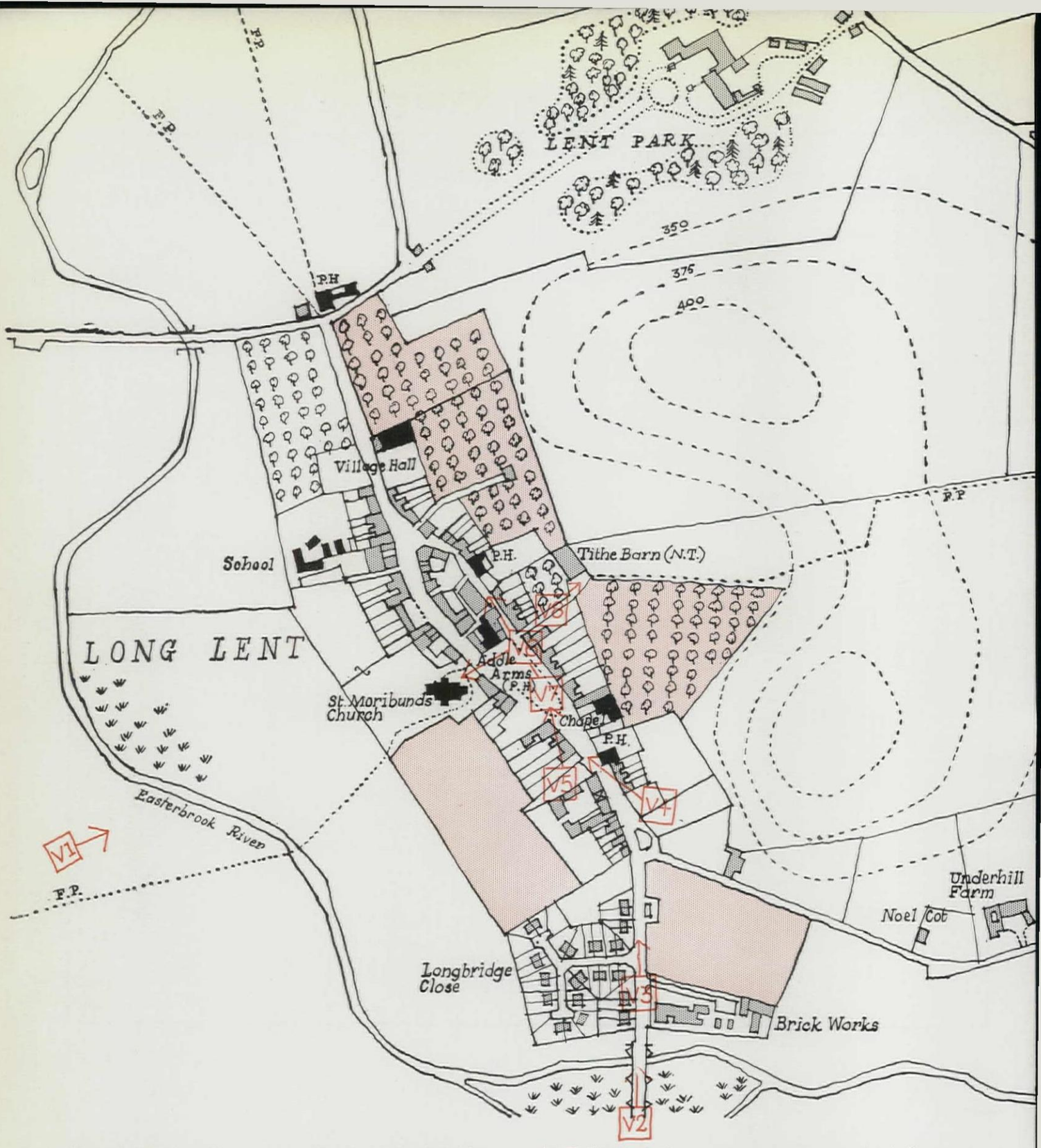
Footnotes

1 Scales and Indicators are only to be used where the interpretation of a plan could reasonably be in doubt. This obviously depends to some extent on the type of person who is going to read the plan.

2 The Notation assumes the continued existence of standard planning symbols and that is why they are not duplicated.

3 The author reserves the right to add, alter, rescind any Notations or pattern of Notations as the series progresses.

4 You may say that all this information could be gained more simply by a photograph or a visit. But the purpose of the Code is mainly to explain what is *not* built—what is intended.



Above is the plan of Long Lent as it exists today. Land for which planning consents have been given, and for which there are outstanding applications, is shown by a red tint, and the numbered red vistas on the plan are sketched on the opposite page to show the general nature of the village.

V1 A general prospect of the village in its setting under the hill.

V2 Longbridge over the Easterbrook with the brick works to the right and the village beyond.

V3 The approach to the village with Longbridge Close on the left and the petrol station on the right.

V4 The High Street. Its spaciousness is due to the medieval market which was held there.

V5 The main road passes through the village, left, and facing us is the Addle Arms.

V6 St. Moribund's, Norman porch and font, is situated back from the High Street at the centre of the village.

V7 Clap Lane, a somewhat run-down part of the village, lies to the right of the Inn.

V8 The Tithe Barn, owned by the National Trust, lies amidst the orchards at the end of Penny Lane.

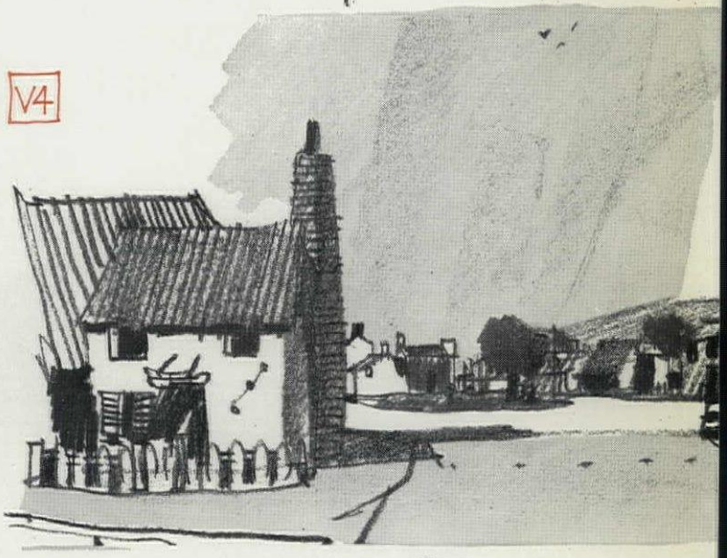
The next broadsheet in this series will apply HAMS Code to suggest a possible solution to Long Lent's development problems.

V1

V2

V3

V4



V5

V6

V7

V8

Owners: Tower Hill Property Co. Ltd. Architect: George Trew Dunn. Windows: Crittall.

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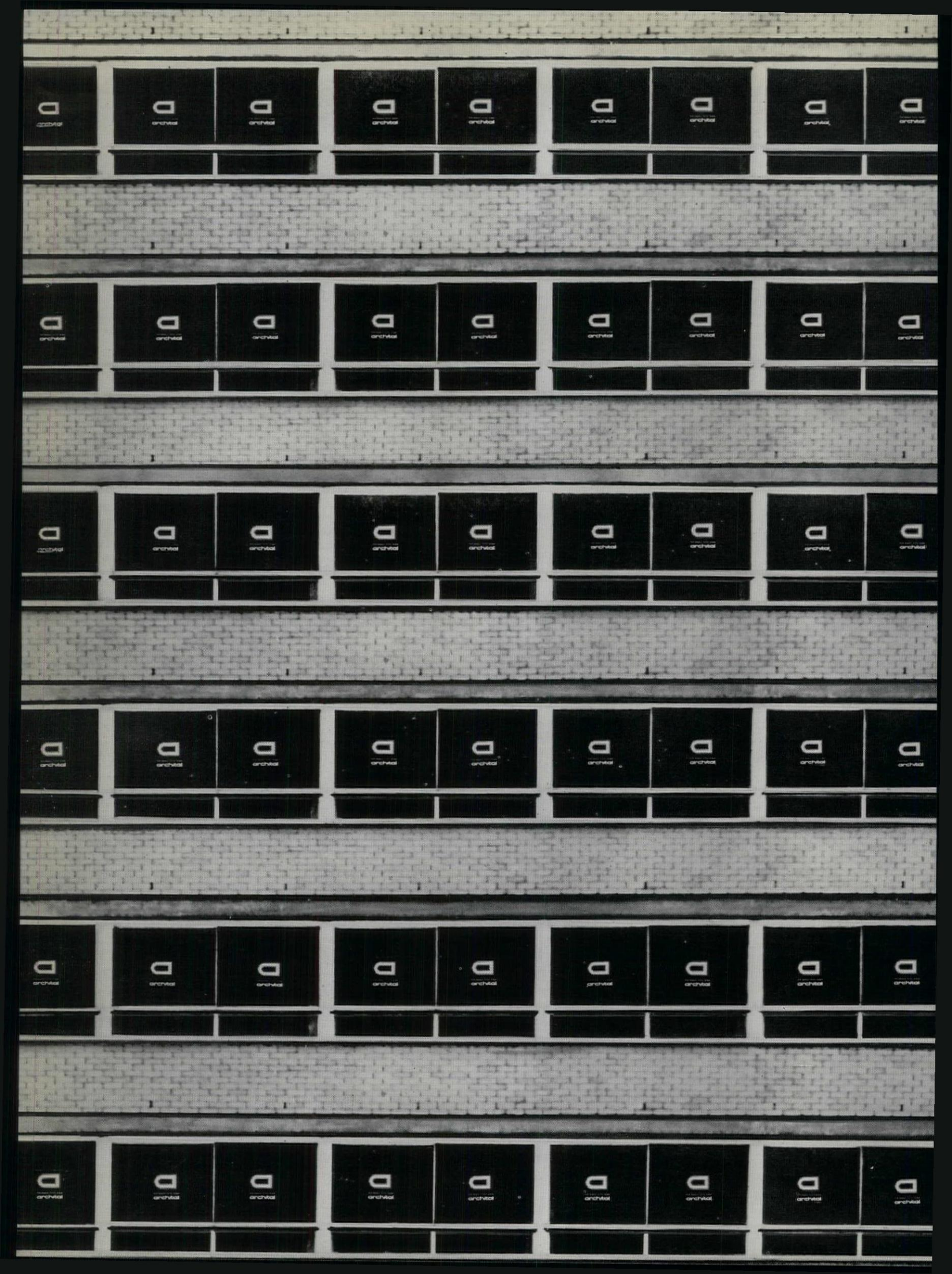
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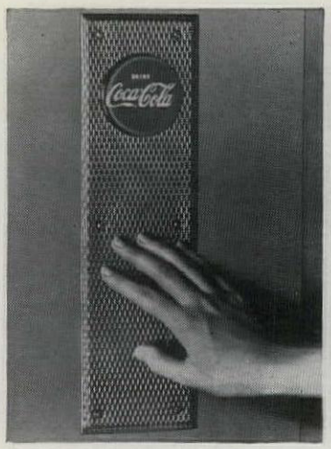

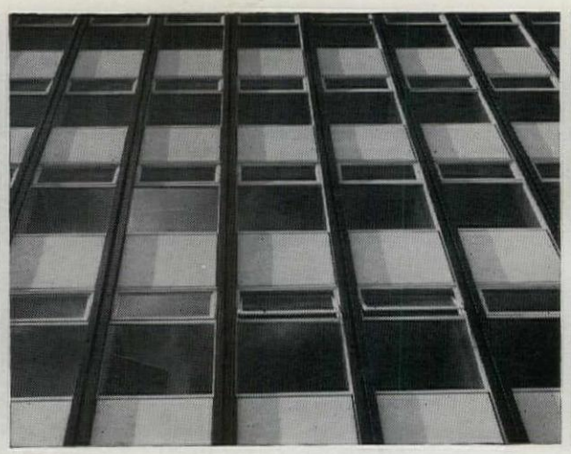

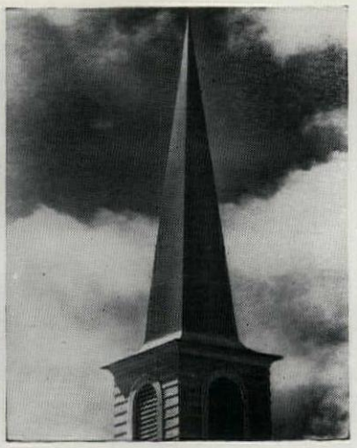

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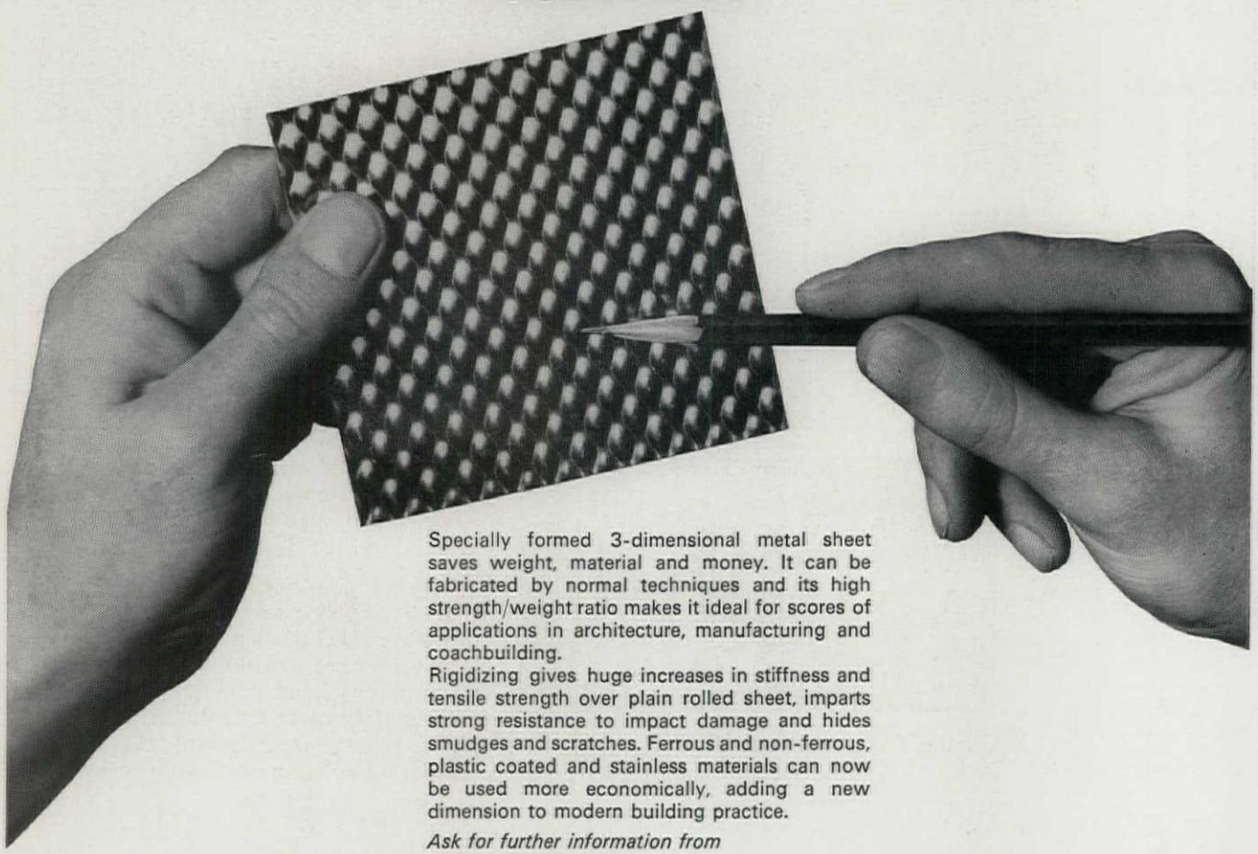

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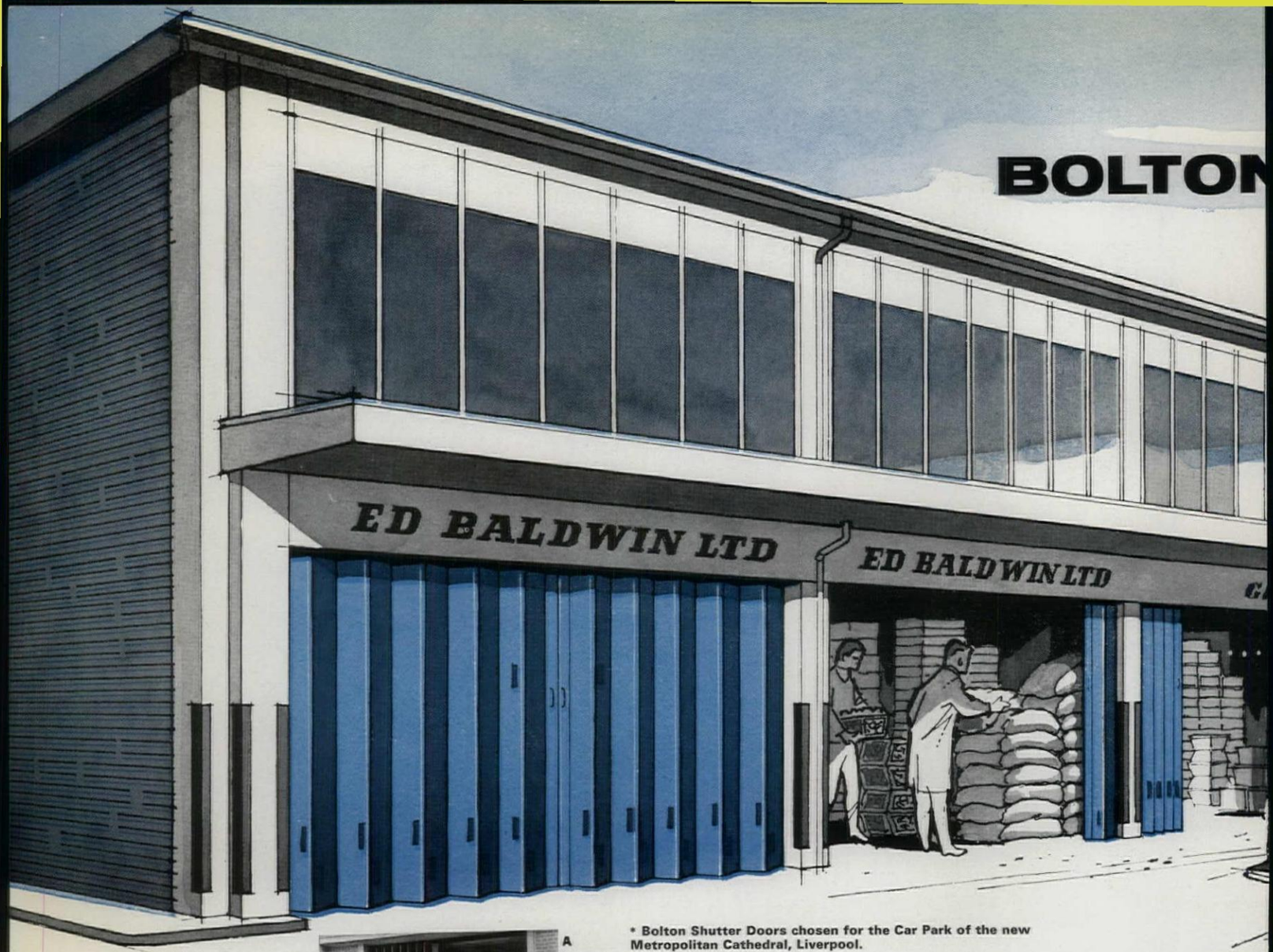


*** Bolton Shutter Doors chosen for the Car Park of the new Metropolitan Cathedral, Liverpool.**

A

B

C

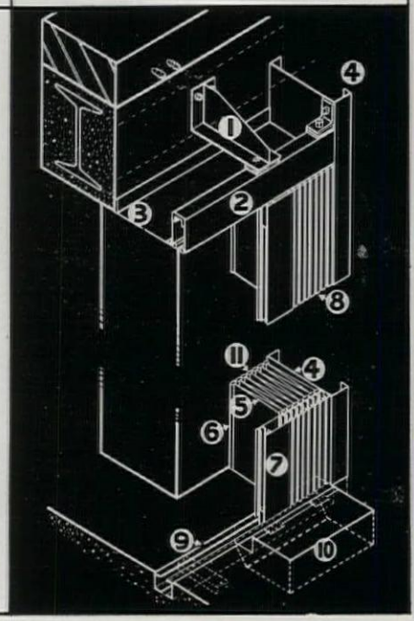
A *A factory installation of Bolton photo-cell controlled Shutter Doors.*

B *Bolton Shutter Doors installed in BEA Freight sheds, N. Ireland.*

C *Bolton Electrically operated Shutter Doors at Shoreditch Fire Station.*
Architects : Architect to the Greater London Council, Hubert Bennett, F.R.I.B.A.

This isometric drawing shows the ideal fixing for Bolton Shutter Doors. Suspending the box track from the inside face of the lintel allows the doors to bunch clear of the opening by folding behind the walls. The cover plate (3) and the end panels (4) make the installation draught-resisting.

1. Welded mild steel suspension bracket.
2. BOLTON patent, totally-enclosed box-type top track.
3. Mild steel cover plate for the exclusion of draught.
4. Mild steel end panels.
5. 16's gauge (1.63 mm.) mild steel shutter leaves, Sherardised against corrosion.
6. Non-ferrous hinging strip.
7. Rigid front to accommodate locking arrangement.
8. Steel pickets on which the door is built.
9. Self-cleaning bottom track, built up from rolled steel channels.
10. Mild steel sump-box with hinged lid to facilitate cleaning out.
11. Shutter leaves rolled round $\frac{1}{8}$" (3.2 mm.) diameter wire reinforcement to give great vertical strength.



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Bolton Shutter Doors installed in Blackburn Wholesale Market.

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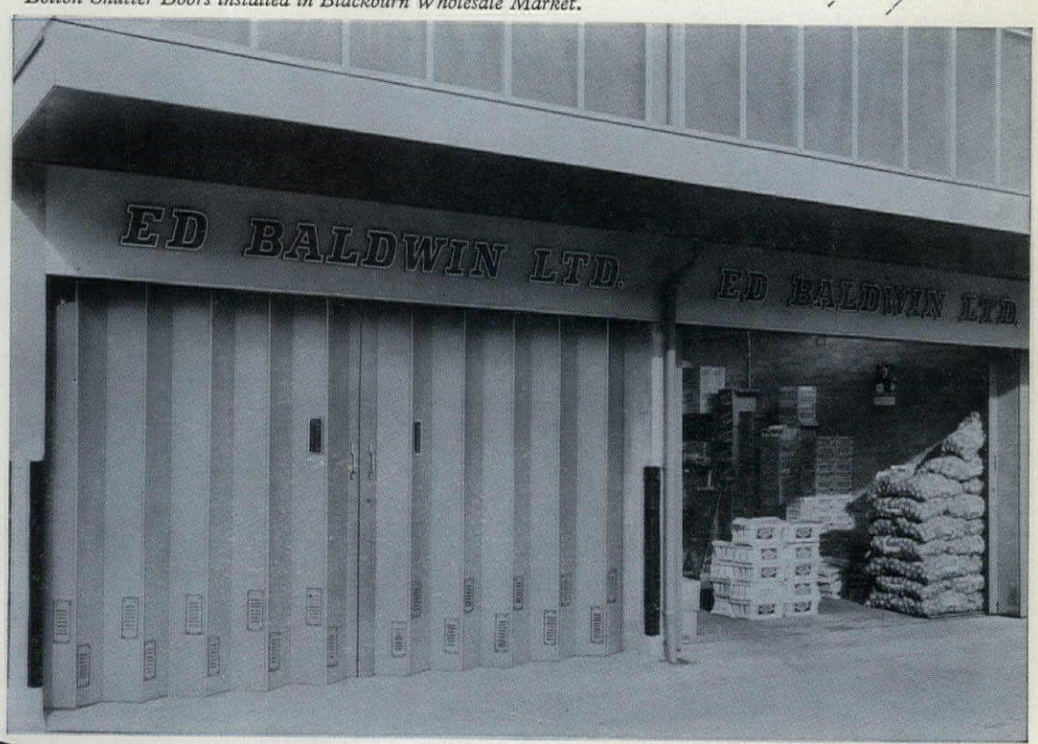

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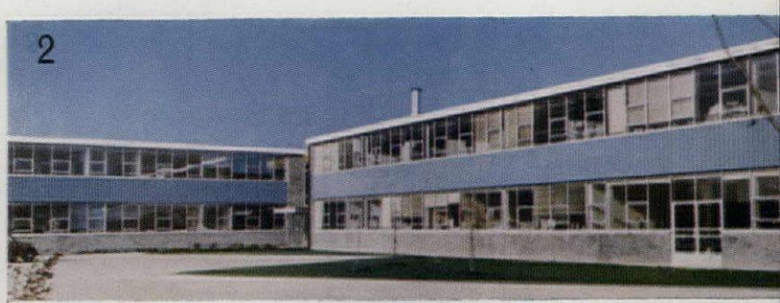

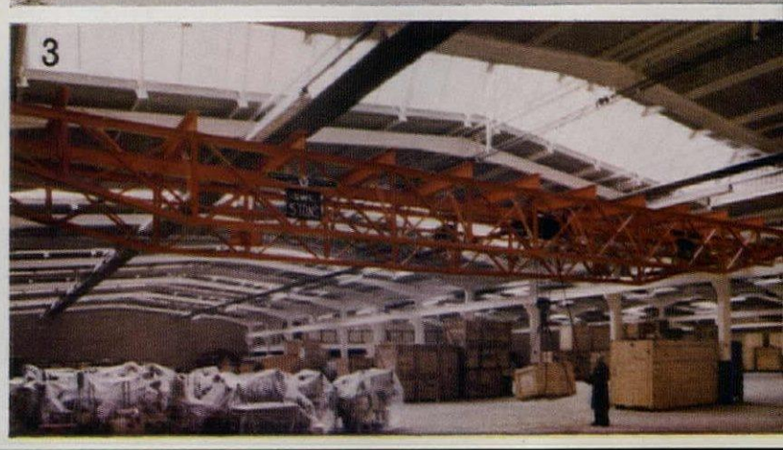

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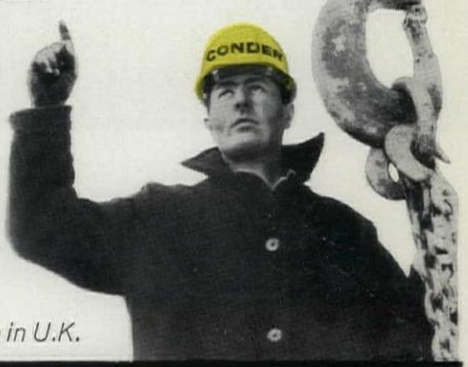

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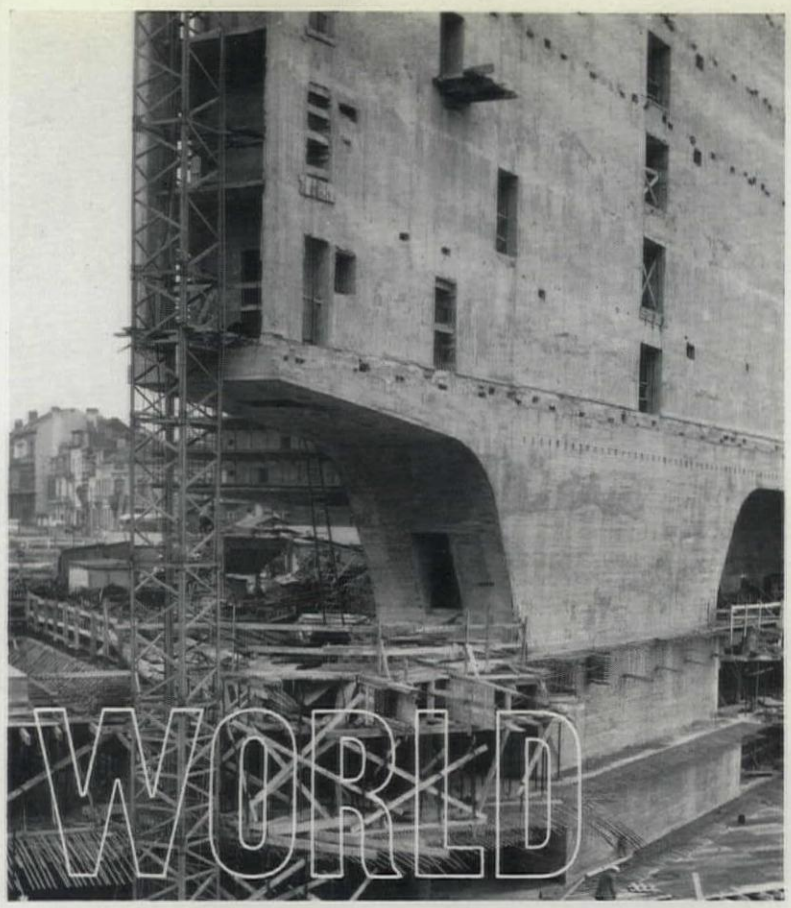
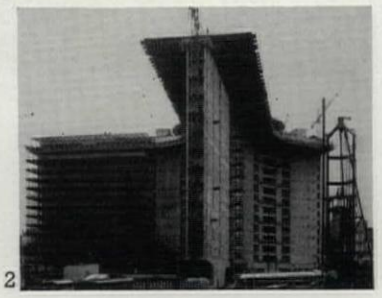


1

MARKETS

The Common Market offices at Brussels, post-war neo-provincial, disgrace the slopes below the Place Royale; but bulky new offices, 1, are now erupting over the railway lines in the suburb of Berlaimont. The concrete core structure for the thirteen-storey Y-shaped block is being rapidly clad in steel, 2; behind modish vents to the subterranean floors, 3, the completed curtain walling in the east wing is encouragingly sophisticated (architects L. de Vestel, J. Gilson, A. & J. Polak and J. Schmidt).

The EEC's Moscow counterpart, COMECON, has nearly finished new headquarters, 4—another Y-shaped layout but with service towers in the stem of the Y.



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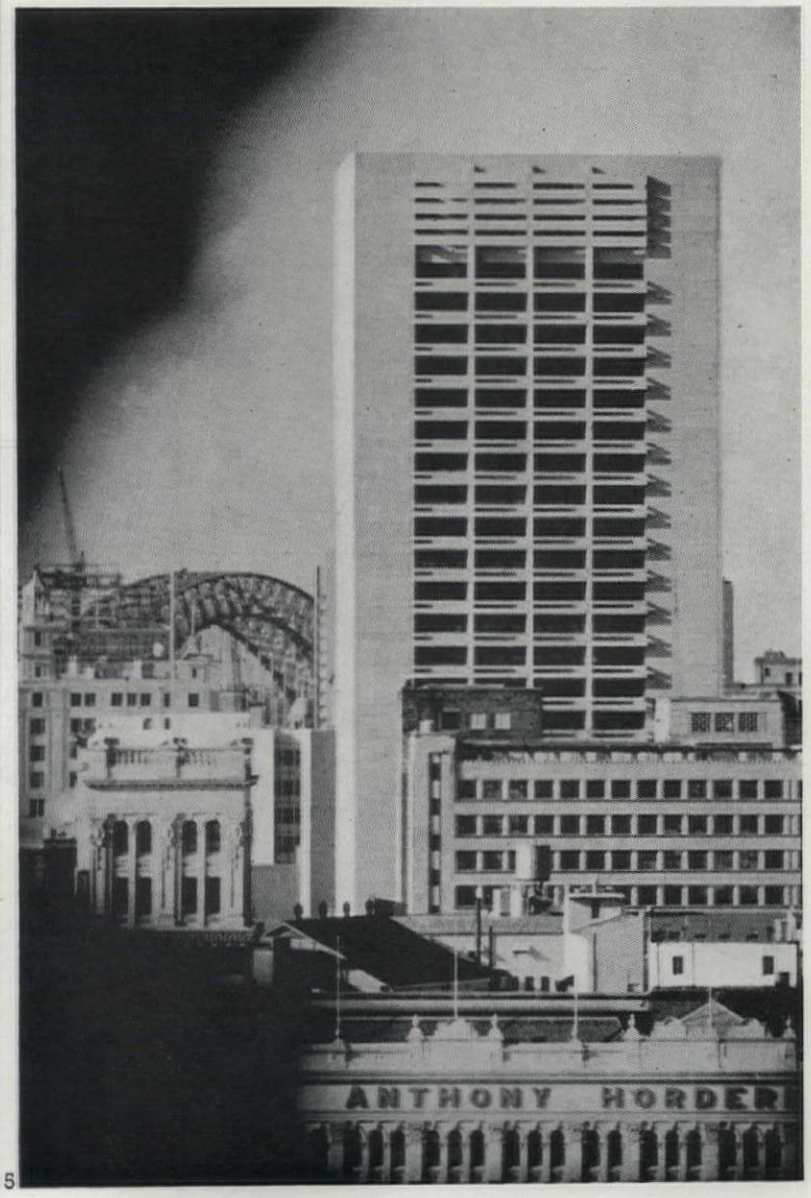
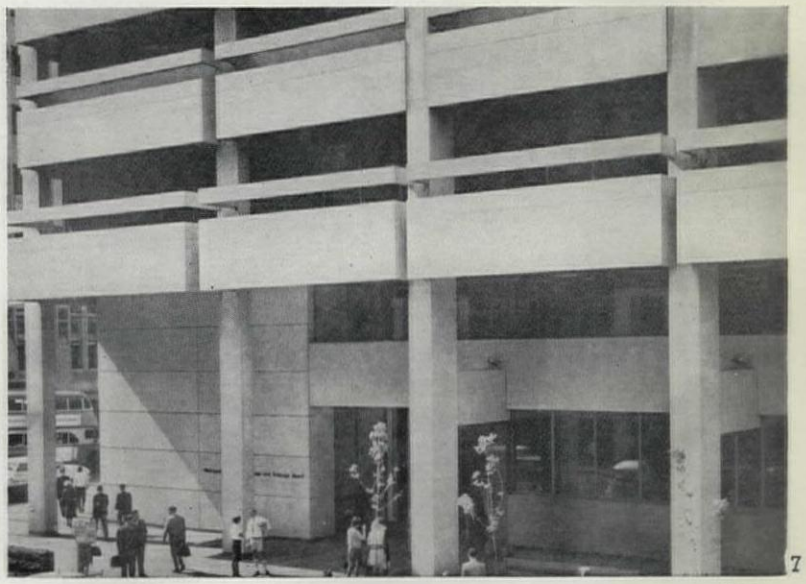


5

SYDNEYSIDE WATER TOWER

McConnel, Smith & Johnson's head office extensions for the Metropolitan Water, Sewerage and Drainage Board at Sydney form, in spite of their title, probably the most sophisticated tower built in the city since the 150 ft. limit was relaxed in 1957. Although a telephoto view of it from the Central Railway Clock Tower, 5, relates it closely to the Harbour Bridge, it is in fact an isolated tower well to the south of the main business centre; but the Sydney County Council offices are now rising to join it (left in 6). It is steel-framed, but the overwhelming impression is of white concrete, especially elegant in the recessed entrance porch, 7, with its tasteful economy in street furniture.

6



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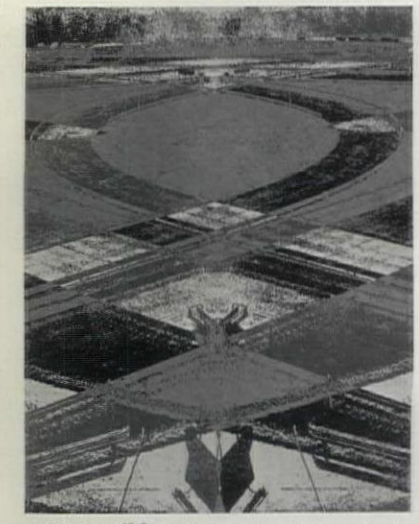
acknowledgments

WORLD, pages 401–404: 1-3, W. H. R. Godwin; 4, *L'Oeil;* 5–10, *Architecture in Australia;* 12, *Architectural Record;* 13, *Kenchiku Bunka;* 14, *Architect and Builder;* 15–17, *NZIA Journal;* 18–21, Max Dupain; 22, David Moore; 25, 26, David Photo Co.; 27, K. Hallam and A. Brailey; 29–31, Sam Lambert; 32, 33, R. E. Enthoven. VIEWS AND REVIEWS, pages 405–407: 1, 2, Whiffen; 3, Turvey & Turvey. FRONTISPIECE page 408: John Mills. SPORTS CENTRE, UNIVERSITY OF LIVERPOOL, pages 413–417: Richard Einzig. SOCIAL BUILDING, UNIVERSITY OF LEICESTER, pages 418–421: 1–3, 5, Richard Einzig; 4, Roger G. Richards. ST. FIN BARRE'S CATHEDRAL, pages 422–430: 1–7, 9–14, 16–20, T. F. Sheppard. INTERIOR DESIGN, pages 431–435: 1, 7–13, Bath Academy of Art; 2, Norman Foster; 3–6, Toomey Arphot; 14, 15, John Maltby; 16, Henk Snoek; 17, Sam Lambert; 18, 19, Geoffrey Gale. CRITICISM, pages 436–439: 1, Hugh Alexander; 2, Henk Snoek. METROPOLITAN CATHEDRAL OF CHRIST THE KING, LIVERPOOL, pages 440–448: 1–7, 9–11, Henk Snoek; 8, John Mills, Taylor Woodrow Construction Ltd. SHIP INTERIORS, pages 449–452: 3–7, Stewart Bale Ltd.; 8, John Maltby. DESIGN REVIEW, pages 453–456: 1–3, 5–17, Galwey Arphot. GALLERY, pages 457–460: 1–9, Courtauld Institute of Art. MISCELLANY, pages 463–466: Tremadoc, 1, 4–8, Ivy de Wolfe; 3, University of Liverpool; 9, 10, Joan Stockwell; Cumberland Sculptor, 1, 2, 4, James Austin; 3, Courtauld Institute of Art. SKILL, pages 467–472: 1, Max Dupain; 9, W. Ralston; 10, Henk Snoek. THE INDUSTRY, pages 472–474: 4, Stewart Bale Ltd.; 6, 7, Allen-Brooks Ltd.; 8, Humphrey-Saunders Studio; 10, Lightfoot Brothers & Newman. STOP PRESS, pages 477–478: 1, Fox Photos; 2–5, 7–11 Nairn Arphot; 13, 14, Peter Burton.



This month's cover *has been designed by the experimental photographer, Vincenzo Ragazzini, some of whose work can currently be seen in the British pavilion at the Montreal Expo. His use of intersecting images creates an hallucination of empty freeways—the Op Art of traffic engineering.*

THE ARCHITECTURAL REVIEW

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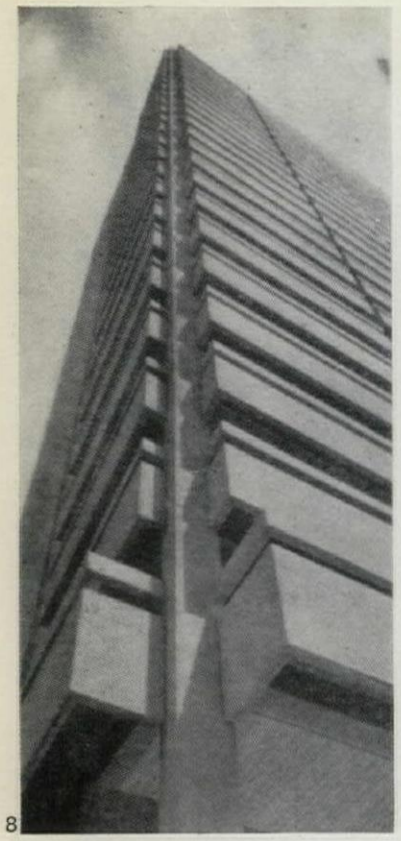
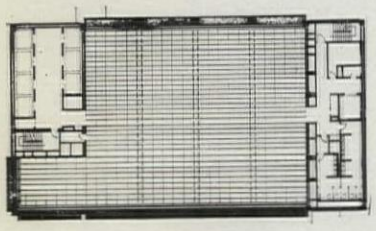


8

WATER TOWER

The bold sun visors and guard rails of precast concrete, which have an acid-etched surface of granite chips and white cement, are particularly well handled at the cut-in corners, 8. The open office areas, 9, on a 4 ft. 2½ in. module, have columns at 23 ft. centres and beams which span 73 ft. clear from wall to wall; service rooms occupy one windowless end, the other containing lifts plus a short length of executive offices. The executive reception area, 10, on the twenty-third floor, is typical of the prevailing air of quiet luxury. There is full double-glazing with grey-tinted outer glass and woven aluminium glare screens.



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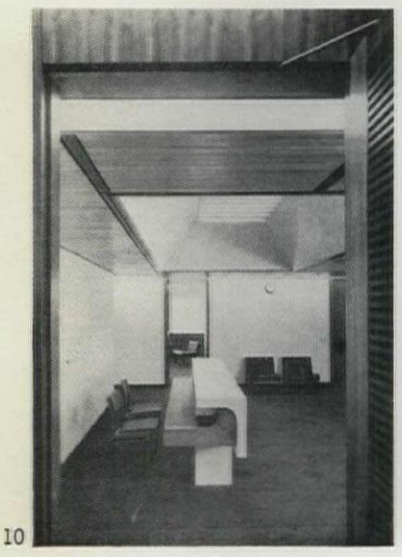

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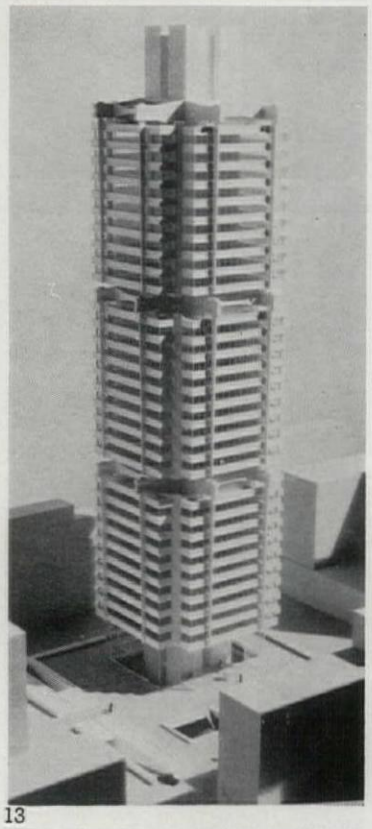

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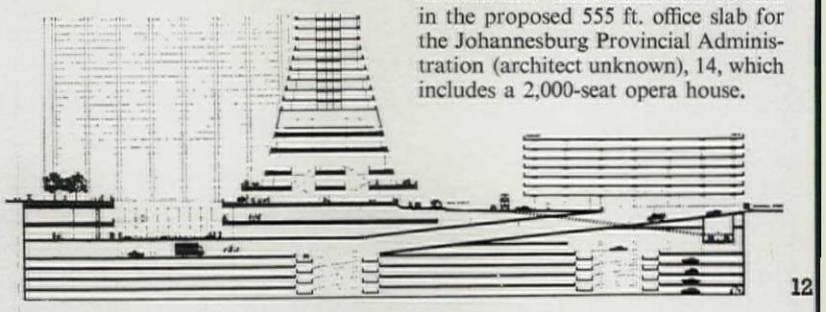
14

GOLD RUSH

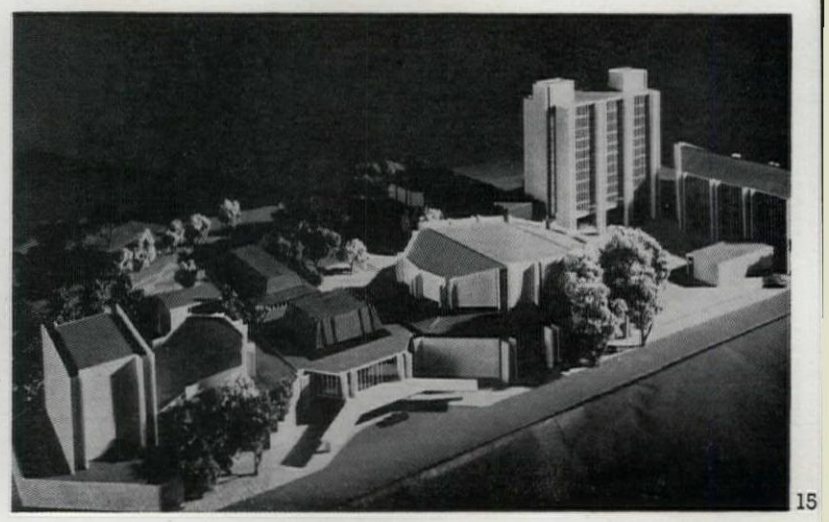
The absolute security enjoyed at present by the Verwoerd Government in South Africa is indicated physically by skyscrapers: *Architect and Builder* last November published nineteen of them. The most interesting seem to be in Johannesburg, where the old mining settlement's grid of streets is likely to become hopelessly overloaded with traffic. The Carlton Centre, 11, with its 730 ft. offices which will be the tallest reinforced concrete structure in the world, its 405 ft. hotel and its rather bleak 3½-acre plaza, has been designed by SOM's New York office in association with Rhodes-Harrison, Hoffe and Partners. In spite of the sophisticated section, 12, the relationship of the blocks seems arbitrary. Ove Arup and Partners are the engineers for this as also for the more interesting Standard Bank tower, 13, designed by Hentrich & Petschnigg (of Phoenix-Rheinrohr, Dusseldorf fame) as three sets of ten floors each, the external edges of which are suspended from prestressed cantilevered beams. A rather different division into three stacks can be seen in the proposed 555 ft. office slab for the Johannesburg Provincial Administration (architect unknown), 14, which includes a 2,000-seat opera house.



12

RETICENCE

'Good-mannered, decently reticent, clean cut and from good stock—very much as Christchurch itself would like to be,' was one Press comment, quoted by the *NZIA Journal*, on Warren & Mahoney's winning design in the two-stage competition for Christchurch Civic Centre. In an aerial view of the model, 15, the Beaux Arts



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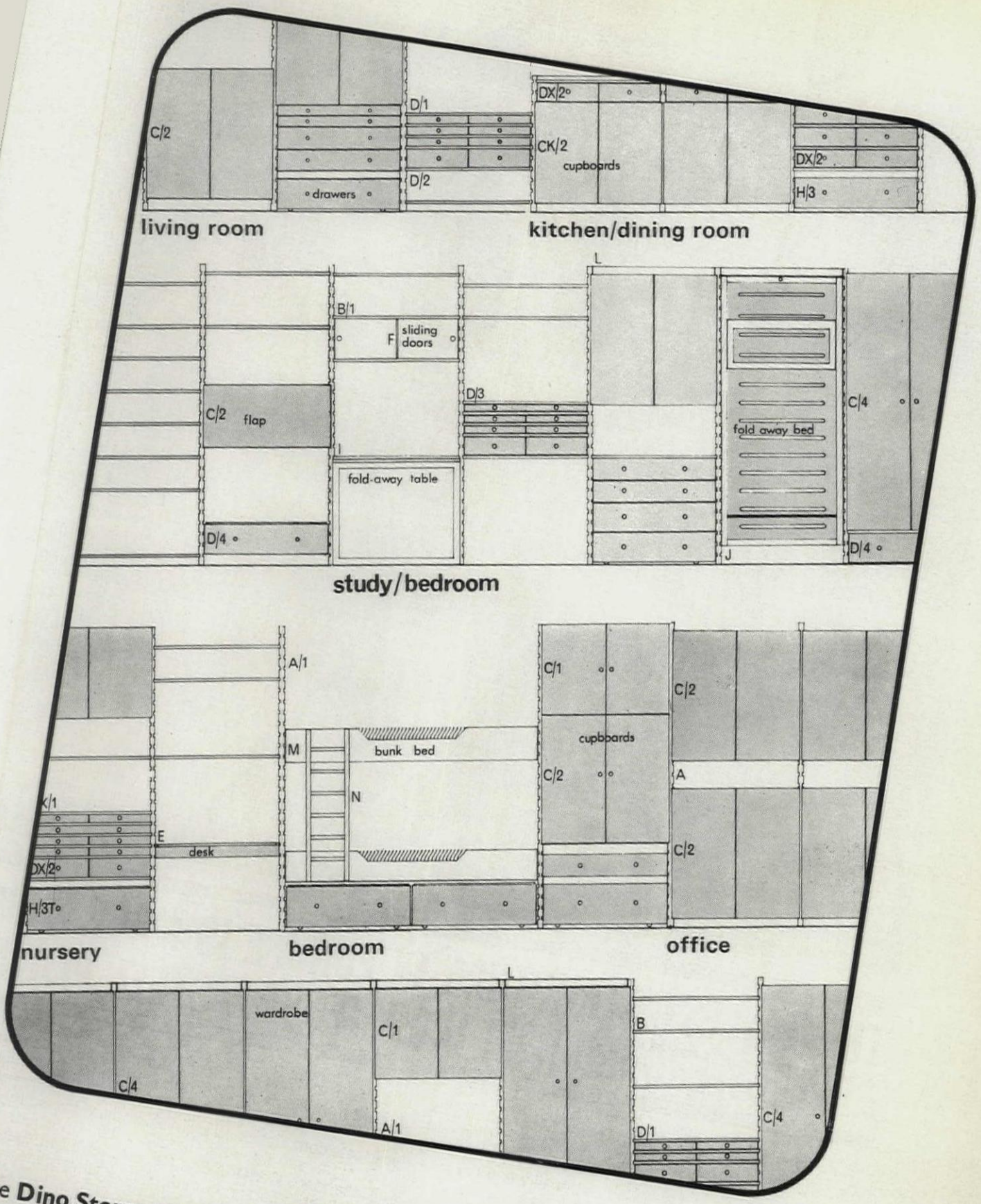

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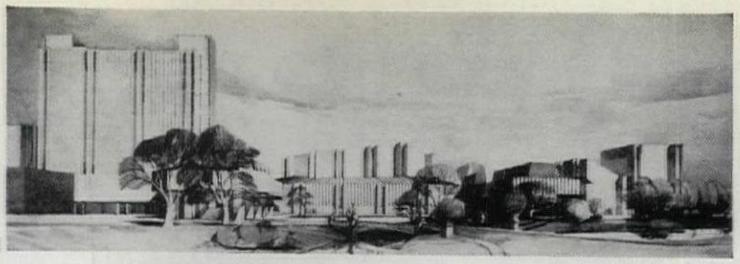
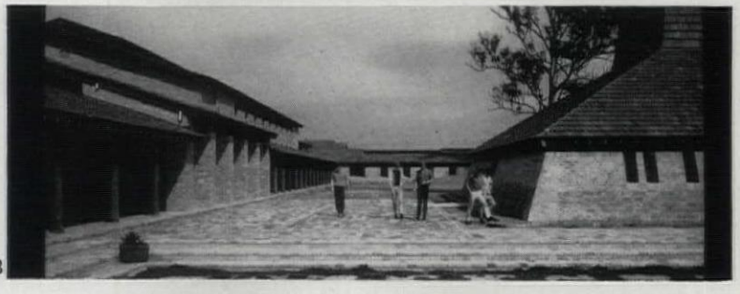


6

RETICENCE VERSUS FUN

planning of the Kilmore Street front is apparent: the 855-seat concert-hall-cum-theatre (left) and the 2,326-seat town hall auditorium are joined symmetrically and encircled by an economically spacious foyer area. Axially behind the main entrance are two meeting rooms and a large banqueting hall. The details, however, 16, are relatively pedestrian compared with the witty display of Scharounery, 17, submitted by Peter Beaven and not selected as a finalist because of its presumed excessive cost.

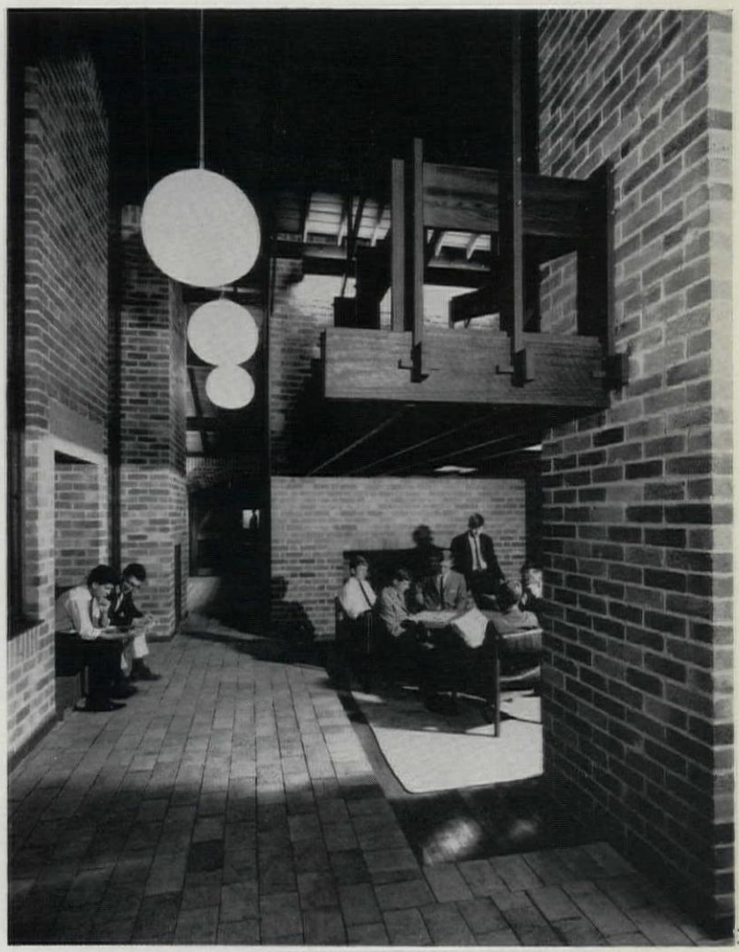
17



18

AGRICULTURAL

A Presbyterian Agricultural College could be expected to have an atmosphere both puritanical and earthy—and these, at their best, 18, are the qualities of C. B. Alexander College, which deservedly won the Australian architects' Sulman Award for last year. Its young architects, Ian McKay and Philip Cox, have used a consistent vocabulary of local brick and timber, to unify a spreading plan and a variety of spaces that might otherwise have become disorderly. The common room, 19, stands at the north end of the long east-west orientated residential wing; the south end of this can be seen, in the background of 18, where it joins with the assembly hall (left) and the chapel (right) to form a spacious courtyard with continuous timber cloisters connecting most of the public rooms and classrooms. In the rolling New South Wales grassland, 20, the buildings sit comfortably (this view from the west shows the common room at the left and the assembly hall at the right), only the spiky spire of the chapel striking an arch note of self-consciousness. This is redeemed by its admirable square-plan interior, 21, with brick-paved floors, indirect lighting and a tapestry by Margaret Grafton behind the altar.



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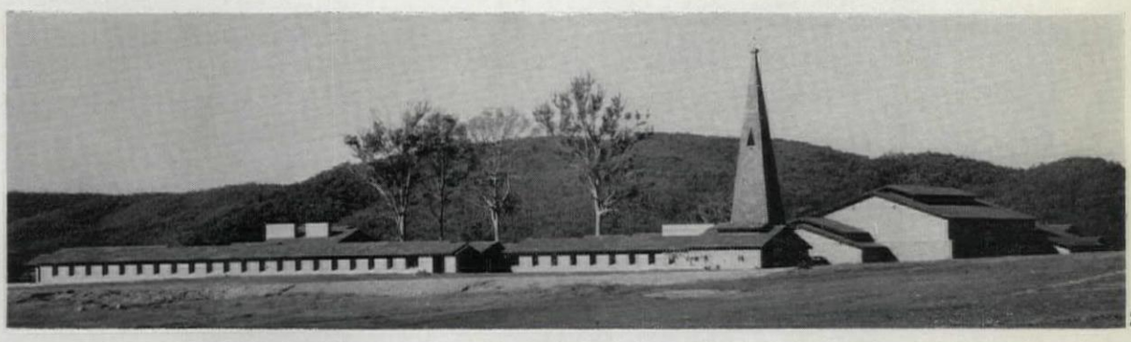


20

22

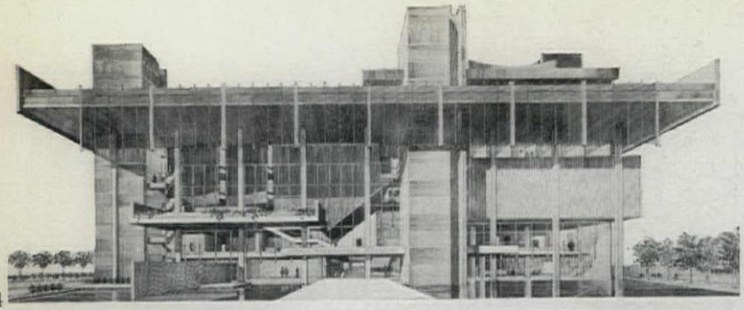
SPOTLIGHTS

Using the broad spaces of an early concrete-framed and mushroom-columned department store of *c.* 1915, Hely, Bell and Horne have created offices, 22, for the newly established State Planning Authority of New South Wales. The canted ceiling of sapele accommodates the mushrooms and reflects the glitter of a multitude of adjustable spotlights.

TUC

The Singapore Conference Hall and Trade Union House, designed by Malayan Architects' Co-Partnership (led by Lim Chong Keat and no relation to the London firm), has a main auditorium, 23, of an elegance—slatted walls and gypsum plaster pyramidal

23



24

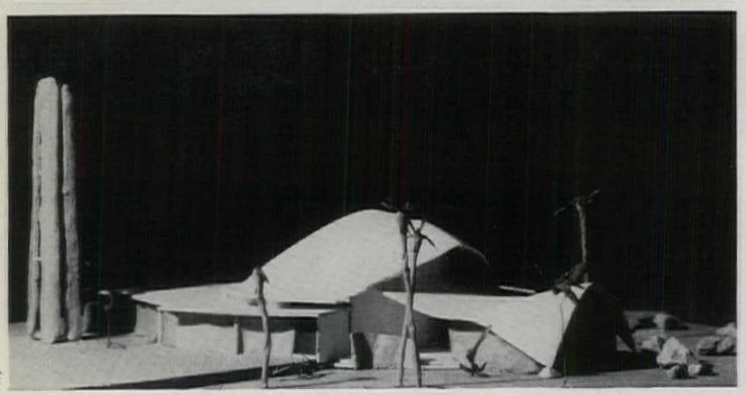
TUC SINGAPORE

coffering for the ceiling—which could be Swedish. But the exterior has a characteristically Malaysian atmosphere, possibly more impressive in the stick-like elevational drawing, 24, than in the less homogenous texture of the material actually used, 25. This entrance front clearly displays three floors of trade union offices and two of restaurants to the right of the central circulation tower, and the second

25

floor auditorium over conference rooms, 26, on the left.

26



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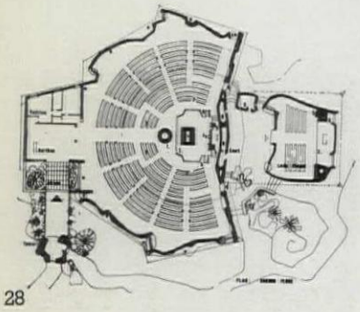
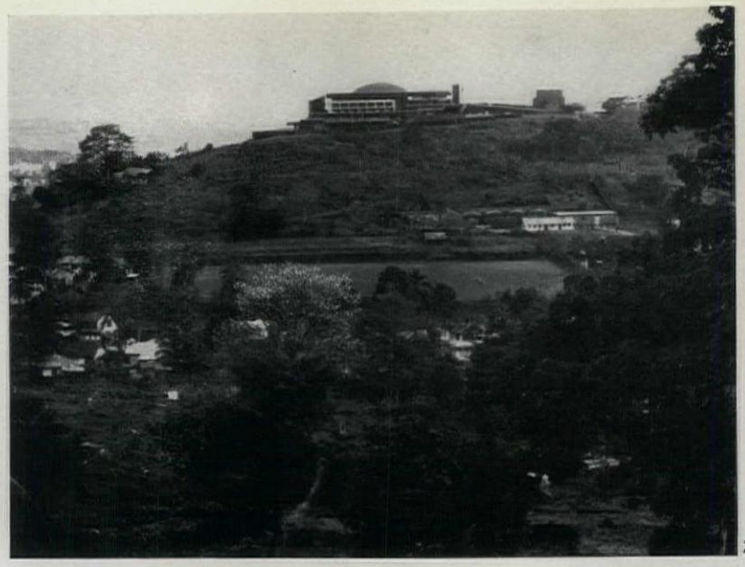


28

LITURGICAL

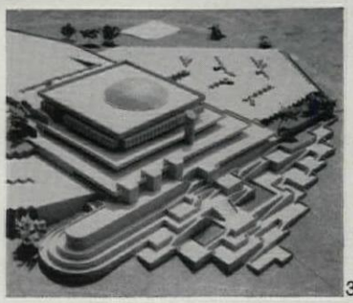
Murta and Hall have designed a cathedral for Kaduna in Northern Nigeria, with an excellently organized plan seating 1,500, 27. Font, pulpit and lectern are all closely related to the sanctuary, with the organ between it and the 120-seat Lady Chapel, which has its own porch and will be built first. The main rooms are clearly expressed in shell concrete roofs, 28, which are intended to reflect the local Hausa mud tradition (AR, February 1965).



29

HILL FOR ASSEMBLY

It is unfortunate that the collapse of democracy in Sierra Leone should have followed so swiftly the completion of the hilltop Parliament Building overlooking Freetown and its bay, 29, designed by the Israeli architects, Karmi Associates. The central chamber was completed within seven months of its design (so as to be ready for Independence Day); the rest followed more gradually, concluding with the cascade of garden terraces, 30. The circular chamber, 31, is approached on different levels by public (upper) and VIP's (lower); there is also a clear separation between the formal spaces of the representatives' rooms and the smaller projecting boxes of the administrative offices, 32. The building's crisp precast units, 33, are faced with red stone quarried on the site.



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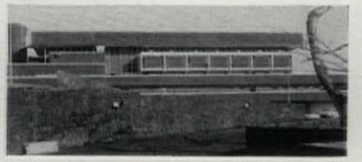

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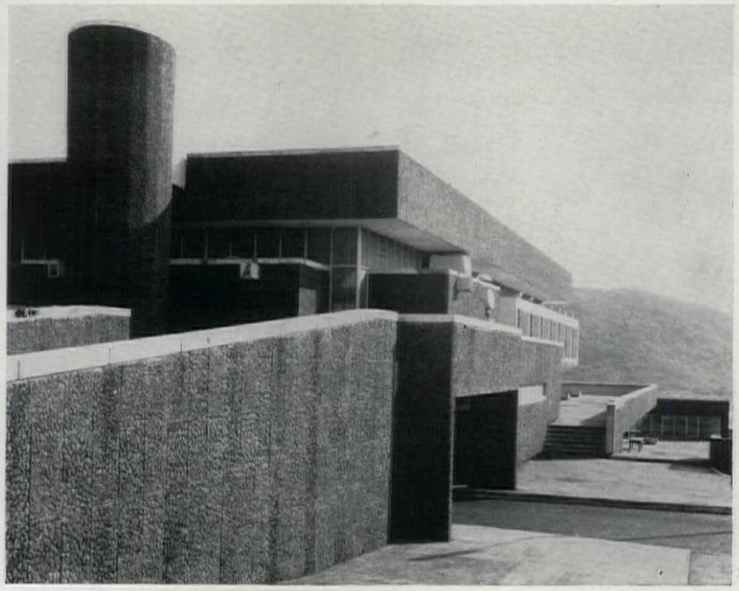

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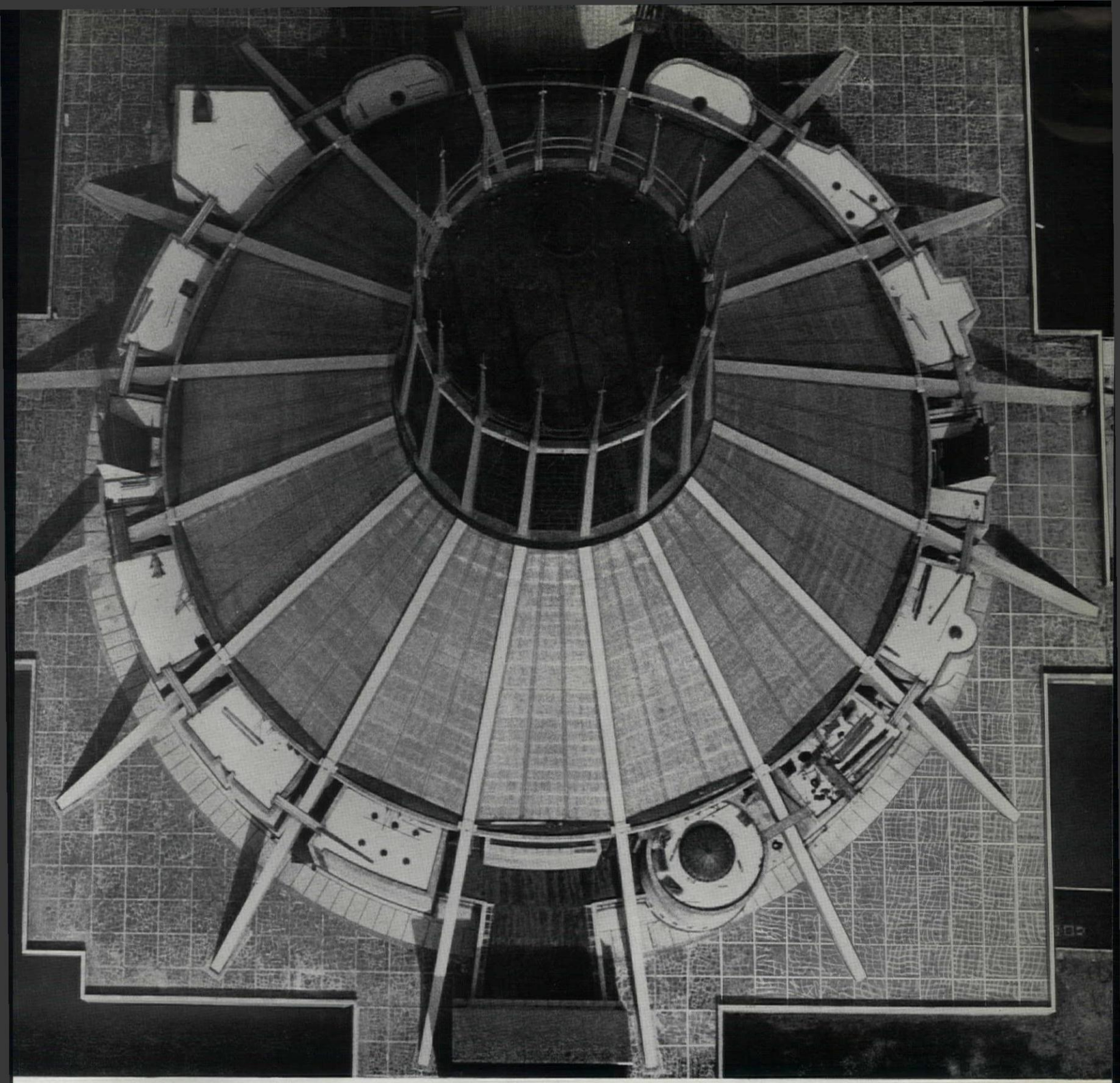

The Baco Aluminium view of the new Metropolitan Cathedral

Viewed from any angle Liverpool's new Metropolitan Cathedral of Christ the King is impressive architecture—viewed from above it also shows the large area of aluminium roofing. It had to be the right colour to blend with the rest of the structure and durable enough to resist British weather. The Metal Roofing Division of the Braby Group used Baco Aluminium, the one metal able to meet the exacting specifications and give the dramatic design its full expression. The British Aluminium Company Limited, Norfolk House, St. James's Square, London, S.W.1. Telephone 01-839 8888.

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VIEWS AND REVIEWS

marginalia

FATES BETTER THAN DEATH

The report of the York Redundant Churches Commission (*New Uses for Old Churches*, Church Information Office and SPCK, 5s.) does an admirable job on a local level. With Marcus Worsley, MP, as chairman and the architectural historian John Harvey as secretary, the commission considered the future of eleven churches out of the twenty in central York; of the other nine, six are active as churches, two are already used for other purposes (St. John's for the Institute of Advanced Architectural Studies, St. Andrew's as a gospel hall) and the remaining one of 1876 has since been demolished. Of the eleven, the commission considers two to be worth keeping *in toto* as ancient monuments: All Saints, North Street, and Holy Trinity, Goodramgate. Seven are 'capable of some degree of alteration'; suggestions include a reading room, a columbarium for cremated ashes, a city information centre (with a giant model of York on display), a diocesan missionary centre, an old people's day centre, a take-over by the Dean and Chapter, and a take-over by the Roman Catholics. Finally, there are two 'capable of major internal alteration,' one as a store or offices, the other as a store or concert hall. A valuable appendix gives a detailed list of converted church buildings in other dioceses.

In another appendix, from Ivor Bulmer-Thomas, of the Friends of Friendless Churches, hard principle emerges from beneath these sensible arrangements: 'An ancient and beautiful church fulfils its primary function merely by existing. It is, in itself, and irrespective of the numbers using it, an act of worship . . . a perpetual reminder of spiritual values.' If the York Commission had questioned such principles (and its own) more ruthlessly, it could have provided a prototype for the new Church of England machinery as a whole (see 'Whose Redundant Churches?' in AR, March, 1966)—and it was no doubt for that purpose the Pilgrim Trust so generously supported it. The commission admits a dearth of new ideas for suitable uses. So what about unsuitable uses? Where does the line have to be drawn? Is there a fate worse than death? The York Report could have established some case law. A branch library?—yes. An abattoir?—of course not. But not at all, even as an alternative to demolition? At St. Margaret, Walmgate, for example, there might be a case for brutalising the relatively unimportant nave for the sake of keeping the superb Norman doorway in situ (except that it was actually moved from another church as recently as 1660). One's suspicion, looking at our surviving fragments of medieval abbeys, is that posterity may value even a tenth of a loaf more highly than no bread.

Meanwhile the Pastoral Measure which contains the new Anglican machinery has been delayed until this summer by the setting up of the Redundant Churches Fund Committee to revise it. The committee's report (Church Assembly Papers CA 1619, SPCK and Church Bookshop, 1s. 6d.), apart from a trifling restriction on the Church Commissioners' use of money from selling sites, has not altered the Measure; but it has recommended that a Commission should be set up to report on the repair and upkeep of *churches in use*—just as the Bridges Commission reported back in 1960 on redundant churches. This is a major opportunity for new thinking on the relationship of the Church to national and local government, who in return for financial aid are bound to insist that churches cease to be exempt from planning law. The recent committee considered this carefully and, although they decided to uphold exemption, there was a substantial minority who thought otherwise. Meanwhile the term 'buildings in ecclesiastical use' has been restricted to churches as such by means of an amendment to the Civic Amenities Bill, which brings vicarages back under control (see 'Paganism,' AR, November, 1966).

BARNSBURY SCANDAL

After months of rumour that all was not well with the Barnsbury Study (for its origin, see AR, September, 1965), *The Spectator* of 3 March published a detailed article on it by Patrick Hutber that seemed, in the absence of any immediate reply, extremely damaging to the authorities concerned. A joint Ministry-GLC-Islington team was appointed in 1965 by Mr. Crossman, then Minister of Housing, to study the application of Buchanan's concept of the 'environmental area' to Barnsbury; he laid down that the residents' own Barnsbury Association, which had originally thought up the idea, should be consulted (it was not). The technical team under J. Grove, a Ministry planner, swiftly produced an interim report (Hutber is one of the few to have seen it) which, apart from the limitation that they were not empowered to prescribe a primary network outside the area to draw off Barnsbury's traffic, substantially justified the promise of Crossman's appointment of them.

However—and this is Hutber's 'Barnsbury Scandal'—the final report that was passed for publication by the steering committee of officials from the three authorities was cut to barely nineteen pages of the original 42. Hutber says that 'every comment or proposal which directly or by implication would have called any existing council policy into question has been ruthlessly excised.' The team's criticism of the GLC's proposed piecemeal redevelopment of Bewdley Street was actually turned into a plea for the council to be allowed to go ahead with it without delay; criticism of the GLC's proposed Barnsbury Park open space was cut out; and a whole chapter was omitted which suggested outlandish ideas such as a sociological survey, a scheme for tidying up eyesores, a system of consultation with residents and a series of technical papers suggesting general principles for application elsewhere. The team's original statement that 'the Georgian and Early Victorian squares in the middle of the study area are of unusual quality and a case can be made out for preserving them' was severely cut and given the sinister gloss 'especially to those who value historical preservation.'

At the time of writing a frank statement on Barnsbury was awaited from the present Minister, Mr. Greenwood; but those who remembered the curious effect of the Islington air on his predecessor's treatment of the Packington Estate were not hopeful.

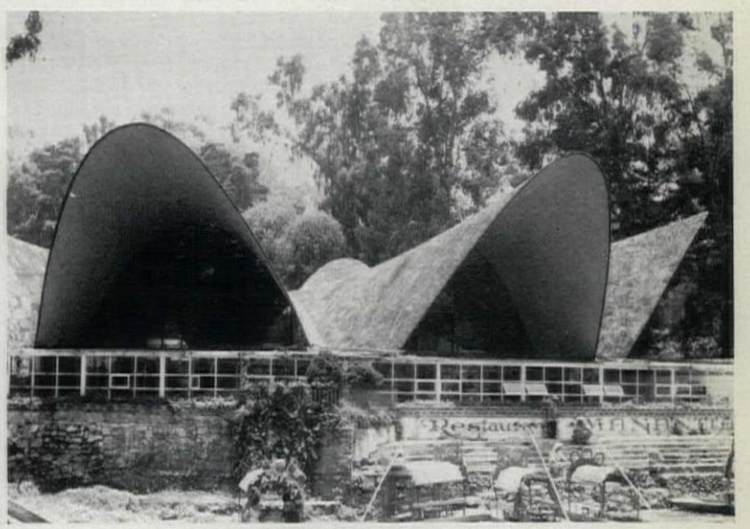
SHELLS IN DISTRESS

Much of the effect of buildings with shell vaults comes from the manifestation of their lightness at the points of support—as recent additions to two buildings with shells by Felix Candela unhappily demonstrate. The diners around the perimeter of his Los Manantiales restaurant, 1, at Xochimilco (Joaquin and Fernando Alvarez Ordonez, architects, 1958) no longer overlook the canal from behind an unobtrusive metal railing, but are enclosed in a kind of greenhouse which is equally destructive of the elegance of the building itself and of its harmonious relationship with surrounding nature. The earlier Cosmic Ray Laboratory at the National University of Mexico (Jorge Gonzalez Reyna, architect) has also, last summer, been confined behind a stone wall, 2. The higher wall underneath the building, seen on the left, has been there all along, though few who knew the building from photographs may have noticed it; its massiveness and its artfully casual placing contribute to he illusion of portability that is one of the charms of this miniature laboratory. Whatever its practical purpose, the new wall (seen under construction in July) rather suggests that someone was afraid that the building might go wandering off on its own.

MARCUS WHIFFEN

NEWCASTLE MOTORWAYS

Newcastle! Yes, that's the town through which the A1 goes. But one day it might be the town through which the motorways go—that is if present proposals become fact. The long-term plans make provision for three motorways to cross the River Tyne at separate points and then, travelling north, to coalesce in one great interchange above the University and the Hancock Museum. Into this



1, *Los Manantiales resturant, by Candela and Ordonez.* 2, *Cosmic Ray Laboratory, National University of Mexico, by Candela and Reyna. See 'Shells in Distress'.*

system there will also come a coast motorway from the east and various branches and spurs as well as an east-west underground link.

Yet as a town centre Newcastle is small. In fifteen minutes you can walk from the University to the Grainger-Dobson blocks to the Quayside. It is this area which is to be enclosed like a medieval walled town with motorways. The report on these, presented to the corporation last year, stated that 'Within the motorway system . . . the environment must be given priority.' But in the Newcastle context motorways and environment would not seem to be compatible. For instance, at the northern interchange there are at present some of the most desirable residential buildings in Newcastle. But will they still be so desirable when the motorways have used up much of the land frontage and there are all the usual accompaniments of noise and lighting at night, let alone the size of the interchange itself? Also the present alignment of the coast motorway cuts through Jesmond which is one of the few residential districts of architectural note and with high amenity value. Indeed, the motorway will pass between Jesmond parish church and the Friends' Meeting House with only feet to spare on either side. Of another building, Holy Jesus Hospital (1682) the report says that it is designated for compulsory purchase 'in order to ensure that its retention, or its re-development, is fully integrated with adjacent land over which access must be gained.' But Holy Jesus Hospital is drowning below a tidal wave of concrete with the traffic roaring by at roof level.

The report also states the need to prevent the motorway becoming a physical and psychological barrier. However, this may be the one real achievement of the plans. At present each huge block of the city centre has its own character, its own identity, and these, aided by the geography which gives the town so much of its drama, flow into one another; but given the motorway proposals the city's quality would be fragmented into a series of cantons with the civic centre as one and the Hancock Museum as another and with the University cut off by the western motorway from the town. In addition, the city will be faced with problems of its own making if it does establish the proposed educational precinct below the apex of the triangle. Not only are there spatial limitations but there is the problem of noise to be overcome. Indeed, the University admits that it has so far failed to find a use for its motorway frontages where the external noise would not grossly interfere with academic pursuits.

Therefore there is the possibility that the motorways could hinder the full development of the city. Already the land use of large parts has been permanently defined: the University, the civic centre, the markets and so on. True certain streets, such as Percy Street, could be profitably developed, but nevertheless a city centre should be able to expand outwards. For a regional capital like Newcastle there are tremendous possibilities provided there is no physical constraint, which in thirty years time would not only be deleterious but would also involve the loss of much land where it is most valuable. Indeed there is a very real danger of repeating last century's smash-up of our cities by the railways, since motorways have the same visual impact, the same problems relating to viaducts, to their uses below, and to aesthetic treatment.

Like any other major city Newcastle needs a motorway system, but not in the central areas. There it is necessary to loosen the concrete corset. The middle motorway plans are too advanced to be stopped. Nevertheless the final stretch of the coast motorway should be moved further south to save Jesmond while a realignment could save Brandling Park and its excellent housing. For the rest the eastern and western motorways should be diverted to pass through less congested areas and less valuable properties. And if, as the report states, only 2.3 per cent of the north traffic is through traffic why can it not use the Tyne Tunnel when it is in use? After all Buchanan did write, 'In many instances the supposed needs of through traffic have been given priority over the needs of town traffic, with the result that proposals abound which, if executed, would be fatally damaging to local environments.' JAMES MACAULAY

TEN YEARS' HARD

Dieci Anni di Activitá 1955–1965 is the title of a massive special issue of *Italia Nostra* (November, 1966), the magazine which bears the name of that remarkable Italian organization which combines the functions of the Civic Trust, the National Trust and the SPAB. The anniversary booklet is divided into three sections: Historic Centres and Remains, Landscape and Countryside, and the Coastline. In each a logbook of relevant events in the society's history is followed by an extensive file of photographs, in which English readers will find things that are uncomfortably familiar. Modern Outrage is as internationalist in spirit as Modern Architecture. Yet Italy does have its own specialities: a derelict museum of nude statues at Palermo, Renaissance churches used for parking Lambrettas in Pavia and for a car-wash in Ferrara, monstrous hotels (*mastodontiche construzioni*) on the Aga Khan's Sardinian beaches. It is to prevent these latter explosions that Italia Nostra has commissioned from a group of architects, planners and economists, headed by Italo Insolera, a report on the Gallura coast of Sardinia. Insolera's two volumes, closely packed with detailed survey work, are a model of their kind (Italia Nostra has published them from Via Piemonte 39A, Roma).

PROSPECT OF WHITEHALL

'Pictorial topographical views by English artists are rareties at this early date, and a view of Whitehall absolutely unique,' said John Harris in the February issue of *The Burlington Magazine* in introducing a remarkable drawing by Inigo Jones, recently uncovered in a 'Private Collection, England.' Measuring 15 in. by 24⅝ in., it depicts in a carefully measured grid of ⅛ in. squares the Whitehall front of the Banqueting House, flanked by the Great Court gateway on the left and the Holbein Gate (with the Tilt Yard Gallery) on the right. Certain inconsistencies of perspective and formal contrivancies led Sir John Summerson to identify it as the 'prospective of Whitehall with the Banqueting House' which was the opening scenery for the masque *Time Vindicated to Himself and His Honours*; this was performed in the Banqueting House on 19 January, 1623, only a year after its completion. Besides its value as an unusually large and early masque design, showing Jones's command of the latest French and Italian stage techniques, the drawing is an astonishingly good record of the Banqueting House in its pristine state. It is the first important Jones drawing to see the light since Lord Burlington completed his collection in 1720.

URBAN NEWS

Victorian Suburb, a study in depth of Camberwell, was a landmark in urban research; its author, Dr. H. J. Dyos, has now formed an Urban History Group, the cyclostyled newsletter of which is an invaluable means of keeping in touch with a fast-growing subject. Its 'current bibliography of urban history' should be indispensable to all architectural historians who care about towns. *Urban History Newsletter*, of which seven issues have so far been published, is available at the bargain price of 10s. to cover the two years 1965–67, from Dr. Dyos at the Department of Economic History, Leicester University.

ENCOURAGEMENT

Everyone knows the perils into which planning authorities run when they attempt aesthetic control. Aesthetic encouragement is much easier and costs less, as the Hampshire County Council and their planning officer, A. D. G. Smart, have set out to prove in producing popular booklets which record the best-designed examples of recent buildings to which they have had the pleasure of giving planning permission. *Better Design* 66, to which Sir Hugh and Lady Casson were advisers on selection, is hampered by having to omit the county boroughs of Bournemouth, Portsmouth and Southampton, particularly the latter; and the best work at Andover and at Aldershot was apparently finished too late for it.

The remaining area has three or four individual houses which would be the pride of any county: Stephen Gardiner and Christopher Knight's linking of new mansion to surviving portico at Stratton (illustrated in AR, March 1965), Michael Brawne's house at Fisher's Pond, Kenneth Claxton's at Steep. The county architect's department shows promising initial results from using the SCOLA industrialized system for schools and clinics. But the crux of the matter, particularly in a rural county under pressure just beyond the London green belt, is how new and old can be intermingled in town or village streets. There are some fairly acceptable examples in the booklet by Peter Shepheard and by Cruickshank and Seward at Winchester and by the Ministry of Public Building and Works in a Post Office at Alton—though the listed buildings next door, with which the Post Office was carefully kept in scale, have since been demolished (with permission from the county council). But others—shops at East Meon, semi-dets at Romsey, flats at Highcliffe—hardly rise far enough above the subtopian norm to justify official approval in a booklet of this kind.

SALES COUNTER AT KINGS

When the sales counter that has been installed inside King's College Chapel, Cambridge, was illustrated in the AR for March credit should have been given to Sir Hugh Casson as consultant as well as to Bernard Holdaway as designer.

book reviews

TECHNICAL AND AESTHETIC

THE PUZZLE OF ARCHITECTURE. *By Robin Boyd. Melbourne University Press.*

This book, both in style and format, is at first sight curiously old-fashioned. However, once one has recovered from the shock of the rather inadequate marginal sketches, printed in brown, one discovers that the text is really very useful and erudite and sometimes brilliantly analytical. Since a book of this size and scope could hardly be expected to illustrate in the fashionably glamorous manner all the buildings mentioned—most of them familiar—even the slight sketches are valuable if only as mnemonics to the initiated. To the uninitiated the book would almost certainly have to be supplemented by some of the many glossy albums that are lying about everywhere.

The author, one of the best architects in Australia, has travelled widely, seeing the things that he now writes about, and has spent a useful year on the faculty at MIT. In fact he clearly knows his stuff, and if his writing, like his sketches, is gentle and old-fashioned, it is little the worse for that. It is at least clear and free from gimmicks and modish words. That is as well since Mr. Boyd's object is an ambitious one, difficult for both

Dreary though the housing shown in 3 is (it might be anywhere but is in fact at Dunstable), readers may spot one thing it has not got—a thing which makes most housing estates even more unattractive to the eye: the dozens of television aerials on the roofs. Credit for this is due to Mr. J. A. Murch, engineer and surveyor to Luton rural district council, who devised the wired television system that made aerials unnecessary.

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writer and reader. After a few preliminary skirmishes—fairly orthodox—as to the nature of architecture, he sets out upon a long and very careful dissertation . . . nothing less than the story of modern design from the days of the Bauhaus and the early Frank Lloyd Wright, to the very latest manifestations of modern architecture wherever in the world they may be. The thing that emerges may be something that we all know, but it is something that Mr. Boyd clarifies in a way that has not been done before. His theme is that there has been an absolute integration of the technical and the aesthetic in modern architecture. Each technical advance produced a new aesthetic. That that integration has been so absolute is, of course, the supreme justification of modern architecture as a historical style in its own right.

Needless to say the story is really an anarchic one—neither the pioneers nor the masters of the modern movement can have had the slightest idea that they were contributing to such a series of events, such a continuity of development, as is here outlined by Mr. Boyd. That the Farnsworth House, say, should have been the end of one chapter in the story of space enclosure, and that the MIT Kresge Auditorium—the form of which was discovered by Saarinen when cutting up a grapefruit—should be a 'guide vision' building, are things that neither Mies nor Saarinen can have ever realized. That is neither here nor there . . . none of the builders of history can have ever known just where they were fitting into history. Too much extrapolation is probably bad for architecture anyway. 'Guide vision,' by the way, is the author's favourite phrase; it indicates a building that is significant, seminal or influential; it does not necessarily mean a building that is in itself supremely great. In Saarinen's work alone the TWA building and the Dulles Airport Building are much finer essays—with all their faults—than the actually rather puny Kresge Building, but the Kresge grapefruit sector had to come first. Similarly Gaudi—in spite of such a great time lapse—had to precede Guedes's 'Habitable Woman' and Kiesler's 'Endless House' of 1960; in this sense Gaudi was, in Mr. Boyd's phrase, a 'guide vision.'

This emphasis upon significant form—the treatment of space, the single conceptual building—whether as great works in themselves or as manifestations of new structural techniques of a revolutionary order, is the real basis of the author's theme. To take one example: the complete *separation* of services from spaces—the areas that are served and the areas that are servants—was realized in Louis Kahn's towers at the Richards Laboratories in Philadelphia. This was a significant *technical* achievement; it was also an aesthetic one in that it was followed by Paul Rudolph's topless towers at Yale, and by Tange's towers at the Yamanashi Press in Tokyo. They are a family of buildings sharing a common aesthetic, but born of a technical revolution.

And so throughout the book. . . . 'The two most insistent and persistent qualities of architectural design may always remain conflicting: on the one hand, a morality based on reflections of the truth of construction and a valid image of society in its shelter; on the other, the lure of beauty—always personal, often irrelevant.' That is Robin Boyd's summary of his thesis. The same thing may have been said before but probably not said better. Many histories and surveys of modern architecture have been written. This is the first book to truly survey the whole field, not merely as a chronological record, but rather as the story of a series of artists, over half a century, working within the tremendous potential, but extremely hard discipline, of modern structure.

R. FURNEAUX JORDAN

TOWN FOUNDER

MADOCKS AND THE WONDER OF WALES. *By Elisabeth Beazley. Faber & Faber.* 36*s.*

William Madocks, M.P. (1773–1828) was the creator of Tremadoc and Portmadoc, and of the Wonder of Wales, the great embankment that dammed out the sea and stopped it from washing the feet of Snowdon. He was sometimes racked by 'gout' (high blood pressure?) and always by doubts, which were the creation, as Miss Beazley clearly explains, of the unceasing war within him between romance and practical duty as he conceived them both. This drove him, and the extraordinary John Williams who was his agent, and who makes a splendid second lead in the story, with a force that made ordinary strong men look silly. Between them they got the embankment built, surmounting impossible odds and constant impending bankruptcy, never saying die even when disaster succeeded triumph. Triumph prevailed after twenty years or so. It is not surprising that he encountered Shelley, who made a passionate fund-raising speech for the cause, nor that he was for years saved from the bailiffs by the loyalty and idealistic response he automatically inspired in others; nor that he adored pageantry, parties, race meetings and acting (he and his brother were gifted actors) but also rhyming paper games, waterfalls, woodland paths and the Picturesque.

This biography of him, this story of his preoccupation, could not be better done. The drama works up to a crescendo, but the writing remains sober and well informed. The background work was hard and rewarding: the Madocks-to-Williams side of a large correspondence between master and agent exists. The book was needed; it explains a lot about this gorgeous part of the coast where Caernarvonshire joins Merioneth and, inland, Snowdon, Cnucht, the Moelwyns and the Rhinogs leap and entangle themselves to form an unforgettable skyline.

He built a charming house, Tan-yr-allt ('under the wooded cliff') about 1800, a house that inspired in its foothill-situation and its low, verandahed construction many a later nineteenth-century Welsh building. It echoed with the noise of parties given in defiance of creditors. It still exists, and Clough Williams-Ellis, to whom the book is dedicated, was born in it. The town of Tremadoc was designed as a coaching stage on the Dublin-London route *via* the harbour of Porthdinllaen on the Lleyn peninsula—the port that was then more favoured than Holyhead as the official one. Tremadoc* was planned by Madocks, and some of his back-of-an-envlope sketches remain. Two or three years later J. C. Loudon was involved in giving landscape advice and exploring landscape possibilities, but his published *Ideal Plan for Trè Madoc* (later still) does not indicate him as designer. The originator-planner-designer himself would have been delighted, as Miss Beazley says, that it has 'recently become a mecca for architectural and planning students who survey and appraise its buildings and layout.'

Is the embankment a 'triumph' from our point of view? Would we build it if it didn't exist? Most of his contemporaries were awed into silence about the Picturesque losses involved by the romance of the thing itself. Fenton disapproved of the planting, but doesn't say he disliked anything else. Many travellers welcomed it on 'amenity' grounds. Pennant had noted the need for a dam a hundred years earlier. 'Once drained it would inevitably lose its magic. . . .' A lot of people thought this, certainly, but the approaching triumph, and then the triumph itself silenced them all. Except Peacock, whose three philosophers in *Headlong Hall* watch the ebbing tide of the inland sea—no longer to ebb or flow—in silence. 'The mountain-frame remains unchanged, unchangeable: but the liquid mirror it enclosed is gone.' (The philosophers then proceed to Tremadoc for a cold saddle and a bottle of sherry.) The landscape loss, in spite of the 'haunting fascination of the lonely islands stranded in the sea of grass,' that the author speaks of, is terrific. And, in fact, we would just as happily motor round the head of the estuary at Aberglaslyn as we do round the head of the Barmouth estuary at Dolgellau—for that remains an estuary, in spite of the railway bridge, and Cader Idris looks wonderful in relation to its water. But not half as wonderful as Snowdon and its peaked and variously-indented neighbours would have looked had Madocks not been a slave of that internal war of his.

JOHN PIPER

THE 'TWENTIES KICK

MODERN ARCHITECTURE AND EXPRESSIONISM. *By Dennis Sharp. Longmans Green.* 70*s.*

The title of this book must have been chosen because modern architects have proved receptive to Expressionism, not because the book itself deals with both the Expressionists of up to 1924 and modern architecture. The latter consists of two illustrations of Ronchamp and a few sentences at the beginning and the end, but the book clearly caters for the neo-Expressionists of today, the architects who get a huge kick out of the 1920s and are deprived of it in the standard books on the Modern Movement, including my own, which ended in 1914. Mr. Sharp says: 'The standard books on the Modern Movement in architecture have provided a distorted view.' In this he is right, although of course his view is no less distorted. The older books leave out the Expressionists; he all but leaves out the rationalists. But then his book's title makes that clear, and so no one ought to blame him.

His book is a comprehensive account of the Expressionism of the First World War and its aftermath, generally in Germany, with chapters on Poelzig, Bruno Taut, Finsterlin, Mendelsohn and Rudolf Steiner and one chapter on the School of Amsterdam which is probably the best. The ample illustrations include portraits of the principal actors, and there are also two appendices, being texts of a statement by Poelzig of 1919, passages from Mendelsohn of 1914-23 and an untranslatable extract from Finsterlin of 1920.

In addition there is a useful chart of events. The text is unfortunately not free from misprints, the funniest being, Roupert House for Konzert-Haus (i.e. Concert Hall).

Among the illustrations some are ridiculously like the 1960s, especially the towering vertical fantasy of Carl Krayl and the rough concrete work inside the Centennial Hall of 1913 at Breslau. A good many of the more fantastical designs call to mind the present *Archigram* situation, except of course for Archigram's self-conscious pop-vulgarity, and the author himself admits in the case of Taut that many of his designs 'were wildly impracticable and certainly technologically impossible as well as economically impracticable.'

The text is competent but not of the calibre of Reyner Banham's *First Machine Age*. There is much less first-hand research in it, and the material is presented less incisively, Even so this is a book which deserves a welcome from scholars and architects alike.

NIKOLAUS PEVSNER

SQUARE SUMMARIES

LIVING ARCHITECTURE: OTTOMAN. *By Ulya Vogt-Goknil, with photographs by Eduard Widmer and preface by Jurgen Joedicke.* ROMAN. *By Gilbert Picard, with photographs by Yvan Butler and preface by Paolo Portoghesi. Oldbourne.* 55*s. each.*

Two more volumes in a series that has already dealt with Mayan and Egyptian architecture: well illustrated books with a square format based on the principle of illustrating about fifteen representative buildings and using them to summarize the architecture of the period and its cultural significance. The photographs are good and the drawings are unusually clear and full. The prefaces are excellent in the case of Dr. Joedicke (who aptly takes his illustrations from Le Corbusier's *Carnets de Voyage*); but weak in the case of Sig. Portoghesi who introduces pictures of his own work which are neither relevant nor interesting.

The chief weakness of the volumes however—which makes them much less useful than they would otherwise be—is the utter confusion of their arrangement, so that text, pictures and captions are bewilderingly difficult to relate to one another.

BOOKS RECEIVED

DESIGN FOR NOISE REDUCTION. *By J. E. Moore. The Architectural Press.* 21*s.*

GREENHEART METROPOLIS. *By Gerald L. Burke. Macmillan.* 50*s.*

BUILDING LAW. *By J. R. Lewis. Allman & Son.* 18*s.* 6*d.*

DUTCH HOUSES IN THE HUDSON VALLEY BEFORE 1776. *By Helen Wilkinson Reynolds. Dover Publications Inc.*

EARLY CONNECTICUT HOUSES. *By Norman M. Isham and Albert F. Brown. Constable & Co.* 24*s.*

ART AND ARCHITECTURE ON THE MEDITERRANEAN ISLANDS. *By Erich Arendt. Edition Leipzig.*

* See pages 463-465 of this issue (Editors).

In an age of skyscrapers it is rare to find a modern industrial city dominated, as Liverpool now is, by the twin crowns of twentieth-century cathedrals. In obvious ways they differ: Sir Giles Scott's Anglican cathedral is a massive masonry structure which is still in the final phase of construction sixty-four years after his first design won the competition, while Frederick Gibberd's Roman Catholic cathedral (discussed and illustrated on pages 436-448 of this issue) opens as a virtually completed building barely seven years after the design was selected—again by competition. Yet in deeper ways they are similar, both being in the English Gothic tradition of angular construction.

Edward D. Mills

EMERGENCY AID

Although news of the floods in Florence brought help on an international scale, the disaster provided further evidence of the need for some permanent organization ready to furnish help whenever natural disasters occur—an organization that could move into action more efficiently and knowledgeably than even the most enthusiastic impromtu response can be expected to do. Such an organization is especially needed in the technical field, to supplement the efforts of, for example, the Red Cross in the medical field. UNESCO is aware of the need in the case of earthquakes, having arranged in 1964 *to send expert missions to the scene of earthquake disasters, but these missions are empowered only to investigate and report, not to furnish aid on the spot, and they do not include planners or architects. Edward Mills calls for a broadening of the UNESCO mission idea in the shape of a permanent emergency technical aid service (UNETAS), under the United Nations, to be at the disposal of the victims of every kind of natural disaster.*

Natural disasters fall broadly into three categories: (*a*) earthquakes, volcanic eruptions and landslides; (*b*) hurricanes, cyclones, typhoons; (*c*) floods resulting from storms, tidal waves, etc. While these categories are listed separately for convenience, the natural forces present at any given disaster area may well include elements from all three. Earthquakes may cause landslides and tidal waves (*tsunamis*) and hurricanes may spread damage not only by wind but also by flooding due to torrential rains. In the Japanese earthquake of 1923, which in five minutes destroyed Tokyo and Yokohama, the resultant fires were aggravated by a typhoon. The total of persons killed and injured was at least a quarter of a million while the damage to property was estimated at £900 million. Natural disasters are, therefore, often a combination of natural phenomena, sometimes aggravated by man's incompetence.

Systematic records of loss of life and physical damage caused by earthquakes go back less than a hundred years, but they show that in the second quarter of this century (from 1926–1950) earthquakes were the direct cause of the death of over 350,000 people, and damaged property to the value of over 3,000 million pounds. Last year recorded earthquakes included one in Turkey, where over two thousand people were

killed, 3,000 injured and 100,000 rendered homeless, one in Tashkent where 1,000 were injured and a quarter of a million made homeless, and others which occurred as far apart as Peru, Greece, China, Uganda and Nepal. In October last year Hurricane Inez started in the French Caribbean and finally ended in the Atlantic after passing over Cuba, the Dominican Republic, the Yucatan Peninsula, etc., causing the death of at least 2,500 people and devastating more than 100,000 homes, and at least four major typhoons and cyclones were recorded in the Far East, causing a vast amount of damage and loss of life. Volcanic eruptions occurred in 1963 in Costa Rica and Indonesia where 1,700 people were killed and 400,000 left destitute. Up to then the most recent major volcanic eruption was the one that shook Tristan da Cunha in 1961, when the islanders were all evacuated and sent to the United Kingdom. Major flood disasters occurred in at least twelve countries in 1966, the worst being in India and Pakistan where hundreds of thousands of people were driven from their homes. The November floods in Italy are still in the news because of the extensive damage to art treasures and historic monuments in Florence and other cities. The value of this damage by floods, which covered an area of approximately 40,000 square miles, has been estimated at £57 millions, while 180 people were reported killed and 70,000 made homeless.

This heavy toll of life and property caused by natural disasters underlines the need for co-ordinated international emergency action, for it is unfortunately a fact that these catastrophies often overwhelm those countries least able to cope with them. The 'disaster belt' includes not only countries like the United States of America, Japan and other rich and highly organized communities, but it also takes in the Middle East, South and South-East Asia, the Caribbean and South American areas that are not only comparatively poor but are also less highly organized and even in normal times are fighting a constant battle against economic instability.

While the picture of world devastation is thus appalling, the remarkable work of official and voluntary relief organizations at times of natural disaster is something of which we may be proud. Many national and international agencies regularly contribute material and technical aid to devastated areas with commendable promptness and unstinting generosity. After the Skopje earthquake disaster in 1963, for example, massive aid was forthcoming on an international scale. Over forty Red Cross Societies sent help in goods and money, and Governments sent not only food, medical supplies and money (either as gifts or long-term loans) but also provided mobile hospitals, building materials and prefabricated houses. Similar facts can be given for all the catastrophes which have overwhelmed countries unable to cope with disaster situations from their own resources, and emergency assistance flows readily from national and international philanthropic societies, governments and United Nations agencies. Nevertheless such well-intentioned help is unco-ordinated and is often given without adequate knowledge of the real needs and priorities; nor is it often backed up by expert co-ordinated *technical aid*. Immediately after a natural disaster the Red Cross and similar organizations move in to provide essential rescue, medical aid and physical relief services. They are able to work immediately, swiftly and efficiently, often at short notice, and it is impossible to overestimate the value of their aid. The obvious efficiency of such physical relief work serves to underline the need for an equally well-organized and co-ordinated complementary *technical aid service* to deal with the many other aspects of relief and rehabilitation that are vital.

One of the major problems is the panic and confusion that arise as a natural consequence of any catastrophe. Records of disasters show that, if available, a properly organized Emergency Technical Aid Service could prevent a great deal of this unnecessary confusion, the effects of which are not only felt by the people immediately involved, but can inhibit plans for ultimate reconstruction and rehabilitation. Often, in the days directly following a natural disaster, temporary housing is erected on unsuitable sites where essential services are not available. Sometimes refugees are allowed to return to partly demolished dwellings and temporarily repaired structures that should be scheduled for total demolition. The resulting slums, often heavily populated, are difficult to eradicate at a later date. In both cases lack of forward planning imposes serious restrictions on town-planners in preparing the final reconstruction schemes. Similarly, rubble from badly damaged or demolished buildings dumped indiscriminately without thought for future reconstruction becomes an immediate hazard and an impediment to permanent replanning or improvement. Earthquakes and hurricanes exercise no discrimination in respect of the buildings they destroy; the ancient cathedral and the historic monument are as vulnerable as the slum tenement or the shanty town. But historic buildings must be safeguarded to give a town a sense of its continuity and history. In the past, damaged buildings of this kind have often been totally destroyed or have suffered further damage at the hands of well-intentioned but inexpert and inexperienced demolition gangs.

All natural catastrophes can yield scientific data which should be properly recorded and analyzed. Information concerning the origin and effect of the disaster can be of inestimable value in relation to future plans, not only for the area immediately concerned but for more general application. But vital evidence may be unknowingly destroyed if the guidance of trained technical experts is not available. Architects, planners and engineers can learn much from the behaviour of building structures and materials under abnormal stress and the knowledge gained can be invaluable for the future, to ensure that the new buildings resist these stresses more effectively than the old. At the time of a natural disaster essential services and communications are often temporarily or permanently disrupted and this accentuates the helplessness of the population. Technical experts are needed to determine the extent of damage to the infra-structure of the town or city and to advise on temporary reinstatement. Confusion in this field can not only lead to chaos but can be the cause of epidemics and other health hazards, at a time when physical resistance to disease is at its lowest level. The 1963 Skopje earthquake was well documented and received more international attention than any

other natural disaster of this century. Modern means of communication—radio, television and press—meant that, within a few hours, details of the catastrophe were relayed throughout the world and a flood of sympathy and practical help was made available from many countries. Yet, even here technical aid in the days immediately after the shock was not sufficiently well organized. The largest emergency camp settlement in Skopje's central park provided temporary tented accommodation for some 7,000 people, but in October, 1963, three months after the earthquake, this area was flooded by heavy rains, and the camp had to be evacuated. Other complications arose which seriously delayed the reconstruction programme and increased the confusion. The Skopje authorities were faced with an overwhelming task at a time when they were still suffering from the physical effects of the disaster and were unable to completely estimate the extent of the calamity. Medical aid, money, food, demolition squads and many other invaluable forms of aid flowed into the stricken area immediately after the earthquake, but the vital need was for *technical aid* within twenty-four hours (or less) of the disaster. Some months later these essential skills were mobilized and the permanent reconstruction plans for Skopje were directed by some of the world's most experienced experts.

If UNETAS (a United Nations Emergency Technical Aid Service*) had been available, modern jet air transport could have ensured that a skilled technical team was working side by side with the Red Cross rescue and medical teams in a matter of hours, helping to create confidence and avoid the complications which must have made the preparation of reconstruction plans more difficult. Medical and rescue work is accepted as having first priority, but technical aid is of equal importance and urgency.

The period following any natural disaster can be divided into three phases, although these cannot always be arranged in a distinct and tidy pattern. The first phase is the period of first aid for the injured, and those in physical distress, the burial of the dead, and the attention to the immediate needs of the population to ensure their survival, safety, health and welfare. The second phase covers the return of the community to an organized way of life, the provision of temporary housing and other essential amenities for large numbers of emotionally distraught people. At this time preliminary surveys and assessments must be made and information must be collected to enable broad outlines to be laid down for the final phase. The third phase may extend over a very long period, for it concerns the long term reconstruction plans and the permanent rebuilding of the devastated community.

Experience of recent disasters has shown that there is often no clear line of demarcation between the first and second phases; if these two stages in the ultimate return to normality are widely separated the problems created by the disaster are increased rather than reduced. If an Emergency Technical Aid Service were available to work in parallel with Red Cross and similar emergency relief services these two separate activities could be carried on at the same time. While any natural disaster inevitably brings confusion in its train, there is no reason why those who bring physical relief should add to this confusion by unco-ordinated and overlapping activities. While the vital work of physical rescue and first aid is proceeding, *technical aid* must be available to deal with the longer term relief in respect of food, shelter, health and welfare, and the detailed assessment of ultimate needs against the background of local and international resources. Disaster 'sight-seeing,' which can be an outward sign of international concern, can also cause delay and muddle which is costly in human life and suffering. It is regrettable that sometimes almost the first arrivals on the scene are the 'international salesmen' of temporary housing, building materials and equipment.

While the temporary rehabilitation of the community is vitally important, the preparation of initial plans for ultimate reconstruction is equally urgent at this stage. An Emergency Technical Aid Service must be available to survey the situation, record and analyze the findings, and plan and prepare for the future reconstruction in broad outline so that temporary measures do not make permanent reconstruction more difficult than is necessary. The reconstruction period is nevertheless a long-term one, and will of necessity take years to reach complete fulfilment, since few cities in the world's disaster zones have ready-made development plans awaiting the fatal moment, nor do they have the fundamental data necessary for the preparation of such plans. The organization of adequate funds and long-term technical assistance takes time, and comprehensive planning is a time-consuming activity if it is to be carried out properly and effectively. Therefore, the emergency collection of data and preparation of broad outline plans by technical experts at a very early stage after a disaster can be of immeasurable assistance to the permanent reconstruction team and make their task both shorter and easier.

An Emergency Technical Aid Service could be the strong thread that would link all the various essential parts of the present unco-ordinated but well-intentioned relief and reconstruction agencies that already exist to render help at the time of a natural disaster. It must be properly established and securely based. In view of the international character of the work, the new agency should be set up within the United Nations and should work in close collaboration with UNESCO and other United Nations agencies which are already concerned in their own special spheres of responsibility in relation to natural disasters. The work of UNETAS would in no way interfere with these activities, for the technical aid the new organization could give is not being given at the present time.

The direction of UNETAS should be on a permanent basis, preferably as an independent agency of the United Nations. The permanent staff need not be large but it must be technically equipped and strategically located. The centre would need to be in direct contact with UNESCO in Paris, the World Meteorological Organization in Geneva, and with national and international scientific, meteorological and similar institutions, in order to receive up-to-the-minute news of weather conditions and natural phenomena which could have disaster characteristics. In order to pass on information concerning disaster areas it should be

*The UNETAS proposals have been described in greater detail in a paper specially prepared by the Author and published in the UNESCO journal Impact. Vol. XVI. (1966) No. 3.

in close contact also with WHO, FAO and international and local Red Cross and similar bodies. The UNETAS Centre should be envisaged as a generating station from which energy would flow, its most valuable asset being information. Records of all types of disasters, records of the effect of disasters on people, buildings and towns would be compiled and analyzed so that the knowledge gained could be made available to architects, planners, engineers and other technologists. Such information is badly needed in educational centres, particularly those in the world's disaster belts, and the UNETAS Centre could also perform a valuable task in advising universities, technical colleges and schools in relation to special training in the design of buildings to withstand earthquake shock, hurricanes and floods. A study of town planning techniques in relation to these natural phenomena is also urgently needed.

UNESCO is already aware of the need for the study of earthquakes and earthquake-resistant structures, and the Intergovernmental Meeting on Seismology and Earthquake Engineering, in 1964, gave particular attention to the questions of earthquake engineering and field studies of earthquakes. This latter activity is of special importance and the intention is that experts, engineers and scientists should be sent to the site in order to report on an earthquake within seventy-two hours of the shock. If UNETAS existed, such scientists could play a valuable part in the UNETAS team and assist in the vital matter of publishing the findings of earthquake reconnaissance missions at the earliest possible date. The UNESCO missions are at present, however, empowered only to make scientific investigations and cannot, by their nature and terms of reference, provide technical aid. Thus, it is urgent that the existing UNESCO earthquake missions be strengthened to include architects and planners, so that their admittedly limited field activity can be usefully enlarged. Furthermore, these UNESCO missions are concerned with earthquakes and volcanoes, but there appears to be no international agency organizing similar reconnaissance missions or field surveys of hurricanes, floods or other natural phenomena which cause disasters.

With the growth of intergovernmental activity and highly organized (sometimes over-organized) international agencies, the role of the individual in world affairs grows smaller with the passing years. Yet many of the world's great philanthropic, humanitarian and social services are still run by groups of individuals, and not directly sponsored by governments or other official agencies. The voluntary and charitable organizations of the world render a service to all in need which no government could equal. One of the most valuable records to be established at the UNETAS Centre would be a world-wide register of practical technical experts from all fields who would be available to form teams in any emergency situation. This would be the foundation of the field work of UNETAS.

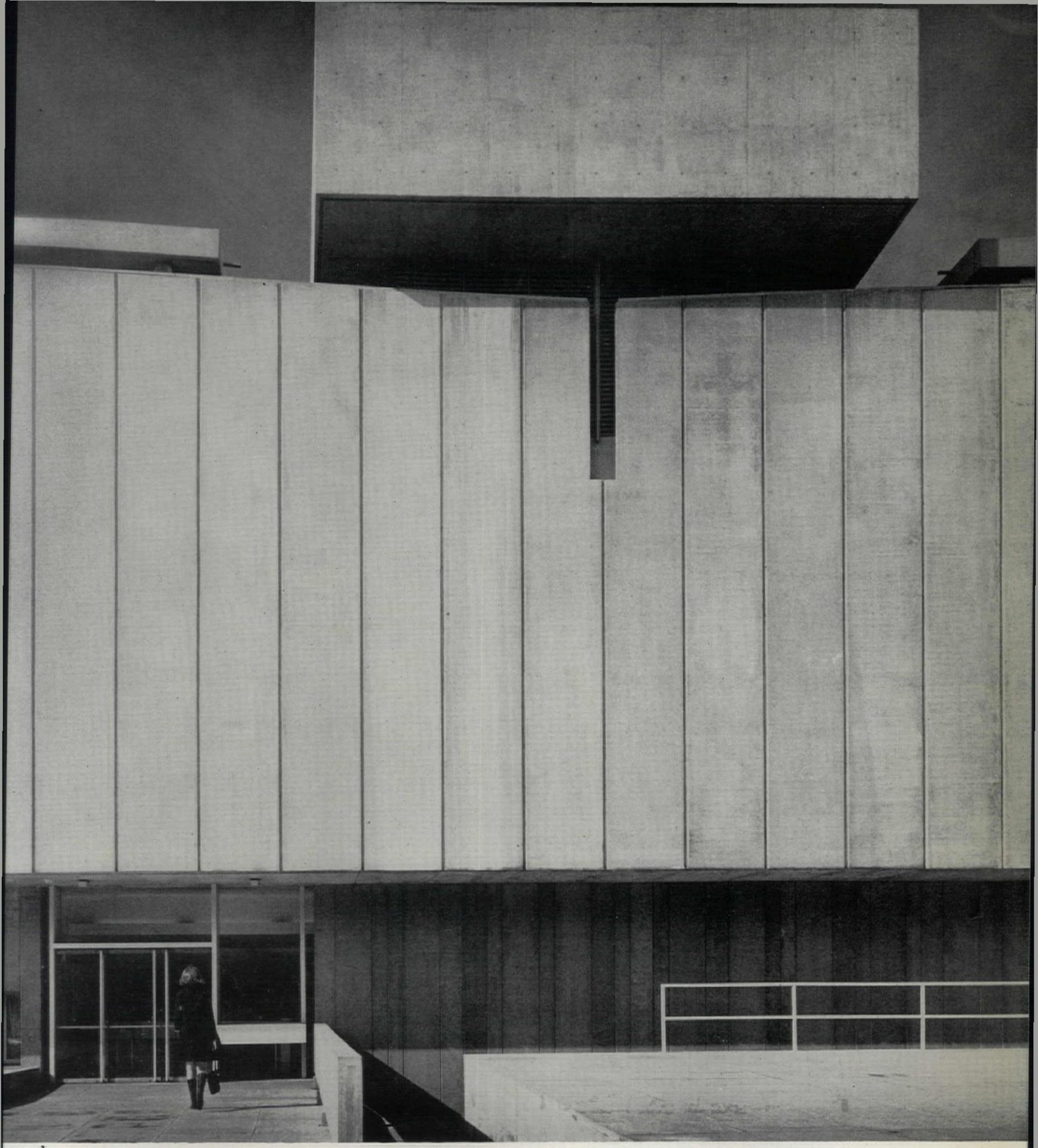
Basically it should be possible for a UNETAS register to be compiled in various countries of the world, with a master register at the UNETAS Centre. Each national register would consist of a classified and fully documented record of volunteers under a variety of activity groupings such as scientific investigation, technical aid, technical investigation, etc., and would include scientists of various types, architects, planners, engineers, construction and survey specialists and any other suitable persons with a technical skill which could be of use in an emergency. The register would need to be kept completely up to date with the understanding that those on the register were pledged to make themselves available at twenty-four hours' notice to give specialist service anywhere in the world for an agreed period of time, in return for out-of-pocket expenses only.

The obvious sympathy with which the initial idea has been received since it was first proposed by the author in 1962, suggests that national UNETAS registers could be compiled without difficulty. The members of national UNETAS registers would need to meet periodically to discuss problems, exchange views, consider relevant material from the UNETAS Centre and in general prepare themselves for action in the field. National teams in the technically developed countries, being strongest in manpower, would be available for service in their own country as well as overseas. National UNETAS groups would vary in size and experience according to the part of the world from which they came. Periodic international conferences would, therefore, be essential as opportunities for the interchange of ideas and experience at an international level. Working techniques could also be discussed and the personal relationships which are vital for good teamwork could be established.

The method of operation would be simple: when a disaster occurred the government concerned would immediately notify the Director-General of UNETAS. A country that could deal with the situation by itself would provide data to the centre and invite an observer to visit the disaster scene so that UNETAS could benefit from the experience and expertise of the government concerned. A country unable to deal with the situation would ask UNETAS to help and the appropriate experts from national teams would be alerted while a UNETAS official was sent immediately to assess the situation and organize the arrival and operation of the UNETAS international team. Participating governments would be expected to provide all the necessary facilities for the team members; visas, permits, transport, and other essentials that would eliminate red tape and reduce delay. Thus within twenty-four hours a basic technical team could be established and have begun its work with the same speed and efficiency as the Red Cross service.

Money would be needed, but when it is considered that a tiny part of the world space programme could finance an Emergency Technical Aid Service for a decade or more, the question of cost becomes academic.

While an Emergency Technical Aid Service would cost a little money and much technical skill, natural disasters cost vast sums of money, human life and suffering. In 1963, one of the worst disaster years on record throughout the world, more than 10,000 lives were lost through earthquakes, hurricanes, volcanic eruptions, storms, tidal waves and dam disasters. The damage to buildings, crops, animals and other property added up to an immense total. What will the cost be in 1967 or 1968 if plans are not made for an adequate technical aid service to assist in the event of disasters?



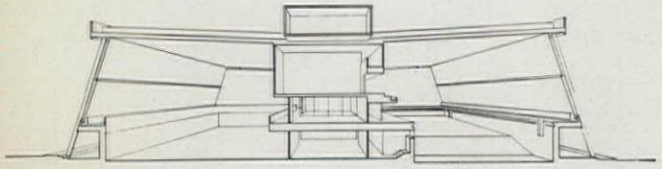
1

SPORTS CENTRE, UNIVERSITY OF LIVERPOOL

photographs by Richard Einzig

architects **DENYS LASDUN AND PARTNERS**

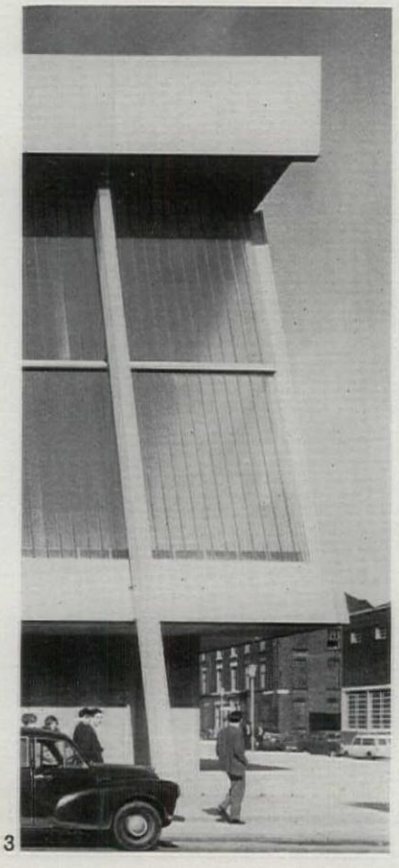
latively high wind-loading on the facade through the roof structure to the core and foundations. The columns were erected by two mobile cranes, one lifting the column whilst the other lifted the main roof lattice beam which is supported by the column through a simple steel pin connection, the column and beam forming a pinned 'L' frame. The gable walls are framed in lattice steelwork and clad in precast facing slabs. The large spaces are walled with vertical brick panelling, whereas the slabs are supported by inner walls and the raking columns at the sides of the building. The main structural function of the perimeter slabs is to act as horizontal portal frames to resist lateral loading resulting from wind pressure and the horizontal components of the raking columns. On the swimming pool side the pool walls are designed as propped cantilevers to resist water pressure. The horizontal portal provides the necessary propping forces.



typical cross section

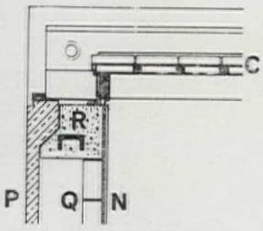
2

1 (page 413), the entrance from Bedford Street North. 2, from the north-east. 3, the south-east corner. 4 (facing page), looking along the south side, showing the raking columns which support the roof.

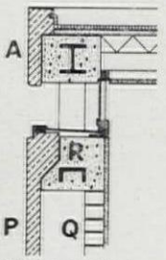


3

key
A, precast concrete fascia
B, steel trusses at 18 ft. 3 in centres
C, double glazing of vertical channelled glass panels
D, central mullion ex 6 in. by 5½ in. r.s.j. attached to columns
E, precast prestressed concrete columns
F, condensation channel
G, glass fibre radiator cover
H, rainwater channel
J, precast concrete fascia used as permanent shuttering
K, non-slip ceramic tiles
L, surface water channel
M, non-slip ceramic nosing
N, glazed tiles
O, scum channel
P, precast concrete unit
Q, blockwork
R, reinforced concrete beam
S, paving slabs
T, mild steel shoe
U, column base
V, precast concrete unit foundation



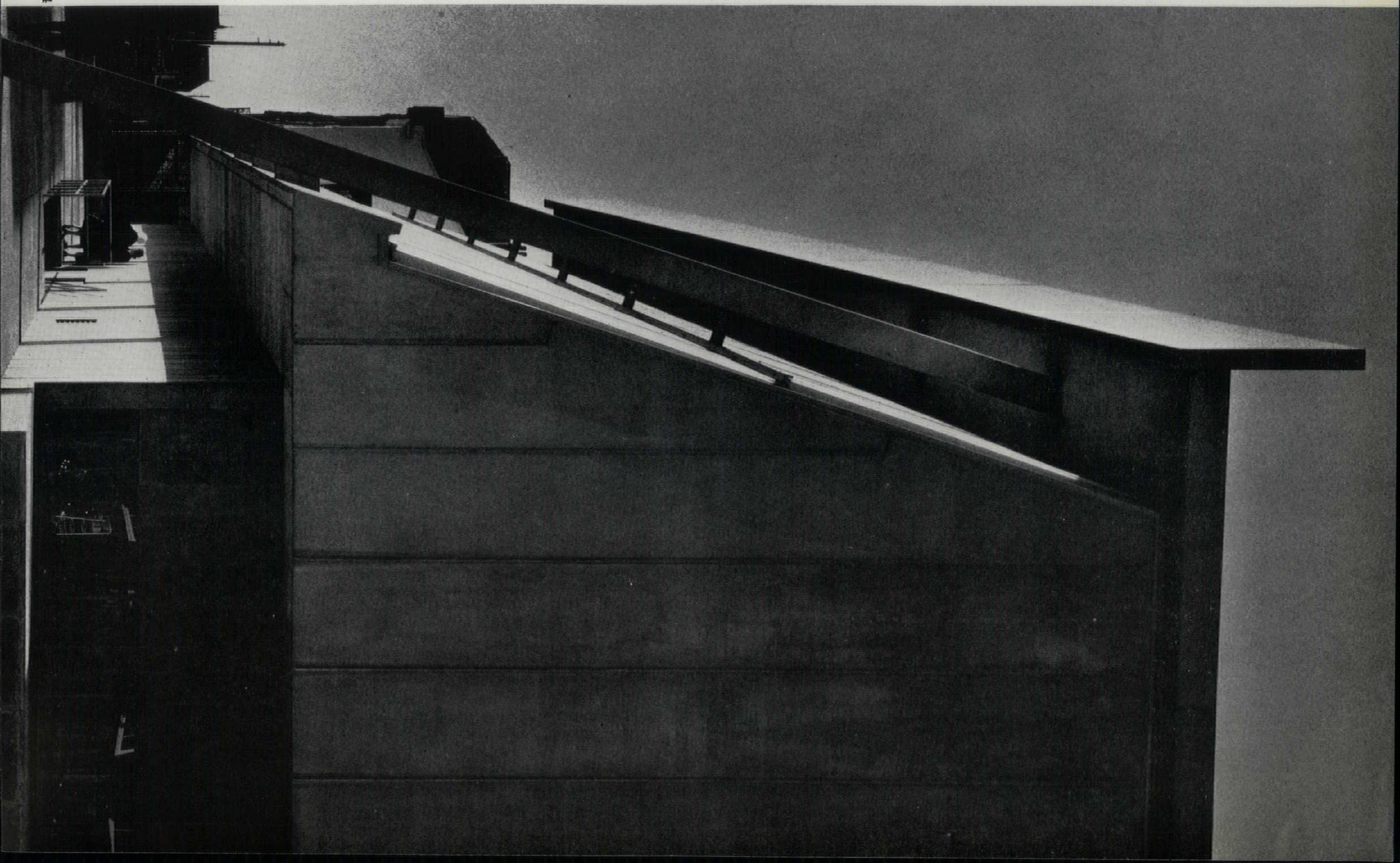
joint of vertical glass panel screen: plan



slot window: section

detail section

5 0 1



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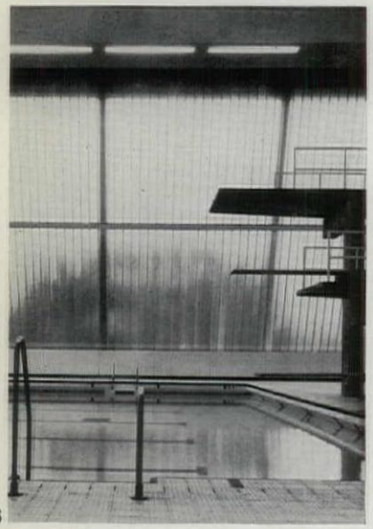
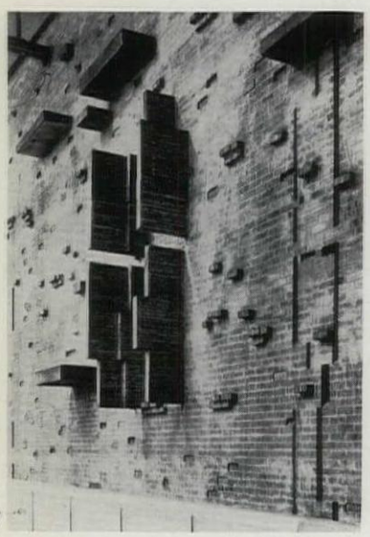


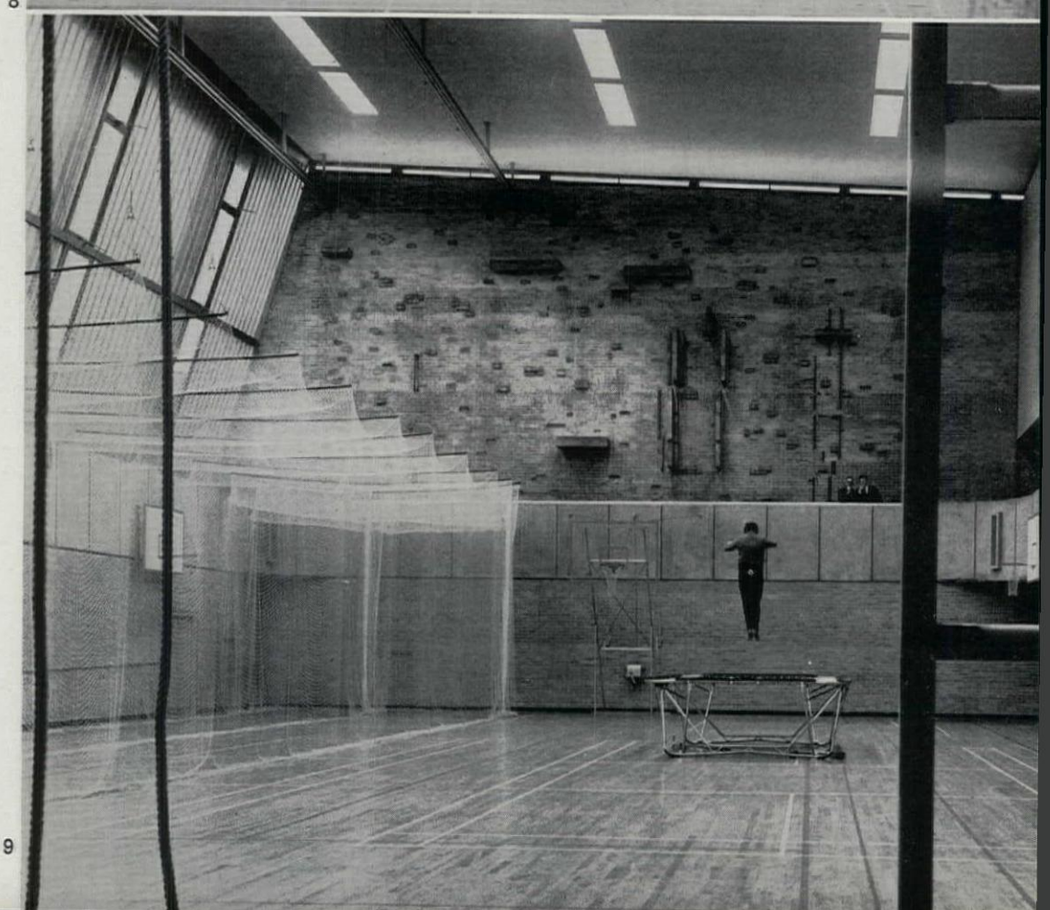
6

5, the swimming pool seen from the diving boards. 6, looking across the pool to the glazed side wall. 7, the climbing wall at one end of the sports hall. 8, the glazed side wall of the sports hall. 9, looking along the hall towards the climbing wall.



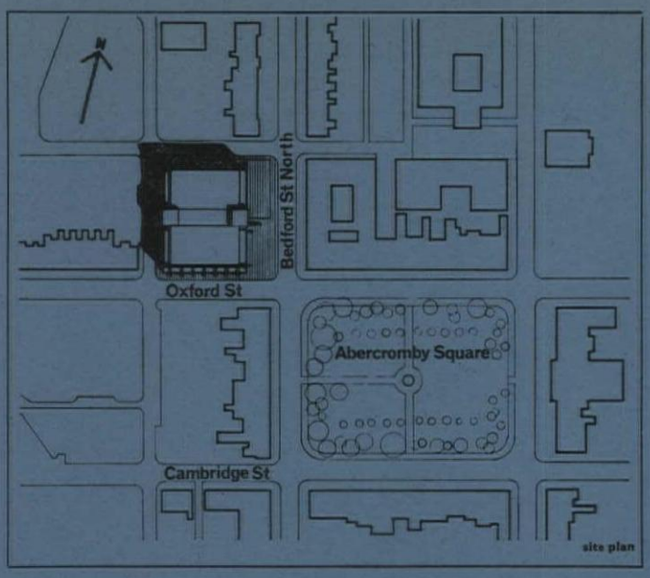
7

8



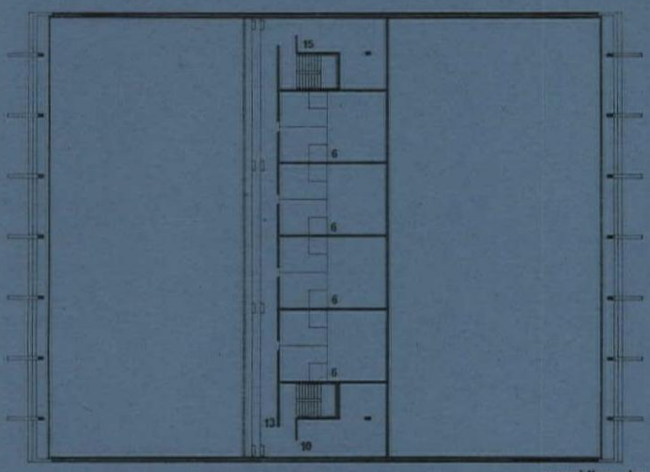
9

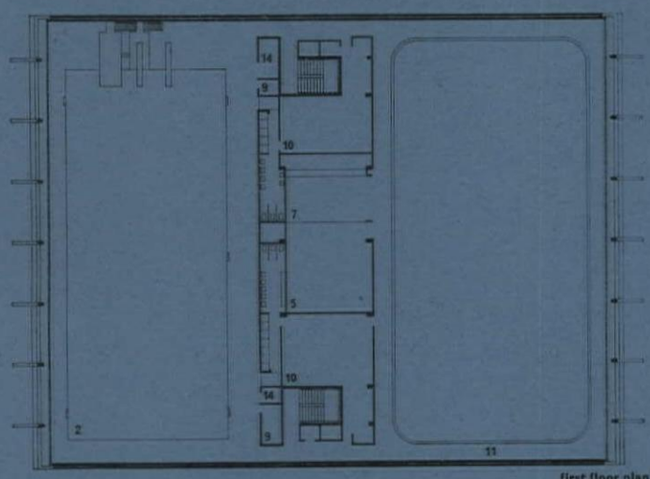
SPORTS CENTRE, UNIVERSITY OF LIVERPOOL

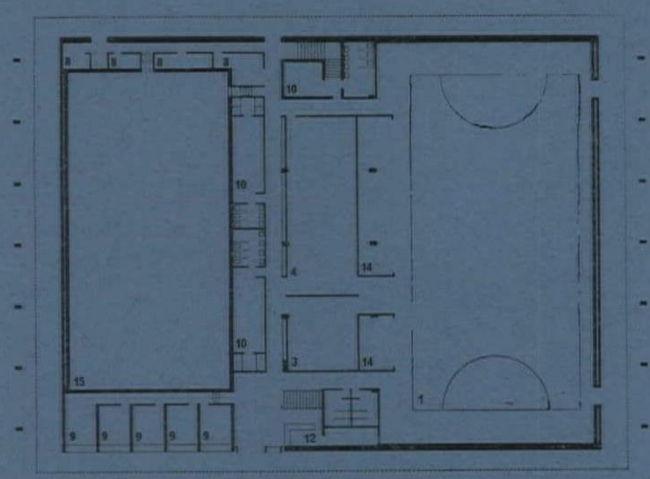


site plan

key
1. sports hall
2. swimming pool
3. training room
4. studio
5. dojo
6. squash court
7. buffet
8. service room
9. office
10. changing room
11. climbing wall
12. porter
13. swimming pool gallery
14. store
15. plant


second floor plan


first floor plan


ground floor plan

40 20 0 10

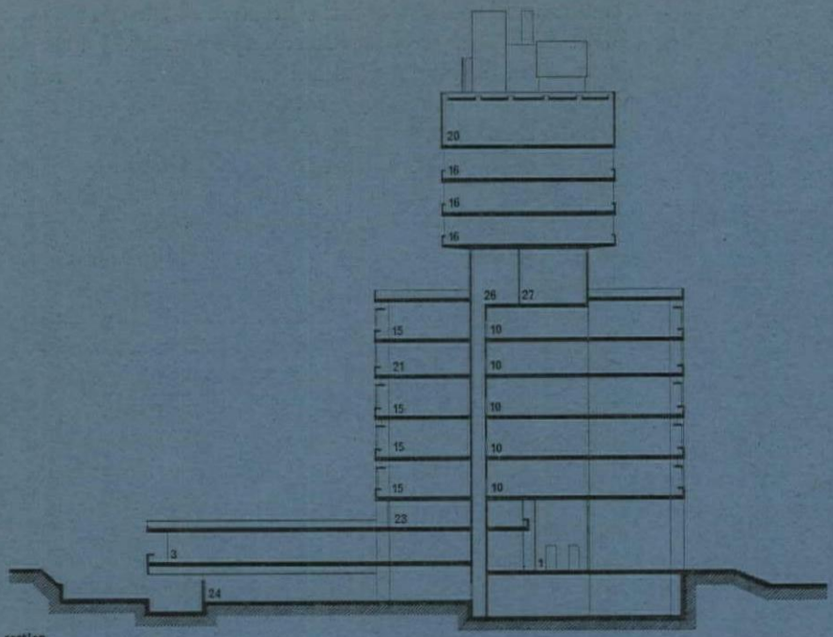
The building is located at the junction of Oxford Street and Bedford Street North, approximately 100 yards from the students' union, adjoining Abercromby Square, and forming part of the overall university development. It provides covered sports facilities for the newly formed Sub-Department of Physical Education which, besides organizing classes in physical education, provides physical recreation facilities for students through university clubs within the Guild of Undergraduates. The present participation is between 3/4,000 students per week with as many as 200 students at any one time. Facilities include a 6-lane swimming pool, 110 ft. by 48 ft., with a 5-metre fixed diving board and spring boards at 1 and 2 metres. There are two underwater viewing windows and a gallery overlooking the pool seating 150 spectators. There is a sports hall, 120 ft. by 64 ft., marked out for basket-ball, tennis, net-ball, and badminton. At one end the hall is provided with gymnastic equipment and can be sub-divided by nets to permit various activities being performed simultaneously. At first-floor level the hall is surrounded by a dual-purpose gallery providing access to the climbing wall and facilities for use as a running track. The climbing wall, a pattern of reliefs in concrete and brick, was devised by Donald Mill. It provides facilities for instruction in rock climbing techniques and rope handling. There are four squash courts, and general activity rooms for weight training, fencing, various forms of dancing, judo, wrestling, etc.

The swimming pool and sports hall are on either side of a central core which contains the smaller sports areas, changing rooms and the vertical circulation. The ventilation plant rooms are above and at each end of the central core. The main plant room and offices are under the shallow end of the swimming pool.

The structural system derives directly from the planning concept. The core of the building containing squash courts, general activity rooms and changing rooms is a three-dimensional system of reinforced concrete floors and walls, two storeys in height, supported by a series of reinforced concrete columns arranged in pairs. The structural core provides the overall stability for the large spatial envelope enclosing the swimming pool and hall, in addition to providing the central support for the main uni-span roof structure. The swimming pool has been designed as an independent suspended structure within the building. It has a continuous expansion joint round the pool at first floor slab level to isolate its structure from any movement of the building which could otherwise cause cracking and consequent leakage. The column and two projecting cantilever arms supporting the diving platforms were precast in one piece on site. Strip foundations with pad footings transmit the structural loads down to the sandstone bearing strata. Internally the walls are fair-faced brickwork or faced with glazed tiling; the floors are tiled or have hardwood strip. Heating is obtained from the university's central boiler-house and district heating mains. The swimming pool hall is heated by a low pressure hot water system with embedded floor panels and concealed radiators; the rest of the building is heated by thermostatically controlled forced-flow convectors and radiators.

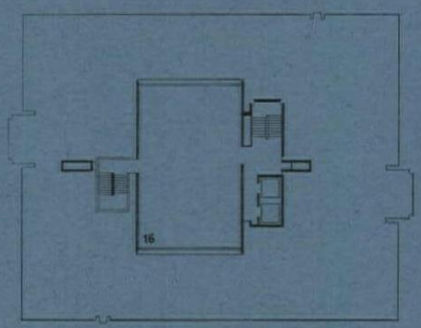
Architect in charge, Stefan Kuszell. Assistant architects, C. Baden-Powell, W. Ungless, R. Kwok.

Structural engineers, Ove Arup & Partners. Services consultants, G. N. Haden & Son. Electrical consultants, Haden Electrical. Quantity surveyors, Eidnell & Trollope. For contractors, see page 476.

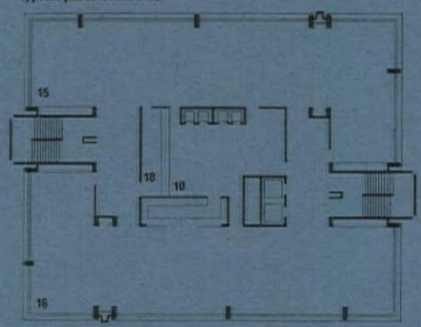


section

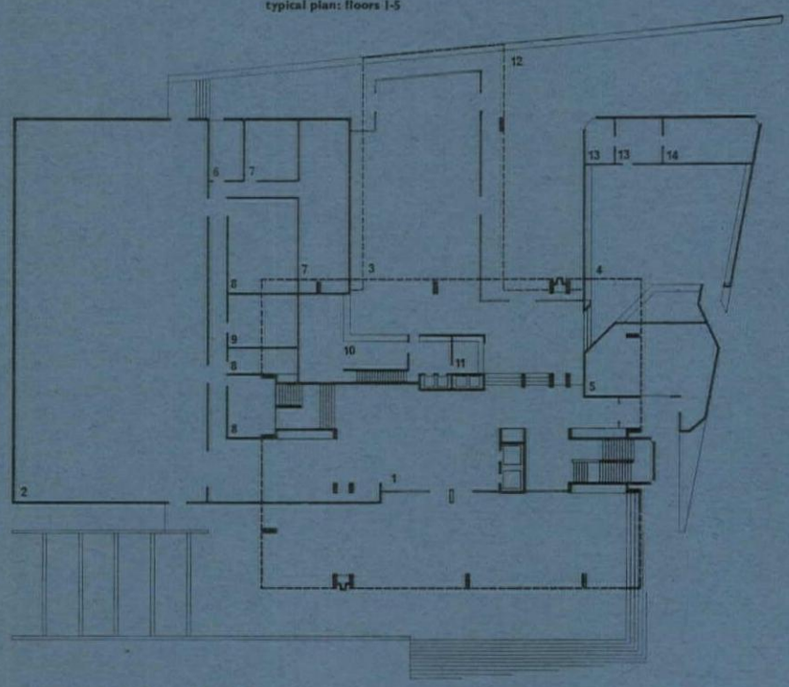
key
1. entrance foyer
2. general purpose hall
3. snack bar
4. university bookshop
5. branch bank
6. p.e. instructors' office
7. changing room and showers
8. storage
9. weight-training room
10. servery
11. kiosk
12. terrace
13. office
14. book store
15. self-service restaurant
16. common room
17. service counter
18. coffee bar
19. vestibule
20. music/exhibition room
21. a-la-carte restaurant
22. committee room
23. administrative office
24. main kitchen area
25. boiler house
26. food lifts
27. cold water storage and ventilation plant



typical plan: floors 7-10



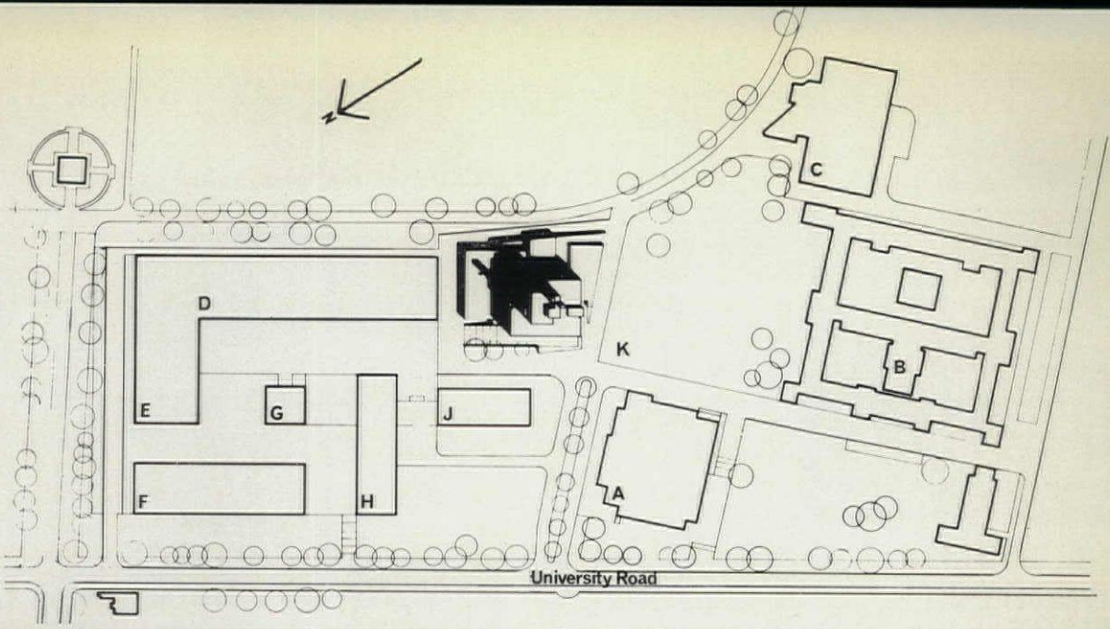
typical plan: floors 1-5



40 20 0 10
ground floor plan

The main function of this building, which is known as the Charles Wilson building, is to serve 2,750 lunches per day for academic staff and students. In addition it has common rooms, coffee bars, a large general purpose hall for examinations and physical education.
Changes in level of the site have been used to locate the food storage, preparation and cooking area at a lower ground level, with its own service access.
The main restaurant and common room areas are planned on the first to fifth floors. Each floor has a central service core to which food is delivered from the kitchen by four lifts. The first, second and third floors are for students and the fifth floor is the senior common-room area. The fourth floor has an *à-la-carte* restaurant with waitress service, and a number of smaller rooms for receptions, private dining and committees. Above this level the structure of the central core is continued in the form of a small tower in which the seventh, eighth and ninth floors each have a common-room; the tenth floor, which is top-lit, is for exhibitions and music recitals.
The main cloakrooms and the administrative offices are at a mezzanine level above the ground floor.
The main structure of the building is in reinforced concrete, the central core and its continuation as the tower being *in-situ*, and all the perimeter columns, beams, staircase walls and ducts up to the sixth floor precast, in order to achieve a higher and more uniform standard of finish. The precast units were manufactured at a works a few miles from Leicester and were delivered to site as required for erection by mobile crane direct from transporters. Plywood-lined timber moulds were used throughout and in spite of the units being up to 50 ft. long and weighing up to 10½ tons, a high degree of accuracy was obtained, tolerances being half those laid down in the then draft Code of Practice. The seating of beams on columns was made with a thin bed of mortar and at each floor level the columns are spliced one above the other with dowels, the holes for which were filled by pressure grouting. The joints between units were sealed with poly-sulphide rubber compound. The windows of the first to fifth floors were designed so that they could be fixed and glazed from inside, and this, combined with the precasting of the structural elements, eliminated the need for external scaffolding.
The walls of the general purpose hall and adjacent area, together with the bookshop and bank, are in load-bearing brick. The metal deck roof of the general purpose hall is supported on precast concrete beams which are grouped in pairs to form roof lights across the width of the hall. The roofs of the ground floor snack-bar and bookshop are metal decking supported on lightweight steel joists. Walls of common-rooms and restaurants are partly Columbian Pine boarding and partly plaster. The general purpose hall and the entrance foyer are fairfaced brickwork. Windows in common-rooms and restaurants are Columbian Pine and afrormosia, and elsewhere are painted steel. Heating is by low pressure hot water from oil-fired boilers, the boiler house under the entrance foyer serving both this and the adjacent physics building.
Associate in charge, Harry Pugh. Assistant architects, T. Holzbog, A. J. Matthews, T. Elson, M. A. Roseberg. Structural engineers, Ove Arup & Partners. Mechanical and electrical engineers, Steensen, Varming, Mulcahy & Partners. Quantity surveyors, Monk & Dunstone. For contractors, see page 476.

site plan: key
A, Percy Gee building
B, administration building
C, engineering building
D, physics building
E, Bennett building
F, Adrian building
G, lecture theatre
H, chemistry building
J, chemistry research
K, future development

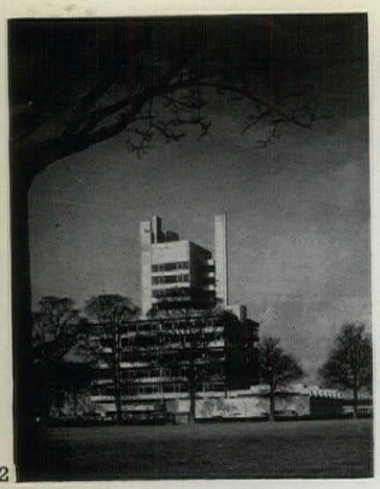


1

SOCIAL BUILDING, UNIVERSITY OF LEICESTER

architects **DENYS LASDUN AND PARTNERS**

photographs by Richard Einzig and Roger Richards

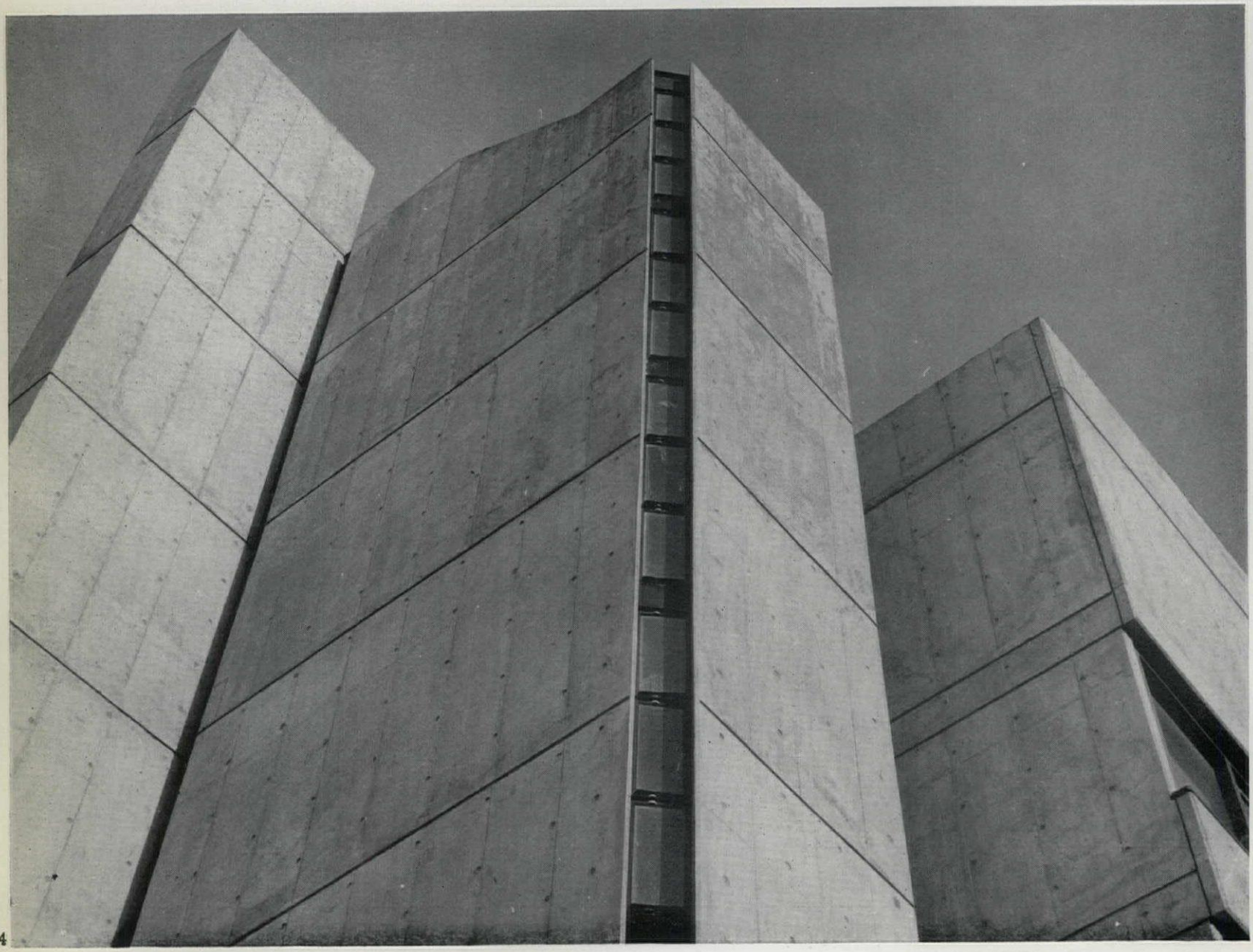


2

SOCIAL BUILDING, UNIVERSITY OF LEICESTER

1 (page 419), from the south, with the ventilator shaft of Stirling and Gowan's engineering building silhouetted on the left. 2, from the east, across Victoria Park. 3, the two-storey general purpose hall, with load-bearing brick walls. 4, the *in-situ* concrete central tower.

3



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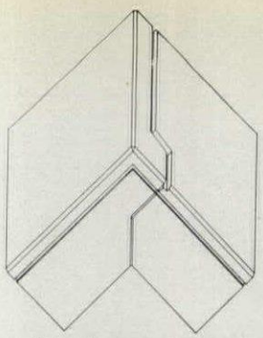
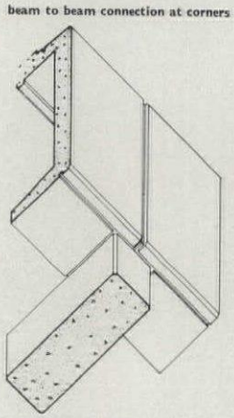
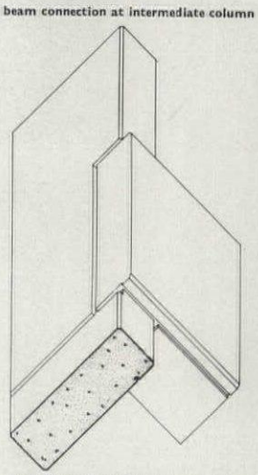


beam to beam connection at corners



beam to beam connection at intermediate column

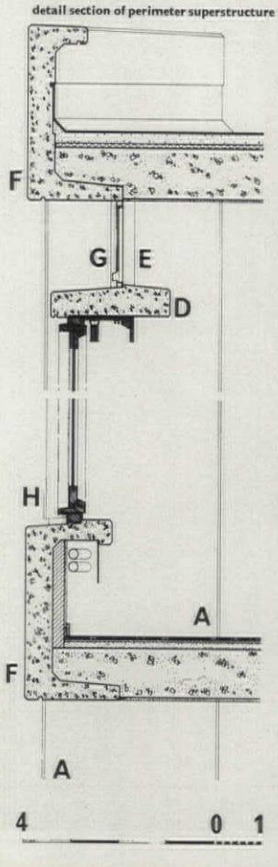


beam to column connection at columns adjacent to staircases and ducts

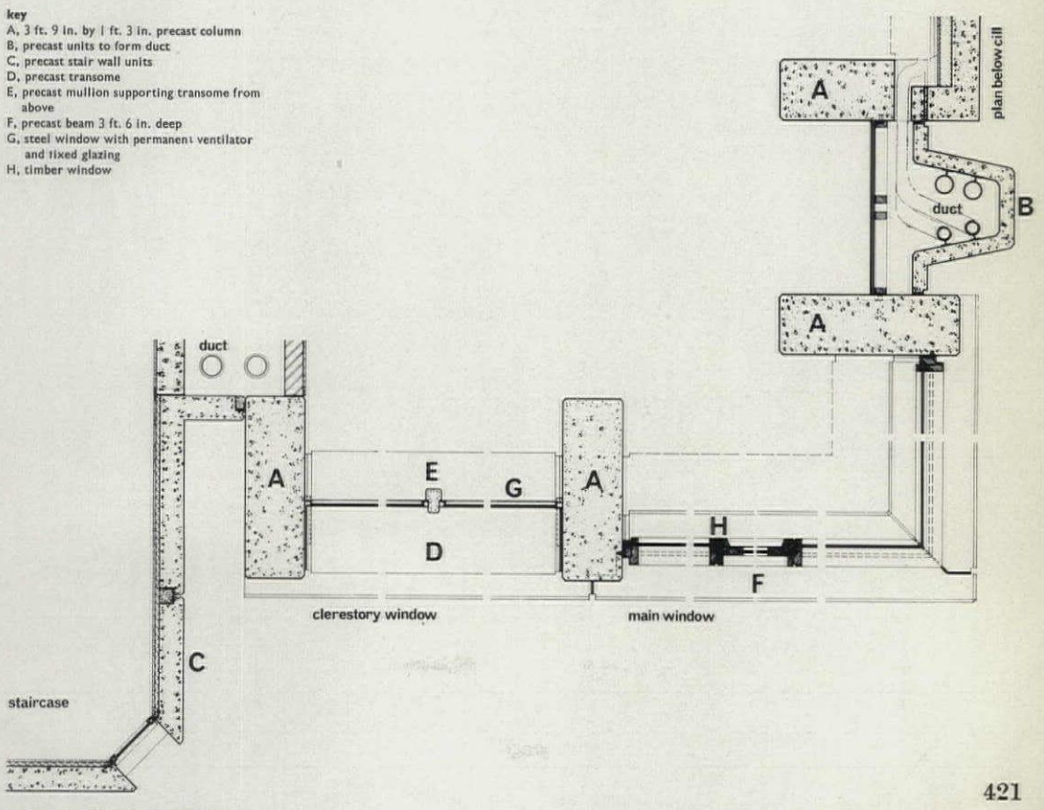
5

5, precast duct and spandrels on the first to fifth floors.

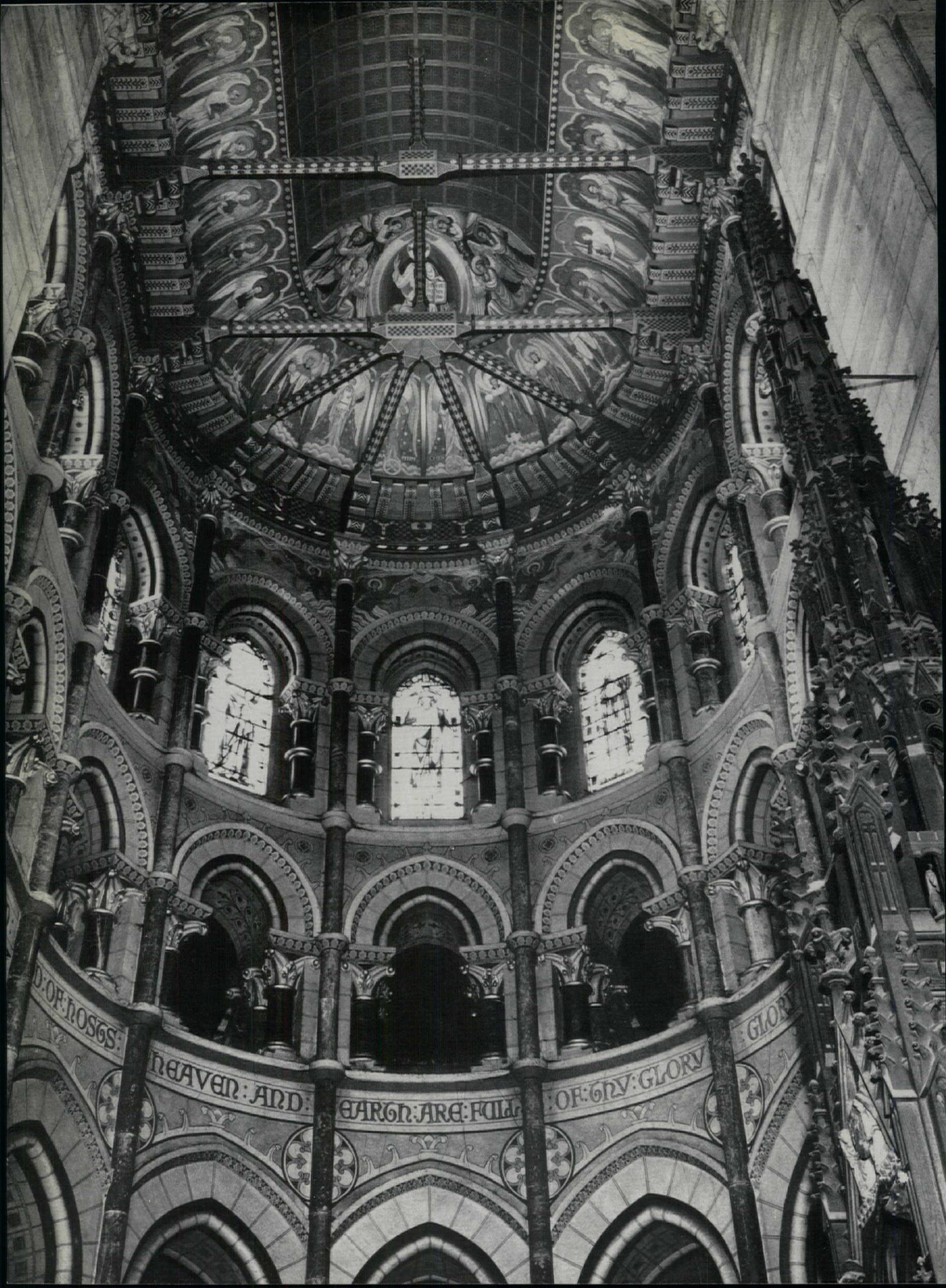
detail section of perimeter superstructure



key
A, 3 ft. 9 in. by 1 ft. 3 in. precast column
B, precast units to form duct
C, precast stair wall units
D, precast transome
E, precast mullion supporting transome from above
F, precast beam 3 ft. 6 in. deep
G, steel window with permanent ventilator and fixed glazing
H, timber window



detail plan of perimeter superstructure


D:OF:HOSTS:
HEAVEN:AND:
EARTH:ARE:FULL
:OF:THY:GLORY
GLOR

Charles Handley-Read

ST. FIN BARRE'S CATHEDRAL

William Burges (1827-1881) is the subject of an important new architectural biography on which Mr. Handley-Read is at present working. This article is an account of one of Burges's most remarkable buildings, his cathedral at Cork, to which surprisingly little attention has been given in print. It is published on the occasion of the illustration in the AR of another new cathedral—Mr. Gibberd's at Liverpool. St. Fin Barre's Cathedral was the outcome of a competition held in 1862, the foundation stone was laid in 1865, it was consecrated in 1870. The western towers and spires were, however, not completed until 1878, the central tower and spire until 1879 and the sculpture on the west front until 1883.

'A perfect abortion of a cathedral . . .'. With these words a critic named Richard Rolt Brash described St. Fin Barre's at the competition stage, his aesthetic sense offended by its 'swelling attempt to look big.' Later on another critic complained of the 'enormous heaviness . . . extreme narrowness and vast height' of the nave and chancel, and went on to dismiss the organ and pulpit as 'about the ugliest' he had ever seen.

Burges's taste ran to extremes. The element of excess in his designs has often been criticized and even E. W. Godwin, writing in 1886 after Burges's death, was still uneasy about the 'elephantine' touch and the 'exaggerations' in the work of his old friend. Cork was designed with a length of only 170 feet yet it was built, no more than a few feet longer, with three enormous towers and spires—'one would look bad' was Burges's early comment 'and two would be seen in a line' (RIBA Notebook No. 31). Aiming in 1862 at a tall and 'dignified' church in a 'plain style,' he eventually achieved grandeur, even a typically High Victorian grandiloquence.

Yet for all this Cork is a miniature cathedral, tightly packed on a confined site, and designed to soar rather than sprawl; at the same time it is heavily earth-bound and appears to squat as much as it soars. Perhaps these contrary effects were what Warrington Taylor had in mind when in 1863, having studied the plans, he wrote to E. R. Robson saying that the building was 'killed' by the spires and that to him it looked 'stumpy.' Among these adverse criticisms came the weighty approval, again in 1863, of *The Ecclesiologist:* 'Without committing ourselves upon . . . the theoretic perfection of Early French, we can without misgiving say that Cork Cathedral . . . will be among those monuments of the Gothic Revival of our generation which will be referred to by posterity as typal examples of excellence.'

* * *

Ireland in the High Victorian decades was still a country of famine and poverty, religious rivalry and political chaos. Building at Cork was held up after the competition by bad harvests and economic depression, and it was not until 1864 that a date could be fixed for laying the foundation stone. Even then the Building Committee had collected only about £10,000, yet by 1881 they had spent the phenomenal sum of £100,000, or something very like it, on a cathedral for Protestants in a city dominated by Roman Catholics. This total was calculated by Richard Caulfield, author of the first guide book to Burges's cathedral published in 1881. (Details of the sources on which this article is based are listed on page 430.)

A letter to a Cork newspaper in January, 1862, deplored the 'discreditable state' of the existing cathedral, a rectangular eighteenth century box with about 300 sittings which had been added, from 1735 onwards, to a mediaeval tower. The newspapers set out to whip up enthusiasm for a rebuilding campaign. 'Our brethren in Belfast' hoped to raise £100,000 for a new cathedral, while at St. Patrick's, Dublin, the expensive 'transformation' was backed by a rich merchant, Benjamin Lee Guinness: what could be expected from the brethren in Cork? At that date, it seems, very little; but already it was assumed that the new cathedral would be in 'early Gothic' and that it should be associated with the new Bishop, the Right Reverend John Gregg, who had been appointed to the See in 1862. Rapidly capturing the devotion of his people, it was not long before he had them in the palm of his hand. An inspired fund-raiser who did more than anyone else to collect the money, in a sense he built his own cathedral. He was the hero of Cork.

The project aroused interest elsewhere. William Bence Jones, writing to a Cork paper from London, offered £500, but with the suggestion that local architects should be passed over in favour of more experienced ones from England. He refused to subscribe to an inferior building: '. . . it will be unpleasant to become the laughing stock of our Roman Catholic and Presbyterian neighbours.' Local talent was ruffled and the authorities decided to hold a competition. A pamphlet setting out the conditions was published in April 1862. I have not seen a copy, but there can be no doubt that 'Early Gothic' was the preferred style and criticism of some of the designs reveals the main requirements. These included a Chapter Room and Vestry, a bell-chamber for existing bells, a large organ and space for a large choir and finally sittings for about 700 people. The cost was 'not to exceed £15,000.' Two prizes were offered of £100 and £50.

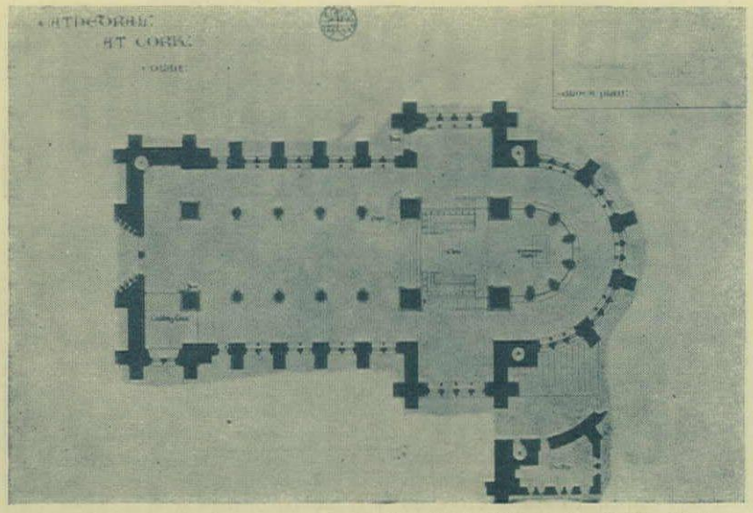
Sixty-eight designs (64 according to *The Builder*) from 'France, Germany, England and Ireland,' all of them in Gothic, were exhibited in October, 1862, in the Cork Athenaeum. The drawings were returned to the competitors, not more than fourteen of whose names appear to have been recorded, most of them of unimportant architects: J. P. Seddon and E. W. Godwin, both of them Burges's friends, were probably his only serious rivals. A unanimous choice of the design inscribed '*Non Mortuus Sed Virescit*,' Burges's motto, was followed by his appointment as architect. Bishop Gregg, just then on the point of taking up his new duties, and no doubt conscious of the challenge that lay ahead, at once accepted the office of Patron and thereafter became the 'mainspring of the enterprise' (Caulfield).

Almost inevitably, the winning designs came under fire as soon as the result of the competition was published, and we may be thankful that bickerings in the press did nothing to discourage the Committee from their choice. Disappointed competitors, well aware that the towers and spires were precluded by the advertised sum, wrote angry letters suggesting that they had been put in to catch the eye of the judges. Burges in his turn wrote a letter in which he attempted to justify his moral position: he had foreseen the criticism, and in a *printed* note attached to the drawings he had acknowledged that only the main body of his cathedral could be built for £15,000.

Criticism was not confined to the towers and spires. So far from designing a 'model cathedral of the nineteenth century' as one of his supporters had claimed, Burges had given them a 'miniature copy of a . . . French cathedral . . . without one single change due to reformed faith.' Isolated observations of this kind were supported by a list of shortcomings drawn up by Richard Rolt Brash. In his opinion the Chapter House and Vestry were inadequately provided for, 3, the piers at the crossing, if built to Burges's dimensions, would never support the central tower, and he also calculated that there was space for hardly more than 500 sittings. His criticism of the building for its 'swelling attempt to look big' has already been quoted; he was equally critical of the '7 steps' between nave and altar which he associated with the 'ultra-church' party in the 'sister isle,' especially with the Puseyites whose 'peculiar ideas . . . have been most carefully carried out in the adopted plan': in other words, the plan was High. But few of these criticisms were acted on. And as for the towers and spires, they were safe enough, for nearly everyone had been captured by a vision. The Protestants would one day confront the Catholics with the finest church in Cork.

While building was delayed by bad times the critics had a chance to air their views, but in March, 1864, they were to some extent appeased by a public meeting which proved to be a turning point. The Committee then announced some of the minor improvements advised by their architect since the competition: for the external walls, stone instead of rubble, barrel-vaults over the aisles instead of wooden roofs, 'handsome and substantial'

1 (opposite page), seen from the west end between the plain stone piers of the crossing, the glitter of the apse wall provides a dramatic climax to a building of pale colours.
2, the west front. To mid-Victorians the style was known as 'Early French.' Burges and Clutton designed a similar trio of linked porches for the Lille Cathedral competition of 1855.



3, *plan of St. Fin Barre's, from a competition drawing of* 1862 *with Burges's motto* 'Non Mortuus Sed Virescit.'

fittings instead of the 'cheap' ones suggested in 1862. Most important of all, they had decided to add an extra light-bay to the choir (the decision to add a proper Vestry, a Chapter House and two side porches at the west end came later). The Committee had discovered that the foundations would often have to descend to a depth of 20 feet, but nearly £9,000 had been subscribed and an appeal brought in £1,200 on the spot. It was a matter of pride that funds were no longer raised, as in the eighteenth century, by taxing coal. They hoped they could soon begin to build, but another ten months were to pass before they could take the first really decisive step.

The foundation stone was laid on Thursday, January 12, 1865. According to *The Builder* (January, 1865) the ceremony was performed by the 'Lord Bishop of Cork, attended by several members of the masonic body, the Dean and Chapter' but local reports tell a rather different story. The 'Masonic body' alone numbered about '500 Brethren' of the different Lodges of Munster—this was in a gathering of perhaps 2,000 people—and the Masons contributed almost as much to the ceremony as the Ecclesiastics. The foundation stone itself was proved 'fair work and square work,' the date was given as 1865 according to Christianity and 5865 according to Masonry, the gavel was handed to the Bishop by Brother Robert Walker (the building contractor), the Provincial Grand Master poured corn, wine and oil on the stone when it was laid, and a prayer to the 'Great God of the Universe' was closed with the words 'So mote it be.' Perhaps the rivalry in Ireland between Protestants and Roman Catholics encouraged alignment between Masons and Protestants, and the Masons may have played a larger part in the affairs of the cathedral than would have been the case elsewhere in the British Isles. They gave at least £4,000 to it.

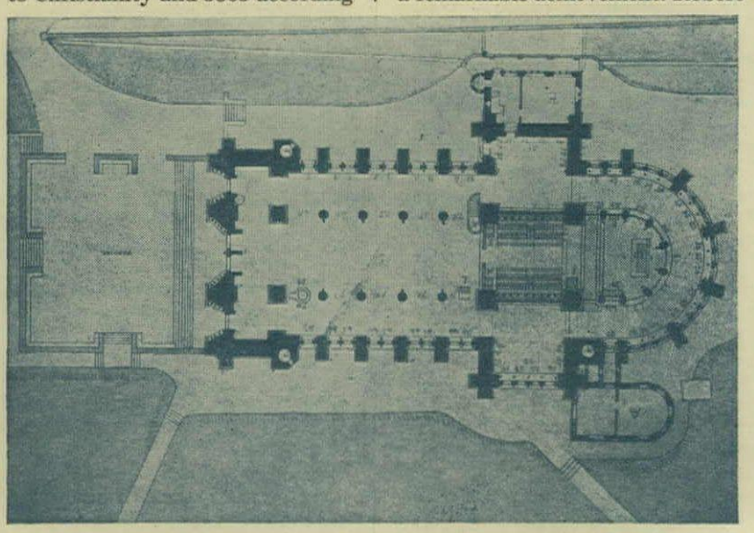
Burges attended the ceremony of 1865 and he may then have been impressed by the Masons in full rig. Never a keen churchgoer and certainly not a convinced Christian like some of his colleagues in the profession, he became a Mason in May 1866 and reached the '3rd degree' in July (Abstract of Diaries), but to his career as a Mason he rarely again refers. He would have enjoyed the symbolism, the dressing up and the glamour of a secret society, but by becoming a Mason he may also have hoped to swell the funds.

Five years' work from 1865 onwards completed the main body of the cathedral. In view of local set-backs and recurring political and religious upheavals, this was a remarkable achievement. Robert Walker, the first building contractor, retired in 1867 and there followed six months' delay until he was replaced by Colbourne (or Cockburne) of Dublin; he in turn was later replaced by Delany of Cork. By 1869, when funds were being spent at the rate of about £1,000 a month, the Church Commissioners for Ireland had promised a total of £4,000 to be paid when the cathedral should be ready for divine service, and no doubt the Building Committee was thankful even for this assurance: the Irish Church Act dates from this year, and the Committee knew very well that after it had been passed their 'ancient endowments' would no longer be forthcoming.

The crisis of 1869 coincided with the Consecration of St. Fin Barre's on St. Andrew's Day, 1870, and perhaps it was this event which brought in spectacular additions to the funds. Walker's contract of November 1864 survives to show that he undertook to build the main body of the cathedral for £13,000, yet according to the 'Abstract of Accounts' ('Charges Book,' opened in 1863), by 1873 the total that had been received and spent was no less than £40,000. Where did the extra money come from and how was it spent? These questions are not answered by any of the accounts I have been able to examine. Moreover, even after this outlay, so far beyond what had been anticipated in 1862, a great deal of work remained to be done. The organ, pulpit and font were in position by 1870, but not a penny of the £40,000 could have been spent on the wooden furniture at the east end, the stained and painted windows, or on the sculpture in the porches since it was not until 1873 or after that detailed drawings for decorations of this kind were prepared; and of course the towers and spires were yet to build.

But the story of Cork is the story of Bishop Gregg's powers of persuasion, of Providential benevolence, or perhaps simply of good luck. Suddenly, when further progress seemed to be blocked for lack of funds, there came the most sensational event in the whole history of the cathedral. At the Anniversary service in 1875, the Bishop, speaking from the pulpit, was able to make the announcement of a lifetime: he had just secured £30,000 at a stroke. He made it sound easy, but he took care to dramatize the good news by arranging for a performance, it is said in the middle of his sermon, of the Hallelujah Chorus. Worried about funds, he had called on a rich merchant named Francis Wise who had readily promised £10,000, even £20,000 if another £10,000 could be found within the month. Playing one rich man off against another, the Bishop had next called on W. H. Crawford, another local merchant, who at once promised the necessary £10,000.

Here at last was the money for the towers and spires. They were built by Delany who had taken over from Colbourne in August, 1873.



4, *definitive plan of* 1881, *the year of Burges's death. The Vestry abutting the north transept was built in* 1896, *the Meade Chapter House from* 1914 *onwards, both to Burges's designs.*

ST. FIN BARRE'S CATHEDRAL

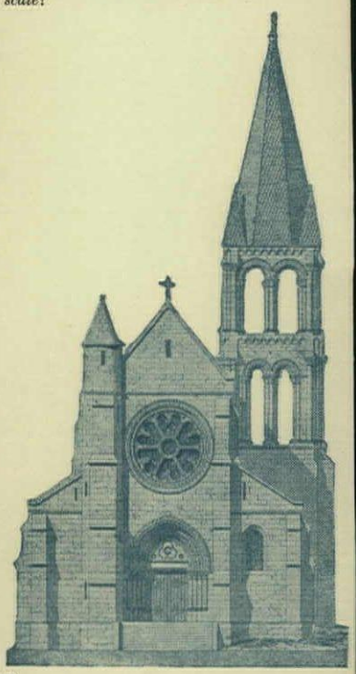
5, *the east end. The low projection against the north transept is the Vestry.*

6, *view from the high shelf of ground which encloses the site on the south side. The design of the round window in the transept is based on a design evolved for Lille in* 1855. *The details of the columned turrets in the towers are derived from Notre Dame, Etampes.*

7, *the west front. The limestone was quarried in the valley between Cork and Youghal. Burges's chief historical models were Laon, Amiens and Notre Dame, Etampes.*

8, *from* 1855 *onwards Burges had several times travelled in north-east France. He called this church at Nesle on the Somme 'exquisite'. It typifies the so-called Early French style. The similarity between the round west windows at Nesle and at Cork may not be a coincidence.*

9, *one of the four great 'gurgoyles' on the west front. A 'Virtue,' represented by a female figure, is hidden behind the goat which represents one of the 'Vices.' Burges borrowed this theme from the* Psychomachia *of Prudentius. Victorian sculptors could formalize animals and foliage, even if they could rarely formalize the human figure. Where in High Victorian architecture, should we look for finer animal sculpture carved in stone to a large scale?*



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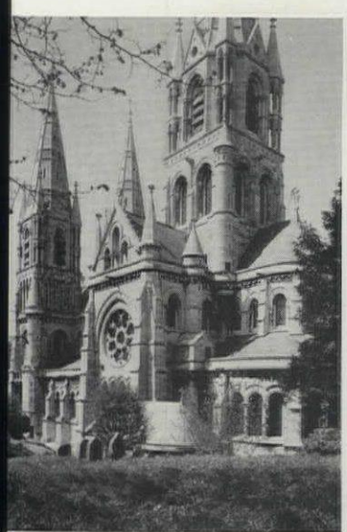

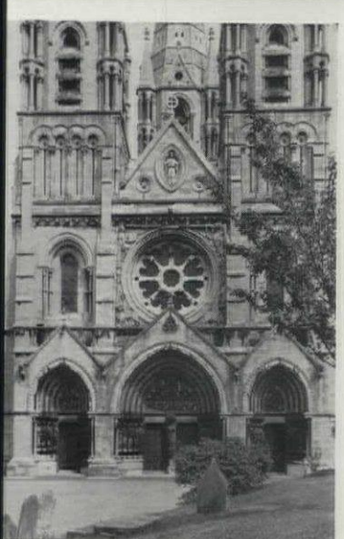

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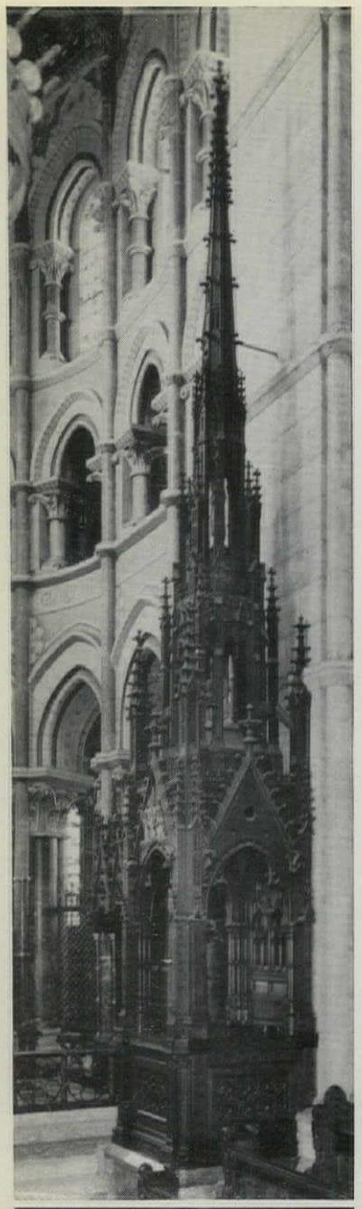

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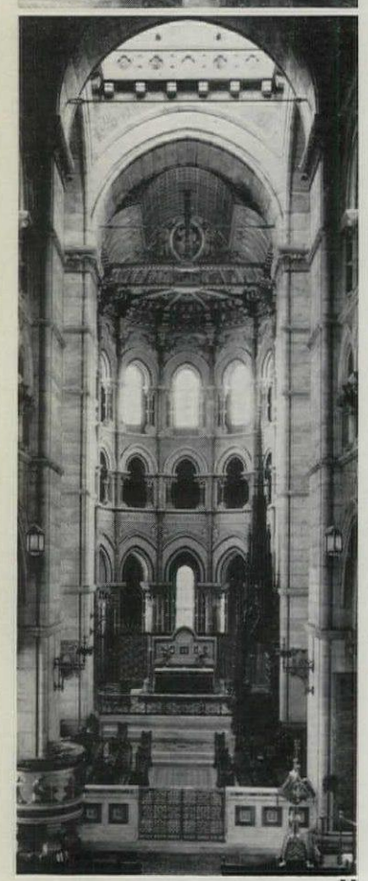

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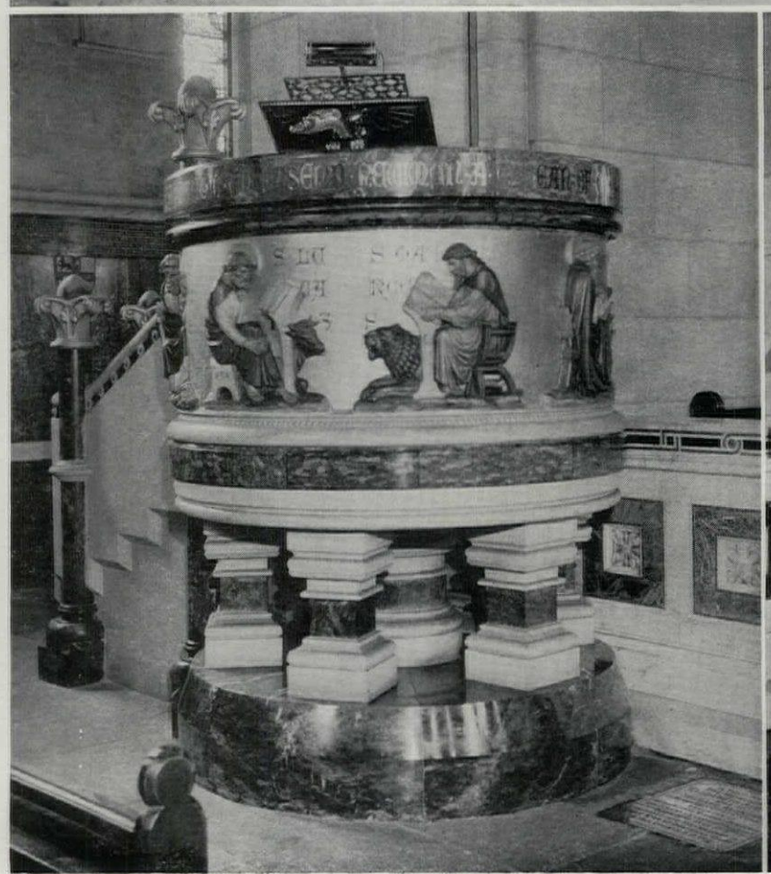

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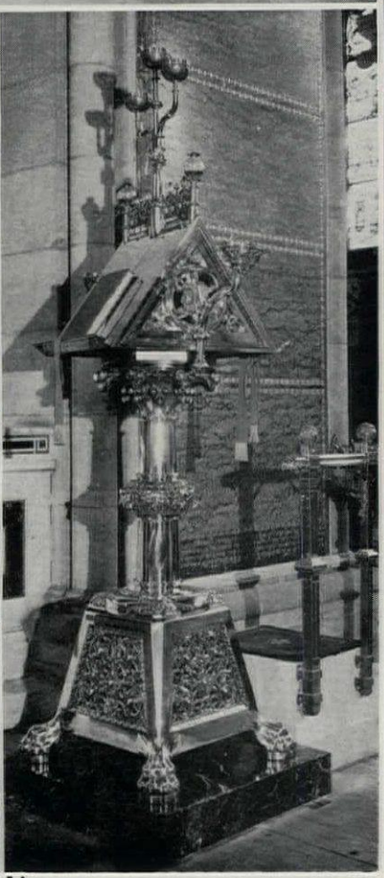


14

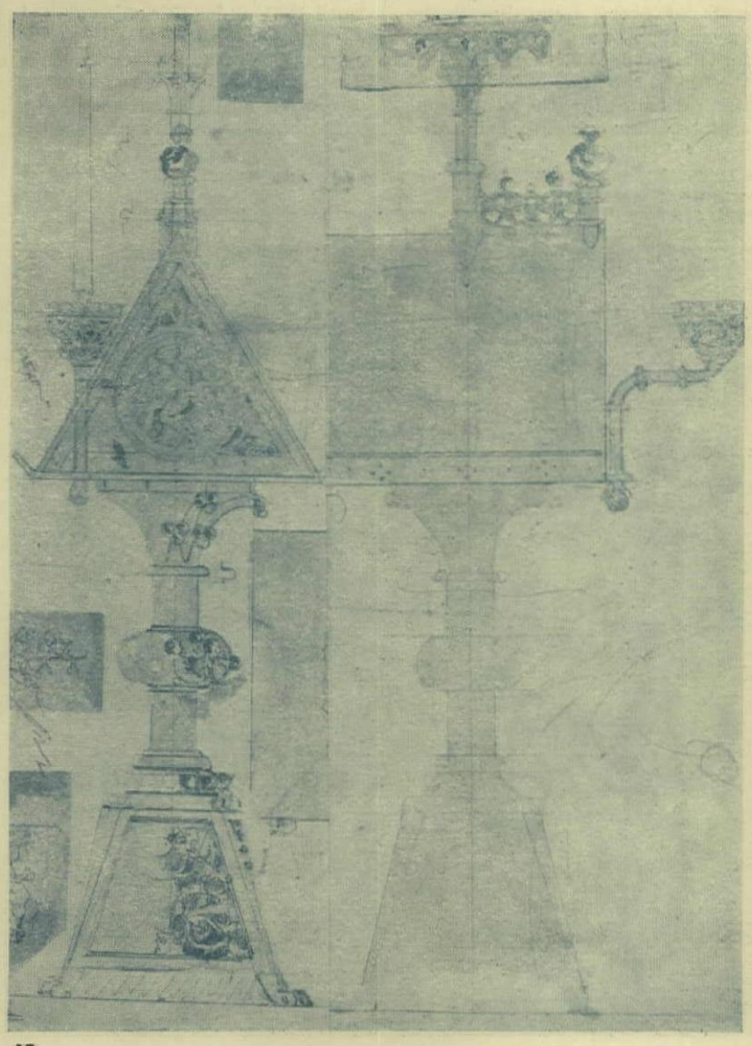
ST. FIN BARRE'S CATHEDRAL

0, the Bishop's Throne was completed in 1878 *r early in* 1879 *at an estimated cost of* £1,386 *y Burges's favourite joiner, a Londoner amed Walden of* 12 *Maiden Lane, Covent arden. The throne soars to a height of nearly 0 feet. Seen against the welter-weight embering of the Early French architecture, it rovides one of those contrasts between heftiness nd delicacy of which Burges was so fond.*
1, the east end from the Nave, with the four iers of the crossing and the apse wall.
2, a Neo-Renaissance alabaster head, carved in w-relief and set in gold mosaic. From the wall ividing the nave from the chancel. Designed in e 1870's, *reliefs of this kind anticipate the rts and Crafts style of the* 1890's.
3, the pulpit (before 1870). *Even in the ntext of a tough Early French building it mes as something of a shock. A minor High ictorian thunderbolt, it has the bulk of a ell-head scaled for Stonehenge. In the finials urges seems to have intended a travesty of othic; in the drum, style has been submerged n the interests of shape. Several of Burges's esigns pose Paul Thompson's 'Problem of gliness' in High Victorian architecture.*
4, the lectern. Burges cherished rejected esigns, whether prepared for competitions or r rich clients, and often re-used them in later ork. This lectern was executed by Jones and Villis at an estimated price of £147. *They oped to send a lectern based on the same design the Paris Exhibition of* 1878. *The railings ere designed after Burges's death by John tarling Chapple.*
5, a lectern designed in 1855 *or* 1856. *From n album of drawings and sketches made by urges while he was working with Clutton on e competition for Lille cathedral.*

The topmost stones were ceremonially laid on the western spires in May 1878 by Bishop Gregg—it was his last appearance in public—and on the central spire by his successor in 1879. The cost of this work was a little under £23,000; therefore by 1880, just when Caulfield was writing his guide book, a total of £62,000 had been spent on the fabric alone. This leaves about £40,000 of the grand total still to be accounted for—it went chiefly on furniture, glass, sculpture and architect's fees[1].

The plan of 1862, 3, shows the overall length of the building as 170 ft., the width of the transept just less than 100 ft. The five-bay nave is augmented, at the west end, by a narthex under the organ-loft and between the towers. The central tower is supported at the crossing by four piers nearly 8 ft. square and just under 30 ft. apart centre to centre—a measurement which dictates the width of the nave. Additions to the plan of 1862—the extra light-bay in the apse, the side porches at the west end, the Vestry, the Chapter House and the Parvise—can be seen in the definitive plan drawn out shortly before Burges's death in 1881, 4; only the Parvise was never built. Caulfield recorded the height of the central tower as 240 ft.

Cork was Burges's first really big job, but it embodied many ideas from earlier unexecuted designs, some of which were in turn used again in buildings designed after 1862. It became his habit to cherish ideas in this way: rejected decorations intended for Knightshayes in 1873 are still to be seen at Tower House, and a lectern designed for Lille in 1856 (competition of 1855) was executed for Cork more than twenty years later, 14, 15. Once a unit of design had been carefully worked out, he nearly always found a place for it. The origins of the plan of Cork lie in the first of the plans designed for the Crimea Memorial Church (competition of 1856, unexecuted): the two plans could easily be confused, and as it happens Burges submitted a very similar plan for a third time when he went in for the Edinburgh competition of 1872 (St. Mary's, unexecuted). Links between Cork and Lille are, however, more numerous and no less important. Designs for three gabled porches had been worked out by Clutton and Burges in 1855[2], and the porches proposed for Lille and those built at Cork, 2, 7, are in many ways alike—the evidence is in a large album of Burges's own studies for Lille which came recently into my possession. Also from the Lille design Burges re-used the louvred openings and their surrounds in the Cork towers, while the round windows in the Cork transepts might almost have been traced from the Lille drawings. The design for these transept windows was used again in 1867 for the west window at St. Michael's, Lowfield Heath.



Meanwhile it was for the St. Ethelbert relief of 1859 (St. Augustine's College, Canterbury) that Burges first designed that type of stumpy column and exaggerated capital which soon reappeared at the east end of Waltham Abbey, in several designs for fonts, and again in the Cork apse. Similarly the bold shafts which rise from floor to roof at Cork had already appeared in the unexecuted design for Brisbane, again in 1859; there, too, he had included a coved wooden roof which, as at Cork and in several other later churches, was supported by king-posts corbelled out from the shafts. The Brisbane roof may have been adapted from the still earlier wooden roof which he had proposed for the Crimea church—a point noted by *The Ecclesiologist* in 1863. Internal wooden roofs, warmly approved by Beresford-Hope, became a feature of Burges's later designs in several of which he repeated the three-lobed section first executed above the Cork apse.

* * *

'Early French' was a style rather nearer to Romanesque than to mature Gothic. Admired by mid-Victorians for its rugged monumentality, and adapted by Burges in a way that is personal, consistent and easily recognized, it is the style which gives Cork its architectural character. Features borrowed from several historic buildings were added to the Early French body, but Burges was careful not to smudge his debts to the past according to the generalizing picturesque method of later Georgian architects, and the eclectic additions are easily traced to their sources because they are as a rule accurately re-used. Since too they are strictly confined without spilling or blending within sharply defined areas, they contrast the more strongly with the basic style.

The round window on the west front, an epitome of Early French, draws the eye like a target. The encircling rim is tough enough to confine the explosive force of the radiating shafts, but it transfers their outward thrust by squeezing the beasts, emblematic of the Evangelists, into their exiguous corners: trapped between square and circle, and almost Assyrian in conception, they are carved with rocky surfaces suited to their monumental scale. Even the beasts are diminished by the sheer weight and rather harsh geometry of the window, but the group as a whole, extra forceful for being compressed into an exact square, threatens to overwhelm the gables and porches lower down, 7. Everything here except the four gargoyles, 9, again rocky and monumental, is crisp and dapper to the point of elegance—a 'thirteenth century' addition to an 'Early French' church. The figures in the porches, very little more than life-size, show up the vigour of the other sculpture since they are carved with a smooth, academic naturalism.

The gables and figures are an amalgamation of units from Laon and Amiens; the transept windows

were first intended, as we have seen, for Lille; and the round windows at the west end must I think have been based on the type of window seen in a church at Nesle, in North-east France, 8. Burges himself had called this church an 'exquisite' example.[3] The columned aedicules at the angles of the Cork towers were closely copied from Notre Dame, Etampes—in the central tower they loom over the apse, 5, 6, and the golden angel, the latter a debt to Chartres or to the Sainte Chapelle in Paris; and it is typical of Burges that the details from Etampes were based on dozens of archaeological studies including rubbings even of the 'tiles'. Historical adaptations of this kind were not, however, confined to the outside of the church. The shape of the lobed wooden roof over the east end was perhaps copied from S. Zeno in Verona; with its delicate illuminations (executed to Burges's designs but long after his death by the late Professor Tristram) it canopies the apse wall. Moreover it is the only element at Cork likely to have been derived from Italy. But not all Burges's historical sources were of foreign origin and if the hinges on the west doors seem familiar, this is because they were adapted from those on the doors at Merton College Hall, Oxford, of which he made detailed drawings for M. D. Wyatt's *Metalwork* of 1852 (Pl. 34 in that book). But Cork is ultimately memorable not merely as a skilful synthesis but as a vigorous composition consisting of clearly defined units, bold membering and finely executed details. The external wall-surfaces, built of a lovely silver-grey limestone, were not to Burges a primary architectural factor but a background. For their rich load of gables, turrets, sculpture and framed openings, the epithet 'grandiloquent' should stand, but not Brash's dismissive 'swelling attempt to look big.' The spires soar, yet the architectural character of the cathedral owes a great deal to its compactness: if 'compression is the first grace of style,' then like the snail with the load on its back, Cork has it. Once inside, the effect of lateral compression seems to be confirmed by the extreme narrowness of the nave and by its extravagant height, but these contrasting dimensions are not explained simply by the exigencies of the plan and the need to save money: there was also the structural problem of supporting the central tower. Burges's solution lay in the four colossal piers at the crossing which dictate both the width and the height of the entire vessel; faced in absolutely plain stone, they define the tall, high-shouldered slit which so dramatically heightens the spectacle of the apse—the glittering climax to an all but monochrome sequence. Seen from the west end, it is framed between walls and piers of masonry which shore up an unforgettable parallelogram of towering space.

* * *

There are, at Cork, more than 1,000 pieces of sculpture and carving. Burges, methodical as always, in 1878 prepared a separate estimate book with tracings and costs of every item due to be executed in stone. In 1877 Crawford had made another gift towards the funds, this time of £8,300, and the estimate for the west-front sculpture was evidently calculated to absorb exactly this sum. Burges insisted on the preparation by Thomas Nicholls, his favourite sculptor, of full-size plaster models not only for all the stone figures but for all the sculpture and carvings everywhere in the cathedral, however small. Few of Burges's original drawings for the Cork sculpture have so far been traced, but many of the models survive in one of the towers, 16, as proof of the care he and Nicholls together bestowed on this part of the work. By 1870 the emblems of the Evangelists had been executed by C. W. Harrison and Son, a firm in Dublin which in 1878 was replaced by a local mason named MacLeod. It was MacLeod's team which was responsible, to take prominent examples, for the enormous gargoyles again on the west front, 9, four magnificent groups representing 'virtues' overcoming 'vices' as interpreted by Prudentius in the *Psychomachia:* we should have to search hard, in Victorian architecture, for finer animal sculpture carved to a large scale. More important to the façade as a whole, however, are the Virgins and Saints flanking the porches; unfinished at the time of Burges's death, they embody the climax of his efforts at Cork. Writing to the Bishop of Ossory in May, 1878, he remarked 'We are doing a work that has not been attempted since the West Front of Wells Cathedral.' The figures were carved in London between 1879 and 1883 by Thomas Nicholls himself—this we learn from one of his letters—and until 1881 under Burges's eye, yet they are less successful than the gargoyles or the emblems of the Evangelists which were also carved from Nicholls's models but by other hands. Several figures of the Saints survive in the plaster stage to show that Nicholls copied his own admirable models with great care, 17, but the stone versions of these figures, at present too dirty to allow of final assessment, seem rather lifeless, too naturalistic to stand up to the animal sculpture. This inequality of merit deserves two explanations.

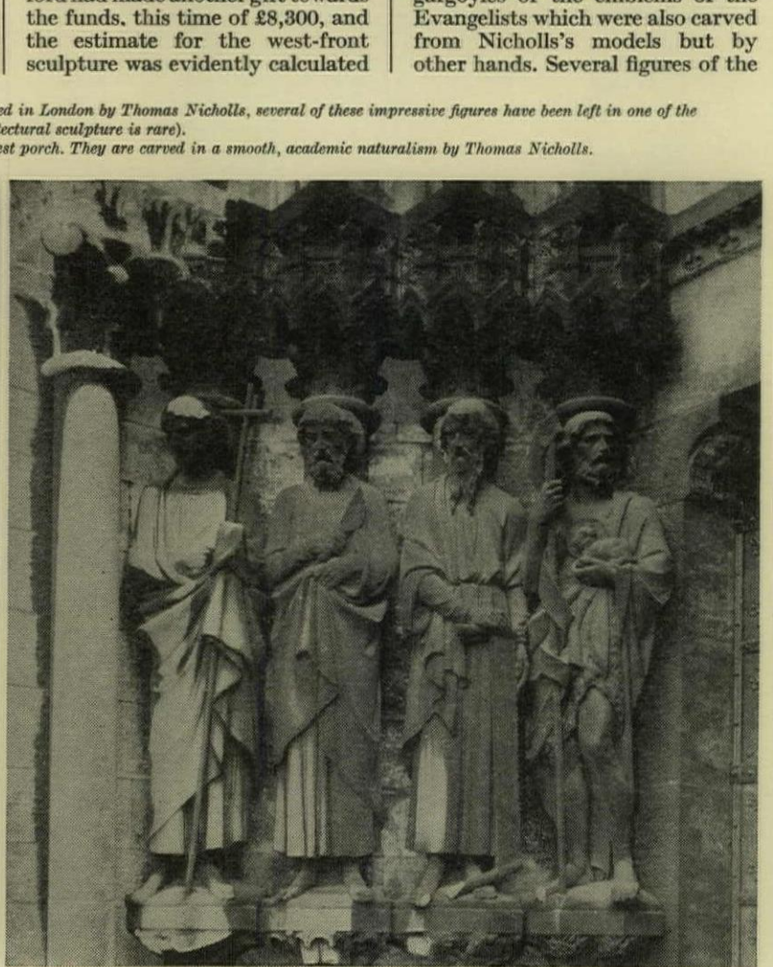
In the first place, while Victorian sculptors could successfully formalize animals and foliage, the formalization of the human figure seems to have been beyond their range. Burges, writing in 1867, acknowledged that sculptors knew their anatomy and could copy nature, but he insisted that they 'must also conventionalize their figures if they ever expect them to go well with the architecture' (*The Ecclesiologist*, 1867, p. 154); so even with the experienced Nicholls as his craftsman, Burges could not always be sure of getting the results he wanted. Secondly, an anonymous writer in the same journal remarked in 1855 (p. 297) that even the best English stone carving looked 'tame and like machine work,' a defect he explained by the 'vicious practice of carving ornaments in a builder's yard, instead of on the building itself.' We have seen that the stone figures of the Saints and Virgins were carved by Nicholls, but in London and not, like the gargoyles, *in situ;* here, very probably, lies the chief cause of their failure. Whether to get sculpture carved by a trusted craftsman, perhaps working in a studio remote from the site, or whether to rely on local talent, ready to carve from blocks built into the fabric, must for many Victorian architects have been a recurring problem. Too often they chose the easier way.

* * *

The 74 stained and painted windows at Cork stand up, on balance, to the sculpture and furniture. Executed from the mid-seventies onwards to slightly earlier designs, they cost not less than £5,000, perhaps a good deal more. In 1861 Burges had published a short article on the decoration of glass (*The Builder*, August 3). At Cork several of his theories—for instance that background areas of the same colour should embody varied textures and 'tints': he deplored the custom of 'cutting the whole affair' out of the 'same piece'—were now put to the test, though not for the first time. Burges prepared designs for 21 out of the 27 clerestory windows, the round window at the west end—in some ways one of the finest in the building—and perhaps also the round window in the north transept. But the Cork glass involved a rather large programme and just as on other occasions he turned for help to J. E. Millais, N. H. J. Westlake and Henry Holiday, so he now sought designs from associates. It is surprising how many of them specialized in stained glass.

It was Fred Weekes who designed the three central windows in the apse clerestory, also perhaps the small roundels in the transepts. With the exception of these win-

16, *full-size plaster models for the Saints. Prepared in London by Thomas Nicholls, several of these impressive figures have been left in one of the towers (the survival of models for Victorian architectural sculpture is rare).*
17, *life-size stone figures of Saints in the south-west porch. They are carved in a smooth, academic naturalism by Thomas Nicholls.*



dows and the windows designed by Burges, all those remaining were designed from 1869 onwards by H. W. Lonsdale, whose water colour drawings and full-size cartoons for nearly all the Cork glass survive. According to Caulfield, the glass was manufactured by Saunders and Co., a firm which may have taken its name from the Albert Saunders who between 1865 and 1870 was in and out of Burges's office—here, very probably, is yet another of Burges's associates who specialized in stained glass. At a later date—some time after 1885—a firm named Worrall and Co. claimed in an undated pamphlet to have made all the glass not only at Cork but at Studley Royal, Skelton, Cardiff Castle, Castell Coch, Tower House and Worcester College Hall, Oxford. The address of the firm is given as 75 Endell Street, WC1, and a photograph of Cork is accompanied by the inscription 'All the windows in this cathedral were painted by Mr. W. Worrall himself.' Unless Worrall worked with Saunders before setting up on his own, a possibility suggested to me by Mr. A. C. Sewter, the claims in the pamphlet should probably be regarded with suspicion.

Burges evidently aimed in his stained glass at absolute clarity of image. He insisted whenever possible on a rational placing of the lead glazing lines and rarely made the mistake of allowing cardinal points of design to coincide with the horizontal bars to which the lights are fastened. Yet there are a number of minor faults in the Cork glass and since comparisons of the cartoons with the windows show that the manufacturers worked with remarkable precision, these faults must ultimately be blamed on the architect. In the round window of the North Transept, for instance, the larger metal supports were designed in the shape of a blunt star, a shape which is at variance with the pattern of the tracery and damaging to the figure subjects. A more serious defect is the ill-judged range of translucency in the round window at the West End where the decorations, executed in colours reminiscent of Burne-Jones, are often lost on the beholder because of the glare from the pale glass which surrounds them; and even if in some of the higher windows the details had been designed to a larger scale, for instance in Burges's Zodiac series, the glare from the borders would still have diminished their legibility.

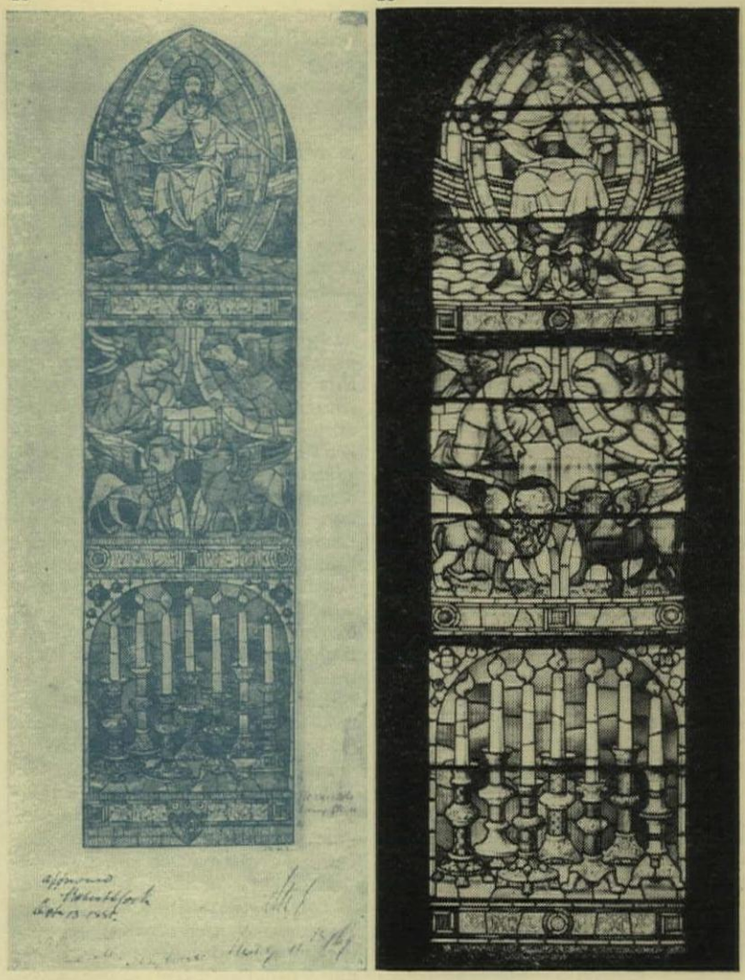
Errors of judgement in some of the Cork glass are redeemed by the excellence of the windows in the Ambulatory, a remarkably consistent series in which if the problems were fewer the designs are in their way faultless. The scale and treatment of the figure subjects, grouped throughout the series in three frames to a light, are exactly suited to observation at close range; the lines of the lead sub-divisions are rationally placed to emphasize the units of design in a way which at the time was distinctly advanced; and the colours, notably high-pitched and full-blooded, could be said to burn, given a little sunshine, with a hard, gem-like flame—they would, however, have been rather too hot, too visceral for Mr. Pater. These windows are High Victorian, not *fin-de-siecle*, yet in several ways—like the windows by Weekes at Studley Royal—they can fairly be compared, sometimes to their advantage, with a good many windows designed by the associates of William Morris; which is another way of saying that they are among the best of their period. The estimated price of each of the Ambulatory windows was £89 4s. 3d.; some were executed for less. The window with the seven-branch candlestick, 18, 19, was intended by Burges to be a memorial, when the time came, to his father, but Burges died first and it was inscribed soon after his death with his own name.

* * *

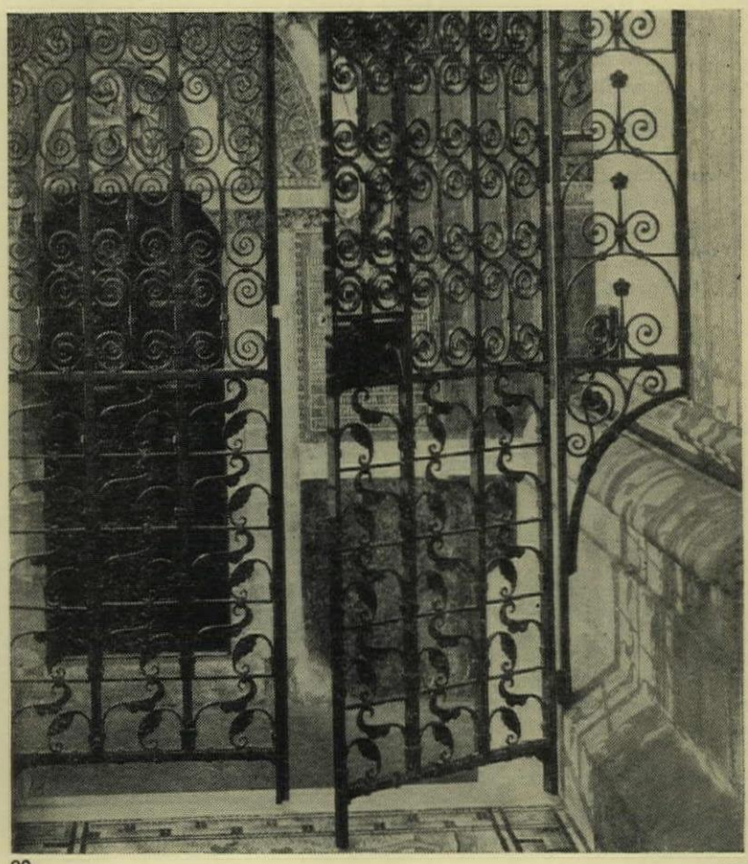
The sculpture, the stained glass and now the furniture and decorations at Cork raise the question: was Burges a reformer of the applied arts, or an innovator, or merely an imaginative designer who laid stress on the comprehensive approach? Certainly he helped to widen the scope of their application, but his insights into the needs of craftsmen (I am thinking of his drawings and of the often excellent advice in his numerous publications), his insistence on high standards of execution, and his innovations with techniques and materials anticipated several developments later associated with the Arts and Crafts movement. A close study of his decorative work reveals designs and ideas which were well in advance of their time and sometimes proveably influential.

The wrought iron screens hanging at the East End of Cork between the ambulatory and the chancel, 20, combine fine-drawn delicacy with sturdiness and restraint; the brass lectern, 14, 15, opulent with glass 'jewels', is of a size and splendour suited to a cathedral: both are based on designs prepared for Lille in 1856, both are derived from mediaeval prototypes. Yet the ironwork suggests a comparison with Street, and the lectern with A. W. Pugin; at the same time the lectern is authentically High Victorian although the manufacturers, Jones and Willis, wanted to exhibit an identical model at the Paris Exhibition of 1878 (these dates and comparisons are a sign of the extreme conservatism, up to *c.* 1890, in nearly all Victorian church metalwork, even when designed by architects). More original than the screens or the lectern are the carved alabaster reliefs inlaid with gold mosaic and set in the walls of the chancel, 12: dating from the late 1870's, they would look well in a church by J. D. Sedding, better still in a theatre by Thomas Collcutt. Burges occasionally anticipated not merely the methods and techniques but even the styles of the Late Victorians.

18 19



18, *a design by H. W. Lonsdale for one of the* 18 *windows in the ambulatory, c.* 1869.
19, *the same ambulatory window. Very accurately based on the Lonsdale design, it was executed in about* 1880 *by Saunders and Co., who were responsible for all the glass at Cork. Intended by Burges to be a memorial to his father (who survived him) this window was inscribed with his own name soon after his death in* 1881.
20, *one of nine sets of painted wrought iron screens which hang between the chancel and the ambulatory. They were executed by Hart and Co. in* 1876 *or soon afterwards, at an estimated price of* £209. *Like the lectern, they are based on a design evolved for Lille. Combining sturdiness with delicacy, they could stand comparison with the metalwork of G. E. Street.*



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The Bishop's Throne, 10, soars to a height of about 30 ft. and thereby dwarfs all the furniture at the East End: the contrast between heftiness at the base and delicacy at the top is typical of Burges, so too is the skilfully formalized carving spaced out at carefully calculated intervals. Arresting in a different way is the aggressive Pulpit on its stumpy piers, 13; even by comparison with the tough Early French architecture it comes as a shock, an onslaught. Carved out of huge blocks of stone and marble, a minor High Victorian thunderbolt, it has the massive bulk of a well-head scaled, apparently, for Stonehenge. Moreover it is, at Cork, something of an anomaly for unlike the rest of the furniture it embodies inflations and abstractions which are almost caricatural. No one would suppose, looking at those exaggerated finials, that Burges was a learned archaeologist, and in the drum of the Pulpit he has all but sacrificed style to geometric shape.

Potent shapes of this kind are not uncommon in his buildings. One remembers at Gayhurst, in the Welsh Castles and elsewhere the kegs and cones, the shafts and cylinders, often in rather harsh juxtaposition, in which mediaeval shapes are similarly formalized, exaggerated or abstracted; and in his buildings—that is to say in the open air—these shapes are I think architecturally very impressive. But when in the years around 1860 he applied in his zeal the same methods of design not only to his secular furniture and decorations but also to the St. Ethelbert relief, with its cruelly harsh contrasts of scale and shape, and to the Cork Pulpit, 13, then the results are arresting and impressive but from the critical point of view difficult to assess—it is a matter of context and purpose: they seem to relate back to the harsh compositions and fanatic realism of the early Pre-Raphaelites (a comparison with a long history) and even to the type of design associated a little later with Goodhart-Rendel's rogues. In fact the early critic was right: the Cork Pulpit—like a good many other designs by Burges in the decade following 1855—is undeniably ugly, some would say 'brutal.'

* * *

In his paper on *The Problem of Ugliness* in High Victorian architecture (1964)[4] Dr. Paul Thompson has shown that several Victorian architects experimented with abrupt juxtapositions of harsh geometric shapes to achieve startling effects. In *Changing Ideals in Modern Architecture* (1965), Professor Peter Collins embraced similar problems (and much else besides) and in his discussion of Brutalism went so far as to say 'No architect of the nineteenth century ever produced more brutal designs than William Burges.' This statement leaves me rather at a loss: I should like to know which buildings, if any—as opposed to furniture or decorations—he had in mind. But Thompson would agree that, if judged by his own interpretations of churches by S. S. Teulon or Frederick Pilkington, then Cork Cathedral as a whole is neither 'ugly' nor 'defiant,' although its Pulpit is both.

Nor, however, is Cork an example of Gothic rationally revitalized in the spirit of Webb, Butterfield or Street. Whether on moral, religious or aesthetic grounds, these architects were trying to break with style, pretension, and design which falsified construction; and of Burges—who was neither churchman nor rationalist—we can say this only rarely. He was 'plucky' enough to use exposed iron in three of his buildings, and he was at least an innovator—I believe sometimes a reformer—of the decorative arts. His unashamed love of grandeur, sometimes inflated into grandiloquence, relates him closely to architects such as Scott and Waterhouse, and few would deny that the sheer romantic fantasy of the Cardiff Castle Smoking Rooms is unique—the product of learning and wit, an uninhibited imagination and an insatiable relish for the act of design. This was the sphere in which he had no rivals.

There remains in Burges's architecture and designs the inescapable element of excess or extremism—it turns on the exploitation of style or ideas to the limit of their potentialities. But Burges was not by any means the only exponent of design at this pitch: many other architects of the 1860's, challenged by unprecedented problems, were forced or beguiled into extreme statements, often with arresting results. Mid-Victorian extremism as I see it includes both Thompson's ugliness and Collins's brutality, as in the knockouts and thunderbolts of Teulon or Pilkington; it includes the aggressive scale, for instance in hotels by Brodrick, Knowles and Giles, or again in several well-known Town Halls (not forgetting Barry's tower at Halifax) and in a good many competition designs notably for the Law Courts of 1866; it includes also the overplus of architecture on engineering in certain railway stations and pumping stations—Scott's St. Pancras is an outstanding example; and it includes the display to saturation point of chryselephantine polychromy in the Albert Memorial. The list could be extended (moreover it could be matched very precisely by European buildings of the same date).

It is, I submit, in the context of design of this type and at this pitch that several of Burges's major buildings should be assessed, notably Cork Cathedral with that awe-inspiring sequence from West End to Apse—the apotheosis in the British Isles of Early French. Extremism of this kind, whether of style or scale or decoration, and whether evolved on an archaeological, functional or representational basis, seems to me to correspond to many aspects of the social, religious and political background of the period—its material prosperity, its problems only to be solved on an almost heroic scale, its agonizing doubts as well as its robust convictions.

And if, finally, the exploitation of styles and ideas to the limit of their potentialities is seen as a central theme in High Victorian architecture, then in examples where scenic grandiloquence displays more vigour and force than is usually implied by the word 'picturesque,' as also perhaps in examples at present described as 'ugly' or 'brutal,' I wonder if the architects concerned were not reaching for a kind of sublimity—an element in their buildings which with support from Ruskin and other critics, to say nothing of definitions in the OED, could be given at least a semi-technical status. In Burges's case it is clear that a purely archaeological interpretation of Cork—seeking perhaps to dismiss the building as mere sham—would be inadequate. Between the ugliness of the pulpit and the sublimity of the crossing (extreme statements in close juxtaposition) there are in addition the elements of drama, display, experiment, a horror of monotony, the triumphant synthesis of unexpected theories and of contrasting styles, sheer overwhelming bigness of scale, and the capacity to shock. But if these are some of the ingredients of Cork, they are also the ingredients which epitomize many other examples of outsize High Victorian architecture.

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[1] Very little of Burges's design has been altered since his death in 1881, except that the organ and its timber housing have been moved from the gallery at the west end and partly sunk in a pit in the north transept.

[2] For Burges's critical comparisons between west end porches in Romanesque and Gothic European cathedrals, *see* 'French Portals' in *The Universal Decorator*, London, 1860, pp. 148-151.

[3] In *The Gentleman's Magazine*, 1863, p. 678. The itineraries in Burges's various notebooks prove that he knew most of the historical buildings here quoted before 1862, and at first hand. If a record of a visit to Nesle survives, it has eluded me, but from 1853 onwards he had often travelled in the area between and around Lille, Amiens and Rheims. Viollet-le-Duc in his *Dict. De L'Arch. Francaise*, III (1859–1861), p. 346, recorded the church, which he illustrated, as in the Department of Seine-et-Oise The illustration used here, 8, is from the *Building News*, March 13, 1874.

[4] See the summary of a lecture given at the Victorian Society's second conference (London, September, 1964) in *Victorian Studies*, vol III, 1964, pp. 222 *seq.*

SOURCES,

Cork Cathedral Chapter House:

Letter Book, compiled by Richard Caulfield. Covering the years 1875–86, many of the letters are written in Burges's own hand.

A Book of Press Cuttings from Local Papers, 1862–75, compiled by Richard Caulfield.

Burges's Competition drawings (2), design drawings, working drawings, FSD's, etc.

Books of Design: Stained Glass Windows; Furniture, 1876 onwards.

Contracts, Accounts, Subscription Lists.

To the Dean, the Very Reverend Dr. E. G. Daunt, to the Chapter of the Cathedral, and to the Reverend Canon E. P. Mills I very gratefully acknowledge most kindly help during my visits to Cork.

Fitzwilliam Museum, Cambridge:

Burne-Jones Papers. It was through the kindness of Dr. Paul Thompson that I heard of the letters exchanged between Warrington Taylor and E. R. Robson.

RIBA:

Burges's Notebooks.

Mrs. Brian Mallock:

Burges's Abstract of Diaries.

BIBLIOGRAPHY

Lille Cathedral. An album of drawings by Burges with details of the architecture, furniture and decorations, 1855, 1856. For my ownership of these drawings I am indebted to the extreme generosity of Mr. John Betjeman.

Richard Caulfield, LL.D., F.S.A. *Hand-book to the Cathedral of St. Barre*, 1881.

Andrew C. Robinson, M.A. *St. Fin Barre's Cathedral*, 1887.

I would like to thank Mr. T. F. Sheppard for his skill and patience when taking the photographs.

This month sees the opening of the International Plastics Exhibition—Interplas 67—at Olympia. ID is therefore concerned with three jobs involving, in one way or another, the applied use of plastics.

Furniture and exhibition system, Factory, Swindon

furniture designers: Team 4 (N. Foster, W. Foster, R. Rogers)

exhibition system designers: Students of Bath Academy of Art under the direction of Raymond Burton, Rosemary Ellis and Norman Foster.

photographs by Bath Academy of Art, Norman Foster and W. J. Toomey.

ID
Interior Design

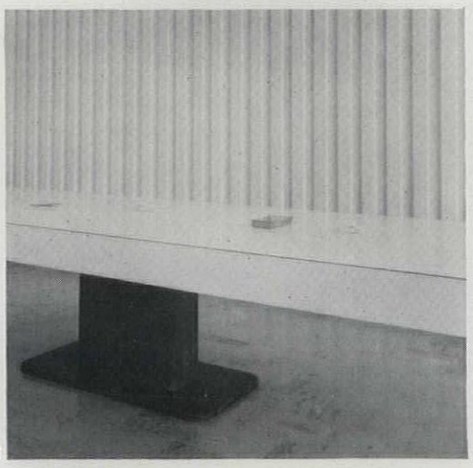
1, *view of main canteen at night showing architect-designed tables in use with Hille polypropylene chairs.*

Furniture

Designed by the architects of the new electronics factory for Reliance Controls (to be illustrated in next month's AR), this furniture was seen as a detail design extension to the building itself. Besides being extremely cheap the furniture was easy to make, facilitating a quick delivery time. The canteen tables, for example, were ready just three weeks after being ordered. Bases are welded steel, painted or polyurethane lacquered. Tops are plastic laminate on blockboard.

2, *welded steel base of the smaller table.* 3, *large version of the table in main conference room.* 4 *and* 6, *smaller table with top fitted;* 4 *shows a detail of drawer fitting.* 5, *circular canteen table which also appears in* 1.

2



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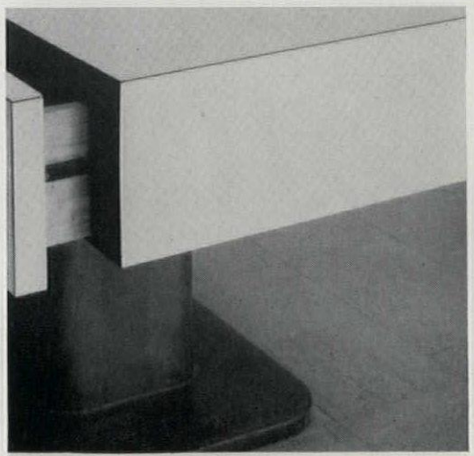

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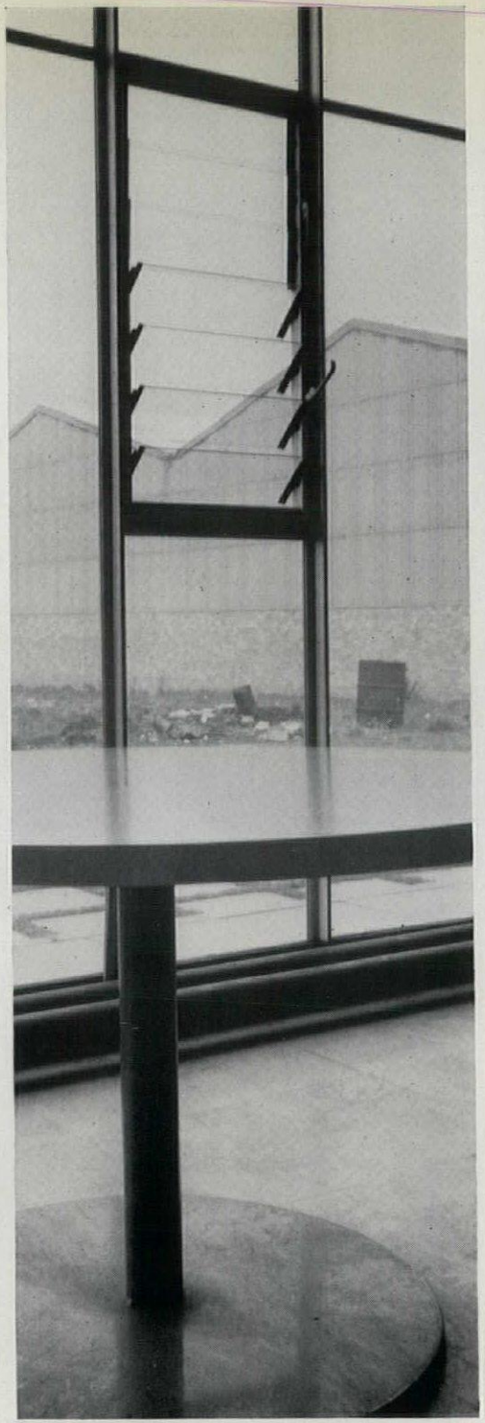


5

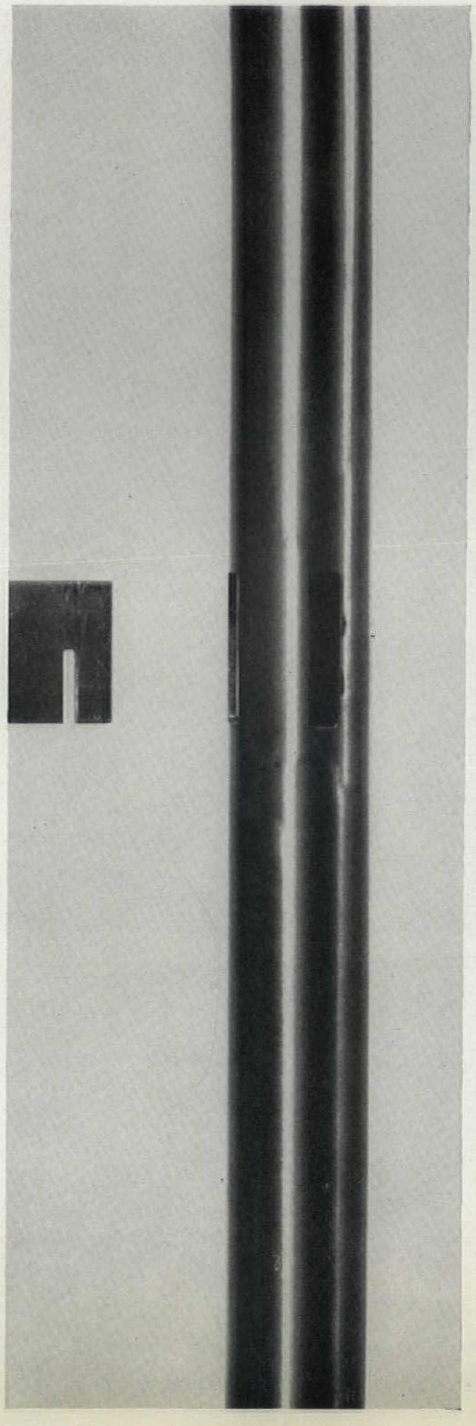
6

Exhibition system

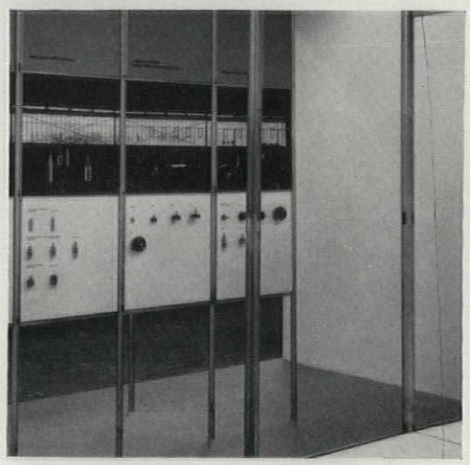
At the client's request this exhibition system was organised as a students' project and designed by them rather than being presented as part of a package deal by an exhibition contractor. Seeing this as a further extension to the overall design of the factory, the architect initially acted as a link between clients and students, later as a part of the total group. After a brief research period, students prepared individual schemes which were appraised by a jury representative of all parties. From an analysis of this stage a group design emerged and a student was appointed group leader. The system was ready ahead of time, first being used at Olympia in 1966, and it has been in constant use since then, either on tour or in the main exhibition space of the factory.

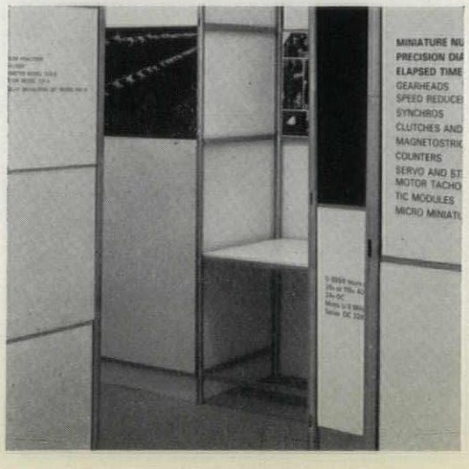
7, detail of steel tube frame and crosspiece. 8-13, details of various panels and shelves.

7



8, 9, 10





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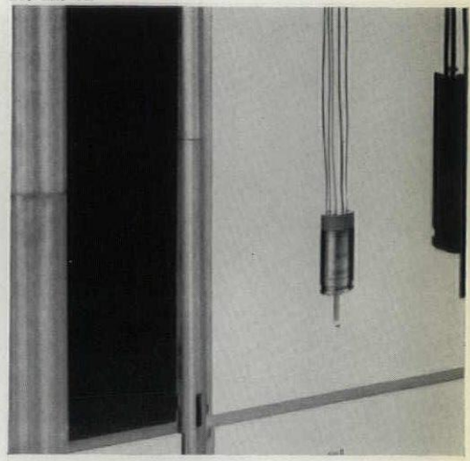
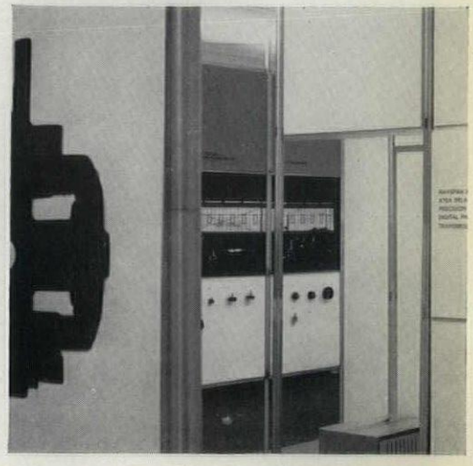
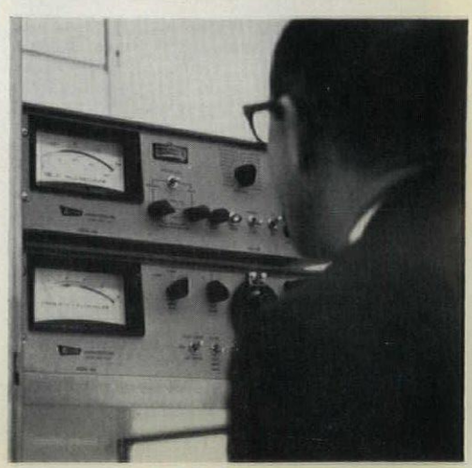


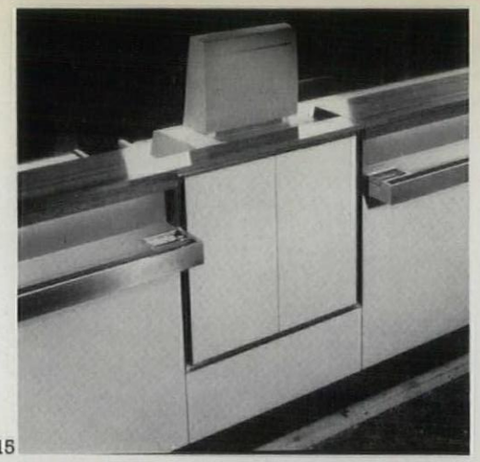




Ticket desks, Airline offices, Glasgow

designers: Design Research Unit

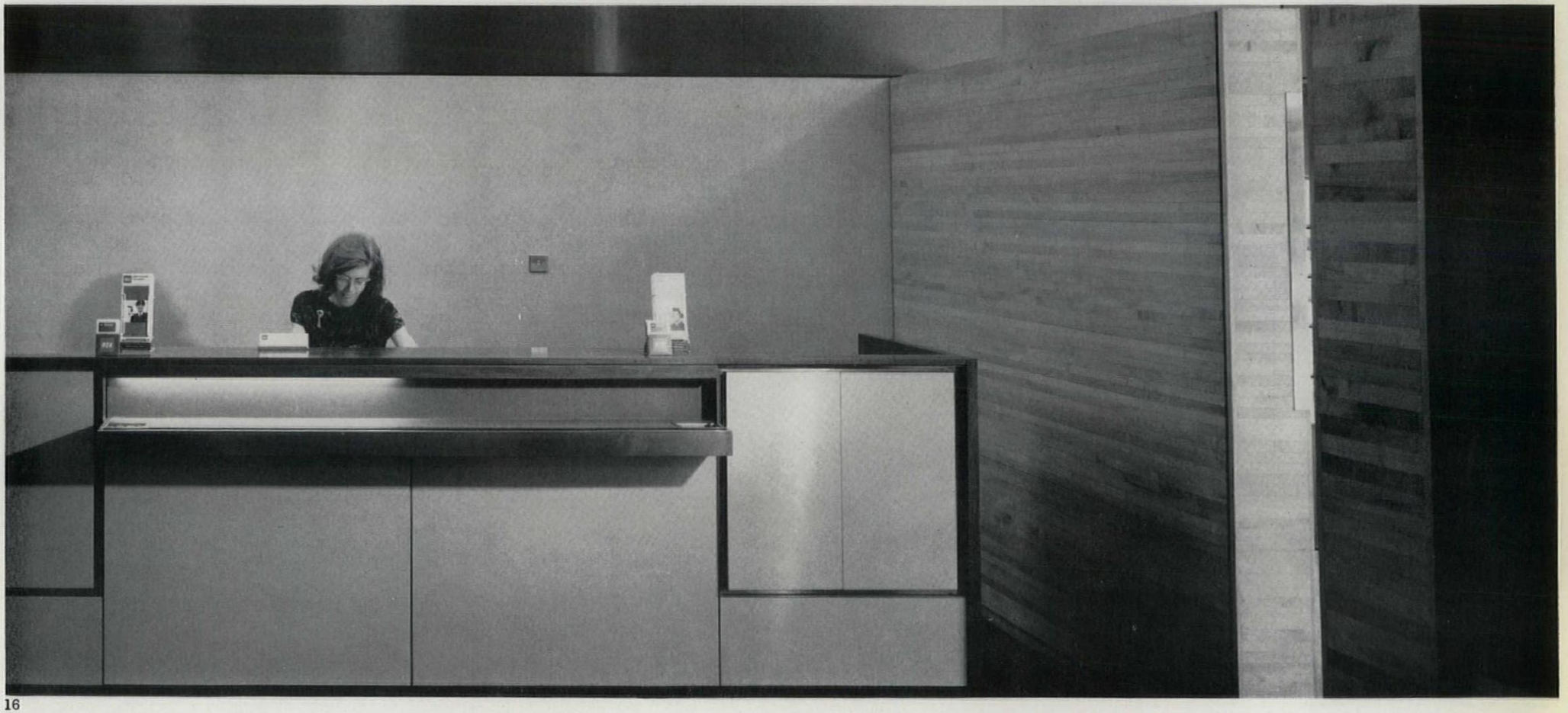
photographs by John Maltby and Henk Snoek



14, 15

These desks were designed as standard equipment for all BEA sales offices. Intermediate units are fitted between desks to take computer equipment which links individual offices with the central computer installation at West London Air Terminal. 3 shows the desks in use at the BEA sales office in Glasgow (architects: Law and Dunbar-Nasmith).

14 and 15, prototype of desk. 14, desk front. Facing material, matt light grey plastic. Bag shelf and riser, green p.v.c. cloth. Umbrella rail and ashtray, stainless steel. Hardwood trim and elbow shelf, makare wood. Fluorescent lighting is concealed behind the front edge of the elbow shelf. 15, back of desk showing computer equipment housed on trolley. Desk top, plastic laminate; metalwork nylon-coated in dark grey. 16, desks in sales office. Computer equipment to be fitted later.



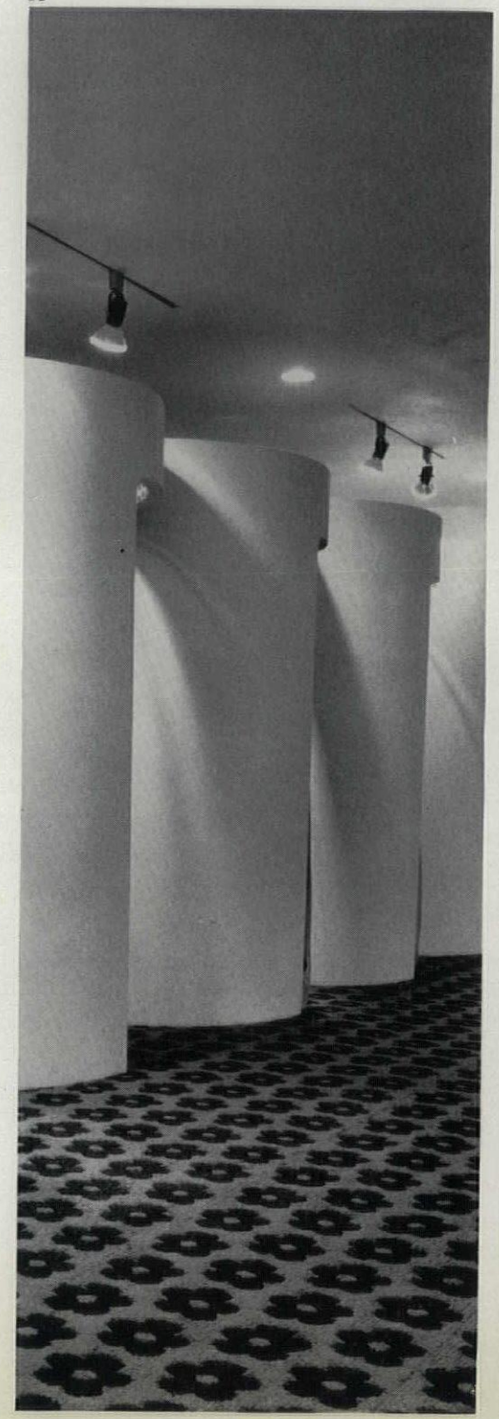
16

Dress shop, New Bond Street, London

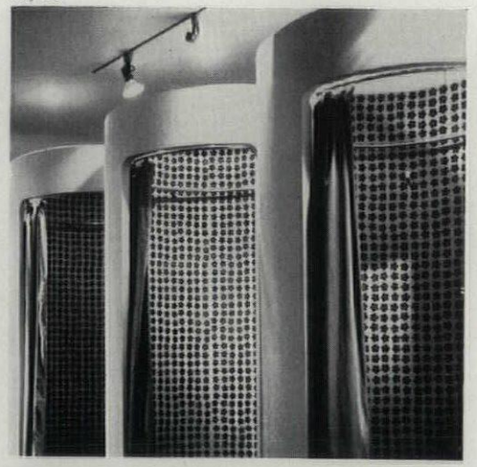
designer: Jon Bannenberg

photographs by Geoffry Gale and Sam Lambert

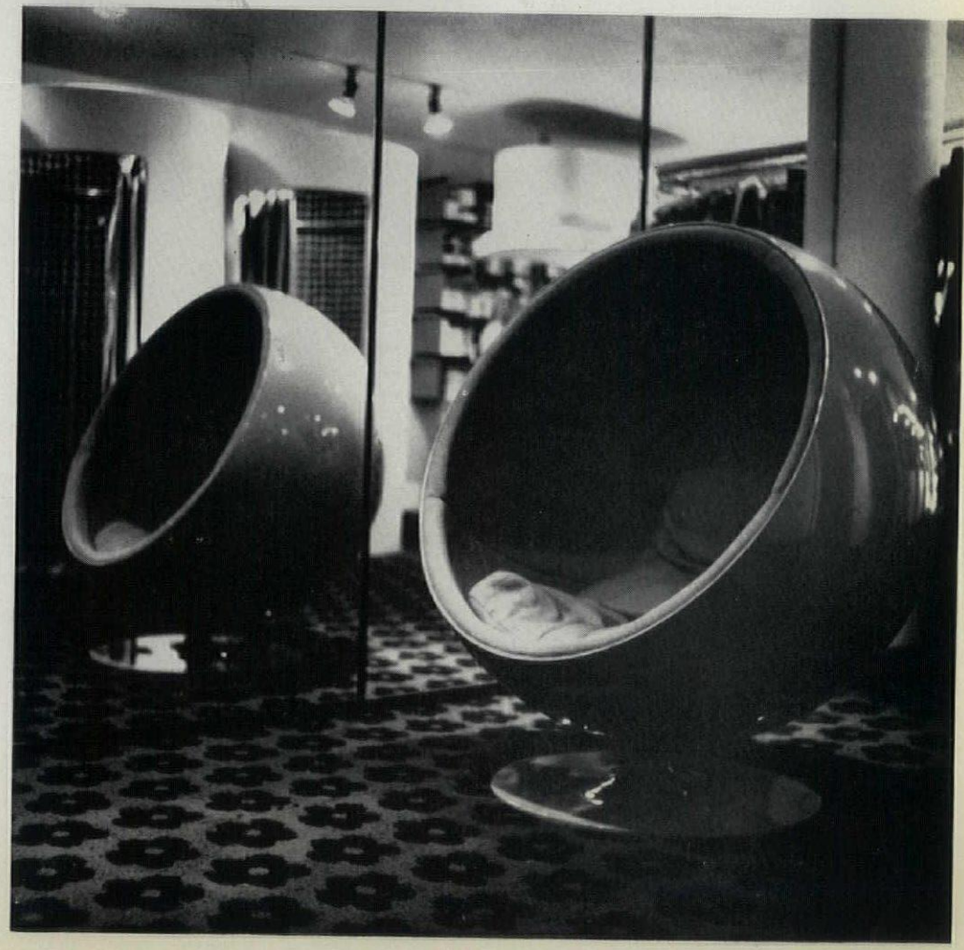
17



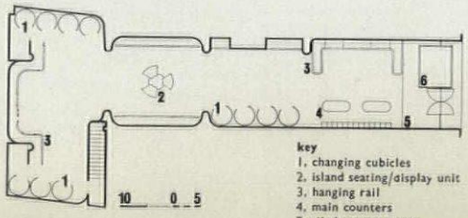
18, 19



Situated in a main shopping street, this shop for Mary Quant the fashion designer, occupies ground floor and basement of an existing building. The basement incorporates storage and workrooms, the ground floor display and sales. The two main features of the shop are the long hanging rails of orange lacquered steel tube and the drum-shaped changing cubicles. The latter, of ply skins on timber frames, are lined inside with a wallpaper specially designed using Mary Quant's flower motif trademark. The carpet in olive and black repeats this pattern. Finish on the exteriors of the cubicles and on the counters is plastic laminate sheet. The shopfront is in stainless steel, the entrance area paved with black quarry tiles. Lighting throughout is in tungsten spots.



17 and 18, drum-shaped changing cubicles. 19, central area. The chair is Erio Aarnio's 'Sphere.'



floor plan

key
1. changing cubicles
2. island seating/display unit
3. hanging rail
4. main counters
5. tiled entrance area
6. window display unit

1 (*opposite*), *'These buttresses', Frederick Gibberd has said, 'seem to have become a characteristic of the cathedral out of all proportion to their structural importance'—the main load of the central lantern over the altar being carried in fact by the vertical columns of the nave walls. But there is no doubt of their visual importance in establishing the cathedral as 'a mighty Pop landmark' and 'a symbol of Catholic Kingship'.*

criticism

Nicholas Taylor

Architects: Frederick Gibberd and Partners

Metropolitan Cathedral, Liverpool

Merseyside is a modern holy city as Coventry never was. The Beatlemania of the Cavern and the FA Cup hysterics of the Kop are merely the icing of a rich religious cake. The teeming Irish community has previously been confined by poverty to the gilding of back street Madonnas—apart from the 'creative poverty' of Leonard Stokes at Sefton Park and F. X. Velarde at Clubmoor. Frederick Gibberd's cathedral triumphantly redresses the balance, at least externally, by its challenging relationship with Sir Giles Scott's Catalan Gothic splendour for the Protestant ship-owners further along the ridge. The loosely defined image of the 'big top' or 'wigwam' will probably prove as big a success with the people in general as Spence's Coventry, and there are already signs that it may acquire the same identity with Liverpool's own civic image that Bertrand Goldberg's Marina City towers have with Chicago's. The reason is that it expresses with uncommon force one particular historical emotion: at Coventry it was the War Memorial with its symbolism of Sacrifice in the ruins and of Resurrection in the new church; at Liverpool it is the *ecclesia triumphans* of the Foleys and O'Reillys, a symbol of Catholic kingship riding high above the former Protestant ascendancy of merchants in the quaysides below.

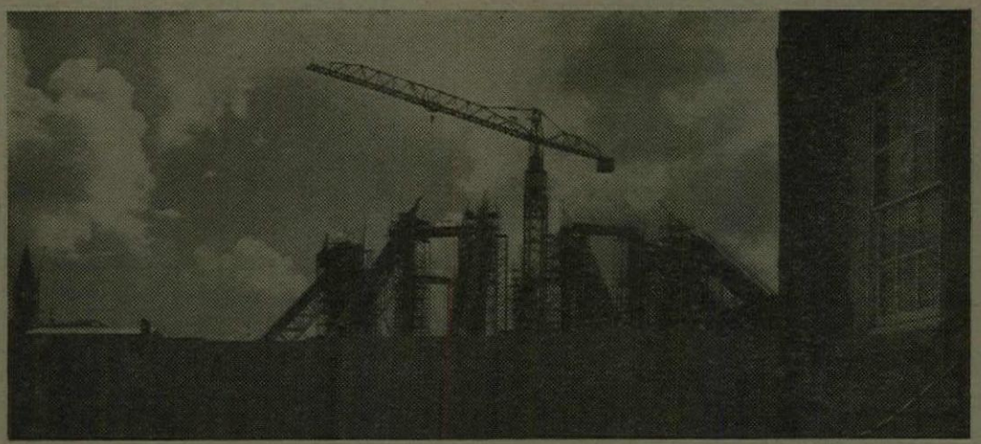
'The tower serves the functional purpose of lighting the sanctuary but,' Gibberd emphasizes, 'it was largely determined by the environmental conditions. The great cathedrals of Christendom are generally crowns of the urban composition. Giles Gilbert Scott's tower already provided one crown for Liverpool and it seemed to me that, if it could be balanced by a tower of the Metroplitan Cathedral, the city would have a unique topography. . . . Symbolism was not the primary purpose of the pinnacle structure: that its bracing indicates a crown (not of thorns—it is the Cathedral of Christ the King) was of less importance to me than the environmental consideration of dissolving the silhouette into the Liverpool atmosphere.'

It is indeed a mighty Pop landmark, appropriately seen at its best on the landward side from the old Littlewood's building, which in a sense paid for it all through diocesan football pools. The architect has transmitted high emotional frequencies, not by introspective subtlety but by putting what can only be called architectural clichés into an uncannily right relationship with their site and with their surroundings. Archbishop Downey's purchase of the Brownlow Hill site in

location plan: key 1, Metropolitan Cathedral. 2, Anglican Cathedral. 3, St. George's Hall. 4, Pierhead. 5, Albert Dock.
The roads shown are those proposed in Graeme Shankland's plan.

1928 was a stroke of genius: lofty and aspiring, it is yet much closer to the bustle of commerce than the Anglican St. James's Mount, with which the new lean structure contrasts more noticeably on the skyline than Lutyens's Byzantine fantasy would have done. Gibberd has deliberately heightened the contrast with Scott's rose-red pile by changing his finishes from grey concrete frame and pink Hollington stone infill in the competition design to white ceramic mosaic and greyish-white Portland stone; and the crowning lantern has been made more solid and less tapered.

There was widespread criticism back in 1960 that the architectural form lacked scale, being merely a blown-up tent. This happily proves untrue externally—the interior is another matter, as we shall see—the more reasonable analogy, if there has to be one, being with the Octagon of Ely Cathedral. Gibberd uses the same peculiarly English stick-like forms, his boomerang-shaped reinforced concrete members looking as wooden as the actual tree trunks at Ely. Everything is tightly corseted within the three massive ring beams, except for the flying buttresses added at the suggestion of James Lowe, the structural engineer. Gibberd is not quite happy about them: 'These buttresses seem to have become a characteristic of the cathedral, out of all proportion to their importance, and to some they have given it a superficial resemblance to Niemeyer's cathedral at Brasilia, which I find infuriating because it is not a wigwam form: the walls are vertical and the load is taken by triangulated delta frames, not single inclined members.' Yet, as so often happens with such puritanical honesty—Gibberd's own background is Congregationalist (oddly enough, from Coventry)—a powerfully emotional image has been created from the sharp joints and clumsinesses of deliberate sincerity, where smoother curves and a more fluent vocabulary might have dulled it. The result has a surprisingly unpuritanical appeal—the kind of bony glamour that a top model-girl possesses. In Gibberd's own words, it is 'a precise,



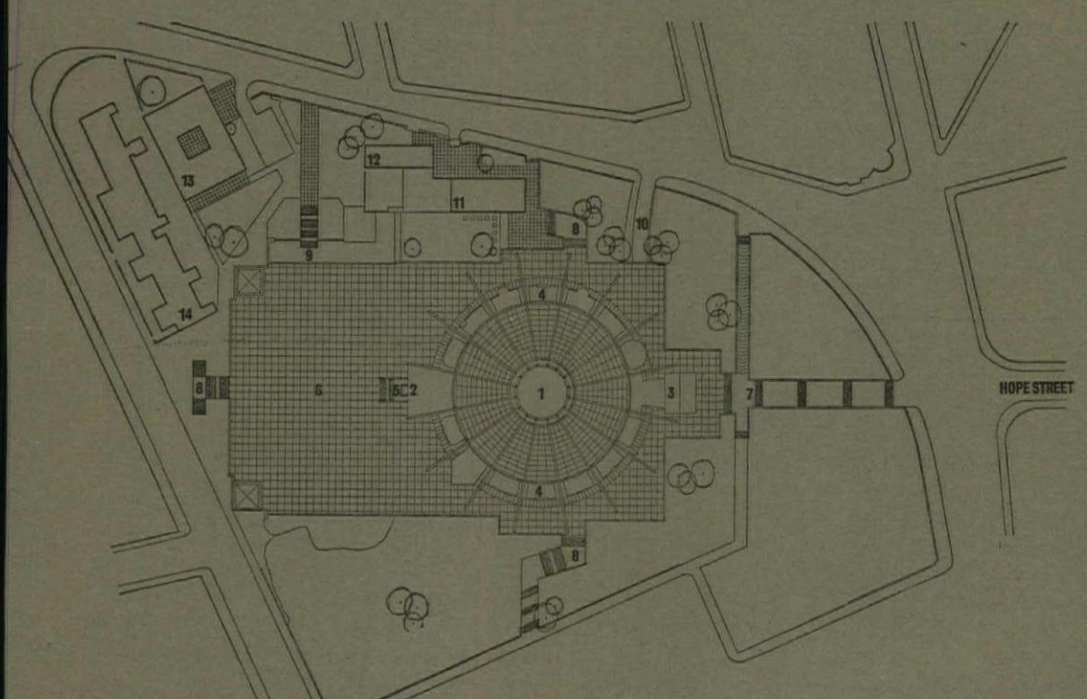
2, the cathedral under construction in 1963, showing the centrally-placed tower crane. The contractors were brought in at an early stage; the buttresses and the ribs of the cone were redesigned to an equal length so that the same formwork could be used for both.

geometric structure on a precise, geometric base growing out of irregular rocky surroundings'—the decayed roofs of the city centre on one side and the miscellaneous scrapbook of recent university architecture on the other.

The base in every sense of Gibberd's external success has been his inspired use of Lutyens's unfinished crypt at the northern end of the site as a dark granite-faced podium supporting an 'open-air basilica.' Out of this vast paved space for people to mill around in soars the tent, with the external altar backed up against the picture-frame end of the Blessed Sacrament Chapel. Gibberd, who was classically trained in his youth, has skilfully exploited the latent symmetry of Lutyens to fix the otherwise undefined rotunda, with its tendency visually to spin, on a firmly directional north-south axis. The Blessed Sacrament Chapel's sculptural emphasis is carried through on the opposite side of the building in the dramatic Breuer-derived 'banner' of the main entrance and bell-tower facing down Hope Street, to which eventually a straight flight of steps will descend, replacing the University's temporary nuclear science building.

Particularly skilful is the varied articulation of the other fourteen subsidiary volumes, each side chapel being clearly visible as an individual entity from nearby, yet merging at a distance into a convincingly solid bounding wall to the whole. The ribs of the big structural frame are sometimes lost briefly among the projections; but from beside the east and west porches the nearest can be seen entire from base to pinnacle, slicing at random, with appealing clumsiness, through the edge of the podium, which is carried round the entire structure as a cruciform promenade

site plan: key
1. cathedral
2. blessed sacrament chapel
3. main entrance porch and bell tower
4. east and west porches
5. external altar
6. roof of Lutyens's crypt
7. ramp to street level
8. stairs to street level
9. stairs down to crypt
10. service road
11. presbytery
12. convent
13. chaplaincy
14. existing office block



(see site plan). One of the best things Gibberd has done is to rescue the two fantastic staircases which Lutyens designed at the north-west and north-east corners of the crypt; their granite cantilevers (since 1939 supported on scaffolding) have finally been balanced by massive concrete pyramids poured on top.

As a whole, whatever minor infelicities there are (such as the bronze spirelet on the Lady Chapel and the barley-sugar helices absorbing wind pressure on the pinnacles of the crown), Gibberd has splendidly restated the traditional *parti* of a Catholic shrine: a geometrical temple on a panoramic platform on a sacred hill-top. The difference is that in Italy worshippers would not have been made to face an altar into the sun and they would have been able to retire to a protective cloister on one or more sides. Gibberd's pilgrims can expect few bodily comforts to complement those of the spirit. They and their children will be deposited on an exposed hill-top—not far from the city centre, it is true, but soon to be cut off from it by the 'spaghetti' of the inner motorway. The university's nearby car parks will fortunately be empty at the weekend when demands at the cathedral are greatest; but the other amenities in the crypt are simply inadequate, the tea-room being actually an afterthought, which had to be blasted through concrete walls already erected. At the corner of Hope Street opposite the bell-tower the city planning officer intends eventually to create a small shopping parade, but this will be of a permanent kind and may not be organized for some years. In the meantime it is essential that the cathedral should be able to provide—if possible at street level and not on the podium—a series of elegant temporary units to house the cafés, postcard stalls and religious trinket marts which may otherwise deface the cathedral precinct with unplanned shacks. The ancillary buildings so far erected—the presbytery, the convent and the university chaplaincy—have been designed by Gibberd's office in disappointingly heavy Portland stone with slate lintels and arched doorways.

The Roman Catholic Church has been doing a mortifying rethink on its role in a 'post-Christian society.' The whole emphasis of progressive talk about the cathedral will probably therefore be turned away from its external success as an old-style popular pilgrimage spot and instead focused internally on its supposed importance in the development of the Liturgical Movement. It is true that in shape it is not a refurbished medieval basilica as Coventry is, but adopts a wholly centralized layout. As Cardinal Heenan said in his letter to competitors, 'The high altar is not an ornament to embellish the cathedral building. The cathedral, on the contrary, is built to enshrine the altar of

sacrifice.' Gibberd has answered this demand by putting the altar in a dead central position; by bending the congregation round it in more than a semi-cricle, he has eventually provided for 2,020 people within 80 feet of the altar (reduced from 3,000 in the slightly larger competition design). But he has frankly admitted: 'I have only the slightest knowledge of the new Liturgical Movement: if, for example, someone says that a bishop's throne must be behind the high altar, or that the font may be associated with the sanctuary, then I cannot question these statements.' 'In so far as the seating is concerned,' he has said, 'the plan could just as well be a semi-circle'—which might indeed be more logical, in view of the small space taken up by the priests on their side of the altar compared with that of the congregation. Choir stalls and a ceremonial ramp fill it out at Liverpool. Gibberd claims that 'the circular plan form is a *natural grouping* (my italics) in which there is a sense of physical proximity to the centre of activity and a relationship of person to person which emphasizes the communal aspect of worship.' Yet the truly natural grouping which can be seen around any rostrum at Speakers' Corner can best be described as a series of circular rings held together tangentially at one side—resulting in an off-centre scallop or fan shape. Gibberd's circular cliché feeds the popular misapprehension of 'the church-in-the-round,' at a time when the Renaissance idea of a geometrically central altar has been rejected for some years by the more imaginative Liturgical Movement architects on the Continent and in this country. Admittedly most of their churches are small in size, making irregular roofs relatively easy to build; for a big space, Gibberd's regular progression of cylinder, cone and lantern had a compelling logic in terms of technique. Taylor Woodrow's single tower crane, revolving slowly upwards, was visually perhaps the most splendid piece of contractors' tackle seen in England since the war.

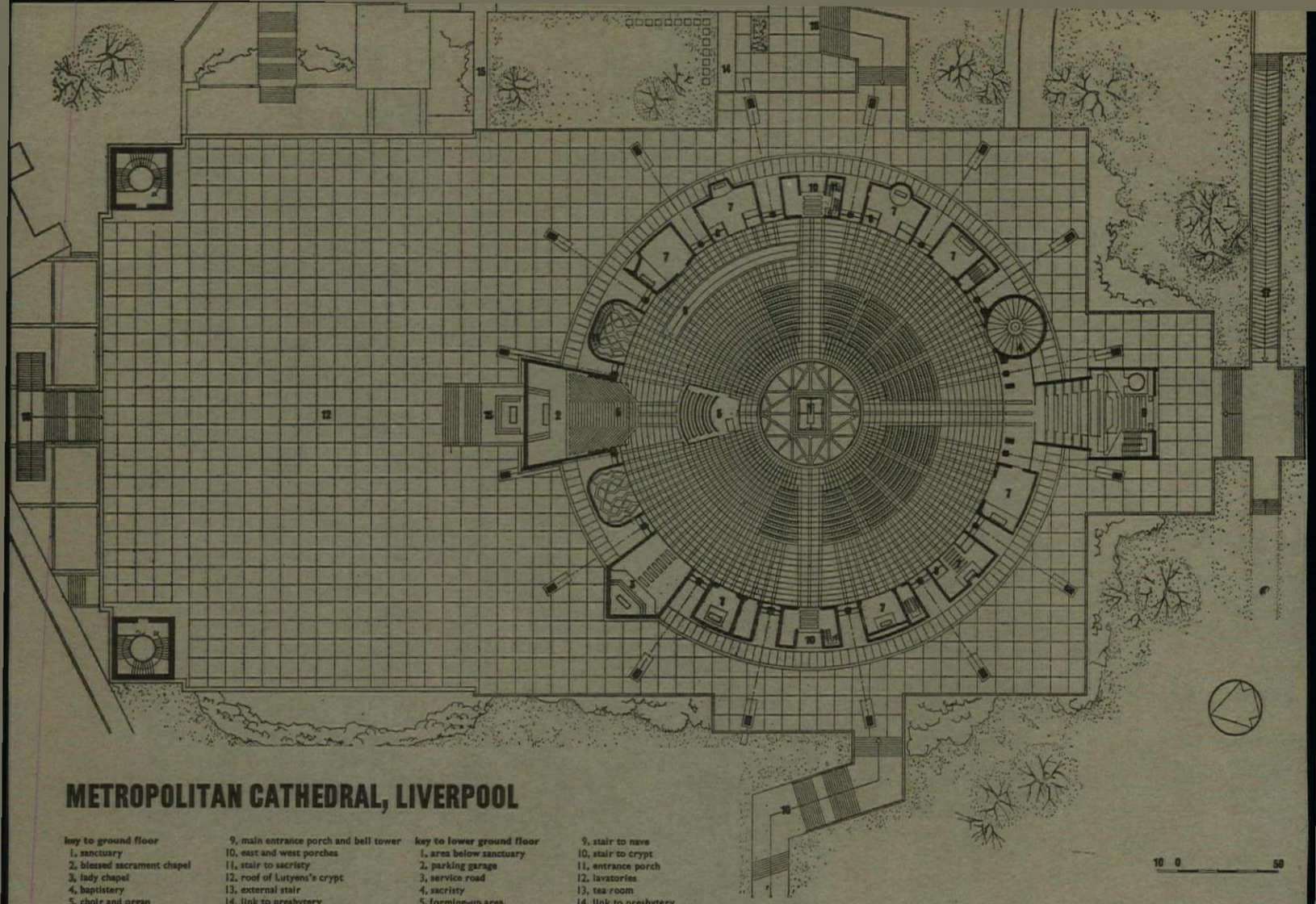
In the space left behind, however, there is a fatal lack of definition. (Admittedly this has been written before the insertion of the seating; but not much visually can be hoped for from that, particularly as it is intended to be removable). The sequence on the main axis starts promisingly within the soaring main porch. The low glazed link further raises expectancy and then—whoosh, the entire space opens out in a single *coup d'oeil*. A single-room parish church is small enough for functional diversions within it to be tightly marked and controlled. In the Metropolitan Cathedral by contrast there is nothing fixed at all except the altar, which is raised by three steps on a low sanctuary platform, and the organ console behind it. The font, instead of being associated with the sanctuary for baptisms involving the entire congregation, is retracted to its conventional position as a chapel beside the main entrance. Admittedly one doubt of 1960 proves unfounded: that the Piper-Reyntiens glazed lantern would ride too high above the sanctuary to relate meaningfully to it. Although the representation of the Trinity in three bursts of light is not comprehensible except on the rare occasions when the visitor is standing directly beneath it, the quality of that light is superb and possessed of never-ending refinements of depth and focus depending on the time, the seasons and the weather. The finest view of all inside the cathedral is that which unfolds gradually to the clergy and choir as they proceed up the ceremonial ramp from the sacristies in the crypt; they emerge behind the high altar in a smooth curve which carries them exhilaratingly into the midst of the central space. From an oblique angle the thorny baldacchino, with its sophisticated battery of mechanical equipment, succeeds admirably in spatially relating lantern with altar. Only on the main axis does this connection break down, because the canopy's aluminium tubes are hung at a height where they cut across and are submerged by the massed organ pipes directly behind; these in turn crush into insignificance, except at close range, the liturgically important opening behind the sanctuary which focuses on the tabernacle of the Blessed Sacrament Altar.

Much more serious, however, is the curious lack of scale inside the main space, which is, after all, 194 feet in diameter within the main structure and an average of 235 feet across the chapels. It appears quite a small assembly hall until the size of men on the opposite side is picked out. There are, I think, two main reasons for this. There is the specific failure to achieve internally adequate proportions for the subsidiary chapels, which externally are so convincing. They are very small and shallow on plan, 18 feet square for the smallest and 28 feet by 18 feet for those slightly larger, but reach a quite disproportionate height of 45–50 feet. This would not matter so much if most of them were not wide open to the central space, becoming merely recessions off it and not distinct spaces in themselves. But even those that are shut off for private prayer lack scale: that of St. Joseph is crushed by its insensitive 45 foot light-funnel; that in the equivalent position on the east has a round-headed doorway, an alien form in itself, which turns out to be at least twice as high as from a distance it appears to be.

The competition drawings were littered with similar doorways but—and this is the second, more crucial point—at that stage Gibberd proposed to face the entire wall surfaces of the chapels, inside as well as out, with Hollington stone. This has now been replaced, on every surface that can be seen from the main space, by acoustic plaster or buff rendering. The English eye, I believe, has an instinctive appreciation of scale based on the presumed dimensions of brick and stone courses. It is Sir Giles Scott's exploitation of such dimensions that makes the choir aisles of the Anglican Cathedral at Liverpool such an exhilarating and (in spite of the decor) convincing experience. The eye which picks out what are apparently the same stones low down in the aisle wall, high up in the transeptal vault and higher still in the main choir is able to measure the spaces between. In the Catholic crypt, the elderly Lutyens played games of perverse power by standing these accepted notions on their heads. (The effect is even better than he intended, as one of Gibberd's first acts was to insist that the brick vaults should not be plastered over, as even Lutyens himself had intended.) Whereas Le Corbusier took to rough-shuttering his monumental buildings in regular courses, all Gibberd can offer is the indefinable vagueness of acoustic plaster, supplemented by the grid of the ceiling.

Gibberd had himself solved such problems of scale exceedingly well in the chapel of De La Salle College, Hopwood Hall, Middleton (illustrated in AR, August, 1965), which was the one church he had been asked to design before Liverpool—about a year before. There, instead of placing the altar centrally in a circle, he placed it to one side in a hexagon; and against the pull of a similar central lantern he tied the space firmly down to human height by means of a continuous clerestory strip which defines a low ambulatory wall.

A visit to this little building makes the more acute one's disappointment with the trite forms of detailing given to such chapels at the cathedral as have so far been fitted out. The stained glass at these lower levels by Piper and Reyntiens is decidedly unhelpful: they have filled the three-sided frame round each chapel with bright blue glass in harsh diagonals, which besides being exhausting to the eyes, does much to destroy the integrity of the main structural ribs. But Gibberd has not made the usual mistake of over-furnishing. He has omitted most of the pseudo-symbolic sculpture that he plastered on to his competition drawings. He has also deliberately left most of the chapels bare (apart from stained glass), so that, as funds allow, the growth of the community can be symbolized by the growth and change in its cathedral. This may leave the way open for tinsel Madonnas and Sunday School martyrs, but it is better to have those than to wrap up the whole cathedral as a *fait accompli*, with inherent dangers of spiritual stagnancy and liturgical obsolescence. It is admirable that an architect should have had such humility as to allow his cathedral to be tampered with by its users.



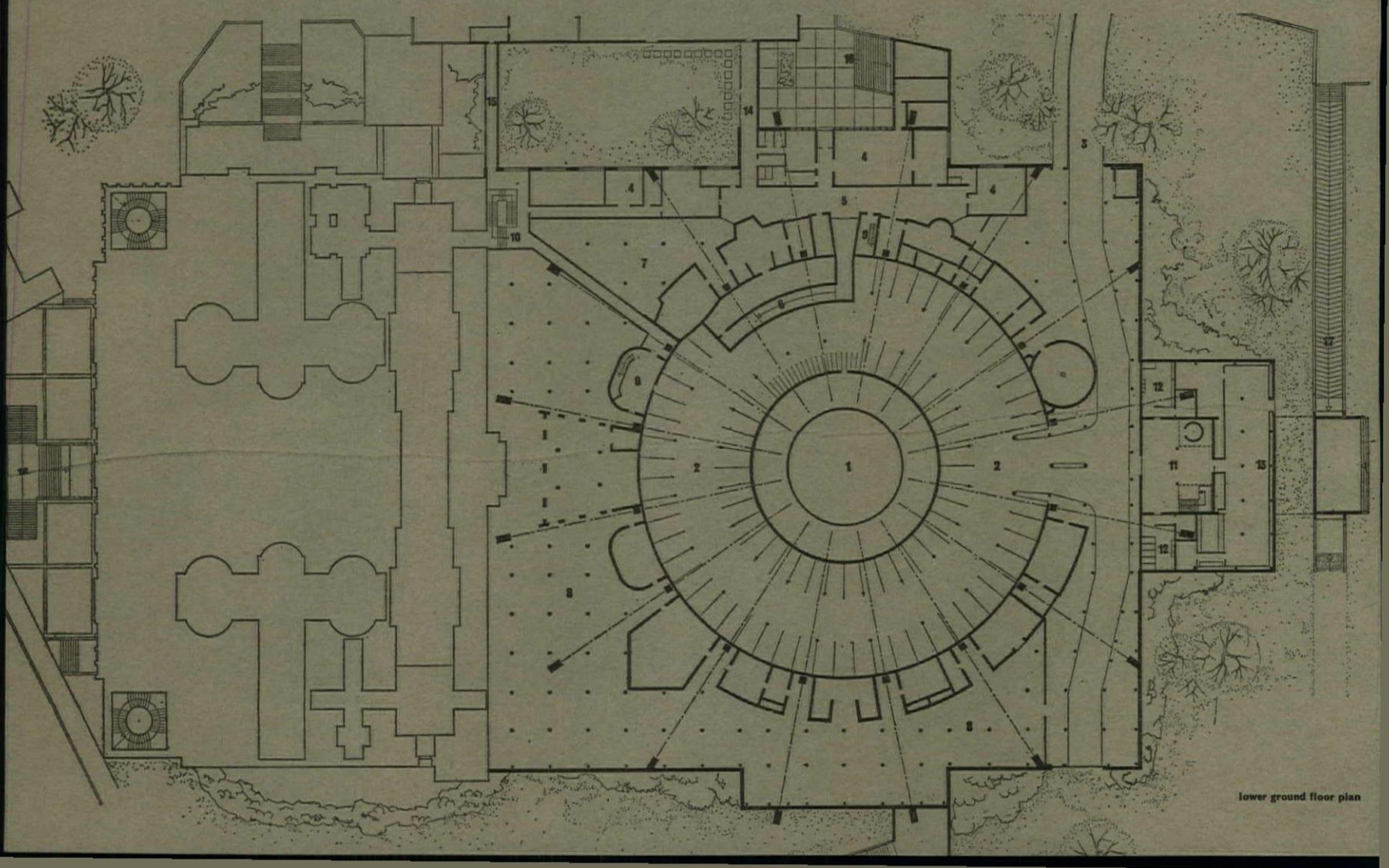
METROPOLITAN CATHEDRAL, LIVERPOOL

key to ground floor
1. sanctuary
2. blessed sacrament chapel
3. lady chapel
4. baptistery
5. choir and organ
6. ramp from sacristy
7. side chapel
8. confessional
9. main entrance porch and bell tower
10. east and west porches
11. stair to sacristy
12. roof of Lutyens's crypt
13. external stair
14. link to presbytery
15. link to convent
16. stair to street level
17. ramp to street level

key to lower ground floor
1. area below sanctuary
2. parking garage
3. service road
4. sacristy
5. forming-up area
6. ramp to nave
7. chair store
8. storage
9. stair to nave
10. stair to crypt
11. entrance porch
12. lavatories
13. tea room
14. link to presbytery
15. link to convent
16. stair to podium
17. ramp to podium

10 0 50

ground floor plan



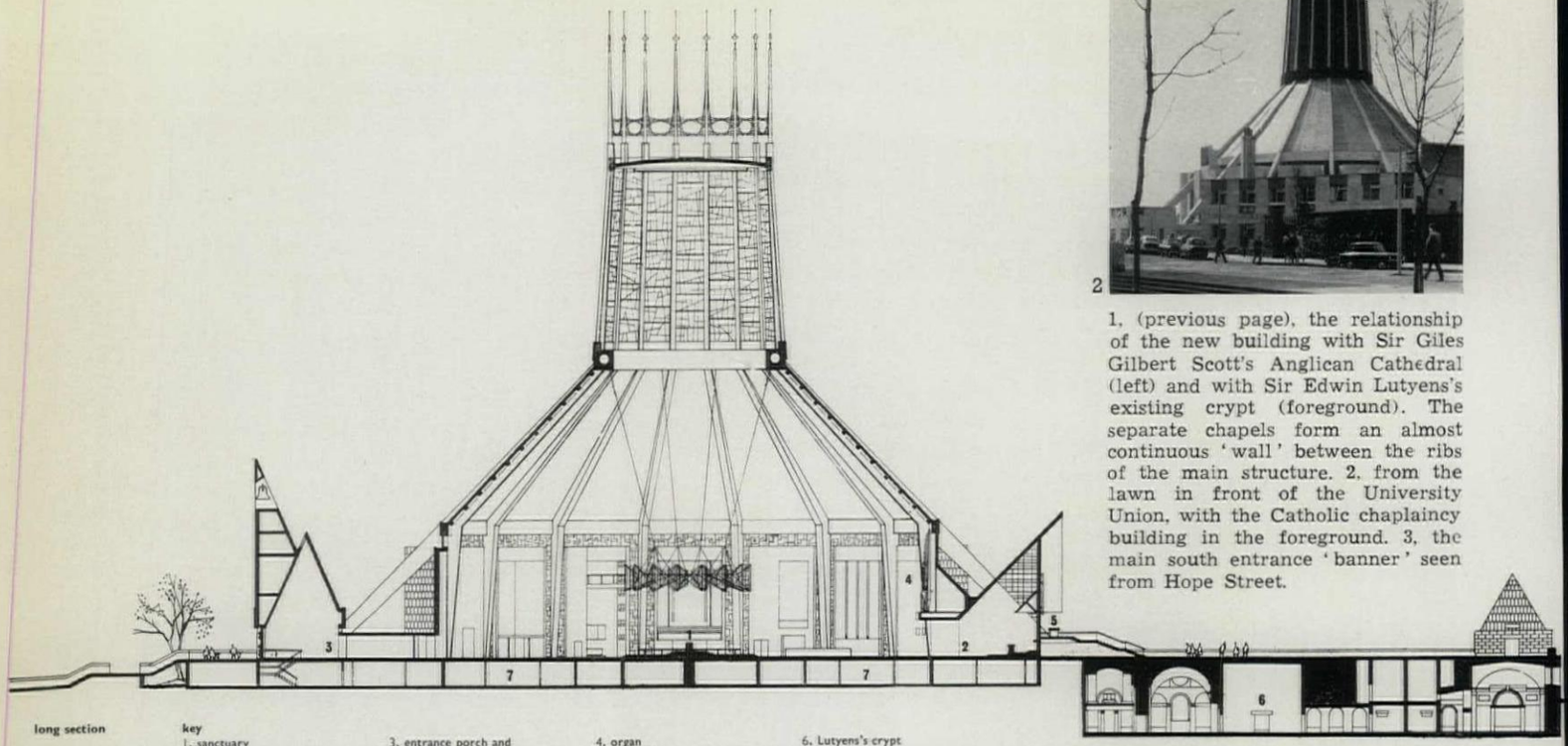
lower ground floor plan

1

METROPOLITAN CATHEDRAL OF CHRIST THE KING, LIVERPOOL

architects **FREDERICK GIBBERD AND PARTNERS**

photographs by Henk Snoek and John Mills



long section

key
1, sanctuary
2, blessed sacrament chapel
3, entrance porch and bell tower
4, organ
5, external altar
6, Lutyens's crypt
7, car park

2

1, (previous page), the relationship of the new building with Sir Giles Gilbert Scott's Anglican Cathedral (left) and with Sir Edwin Lutyens's existing crypt (foreground). The separate chapels form an almost continuous 'wall' between the ribs of the main structure. 2, from the lawn in front of the University Union, with the Catholic chaplaincy building in the foreground. 3, the main south entrance 'banner' seen from Hope Street.

In spite of the speed of its ultimate erection, the Metropolitan Cathedral at Liverpool is the end product of no less than 114 years, nine bishops and archbishops and four different architects. In 1853 Edward Welby Pugin designed in Gothic at Everton, but only the Lady Chapel was built (now the church of Our Lady Immaculate). Seventy-seven years later Sir Edwin Lutyens responded to the dominating Brownlow Hill site with a Byzantine design which would have been the world's second largest; and in spite of the Depression, its crypt was almost completed by 1939. Adrian Gilbert Scott, Sir Giles's brother, drew up a reduced version of it in 1953. Finally in 1959-60 Archbishop (now Cardinal) Heenan promoted an open competition, judged by himself with Sir Basil Spence and David Stokes; of 293 entries Frederick Gibberd's was the winner. Construction to his design, slightly modified, began in September 1962 and was virtually finished for consecration on May 13-14 this year.

Cardinal Heenan placed one overriding condition on competitors: that the cathedral's high altar should be so enshrined as to make the celebration of the Mass visible to the entire congregation, so that all could participate closely. Such a centralized brief had to be reconciled with the rectangular site and with Lutyens's basilican crypt; this stands 12 ft. out of the ground at its northern end, facing the University, and contains an extensive network of vaulted chapels, sacristies and meeting rooms. Gibberd's solution has been to prolong the crypt southwards as a unifying podium over the entire site, placing a compact new cathedral at the southern end, facing down Hope Street, where the conditions had required the main entrance to be.

The roof of the crypt has become a piazza for open-air services, with its external altar raised up against the end wall of the Blessed Sacrament Chapel.

The cathedral is basically a single sixteen-sided space, with the high altar at its exact centre. The sanctuary is dramatically emphasized, externally and internally, by a concrete-ribbed lantern of stained glass, which tapers (from 78 to 67 ft. diameter) to a crown of pinnacles, 290 ft. above the ground. The lantern stands on sixteen enormous reinforced concrete members of a boomerang shape, clad in white mosaic; they enclose the main space to its full height in three stages: vertically for the main walls, diagonally for the conical roof and cylindrically tapering for the lantern. From the base of the conical roof a second limb of each member is carried outwards and downwards in the form of a flying buttress. In the sixteen bays between these buttresses, there are the Blessed Sacrament Chapel, the Lady Chapel, the baptistery, eight small chapels (these eleven spaces were all laid down in the competition), the main porch, the east and west porches, a space for the bishop's throne and a hallway for the staircase down to Lutyens's crypt. These subsidiary spaces are individually designed as independent load-bearing structures of brick or concrete, faced in Portland stone.

The high altar consists of a solid rectangular block of Macedonian white marble, 10 ft. by 3 ft. 6in. by 3 ft. 6in. high, standing on a predella of three steps within the circular sanctuary platform, which is 54 ft. in diameter and 10 in. above the main floor. The altar cross has been sculptured by Elizabeth Frink. Suspended about 30 ft. overhead is a hanging baldacchino; its space-frame structure, of sixteen aluminium trusses with diagonal braces and stretched wires, supports vertical aluminium tubes and a coffered plywood sounding-board. Besides visually linking the altar to the lantern, the baldacchino transmits artificial lighting, heating and ventilation and houses the loud-speaker system. The glass in the lantern, designed by John Piper and Patrick Reyntiens (and made in Reyntiens's studio), has three giant bursts of light, symbolizing the Trinity, against a blackground of the colour progression of the spectrum. The pieces of glass, 1 in. thick, are cemented together by epoxy resin and precast within a tracery of thin concrete ribs—a technique invented for this job. The pinnacles of the lantern are prestressed concrete posts, cast within plymol tubes and linked together by steel tracery to damp down oscillation; crosses and finials are also of steel, which is throughout protected from corrosion by an outer casing of synthetic resin.

The nave space is defined by the main structural members of fair-faced concrete, with blue glass by Piper and Reyntiens framing the chapels between them. The roof of the cone has precast concrete purlins; between them are timber-framed acoustic boxes, faced with hardboard and coloured dark blue.

Over 2,000 people can easily be seated within 80 ft. of the sanctuary steps in a fan formation on three sides of the altar. The curved benches, designed by Frank Height, are of laminated Douglas fir on solid ash supports; they are movable, and normally only 800 seats out of 2,020 will be put out. The grey and white marble floor has a geometrical pattern by David Atkins intended to unify the sixteen radiating arms with the need for parallel aisles in the seating. The celebrant priests face the congregation from the fourth side of the altar; behind them is a 58-seat choir enclosure and the organ console—the last being the only fixed item in the main space outside the sanctuary. The organ itself, which is in fact a complex of six organs (to a specification by Fr. R. R. Wright), stands directly behind the altar in a gallery over the entrance to the Chapel of the Blessed Sacrament. The importance of this chapel liturgically is that westward-facing celebration (liturgically 'westward') on the high altar precludes the reservation of the Sacrament there; so a tabernacle on the chapel altar is intended to be prominently visible behind the high altar on the main north-south axis. The chapel, seating 104, is the largest and most intricate in the cathedral, its roof sweeping upwards at a 45 degree angle, cutting across the buttressss of the main structure, and its side walls also splaying outwards to an end wall of Roachbed Portland stone. Ceri Richards painted the reredos and designed the stained glass in the two flanking windows. The archbishop's throne in the adjoining bay to the west was designed by R. D. Russell.

At the other end of the axis the main porch gives a similar directional emphasis, the triangular entrance space being surmounted by the reverse triangle of the bell-tower, so that a broad flat front is presented to the Hope Street approach: a Portland stone banner with a giant design of three crosses and three crowns by William Mitchell carved upon it. A broad flight of steps will eventually rise from Hope Street (replacing the University's temporary nuclear physics building) to the main entrance, which has doors designed and made by Mitchell in bronze fibreglass and polyester resin on a steel frame; they represent the symbols of the Apostles. Normally these doors are slid back as decorative panels, draught and noise being excluded by a glass and aluminium inner screen, the centre portion of which

can in its turn be retracted like a portcullis into the bell tower to make way for processions. Visitors pass from the soaring space of the porch to an intentionally diminutive glazed link from which the vast space of the cathedral suddenly opens out. From the link a second doorway on the right leads into the baptistery, which also is kept low in contrast to the altar space, to which it is symbolically related. The cylindrical font of white marble stands within a cylindrical white-painted space; above it a conical fibrous shape deflects light from a bronze roof lantern. The black and grey floor is by David Atkins, who also designed the bronze gates inset with brass. A secondary axis is formed by the east and west porches, over each of which is a gallery seating 70. Here also the bronze-faced doors slide back to form the sides of the entrance lobbies.

The Lady Chapel, which seats 94, is tall, narrow and fully open to the nave. The triangular sanctuary formed by two walls parallel to the podium is faced with white mosaic and lit by a bronze-framed spire; the Madonna statue is by Bob Brumby. Above the dado of white Sicilian marble are narrow stained glass windows by Margaret Traherne, in bronze frames and with oak reveals, alternating with narrow panels of raw silk. The ceiling is a diagrid of deep concrete beams.

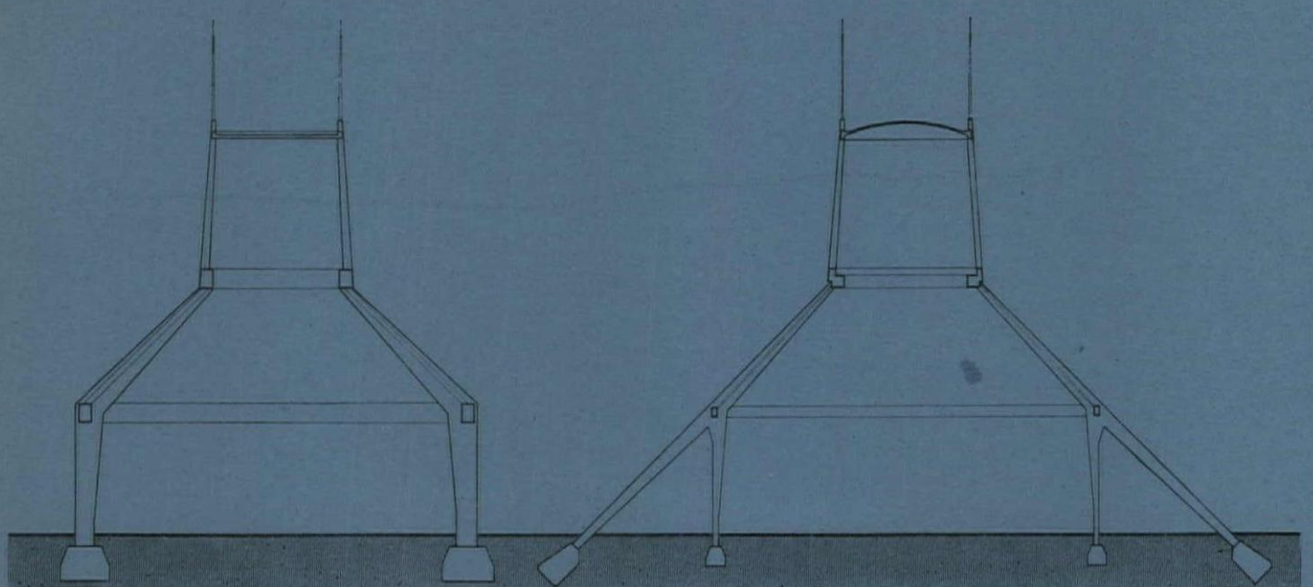
The eight small chapels of saints are of the same basic external form but vary in area from 18 ft. sq., seating only a handful, to 28 ft. by 18 ft., seating 45, and vary considerably in their internal spaces. Some are small-scale extensions of the main space, the only barrier being at ground level where in three cases the entrance is flanked by confessionals; walls open to the nave are finished in buff rendering or acoustic plaster. Other chapels are almost totally enclosed for private prayer. Over two chapels are galleries for television cameras. Staircases, stores and ducts further modify these subsidiary spaces. Only two chapels yet have their permanent furnishings: St. Joseph's, next to the Lady Chapel, which is enclosed with pine-boarded walls carrying a white fibrous plaster pyramid which tapers to a thin rooflight 45 ft. above floor level; and St. Paul of the Cross, on the west side, which is open to the nave, with its altar placed centrally beneath a tall reddish window by Margaret Traherne.

Beneath the cathedral is Gibberd's new crypt, entered by a service road at the southern end of the site and connected to the main porch by a flight of stairs and by an hydraulic lift contained in a freestanding reinforced concrete cylinder which passes through an open well in the floor. At the lower level, close to the entrance porch, are a tea room and lavatories for visiting parties. The crypt also contains parking space for 83 cars, plant rooms, storage space for seating and the main sacristies. From these a curving processional ramp rises into the main space behind the high altar; it also provides trolley access for bulky articles such as seating. An outside entrance leads to the presbytery and to the convent (nuns do most of the cleaning and other daily duties). The podium is faced with large precast slabs finished in dark grey and black Anglesey granite and has a floor surface of grey Welsh slate laid random within a 9 ft. sq. grid. External colours are otherwise white (mosaic), silver-grey (Portland stone) and powder grey (the aluminium cladding to the main conical roof), the dark tones of the glass and the bronze doors and window frames providing incidental contrasts. The structure was wind-tested by means of a model at the National Physical Laboratory. The contractors used a huge tower crane which stood on the foundations of the high altar and progressively increased in height as the in-situ concrete grew around it. The frame was designed to be mainly in compression, both to reflect the total space of the cathedral and to give an exceptionally long life. The lantern tower alone weighs over 2,000 tons. Horizontal and diagonal thrusts are restrained by two concrete ring beams at top and bottom of the main roof cone; a third ring beam secures the top of the lantern, which has a shallow dome. The cone is formed by precast purlins supporting precast slabs, on which the aluminium sheeting is secured by an insulating layer of foamed polyurethane.

Heating is mainly by underfloor coils, supplemented by warm air grilles beneath the nave windows and within each chapel. Special heating elements on the baldacchino and at the base of the lantern prevent down draughts. The car park and sacristies are mechanically ventilated. Apart from the baldacchino, artificial lighting in the main space is by one suspended fitting in each bay consisting of three tungsten iodine lamps.

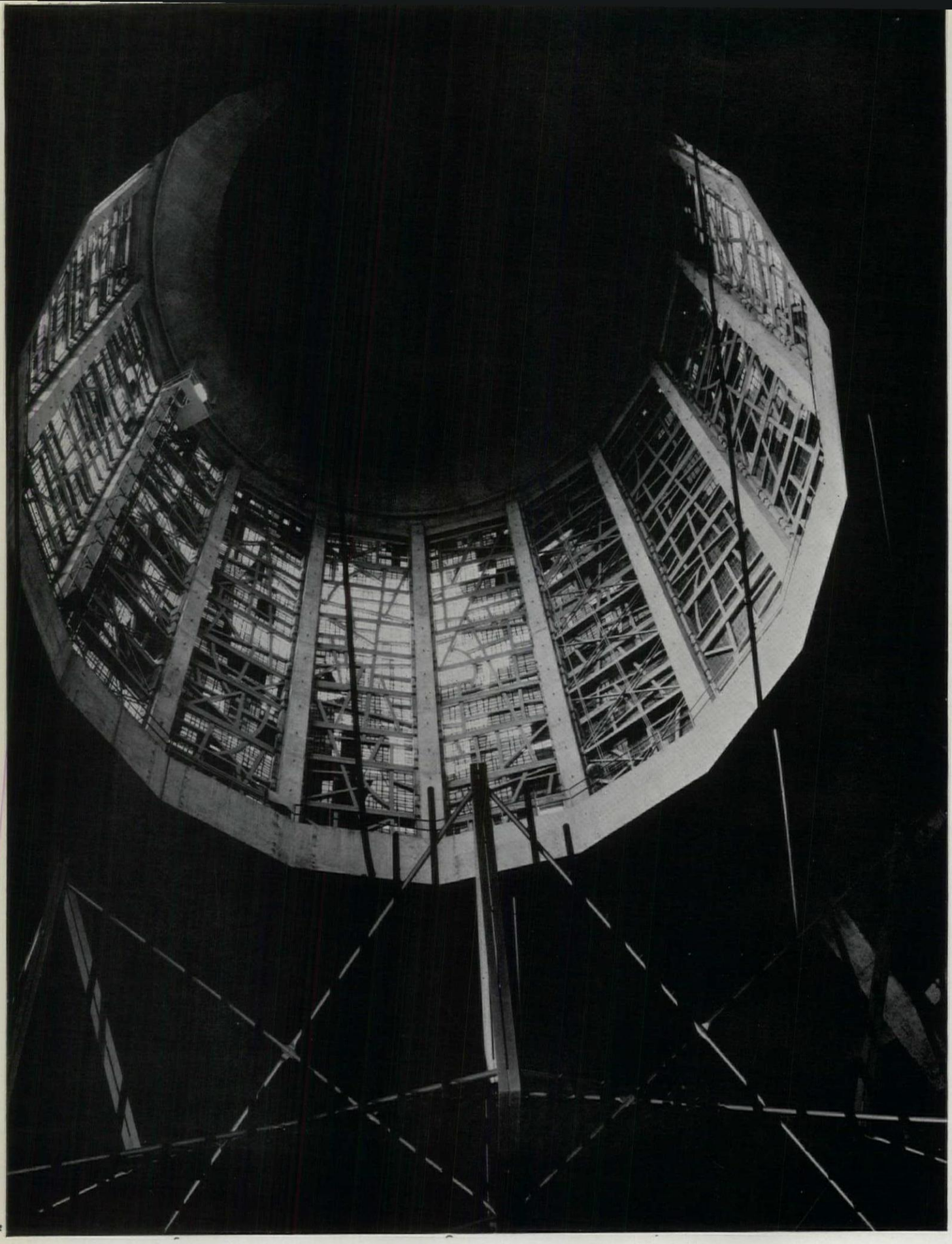
Consulting engineers, Lowe and Rodin. Acoustic consultants, H. R. Humphreys and Hugh Creighton. Electrical consultants, Barlow, Leslie and Partners. Heating consultants, Young, Austen and Young Ltd.

For contractors, see page 476.



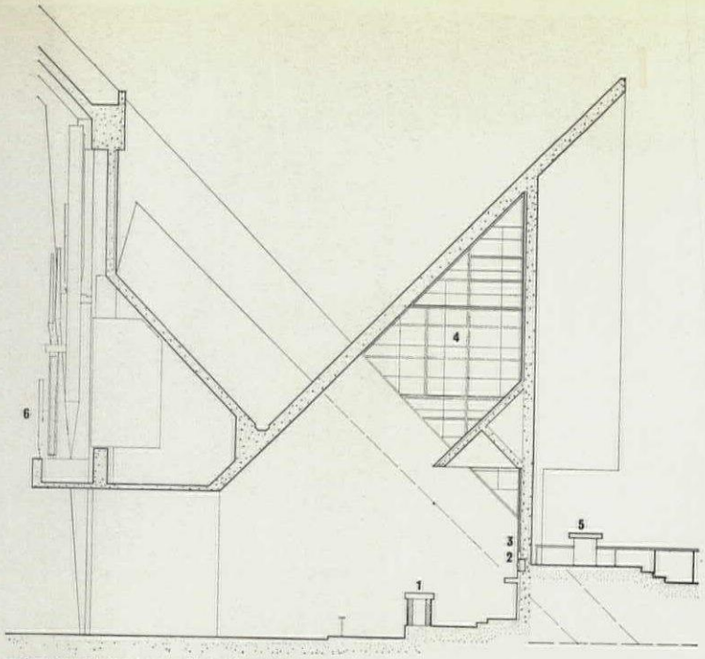
structural diagram showing the basic design (left) and its eventual modification by buttresses (right)

At the north-west corner, 4 (opposite), the structural forces of the building can clearly be seen. The Lady Chapel (left) and the other chapels stand on a granite-faced plinth, containing sacristies and car park, which continues the line of Lutyens's crypt. Through it penetrate the buttresses of the main ribs of the central lantern.

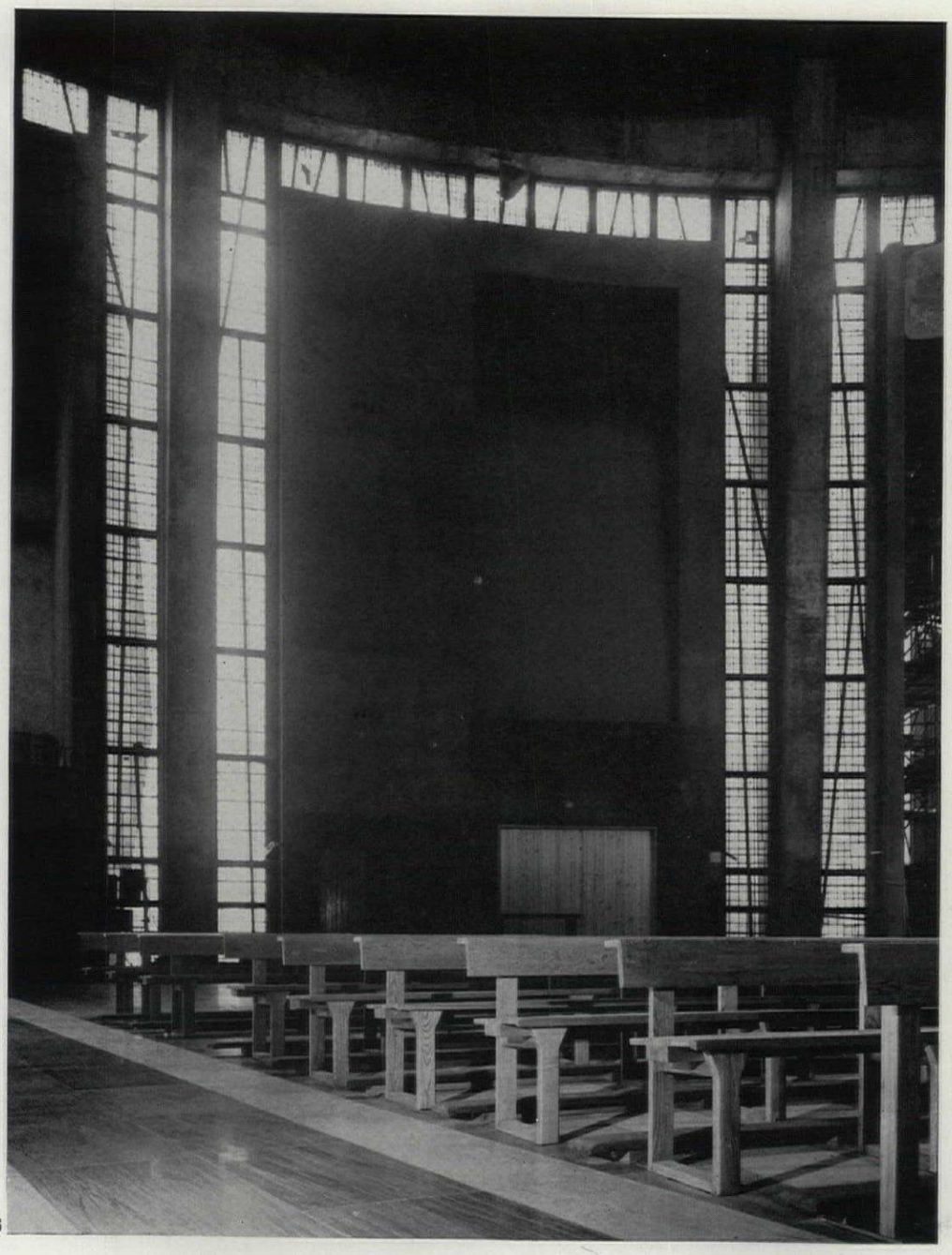


5, the great central lantern, with its glass symbolizing the Trinity designed by John Piper and Patrick Reyntiens. The roof is slightly domed. From the lower ring beam hangs the baldacchino over the altar. 6, each of the side-chapels is framed by more Piper-Reyntiens glass, mostly in vivid blues; this chapel, of St. Joseph, has a 45 ft. pyramidal roof internally (its exterior can be seen next to the Lady Chapel in 4). The nave seating, of laminated Douglas fir on ash supports, is by Frank Height. 7, the organ, which stands on the main axis over the doorway to the Blessed Sacrament Chapel. 8, a general view of the interior, still unfinished (the perspective of lantern to cone is distorted). The low doors of the main entrance (right) stand next to the baptistery (centre background). The main roof has a system of acoustic timber boxes between the main ribs and precast purlins. 9, inside the baptistery (the wall surfaces are shown unfinished). The cylindrical font of white marble stands beneath a conical roof of fibrous plaster.

key
1, altar
2, tabernacle
3, reredos
4, stained glass window
5, external altar
6, organ



section through chapel of the Blessed Sacrament



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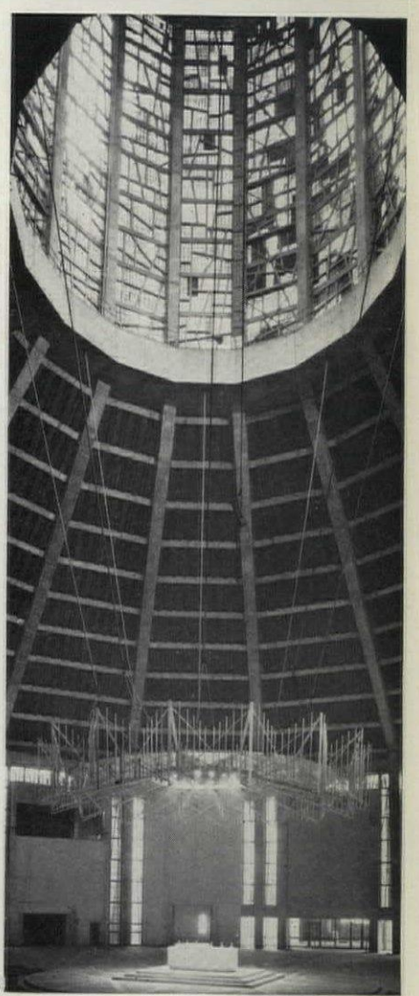

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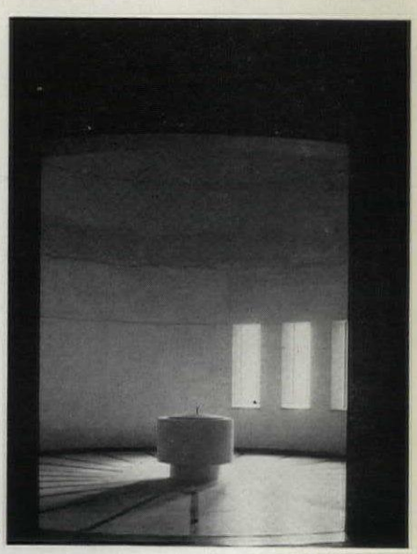
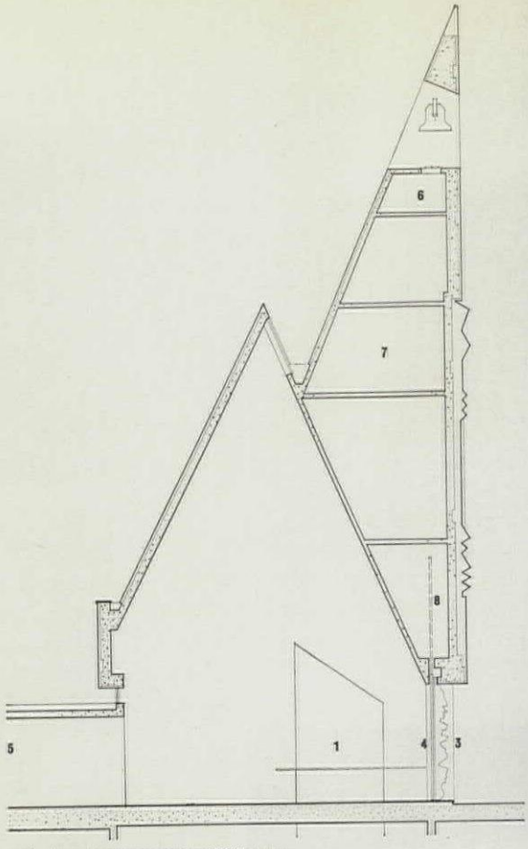


9

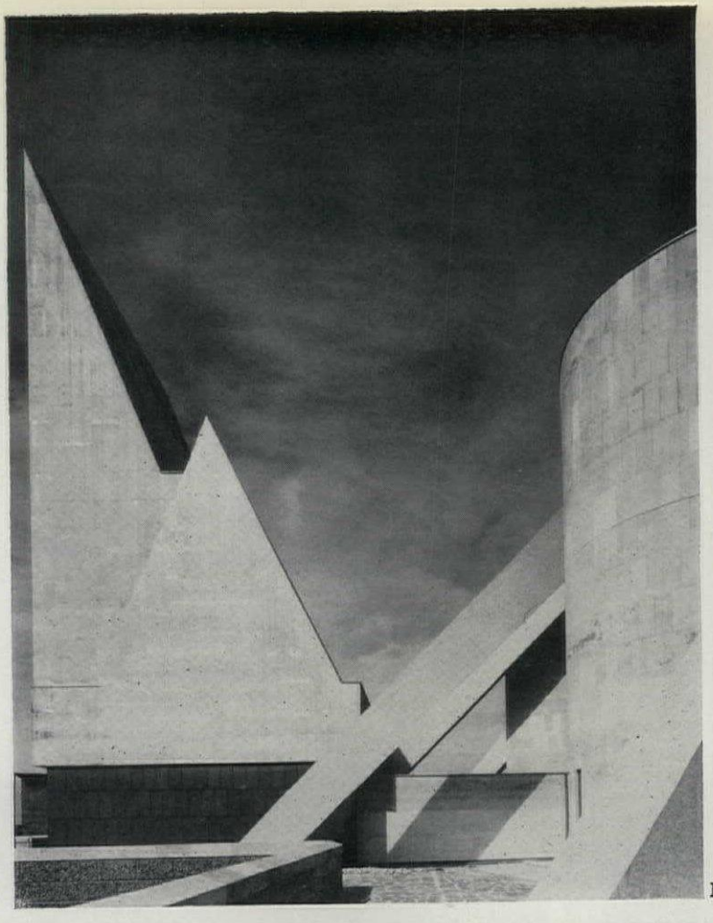
METROPOLITAN CATHEDRAL, LIVERPOOL

10, the main entrance porch seen from a corner of the podium, which is paved in random-laid slate. The pyramid-roofed porch is abutted by the 'sideways pyramid' of the bell-tower. The baptistery's curved wall is on the right.
11, a dramatic view outwards from the same corner towards the Anglican Cathedral.

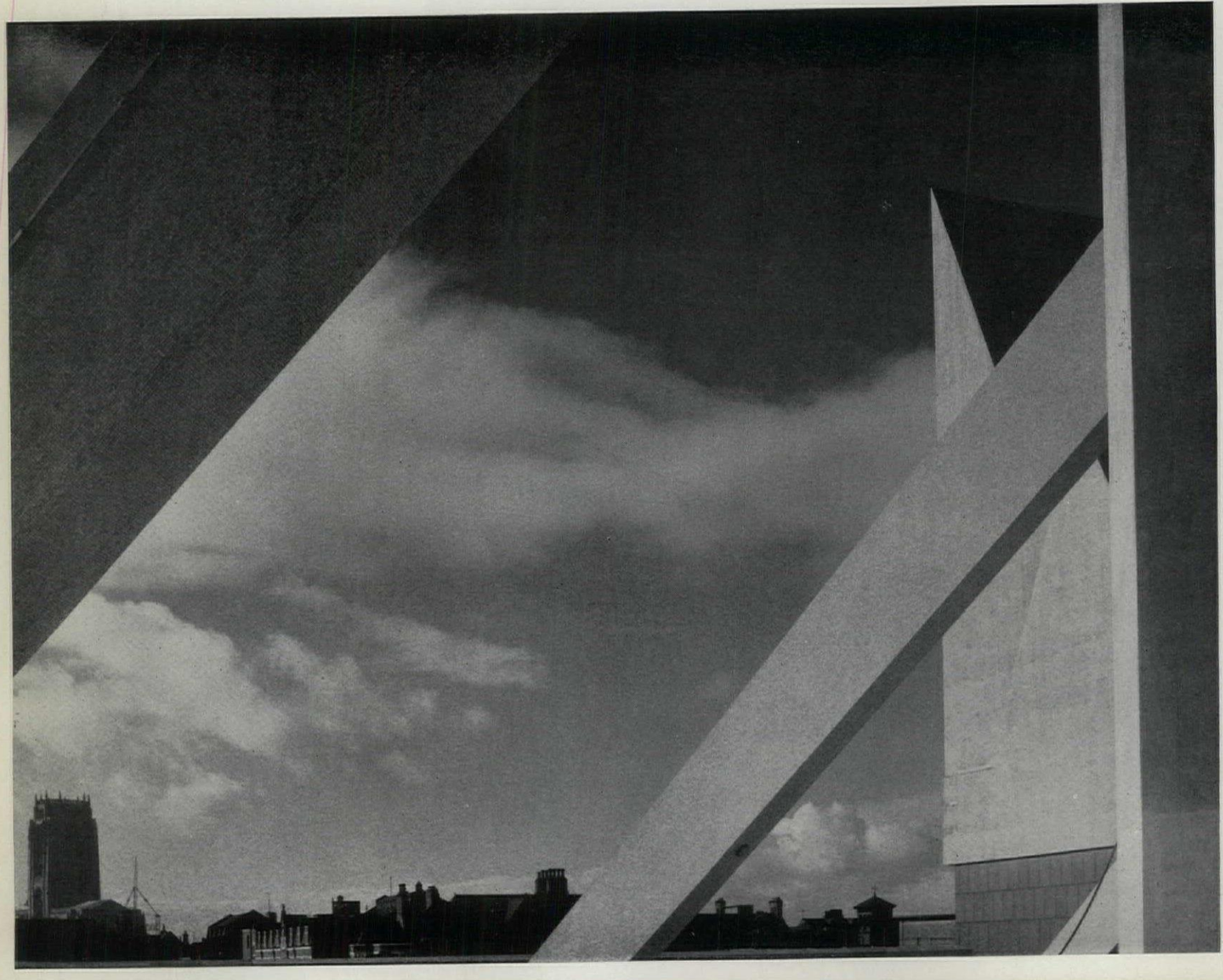


key
1, lift to lower porch
3, main door
4, inner glass screen
5, link to nave
6, bell motor
7, water tanks
8, sliding door gear

section through entrance porch and bell-tower



10



11

COLIN ANDERSON

SHIP INTERIORS: WHEN THE BREAK-THROUGH CAME

The construction of the Q4 has brought the interior design of ships once more into the news and the recent controversy about the choice of designers for her (now fairly satisfactorily resolved) shows that the battle for more sensible design policies in this field is not yet won. But the main, and succesful, engagement in this long drawn out battle was fought more than thirty years ago when the Orient Line revolutionized British ship interiors with their 'Orion'. In this article Sir Colin Anderson, a director of the Orient Line and the man who took the initiative when the 'Orion' was conceived, recalls the circumstances of this important break-through, the history that led up to it and some of the developments that followed it.

For over a century ships were made of metal sheet on an armature of metal, while on land buildings bumbled on, relying on timber, brick, stone, and sometimes even mud. The shipbuilders had invented cladding. Now that cladding has climbed ashore, the ship and the building have come once more to have a family resemblance. Le Corbusier was already playing with that idea in the 'twenties (though without any cladding to excuse it). Even now, with cladding, the resemblance is still only a superficial one, for the ship still has to do far more than the building in withstanding the elements, and also has to float upright and to move through rough water at a prescribed speed for days on end.

Every line and proportion within a ship is dictated by a mass of rules concerning aspects of safety which form an insurmountable barrier in the way of anyone who wants to make the ship interior indistinguishable from the house or hotel interior. And yet this wish to try to make the spaces on board look like rooms ashore has long beset ship interiors. In Nelson's time the spaces where the senior officers lived were already done up in shore style, their decks covered in canvas painted in black and white squares to look like marble, though they had no upright wall, no level floor, no rectangular door or window and no vertical height where a sizeable man could stand upright. A kind of grand effect was achieved which was at the same time rather ludicrous, and this tendency went merrily on and indeed can still be met with afloat today. It amounts to a desire for a high style which is not appropriate to the inside of what is simply an unusually mobile public vehicle.

One could find a similar objection (on the ground of misplaced emphasis) to the marble interiors of the Moscow underground railway and to the overblown interior style of many well-established and popular hotels and eating places. The grand style can never become a vernacular, which would be a contradiction in terms. There was originally a formula for the arrangement of the passenger quarters on board ship, so dictated by necessity that its acceptance was universal though the discomfort it imposed was great. I speak of the era of the clippers and windjammers. Conscious decorative design of public rooms for the use of passengers only came with the generation of ships that saw the introduction of steam power and later of electricity and refrigeration. It was the increase in the space available on board that first enabled the shipbuilders to add what elegance they could to interiors that were, for the first time, something more than the least space that could be devised for their purpose. However, even close business connections with the rest of the world have not, historically, produced amongst either our shipbuilders or shipowners any heightened awareness of architectural or design trends elsewhere. British ship interiors have tended even to lag behind British shore interiors.

Having been shipowners for a number of generations our family business had finally crystallized into an established form, as the owners and managers of the Orient Line to Australia, in 1878. My grandfather and his generation, and later my father and his cousins who had then become the partners in the enterprise, were men of taste and this was reflected in the interiors of their ships. They had been early to react against the unimaginativeness of standard shipyard interior design and by 1879 had adopted the policy of engaging a shore architect, yet another cousin, J. J. Stevenson, F.R.I.B.A., who had started in Sir G. G. Scott's office. He was already an established practitioner, though his most distinguished buildings—Cheniston House, Kensington Court, 1889; 14, Melbury Road; 8, Palace Court, Bayswater ('The Yellow House') and 3, Bayswater Hill ('The Red House')—were to come later. He also had a half-written two-volume book, *House Architecture*, which was published in 1880.

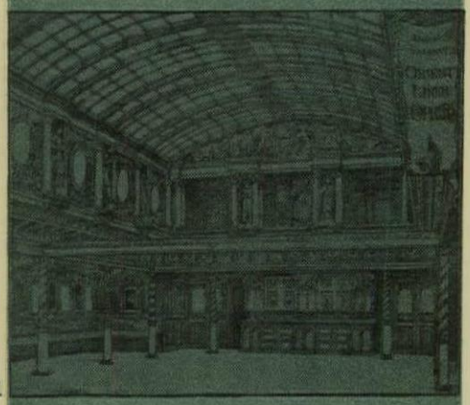
This first marine commission was for him to decorate the main rooms of the 'Orient' (1879), in which the heady ability at last to waste space on board was exemplified by an oval drawing-room with a well looking down into the dining saloon. There was more beside that to be designed—a card room, a smoke room and a main lounge, and though they were small rooms the commission was a conscious effort in the right path. I am not sure, however, that Stevenson was an ideal choice for what were after all exacting practical commissions. He was perhaps too much the aesthete. I remember tales of a dining saloon ceiling of heavy decorative tiles (from de Morgan, I have always hoped) which started, in rough weather, dropping one by one like ripe pears, so that for the rest of the voyage meals had to be eaten crouched beneath the dubious protection of a stretched velarium of netting into which from time to time yet another tile would bounce.

The 'Austral' (1881) came next, to be followed by the 'Ormuz,' Stevenson's design for the dining saloon of which was exhibited at the Royal Academy of 1887. His deck saloon for the same ship was described as 'a magnificent apartment 42 by 20 feet' and its walls were 'adorned with the following original pictures: "The Lower Thames, Woolwich" by C. W. Wyllie; "The Upper Thames, Windsor" by John O'Connor; "The Old Squire" by J. Pettie, R.A.; "On the Coast of Banffshire" by Colin Hunter, A.R.A.; "Loch Achray" by J. MacWhirter, A.R.A.; "Lisieux, Normandy" by Robert Dudley; "Falmouth" by R. Napier Hemy.'

The room also contained a piano and an

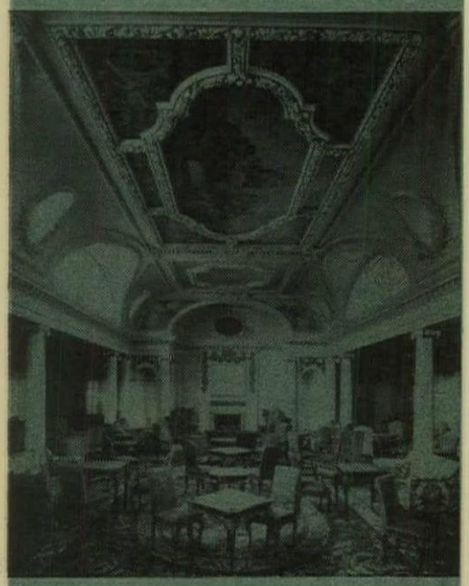
SHIP INTERIORS:

1891: 'OPHIR'



1

1914: 'AQUITANIA'



2

1937: 'STRATHEDEN'

3

organ. Its general character is thus not hard to envisage. The same kind of effect can be seen in Stevenson's drawing, 1, for the 'Ophir' dining saloon (1891).

With their glowing descriptions of carved heraldry, pilasters of walnut in an Old English pattern, stairways concealed by 'a kind of buffet' and panelling inlaid with rosewood and satinwood, these rooms sound as uninviting to the modern taste as they well could. The fact remains that they were an advance and that, in the words of a contemporary brochure, 'great care has been taken that even the smallest detail of ornament shall be complete and perfect, and that, at the same time, nothing should be glaring or inharmonious.' I may mention here that the title-page of this brochure carried out the foregoing precepts in an unexpected way by being designed by Miss Kate Greenaway, a friend of the family.

J. J. Stevenson was eventually followed as the Orient Line's decorative architect by Andrew N. Prentice, a pupil of T. E. Collcutt, who himself at about the time was doing interiors for the P & O liners. Prentice's two loves in architecture were of Spain and of the Cotswolds, but he betrayed neither of these amours in his designs for the interiors of the Orient liners. He used instead an eclectic Palladio-Adamesque style, and in conjunction with this he boldly exploited new materials as they became available—moulded glass decorative lighting features, white metal enrichments, newly imported timbers, unclassical colour combinations.

I remember hearing one of the great poseurs of the period, the traveller and author Cunninghame Graham, remark for a roomful of strangers to hear, on first seeing one of these rooms in which scagliola pillars the colour of buttered egg contrasted intriguingly with lacquer panels of deep peacock blue, that it was the height of vulgarity. It was rather, I thought, merely startlingly original. And yet in all his work for the Orient Line, which continued until the end of the 'twenties, Andrew Prentice never betrayed any knowledge of the existence of the Bauhaus, of Dudok or indeed of anything that could seriously be called a new style. Even *Art Nouveau* escaped him, though the ship decorators had had a stab at it. Prentice's forte remained the designing of reasonably architectural interiors in the eighteenth-century mode, that did not descend to pastiche nor aspire to anything that could be described as '*le style Ritz*'—which, as I shall hope to show, might just as well be known as '*le style Hamburg-Amerika*.'

The furnishings and carpets of these rooms in the early Orient liners were not considered to be within the architect's province. They were all chosen by the partners responsible, much as they would have chosen for their own houses, except that for the ships they had antique models copied, with discreet strengthening. The final effect was undeniably superior to a 'decorator's' interior of that date, but it was thoroughly insular and provincial all the same.

On the Atlantic, though a bit later in date, a somewhat similar process could have been observed. For instance, the Hamburg-Amerika Line appointed Charles Mewès, of Paris, to decorate the grandest rooms of their new liner, the 'Amerika,' completed by Harland & Wolff of Belfast in 1905. As he didn't speak English, Mewès took into partnership the 21-year-old Englishman, Arthur J. Davis, who, having been brought up in Brussels and Paris, was bi-lingual. At the Paris Beaux Arts he had carried off all the prizes open to foreigners and he had already assisted Mewès with his entry to the competition for the design of the Grand Palais for the 1900 Paris Exhibition. They had gained fourth place. Before being commissioned to design the Hamburg-Amerika interiors the firm had designed several grand banks and hotels and they went on to build such monuments as the Ritz Hotel, London, the Morning Post building (346 Strand) and the Royal Automobile Club. It is therefore tempting, if not literally correct, to deny that the Ritz style was eagerly snapped up by the designers of liner interiors and to claim that the Ritz (and, if it comes to that, the grand staircase at Luton Hoo) owed something to some liner interior.

It is perhaps of interest to recall that Mewès, for his first ship, had predictably planned a grand axial vista down the centre line, ignoring the boiler uptakes and engine-room trunkways. The scheme was rejected, probably by Harland & Wolff the builders, as being impossible. It was of course far from impossible, as the German and French shipbuilders of the period were soon to show. This craving for a central axis has persisted and it has since been adopted in liners of various nationalities, though always, in my opinion, at an undue sacrifice of other advantages.

Some of these great ship-board rooms had roughly the proportions of Wren's library at Trinity College, Cambridge, and were entered dramatically at one end by a stairway. Anyone anxious to experience such a room has only to go to dine at the Palace Hotel, St. Moritz.

When it was later proposed by the Cunard Company to build the 'Lusitania' and 'Mauretania,' Mr. Ernest Cunard wanted to secure Davis for their decorative interior work. However, the Hamburg-Amerika Line claimed him as their own and Cunard went elsewhere and appointed James Miller and Harry A. Peto respectively. The next Cunard ship after these was the 'Aquitania.'

Again the Hamburg-Amerika sought to reserve Davis, who was to do their 'Imperator' (later 'Berengaria'). But a

strange compromise was finally struck. The two partners, Mewès and Davis, were allowed to work for the rival shipping companies on condition that one would work solely for each Company and that there would be no knowledge by either partner of the plans of the other. Davis now finally became the Cunard man and was responsible not only for the 'Aquitania' (his lounge in that ship is shown in 2) but for the post-1918 'Laconia' and 'Franconia' and, at the end of his career, for some features of the 'Queen Mary,' including (I have always understood) the decorative mirrors that supplanted the rejected decorative panels painted by Duncan Grant (a sad and even notorious incident). Mewès had died in 1914 and his last ship for the Hamburg-Amerika Line was the 'Leviathan.'

This strange, but prolonged, association between the two most prestigious Transatlantic liner companies and a partnership of two architects both of whom sprang from Beaux Arts sources, no doubt goes far to explain how it was that that kind of opulence in design came to be copied by other shipping companies and so to become, unhappily, their preferred style long after the tune had changed ashore.

Having described the interior design procedures of the Orient Line and of two large transatlantic passenger lines, I must not leave the impression that these were normal arrangements. Far from it. They were quite unusual. The usual thing was for the shipowner to rely upon the shipbuilder to put forward comprehensive decorative schemes for the interiors. These were commonly provided by one of the great furnishing organisations of the period —Messrs. Maples, Waring and Gillow, Martyns of Cheltenham, or Wylie and Lochhead Ltd. of Glasgow, for instance. Entire rooms, proposed in the form of coloured sketches in highly imaginative detail, including all the furnishings, were often accepted on that evidence only. These proposals were in general, to say the least of it, uninteresting aesthetically. Quasi-historical in flavour, they were for the most part true 'upholsterart.' But though the architect-designed interior was infinitely preferable, it did need a continual infusion of new ideas, and these were not forthcoming either from A. N. Prentice, where our own ships were concerned, or from any other source for the great British passenger liners as a whole. By the early 'thirties the standard of interior design had become almost equally fuddy-duddy over the whole field of British passenger vessels. (3 shows first-class reading and writing room on the P & O Orient liner 'Stratheden.')

It so happened that about that date I was still young enough to be critical of the Established Order (I was in my late twenties) and, because ours was a family business, was able to make my critical remarks in circles far more authoritative than are usually available to young reformers in the more democratically organised concerns to which we are now conditioned. Indeed, by the end of the 'twenties my voice (raised, I expect, all too often out of turn) was producing ripples of disquiet in the Pond of Power, and by 1930 the argument that we must have a clearly contemporary design for the new ship then being contemplated was not only listened to but accepted. It was a bold acceptance. My superiors had the candour to declare in effect that though the argument seemed intellectually right, they didn't feel capable of taking the practical responsibility for carrying it out. This, they conceded heroically, was to be mine and was to include the choice of some young lay architect who would be in sympathy with my intentions.

I am not exaggerating in calling this commercial heroism on their part. I was untried and the contemplated ship was to cost over £1 million, which at that date was far from the chicken-feed it may now seem in certain quarters. I do not remember all the names of architects I considered before making my difficult choice, but I know those of Maufe, Oliver Hill, Chermayeff and Wells Coates were amongst them. Some of these happened to be amongst the liveliest established architects of the day, but the fact is that I had become interested in them only because I had seen photographs of their work which had chanced to appeal to me. Such is often the barmy way of an intending client. However, these particular architects all seemed to me likely to be unmanageable; too established, in fact. I felt I needed someone with whom I could identify myself, and (again on the strength of a few photographs) the choice finally fell on a young New Zealander working in England, Brian O'Rorke (now R.A., F.R.I.B.A., R.D.I.) who had almost as clean a sheet of achievements to his name as I had. That first ship, the interior designs for which he alone was responsible, was the 'Orion,' finally delivered by Vickers of Barrow-in-Furness in 1935.

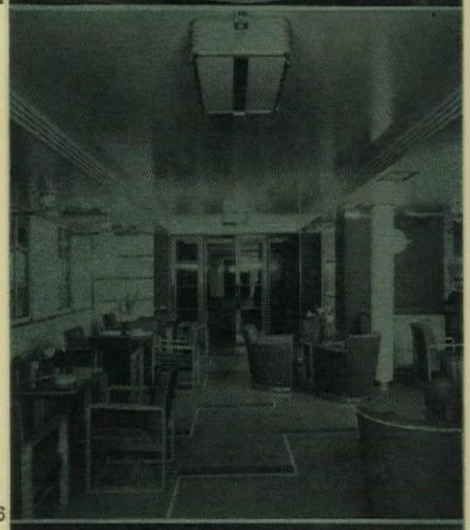
Messrs Vickers had made their great reputation in the field of shipbuilding in naval construction, and it was only comparatively recently that they had started building modern passenger ships for the Orient Line. They were, therefore, not overburdened with preconceived ideas of what a passenger ship ought to be and this happy freedom from prejudice was a merciful asset in our task. There were difficulties ahead enough without having also to argue all along the line against long-established and out-of-date ways of constructing every detail of a passenger ship.

I have recently been shown the sheet of foolscap on which, in October 1933 I wrote, in longhand, the original architect's brief.

WHEN THE BREAK-THROUGH CAME

1935: 'ORION'

4



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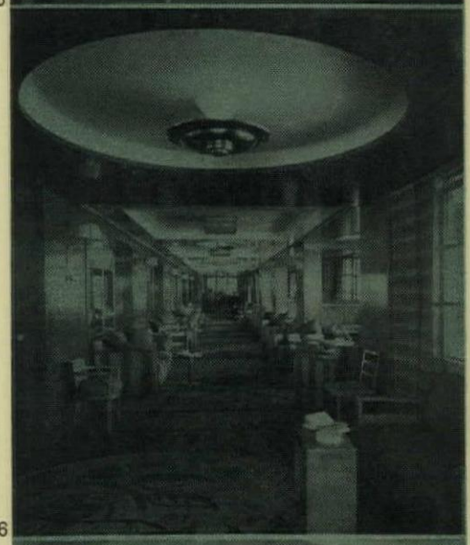

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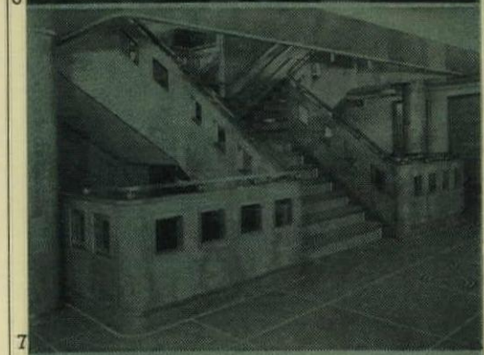

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Nothing could have been shorter, nor more austere, nor more cautious.

'1. Escape from Period decoration without going extremely in opposite direction. Hints of period are not objected to.
2. Produce rooms which will bear sitting in:
(*a*) Every day and night for 5 weeks.
(*b*) Through the tropics.
(*c*) ,, ,, English winter.
(*d*) Highest possible seating capacity.
(*e*) Every seat in a light suitable for reading at night.
(*f*) Flooring not very slippery.
3. Decoration as fire-resistant as can reasonably be procured.
4. Taboos:
Curtains (unless they have a real use, as opposed to being merely decorative).
Close carpeting.
Fireplaces.
Squeak-and-chatter-producing decoration.
Surfaces of decoration or fabric requiring constant upkeep or showing dirt freely.'

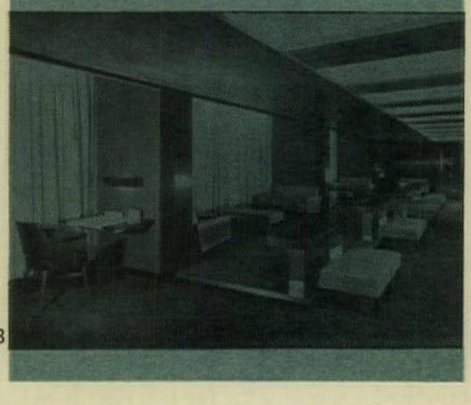
And so it went on, but only for four more paragraphs.

The sheer struggle represented by the creation of the 'Orion,' 4, 5 and 6, was immense, for almost all the components that made up her appearance had to be specially designed and made for her. For instance, we were setting out to escape not only from the shape of every handle but from the dominance of brass as a material. We were a spearhead of the use of white metal at sea, though aluminium was not itself yet freely available and anodizing was a new word. We were fighting the baroque figuration of veneered panelling and insisting that straight and uneventful grain was what we must have. We were rejecting all the damask patterns, all the floral patterns, the cut velvet, plush and chintz, the 'galon', the bobbles, and the vaguely Louis cutlery.

Mr. O'Rorke also had to wean us gently away from some of our more austere taboos—our dislike of curtains (born of the need for air and ever more air on our tropical voyages before the days of air-conditioning) and of close carpeting. It was a series of major upheavals and it was not carried through without pain. There was no accepted vocabulary of modern interior design at that date; no Council of Industrial Design and therefore no Design Centre, and no shops dealing in standard ranges of contemporary fitments (except for a few pioneers such as Heal's and Dunbar Hay).

It would be hard to exaggerate the difficulties we met in persuading proud and successful industries that not a single object in their entire output was acceptable for a modern ship interior. How could we explain to them even what we meant by such an interior? We found ourselves having to discover designers capable of producing new designs for a wide range of products, from carpets to cutlery, the makers of which had no staff designers who understood what it was we were after. And this was not at all easy, for there were no such people as industrial designers. There were a few artist designers, if one knew where to find them.

1960: 'ORIANA'



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The outcome of this situation was, incidentally, that Brian O'Rorke had to design all the 'Orion's' furniture himself—a major task, even if he had had no architecture to worry about. His designs for chairs were, as was our custom, subjected to the entire Board of Directors in prototype form and the sight of those alarming gentlemen earnestly testing their eating, lolling, writing and sleeping qualities, made an impression on the young designer which has kept its horrific freshness till today. He also found himself designing all the light fittings. Neon and fluorescent lighting had not yet become sea-borne, but the boxing-in of tungsten lights in trough-shaped glazed receptacles had arrived as a foretaste of what was to come.

While on the subject of the applied arts it may be interesting to recall that (Miss Kate Greenaway having gone out of fashion) the young designer of the booklet giving publicity to the 'Orion' as a new ship was Ceri Richards. We did, for a later ship, commission a painted ceiling from Graham Sutherland, but alas it somehow didn't seem to fit the circumstances and so was rejected. The 'Oriana,' by the way, daily uses a bugle call generously composed for her, as a gift, by Benjamin Britten, thus accentuating, through yet another art, our continuing effort to create a contemporary pattern on board.

In completing the 'Orion' we owed much to E. McKnight Kauffer for personal encouragement and much general draughtsmanship, design know-how and typographic advice; to Marion Dorn for highly original designs for carpets and textiles of all kinds; to Lynton Lamb and to Alister Morton. Since then, for later ships, the list has become immense. I should like to mention a few names of other people who have created designs for us; those of the late Ernest Race, John Hutton, John Armstrong, Edward Bawden, Humphrey Spender, John Piper and the Australian, Douglas Annand. In the more recent phases of our work there have also been other architects, such as the Design Research Unit; Sir Hugh Casson and his partners; R. D. Russell and his; Ward and Austin; and George, Trew & Dunn.

Through almost all of this work the hand of Brian O'Rorke has continued to be felt, and it was he alone who set the pattern in which the much larger later achievements such as the 'Oriana' (November 1960), 8, and 'Canberra' (May 1961) were created. For them partnerships of architects became absolutely necessary. Our first use of more than one architect had been for the 'Orsova' (1954) when our team had consisted of Brian O'Rorke and John Wright, who was responsible for the flat and all the other special staterooms and the tourist-class Library.

To return to the early 'thirties, there has by chance recently come into my hands a copy of the Schedule of Bills of Quantities for the 'Orion.' It contains 362 foolscap pages of minute instructions, many of them meticulously illustrated. It is a document that now seems to come from another century in its bland assumptions and its leisurely and almost loving descriptions of detail. It is almost Proustian indeed in its appraisal of the qualities expected, for instance, of a secondary staircase. There was no hint that before a quarter of a century was past the stairways in most great shore buildings would have been reduced to utilitarian escape routes not worth improving beyond their original raw cement finish. The staircase in the early 'thirties, 7, was still something of a confection, and it remains so at sea.

Such success as our continuous effort to improve shipboard design may have had has not been entirely based on aesthetics. I am assured that our particular insistence on giving full weight to fitness for purpose has played a large part. It is an angle which has been recently much stressed to me from the shipbuilders' point of view. I have been assured that there were moments when this meticulous attention to what seemed unimportant detail (for instance in the placing of cabin shelves and hooks) brought the responsible officials of the shipbuilders near the breaking point. It has been good, after all these years, to be assured that they later realised the special quality of the end-product.

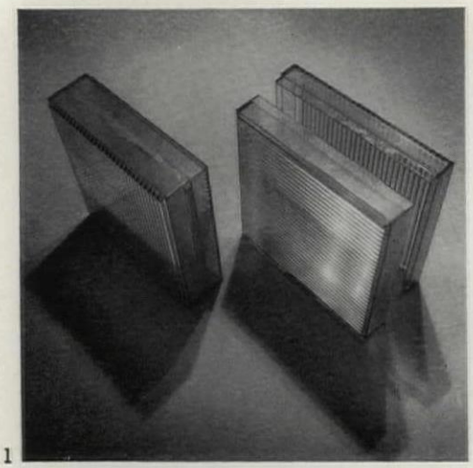
As a new ship, in 1935, the 'Orion' was revolutionary as far as British ships were concerned. She not only influenced the interior design of British passenger ships in general but also of hotels, including their furnishing, lighting and general equipment, and of other kinds of transport including train and aeroplane interiors. She has now run her appointed course and has been duly broken up. She can no longer stand as a witness to the truth of the contention (when the project was being argued about before her building had even been decided upon) that if she was ahead of taste when she came into service, she would end her life still well abreast of it. But this was what indeed happened. She was broken up in her 29th year in 1963.

Design Review

New products chosen and annotated by Ronald Cuddon

DR

Plastics



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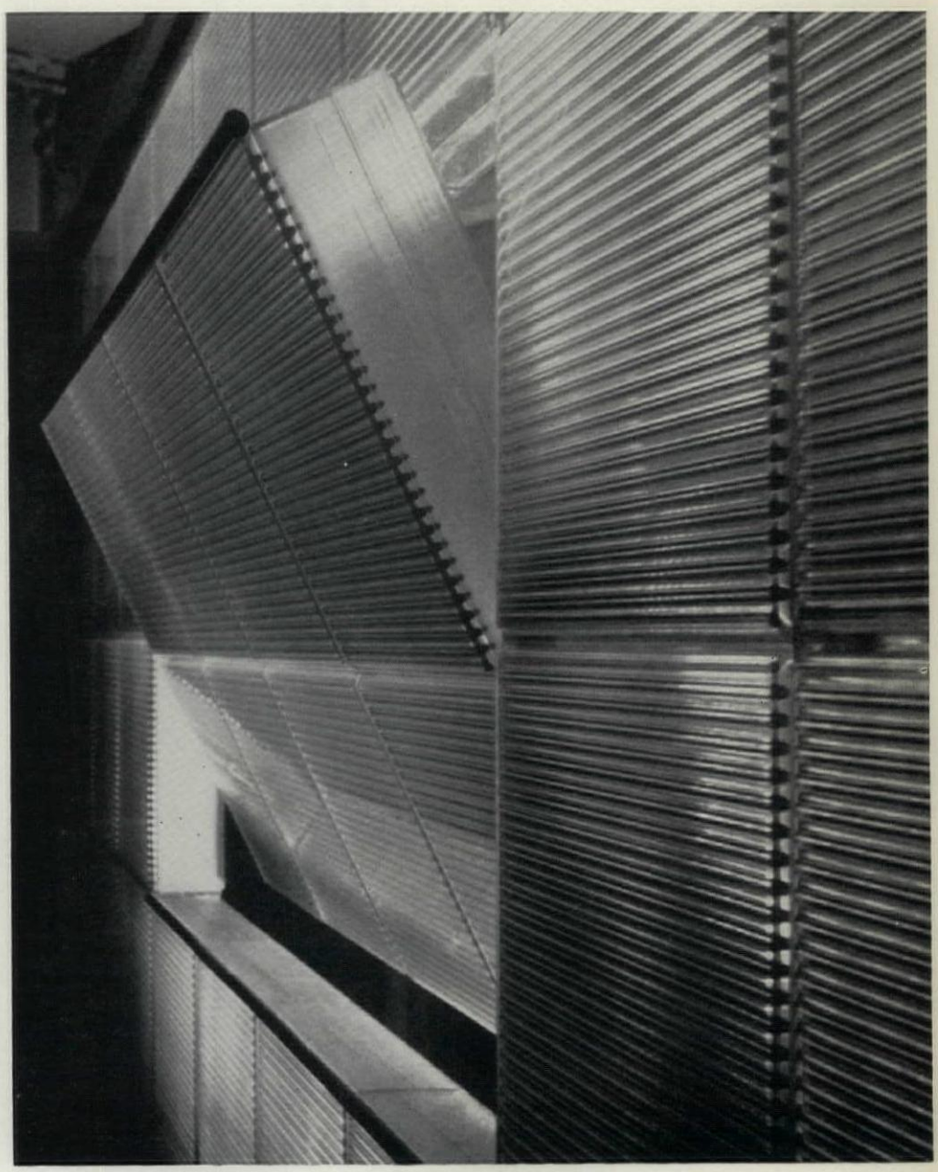
The properties and characteristics of plastics are so extensive and complex that they cannot be encompassed in a short review, and their implications can only be touched upon where they have some application to building and consumer products. Just as the development of cast iron in the nineteenth century heralded an era of intense industrial activity, so the arrival of plastics is seen by many as the all-embracing final answer to the multitudinous problems of design and production in the second half of the twentieth century. Unfortunately when I last visited the International Plastics Exhibition, which returns to Olympia this month, I was more impressed by the mammoth injection moulding machines than by the products which they spewed out; many of the larger sleeker machines, masterpieces of technical ingenuity, were producing some of the nastiest rubbish ever conceived by man, plastics constituting a material which has many virtues but which lends itself to appalling abuse by indiscriminate manufacturers and users alike.

The capital investment in sophisticated conversion machinery, its servicing and running costs, demand that an economic return can only be achieved by continuous production and so voracious an appetite calls for a market of vast dimensions. In consequence all possible outlets are explored to find new applications for plastics whether they are appropriate or not. In many instances plastics are superior in their function than the traditional materials they have superseded. Nylon ropes and gears and polyethylene storage vats are but three out of many examples, and it would seem that it is in the manufacture of components rather than total artefacts that plastics make their most important contribution. In the building industry their value in lighting and sanitation is recognized and more ambitious projects in system building and prefabrication are just around the corner. The ICI heart-unit displayed at the 1964 IBSAC exhibition was a forerunner of things to come. Whether plastics will replace the more basic building materials, like concrete and brick, for structural purposes is a matter of conjecture; unlike the raw materials constituting these products plastics are dependent on highly advanced scientific processes before they can be converted into the simplest of structures. Furthermore their inorganic nature produces surface finishes close to perfection, resistant to the ravages of weather and time. They neither mature nor acquire a patina but gradually take on a dirty discoloured appearance, with the intersections and joints providing vulnerable sources for disfigurement and decay.

buildings for roof-lighting and cladding panels since they can be translucent, transparent or opaque. A new translucent product is Litewall. Originating in Polyester and acrylic plastics are used in Switzerland, it has been further developed in this country by Hellerman Plastics Ltd. in co-operation with BXL Plastics Materials Group Ltd. to meet regulations governing structural fire precautions here. The plastic used is an unplasticized polyvinyl-chloride but Makrolon, another plastic, is also available for applications which call for a material of considerable impact strength. The modules, 1, are made up of two shells to form a unit 200mm. square by 60mm. deep which can be moulded with prismatic, ribbed or smooth faces from crystal, smoked and coloured material. Decorative treatments can be sealed into the modules or cast in high or low relief, a useful factor where it is desirable to integrate trade marks, symbols, numbers and other permanent information into a wall surface. The module is light in weight and can be assembled under factory conditions, cutting on-site installation to a minimum, thus, it is claimed, much reducing costs. In appearance the module is not unlike the glass brick so popular among *avant garde* architects of the 'thirties but this



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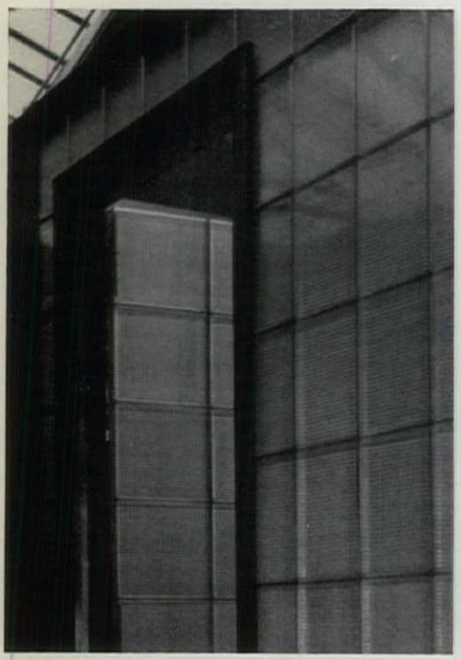

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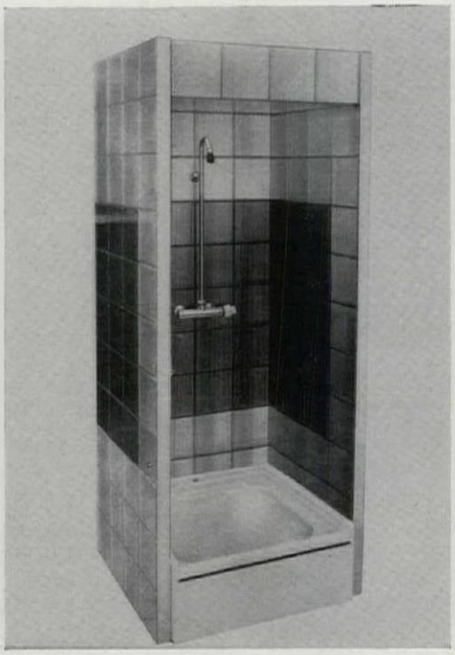

4

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product does seem to have a number of advantages. Especially interesting is the method employed for forming door and window openings with the doors and windows constructed from the same translucent modules as the wall itself and with plastic hinges and other fittings cold welded to the jambs, 2. However where timber architraves are used, 3, the relationship is incongruous and constructionally absurd, and clearly illustrates how new materials require a different design approach and new techniques in construction. The shower unit, 4, is made up from Litewall modules and, although not entirely satisfactory in design terms, it does indicate the scope of this product. Distributors in London and South East England are the Plastic Marketing Co. Ltd. of Sevenoaks, Kent.

The use of plastic sheeting for wall finishes is accepted without question by many people but there is constant pressure on the architect from manufacturers of these materials to absorb ever increasing quantities in his buildings and an extensive range of patterns and textures has been made available. However, except in a few instances where a pattern or texture has a decisive and valid application, it is difficult to appreciate the advantages of plastic sheeting when a skin of plastic emulsion paint can give continuous even surfaces so easily, quickly and cheaply. Flexible p.v.c. sheeting is perhaps most successful when wrapped round other rigid materials to form soft-cornered panels, as in the case of sliding-folding doors or desk tops; 5 shows a screen in the reception area of Bovril House, designed by THM, where an aluminium frame contains a series of plastic-wrapped panels butt-jointed. The plastic is Quox, a Courtauld Group product distributed by Bonded Fibres Ltd. It is a suede-like material of even texture, and is obtainable in a range of six colours.

Initially a herd of small Indian buffalo skins was destined to cover this screen, but to use such precious leather for so large an area would have been an unnecessary and cruel extravagance. A similar material to Quox but of thicker quality called Yak is manufactured in Germany. The colour range is excellent and wider than that of Quox, but unfortunately it no longer appears to be available in this country. Perhaps the most interesting of all flexible sheetings is Mirrorlite, a product developed by the British Aircraft Corporation. It has a mirrored finish of faultless quality and the material can be wrapped or held taut over a rigid frame to form a light-weight very large mirror. It is an uncanny sensation to touch the surface of the stretched fabric to find it pliable and yielding under finger pressure. Mirrorlite is obtainable from the Pearson Light-weight Mirror Co. of Sheffield, a subsidiary of BAC.

Laminated rigid plastics are advertised as a universal panacea but there are serious snags. One is the material's two-dimensional aspect and lack of apparent thickness; the edge detail for the sink unit, 6, illustrates this clearly. The dark line reveals that the surface is little more than skin deep and that the edging strip, because mitring is not practicable, inadequately conceals the substrate

6

material or covers a shallow box. Although this technique is structurally satisfactory the idea that a material should have thickness, and should feel and sound solid when touched, is an important aesthetic consideration often forgotten or neglected. Laminated plastics lack these robust qualities (characteristic of traditional materials) and are therefore best expressed as skins bonded to plywood or lamin-board with edges revealed, or better still by inlaying into the surface of timber serving to protect and complement it in places where plastics are more suitable. They can also be successfully trimmed, as in this carefully detailed tea trolley, 7, manufactured by R. S. Stevens Ltd., where the Formica surfaces are finished flush with the aluminium frame, 8, completely concealing the dark underlay of the laminate. The sink unit is manufactured by Hamer & Scroggs Ltd. of Bristol, who have developed a new process which enables an indented curved, sloping drainer to be incorporated into a Formica laminate working surface. This type of drainer, generally associated with wooden or metal sink units, was until recently thought to be technically impossible to produce in laminated plastic. A wide range of drainers as well as combined drainers and work-tops is now being manufactured employing this technique marketed under the name Trymline Drainaway. Units can be obtained up to 10 ft. in length and widths vary from 21½ in. to 36 in. and include stainless steel single or twin bowls positioned as desired. In interior work a second disadvantage of the use of laminated plastics is the problem of joining the edge of one sheet to another if cover fillets are to be avoided. The cost of the material and the limitation of standard sheets dictates the size and arrangement of wall panels unless, by luck or judgment, the dimensions are such that they can be fitted exactly without expensive cutting to waste. Joints can then be exploited by quirks or metal inserts, but this technique tends to be resisted by many contractors as it is demanding in skill and patience. Perhaps it is because of their concern with three-dimensional factors that architects are frequently fascinated by the qualities of expanded polystyrene, a material incredibly light but obtainable in massive chunks that can be moulded for packaging or carved as though it were a block of aerated Carrara marble. Plastics have been used by furniture designers as an upholstery material for some time but more significant are the experiments with structural shells for seating. Robin Day's polypropylene stacking chair developed by Hille and Shell Chemicals is a well-known example, but another delightful chair in a different price bracket is that designed by Eero Saarinen, 9, 10, and marketed by Interiors International. It has a 'fibreglass flo-mat' shell with latex seat pads which are upholstered in a splendid range of fabrics The total appearance of the chair suggests that it is moulded in one piece, but in fact the pedestal base is a separate cast aluminium component enamelled white to match the fibreglass shell seat. This deception can be forgiven perhaps in a chair of such seductive elegance.
A clever solution to what is in essence an architectural design problem is the banquette seating, 11, in the entrance foyer of the new Queen Elizabeth Concert Hall on the South Bank. The designers clearly


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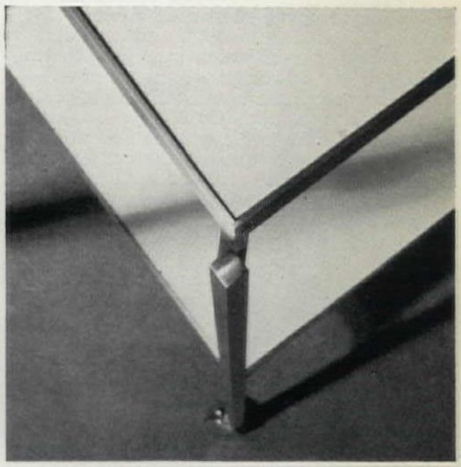
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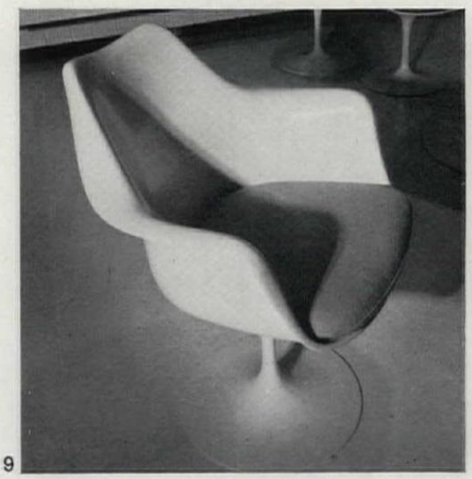
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10


11

wished to preserve the unobstructed floor surface of pristine marble, and a design has been produced which largely satisfies this objective whilst providing comfortable seating accommodation in the superb foyer. A clear perspex drum supports a ring of black leather cushions around the circumference, leaving the centre free to take a clear glass circular surface for ash trays and glasses. The only criticism is that people sitting radiate outwards away from their companions. It could be argued however that these moments are transitory and any minor disadvantage is more than compensated by the excellence of the total concept.
The remaining photographs illustrate domestic consumer goods for which plastics are eminently suitable. 12 shows the Braun Multipress, an ingenious and rather complicated device for squeezing lemons and other fruit and vegetables; 13, the Braun automatic toaster. The former is made almost entirely from a rigid moulded plastic and the latter is an assembly of plastic and sheet-metal parts. Both these appliances have been on the British market for some time but Braun have recently introduced a hair-drier, 14, with a mechanical principle similar to that of a turbo-fan heater. Designed to fit the hand it is made as small as possible, weighing little over ash trays and glasses. The only criticism Duroplast with or without a case. It measures up to the high design standards of most other Braun products and can be seen at the Rosenthal showroom in Brompton Road, London, where these photographs were taken. Unfortunately when these immaculate appliances become defective it is almost impossible to get them adequately serviced without long delays and excessive cost.
The other hair-drier, 15, is a British product designed by Kenneth Grange and manufactured by Ronson Products Ltd. of Leatherhead, Surrey. It has only just appeared on the market and it would seem to be a thoughtfully designed and good looking appliance. Manufactured from acrylo-nitrile-butadiene-styrene (ABS) it also utilizes the turbo-fan principle but it is marginally better to handle and control than the German product.
Finally the range of kitchen knives and utensils, 16 and 17, was designed by Tapio Wirkkala for Hackman & Co. of Sorsakoski, Finland, and is imported into this country by Exqvista Ltd. of London. These elegant tools show how plastics prove to be most useful in combination with traditional materials. The technique of bonding the plastic handle to the stainless steel blade without riveting or other fixings has facilitated the production of an excellent range of utensils which are remarkably cheap, although I am puzzled and slightly disturbed by the way the edge of the blades disappears into the handles. These knives are sometimes to be found in the most ordinary ironmongery shops, as they should be, for it would be absurd to find such basic equipment only in the establishments of discerning retailers or accidentally in ephemeral fancy-goods boutiques.

Product: Plastics

Manufacturers: Hellerman Plastics Ltd., ICI, De La Rue, Courtaulds, R. S. Stevens, Interiors International, GLC, Braun, Ronson, Hackman & Co.


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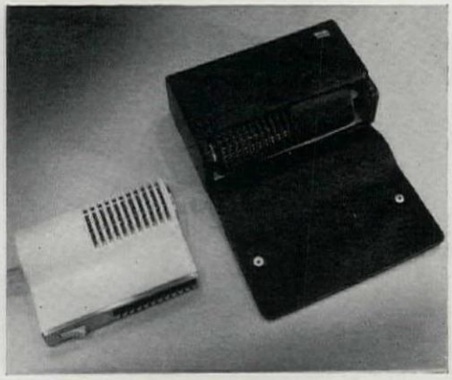
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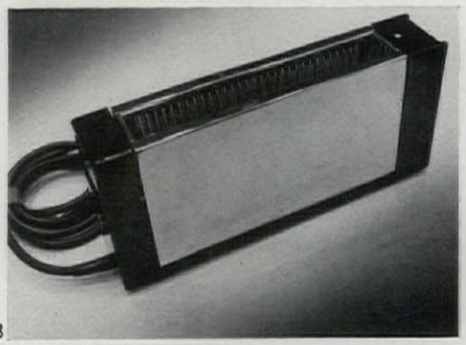
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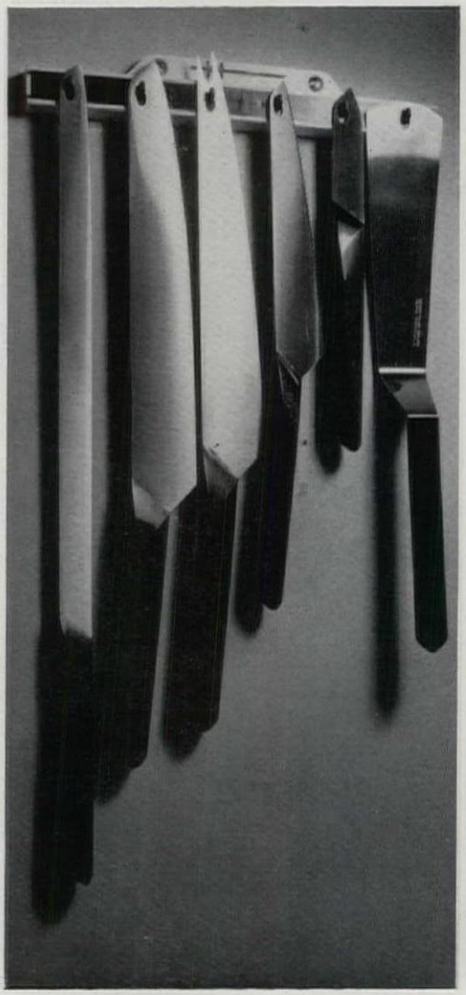
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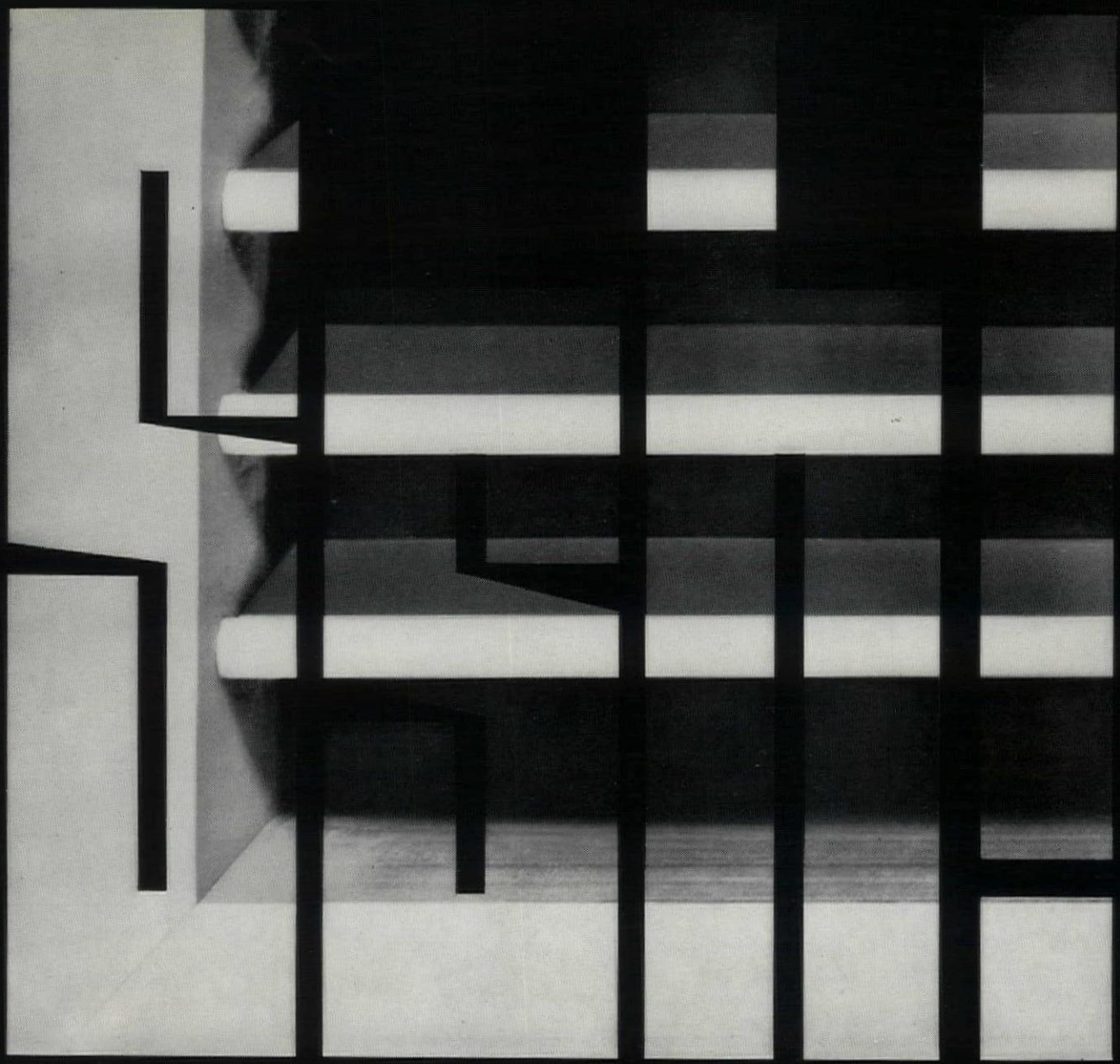

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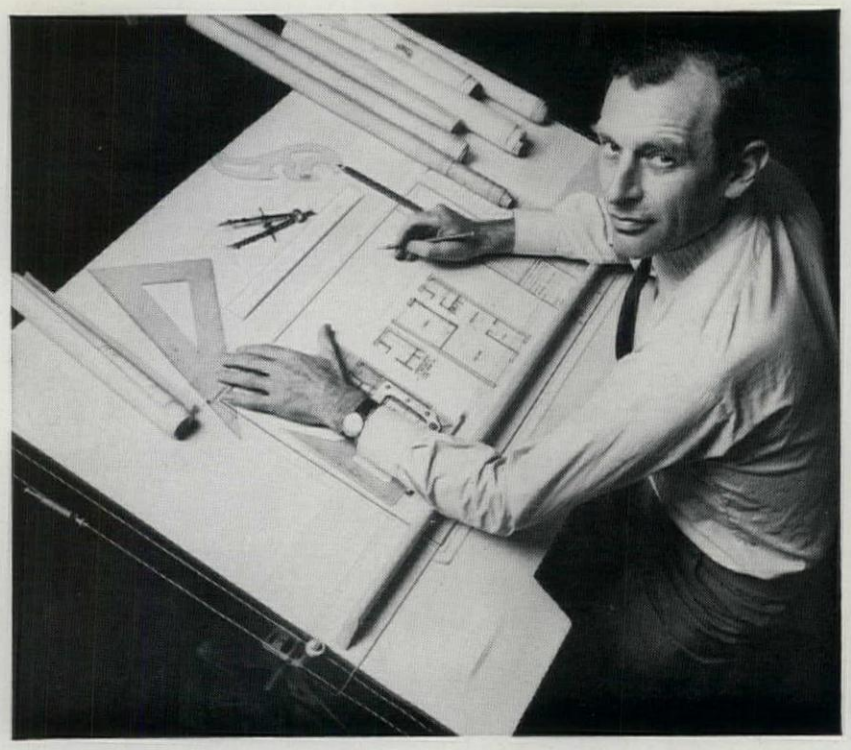

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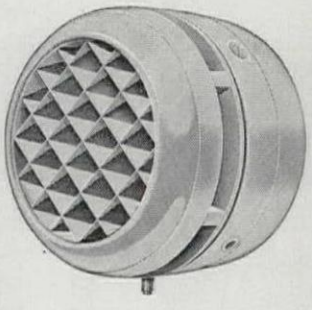

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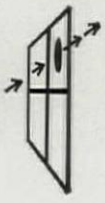

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EXEMPLARY STORY-TELLING

Robert Melville

The provisional catalogue prepared by the Courtauld Institute to accompany the first public presentation of the Gambier-Parry Collection doesn't give any details of the terms of the bequest, but since the ultimate intention is to put the Collection into a specially designed extension of the Courtauld Gallery, it was presumably left to London University on the understanding that the paintings and objects would be kept together. The Italian majolica, medieval ivories, Venetian glass, Islamic metalwork and sixteenth-century Limoges enamels have been chosen with great discrimination, but the only objects which can be said to have a strong connection with the paintings are the three fifteenth-century marble reliefs. The paintings are fourteenth- and fifteenth-century Florentine and are far and away the most important part of the Collection.

1, *'Virgin and Child.' Attributed to Verrocchio. Gambier-Parry Collection.*

It has been necessary to put the Fry bequest into temporary storage to provide space for the new collection, which is at present housed in two rooms beyond the Courtauld Impressionists. This means that it is separated from the Lee Collection, which ranges from the fourteenth to the eighteenth century and includes several examples of fourteenth- and fifteenth-century Florentine painting. It's an arrangement which ruptures the time sequence and it is to be hoped that at a future date the Institute will decide to bring the Lee and Gambier-Parry Collections together and display all the pictures in the gallery in chronological order. After all, the gallery is intimate enough in size to preserve a sense of the separate contributions made by these distinguished collectors without keeping the Collections apart.

The pictures in the Lee, Courtauld and Gambier-Parry Collections extend across six centuries of European painting—the Fry bequest adds a somewhat weaker pendant of early twentieth-century pictures—and the collection as a whole now goes a long way towards realizing Lord Lee of Fareham's dream of providing the University with a compact and comprehensive group of European paintings of high quality as an educational aid for students taking art history and museum technology. It makes the Courtauld one of the most fascinating small museums in the world.

Thomas Gambier-Parry made all his important acquisitions in the third quarter of the nineteenth-century, and although he lived on until 1888, he spent too much on the founding of charitable institutions to be able to add anything of much consequence to his collection after 1875. It was in that year that he sold some minor works in order to purchase a small, very fine fifteenth-century marble relief, 'Madonna and Child with Four Angels,' by the

Florentine sculptor Mino da Fiesole. Several years earlier he had acquired a somewhat inferior relief of the Madonna and Child which he himself attributed to the same sculptor but which is now considered to be the work of a provincial craftsman, based on a lost relief by Verrocchio. This name is of peculiar interest in the context of the Gambier-Parry Collection because Dr. John Shearman, in the latest attempt to solve the mystery of the authorship of the greatest of several paintings of the 'Virgin and Child' in the Collection, 1, suggests that it has the qualities which one would expect to find in an early work by Verrocchio. His well-argued attribution, published in the special March issue of *The BurlingtonMagazine* devoted to the Collection, is not likely to go unchallenged, but everyone who has seen the picture will agree with his contention that 'we are not looking for the Master of This or That, but for one of the great names of the Quattrocento.'

Perhaps the strangest and most original thing about this grave and gracious masterpiece is the way in which fine strands of gold are mingled with the paint to give the muted colours a sombre gleam. I have never seen the goldsmith's craft put to more subtle or expressive use. These delicate wisps of gold appear in various parts of the painting, not only as an unassuming decorative element, but as a kind of enriching veil over the shadowy areas of the Virgin's cloak and as the highlights in the landscape and in the hair of both the Virgin and the Child, lending their haloes the look of a biological phenomenon. It brings the long, straight, almost straggling hair of the Virgin marvellously to life, and one is left with the impression that the iconographical shaft of gold which plunges out of Heaven in paintings of the Annunciation not only penetrated her womb but suffused her entire being.

The Annunciation itself is very touchingly represented in two panels by Pesellino, 2 and 3. The angel's diffidence suggests an acute awareness of the moral dilemma into which the Virgin is precipitated by his mission, and the sexual implications are delicately reflected in her response, for although she is fully clothed her hands instinctively make the protective gestures traditionally associated with representations of the nude. The most brilliant area of colour in the picture is the vermilion counterpane on the bed, glimpsed through an open doorway; it underlines the nature of the angel's mission and draws attention to the single pillow, which implies that the Virgin sleeps alone.

Another fifteenth-century panel, which has been ascribed to numerous Florentine and Tuscan painters since it entered the Collection, treats the Annunciation as a joyous celebration. It's wonderfully light and decorative; the angel is an engaging young procurer with wings as brightly coloured as the head-dress of a Red Indian chief. Another angel, who resembles a fat-cheeked Cupid, leans out of the sky to blow shafts of gold at the Virgin's thighs and the dove winging down the shafts spits a wide spray of gold from its beak as if the artist were recalling the more open-handed way in which Zeus splashed the gold about when ravishing Danae.

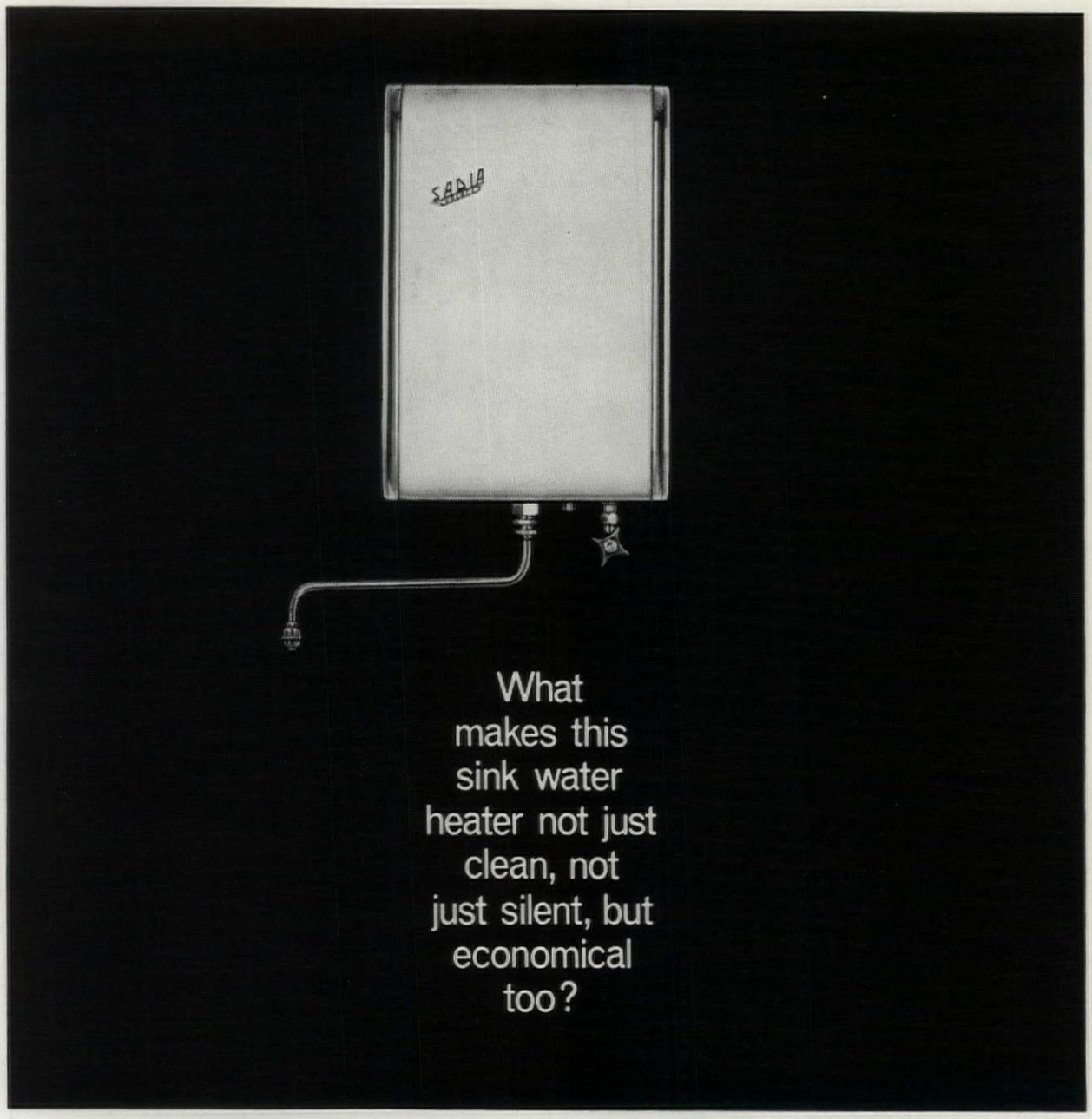
2

3

4

Albertinelli's small panel of 'The Creation,' 4, probably painted very early in the sixteenth century, has something of the poetic atmosphere of Piero di Cosimo's mythologies. God appears three times. First on a distant rock, creating a concourse of animals, with a splendid white horse conspicuously rearing; then helping a faintly reluctant Adam to rise from a sitting position on the ground; and finally raising his hand for the drawing out of a fully grown Eve from Adam's side. At this point, God is set deftly in the centre of the composition and manages to look somewhat taller than his creatures. Eve is being assisted by two angels, and only her feet are still inside Adam, who understandably enough is sitting down again. This biological absurdity is depicted with a gravity and tenderness quite beyond the reach of trick-film magic. The final episode is devoted to the Temptation, and God is replaced by a serpent with a handsome human head. It's essentially a Humanistic work: the human figures are given a firmness of form and a poignant dignity denied to God in his loose, flapping robes.

'The Story of St. Quiricus and St. Julitta,' 5, 6, 7, a Tuscan three-panel painting of the early fifteenth century which has had several attributions that wouldn't stick and is now attributed to 'The Master of St. Quiricus and St. Julitta' (because an art historian has found a 'Maddonna and Saints' which he thinks may be by the same painter), is a delicious example of narrative painting. Nevertheless one would be almost certain to puzzle out a totally different interpretation of the story if the



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verbal records were lost, so people who despise illustration should be able to derive pleasure from this enchanting picture by considering it purely as a composition with figures. If they despise figure painting, too, they will at least be able to appreciate the featureless part of the pink wall over the heads of the figures in the first panel; the pink is as silky and voluptuous as those impeccable sheets of flat colour produced by Ives Klein and Roger Cook. Others will have the added pleasure of following the curious results of an early strip con-

6

vention. Julitta and her child, accused of embracing Christianity, are brought before a judge who takes the child on his knee to persuade him to renounce his faith; but the child slaps his face, whereupon mother and child are put to death. It's evident in the first panel that the child has an intractable disposition and has entered the hall in a belligerent mood. In the second panel he goes out

7

of his way to be provocative by offering up a prayer to his God before allowing the judge to pick him up, and it's doubtful if he gave the judge much of a hearing before slapping his face. The turn of events in the third panel makes it clear that the judge must have been infuriated by the child's conduct, for although he leaves the mother to the professional executioners he stabs the child himself.

The triple representation of the child in this panel allows for two different readings of the situation. Looking at it one way, he offers up a prayer to God before returning to the lap of

8

9

the judge, and after the stabbing falls dead. But since the image of the dead child lies between the image of the child raising his hand to God and the child being stabbed, the progress of events—which read from left to right in the first two panels—can now be read from right to left: the child is stabbed, dies and is reborn.

Some captivating if rather less intricate ways of recounting religious stories are to be found on some of the majolica and Limoges enamels. The story of the crossing of the Red Sea, very difficult to translate into a pictorial image, is tackled with zest on a majolica plate, 8, where the parted waters assume the appearance of a couple of angry personages; and in a lovely Limoges enamel of the 'Nativity, 9, containing rich dark blues and purples, Joseph stalks into

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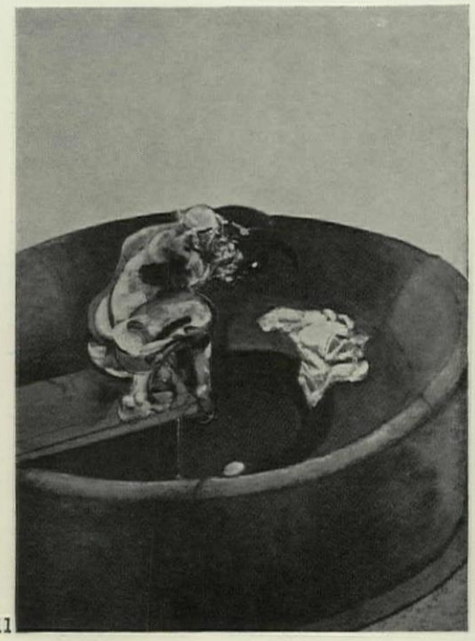

11

the stable like an antique god, carrying a triumphant torch as if celebrating, somewhat surprisingly in the circumstances, the evidence of his virility.

If someone should leave the Courtauld a collection of twentieth-century paintings of the same weight and authority as its group of nineteenth-century masterpieces, the English painter one would expect to be represented is Francis Bacon. His paintings would not look as *avant-garde* as those of the Fauves and Cubists but might bear the same sort of relation to them as the Daumier 'Don Quixote'—which looks like a lacerated old-master with all the nerves exposed—bears to the Seurats and Cézannes.

The catalogue of Bacon's recent exhibition at Marlborough Fine Art includes an interview with David Sylvester in which the artist expresses a somewhat excessive horror of the narrative element in painting, and it would seem to account for the large number of portraits among his recent works. These canvases are small enough to allow him to concentrate entirely on the kind of brush-marks which he had in mind when he made his well-known remark about taking advantage of what happens when splashing the stuff down. I think many people will feel that they express his sense of predicament in a more dignified way than his figures in dubious situations and macabre settings, and they may well convince the waverers at last that he is indeed one of the greatest of the modern masters. The virtuosity of the brushwork is staggering, as can be seen even in this half-tone reproduction of one of his many portraits of Isobel Rawsthorne, 10. But in these portraits his sense of drama, which I have always in the past admired without reservation, is divorced from situation, and it compels him to approach portrait painting in the spirit of a sadistic masseur. The results, brilliant though they undoubtedly are, have for me something of the depressing atmosphere of the documents of a case-history. And as if he were not entirely gratified by his manipulatory activities, he adds demonstrative paint splashes which have no connection with the remaking of the face. The white smear running across the cheek in the portrait reproduced is a case in point. I hardly think he would consider it permissible to read it as a nose-drip blown sideways by a sudden wind, and it seems to me to be a kind of rhetoric, an exhibitionistic flourish, an attempt to compensate for the absence of a situation.

In the interview with Sylvester he makes an interesting remark connected with his paintings of figures in settings. He prefers at present to deal with a single figure because as soon as more than one is involved, the relationship between them sets up a kind of narrative. Then he adds, 'I always hope to be able to make a great number of figures without a narrative,' and Sylvester says 'As Cézanne does in the bathers,' and Bacon answers in the affirmative. But I don't see how a romantic painter like Bacon can ever hope to invade such a purely classical domain. He has already attempted it in some of his finest things, and the result is always a comment on human alienation. In the most successful of the paintings of single figures in settings, the setting itself or an object in the setting operates like another figure to introduce an ambiguous story-telling element. The recent exhibition included a superb example called 'Portrait of George Dyer Crouching,' 11, in which the figure appears to have edged along an enigmatic plank across a piece of furniture which has become an image of inexplicable dread.

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FARINGDON IN PEACE?

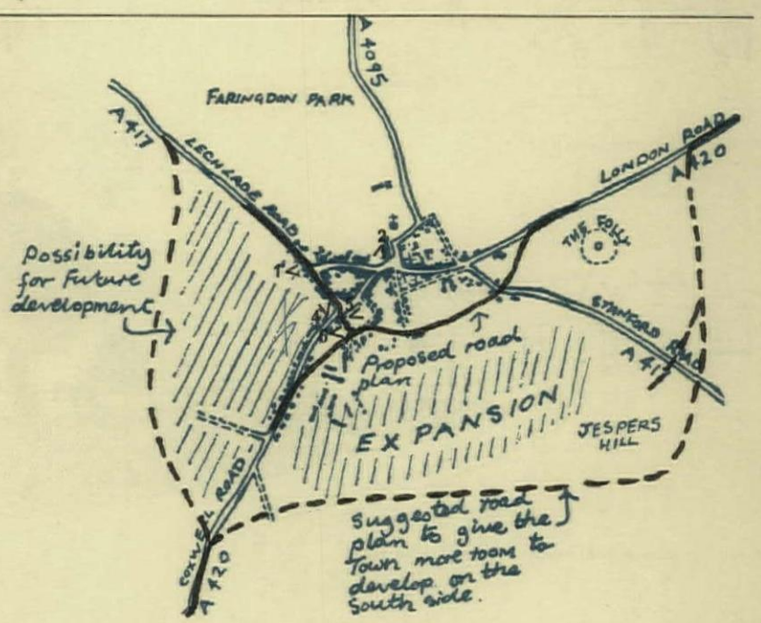
Richard Reid

Faringdon is an example of the small country town threatened by the wrong kind of by-pass. Situated on the Ridgeway between beautiful stretches of the Upper Thames and the Downs, and the market centre for the farmlands of the Vale of the White Horse, it is one of those towns that has largely remained unaltered, with the exception of mod-cons and the inevitable fringe of by-pass modern, since the turn of the century. It is seventy-one miles from London and eighteen miles south-west of Oxford, and has a population of nearly 15,000. But for a few light industrial works the principal activity is agricultural. The local limestone and mellowed brickwork buildings date mostly from the eighteenth century, although the church is twelfth century and the two hotels and some of the shops have seventeenth century features.

In recent years the motor car has held the town to ransom as, yearly, the traffic has increased, making the bottlenecks on the town's only through road, the main shopping street, worse and worse. Everybody has agreed that there should be a by-pass, and one is in fact proposed by the Berkshire County Council. Unfortunately the intended position is incredibly short-sighted.

Instead of taking this by-pass in a clean sweep away from the town, thus allowing enough room for future development, they've only just skirted the town along the south side to bring it swinging back to meet an eventually widened road along the west side (Lechlade Road to Station Road) at another jolly little suburban roundabout. Not only are they cutting off the new development along Coxwell Street (which is pretty ropey) very soon they will be in the ludicrous position of planning for people to cross from one side of the by-pass to the main facilities in the existing town centre. Little Johnny will be playing chicken with the traffic to get himself and his satchel to school.

But these proposals are only half the matter. If something isn't done soon many of the more definite spaces in the town, to which new development should be joined if Faringdon is to continue as an evolutionary growth, will be swallowed by the by-pass or give way to roundabouts. There are three of these spaces in particular. There is nothing marvellous about them architecturally but they are the basis for knitting new development into the town. One of these areas is the junction between Gloucester Street and Lechdale Road, 1. This is the beginning of a sequence of spaces. Walk from here down Gloucester Road to its junction with Marlborough Street, 2. Now from this space you squeeze through and beyond to the left into Market Place, 3. The view of Market Place is drawn from the entrance off London Street. In the centre you have the old Town Hall while through into the space on

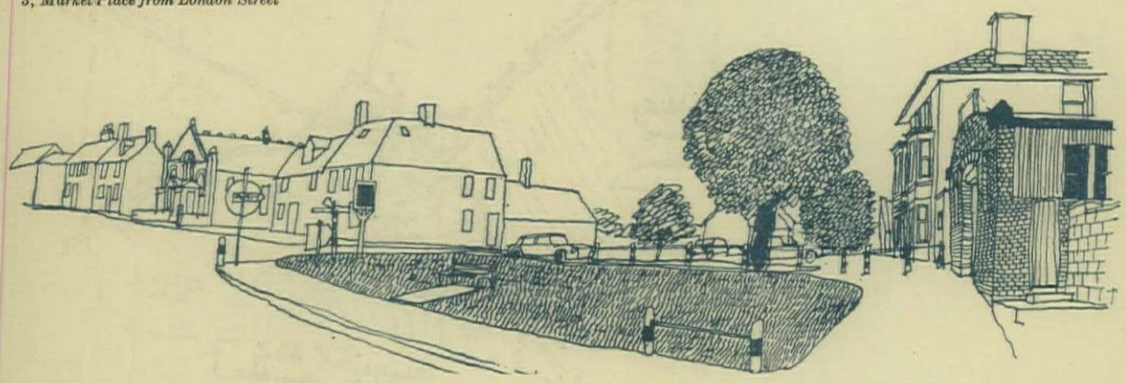


Plan of Faringdon. The numbers indicate the view-points from which the drawings were made

1, junction between Gloucester Street and Lechlade Road

2, junction between Gloucester Road and Marlborough Street

3, Market Place from London Street



4, junction between Marlborough Street and Station Road

5, Marlborough Street, view looking west

6, junction between Station Road and Bromsgrove Place

the right you come to the twelfth century church. And if you walk back to London Street and up the hill, across the fields on the right to the Folly you have fabulous views of the Berkshire and Wiltshire downs and the Cotswolds stretching out below you to the horizons. And this view will not be too pleasant when you have to cross a by-pass for the pleasure.

Back to the road on the west side of the town we are still left with two nore spaces worth keeping. One is the junction of Marlborough Street with Station Road, 4. The road to the side of the White Hart is to be widened, with a slice off the green, when the planners ought to be enclosing the space instead. Especially as, turning right from here, you see the view down Marlborough Street, 5. When you walk along Station Road to where it joins up with Bromsgrove Place this whole group, 6, except the church, is to be replaced by a roundabout.

These areas may not be as good as Market Place, but just imagine what will happen when they go and all that is left is a lot of tatty semi-detacheds. It would be so much better to take the by-pass round the south of the Folly and south even of Jespers Hill and past the nursery and back on the road to Swindon in the south-west (see plan).

As for the through traffic coming in along Lechlade Road, why not catch it before it comes into Faringdon and take it much further away from the western edge of the town, join it up at the end along Coxwell Road and then you can have your roundabout and whizz off to Oxford or Swindon or wherever you want to and leave Faringdon in peace and still with enough room to play with.

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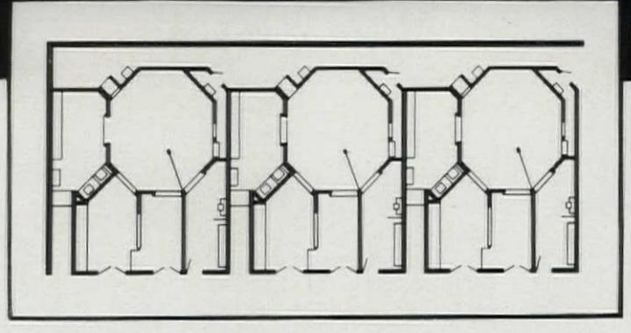

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TREMADOC

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Tremadoc was largely built between 1800 and 1811 by William Madocks, M.P., and his agent John Williams on land reclaimed from the Traeth Mawr estuary. Madocks almost certainly planned the town. The only relevant drawings which have survived are thumbnail sketches in his voluminous correspondence. His favourite method of planning, 'settling on the spot,' avoided the usual pitfalls of drawing board work, but lack of drawings could lead to crises since Madocks was often away from home. The breathless urgency of his epistles

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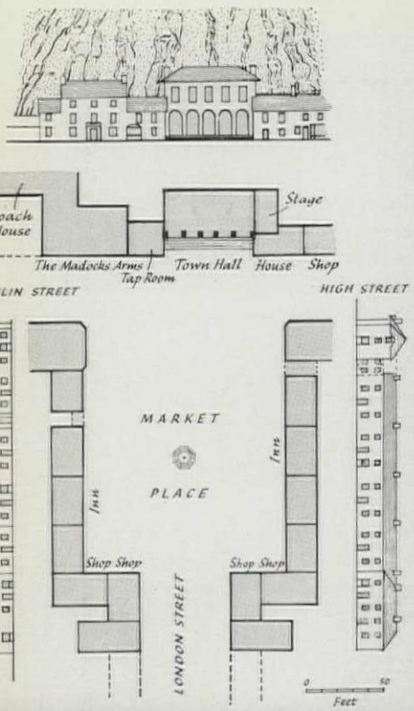

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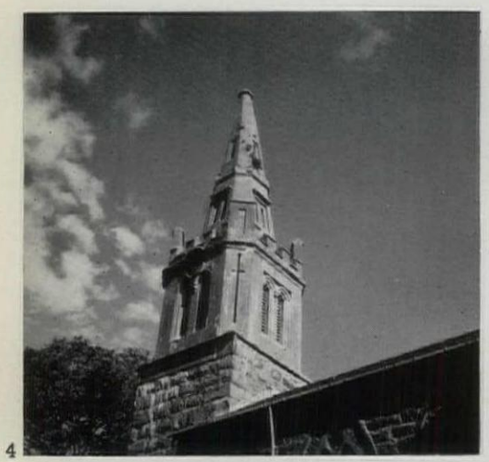
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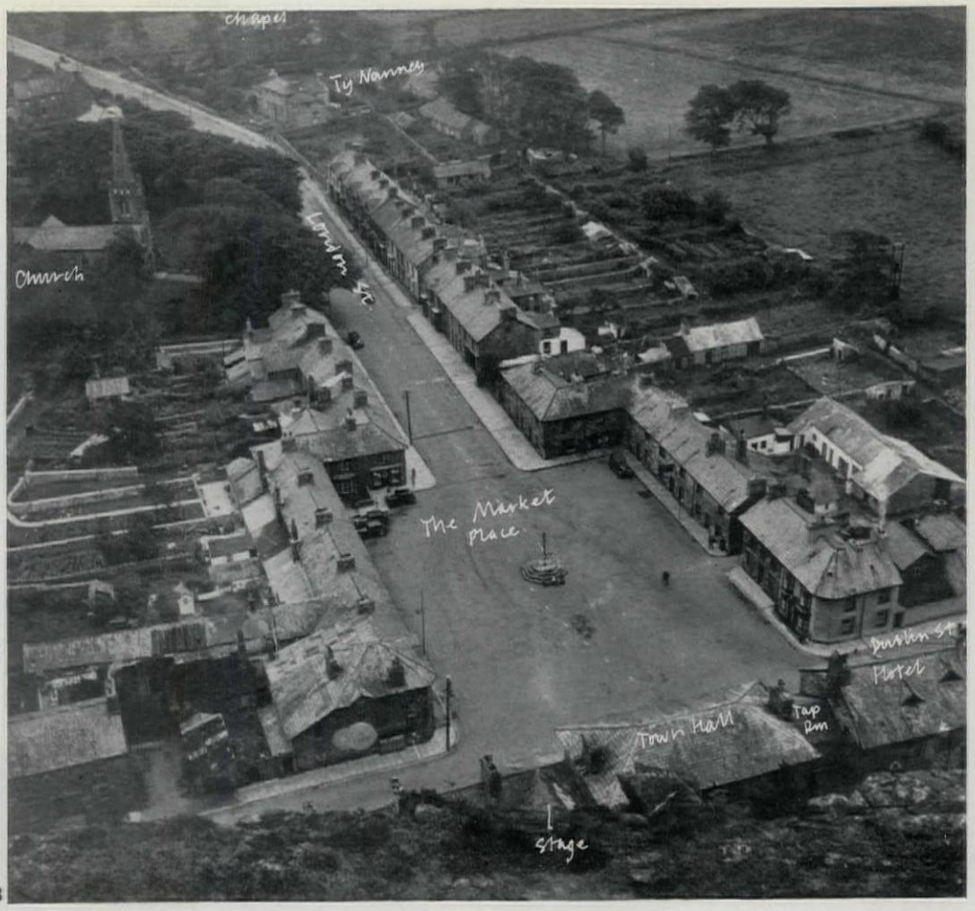

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bring the whole enterprise to life. ('There has been the greatest *Blunder* imaginable . . .' he was to write when the setting out of the town hall went awry).

With the Madocks Arms and the tap-room the town hall forms the focus of the Market Place, the hub of the town, 1 and 2. Although probably not started until 1807, it must have been considered early since its siting under the towering crag, 3, which was once the cliff on the Caernarvonshire shore of the estuary is the key to Tremadoc's outstanding success in planning terms. Without this stupendous backcloth the modest range of classical buildings would be interesting enough, but the great rock gives a sense of finality and drama to which few buildings could aspire.

This was typical both of Madocks's sense of site, and also of his sense of economy. This economy is also evident in his dual-purpose planning. While the town hall has obvious professional origins, its design has been modified with typical ingenuity. Normally the open arcaded space of the ground floor served as the market hall; the room above was used for meetings and probably the school. But for the brief but hilarious Tremadoc season, the market space was converted into the auditorium of the Tremadoc Theatre. A hint of this is given by the Coade keystones representing players' masks which decorate the arcade. Closer inspection shows a proscenium arch (now blocked) in the party wall to the neighbouring cottage. The back part of this cottage was the stage. On such occasions the room above became the dancing room. It was approached from the tap-room, so there was no staircase in the town hall itself to interrupt the floor-space. This plan also meant that the functions of the two floors of the building were usefully separated. The dancing room has a small musicians' gallery in the long wall facing the great windows looking out over the square.

The completion of the church (technically only a Chapel of Ease was allowed) caused


5

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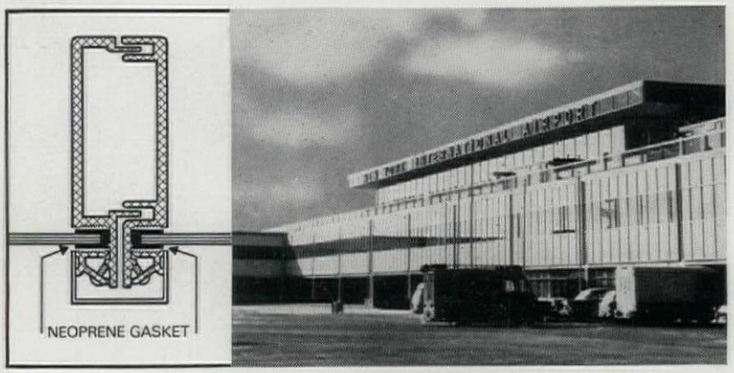

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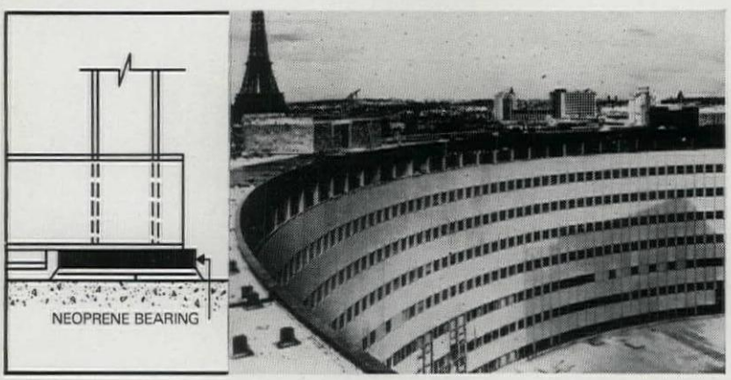

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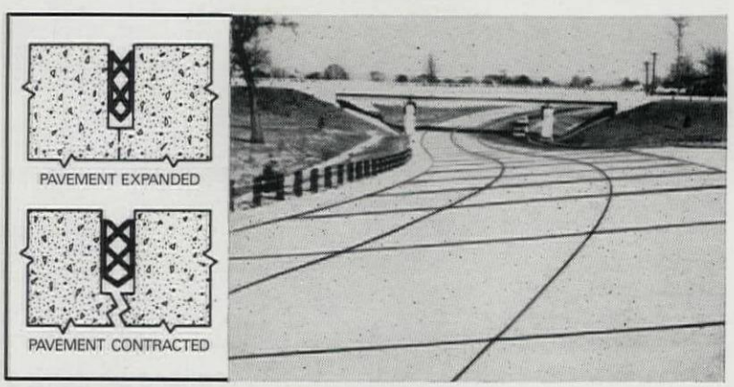

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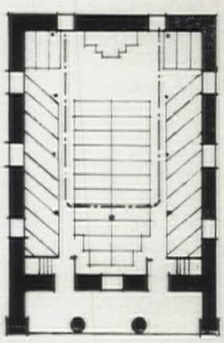
Madocks much anxiety, and his letters contained frequent injunctions to 'drive on the steeple' and similar exortations, but most tourists were gratifyingly enthusiastic about its 'neat gothic,' 4. It was one of the earliest Gothic Revival churches in North Wales (Yspyty Ystwyth by James Wyatt seems to be the first), though there may be earlier examples in South Wales. In contrast to the classic town hall it is romantically withdrawn at the edge of the town on an outcrop of rock which was once an island. This gives additional importance to its not very high spire. The organ, box pews and stained glass have all gone but the 'most superb and elegant' Coade gateway has survived, 5. Its transport presented a problem: Tremadoc was built before Portmadoc existed, so everything coming from London by boat had to be landed in a small natural bay where there was no quay.

While the church excited contemporary interest few noted the 'handsome conventicle' which was the chapel, 6. It had to wait until 1941 to be painted (by Kenneth Rowntree for the *Recording Britain* series). New nonconformist chapels were rare in North Wales in Madocks's time; the gentry had little sympathy with the movement, and for him to allow, let alone encourage, the construction of any chapel. came as a surprise to his colleagues. Architecturally the building is still very surprising. It is the earliest Welsh nonconformist chapel which I know with the pulpit and communion table at the 'east' end instead of in the middle of one of the long walls (many have been altered internally since they were first built). This was probably because of the axial use of the portico (freely adapted from some copy book provided by Madocks?) It meant that the doors had to be in a short wall; the pulpit as the focal point of a chapel was always planned opposite the entrance. To overcome the greater distance from the rear seats to the pulpit, the pews are raked both in plan and section, as shown in 7, giving an intensely dramatic effect. The galleries were probably added a little later, since there is no mention of their cast-iron columns in the original accounts. The most expensive item was the timber: imported Baltic scantlings for the roof, which spanned about 46 ft., cost far more than the local oak.



7

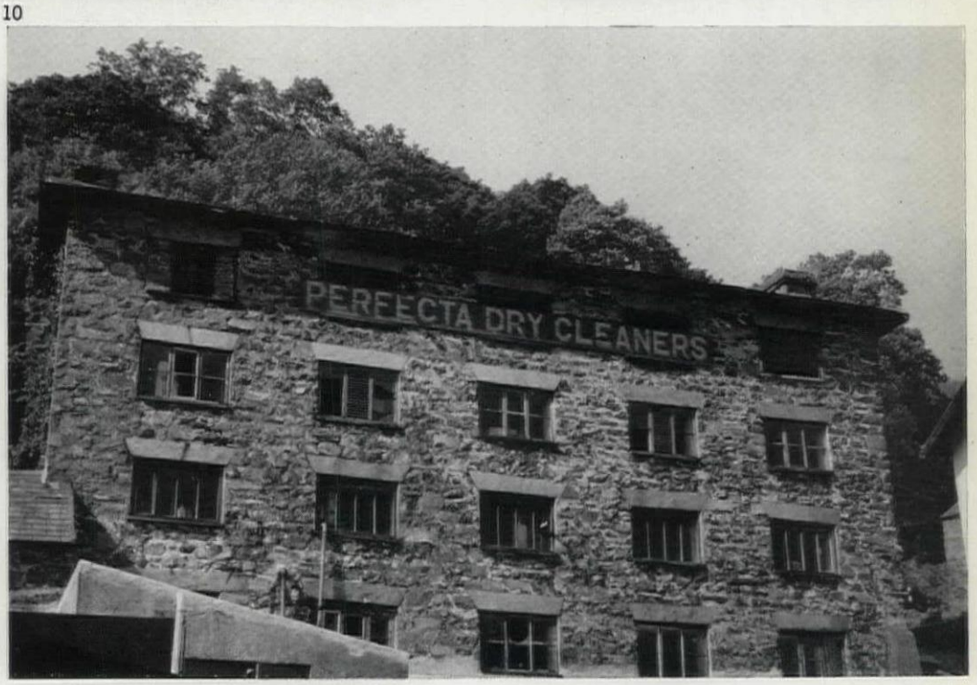
Ty Nanney, 8, is the only villa to be built in Tremadoc itself. Architecturally it is the most successful, but its site is dull by comparison with the wonderfully romantic places where Madocks chose to build. The house was probably built by his brother and may have been finished by David Nanney after John Madocks' death. The low pitched roof and deep eaves are typical of Madocks's buildings and were then quite new to Wales. This house has similarities in detail to John Madocks's villa, Vale Mascall, in Kent.

6

8

9

10



The manufactory, 9 and 10, was one of the first water-powered woollen mills in the Principality. Justifiably Madocks took great pride in it and sited it, unlike later mill-owners, for all to see between his own villa and the town. The industrial area of Tremadoc adjoined his garden. It was powered by water from an enchanting lake which he formed in crags above. Since the idea of spinning and weaving by water-power was then quite new he greatly feared that its importance might not be grasped by his agent: '. . . for Heaven Sake Make the Pool at the back of the Factory on the *Grandest Scale* possible' is a typical, appeal of the 1806 letters. The building had been completed the year before, and Madocks had ordered that it should be *well yellowed* and the windows painted *dark* green. When it was advertized for sale in 1810 it boasted 'machineries of the most improved construction calculated to make and finish fit for market, mixed and medley cloths, kerseymeres, woollen cords, coatings, flannels and woollen goods of every description.'

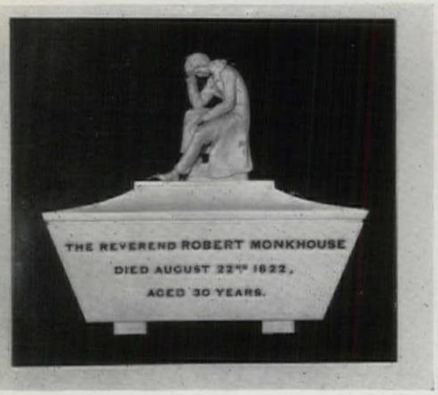
ELISABETH BEAZLEY

For the original of the town and its name, see AR October 1966. A review of Miss Beazley's book about its founder is on page 407 of this issue; the plan, 2, is taken from this book.

2

CUMBERLAND SCULPTOR

Gunnis, in his invaluable *Dictionary of British Sculptors*, 1660–1851 (1953) devotes about a page to Musgrave Lewthwaite Watson, the Cumberland sculptor who was born in 1804 and died at the age of forty-three in 1847. But as Gunnis was not aware of Henry Lonsdale's *The Life and Works of M. L. Watson, Sculptor* (London, 1866) he did not draw attention to Watson's earliest monuments and probably his most interesting. Gunnis reports that Watson was a difficult, moody, depressive man, that he went to London in 1823, became a pupil of Sievier and spent the years 1825–28 in Italy. In 1828 he went back to Carlisle for a short time, and he then worked as a modeller for Chantrey, then for Behnes and Bailey and for Croggan's Lambeth terracotta works. Lonsdale is more explicit and more detailed. The family were yeomen of Sebergham. The father was the son of a shepherdess. The boy attended the village school and excelled there. So in 1821–24 he studied law at Carlisle and attended Dunbar's modelling class. To his emotional difficulties two things must have contributed. He lived with a girl whom he had married only 'left-hand,' and he was subject to fits of somnabulism. In Rome he frequented the German café (i.e. the Café Greco) and mixed as well with the French students. He spoke both languages. On the journey he also visited Naples and Paris.



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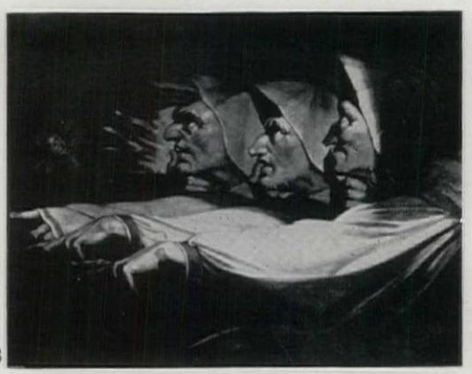
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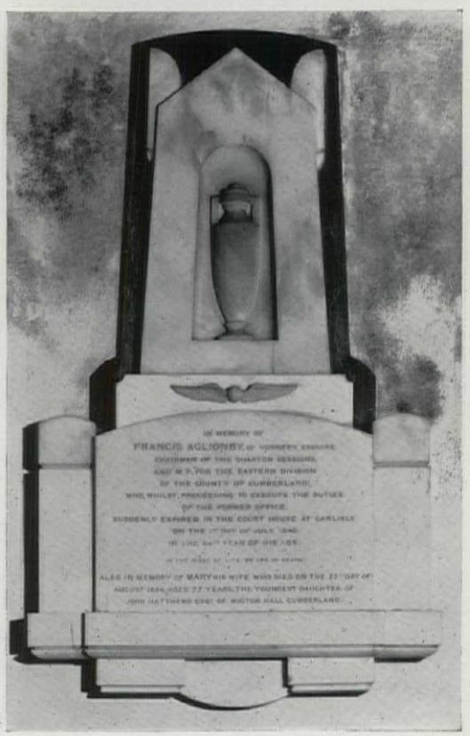
4

Only in his last five years was Watson really successful in London, and Gunnis writes about these last works. The earliest work of Watson's we have is the tablet in Roughton Head church, to his schoolmaster to whom he was devoted, 1. The schoolmaster died, aged thirty, in 1822, and the memorial is both tender and engagingly naïve. Next comes the tablet to his father who died in 1823. This, 2, is of an amazing power and concentration, and would raise Watson to the height of Flaxman and Westmacott, if it were not for the fact that the group of the Three Fates is taken almost literally from Fuseli's Three Witches, 3, shown at the Royal Academy in 1783, engraved by J. R. Smith in mezzotint and now at the Kunsthaus in Zurich. To these two a third unpublished monument may be added, although it is not so early. It is that to Francis Aglionby at Ainstable. He died in 1840. A statue to him by Watson, dated 1845, is in the Assize Courts at Carlisle. The memorial, 4, is out of the ordinary run because of its total absence of ornament, the excessive elongation of the urn and the entirely unmoulded acroteria. Here, as in the tablet of the Three Fates, we can perhaps sense the tensions in Watson's character.

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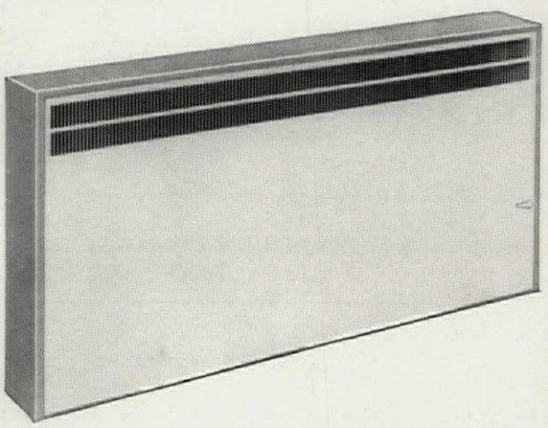

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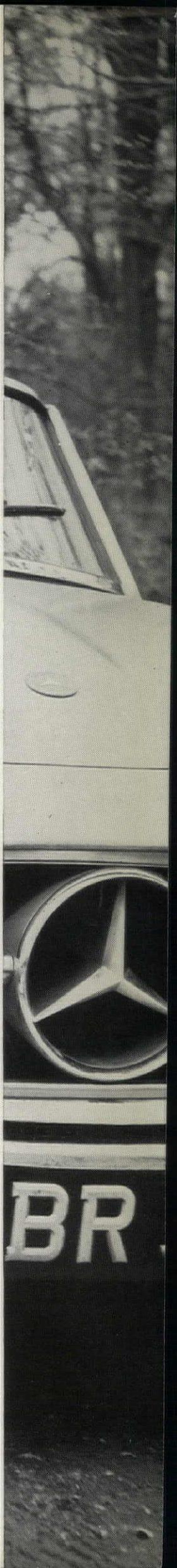
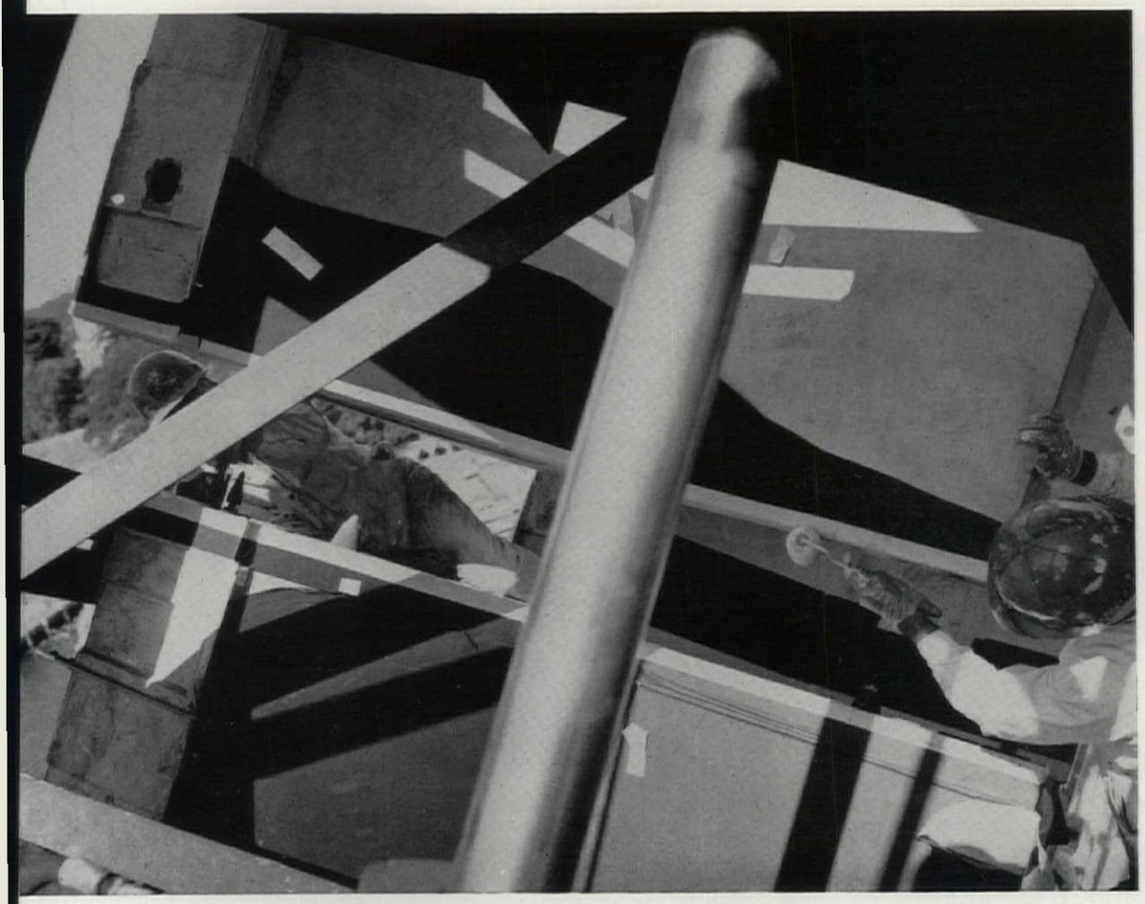




1, *Sydney Opera House*, 1965 (*J. Utzon, architect; Ove Arup and Partners, consulting engineers*). *Preparation of the joint of a precast concrete element for bonding with epoxy resins.*

skill

Joints

June is the month of the Plastics Exhibition. To date by far the most important applications of plastics in building are in the field of component jointing: this is the area in which real technical sophistication promises to enter at last our craft-based industry. In this article David Kirby reviews component jointing as it now is, approaching his subject from the point of view of the criteria which have to be met. Not all of the applications use plastics materials, but it is surely no accident that so many do.

In current architectural practice, the working drawing bears a close resemblance to the type of assembly drawing used by early nineteenth century engineers. These engineers also used the craftsman principle of fitting part to part by careful final tooling so that considerations of joint design were left to be resolved on each job. Traditional constructional techniques follow a similar principal with the additional refinement that as each trade follows the preceding one, the tolerances become closer, each tradesman covering up the coarser work of the one before. Thus, bricklayers, also responsible for setting out, will work to $\frac{1}{2}$ in. on plan allowing positive tolerances only on openings. Heights may well be coarser but degree of 'plumb' somewhat finer. The carpenter, plasterer and joiner will follow and, by packing, filling and covering, will reduce the finishes to the standard required.

Finer finishes can be achieved but they will quite properly cost more; more time will be required to true up work carefully, more pay will be wanted for older, more skilful men who cannot earn high bonus rates for fast work; and more risk will be incurred that the work has to be repeated to achieve the standards desired.

Clearly, there exists an interaction between design and construction in so far as, when the designer leaves the traditional 'cover up' procedures for ones which require closer tolerances, he must expect higher costs, at least in the initial stages of the work. If the job is a large one, enabling experience of the job to develop, these costs may be lost, otherwise they may simply be accepted with irritation and put down to the contractors' 'reluctance to try anything new.' A typical example was the slow initial acceptance of cross wall construction, which required great care in setting out on plan, to maintain location and parallelism and presented difficulties in maintaining height and level. Another smaller example is the omission of architraves to door frames which, when carried out with plaster trim and hardwood frames can succeed in producing a neat result but when applied to low cost work requires standards of tolerance outside those achievable in such work.

It will be clear from these opening remarks that the 'working drawing,' in many cases represents an ideal diagram which is reduced to practice by a series of compromises on the actual site, largely by an implicit understanding of the craft technique shared by the designer and the production team. Where the understanding breaks down, as it tends to do with the divergence in training of the various skills involved, disagreements and misunderstandings proliferate, unless fresh standards can be defined in terms acceptable to all those involved in the process.

In a recent article[1] J. F. Eden of the Building Research Station emphasizes the need for improved standards of measurement, including the definition of these standards, if building is to follow engineering and become the assembly of previously fabricated components. Observation suggests that the need for improvement covers the whole field—architect, manufacturer and general contractor. Few manufacturers are yet able to give sufficiently accurate tolerance ranges to their components to enable them to be successfully attached to other parts of the building without a fitting

process taking place. Such ranges can only be established by accurate recorded measurement as part of the quality control process; and similar types of measurement are needed on building sites to establish the ranges of tolerance normal to a given type of work. Such measurement could well be part of normal site inspection and would lead to realistic design for tolerance.

It should be noted that improvement does not mean a change towards finer tolerances but a change towards more precision of statement. It frequently seems that dimensional variations are a taboo subject with all parties, who deny they exist and barefacedly blame each other when they are seen to occur.

One other aspect of engineering practice should be noted; the clear differentiation between design and production drawings. This differentiation allows the use of draughtsmen at a stage where calculated accuracy within defined design limits can be achieved at economic drawing costs. The precise techniques necessary to good joint design can be obtained and there need be no restriction of visual effect, since the variety of techniques and materials available can handle all types and dimensions of joints.

Since tolerances and sizing are an essential part of any consideration of jointing materials and adhesives it is simplest to consider the two groups of materials as one, from a design point of view. It is normally the intention, with adhesives, that the two joined parts should become as one, with transference of stress through a rigid joint line. Nevertheless, the gap-filling properties of the adhesive, the available techniques for locating and pressing the joint, the strains in the glue line caused by differential movements are all problems common to joints of all types, in one form or another.

Designing for joints involves considering two principal categories of problem: static and dynamic. Static considerations are chiefly concerned with allowing for the difference between the basic size and the actual size[2] and the theoretical conditions of the design office and the actual conditions of the building site or production shop.

Static considerations can be listed:

Location of joint: relative to the tolerances of setting out or the tolerances of previously located work.

Tolerance of joint: either due to relative inaccuracies in the placing of components or to the deliberate use of the joint to take up tolerances in elements forming a component.

Size of joint: (a) to accommodate size and surface deviations of the components, (b) to allow for the correct quantity of material to be placed in the joint.

The calculation of joint sizes and the types of joint in common use are fully considered from this static position in BS 3626, 1963; in *Light Cladding of Buildings*[3] and in other works of reference. J. F. Eden, in the article quoted, draws attention to certain practical difficulties which occur when the conceptual 'modular dimension' is treated as a finite yet perfectly accurate reference line assumed to exist on site. Nevertheless, more difficulties are likely to arise from the general lack of tolerance data of any type. A translation of a German reference *The Determination of Dimensional Deviations in Building*[4] gives a very thorough specification of the physical and statistical methods necessary to establish such data. The Building Research Station has published the results of studies into the dimensional variations of large concrete panels (Table 1).

Taking this example, it can be seen that, where the minimum joint width (based upon an assumed material) is J1, then the jointing material must be equally effective at J1+0.80 in. in the case of a site casting or J1+0.36 in. in the case of a high grade factory casting. This consideration alone will greatly affect the joint design in terms of choice between high performance/high cost sealants, lower performance/cheaper sealants, the detail design and performance of air baffles in drained joints and the sizing of compressive seals. In some cases the tolerancing of the jointing method—for example an extruded elastomeric gasket—may be too fine for the tolerance of the joint. An extreme example would be any idea of glueing the joint, when either extravagantly high precision would have to be aimed at or techniques for dealing with accumulated tolerances at the end of the panel run would have to be devised.

Dynamic considerations in jointing arise from the fact that the parts being joined will be in a constant state of actual or potential movement, relative to one another. This movement will impose strains of various types upon the joint, varying in time and even varying in rate in time. In addition, the joint and its material will be subject to change in size, chemical and physical properties, with changing conditions and passing time.

Dynamic considerations can be listed:

Strain in joints: (a) interfacial movement of the parts being joined caused by component movement, thermal or moisture change. (b) conditions causing the jointing material itself to tend to move, against the restraint of the joint edges.

Change in joint properties: occasioned by change in the jointing material—chemical degradation, for example or change in the joint condition, such as dust silting up drainage grooves.

Dynamic considerations in relation to cladding joints appear to be well understood by the sealant manufacturer—in so far as they are understood.[5] Current work at the Building Research Station into rates of movement in building structure has shown that most joints move at speeds of less than 0.005 in./hour for 80 per cent of the time and only occasionally exceed 0.020 in./hour rates. (See table 2). However, metal and glass curtain walls and light weight concrete structures show a phenomenon called 'slip-stick movement' in which joint movement is restrained temporarily, by friction or some other cause and then suddenly the movement is taken up at a high rate until the built up strain is relieved. This type of movement can affect the useful life of sealants. It was suggested by one manufacturer's representative that the very low rates of movement might also cause cracking in some types of sealant, due possibly to molecular orientation.

The same level of detail concern does not seem to be shared by the materials manufacturers for the tolerancing of joints; reasonably, since this area lies well outside their control. The general advice for using both sealants and adhesives is to contact the manufacturer who, from his experience, claims to advise on the suitability of given materials for different types of jointing problem. It is evident, however, that manufacturers' experience varies widely, particularly where new products or new applications are involved and, since the responsibility is primarily a design one, the architect should be able to specify an adequate range of tolerances calculated for key dimensions.

Table 1: Dimensional variations of large concrete panels

Type of production	*Site casting*	*Normal factory casting*	*Highly mechanized well controlled factory casting*
Mould fabrication	±0.12 in.	±0.06 in.	±0.02 in.
Slab casting	±0.32 in.	±0.20 in.	±0.08 in.
Erection	±0.24 in.	±0.20 in.	±0.16 in.
Total tolerance	±0.40 in.	±0.28 in.	±0.18 in.

Table 2: Movement of joints

Joint in	*Maximum rate*	*Range of movement* $\left(\frac{1}{\times 1000 \text{ inch}}\right)$	*Approximate number of movements in one year*
Concrete roof kerb	20 thousandths of an in./hr.	180	300
Concrete roof kerb	7 thousandths of an in./hr.	30	40
Roof	13 thousandths of an in./hr.	175	300
Upper brickwork	17 thousandths of an in./hr.	168	300
Lower brickwork	11 thousandths of an in./hr.	50	100
Aluminium mullion	120 inches at least in 1 hour	52	200

MATERIALS

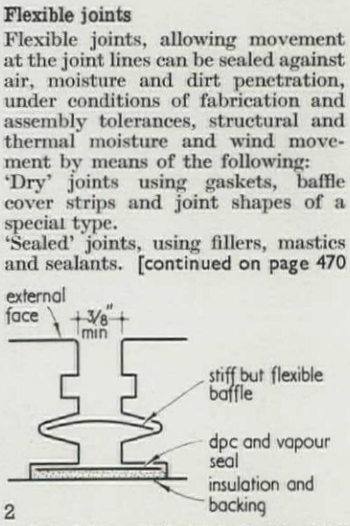
In considering materials for jointing, two types of joint can be considered: the flexible joint and the rigid joint.

Flexible joints

Flexible joints, allowing movement at the joint lines can be sealed against air, moisture and dirt penetration, under conditions of fabrication and assembly tolerances, structural and thermal moisture and wind movement by means of the following:

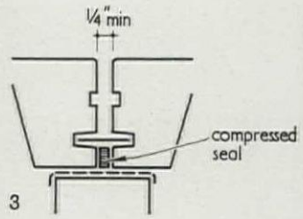
'Dry' joints using gaskets, baffle cover strips and joint shapes of a special type.

'Sealed' joints, using fillers, mastics and sealants. [continued on page 470



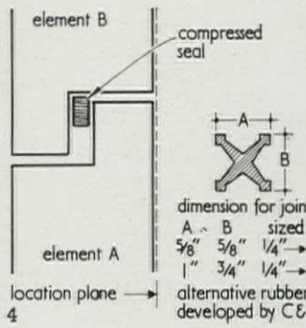
2

2, drained joint with flexible baffle. Edge detail requires precise casting. Limited radius of baffle requires precise location. Table 1 (BRS figures) suggests joint will vary from ⅜ in. minimum to ⅝ in.+0.36 in. maximum (say ½ in.) even when finest casting techniques are used. Materials: baffle, suitable grades of extruded rubbers, e.g. Neoprene or p.v.c.; D.p.c. and vapour seal, the same, or polythene d.p.c. material.



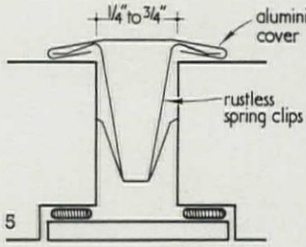
3

3, drained joint with flexible baffle and com pressed seal. Precision casting and locatio requirements appear to be even higher, since th compressed volume must be held to 25 per cen of its original. Assembly details to draw up on panel to the next require considerable attention Materials: baffle, as before; seal: 'Compriband bitumenized foamed urethane strip. Extrude and evacuated rubber (e.g. Neoprene) sections.



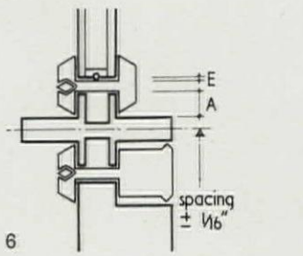
4

4, overlap joint with seal. A joint of this type allows ample tolerance at the overlap which can be sized to manufacturing abilities. The overlap also acts as a compressive jaw. If one face is used for location—in this case, element A being in place, element B is drawn back to it. This type of seal would work in principle both internally and externally. Additional detailing would be required for weather sealing-grooves and for production.



5

5, spring retained cover strip in conjunction with drained joint. Although shown here as an external joint, the principle of the hidden fix cover strip is well established and extensively used, especially in light industry. In this example 'Cliptrim' by Secomastic Ltd., the cover strip replaces the baffle and complex casting of 2.



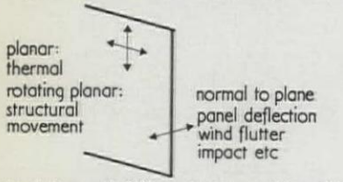
6

6, gasket joint. This example, from Saarinen's Technical centre for GM at Detroit, shows an extreme case of compression obtained in the seals by the zipper technique. General practice in this country has been to use smaller sections and employ metal sections for compression. Minimum nib height, as at A ⅝ in. Thermal expansion tolerance, as at E, calculated as required. Frame spacing required to be ± 1/16 in.

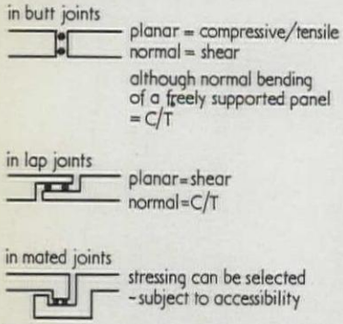
skill

continued from page 468]

Sealed joints: It is generally recommended that sealed joints should be designed to avoid placing direct compression and tension on the seal. The aim should be to create shear stresses, although compression and tension cannot be entirely avoided. For example, movement takes place in a panel in the following planes:

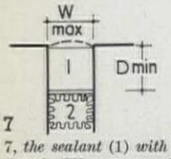


In joints of different types this will produce different stresses:



In most circumstances, involving rigid elements, positive fixing and standard stressing, planar movements will exceed normal movement and joint design should begin with this consideration.

Butt joints: because it is the worst case, most manufacturers emphasize the butt joint. In practice, the minimum butt joint appears in the following form:

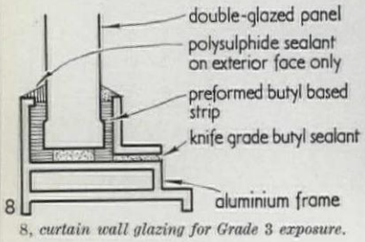


7

7, *the sealant* (1) *with preferred profile shown dotted. Wherever possible the joint would be better sheltered from erosion and sunlight.* (*W and D refer to table* 3). *Back up material* (2) *permits optimum proportions of D and W. Some manufacturers prefer this to be unbonded to* (1), *leaving* (1) *free to operate. Materials include polyethylene foam, urethane foam and traditional packings.*

Lap and mated joints use similar principles, but accessibility presents fresh design problems. Strip sealants and gun applied strips prior to assembly can be used.

Frame and stop joints: The many complex forms of frame and stop joint, developed for curtain walling, panelling and windows have developed corresponding sophisticated assembly procedures using differing grades of sealant. Specialist guidance is necessary in this field and is normally supplied by sealant manufacturers, who supply a wide range of materials, with a high degree of objectivity.



8

8, *curtain wall glazing for Grade* 3 *exposure.*

Table 3

	Form	*Width (max.)*	*Depth (min.)*	*Butt joint movement tolerance*	*Experience*	*Life expectancy*	*Adhesion*
Oleo-resinous	strip	2 in.	¼ in.	2%	50 yrs.	5–10 yrs.	fair
	knife grade	1 in.	⅜ in.	5–15%			
	gun	½ in.*	½ in.	15%			
Butyl	strip	2 in.	¼ in.	2–10%	20 yrs.	10–15 yrs.	fair–good
	knife	1 in.	¼ in.	2–15%			
	gun	½ in.*	¼ in.	5–15%			
Acrylic	gun	½ in.	¼ in.	15%	10 yrs.	25+yrs.	excellent
Polysulphide 1 part	gun	½ in.	¼ in.	15%	5 yrs.	20+yrs.	good—excellent with primers
Polysulphide 2 part	gun	2 in.	¼ in.	15–33%	25 yrs.	25+yrs.	good—excellent with primers
	pourable	2 in.	¼ in.	15–33%			
Silicone	gun	½ in.	¼ in.	50%†	15 yrs.	20+yrs.	good—excellent with primers

*Special grades→1 in. †claim by manufacturers not made in references used for remainder of table.

9

9, *footbridge with chords of laminated timber construction. Muirhead & Sons Ltd.* 10, *IUA Congress building, London* 1953 (*architect, Theo Crosby; engineer, Professor Z. Makowski*). *An extremely light roof structure of* 108 *aluminium pyramids bonded with epoxy resin and fabricated by British Aluminium Ltd. and Marshall Motor Bodies Ltd.*

Rigid joints

Rigid joints can be formed by variety of means, according to th materials and available techniques Adhesive joints require careful pre paration and quality control durin assembly—whether floor tiles ar being stuck to screed or structura members are being stuck together For performance as well as economy joint sizes must be kept constant an the glue line thin. It follows then tha design for tolerances must be care fully considered so as to avoid strai at the joint or strain upon subsequen joints.

As with sealant manufacturers, th majority of adhesive manufacturer produce a range of adhesives, cover ing various combinations of perform ance and price range and it is advis able to consult with them for par ticular specifications. For establishe applications, a representative list o manufacturers, in relation to the us for their products is published i *Specification*[18] and it is of most interes to consider briefly the structural us of adhesives.

Adhesives for structural purposes are chiefly based upon thermosetting plastics compounds although some polyvinyl acetate and animal and casein glues are used for timber elements, produced in workshops under controlled conditions for use in non-exposed situations. Some o the adhesives used are as follows:

Resorcinol-Formaldehyde: for highest quality wood to wood gluing, for use in extreme exposure, including the presence of moisture in the timber. Conform to BSS 1204 part 1 and BS 1203 for WBP type glues. The resins will also stick many other building materials.

Urea-Formaldehyde: a general purpose adhesive for wood to wood or wood to plastics applications. It conforms to the MR grades of BSS 1203 and 1204 part 1.

[continued on page 472

10

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Phenol-Formaldehyde: produces bonds to WBP grades, chiefly in plywood manufacture, involving heated presses.

Epoxy resins: a wide range of adhesives. Because no water is evolved in the setting reactions, epoxy adhesives can be used for glueing non-porous materials, such as metal to metal or metal to glass, together.

The use of adhesives of this type enables the structural engineer to obtain truly continuous joints with structural continuity in the members. The commonest application of this technique has been in timber structures, 9.

Use of epoxy resins in metal structures has also been made, 10, but it is in advanced concrete engineering that most developments appear to have taken place. Several large structures, including the superstructure of the Sydney Opera House, use epoxy resin joints, 1, and three papers[19] given at the 1965 Conference on Plastics in Building Structures, describe points involved in this type of application.

In considering rigid joints, the architect is, in effect, considering the design of components which form parts of his project, possibly major parts. The ability to form three dimensional rigidly jointed assemblies extends the vocabulary of architecture in directions in which, with our commonly two dimensional, drawing board approach, we have hardly begun to move. The problems of flexible jointing are equally multi-dimensional and in some respects are more fundamental. It seems clear that there is no universal solution to jointing problems, to form an instant solution to the mythical, ever-open system. Component-based architecture will involve precise jointing definition and architects have not given the subject the attention which they have given to modular and dimensional aspects of planning development. As J. F. Eden has indicated, in the reference cited, building must follow engineering in the use of precise specifications of location and tolerance in measurement; on the material side, it should be clear that, with modern jointing methods, the architect who continues to write '$\frac{1}{2}$ in. mastic' as a specification must find himself in danger of being charged with negligence if the joints subsequently leak.

REFERENCES

[1] J. F. Eden: 'Metrology and the module.' *Architectural Design*, March 1967.

[2] Definitions BS 3626, 1963. BSI 1963. Basic size: fundamental size by reference to which the limit of size is fixed. Actual size: a size found by measurement.

[3] M. Rostron: *Light Cladding of Buildings.* Architectural Press, 1964.

[4] Published in translation by the MoPBW. Trans. No. 302, June 1965.

[5] Trade information published by the following includes direct guidance on joint calculation:
Designing and sealing of joints in buildings, Bostik Ltd.
Sealants: Guide to their Specification in the Building Industry, also *Joint Design Aid.* Thiokol Chemicals Ltd.

[6] C. Tudor Pole: 'Coverstrips for Joints.' *Architect and Building News*, 15 September 1965.

[7] A selection of gasket manufacturers. *Specification* 1967, p. 2/428.

[8] *Jointing with Mastics and Gaskets.* BRS Digests II 36 and II 37. Essential reference covering most aspects of the subject.

[9] *Specifications and Guidance on 'Neoprene' and 'Hypalon' Rubbers.* DuPont (UK) Ltd., 10 Breams Buildings, Fetter Lane, London EC4. Including fabricators of sections.

[10] R. G. Groeger and S. Barratt: 'Sealants and their Use in Industrialized Building.' *IBSAC Journal*, January 1966.

[11] *Designing and Sealing of Joints in Building.* Catalogue published by Bostik Ltd., Ulverscroft Road, Leicester.

[12] *Draft specification No.* 1. Two-part polysulphide based sealing compositions for the building industry. Sealant Manufacturers Conference of the Federation of British Rubber and Allied Manufacturers, 9 Whitehall, London SW1.

[13] *Sealants: Guide to their Specification and Use in the Building Industry.* Thiokol Chemicals Ltd., Coventry.

[14] Proprietary mastics and caulking compounds. *Specification* 1967, pp. 2/418–2/427. The Architectural Press.

[15] *Polysulphide-base Sealing Compounds for the Building Trade.* ASA A116.1—1960.

[16] Curtain walling: Water penetration,' E. Mills. 'Sealing the joints,' D. Aitken. *Building Materials*, November 1964.

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[19] J. H. Golding: 'The Use of Epoxy Adhesives for Bonding Concrete,' Part I. R. P. Johnson: ditto, Part 2. M. Levitt: 'The Fire Resistance of Resin Pointed Concrete.' All published in *Plastics in Building Structures.* Pergamon Press/Plastics Institute, 1965.

The Industry: Plastics in Building

1 *1, Mellowes-Luxfer steel windows being given a ½ mm. nylon coating.*

Plastics, like any other building industry material, must naturally be judged in terms of cost, and this must include not only the purchase price, but also the cost of fixing and maintenance charges combined with some attempt to assess the value of any improved performance.

In the years immediately after the war there was a general impression that a great chemical age was about to dawn, and that plastics would be the answer to all problems. A few unsuitable components were produced, largely owing to the shortage of metals, but, in general, the suppliers of the plastics raw materials were sensible enough to prevent the perpetration of disastrous mistakes, and over the years plastics have been developed in a reasonable way.

One of the earliest large scale uses was in vinyl floor tiles, which are now available in a wide range of colours and patterns and are suitable for both light and heavy duty. They are laid as tiles, or in large sheets which can be welded together along the seams to provide a continuous and fully watertight surface. Prices run from about 13s. a square yard upwards and plastic sheeting on a backing of foam or felt is also produced for the flooring of flat blocks, where good sound insulation is essential. Laid prices of these latter types may be up to £2 a square yard. At the same time as vinyl floors, one or two firms, like Marley and Yorkshire Copper, introduced polythene pipe as a material for cold water services, largely on the grounds that the material is flexible enough not to burst when the water freezes. The use of this material seems now largely confined to agricultural work, where it can be run above ground for taking supplies to drinking troughs and other equipment. Used in this way it is still necessary to prevent mechanical damage and the pipe runs are along hedges and fencing as far as possible, and when crossing fields it is only necessary to bury it below cultivation level.

2, Bri-Nylon carpet by Illingworths, used in a school library.

2

The cost of plastics

The unit cost of plastics raw materials is comparatively high and the quantity produced is relatively small when compared with conventional materials such as cast iron, steel or copper. But as raw material output increases the costs tend to fall, whereas with metals the price increases fairly regularly, so that there comes a point where the two lines cross and plastics become lower, so that there is a straight saving in first cost.

Gutters and drainage

Plastics rainwater gutters and drainage components provide one of the best examples of cost saving combined with improved performance. Experiments with p.v.c. guttering were made in Germany before the war, presumably to release metals for armament production, and a number of installations are still satisfactory after nearly thirty years of use, though in the early stages there was some trouble with thermal movement when the guttering was fixed in long lengths. British production started in a small way about 1959, mainly with glass fibre polyester guttering in colours which tended to fade. P.v.c. guttering was introduced by the Marley Group and the Rymway consortium about six years ago, and there are now a dozen or more different manufacturers who between them supply enough guttering for about two-thirds of the new houses built each year. First cost is the same or slightly lower than cast iron, fixing is quicker and painting is unnecessary, and at a fairly conservative estimate the guttering should have a life of not less than thirty years. The guttering was followed fairly rapidly by p.v.c. soil stacks, which have similar advantages, the joints being made with neoprene or other synthetic sealing rings so that the necessary expansion can take place at each joint. In the early stages p.v.c. waste pipe was used for sink and bath connections, but the p.v.c. begins to soften at temperatures over 160 deg. F and it was usual to insert a 2 or 3 ft. length of copper pipe to take the waste from washing machines. Waste pipes now being produced are either in a.b.s. (acrylonitrile butadiene styrene) or in polypropylene, both of which will resist higher temperatures than p.v.c.

Plastic pipework

P.v.c. pipes, with solvent welded joints, are perfectly satisfactory for cold water supplies and services, but will not stand up to the combined temperatures and pressures of hot water services. It seems likely that some form of a.b.s. or polypropylene will ultimately be developed, but no manufacturers will commit themselves, and will say no more than that hot water service pipes are 'unlikely to be available in less than five years.'

Sanitary fittings

Baths are now made in a variety of colours in acrylic resins. In this country they are almost all formed from $\frac{5}{16}$ in. thick sheet, generally with glass fibre reinforcement round the waste outlet and in other areas where the shell becomes thin. Prices

[continued on page 474

Royal Blush

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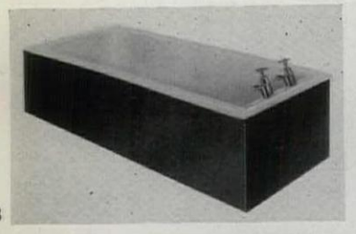

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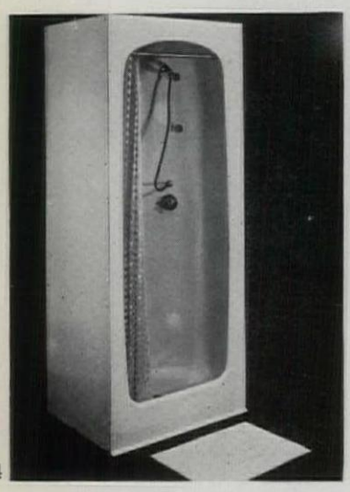

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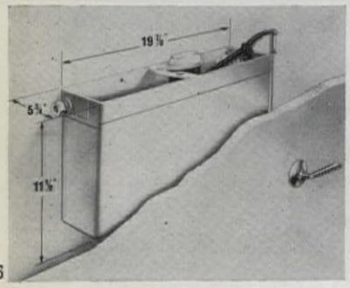

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3, 5 ft. perspex bath by Shires. 4, Swanlyne shower cabinet by Alfred Goslett & Co. 5, Hidaway plastic cistern by Fordham, for installation in ducts. 6, perspex Gridlite top lighting units and, 7, Feroglass litter bin, both by J. W. Roberts Ltd.

6

8

8, Resiform bathroom or kitchen unit, which can be built up to a height of three storeys.

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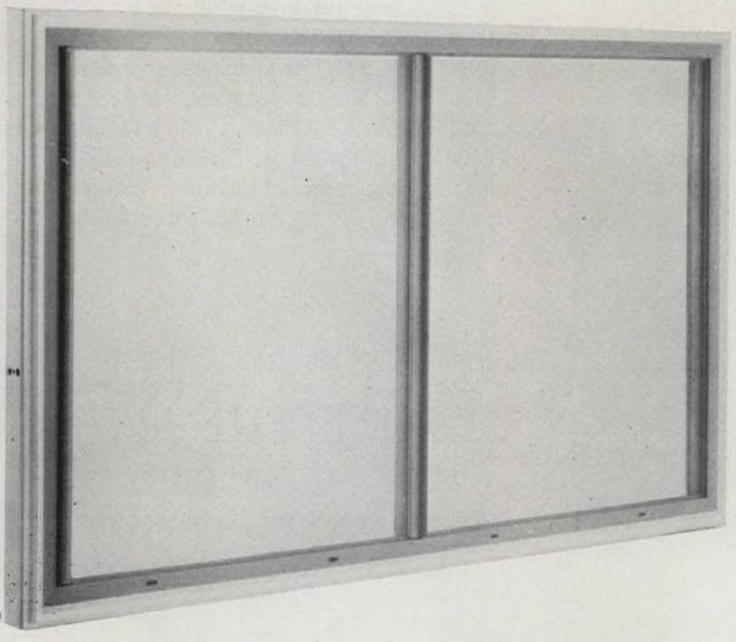
are about the same as for vitreous enamelled cast iron, but there is no extra charge for any of the standard colours. The baths are supplied with a timber cradle which should be designed to give good support to the roll as the bath itself is fairly flexible and the whole assembly is liable to creak quite loudly if the cradle is not stiff enough. The baths weigh very little and are thus easy to install. Shower trays and complete shower cabinets are made either in acrylic or glass fibre and polyester, and fully prefabricated bathroom units are also produced. Two of them were illustrated in the February AR. There is now a further type, the Resiform, which is intended to be used as an addition to the 2 million houses still without a bathroom. It is supplied as a complete unit, including external walls with a glass fibre skin on studding, and contains a 5 ft. 6 in. bath, basin, linen cupboard and w.c. The units are delivered complete by lorry and, 8, installed on prepared foundations. Up to three units can be built on top of each other if existing houses are being converted into flats, and there is a similar unit equipped as a kitchen. Price is about £500.

Flushing cisterns are now almost netirely in plastics, including syphons and nearly all the parts of the ball valve. They are much quieter in use than the cast iron and ceramic types and most of them are available to give an alternative one- or two-gallon flush. Urinals have been produced experimentally in acrylic mouldings, but have not been marketed, as they were found to suffer from cigarette burns. Glass fibre polyester urinals, however, are currently produced in various types. They are not, apparently, burnt by cigarettes, and are damage resistant enough to have been installed recently at Wembley Stadium.

Windows

Experiments with plastics coated windows have been carried out by several manufacturers on both wood and hollow steel cores, but most of them have been abandoned on the grounds of cost. Still available is the Mipolam, made by Braby's under a West German licence. This has bee used in fair quantities and the maker claim that it gives no trouble in us and is free from maintenance, whil at the same time it has a soun resistance about 6 db better than metal framed window. There is considerable choice of colours, thoug the greatest demand is for light grey. The most interesting recent develop ment is the Bovis window, 9, show for the first time at last year's Ibsa exhibition. It has been evolved i conjunction with Bristol Aeroplan Plastics, who have considerable ex perience of high strength plastics fo guided missiles and aircraft. Th frames and main sections are i glass fibre and resin, silicates bein added to the mix to improve fir resistance, plus colouring matter t give a grey, black or white finish. Th sections are pressed in moulds an are not extruded: they are shallo channels, with the necessary rebates and are bonded to form the windo sections and can also be used for th structural members of a curtai walling system. The hollow windo sections are used to provide con cealed control gear for Venetia blinds, espagnolette bolts and simila fittings. Frames of simple casement and sliding sashes are made in high density polythene.

More recently Williams & Williams have announced that the Belgian-designed Polyrama window is to b made in this country. This is another glass fibre type which is to be made in a full range of modular sizes o purpose-made up to 6 ft. by 6 ft. Fixed and moving frames are made in one piece with radiused corners and glazing beads are aluminium with a p.v.c. cover strip, 10.



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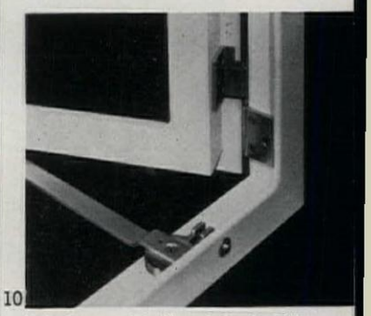
9, Bovis glass fibre and p.v.c. window.



10

10, Polyrama glass fibre window by Williams & Williams.

Plastic coatings

Most thermoplastics can be applied as coatings by various methods. Spraying on site tends to be expensive, though some plastics can only be applied in this way. Dipping into a tank of liquid p.v.c. gives a good protective coating and can be applied to fabrications up to 17 ft. long and 7 ft. square and is suitable for tanks, railings, wire mesh and grilles. An alternative method is to preheat metal articles and dip them in a bath of powdered plastic which is gas-agitated so that it behaves much as a liquid. The heat melts some of the powder which then coats the metal to a thickness which can be accurately controlled. Gutter brackets and tap handles are frequently coated by this method, and illustration 1 shows Mellowes windows being given a coating of nylon about $\frac{1}{2}$ mm. thick. The coatings adhere firmly and in the event of mechanical damage there should be no corrosion creep under the rest of the coating. Crittalls can

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also supply some of their windows with an acrylic finish.

Weathering of plastics

Few externally used plastics have been fixed for long enough to give any accurate indication of life, although all makers carry out accelerated weathering tests. The Building Research Station, which has a great deal of experience in exposure testing, and which nobody would accuse of being unduly optimistic, suggest that polyester or p.v.c. roof sheeting should have a useful life of about thirty years.

Contractors

Sports Centre, University of Liverpool. *Architects:* Denys Lasdun & Partners. *General contractor:* J. Jarvis & Sons *Sub-contractors: Electrical services:* Higgins & Cattle Ltd. *Mechanical services, internal telephone installation:* G. N. Haden & Sons. *Structural steelwork, Profilit glazing screen:* J. Parkes & Son. *Precast concrete cladding units:* Mathews & Mumby Ltd. *Tiling:* Carter & Co. *Waterproof rendering:* Quickset Water Sealers Ltd. *Underwater windows and special metalwork:* Bobak Precision Engineers. *Roof finishes:* The Limmer and Trinidad Lake Asphalte Co. (N.W.) Ltd. *Balustrades and handrails:* Clark Hunt & Co. *Window control gear:* Arens Control Ltd. *Suspended ceilings and acoustic finishes:* Pyro Therm. *Wood flooring:* Horseley Smith & Co. *Folding partitions:* Potter Rax Ltd. Morris Singer Co. *Terrazzo flooring:* Carrara Marble Co. (Liverpool) Ltd. *Catering equipment:* Stotts of Oldham. *Sports equipment:* H. Hunt & Sons. *Excavation:* John Beech Ltd. *Plumbing:* Merseyside Plumbing Co. *Plastering:* John Cothliff Ltd. *Painting:* Decorators Liverpool Ltd. *Manufactured joinery:* Tysons Ltd. *Metalwork:* Bowman & Beddows Ltd. *Vinyl tiling:* Marley Tile Co. *Special fittings:* Critchley & Curtis Ltd. *Glazing:* Compton Brothers 1936 Ltd. *Flush doors:* John Sadd & Sons. *Ironmongery:* Alfred G. Roberts (Exports) Ltd. *Metal windows:* Glostock Patent Roof Glazing Co. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Rubber flooring:* Pirelli Ltd. *Light fittings:* Atlas Lighting Ltd. *Fibreglass radiator panels:* LMB Components Ltd. *Laundry equipment:* Manlove Alliott & Co.

Social Building, University of Leicester. *Architects:* Denys Lasdun & Partners. *General contractor:* Johnson & Bailey Ltd. *Sub-contractors: Mechanical:* H. J. Cash & Co. *Electrical:* Witcombe & Blackwell Ltd. *Lift installation:* Evans Lifts Ltd. *Lightning protection:* R. C. Cutting & Co. *Borsair oil tank:* G. N. Haden & Sons. *Metal deck roof and felt roofing:* Amalgamated Asphalte Co. *Roof lights:* Faulkner Greene & Co. *Acoustic ceilings:* Expanded Metal Co. *Floor finishes:* Vigers, Stevens & Adams Ltd. *Cold rooms:* Prestcold (Southern) Ltd. *Cookery and servery equipment:* Moorwood Vulcan Ltd. *Roller shutters:* J. Taylor (Syston) Ltd. *Glazed screen and entrance door and metal windows:* C. E. Welstead Ltd. *Metal windows:* Williams & Watson Ltd. *Gymnasium apparatus:* Olympic Gymnasium Co. *Demountable partitions:* Expamet Contracts. *Public address system:* Transcall. *Book shelving (timber):* Remploy Ltd. *Mobile book stacks:* Sankey Sheldon Ltd. *Roof trolley system:* Palmer's Travelling Cradle & Scaffold Co. *Venetian blinds and curtain track:* J. Avery & Co. *Carpets:* Conran Contracts Ltd. *Sheet steel piling:* W. A. Dawson Ltd. *Dexion flooring:* Dexion Ltd. *Glazing:* Faulkner Greene & Co. *Asphalting:* Fleximastic Ltd. *Plumbing:* Grocock & Day Ltd. *Tiling:* Leeds Fireclay Co. *Specialist pointing:* Mann Reddington Ltd. *Plastering:* F. C. Meason Ltd. *Painting:* Tandy Bros. *Earthworks:* G. Webb. *Mobile cranes:* Mechquip Ltd. *Slate:* Bow Slate & Enamel Co. *Steel mesh:* British Reinforced Concrete Engineering Co. *Bars:* Helical Bar Ltd. *Mild steel bars:* McCall & Co. *Joinery:* Walter Lawrence Ltd. *W.c. cubicles:* William Mallinson & Sons. *Aggregate:* Hoveringham Gravels Ltd. *Cement:* Cement Marketing Corp. Ltd. *Flush doors:* G. R. Wiltshire Ltd. *Precast concrete beams, columns and wall units:* ECC Quarries Ltd. (Croft Granite Division). *Facing bricks:* Richard Parton Ltd. *Sanitary fittings:* B. Finch & Co. *Steel joists:* Metal Sections Ltd. *Timber windows, doors and joinery fittings:* Walter Lawrence Ltd. *Flexible doors:* Parker & Winder & Achurch Ltd. *Calorifiers:* J. M. Smith & Sons. *Oil burners:* Cory MacColl Ltd. *Ironmongery:* D. A. Thomas & Co. *Chimney capping:* Accrington Brick & Tile Co. *Flush doors:* A. Harvey Ltd. *Emulsion and gloss paint:* Blundell Spence & Co. *Sprayed wall finishes:* Leyland Paints Co. *Varnishes:* Pinchin Johnson & Assoc. Ltd. *Sprayed acoustic plaster:* Pyrok Ltd. *Coloured wall tiling:* Carter Tiles Ltd. *Quarry tiles:* Dennis Ruabon.

Exhibition and Furniture, Factory, Swindon. *Architects:* Team 4. *Exhibition system: designers:* students of Bath Acadamy of Art. *Contractors:* Beck and Pollitzer. *Table tops:* Scott Smith Ltd. *Table bases:* Martin Lynshaw Ltd.

Ticket Desks, Airline Offices, Glasgow. *Designers:* Design Research Unit in collaboration with Law and Dunbar-Nasmith. *General contractor:* W. F. Davey and Co. (Joinery) Ltd. *Chairs:* Murray Equipment Ltd.

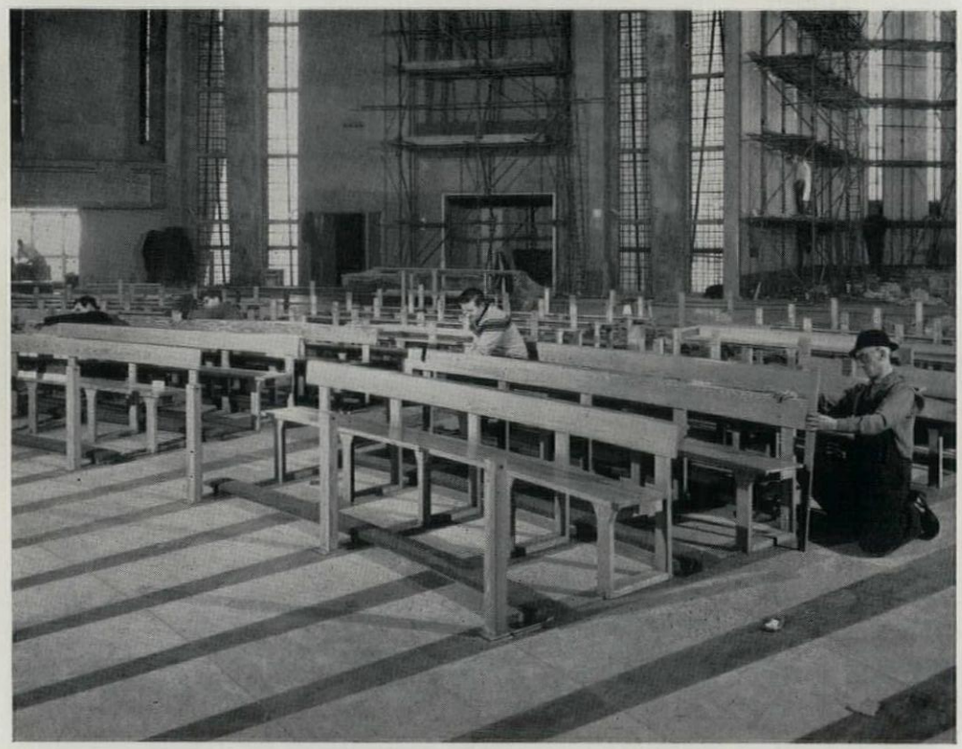
Shop, New Bond Street, London. *Designer:* Jon Bannenberg. *Shopfitter:* Andrew Pegram. *Carpets:* Kossett.

Metropolitan Cathedral, Liverpool. *Architects:* Frederick Gibberd & Partners. *General contractor:* Taylor Woodrow Construction Ltd. *Sub-contractors: Asphalt roofs, podium and tanking, macadam paving:* The General Asphalt Co. *High Altar, altars, marble floor, slate paving, Portland stone cladding, granite cladding:* Stone Masonry (North Western) Ltd. *Baldachino:* Gardiner Sons and Co. *Joinery, softwood doors and frames:* Tysons (Contractors) Ltd. *Bells:* Mears and Stainbank. *Baldachino suspensions:* Head Braiding Ltd., British Ropes Ltd., Cable Covers Ltd., Alma Aluminium, Brass and Pattern Making Foundry, Rope and Marine Services. *Mild steel and silver bronze balustrading, steel columns, aluminium ladders:* S. W. Farmer & Son Ltd. *Mild steel balustrade, metalwork:* Bowman & Beddows Ltd. *Plastering and rendering:* Pollock Bros. *Fibrous plaster:* Merseyside Plasterers Ltd. *Suspended ceiling grounds:* Expanded Metal Co. *Asbestos spray:* Turners Asbestos Cement Co. *Nave ceiling panels:* D. Burkle & Son Ltd. *Cast iron channel gratings:* Allied Ironfounders Ltd. *Glass domelights:* R. Seddon & Sons (St. Helens) Ltd. *Flush doors:* John Sadd & Sons Ltd. *Fireproof doors:* Dreadnought Fireproof Doors (1930) Ltd. *Bronze door pivots, glazed aluminium screens, bronze rooflights:* Grundy Arnatt Ltd. *Safe doors, wall safe:* Chubb & Sons' Lock and Safe Co. *Electrical installation:* Barlow & Young Ltd. *Lightning protection:* R. C. Cutting & Co. *Bronze-faced plywood duct cover and mild steel frame:* Bigwood Bros. (Birmingham) Ltd. *Exposed aggregate cladding to podium:* Pencrete Ltd. *Exposed aggregate cladding to main ring beam:* Trent Concrete Ltd. *Fire fighting appliances:* Foamite Ltd. *Thermoplastic flooring:* Marley Tile Co. *Hardwood block flooring:* J. A. Hewetson & Co. *Linoleum:* Rowan & Boden Ltd. *Terrazzo and granolithic paving to staircases:* Diespeker & Co. *Terrazzo and marble floor, marble door linings:* Art Pavements and Decorations Ltd. *Chimney pots:* Red Bank Manufacturing Co. *Shutter gates:* Bolton Gate Co. *Heating and ventilating and hot water services:* Young, Austen & Young Ltd. *Foam concrete:* Celcon Ltd. *Hardwood joinery, oak confessionals:* William Thornton & Sons Ltd. *Ironmongery:* Alpha Architectural Ironmongery Ltd. *Nave seats:* Beresford & Hicks Ltd. *Lift:* Otis Elevator Co. *Mosaic:* Proctor & Lavender Mosaics Ltd. *Steelwork, mild steel ladders:* George Lowe & Sons Ltd. *Maintenance runway and cradle:* Palmers Travelling Cradle and Scaffolding Ltd. *Piling:* Cementation Ltd. *Mining, for deep excavations:* M. & H. Mining. *Bronze fittings:* Harris & Edgar Ltd. *Paint:* ICI Decorative Products Ltd. *York stone paving:* G. Lindley & Sons Ltd. Heys (Britannia) Ltd. *Slate paving:* Dinorwic Slate Quarries Co. *Pinnacles:* Flexo Plastic Industries, Instalrite Plastic Industries, Stracey Wheeler, McWeeney Smallman Co., D. J. Williams & Son, Alfred Horrocks, WMG (Guildford) 1961 Ltd., General Construction and Engineering Co., Langley (London) Ltd., Arnold Wragg (Bolts & Nuts) Ltd., Henry Clark & Sons Ltd. *Polymer consultants:* Polyplan Ltd. *Aluminium for roofing:* British Aluminium Co. *Roofing:* Frederick Braby Ltd. *Drainage and plumbing:* G. N. Haden & Sons Ltd. *Plumbing:* A. Dillon & Co. (Liverpool) Ltd. *Sound amplification:* Standard Telephones and Cables Ltd. *Switches, electric incinerator:* Wandsworth Electrical Manufacturing Co. *Sanitary fittings:* Dent & Hellyer Ltd. *Bronze skirtings and windows:* Williams & Watson Ltd. *Sliding door gear:* E. Hill Aldam & Co. *Sliding door control gear:* London Electric Firm Ltd. *Bronze screen to main entrance:* A. Edmonds & Co. *Holy water stoup bowls:* SGB (Dudley) Ltd. *Slate cladding:* The Stone Firms Ltd. *Patent glazing:* Mellowes & Co. *Quarry tile paving, slate cills, slate paving:* R. A. Davison & Co. *Car park barrier chains:* King & Co. *Organ:* J. W. Walker & Sons Ltd. *Special light fittings:* Atlas Lighting Ltd. *Light fittings:* Merchant Adventurers Ltd., Lumitron Ltd. *Aluminium grilles:* Air Distribution Equipment Ltd. *Reredos and tabernacle in Blessed Sacrament Chapel:* Wauthier Osborne Guild Ltd. *Landscaping:* Claphams Nurseries Ltd. *Coloured glass fixing:* Modern Art Glass Co. *Manufacture and fixing of coloured glass, chapel 9:* John Hardman Studios. *Catering equipment:* Benham & Sons Ltd. *Special stone paint:* Cementone Ltd. *Signs and lettering:* The Lettering Centre.

Metropolitan Cathedral of Christ the King, Liverpool

Architects: Frederick Gibberd and Partners

The following advertisement pages are presented collectively as a supplement to the editorial feature on pages 436-448, and the list of contractors and sub-contractors published on this page.



Architects: Frederick Gibberd & Partners

The Seating

in the new METROPOLITAN CATHEDRAL, Liverpool

to the prize-winning design of designer Frank Height, Des. R.C.A., has retained in modern style the pew form.

The Problem—one of ergonomics—was to provide seating for 2,350 worshippers and also allow sufficient space for their natural posture when seated or at prayer.
The Seating, in bench arrangement, is made of solid pine and ash so that it will endure with the Cathedral. It is easily and completely removable and takes apart into sections that can be stacked on trolleys for storage in the Crypt.
Although the design took two-and-a-half years to perfect, it was manufactured and assembled within four months by

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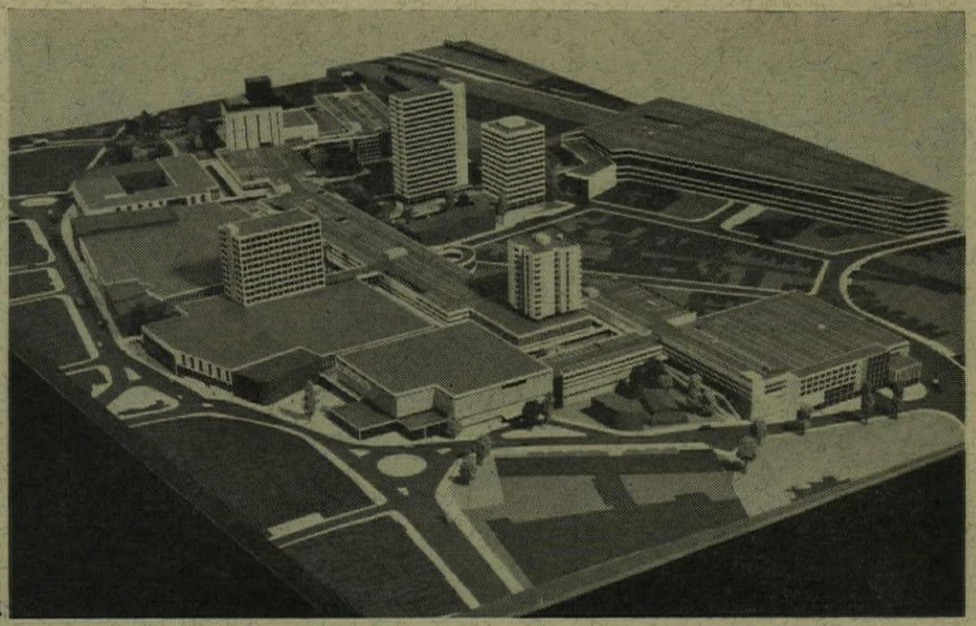
Ian Nairn

STOP PRESS

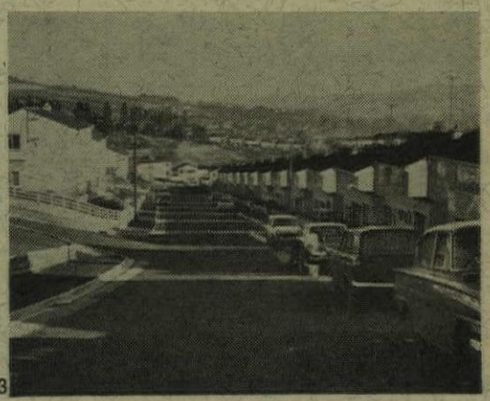
A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn with drawings by G. J. Nason.

OUTRAGE


1

LUTON, BEDS
One more town goes under, 1, in the recently approved £12 million centre for Luton. Developers are the Arndale Property Trust Ltd.


2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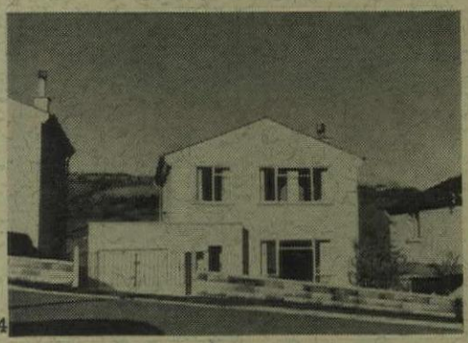
LARKHALL, BATH
Far from the Georgian crescents, out of sight of the Bath Road is this new Council estate, 2-5, the quality of the landscape around can be seen between some of the grimly detached units. All,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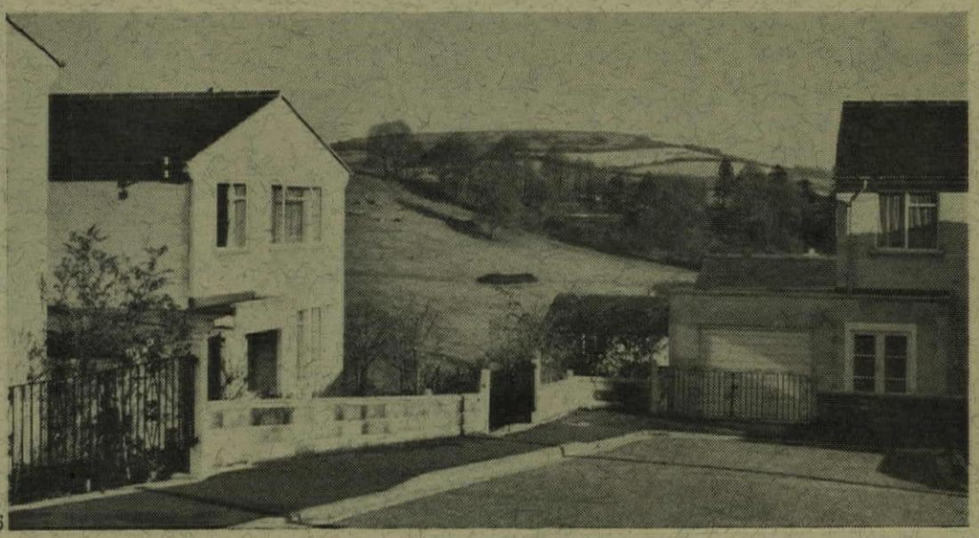
of course, have reconstructed stone fronts to blend in with the Cotswold surroundings. The city has recently appointed a new architect; he has here a perfect example of how not to build.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NEAR PORTISHEAD, SOMERSET
This is the Gordano country, a precious lung for Bristol. And it is being eaten up, slowly but surely. 6 shows an upstage attempt at ' urban rhythms in the countryside,' near Clevedon. 7-10 could have been built thirty years ago,


6

but are in fact new—and this on a fine site overlooking the Bristol channel, near Portishead. And 11 is a notable case of marrying old and new, at Easton-in-Gordano.

11

CREDIT

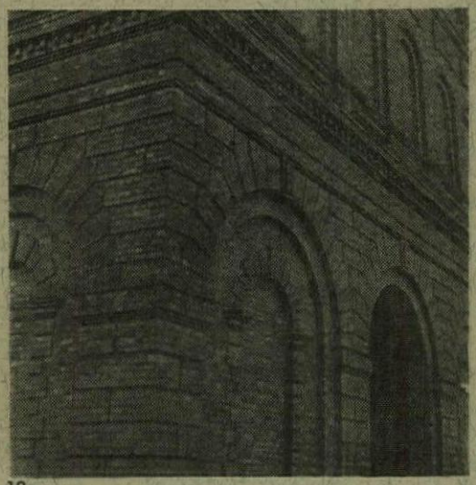
BURNHAM ON SEA, SOMERSET
An unobtrusive but worth while bit of seafront rebuilding, 12, that is a good

12

variation on the mild nineteenth-century high-kicks next door without any kind of slavish imitation.

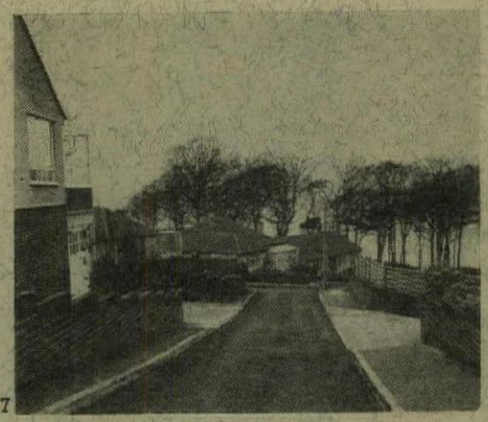
R.I.P.

SELBY, YORKS
A superb bit of nineteenth-century industrial architecture on the way out, photographed by a chance visitor, Peter Burton. This water tower, 13 and 14 is clearly as good as someone's cosseted bit of half timber. But where was the local society's protest? Who cared in the



13

planning authority? Had anyone in the whole over-complicated process been to have a look—or was it just part of a discontented Victorian heritage that the tidy-uppers especially in the North would like to replace by rapid but sootless modernity.



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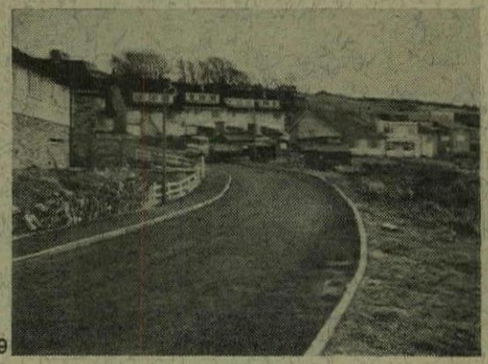

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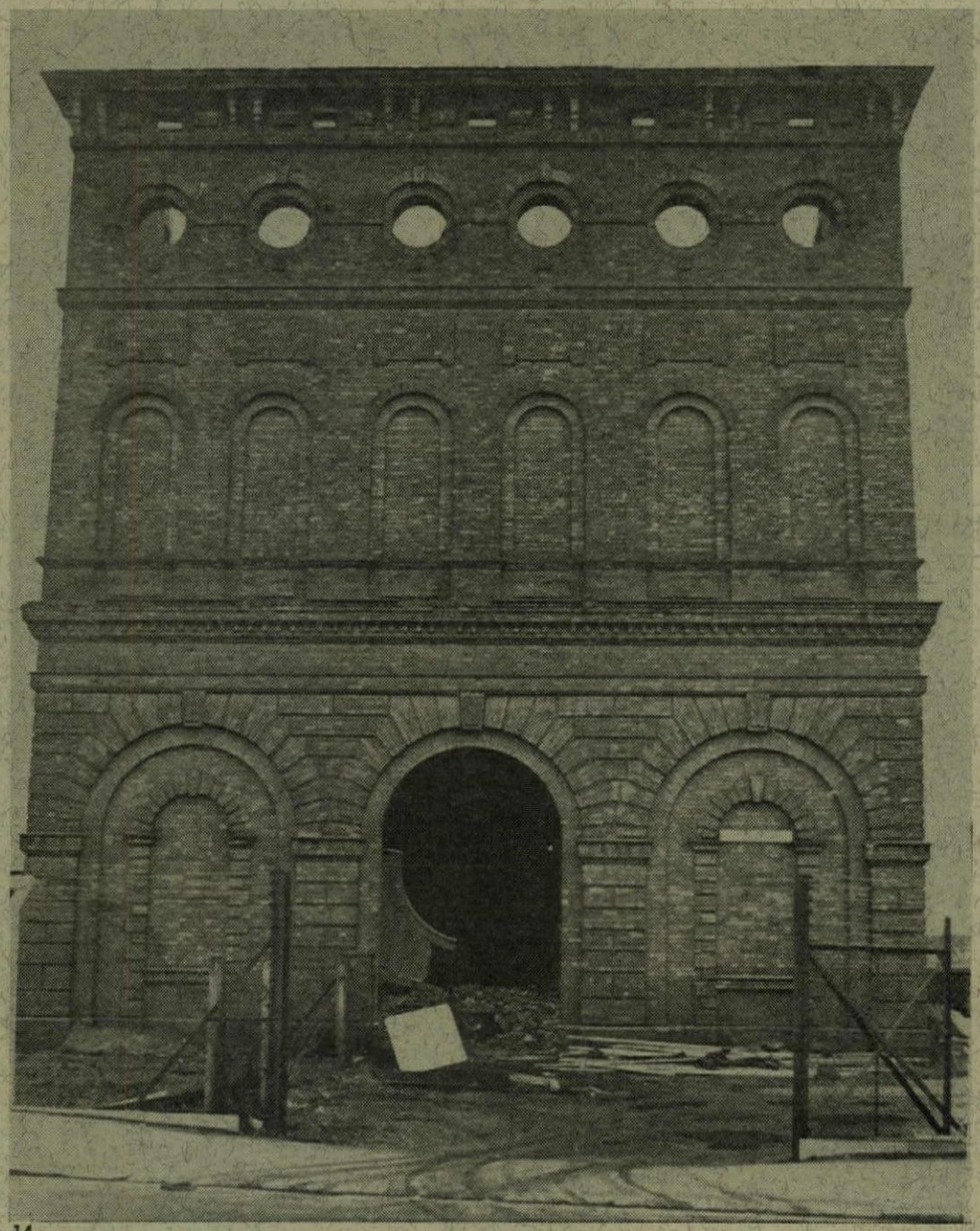

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We at Stone Masonry (North Western) Ltd. are proud to have been associated with the new Metropolitan Cathedral. The above illustration shows our masons fixing into position part of William Mitchell's design of three crosses and three crowns carved into the Portland Stone face of the entrance porch. Some 3,000 tons of Portland Stone of the best beds of the Shelley Whitbed variety and coming from the same quarry as that used by Sir Christopher Wren for St Paul's Cathedral have been worked upon in our Aintree yard for the exterior of the Cathedral itself.

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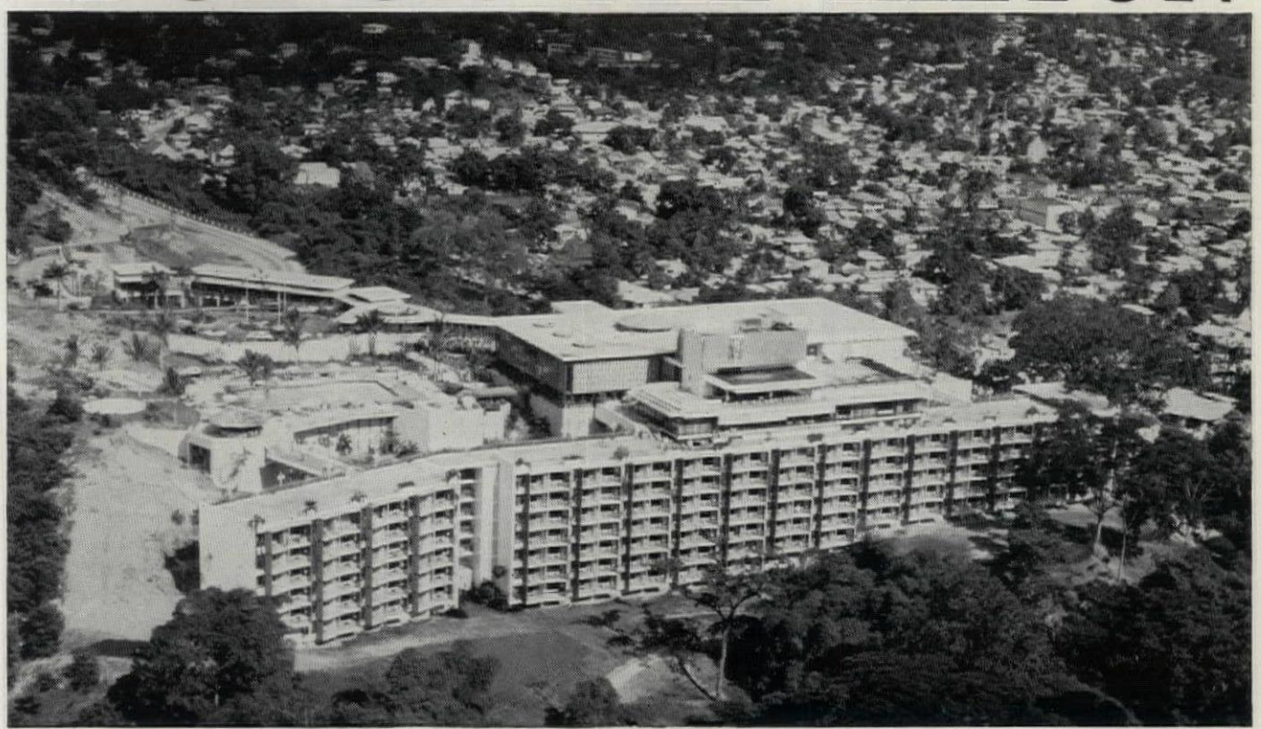

photograph by courtesy of the Hilton Hotel, Trinidad

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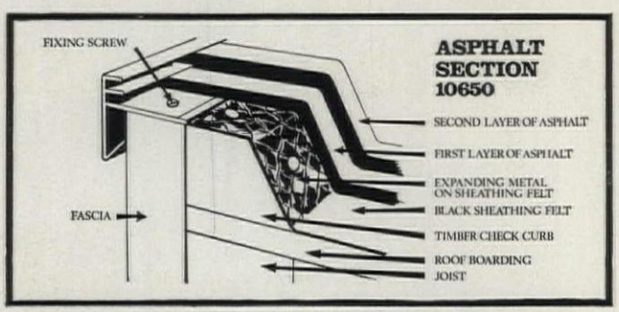

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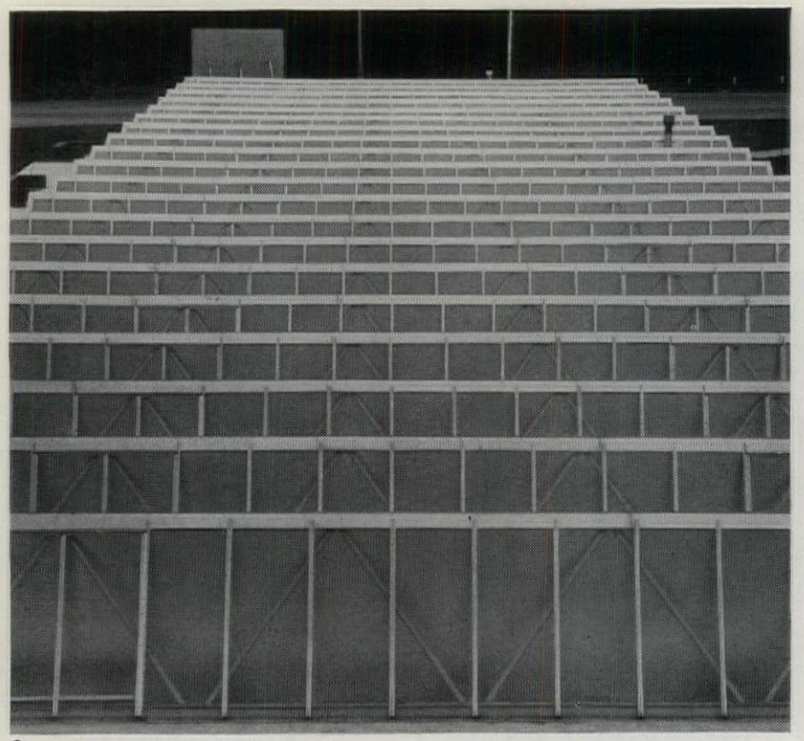

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1 The new Avo plant at Dover demonstrates the use of Aluminex sidewall glazing in combination with Gaiety pivot windows, to provide maximum light and adequate controlled ventilation

2 Fixed Aluminex glazing with varying bar length helps to form this unusual roof light feature at Belper Fire Station.
Architects: Derbyshire County Council

3 Aluminex glazing has been used exclusively to form this factory roof line, creating an interesting architectural feature.
Chief Architect, Dawley New Town Development.
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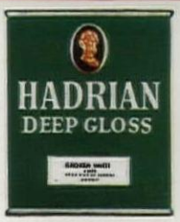
4 In this imaginative station entrance building the lower half has been capped to give a bold sight line to the Aluminex glazing bar and to contrast with the narrow bar above.
Northampton Station, London Midland Region:
Architect: R. L. Moorcroft, D A (Manc), ARIBA
Regional Architect under the direction of
W.F. Beatty, MBE, BSc, MICE,
Chief Civil Engineer



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Architects: Minoru Yamasaki & Asscciates.

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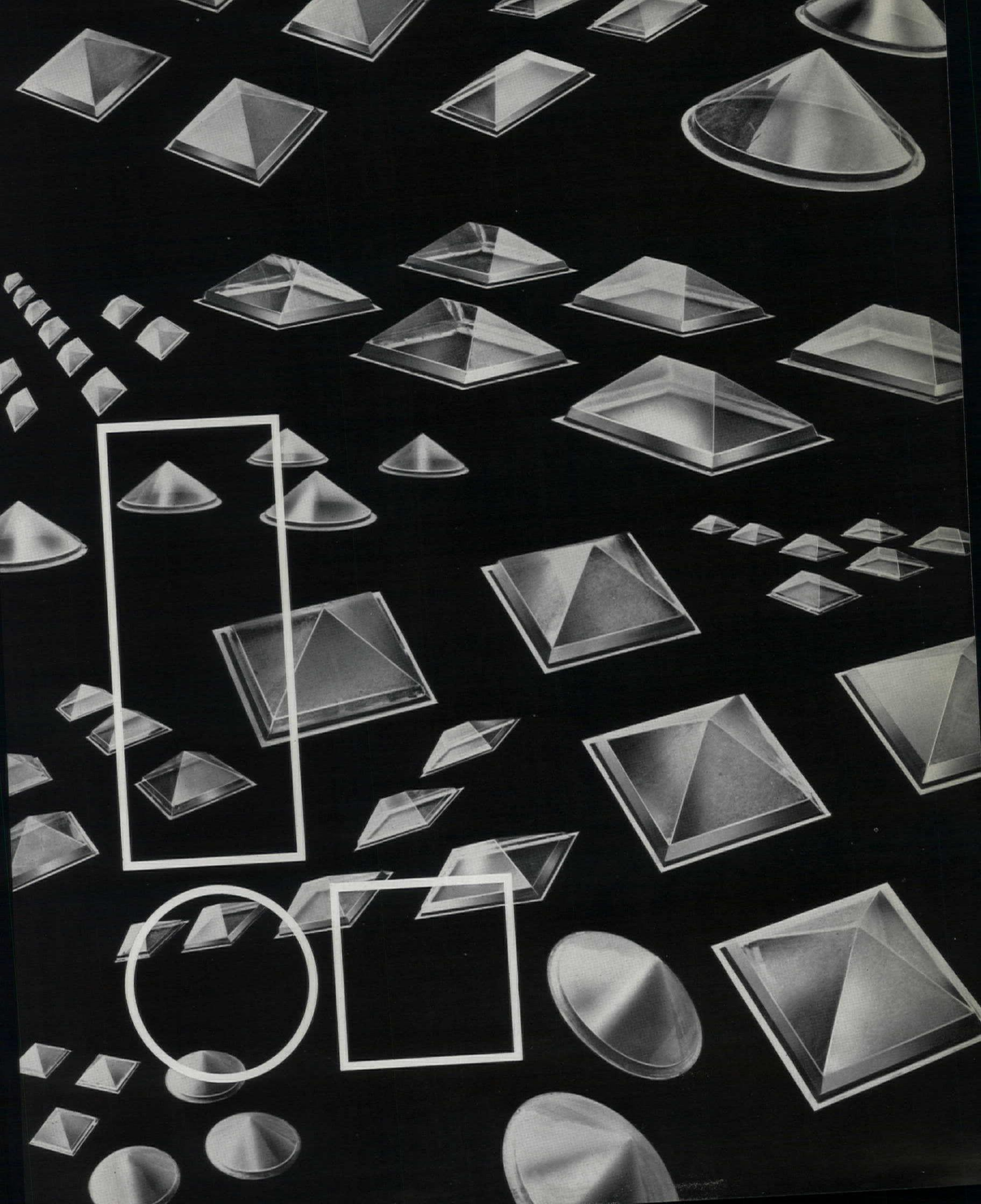

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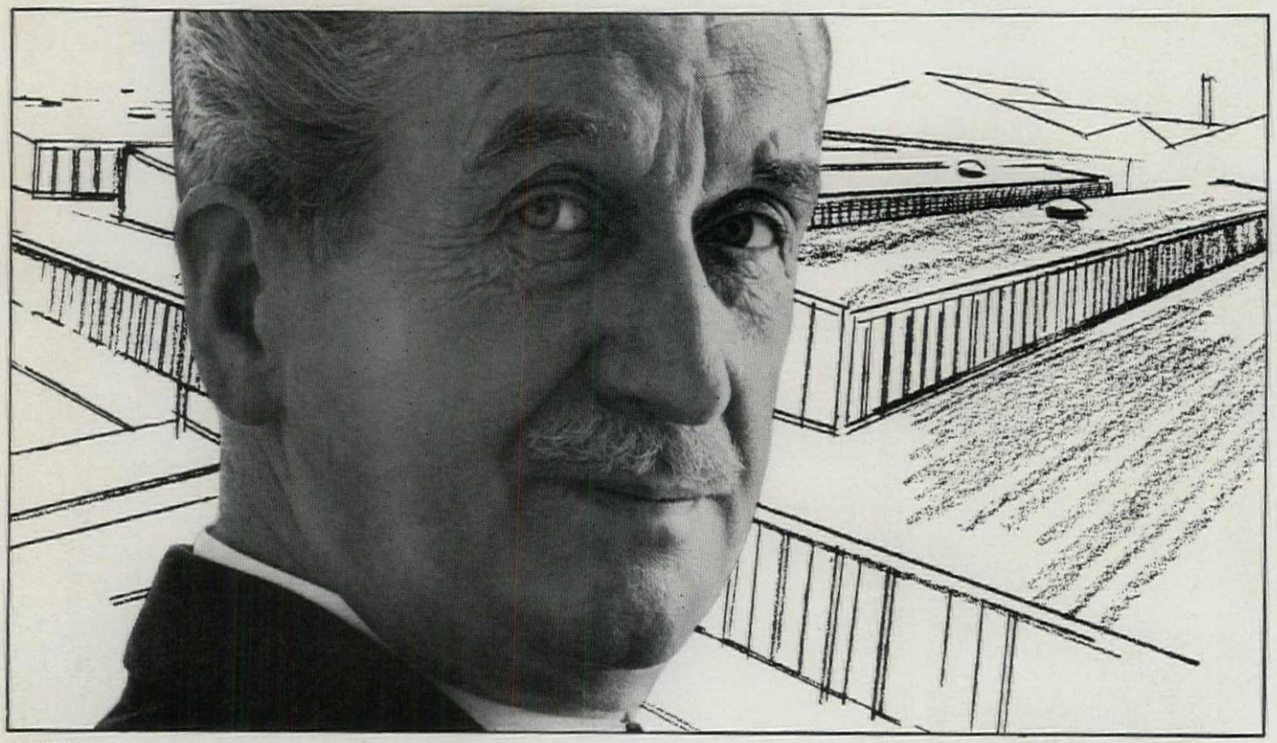

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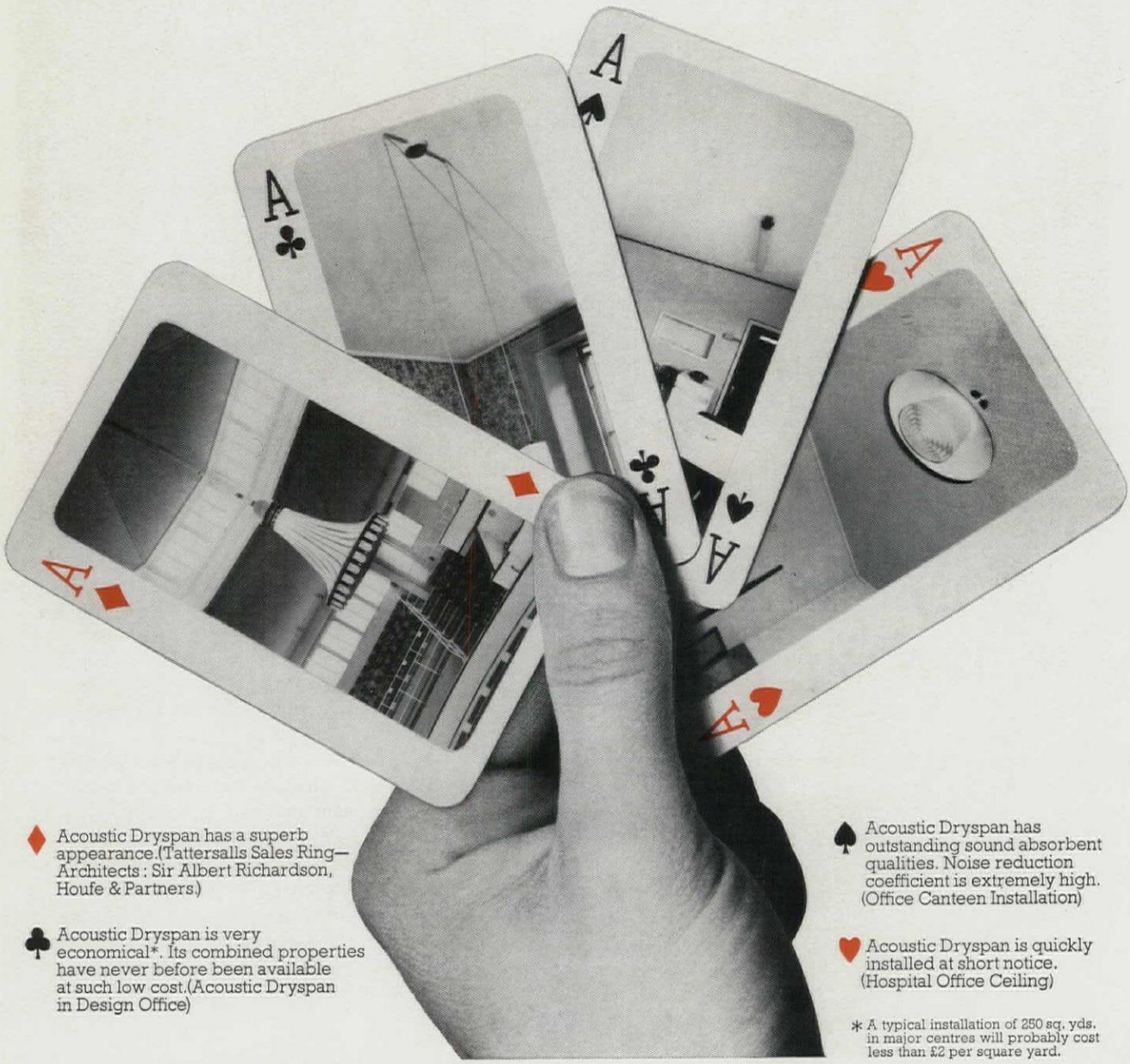

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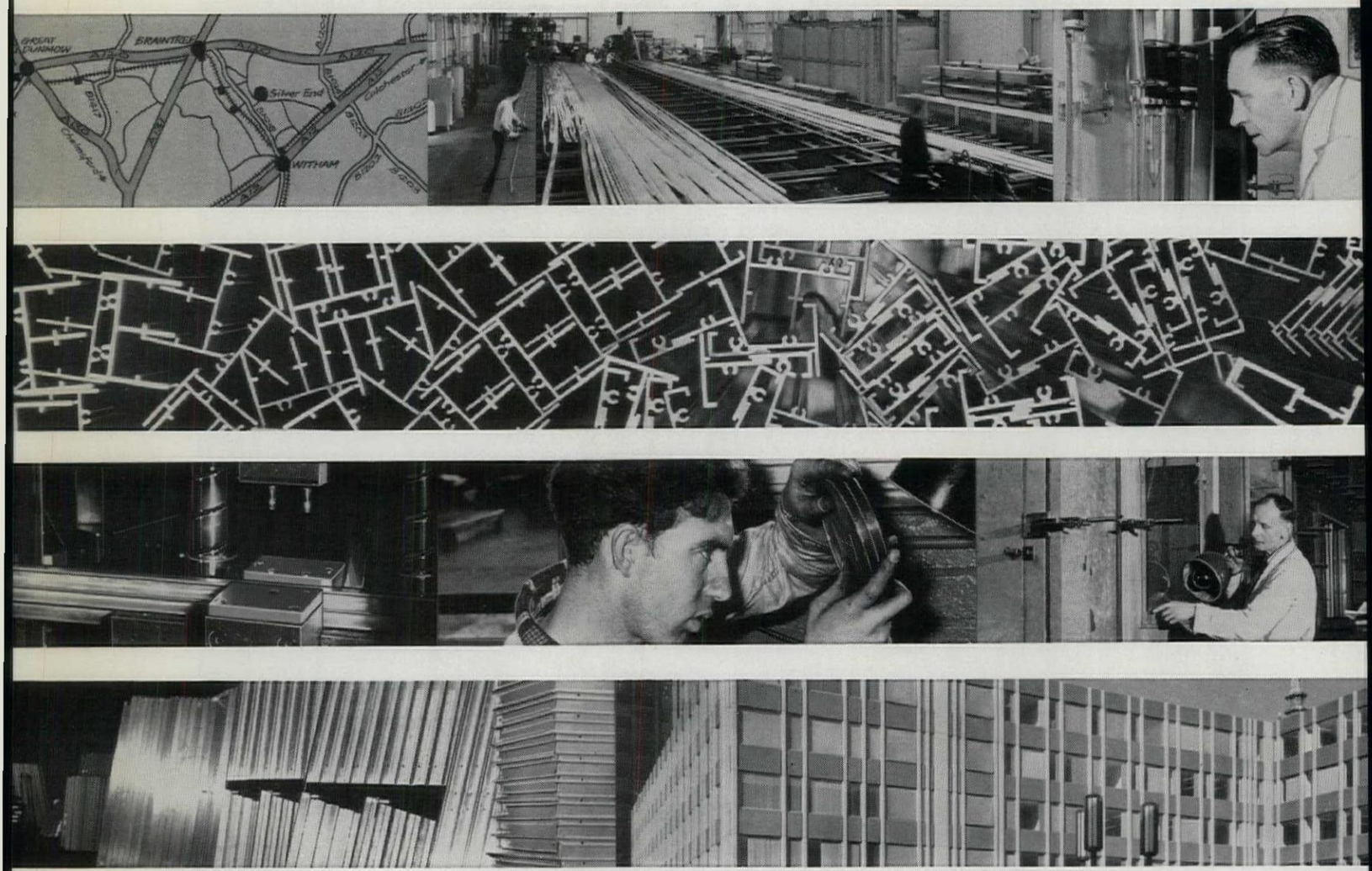

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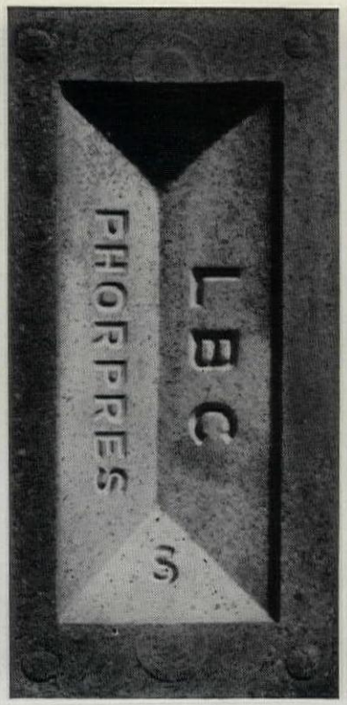

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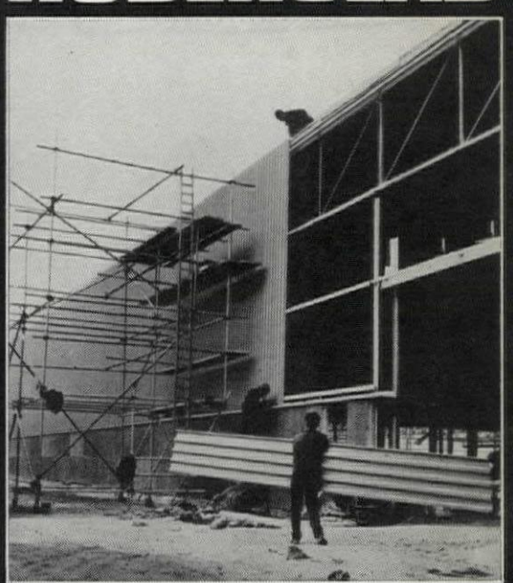

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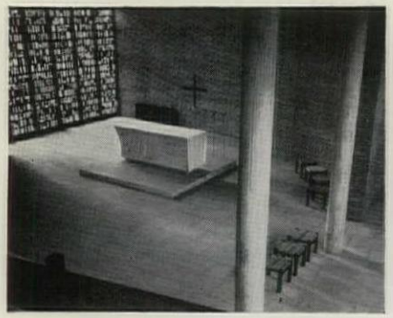
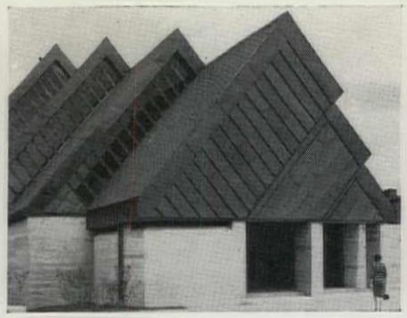
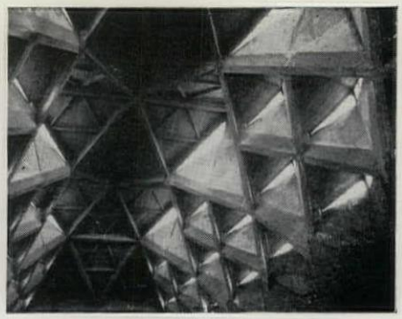
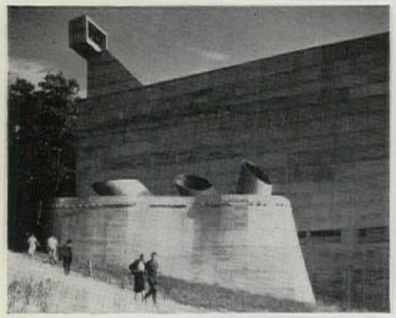
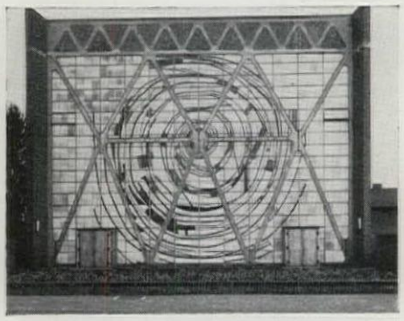
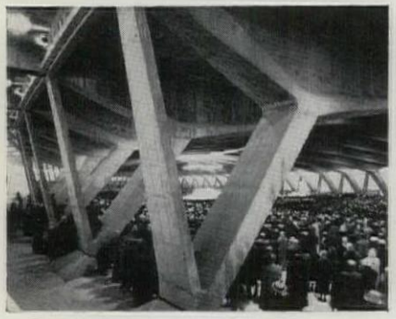
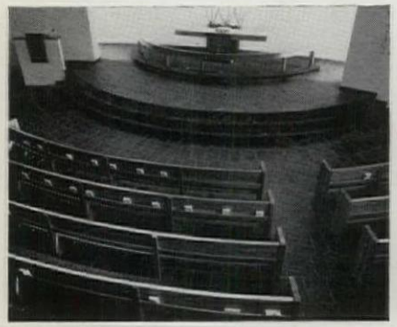
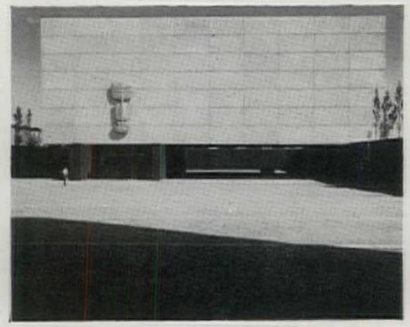
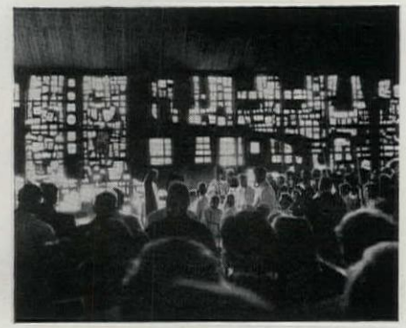




The New Churches of Europe

G. E. Kidder Smith

Author of *Brazil Builds, Switzerland Builds, Sweden Builds, Italy Builds, The New Architecture of Europe.*

This book illustrates and critically describes sixty churches from twelve nations, varying in size from cathedrals to small chapels. It shows plans and sections, and gives details of materials, finishes and seating capacity. It also has a detailed critical introduction and sets of comparative plans and interiors. It makes a major contribution to the evaluation and development of to-day's churches.

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