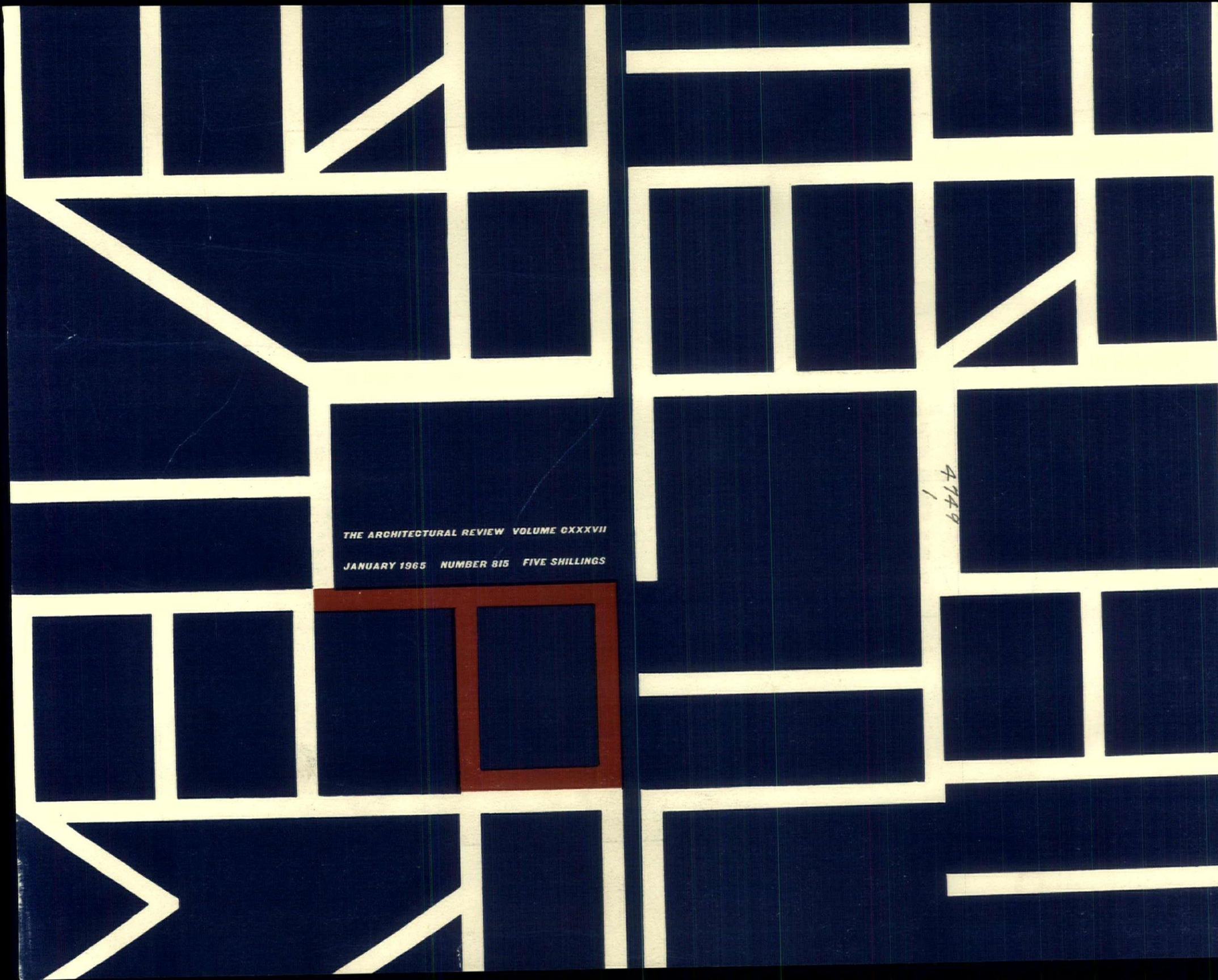

THE ARCHITECTURAL REVIEW VOLUME CXXXVII

JANUARY 1965 NUMBER 815 FIVE SHILLINGS

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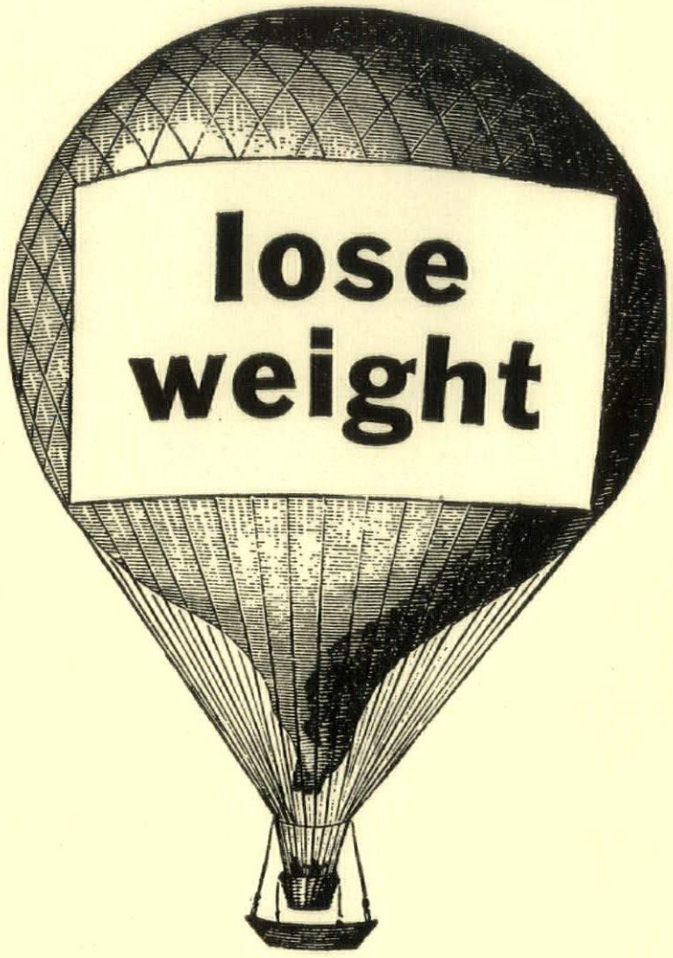

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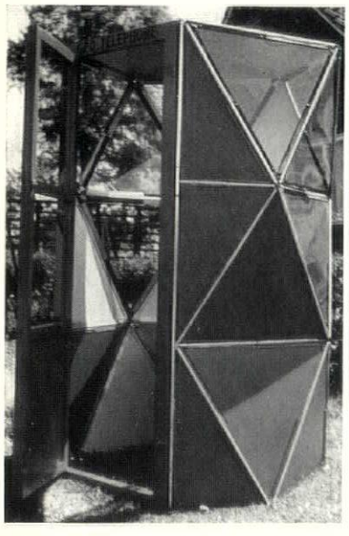
VIEWS AND REVIEWS

marginalia

DEMOUNTABLE TELEPHONE BOX

The photograph below, 1, shows a prototype of a temporary telephone box designed by Mr. Michael Faraday (of Design Workshop) for the GPO. The requirement was to produce a box that could be quickly and easily erected and dismantled, for use at exhibitions, fairs, etc., and for the temporary replacement of damaged boxes. The GPO eventually decided not to proceed with development and production, their main—somewhat strange—reason being the modern appearance of the box, which they thought would be unacceptable to the public, its 'asymmetry from certain viewpoints and its squatness.'

Nevertheless it is an interesting and ingenious design and not inelegant. Its basis is its 'geodetic' structure. which means that all the panels of which it is composed, including the window panels, are identical in size and construction and any panel can be placed in any position during erection, 2. Replacement of damaged panels is easy and cheap. The cost was



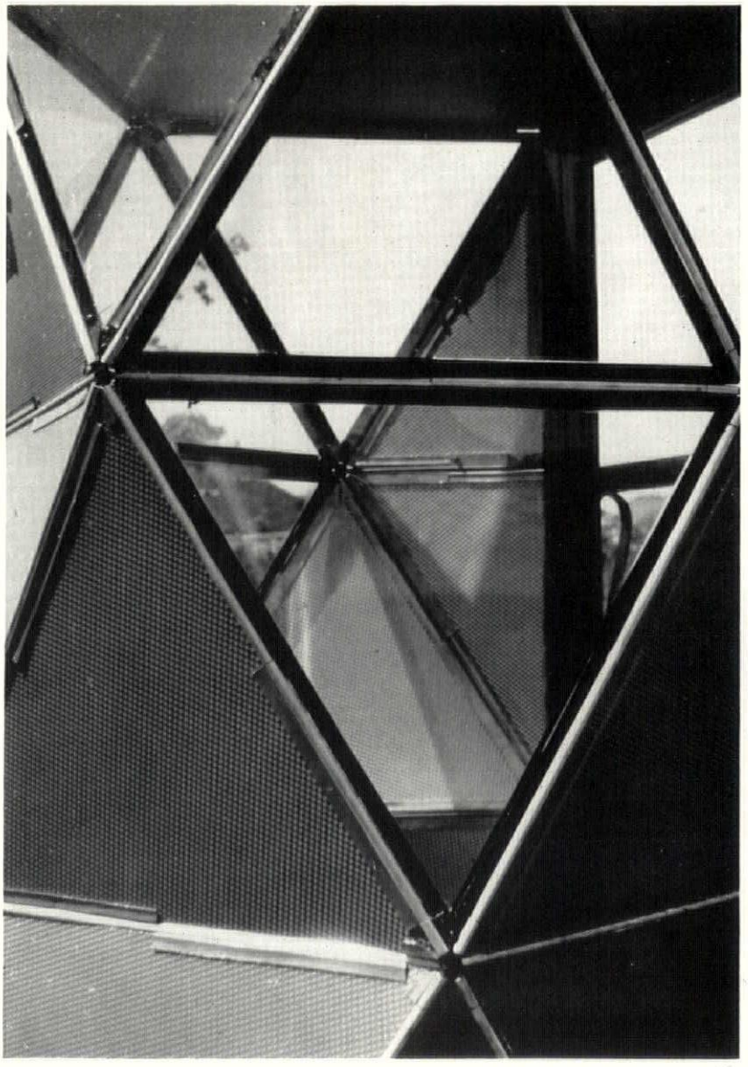
1

estimated at £44, fully finished—as against £85 which is the cost of the normal type permanent telephone box. During testing the box was erected by one man (with the assistance of a second man during the last half-hour) in one hour and forty minutes. One man dismantled it in three-quarters of an hour. Once assembly is complete the box can only be dismantled from the roof downwards and only if one knows how—so to that extent it is vandal-proof.

Assembly, which only requires a hammer and knock-out bar, is by means of rods pushed through the tube-type section, which is an aluminium extrusion, and bolted to the panels, which are also aluminium, forming a hinge-joint sealed with a neoprene section. Nodal caps screwed to each apex secure these points, and the wooden door is hinged to the side-panels in the same way. The roof gives rigidity to the whole structure. The floor is of match-boarding. Services come in at roof and floor level and are led behind a service panel, which hinges on to the floor. On this the coin-box and instrument are mounted. The units comprising the box fit into the normal small-size GPO van.

THE BUILDINGS OF EDINBURGH

Another addition to the small number of guides to modern as well as ancient architecture in British cities is provided by *Edinburgh: An Architectural Guide* (Edinburgh Architectural Association, 6s.). This praiseworthy publication sets a standard which other allied societies of the RIBA would do well to emulate; architects cannot expect others to notice them if they do not help themselves. The Edinburgh guide consists of notes on 260 buildings, divided into an historical section (notes by John Reid) and a modern section (79 buildings). Nearly half the buildings are shown in photographs, artfully laid out in an irregular pattern next to the text. Graham Duffy's design and typography are generally excellent. Particularly good are the two fold-out maps on stiff paper inside the cover. As well as modern buildings, those of the Victorian period are well represented, both the important works such as Capt. Fowke's Royal Scottish Museum and F. T. Pilkington's Barclay Church, and eccentricities such as an extraordinary villa by a certain Sir James Gowans.



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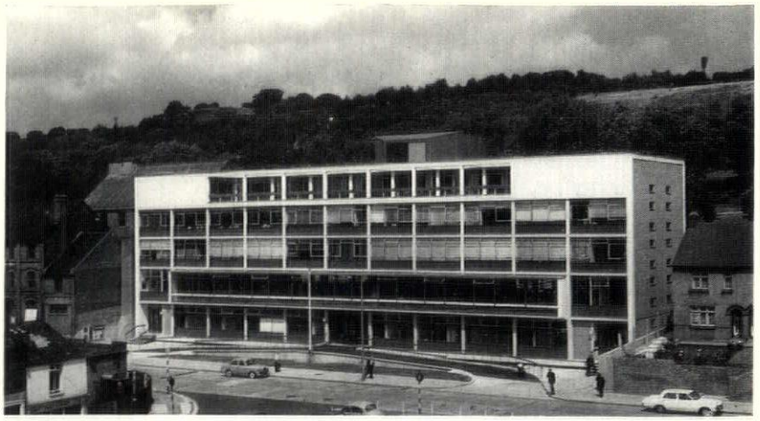

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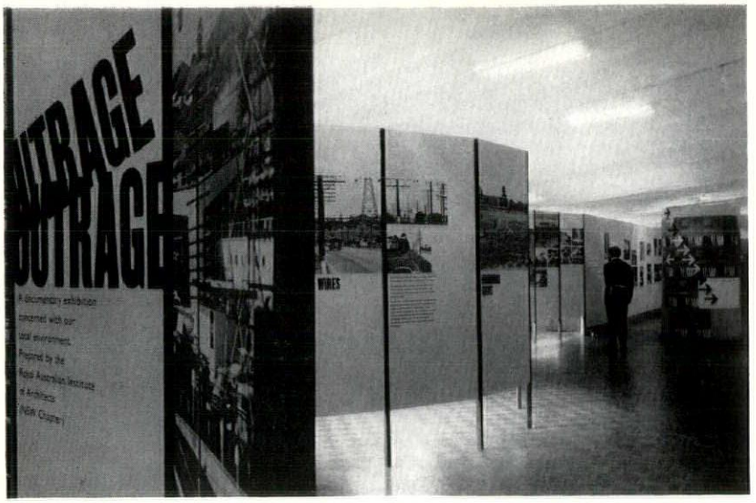
The Government's decentralization policy has resulted in several towns near London being furnished with modern office buildings, some of which are poorly related to their setting—see J. R. Nichols's townscape article in last month's AR. But here is one by the Government itself at Chatham, 3, that sits well on its site, is reasonable in scale and sophisticated in design except for the clumsy roof structure. This building, called Crown House, provides accommodation for departments of the Ministry of Labour, the Ministry of Pensions and the Inland Revenue. The architect was E. H. Banks of the Ministry of Public Building and Works.

THE FUTURE OF BRISTOL UNIVERSITY

The July AR contained both an editorial article, 'The University in the City,' and a survey by Professor Percy Johnson-Marshall on the history and prospect of Edinburgh University's planning, which illustrated the editorial theme. A recent report on the planning of another major city university, Bristol, provides some strikingly similar conclusions, although the local circumstances and problems in Bristol contrast with those of Edinburgh, every city and every university being unique. The Bristol report comes from the local Fabian Society whose discussion group included architect-planners, amenity society interests and social scientists. Their emphasis on the mutual advantage to city and university of an urban campus, and the implied concern at the extent to which the new foundations are apparently retreating to ambitious but essentially suburban sites, again echoes that of the AR editorial.

Bristol University's buildings stand on a steep hill immediately north of the city centre and may be seen from almost anywhere within a large segment of the town. Whatever chance the university may once have had to 'go suburban' has gone, especially now that post-war buildings costing many millions have joined the older ones on the hillside site.

The Bristol Fabian Society report grounds its planning proposals on the probable size and shape of the higher education services of 30-40 years hence. The end-of-century prospect is expected to be one of very large institutions by current British (although not foreign) standards, meeting many more adult part-time demands as well as those of a greatly increased number of young full-time degree students. The immediate and crucial planning assumption flowing from these demands is that the urban campus must be open and public to the extent that people are welcomed and even enticed into sharing in its life and work. This means good access



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The Australian Ugliness was long ago diagnosed by Robin Boyd, but the necessary Counter-attack has been rather slow in materializing—it was finally triggered by the belated arrival of the RIBA's Subtopia *exhibition in Sydney last year, when the RAIA exhibitions committee decided that it was inadequate to the Australian situation, and decided to mount their own exhibition instead, designed by Clark Gazzard and Yeomans, with the graphics under the care of Harry Williamson. The result,* 4, *is now touring various local authorities in the Sydney area.*

from cars and buses with a high level of environment once such vehicles have served their purpose and brought people in; it means shops, cafes and restaurants; it means the end of the cloister and also of the single-use desert which, for example, Mrs. Jacobs has criticized at Columbia University and which is to be found in large areas of the generally superior campus at Berkeley, California.

The Bristol Fabian report calls for a considerable area adjacent to the present university precinct to be allotted to comprehensively planned university use according to a long-term project to be worked on by city and university planners, starting now. This could be regarded either as a bid to provide a first-class academic quarter in Bristol by 1980-90 or, alternatively, as a major land grab by an already expanding, and perhaps rather selfish, university. Which of these impressions prevails, and whether Bristol is to have higher education provision fit for increasing demands, placed in a worthy and socially relevant urban setting, will largely turn on how far city and university are prepared to work together now, as they seem prepared to do in Edinburgh.

It is the present nature of the adjacent land, allocated in the report for academic and public use, which causes the immediate problem. Here are no shocking slums whose replacement by lecture halls can bring a warm glow to local authority and university alike but, instead, a quiet late Victorian estate of substantial villas now serving as Government offices, family homes and flatted homes for younger couples or groups of friends. This, the Tyndall's Park estate, was well laid out and should, in the Fabians' view, be replaced by new educational developments which are at least its equal in planning, design and amenity.

One aspect of this practical case study does not accord with the theory of Lionel Brett (AR, October, 1963) that the aim of urban university planning should, if possible, be the 'wedge'-shape campus driving into the heart of the city, a slender campus having its permanent, high-density uses towards the city centre and larger, possibly more transitory, buildings such as engineering laboratories towards the outside. In Bristol, this theory would come up short against road developments which have dictated the Fabian Society's basic conclusion on the potential future campus. This area will be bounded on two sides by urban motorways permitting no access and on a third by a lesser, but still busy, road. The fourth side of the square is occupied by present university buildings, thus offering a pocket of land which will need comprehensive redevelopment anyway at some future time and which offers a definite area in which a taut, carefully considered campus could lie.

ENVIRONMENTAL DESIGN

University College, London, has announced the establishment of a new chair of Environmental Design and Engineering at the Bartlett School of Architecture. The first holder of the chair will be Dr. R. G. Hopkinson, formerly of the Building Research Station, and his aim will be 'to educate architects, engineers and scientists in ways of designing buildings that are pleasant and stimulating to live in and at the same time functionally efficient and economical.' He will be concerned with, and will encourage research into, problems of lighting, air-conditioning, heating and noise. Courses of study will be set up at University College in which architects, engineers and research workers will co-operate.

RESEARCH AWARD

The Kaufmann International Design Award, which is made every two years by the Institute of International Education, New York, has been given this year to a British engineer-designer, Mr. L. Bruce Archer. He is at present leading a research team at the school of industrial design (Professor: Misha Black) at the Royal College of Art, and has been researching into the design of hospital beds with the aid of a grant from the King Edward Hospital Fund. His American award will enable him to continue, in a wider field, this work on the application of scientific methods to the design of everyday objects.

EXPO LAUSANNE

The architect of the 'Joie de Vivre' group of buildings at the Swiss National exhibition at Lausanne was Tita Carloni, not Ernst Gisel whose name was given in Ian Nairn's article in the August, 1964, AR.

obituary

VILJO REVELL: 1910-1964

Revell, who died in Helsinki in November, was one of the leaders of the post-Aalto generation of Finnish architects, which emerged powerfully after the last war and helped to transform Finnish architecture, previously associated with a single outstanding individual, into a widely based movement with international characteristics. Revell, who began as a pupil of Aalto, could thus be regarded as the bridge between Aalto's personal style, with its vigorous and imaginative handling of geometry, and the later Finnish work, more closely related to modern developments in Europe. Revell's own buildings combined toughness and muscularity with rationalism and a versatile technical sophistication, and his office, in its turn, became one through which many promising young Finnish architects passed.

The building that first drew attention to him was the Palace Hotel on the harbour front at Helsinki, the outcome of a competition which Revell won in collaboration with Keijo Petäjä. A combined hotel and office block, it was built in the first place to serve as the headquarters of the 1952 Olympic Games. This was a time of some economic stringency in Finland, but the building's fundamental merits enable it to survive the austerity of material and detail.

Among Revell's other early buildings were an imaginatively planned primary school at Meilahti, Helsinki, designed in collaboration with Osmo Sipari (1952), and a clothing factory at Hanko, near Turku, which was, when he designed it in 1955, the most advanced example of its kind in Finland in the working conditions it provided as well as in layout and construction. He was also one of the architects responsible for the satellite town of Tapiola, outside Helsinki, where he designed some distinguished housing and a kindergarten. In 1956, in collaboration with Heikki Castrén, he completed the first instalment of a long-term plan for new army barracks near the centre of Helsinki, extending behind the one remaining block of the early nineteenth-century neo-classical barracks by Engel, the rest of which was destroyed in the war. In 1960 he completed a cemetery chapel at Vatiala, near Tempere, with a bold copper-covered parabolic roof. This, too, was the result of a competition.

Much of Revell's time in the last few years was, however, spent in Canada. In 1958 he won the international competition for Toronto city hall with a spectacular design consisting of two high curved wings containing offices embracing a domed council chamber. After delays and difficulties the building is now well advanced and should be finished next year. Revell was in England only a week before his death, discussing with Mr. Henry Moore a work of sculpture that he was anxious to incorporate in the Toronto building.

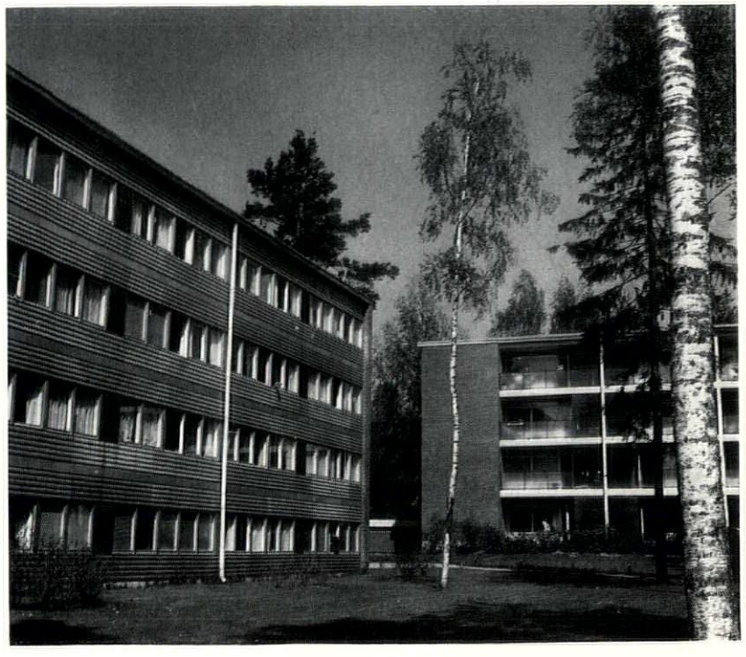
book reviews

PREACHING HOUSES

THE ARCHITECTURAL EXPRESSION OF METHODISM; THE FIRST HUNDRED YEARS. *By George W. Dolbey. Epworth Press.* 35*s.*

The least satisfactory parts of this book are the first two sections of the first chapter, on 'The Relation between Theology, Worship and Organization and Church Building,' 'In the Christian Church from the Beginning,' and 'In the Church of England especially since Medieval Times.'

5, *flats at Tapiola, by Viljo Revell.*



These are subjects far too large to be dealt with in a few pages. There are too many generalizations, and one or two inaccuracies—e.g., on page 11, 'The 1549 Prayer Book brought in a new era of congregational worship and the reading of the divine office was brought from the chancel into the nave.' The 1549 rubric begins, 'The Priest being in the quire.' But as soon as the writer gets to his real subject, he becomes interesting.

The earliest Methodist buildings were preaching-houses, and John Wesley would not allow them to be referred to as chapels: the New Room at Bristol was built as a 'Society-Room.' Wesley himself preferred an octagonal plan, and some octagons were built. The usual plan of the early Dissenting chapels—with the pulpit in the middle of one of the long sides—was sometimes used: the Methodists did not regard themselves as Nonconformists, but Mr. Dolbey thinks that English nonconformist influence, in this matter, is more likely than an imitation of the Moravian chapels that Wesley had seen in Germany.

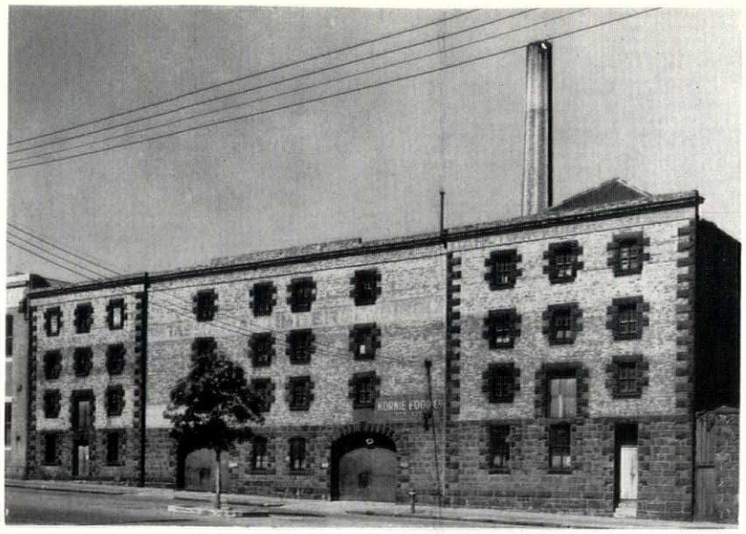
After about thirty years, when relations between the Methodists and the Church of England had become rather strained, buildings were erected which made provision for more than preaching. Wesley's Chapel in the City Road, 1778, was planned for the services of the Prayer Book, and does not differ from an Anglican town church of the time: there is a desk below the pulpit, for the reading of Morning and Evening Prayer, and a recess for the Communion Table. The Chapel at Bath, which was opened in 1779, was a smaller edition of the City Road Chapel. In 1790 the Conference decided that 'All preaching-houses are to be built in future upon the same plan as the London or Bath Chapel'; and this was, in fact, the usual plan for many years afterwards. But there was one unfortunate alteration: a large rostrum came to be substituted for the pulpit and desk, and the Communion space disappeared: there was still a recess at the back, but it was filled with an organ above, and with a vestry below. There are very few chapels in which the City Road arrangement has been allowed to remain.

Chapels of the old type were built until the middle of the nineteenth century—and, indeed, for many years afterwards. But from about 1850 there was a tendency to apologize for them, and to attempt Gothic or Renaissance—though this often extended no further than the front: the Renaissance chapels of F. Boreham, behind their facades, are much the same, except for their debased details, as the old meeting-houses. And the new Gothic buildings were not really Gothic in plan: the wide transepts were built to hold galleries, and what looks like a chancel is really a schoolroom.

Many of the old-fashioned chapels suffered from the same kind of alterations as S. S. Teulon inflicted on eighteenth-century Anglican churches: reseating, open ironwork fronts to the galleries, and Venetian tracery and coloured glass in the windows. But there are some that have been allowed to remain in a more or less authentic condition, and Mr. Dolbey describes several of them. Many of the chapels in large towns are now redundant and are likely to be closed or demolished. But some very good ones remain in small country towns, and are appreciated more than they have been for a hundred years.

There are 24 pages of illustrations and plans. Some of the photographs are less good than they might be: it is a pity that so much less than justice is done to the interior of the City Road Chapel.

BASIL F. L. CLARKE



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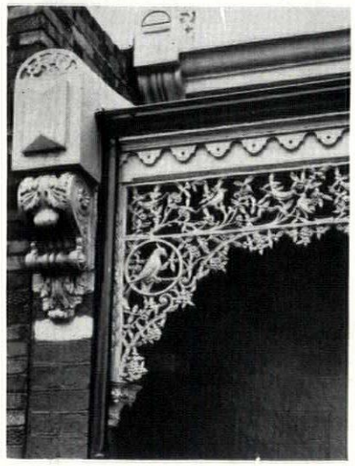


7

Three illustrations from Early Melbourne Architecture: 6, *warehouse in Leicester Street, Carlton*; 7, *veranda in* 154, *Barcly Street, Carlton*; 8, *bank facade re-erected at Melbourne University.*



8

VICTORIAN MELBOURNE

MELBOURNE CHURCHES: 1836-1851. *By J. L. Freeland. Cambridge University Press.* 105*s.*

EARLY MELBOURNE ARCHITECTURE. *Compiled and edited by Maie Casey. Contributions by D. A. Casey, John R. Freeman, Tom B. Freeman, Allan R. Henderson. Oxford University Press.* 65*s.*

The Australians take their architecture as seriously as the Americans. We have nothing in England as exhaustive and as competent on the Victorian buildings of any one city as Morton Herman's Sydney book of 1956, and there are not many in England today who write as perceptively on buildings of the nineteenth and twentieth centuries as Mr. Robin Boyd of Melbourne. Now two more books on Melbourne architecture by other authors lie before us, one learned, the other an annotated picture book.

Melbourne Churches is a beautifully printed record of fifty-six buildings of between 1836 and 1851. It is as detailed as the *Survey of London* is on buildings of the same sweetly indifferent quality. The buildings indeed might stand in any English provincial town or village: St. James of 1839 still classical, St. Francis of 1841 and St. Peter of 1846 lancet-Gothic, and the Baptist Church with its facade of 1862 grandly Italianate. As a matter of fact, as the Casey-Lindsay-Casey-Freeman-Freeman-Henderson book shows, Melbourne in the fifties turned the corner from a scale that you might find at Luton or Gloucester to the ambitions and prosperity of Leeds or Glasgow. The key buildings are the Anglican cathedral by Wardell with two west steeples, a crossing steeple, an ambulatory and radiating chapels, begun in 1860, and Parliament House, begun in 1858, which, with its giant colonnade, is Continental rather than English.

But while it may amuse the fellow Victorian historian to trace parallels and discover sources, for others the fascination of this joint photographic venture is to see in the mostly excellent photographs—the illustrations in the churches book are poorish—where Melbourne is original and unexpected. This applies to the rockfaced bluestone warehouses, 6, the cast-iron verandas, 7, to which THE ARCHITECTURAL REVIEW dedicated a large feature in April, 1960, and—impressing this reviewer particularly—the facade of the Bank of New South Wales in sumptuous Pall-Mall Cinquecento, 8, taken down in the nineteen-twenties and re-erected on the campus of Melbourne University. Such Victorian enlightenment is in England still a matter of the future.

NIKOLAUS PEVSNER

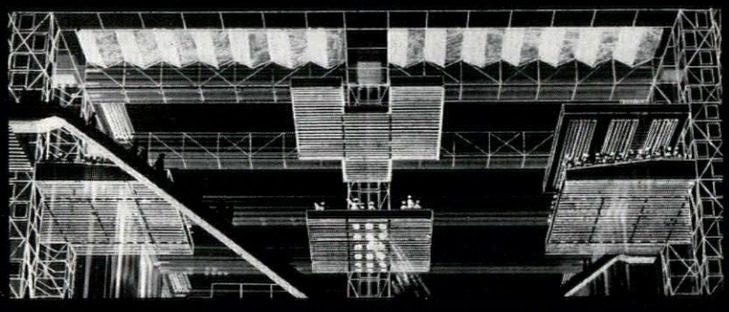
PICTURE HISTORY

KEY MONUMENTS OF THE HISTORY OF ARCHITECTURE. *Edited by Henry A. Millon. Prentice-Hall International.* 80*s.*

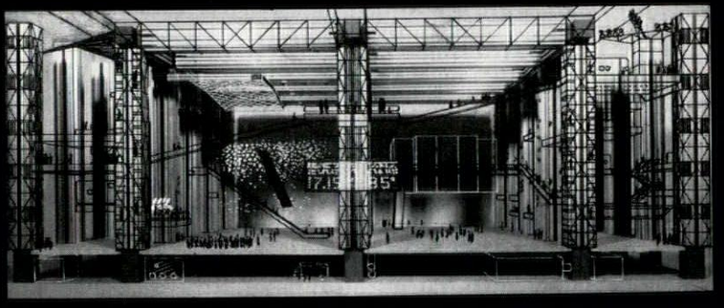
This is just what the title suggests. There is virtually no text. Good photographs (for the most part) and adequate plans and sections illustrate some 425 buildings ranging in date from Stonehenge to SOM's Union Carbide building in New York. The 425 are Professor Millon's choice of the outstanding and representative buildings of every epoch. They are grouped under five chronological headings and twenty-seven sub-headings. Some people may quarrel with some of his choices, and enjoy doing so, but they are instructive and well balanced, making this a useful reference volume for students, though one that breaks no new ground. Naturally Professor Millon's buildings under the last (Twentieth Century) sub-heading is the most controversial because it is difficult to write history while it is still being made. Here there are 43 examples: no British; 13 American; 10 middle-European; 6 French; 6 Dutch.

J.M.R.

'. . . university of the streets; laboratory of pleasure; short-life toy . . . ' Joan Littlewood's Fun Palace in the Lea Valley, designed by Cedric Price, is more fully previewed on pages 74 and 75.



Assembly



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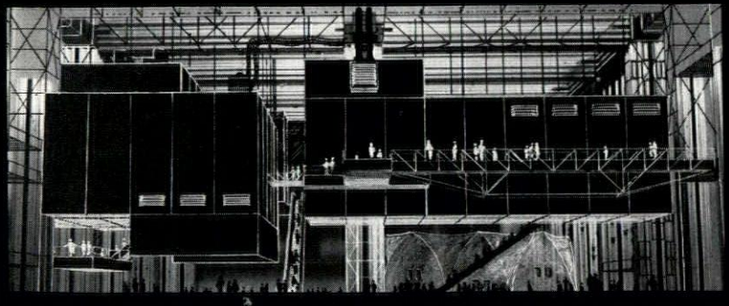

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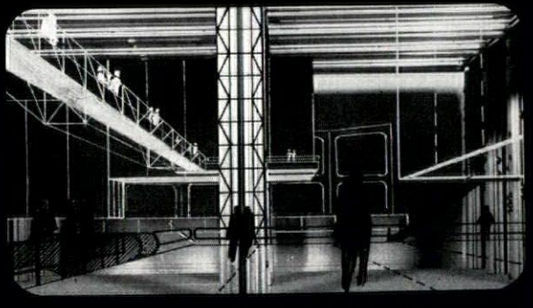


Selection

PREVIEW

It was in 1954 that THE ARCHITECTURAL REVIEW published its first 'Preview' of projects that were expected to rise from the ground during the coming year. 1954 now appears in retrospect (for quite other reasons of course) as a turning point in post-war English architecture. The relaxation of building controls and the refusal to start any more new towns meant the simultaneous disappearance of both the misery and enthusiasm of the immediate post-war years. At the same time, the new-found plasticity of the post-Unité Le Corbusier and the fidelity to materials 'as found' of Alvar Aalto were exerting their fascination on the younger architects, and resulting in the so-called 'New Brutalism' and its various repercussions.

In this year's Preview issue the decade that has gone by is celebrated by casting a retrospective glance at the first Preview and that of the following year, comparing some of the projects published with the buildings as they appear completed —see pages 11-14. Ten years ago, the mainstream of post-war functionalism was seen at its most refined in Chamberlin, Powell and Bon's Bousfield School, while the same firm's Golden Lane housing, with its richly recessed plum-coloured cross-walls and its crazy 'aeroplane' at the summit, showed the new fancies in full flight (very different in detail from Powell's actual prize-winning design of 1952). Again, the light tubular canopied cloisters of Casson and Conder's Sidgwick

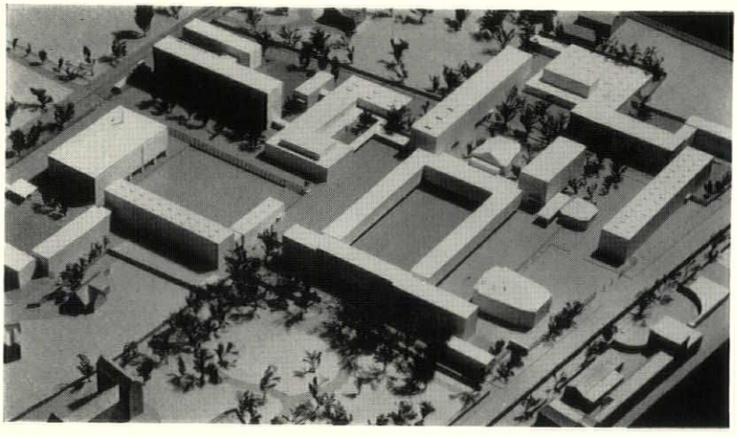
Avenue, illustrated in the 1954 Preview, gave way in the finished version of 1960-2 to massive bush-hammered concrete piers and coffering. The glazed walls proposed for the courtyard in Richard Sheppard's Churchfields School were later exchanged for the textured surface of natural wood boarding. In barely ten years rough chunky forms have taken over as the mainstream aesthetic of English architecture. In 1964 it is the schemes of industrialized building in light frames, or the austerely precast structures such as Yorke, Rosenberg and Mardall's Warwick library or Douglas Stephen and Partners' Watford offices that stand out from the jungle of boarded finishes and engineering bricks and massive wooden window-frames.

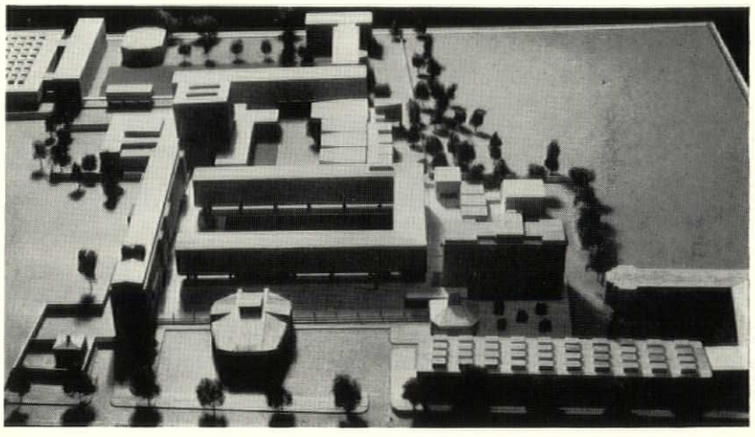
Why has this happened? These luxuriant hand-crafted finishes can surely no longer be attributed merely to the old Adam's affluent reaction to post-war austerity. Is it that ten years' experience has made architects mistrustful of the new materials because of the shabbiness that has resulted from their use, so that they prefer more solidly lasting materials? Or is it rather that there is still a deep-rooted objection to the machine amongst English architects? It is nice to think of the architect as the colossus bestriding the abyss between the two cultures, representing that third culture of visual experience which Sir Robert Matthew convincingly advocated for the state secondary schools at the last RIBA conference. But does this colossus exist? One has an uneasy feeling that the absence of more than a very few schemes by leading architects for factories and shopping centres and office blocks is due as much to an aversion to off-the-peg structures that the client might almost as well order direct from the factory, and to the repetition of forms inseparable from machine-produced architecture, as it is to a praiseworthy enthusiasm for the individuality of the requirements of houses and universities. The world of Kenzo Tange (or for that matter, William Butterfield) is exciting, but incomplete—irrelevant in many respects to the social conditions and demands in this country at the present moment. Most students are still trained to prefer the individual solution; yet if the leading lights of the profession disdain to enter the market-place, there are always those businessmen-architects available for whom the repetitions of commercial design mean little work and good business.

In one respect the signs are encouraging. The projects of 1954 and 1955, for all their 'welfare state' functionalism, are all isolated buildings—school, church, housing and so on. In 1964, as the projects illustrated on the following pages show, there is an increasing number of schemes that can be classified only as 'community building', where the whole needs of the occupants are met throughout the day. Shops in universities, old people's luncheon clubs in housing schemes, welfare departments next to police offices—these are among the examples. The trend is perhaps best symbolized by the establishment at Lambeth of a building committee to co-ordinate the client requirements of all the other committees, which in turn will be met by an architect's department based on a comprehensive group system, not divided into 'schools architects' and 'housing architects'. It is this kind of approach that may well help to heal the present schism between flexible requirements and inflexible, lovingly detailed structures. Seen in this light, Cedric Price's Fun Palace design is by no means as exotic as some might think.

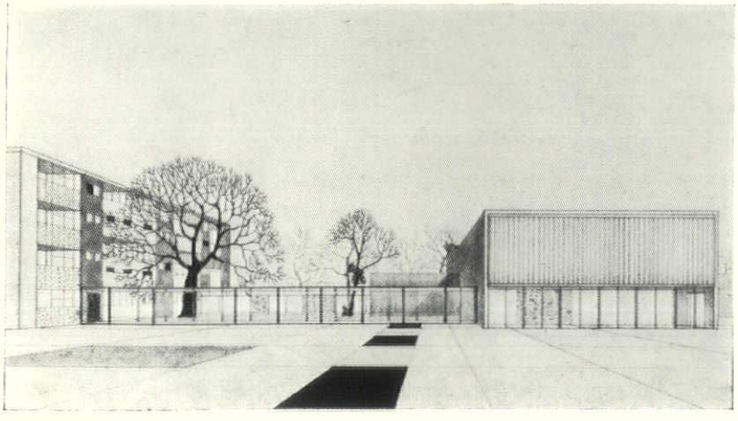
POSTVIEW

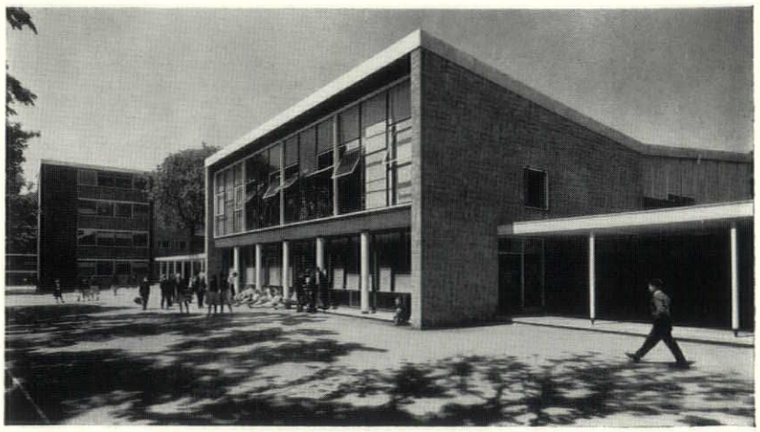
To look back on the 'Previews' of 1954 and 1955 from ten years' distance seems almost like a war veterans' reunion. 'Where are they now?' any reader may ask with a trace of cynicism—those brave young projects on which so many hopes were pinned, which now display, if not the remoteness of history, at least the worn lines of middle-aged weathering. How many of them still maintain the pristine virtues of their published perspectives? While it is the purpose of this 'Postview' to point out, not too gloomily, the kind of changes that took place between the publication of certain projects in the REVIEW and their eventual realization in steel and concrete after several years of detailing and construction, the other side of the picture must be kept in mind: that hundreds of projects remained, like Coventry Cathedral, fairly consistent from first to last and that changes at the working drawing stage are quite as often to the advantage as to the disadvantage of the final building. The mid 'fifties are in any case a particularly interesting period—the years when the traditional centres of English patronage began gingerly to come to terms with the new architecture. Who would have believed a mere five years before that the 'Previews' of 1954–55 would have contained major examples of comprehensive development sponsored by Cambridge University and the City of London and that these should, ten years later, be largely built?

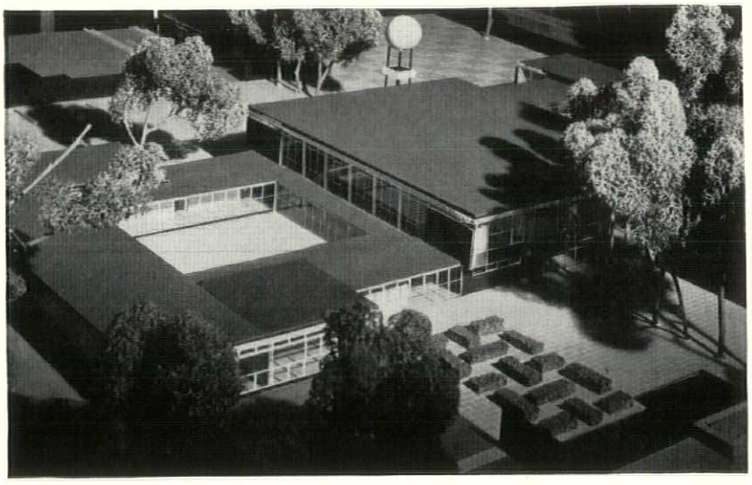




In spite of Robbins, educational building was far closer to the centre of English architecture ten years ago. The Cambridge arts faculty precinct at Sidgwick Avenue, commissioned in 1952 from Sir Hugh Casson and Neville Conder, was one of the most ambitious and certainly the longest delayed of all the schemes then prepared for higher education. Although the model of 1953 (left) shows the courtyard next to Sidgwick Avenue largely as built in 1956–64, everything beyond has been changed (right) as a result of a 'misunderstanding' between the university authorities and the college which owned the land. This reduced the total site by three acres. The 1963 model (right) has lost the central auditorium and water court and is dominated instead by the history faculty (James Stirling's design is on page 17 of this 'Preview'). Much less drastic changes are shown below in the detailing of the LCC Architect's Holland Park School, one of the first great comprehensives, and overleaf in Chamberlin, Powell and Bon's delicately refined Bousfield primary school in Kensington. The mid 'fifties, as

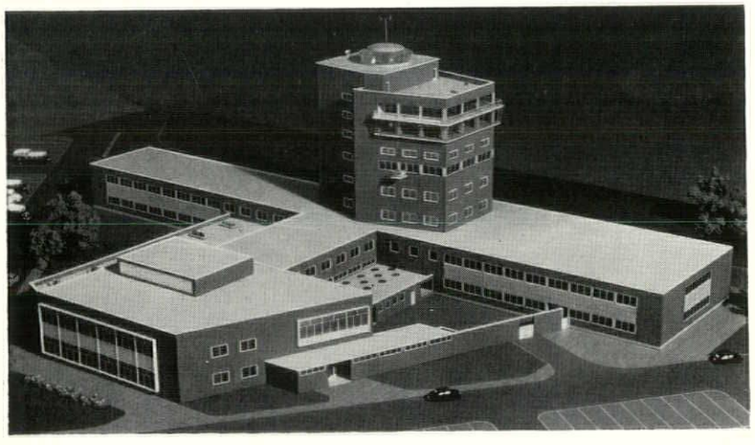






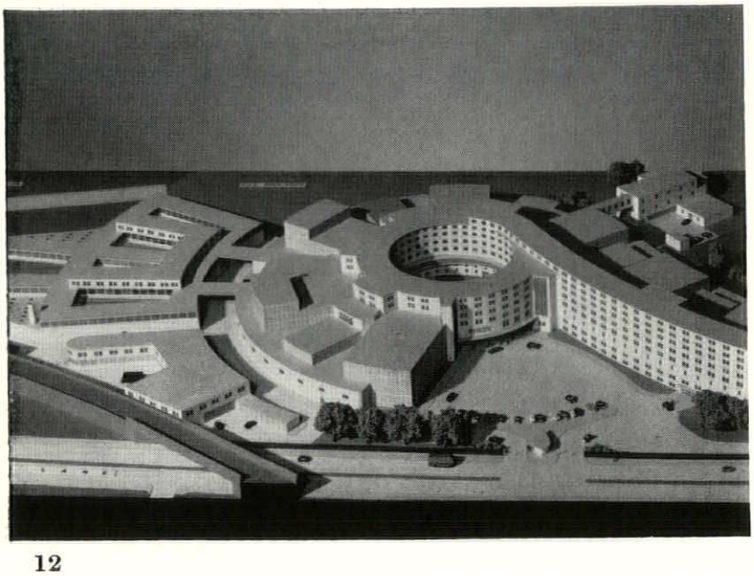


a result partly of greater affluence, partly of technical developments and partly of the new aesthetic of Brutalism and late Corb, saw an increasing finesse in the use of materials. At Bousfield, above, the fully glazed wall, with its dangers of glare and heat loss and psychological insecurity, was modified in execution by the discreet insertion of panels of white brick. The two pictures of the model and the completed building show countless minor changes in such things as the rhythm of the glazing bars and the pattern of the landscaping. Technical development by the client is at least partly responsible for equally

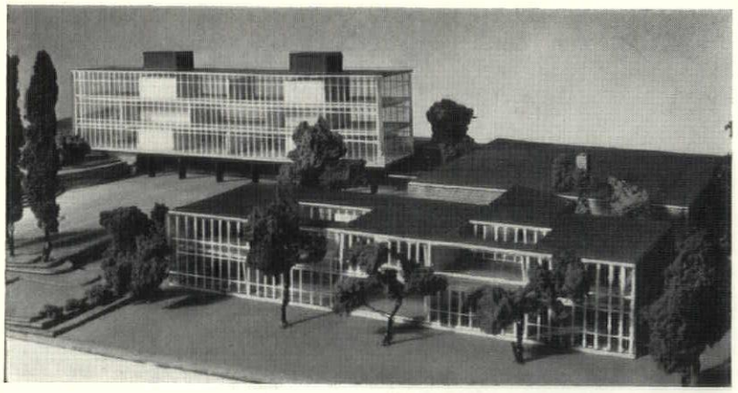




numerous changes in Frederick Gibberd's control tower at London Airport, such as the shape of the lantern on top. The need for heavy servicing vehicles has broken an ugly hole in the high wall which unified this side of Gibberd's building. The architect himself has altered some of the windows and cladding materials. A direct and obvious example of the change from heavy brick facings can be seen in Norman and Dawbarn's Television Centre at the White City, below, with its curtain wall above the completed entrance. Sometimes, however, the change from the original model is more apparent than real:

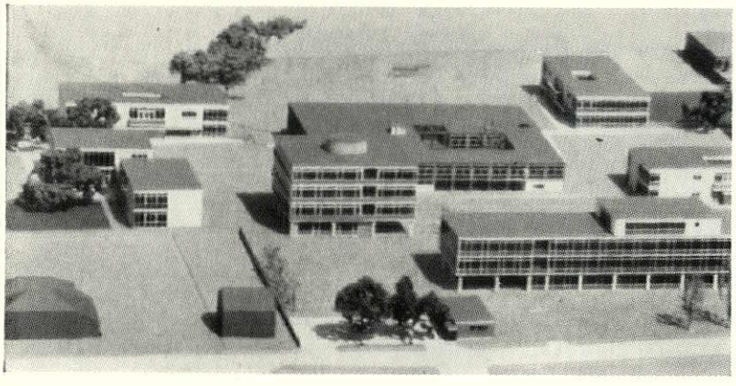






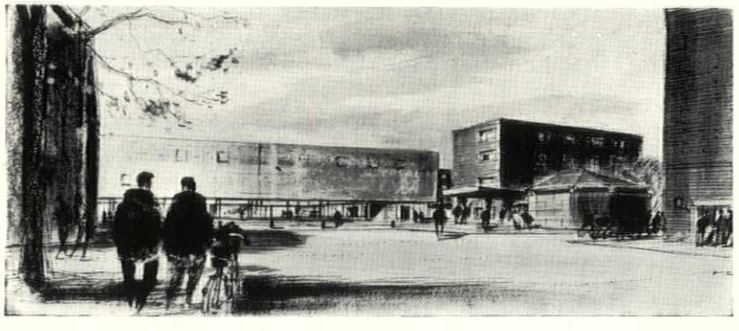


thus in H. T. Cadbury-Brown's primary school at Hornsey, the pattern of glazing bars modifies the basic conception promised in the model. The influence of Aalto and the 'as found' school of thought happened to coincide with a growing (if often ignorant) public outcry against 'glass boxes.' The glass walls shown perceptibly in the model photograph of Richard Sheppard's Church-



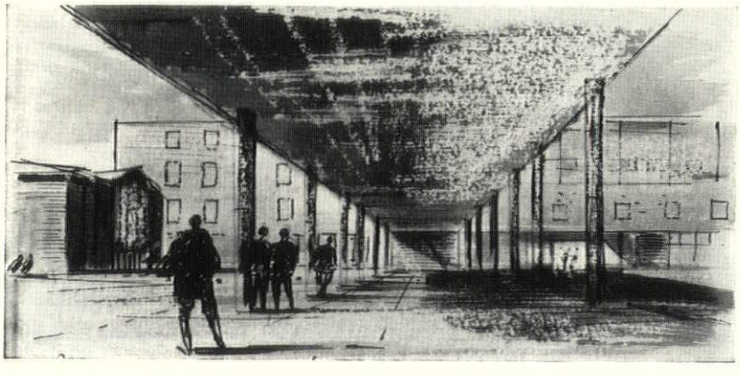


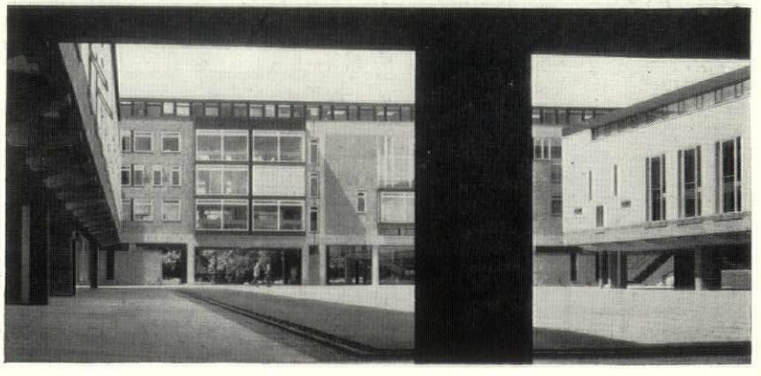
fields School at West Bromwich, above, were changed for the stronger, warmer enclosure of cedar boarding. The longer the 1954–55 projects took to build, the greater the aesthetic change. Sidgwick Avenue's forecourt in Sir Hugh Casson's perspective, below, has an almost village-like charm: slightly flimsy buildings surround beautifully detailed spaces reserved for

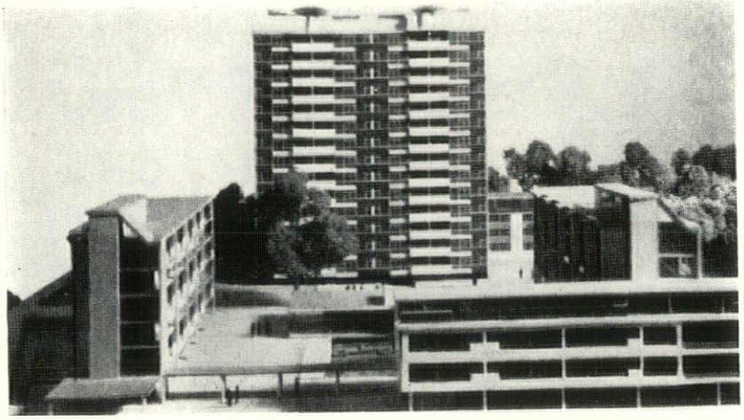


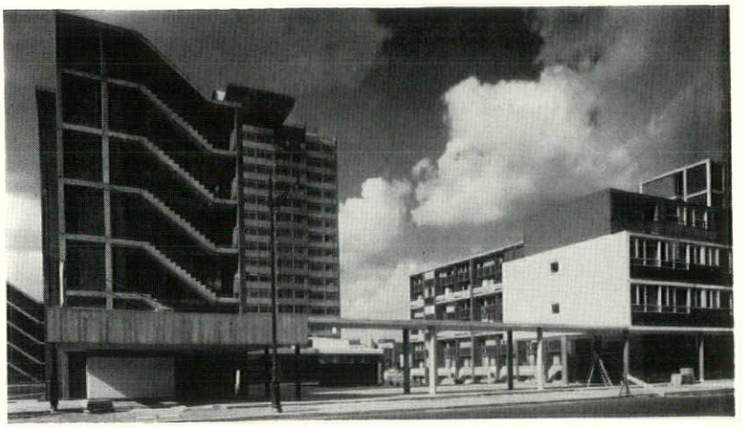


pedestrians and cyclists. In 1964, the motor car holds sway and the newly completed forecourt is choked. The buildings, too, have had a corresponding increase in massive outline and robust finishes. The slender tubular piers of the raised faculty building have become massive and sculptural supports for walls of Portland stone. The sculptural revolution was in

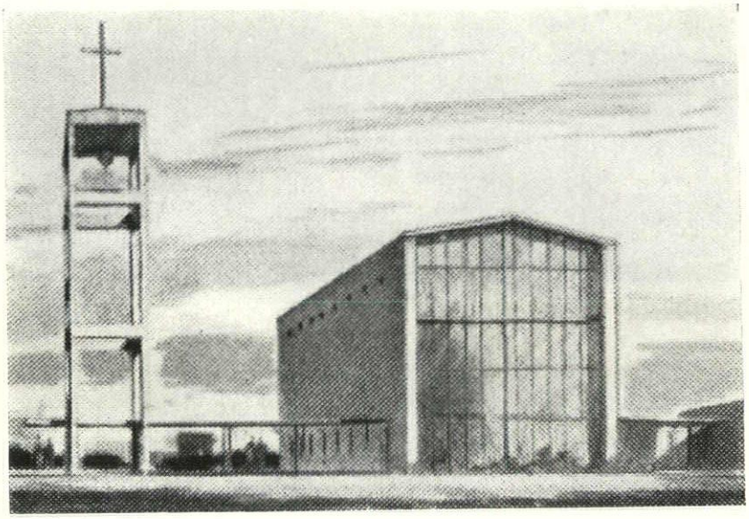


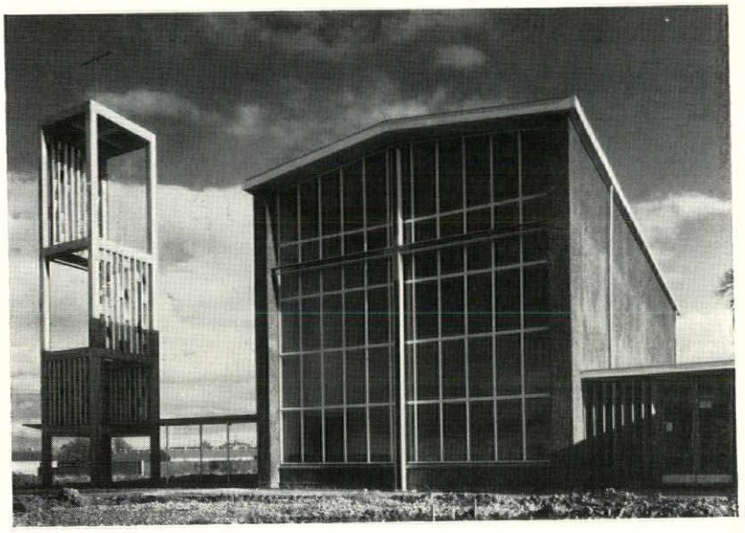




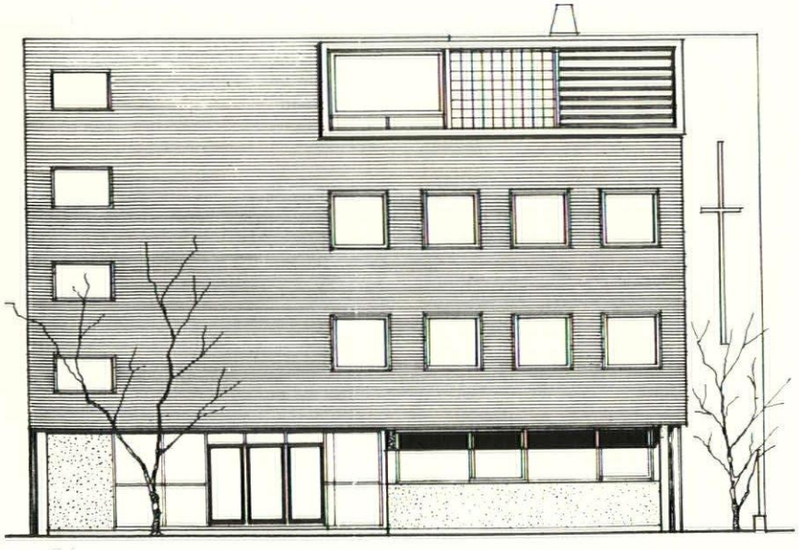


fact presaged in the 1955 preview by the publication of Chamberlin, Powell and Bon's revised design for the City of London's Golden Lane housing, above, won by Powell two years earlier with a less demonstrative scheme. As finished, it shows few further enrichments: a more coherent 'aeroplane' on the roof of the tall slab and a vigorous expression of the staircases in the lower blocks. Similarly slight change, typical of the general 'Preview'-'Postview' contrast, can be seen in the





tower of Sir Basil Spence's church design for Coventry, above. As a corollary, it is rare to find such a complete change of design (everything except the shape of the cross) as that of Yorke, Rosenberg and Mardall's Finnish Seamen's Church.





EDUCATION

Page	*Project*	*Architects*
17	History Faculty, Cambridge University	James Stirling
18	Library, Warwick University, Coventry	Yorke, Rosenberg and Mardall
19	College, University of Kent, Canterbury	Sir William Holford and Partners
20	University of Essex, Colchester	Architects' Co-Partnership
21	University of Lancaster	Bridgwater, Shepheard and Epstein
22	Brunel College, Uxbridge, Middlesex	Richard Sheppard, Robson and Partners. Stillman and Eastwick-Field, Architects for Engineering Complex
23	Mathematics Court, Leeds University	Chamberlin, Powell and Bon
24	Luxborough Lodge Site, Regent Street Polytechnic, London	Hubert Bennett, Architect to the LCC
25	Drama Studio, Hull University	Peter Moro and Partners
25	Theatre, Nottingham University	Williamson, Faulkner Brown and Partners
26	Library, Glasgow University	William Whitfield
26	Library, Edinburgh University	Sir Basil Spence, Glover and Ferguson
27	Central Facilities, King's Buildings, Edinburgh	Michael Laird
28	Women's College, Durham University	Stillman and Eastwick-Field
28	Men's College, Durham University	Richard Sheppard, Robson and Partners
29	Halls of Residence, Coventry	A. G. Ling, former City Architect
29	Hall of Residence, Leicester University	Castle and Park
30	Halls of Residence, Liverpool University	Manning and Clamp
31	Graduate Flats, Oxford	John G. Fryman
31	College Hostel, Cambridge	Trevor Dannatt
32	College Buildings, Cambridge	James Cubitt and Partners
33	College Building, Oxford	Powell and Moya
34	Girls' School, Wallingford, Berks.	Tom Hancock
35	Girls' Secondary School, Bermondsey, London	Mayorcas and Guest
35	College of Technology, Chatham, Kent	Robert Matthew, Johnson-Marshall and Partners
36	Primary School, Cambridge	Lyster and Grillet
36	Junior School, Wellington, Shropshire	Ralph Crowe, County Architect

The predominance of schemes for higher education in this year's 'Preview' can hardly be attributed to the Robbins Report. Most of those illustrated were under way some time before Robbins; in any case, apart perhaps from the Sheppard-Stillman plans for Brunel and the Lanchester Technical College at Coventry, they are all for well-known institutions—not 'jumped-up CATs.' The 'Postview' feature (pages 11–14 of this issue) provides the negative reason for the interest of leading architects in buildings for higher education: the level of sophistication reached in primary school buildings ten years ago (e.g. Bousfield School) meant that they had received their fundamental appraisal for this generation and would thereafter merely be modified and marginally refined. Two projects in this issue—Ralph Crowe's finely jointed SCOLA school and Christophe Grillet's imaginative use of timber paraboloids at St. Matthew's, Cambridge—show how far this refinement has gone. Similarly, the LCC's Holland Park school of 1955 summed up conclusively the vastness and flexibility of the comprehensive approach to secondary education that was then brand new; today only peculiarities of siting or room shapes, as in this year's schools by Hancock and Mayorcas, deviate from the good county architect norm.

A more positive reason for the present fascination of the university for architects is its quality as a microcosm of the urban environment. Just as the housing projects of ATBAT and Team-X in the early 'fifties have now led to an orgy of neo-slums and pseudo-kasbahs, so the Smithsons' Sheffield competition entry has at last brought forth a monumental brood of stone steps and flying catwalks. The variety of expressive forms for public buildings, rarely achieved amidst the frustration and delay attendant on most civic centre projects, are now being realized on the campus. This issue illustrates no fewer than four libraries and two experimental theatres amongst university projects. The vast construction hall designed by the LCC Architect's Department for the Polytechnic College of Architecture is comparable with the boldest civic monuments of the nineteenth century, even if the uniform of its inhabitants will be the white coat rather than the aldermanic chain. Both this project and Michael Laird's drably named 'Central Facilities' for Edinburgh's King's Buildings site incorporate the kind of sectional guidance of people and vehicles which has hardly yet penetrated our major cities. Paved piazzas on podia replace green lawns, so easily defaced.

The crux of these schemes, as of cities, is the maintenance of a live environment for at least fifteen hours a day. Here the four new universities included in this issue are particularly interesting. Essex offers multi-purpose teaching and social buildings with the towers of apartments close by. Lancaster, perhaps the most interesting in plan, concentrates standardized 'study-social units' on a central linear thoroughfare, allowing the teaching buildings to expand unhindered outwards. Warwick offers sheer size plus the immediate proximity of a large 'conventional' housing area. Kent, although split up into ten colleges (surely too small to allow for sufficient diversity of group activities), packs the 600 students in each around a tight cruciform 'racetrack' of communal rooms. Equally encouraging is the diversity shown this year in planning the conventional hall of residence, from a dreaming tower at Coventry to hexagons and crosses for Durham. Both Oxford and Cambridge show suburban 'out-of-college' developments and also massive schemes of renewal in their historic centres; the Cubitt scheme for King's and St. Catherine's at Cambridge is particularly notable as a successful piece of intercollegiate co-operation.

There must, however, be a strong element of post-Robbins doubt about the optimism shown by the universities which are pressing ahead with residential communities. Anyone who does a bit of basic mathematics on the Report's implications is bound to wonder how exactly the money will be found for all the new universities needed. There is one answer, already strongly canvassed in educational circles: universities will have to become far more locally based in their intake, with more and more students living at home. This is a depressing prospect, but it is hard to see how it will be avoided. The Sheppard-Stillman Brunel plan could thus be the most significant of those illustrated: an environment consisting solely of teaching buildings and common-rooms —a kind of luxury factory—and not necessarily the worse for that.

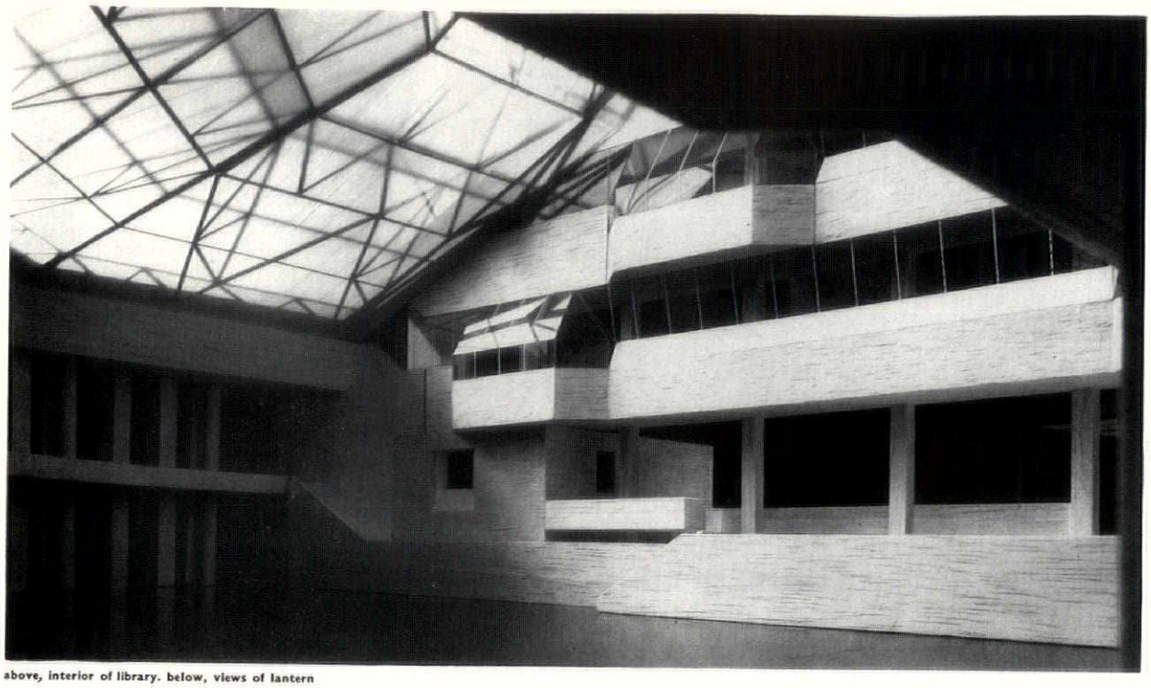
The Brunel engineering complex is detailed in a repetitive system of precast concrete frames, as are Chamberlin, Powell and Bon's buildings for Leeds and Yorke, Rosenberg and Mardall's library for Warwick. These two schemes are unusual in using wholeheartedly the technological advances of recent years to create an appropriate sense of order and scale amongst the diversity of faculties and lecture halls. One other building stands alone as a solution of genuine originality, a whole environment in itself: James Stirling's history faculty at Cambridge, where the 'style for the job' that proved so appropriate for the engineering workshops of Leicester is applied with equal success to a research centre for liberal studies.

HISTORY FACULTY, CAMBRIDGE UNIVERSITY

James Stirling. Sir Hugh Casson, Consultant for Development Plan

CLIENT: Cambridge University.
SITE: In centre of Sidgwick Avenue development for arts faculties.
ACCOMMODATION: Lecture rooms, offices, common rooms, cloakrooms/lavatories for 53 staff and 746 students, in L-shape block. Seeley Library with 12,600 ft. of book shelving for 360 readers, in quadrant.
STRUCTURE AND FINISHES: R.c. frame with plastered finish internally and tiles and glass externally. Steel tube trusses for lean-to lantern.
COST: £336,785.
BUILDING PERIOD: September 1964–June 1966.

Senior assistant, M. Wilford. Quantity surveyor, Monk & Dunstone. Structural consultant, Felix J. Samuely & Partners. Mechanical and electrical consultant, R. Gregory & Partners. Acoustical consultant, Hope Bagenal.

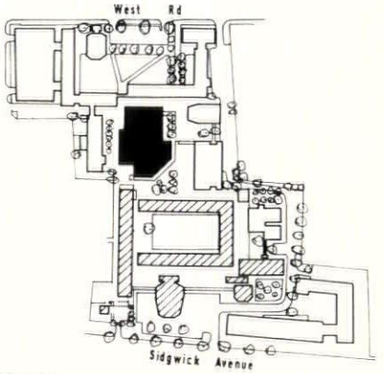


above, interior of library. below, views of lantern

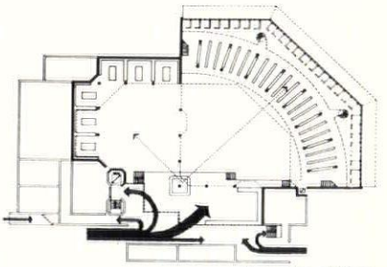




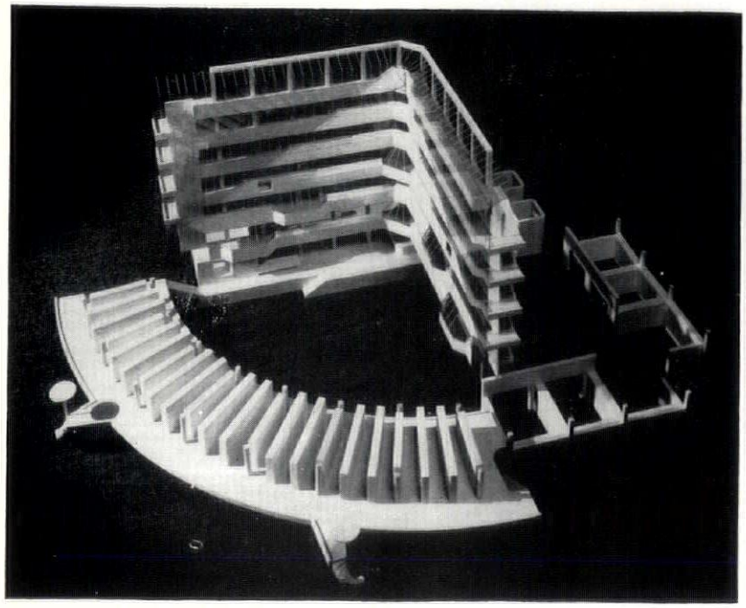
below, structure of library

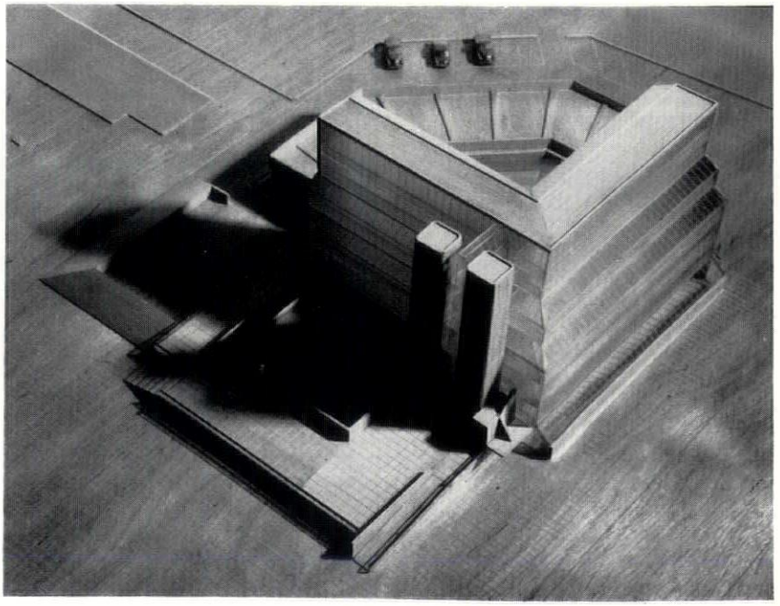


site plan



above, plan of library
below, exterior of faculty, with library at rear



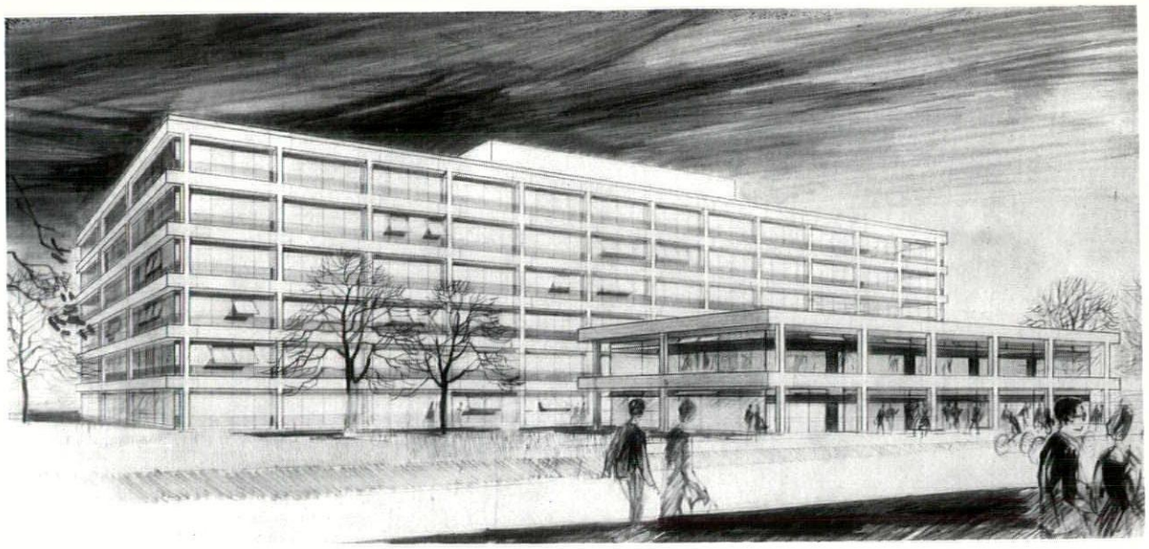


LIBRARY, WARWICK UNIVERSITY, COVENTRY

Yorke, Rosenberg and Mardall. Arthur Ling and Alan Goodman, Consultants for Development Plan

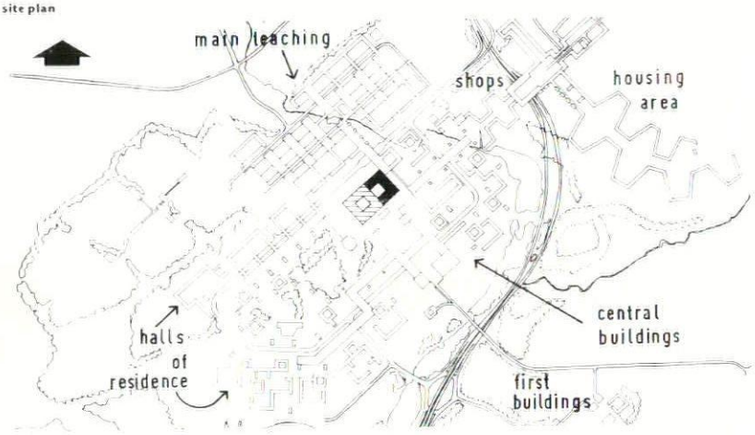
CLIENT: University of Warwick.
SITE: In centre of 400-acre university site in Gibbet Hill Road, Coventry, mainly farmland with gentle slopes.
ACCOMMODATION: Space for 1,250 readers and 450,000 books for 5,000 students.
STRUCTURE AND FINISHES: Largely precast r.c. frame with external tiled finish. Carpeted floors, absorbent tiled ceilings.
SERVICES: Heating by convector panels under windows with supplementary warm air units. Fluorescent lighting.
COST: £715,000 approx.
BUILDING PERIOD: November 1964 May 1966.

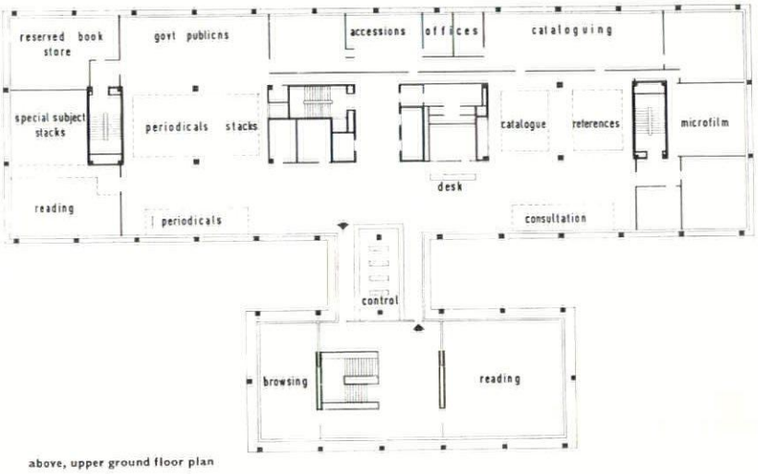
Quantity surveyor, Northcroft Neighbour & Nicholson. Structural consultant, F. Samuely & Partners. Mechanical and electrical consultant, Matthew Hall Mechanical Services Ltd.



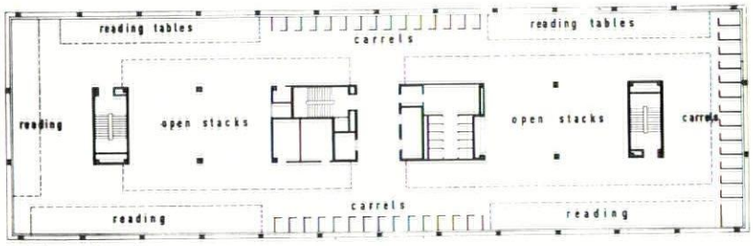
general view

site plan

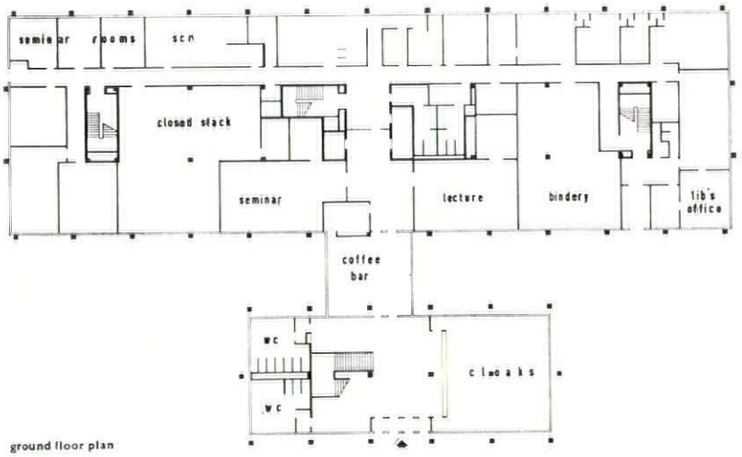




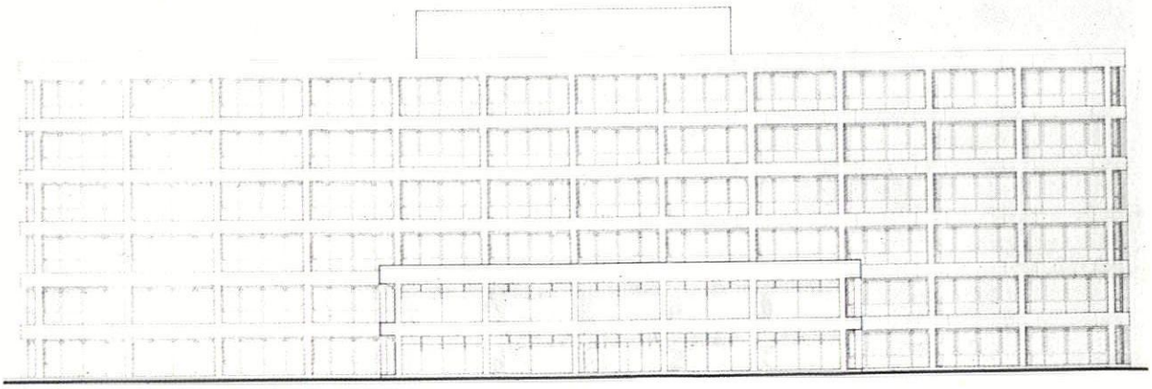
above, upper ground floor plan



typical upper floor plan



ground floor plan



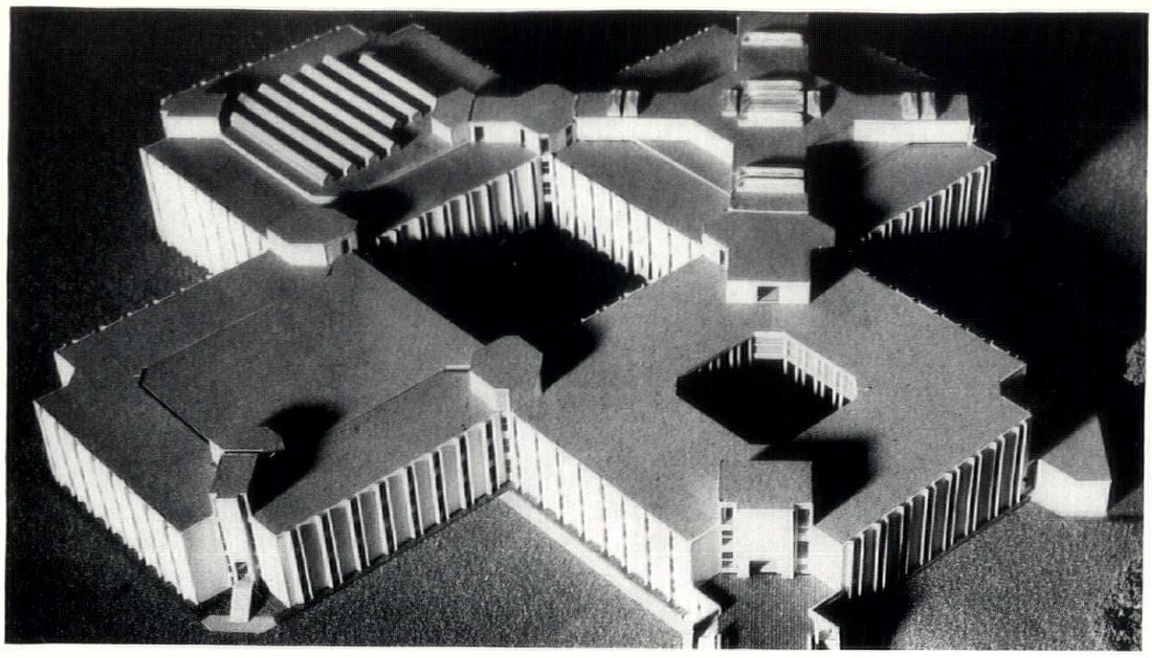
north-west elevation

COLLEGE, UNIVERSITY OF KENT, CANTERBURY

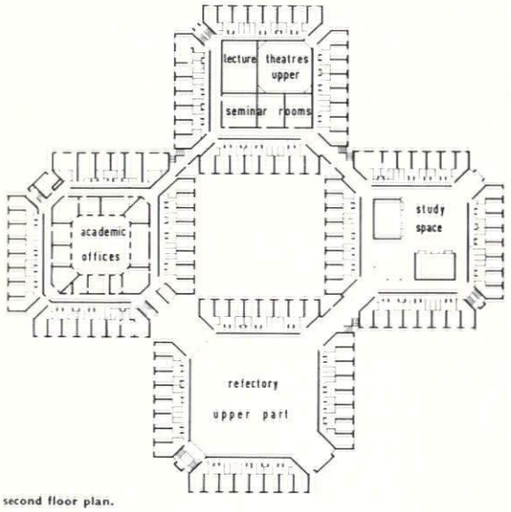
Sir William Holford and Partners

CLIENT: University of Kent.
SITE: Part of 267-acre site overlooking city with south-facing slope.
ACCOMMODATION: Study bedrooms for 300 students, studies only for a further 300, 12 sets for resident teachers, flats for resident domestic staff and bursar, master's house. Dining for 855 students, academic and domestic staff. Junior and senior common room and music room. Lecture, seminar and tutorial rooms, research rooms and administrative offices.
STRUCTURE AND FINISHES: Study bedrooms, loadbearing brick cross walls, precast concrete floors and roofs. Other areas, in situ r.c. and brick work. External walls, precast storey-height cladding units and aluminium windows.
SERVICES: Group boiler house. Hot water radiators in study bedrooms, convectors and warm air elsewhere. Bathrooms, kitchens, etc., mechanically ventilated.
COST: £845,000.
BUILDING PERIOD: March 1964–August 1965.

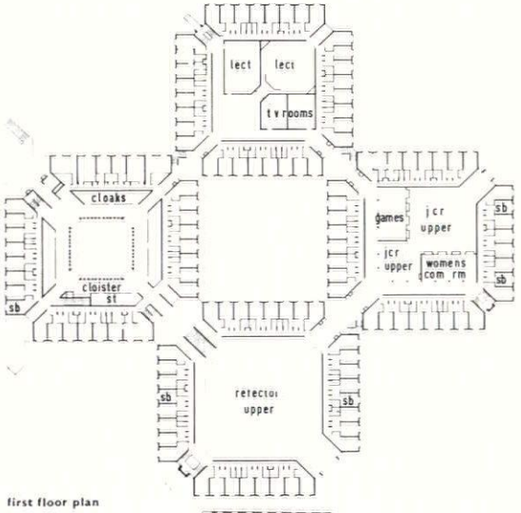
Quantity surveyor, Gardiner & Theobald. Structural consultant, Ove Arup & Partners. Mechanical and electrical consultant, T. Dunwoody & Partners, Matthew Hall Mechanical Services Ltd.



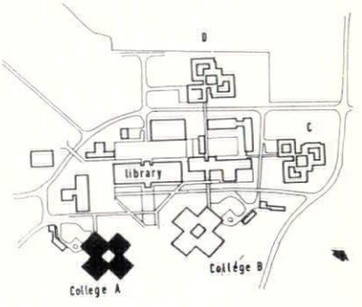
general view of College A



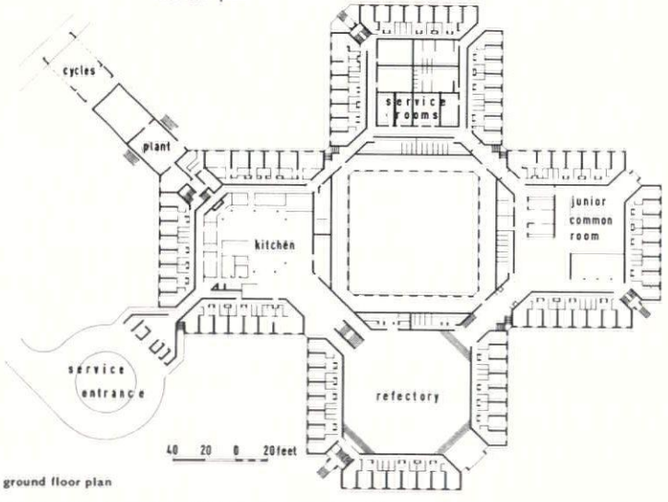
second floor plan.



first floor plan

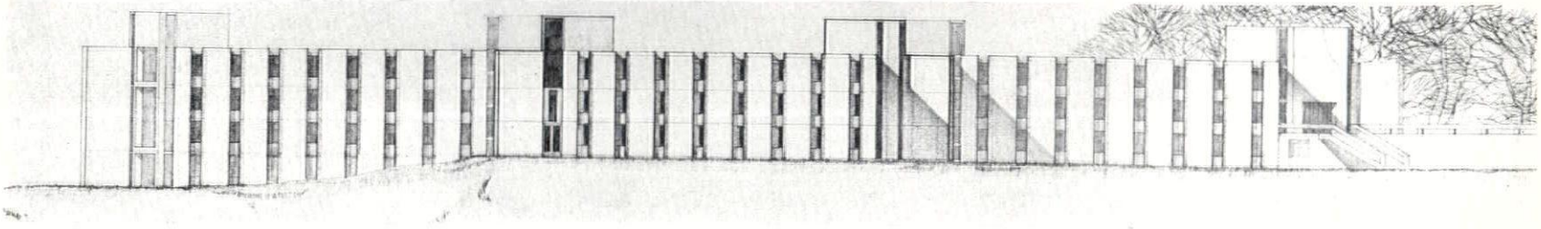


above, site plan



ground floor plan

north elevation

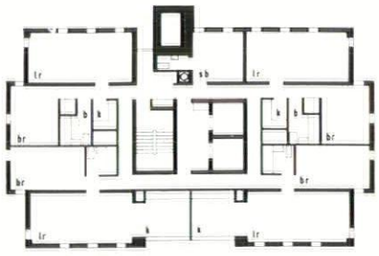


UNIVERSITY OF ESSEX, COLCHESTER

Architects Co-Partnership

CLIENT: University of Essex.
SITE: Wivenhoe Park, 200 acres landscaped with existing mansion.
ACCOMMODATION: Master plan for 6,000 students: 1,470,000 sq. ft. of teaching space including library and lecture halls, 252,000 sq. ft. of students' union etc, study-bedrooms for 2,000–3,000 students, study rooms for 3,000–4,000 day students. Stage I: site works (roads and pedestrian podia), joint science building and future workshops (17,000 sq. ft.), first teaching building, physics (180,000 sq. ft), first restaurant (13,000 sq. ft.), first residential tower (40,000 sq. ft.), boiler house (15,500 sq. ft.) and vice-chancellor's house (3,500 sq. ft.).
STRUCTURE AND FINISHES: Exposed r.c. superstructure for pedestrian podia. General science building: Steel frame, trussed roof, lightweight decking, brick external walls, block partitions. Teaching building and restaurant: R.c. frame, mainly precast, with precast mullions and cladding panels, storey height glazing. Residential tower: 14-storey structure of loadbearing brickwork with in situ r.c. floor slabs, fairface brick internally. Boiler house: In situ r.c. Vice-Chancellor's house: Loadbearing brick, timber clad, on raised concrete platform over weir between lakes.
SERVICES: Heating by medium pressure hot water for radiators, convectors and hot air. Part artificial ventilation. Special services to physics building include helium, compressed air and various electrical services.
COST: Site works, £360,000. General science building, £94,000. Teaching building and restaurant, £1,650,000. Residential tower and boiler house, £490,000.
BUILDING STARTS: June 1964. First permanent buildings to be finished, October 1965.

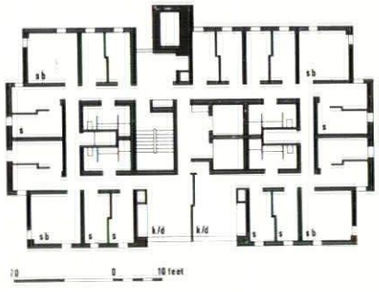
Partner in charge, C. K. Capon. Project control, H. J. Lane-Davies. Design co-ordinator, C. Schevenels. Quantity surveyor, G. A. Hanscomb Partnership. Structural consultant, Harris & Sutherland. Mechanical and electrical consultant, Barlow Leslie & Partners. Special consultant, Miss E. Chesterton.



floor 13, academic staff

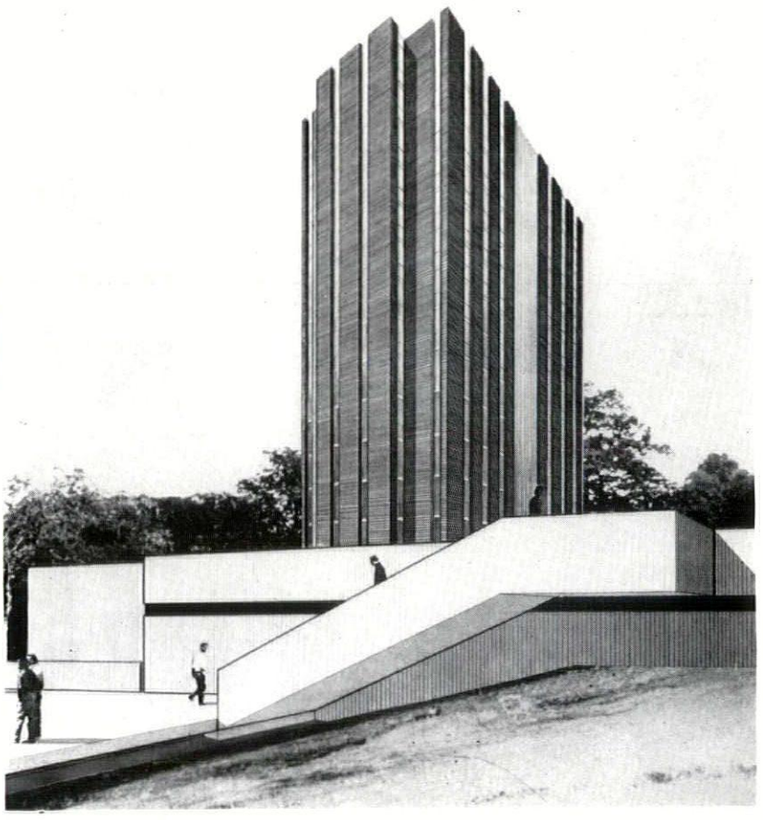


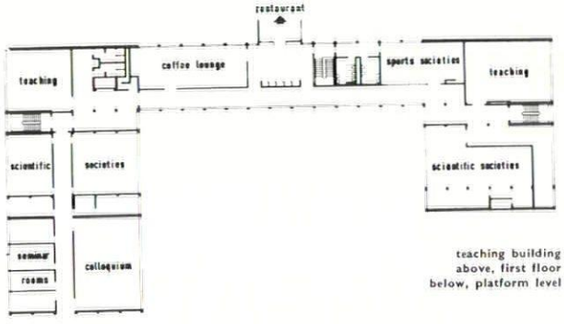
floor 12



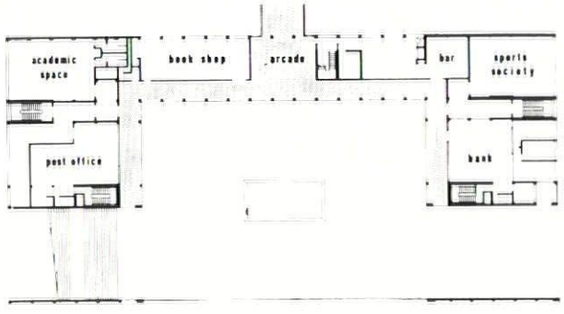
floors 1 to 7

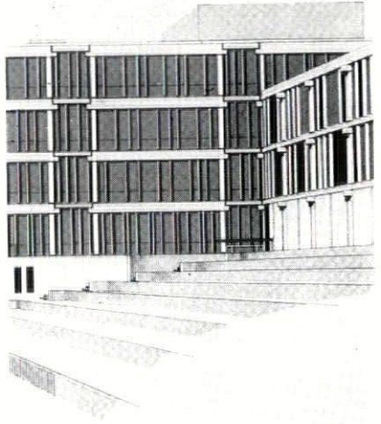
residential tower, right



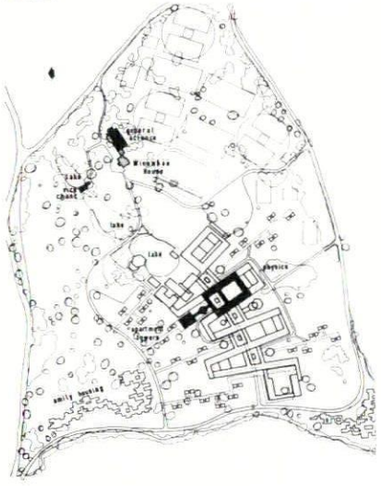


teaching building above, first floor below, platform level

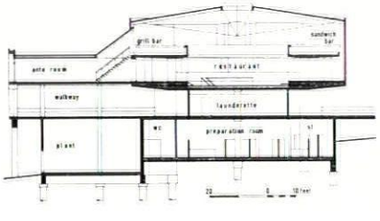


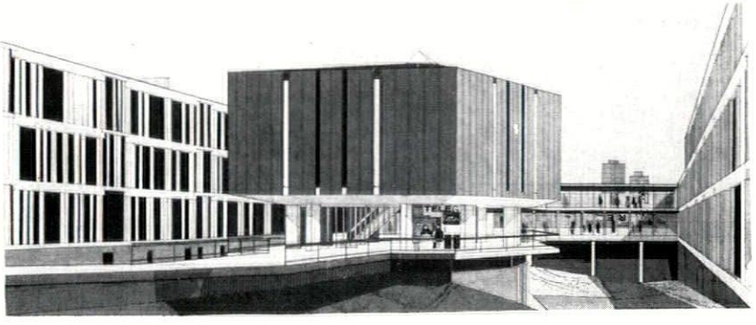

detail of east wing

site plan



restaurant perspective right section below

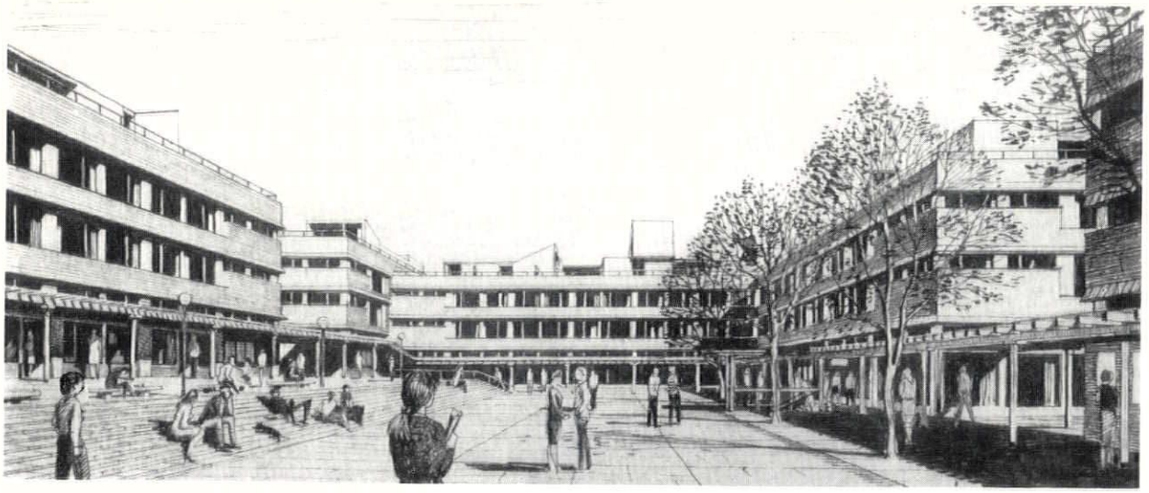




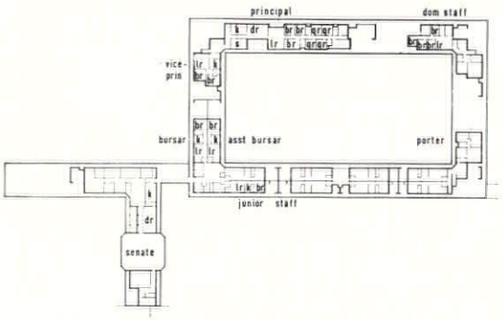
UNIVERSITY OF LANCASTER

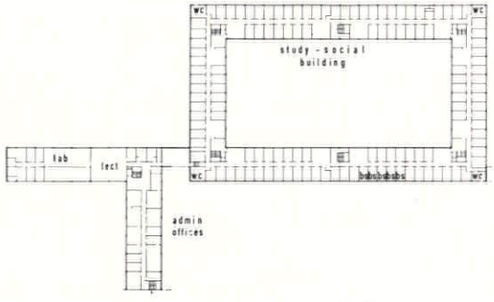
Bridgwater, Shepheard and Epstein

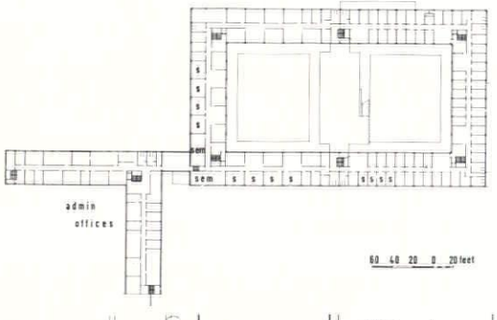
CLIENT: University of Lancaster.
SITE: 200 acres at Bailrigg, two miles south of Lancaster, between M6 and A6. About 85 acres for building. Gentle whaleback configuration, woods and fields.
ACCOMMODATION: Student population initially of 270 in Phase I, eventually rising to 7,000 or 10,000, of whom about 50 per cent will be residents.
STRUCTURE AND FINISHES: R.c. frame, light coloured brick surfaces.
SERVICES: Central duct under pedestrian spine with branch ducts.
Quantity surveyor, Gleeds. Structural consultant, F. J. Samuely & Partners. Mechanical and electrical consultant, G. N. Haden Ltd.

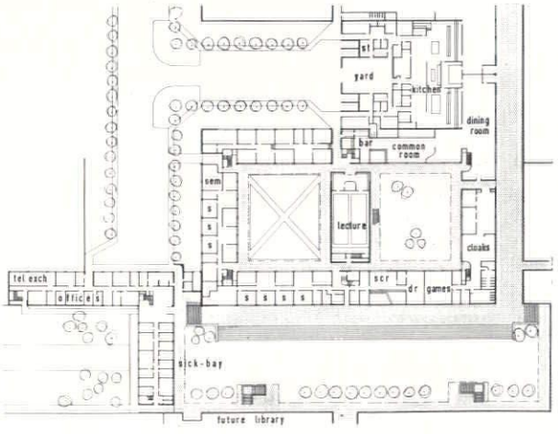


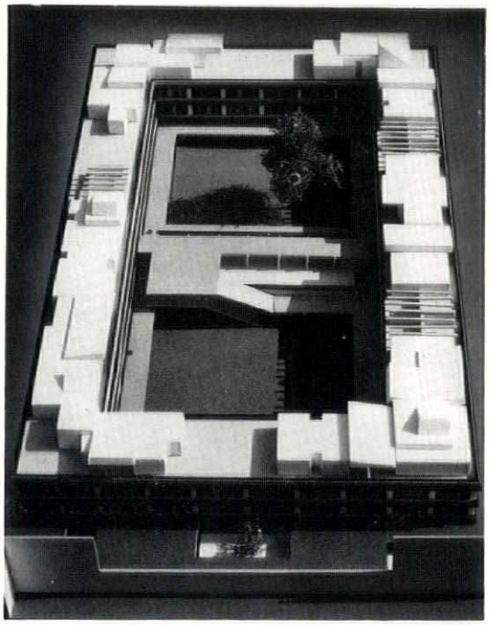
above, view of main courtyard looking east





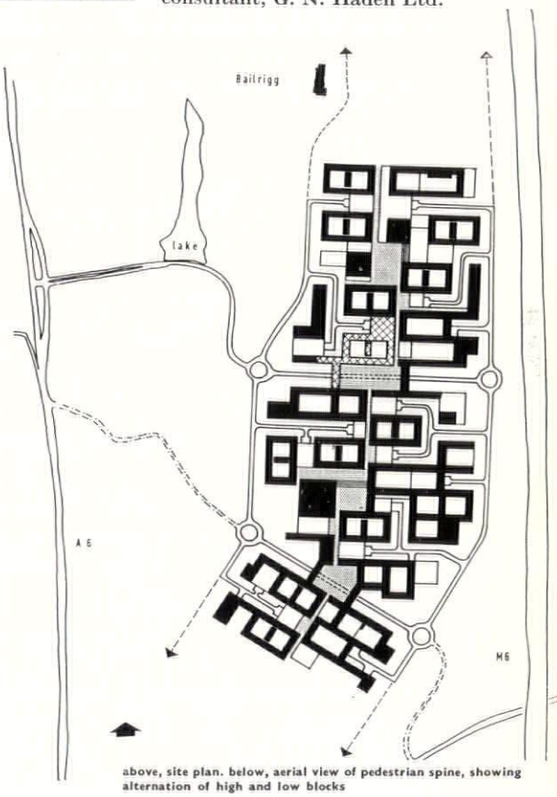




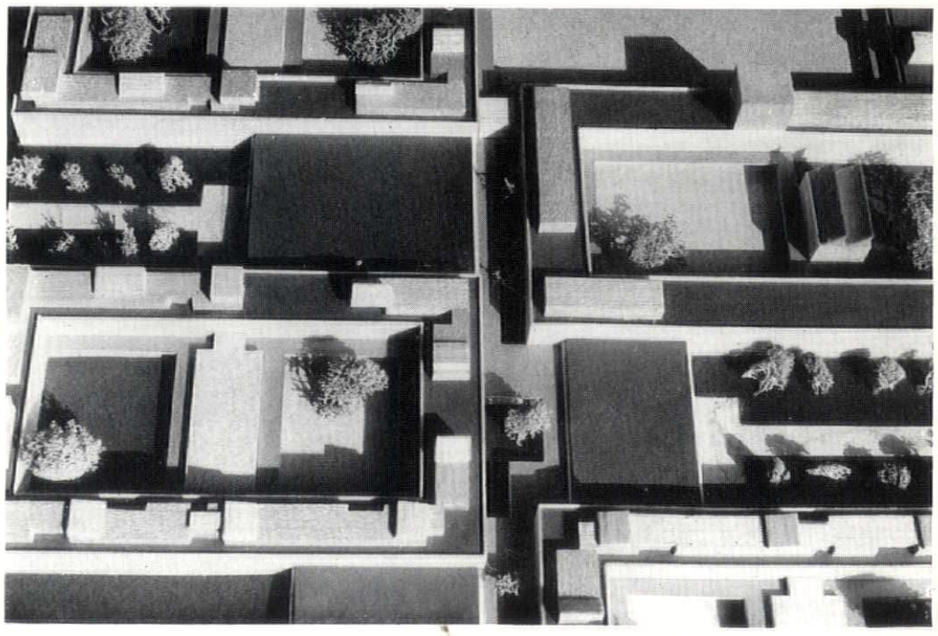


above, model of first study-social building.

left, from top to bottom, third, second, first and ground floor plans



above, site plan. below, aerial view of pedestrian spine, showing alternation of high and low blocks

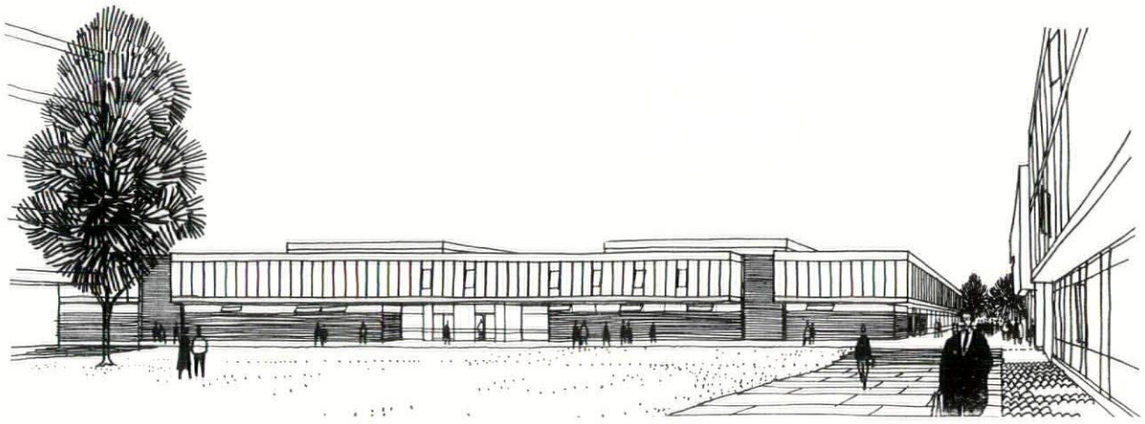


BRUNEL COLLEGE, UXBRIDGE, MIDDLESEX

Richard Sheppard, Robson and Partners, Architects for Development Plan and Phase I Communal Buildings

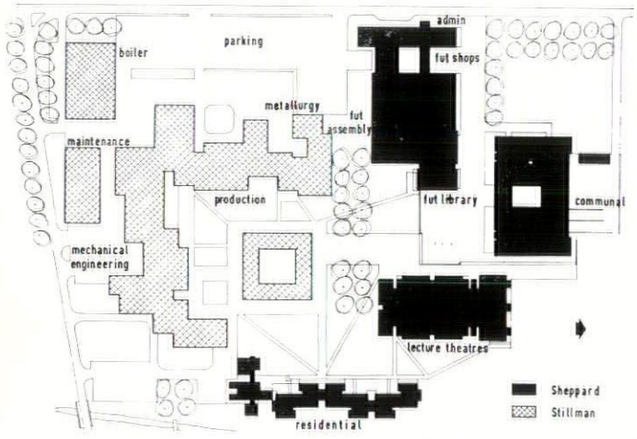
CLIENT: Brunel College.
SITE: Technological university in Kingston Lane, one mile south of town centre. Main site, 65 out of total 170 acres, level and featureless.
ACCOMMODATION: 3,000 to 4,000 students by 1972 including 500 post-graduates. Phase I: administration block, residential block with study bedrooms for 172, central lecture block, and communal block.
STRUCTURE AND FINISHES: Administration, central lecture and communal blocks, r.c. frame. Larger lecture theatres, r.c. box walls with boarded finish. Residential block, loadbearing brickwork with red sand-faced facings.
COST: Phase I, £944,000.
BUILDING PERIOD: January 1965–September 1966.

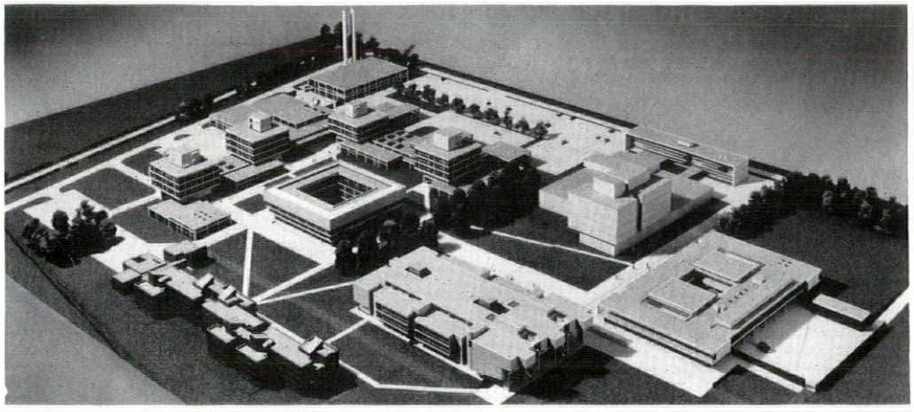
Associate in charge, John Heywood.

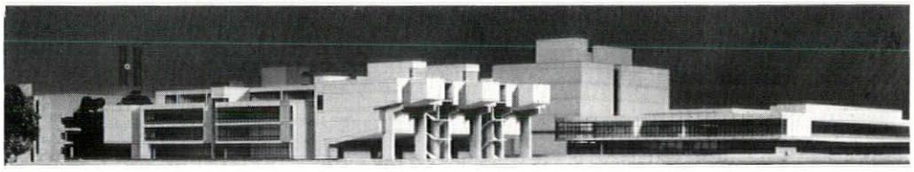


above, communal block with lecture theatres on right. below, general view. bottom, elevation of lecture and communal blocks

site plan



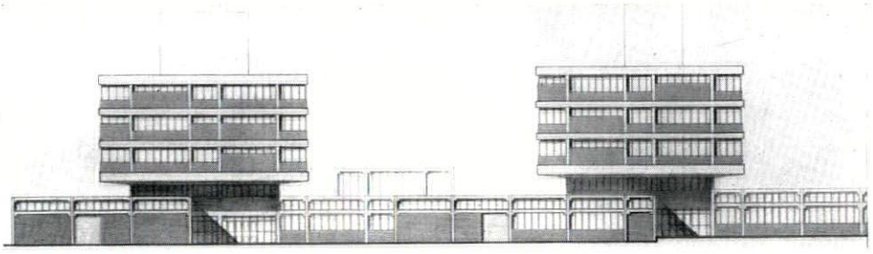




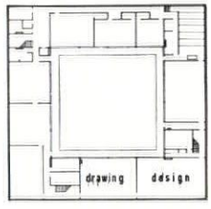
Stillman and Eastwick-Field, Architects for Engineering Complex

ACCOMMODATION: Departments of Metallurgy, Production Engineering and Mechanical Engineering, MOE Science Equipment Consortium. Heavy laboratories requiring ground floor location and heights of 15–25 ft. Tower blocks, light laboratories with working areas on 1,000 to 1,800 sq. ft. Engineering centre, two-storey factory demonstration area, reading room, staffrooms, etc. 3rd floor, classrooms and drawing offices.
STRUCTURE AND FINISHES: 10 ft. module throughout. Heavy laboratories, precast r.c. frame with steel lattice trusses supporting lightweight concrete roofing units, aluminium patent glazing, infill panels of purple Staffordshire facing bricks, internal partitions of fairfaced white flint lime brickwork. Tower blocks and engineering centre, r.c. frame and floor slabs, board finish, patent glazing, brick cill panels.
SERVICES: Ground ducts from boiler house to main intake in tower B. Service runs exposed at high level in corridors. Heating by ceiling panels and unit heaters.
COST: £1,224,000.
BUILDING PERIOD: January 1965–September 1966.

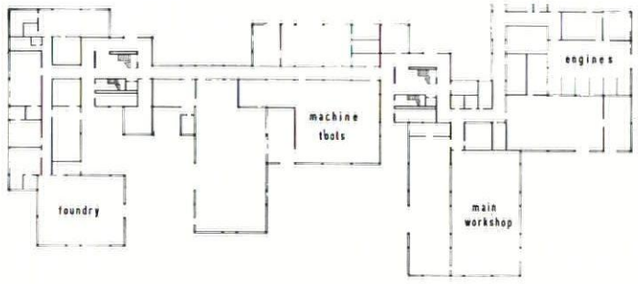
Associate in charge, David Farrant. Assistants, John Farmer, Robert Hurley, Derek Webb, Andrew Chamiec.



above, west elevation. below, ground floor of heavy laboratories. below right, third floor of tower block



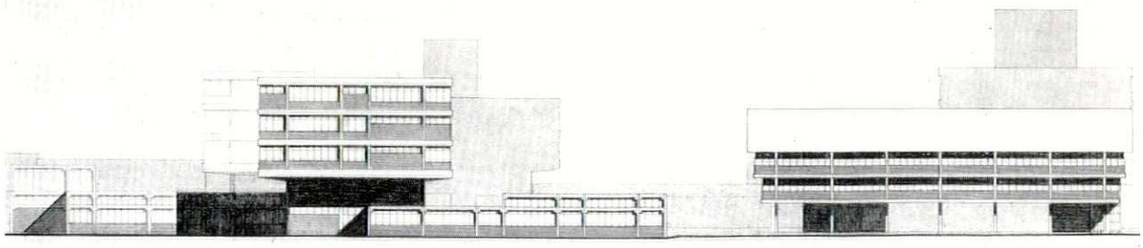
engineering centre, third floor, second floor







below, south elevation of laboratories and engineering centre

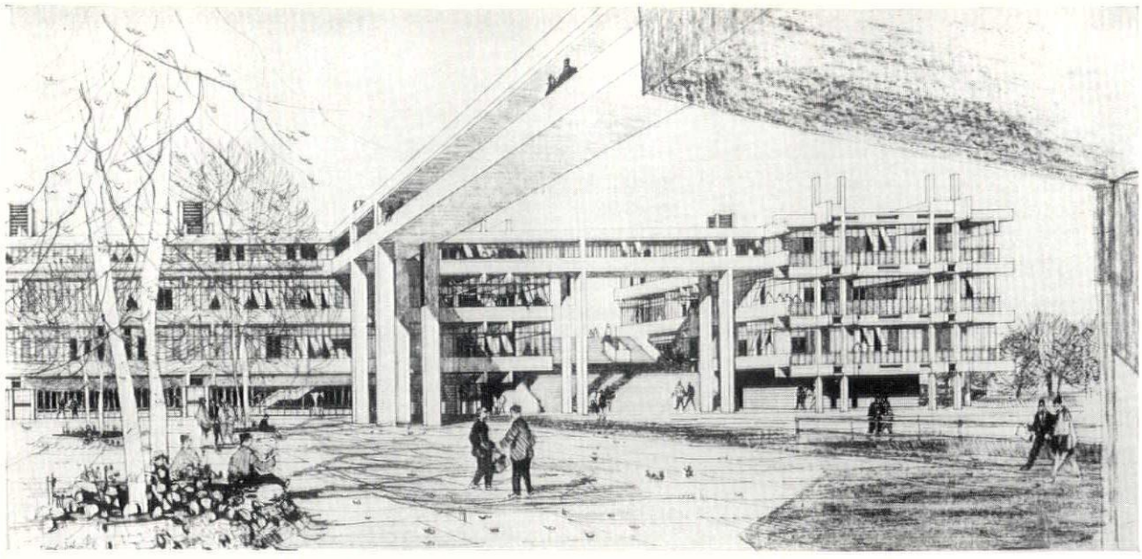


MATHEMATICS COURT, LEEDS UNIVERSITY

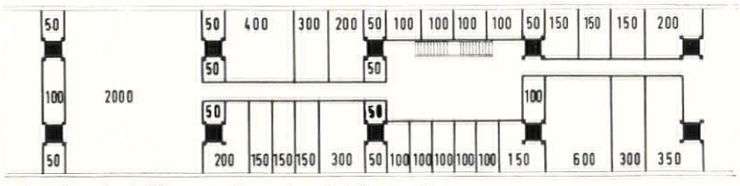
Chamberlin, Powell and Bon

CLIENT: University of Leeds.
SITE: About 5 acres in Virginia Road, Leeds, at centre of future university precinct, 600 yards from town centre.
ACCOMMODATION: 145,000 sq. ft. undergraduate teaching and post-graduate research for departments of mathematics and geology. 48,500 sq. ft. of lounges, common rooms, kitchens and recreational rooms, for senior common room.
STRUCTURE AND FINISHES: In situ r.c. columns, floors and deep longitudinal and cross beams, fair faced except spandrels of aglite concrete bush hammered. Non-loadbearing internal partitions of lightweight concrete modular blocks. External windows of steel opening lights and unframed fixed glazing.
SERVICES: Under-sill convectors using high pressure hot water from calorified plant, served by steam from university's central boiler. Mechanical ventilation internally. Services to laboratories in vertical ducts within quadruple column clusters and horizontal ducts created by main beams.
BUILDING PERIOD: Mathematics and Geology Building, January, 1964–July, 1965. Senior common room: June 1964–February 1966.

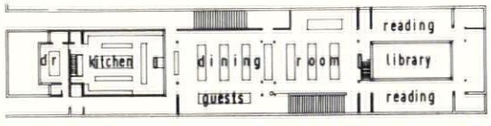
Associate in charge, M. F. Woods. Assistants in charge, D. Jackson, C. E. Broad, M. Welch. Assistants, P. Boer, C. Green, J. Oesterreich, P. Bollen, P. Hunt, R. Young. Quantity surveyor, Davis, Belfield & Everest. Structural, mechanical and electrical consultant, Flint & Neill. Acoustical consultant, Hugh Creighton. Special consultants, J. Lyons & Co. Ltd., Catering Advisory Service.



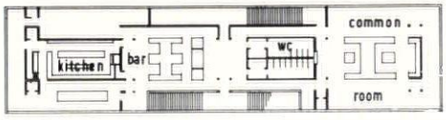
view of concourse stair, high-level bridge to lecture theatre block, and mathematics-geology building



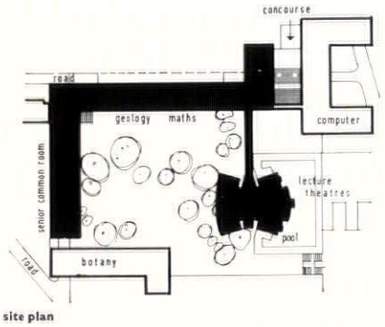
mathematics-geology building, range of room size and relation to services



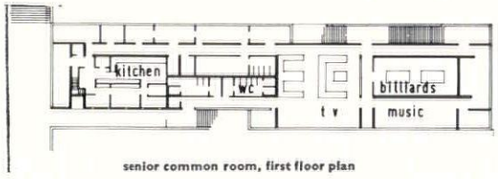
third floor plan



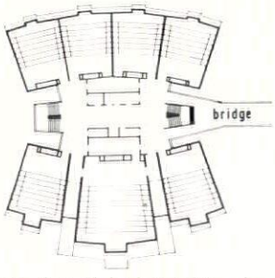
second floor plan

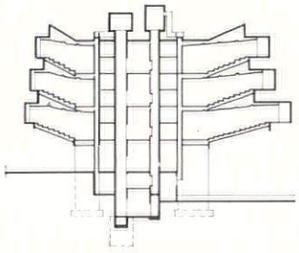


site plan

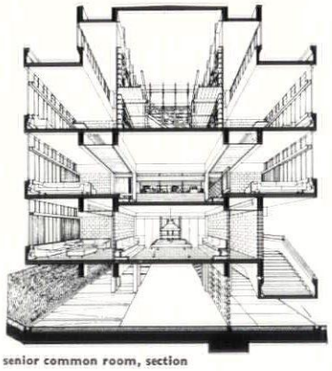


senior common room, first floor plan

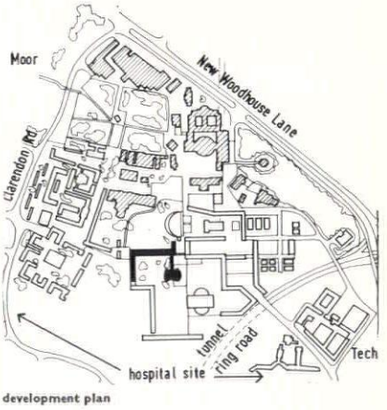




lecture theatre block. left, typical floor plan. right, section

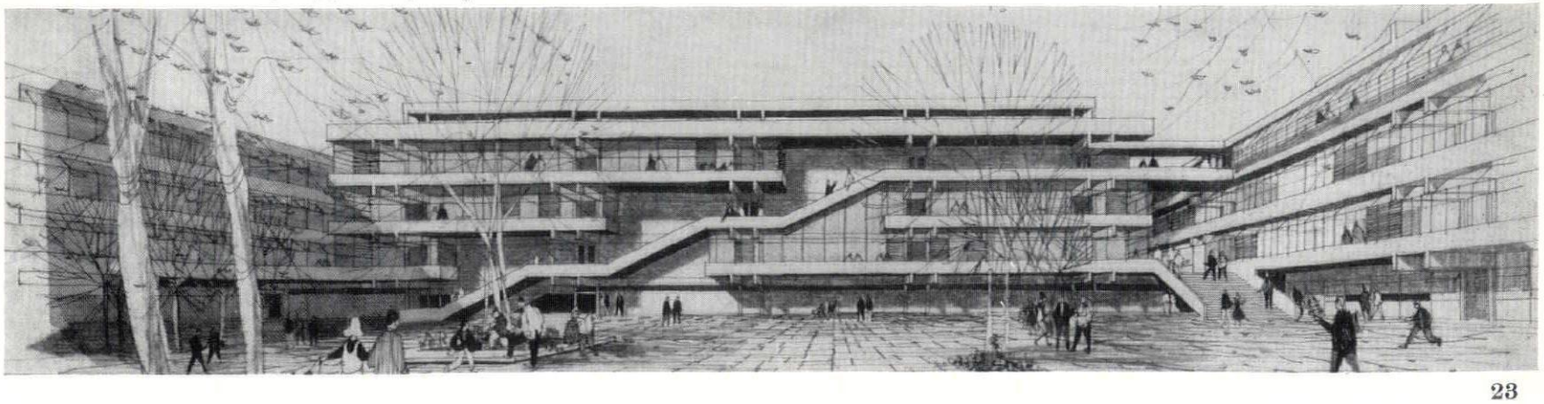


senior common room, section



development plan

view of senior common room. east elevation, with proposed botany building on left



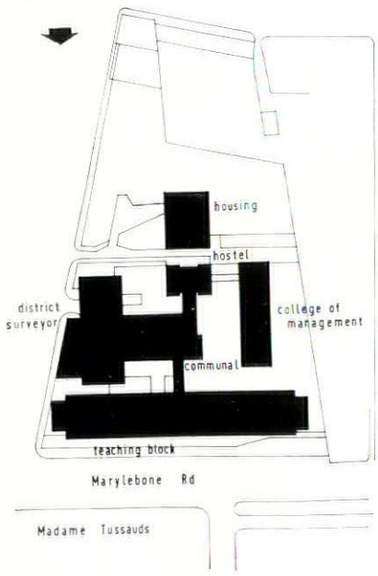
POLYTECHNIC AND HOUSING, LONDON

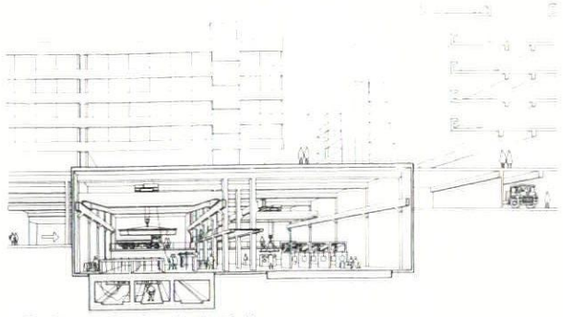
Hubert Bennett, Architect to the LCC

CLIENT: London County Council.
SITE: 3.9 acres in Marylebone Road replacing Luxborough Lodge old people's home.
ACCOMMODATION: Regent Street Polytechnic: College of Architecture and Advanced Building Technology for 1,070 students, including departments of architecture, town planning, engineering, surveying and building. Top-lighted studios and drawing offices on top 3 floors of teaching block, with laboratories, classrooms and lecture theatres below. Large construction hall in podium with adjacent parking space for 90 cars. Communal block with common rooms, dining rooms and kitchen, library and administration suite. Separate school of management studies for 342 students of which 40 are resident, with its own common rooms, dining room and kitchen. Hall of residence tower block for 178 students and staff. Council housing tower block of 115 dwellings with equal numbers of 3-room maisonettes and 1- and 2-room flats. District surveyor's office.
STRUCTURE AND FINISHES: R.c. throughout, mostly in situ with external finish in non-polished Portland stone aggregate. Precast large beams in teaching and management blocks, spanning 50 ft., in polished Portland stone aggregate. Internal surfaces plastered, with some fairfaced brickwork.
SERVICES: Heating by low pressure hot water radiators and convectors, with plant beneath housing block. Most underground accommodation has plenum or air conditioning system.
COST: £3,040,450.
BUILDING PERIOD: 1965–1969.

Deputy architect to the council, F. G. West. Schools architect, Michael Powell. Assistant schools architect, Peter Jones. Group leader, J. J. Pace. Job architects and assistants, J. G. Killeen, A. H. Strutt, Miss C. G. Edwards, D. E. Pratt, C. B. Wilson, P. Wilson, Mrs. O. Samuels. Senior planning officer, J. C. Craig. Principal quantity surveyor, M. F. Rice. Principal housing architect, K. J. Campbell. Acting chief engineer, P. F. Stott. Chief officer of the Parks Department, F. Hallowes.

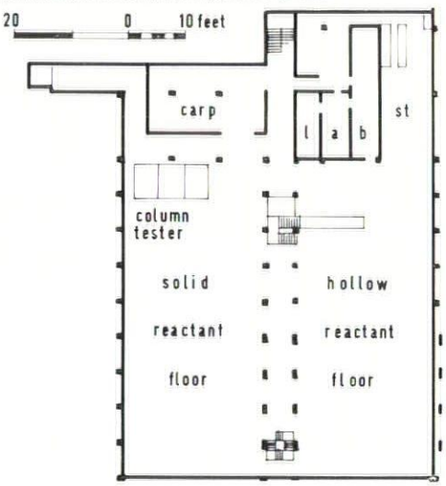
site plan

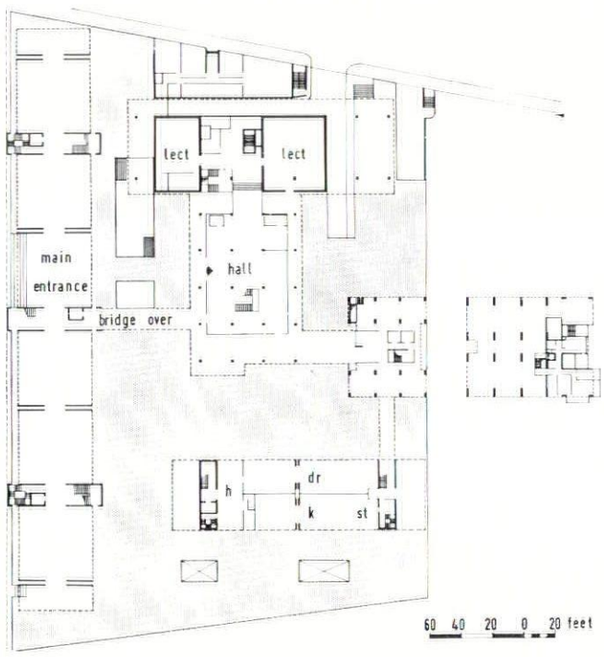




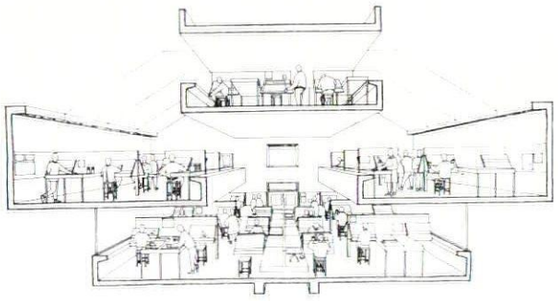
sectional perspective of construction hall

below, floor plan of construction hall beneath podium



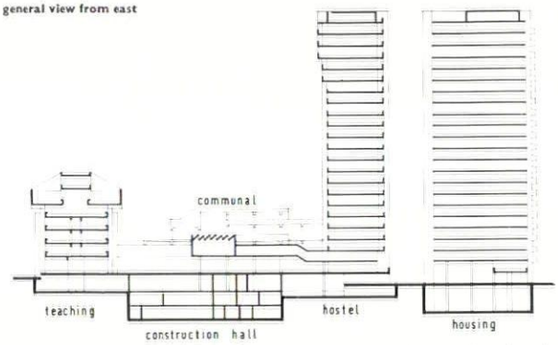


above, ground floor plan of site. below, sectional perspective of studios in roof of teaching block



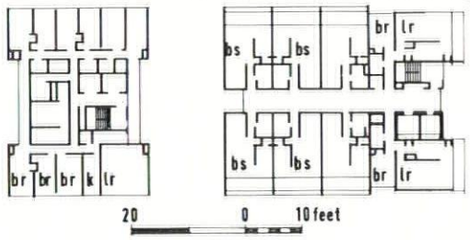


general view from east

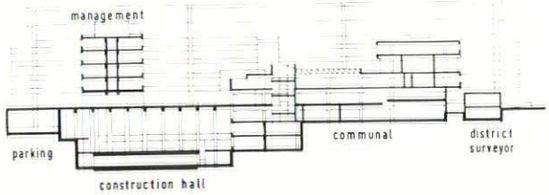


above, north-south section

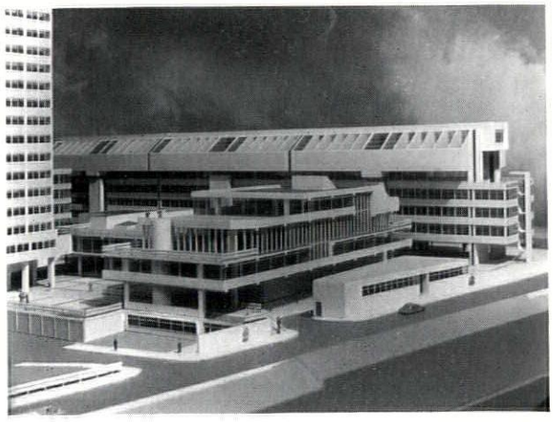
below, typical floor plan of hostel and housing



below, east-west section

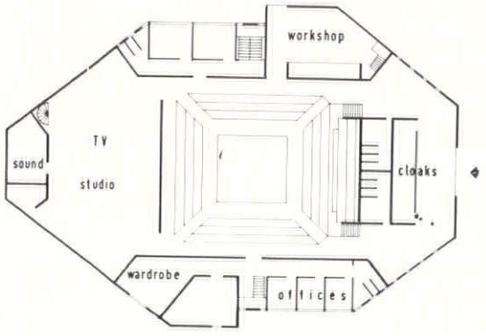


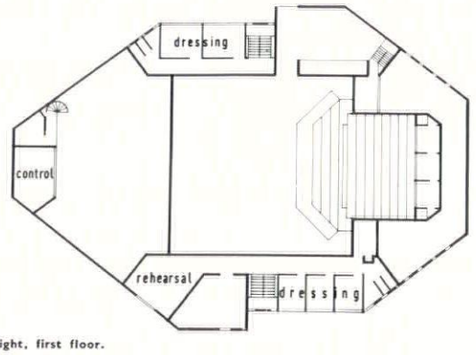
below, view of communal and teaching blocks from south-east





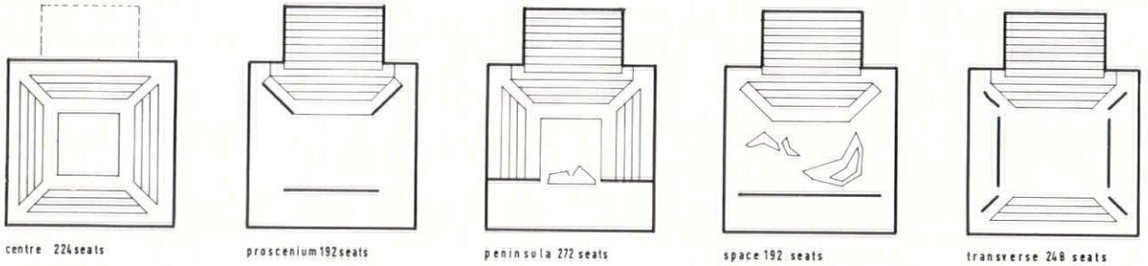
north elevation





40 0 20 feet

above left, ground floor plan. above right, first floor.
below, diagrams of various stage plans



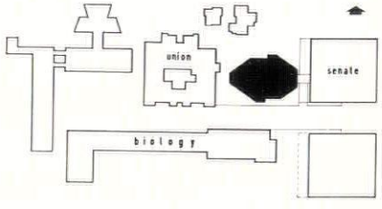
DRAMA STUDIO, HULL UNIVERSITY

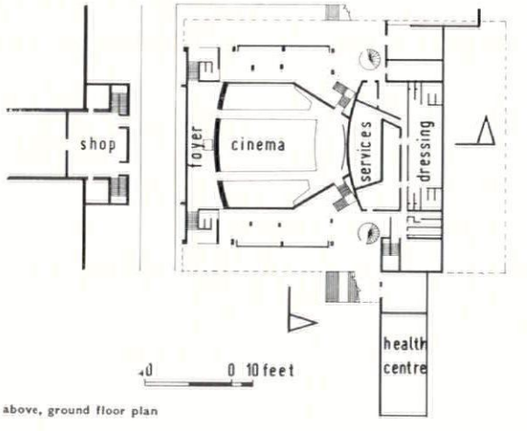
Peter Moro and Partners

CLIENT: Hull University.
SITE: In university central area, planned by Sir Leslie Martin.
ACCOMMODATION: About 200 seats, depending on form of stage.
STRUCTURE AND FINISHES: Loadbearing brick walls, r.c. raked floor, steel roof construction.
SERVICES: Plenum system.

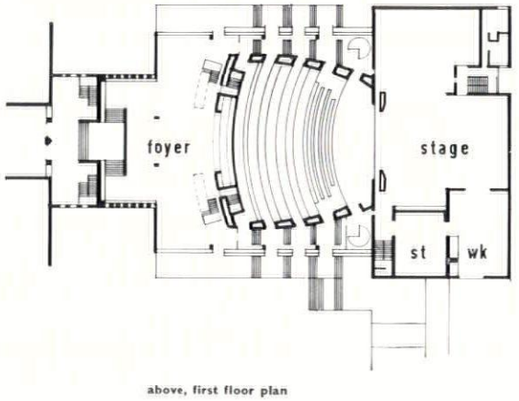
Quantity surveyor, Monk & Dunstone. Structural consultant, Clarke Nicholls & Marcel. Mechanical and electrical consultants, Edward A. Pearce & Partners. Acoustical consultant, Henry Humphreys.

site plan

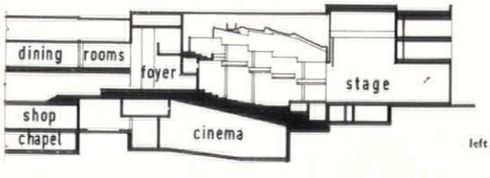


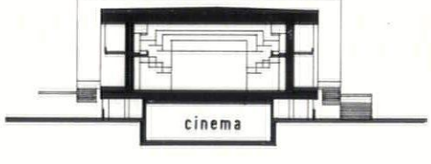


above, ground floor plan



above, first floor plan





left, long section. right, short section

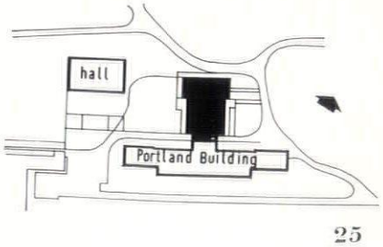
THEATRE, NOTTINGHAM UNIVERSITY

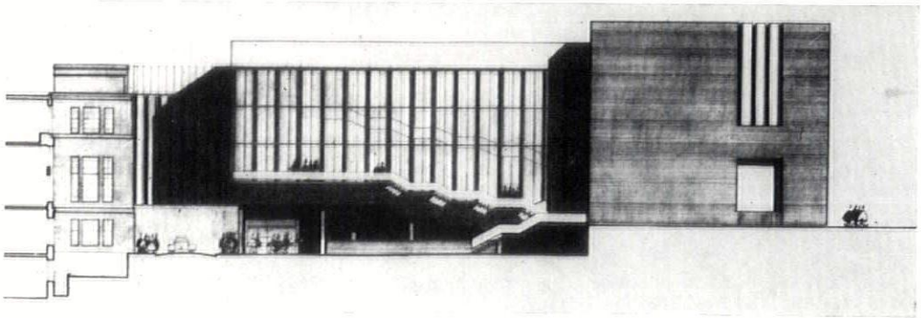
Williamson, Faulkner Brown and Partners

CLIENT: University of Nottingham.
SITE: 400 ft. × 300 ft., with 40 ft. fall north-south, at rear of Portland Building (students' union).
ACCOMMODATION: Theatre to seat 750, cinema to seat 500, parking for 350 cars and 400 bicycles as part of central area replacement. 2 rehearsal rooms for small drama groups, workshops, paint frame, offices, etc.
STRUCTURE AND FINISHES: Steel frame, with cinema shell separated from basic structure. External finishes, facing bricks to match existing rear of Portland Building, copper fascia and fins.
SERVICES: Air-conditioning for theatre, cinema and foyer.
COST: £500,000.

Partner in charge, W. H. Williamson. Associate in charge, E. C. Watkinson. Quantity surveyor, Gleeds. Structural consultant, D. W. Cooper. Mechanical and electrical consultant, A. F. Myers and Partners. Acoustical consultant, Henry R. Humphreys. Theatre consultant, Dr. Richard Southern.

site plan



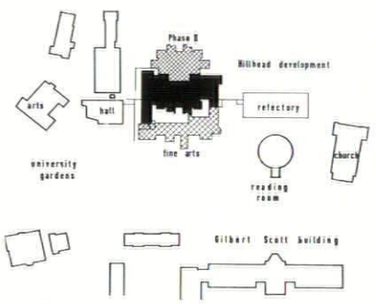


left, north-east elevation

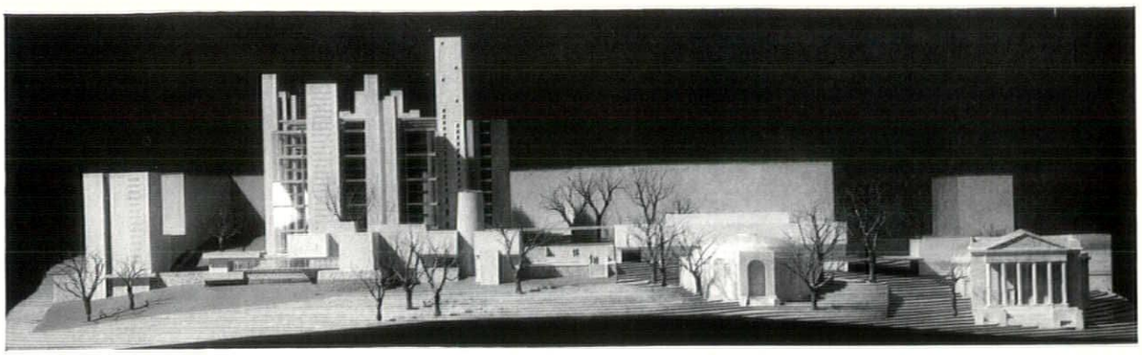
LIBRARY, GLASGOW UNIVERSITY

William Whitfield. J. L. Gleave and Partners, Co-ordinating Architect

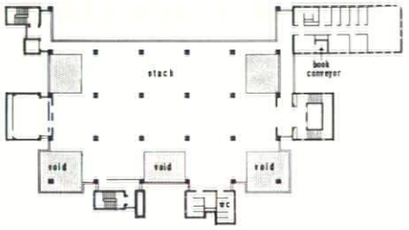
CLIENT: Glasgow University.
SITE: 230 ft. × 180 ft., steeply sloping, in Hillhead Street to north of existing university buildings.
ACCOMMODATION: Phase I, 1,000 readers and 800,000 books.
STRUCTURE AND FINISHES: R.c. structure with fairfaced finish externally, precast concrete cladding.
SERVICES: Concentrated in peripheral towers. Warm air plenum in core. Full air-conditioning for rare books.
COST: Phase I, £800,000 approx.
BUILDING PERIOD: Phase I, Winter 1965–spring 1967 approx.
Partner in charge, William Whitfield. Senior assistants in charge, C. A. Pearce, P. F. Sayer, J. D. Grainger. Quantity surveyor, Reynolds & Young. Structural consultant, Lowe & Rodin. Mechanical and electrical consultants, John Harvey & Partners.

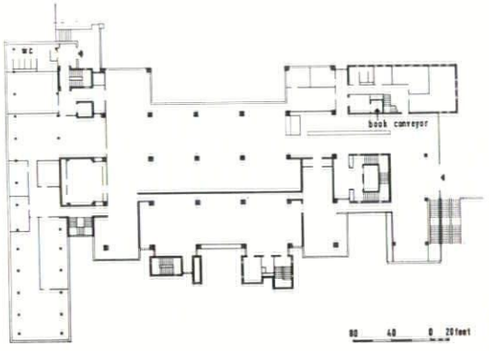


site plan



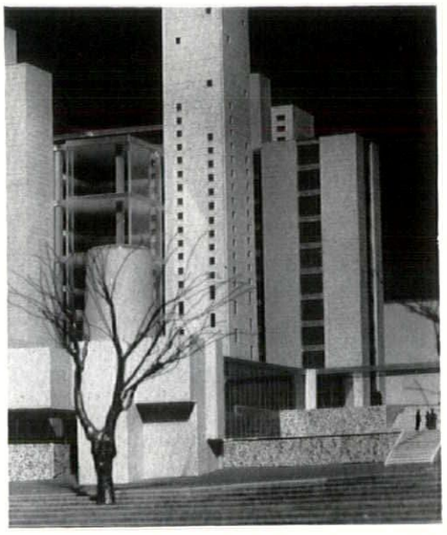
above, general view from south with reading room and church on right





left, ground floor plan. top left, typical upper floor

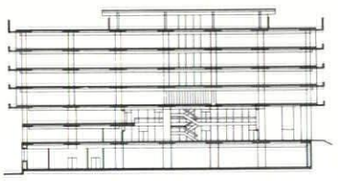
below, near view, with art gallery in foreground

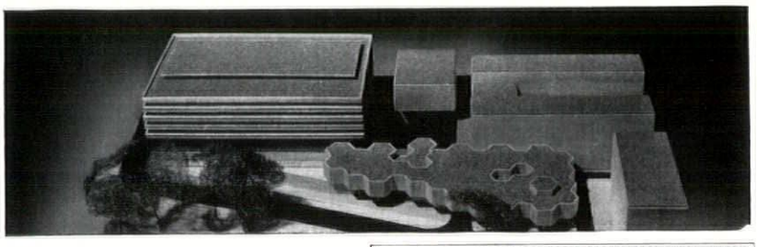


LIBRARY, EDINBURGH UNIVERSITY

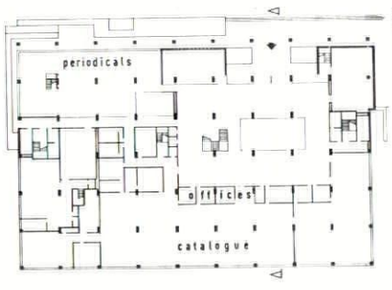
Sir Basil Spence, Glover and Ferguson

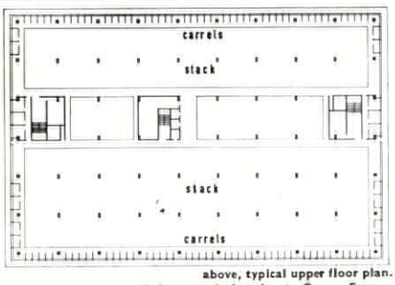
CLIENT: University of Edinburgh.
SITE: George Square, Edinburgh.
ACCOMMODATION: General university library facilities for 4,000 undergraduates, 830 postgraduates, 500 staff and up to 750 non-university readers. Space for 2,000,000 books. Seating for 1,850.
STRUCTURE AND FINISHES: 27 ft. module throughout. R.c. frame, with high quality columns of same size as stacking unit, 3 ft. × 1 ft. 6 in. Floors of in situ beams supporting precast trough units. Balconies to shade and service double-glazing.
SERVICES: Air-conditioned. Electrical underfloor heating of perimeter.
COST: £1,650,000.
BUILDING PERIOD: Early 1964–1966.
Partner in charge, J. H. Glover. Associate in charge, J. I. H. Marshall. Assistant, A. Merrylees.



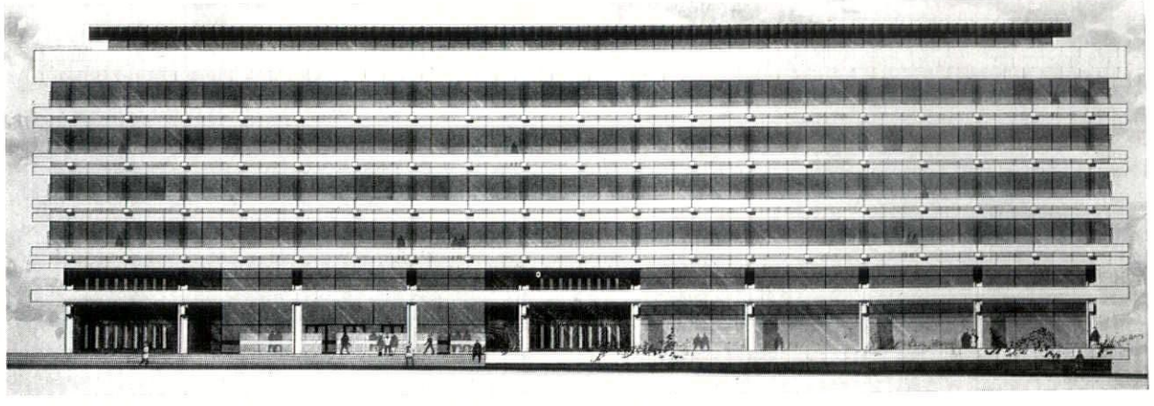


above, general view from south.
upper left, north-south section.
lower left, ground floor plan

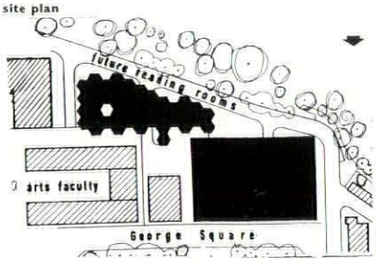




above, typical upper floor plan.
below, north elevation to George Square.



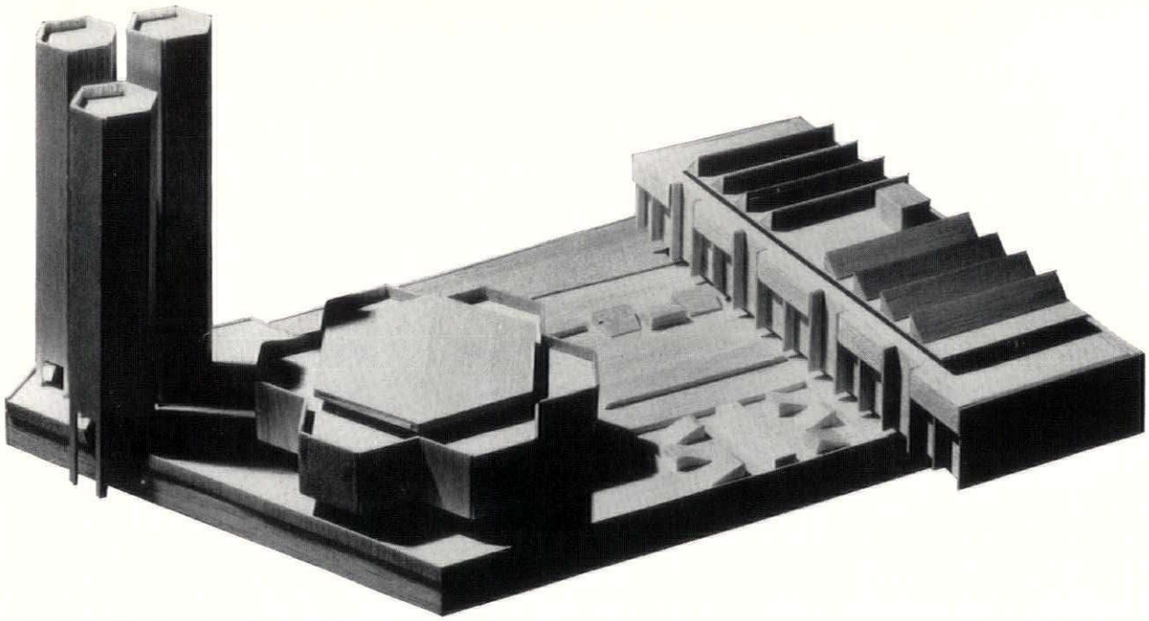
site plan



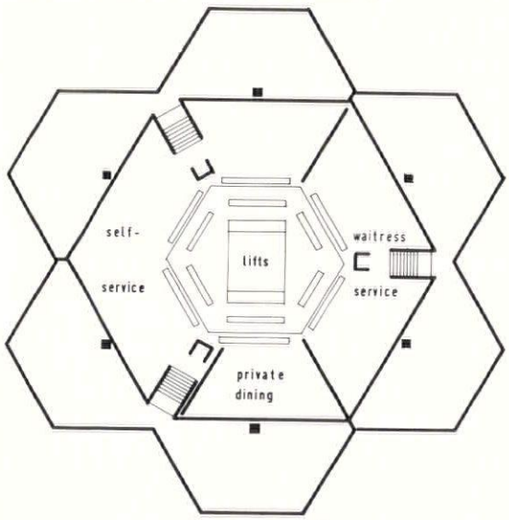
CENTRAL FACILITIES, KING'S BUILDINGS, EDINBURGH

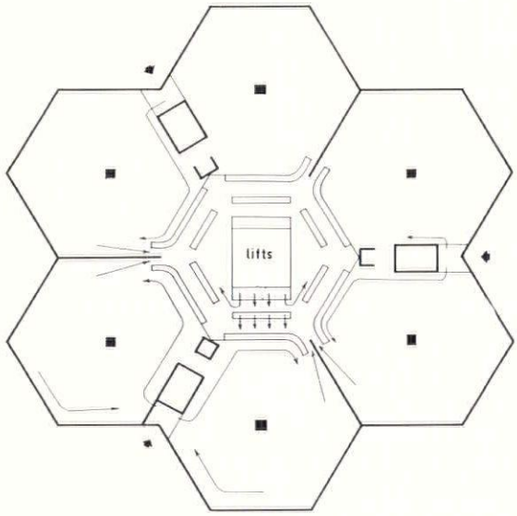
Michael Laird

CLIENT: University of Edinburgh.
SITE: 3.35 acres in centre of King's Buildings site, suburban science precinct of Edinburgh University with future total student/staff population of 5,500. Continuous fall of about 20 ft. from west to east.
ACCOMMODATION: Science library for 350,000 books with 1,200 student and 300 staff reader places, possible future expansion. Refectory and kitchen, seating 1,500 with cafeteria and waitress service. Senior common room for 1,000, writing rooms, television rooms and committee rooms, indoor games rooms and gymnasia, shops. Faculty offices, examination rooms seating 800. Boiler house to serve whole King's Buildings site. Hostels for about 400 students and staff. Parking for 50 staff cars and about 200 cars with access to hostels.
STRUCTURE AND FINISHES: R.c. frame with exposed aggregate cladding in Norwegian quartz and Wally blue flints. Hostel tower block with loadbearing slab walls, twin flues of boiler house integral with structure.
SERVICES: Full air-conditioning in library and refectory. Medium pressure hot water space heating throughout from oil-fired boilers.
BUILDING STARTS: Phase I, boiler house, 1965.

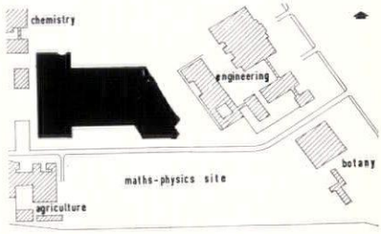


above, general view: hostel left, refectory centre, library right

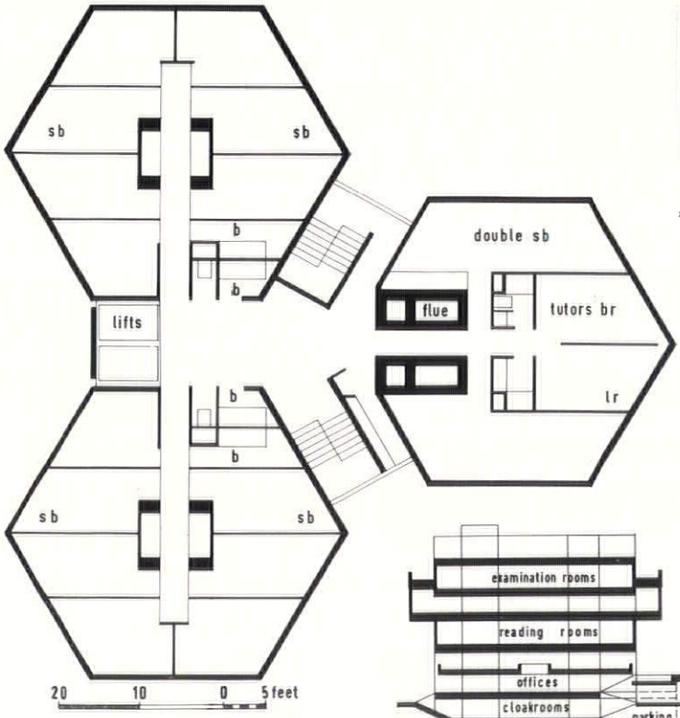


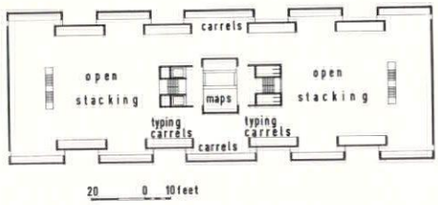


above, refectory, meals floor. above right, snacks floor



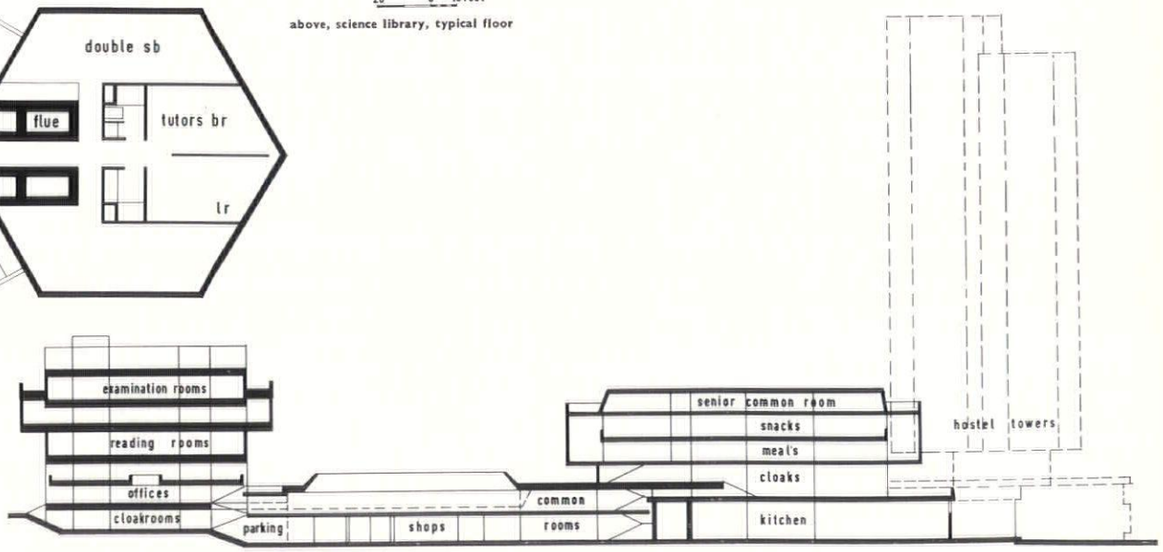
above, site plan





above, science library, typical floor

above, typical floor of hostel, right, long section

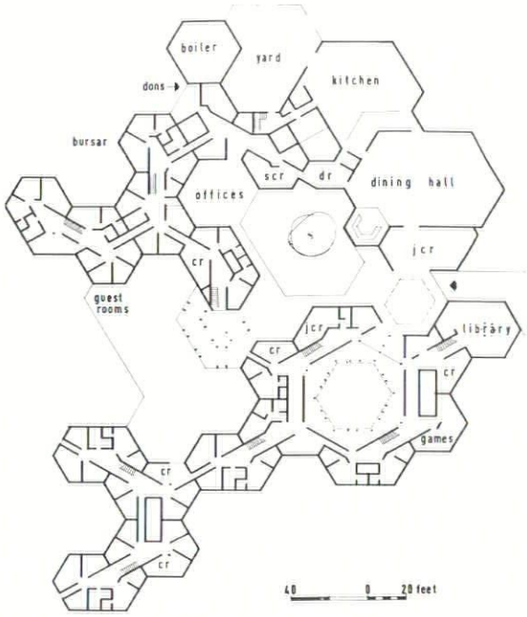


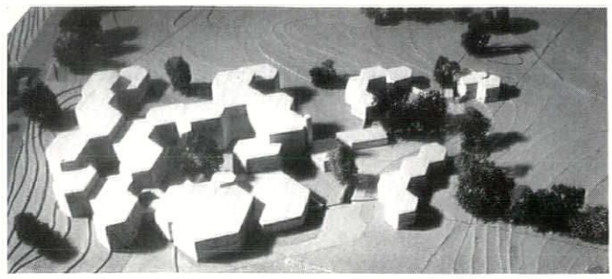
WOMEN'S COLLEGE, DURHAM UNIVERSITY

Stillman and Eastwick-Field

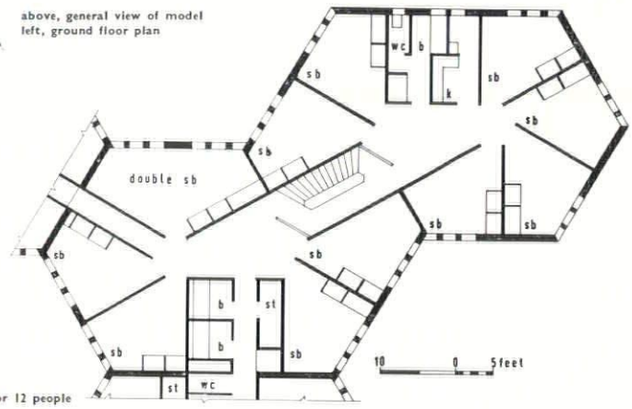
CLIENT: University of Durham.
SITE: 9 acres of well wooded farmland in valley with views from north to Cathedral, ⅔ mile away.
ACCOMMODATION: Bed-sitting rooms for 250 women undergraduates, flats for 10 dons, library and tutorial rooms.
STRUCTURE AND FINISHES: Loadbearing brick with in situ concrete floors, hardwood windows. Dining hall finished internally with fairfaced brickwork with exposed timber and steel space frame roof.
SERVICES: Central heating with oil-fired boilers.
COST: Phase I, £340,000; Phase II, £70,000.
BUILDING PERIOD: Mid-1965–mid-1967.

Associate in charge, H. J. Lukyn Williams. Quantity surveyor, Harry Trinick & Partners. Structural consultant, Charles Weiss & Partners. Mechanical consultant, David Kut. Electrical consultant, Peter Jay & Partners Ltd.

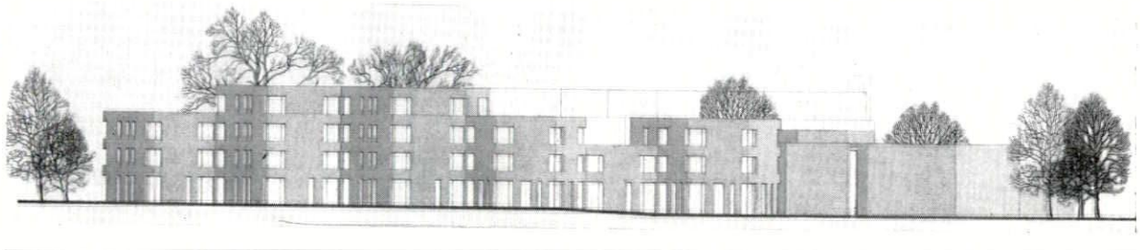




above, general view of model
left, ground floor plan



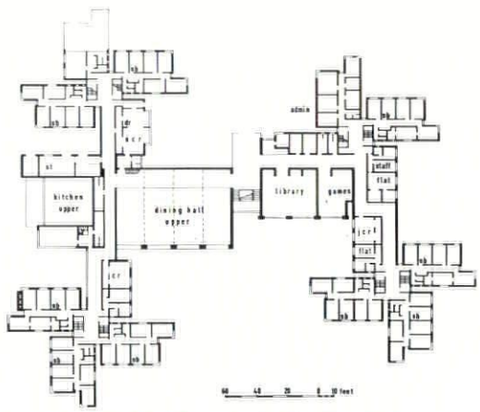
below, west elevation. above right, floor plan of typical study bedroom unit for 12 people





above, site plan
right, ground floor plan





above, first floor plan. below, section through south-east block

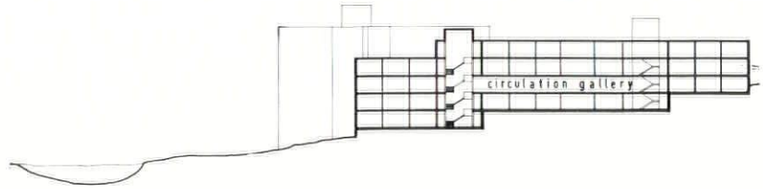
MEN'S COLLEGE, DURHAM UNIVERSITY

Richard Sheppard, Robson and Partners

CLIENT: University of Durham.
SITE: South Road, replacing house in existing parkland, deep slope to south.
ACCOMMODATION: Study-bedrooms for 300, dining hall, common rooms, library.
STRUCTURE AND FINISHES: Loadbearing brick residential wings, r.c. frames for communal areas.
SERVICES: Convector heaters with low pressure hot water system.
COST: £477,225 approx.
BUILDING STARTS: 1966.

Partner in charge, Richard Sheppard. Assistant, Denis Serjeant. Quantity surveyor, E. C. Harris & Partners. Structural consultant, Hajnal and Myers. Mechanical and electrical consultant, Zisman and Boyer.



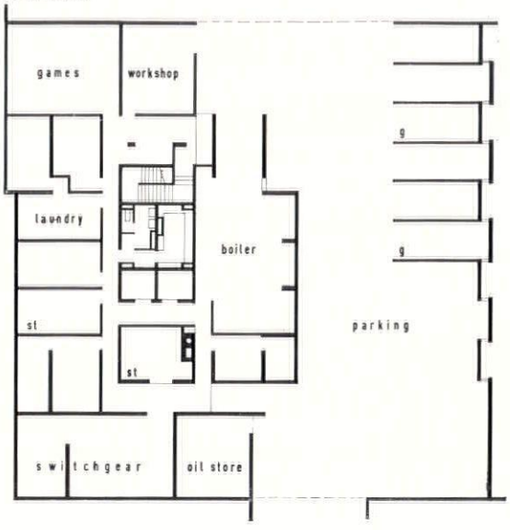


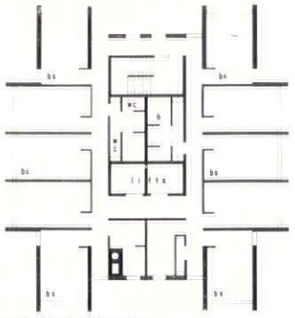
left, part of typical study bedroom unit. below, general view from south





above, view from north, with cathedral in centre. below, basement plan





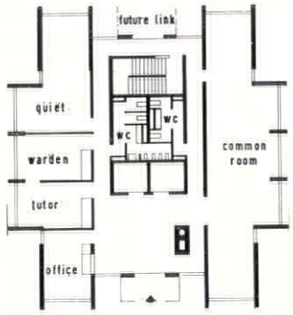
typical upper floor plan

HALLS OF RESIDENCE, COVENTRY

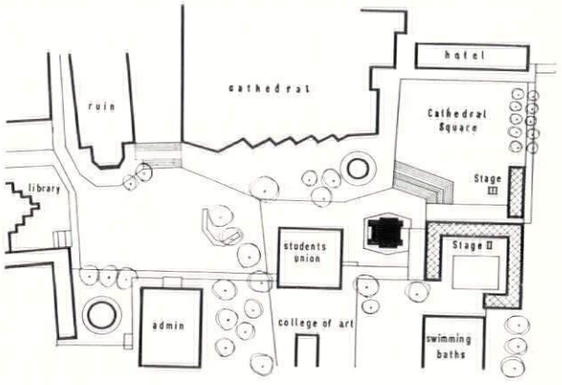
A. G. Ling, City Architect and Planning Officer

CLIENT: Lanchester College Halls of Residence Foundation.
SITE: Priory Street, next to cathedral.
ACCOMMODATION: 20-storey tower block housing 150 students grouped 10 per floor with central service core, with flats and bed-sitters for academic staff, domestic staff, etc.
STRUCTURE AND FINISHES: Tower block in Bison wall frame system. In situ basement and ground floor.
SERVICES: Heating oil-fired.
COST: First stage, £300,000.
BUILDING PERIOD: Mid 1965–Mid 1966.

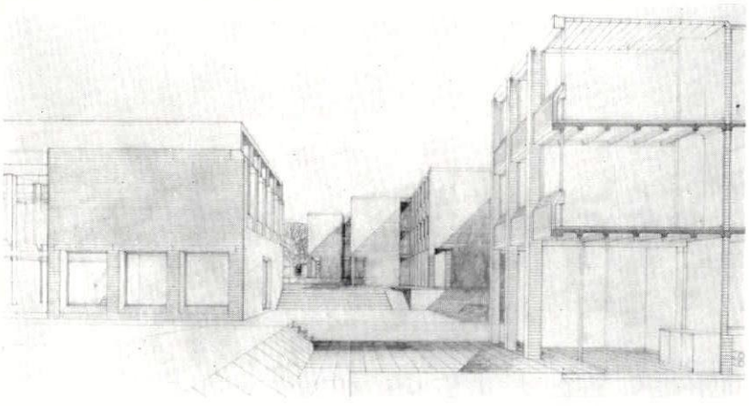
Principal schools architect, F. J. Barnett. Project architect, R. Saunders. Chief quantity surveyor, Ronald F. Lear. Structural consultant, Foundex Ltd. with Concrete (Midlands) Ltd.



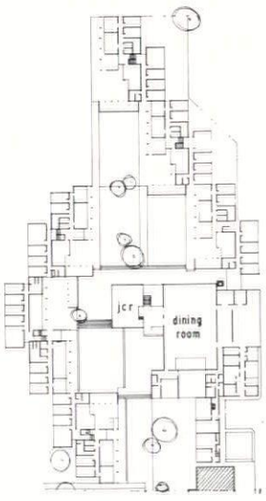
ground floor plan



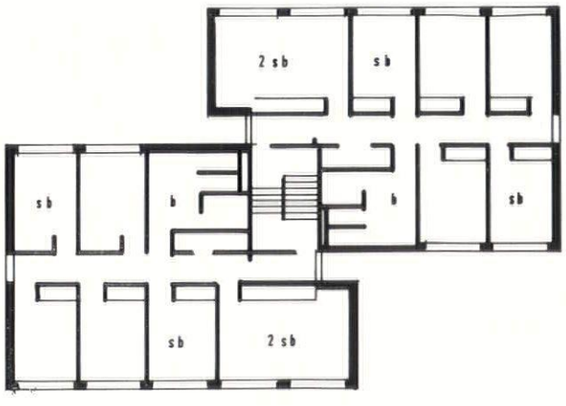
site plan



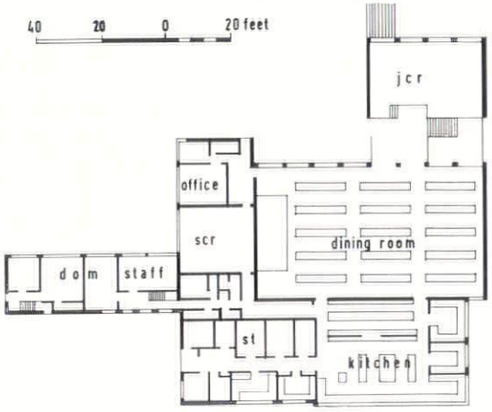
above, view from north towards entrance, with dining room on left. below, typical study-bedroom group



above, ground floor plan of whole site. below, ground floor plan of dining block



30 20 0 10 feet



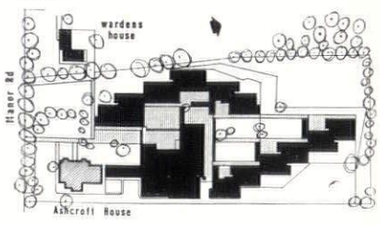
HALL OF RESIDENCE, LEICESTER UNIVERSITY

Castle and Park

CLIENT: Leicester University.
SITE: 2.7 acres at Ashcroft House, Oadby, about 3 miles from university. House to be retained, well-planted long narrow garden with slope of 20 ft. to north.
ACCOMMODATION: 200 study bedrooms of 110 sq. ft. each, 6 tutors' flats, pantries, utility rooms, cycle stores. Dining and 3 common rooms, kitchen, domestic staff accommodation, porter's and wardens' houses. Parking for 10 cars and 20 overflow.
STRUCTURE AND FINISHES: Loadbearing brick with precast concrete units to upper floors, fair faced. Roof of tongued and grooved timber decking with laminated beams over large spans. Windows of stove enamelled aluminium, horizontal sliders. Internally, walls plastered.
SERVICES: Low pressure hot water and convectors, oil-fired boilers.
COST: £313,000.
BUILDING STARTS: January 1965.

Quantity surveyor, Monk & Dunstone. Structural consultant, Anthony Hunt.

site plan

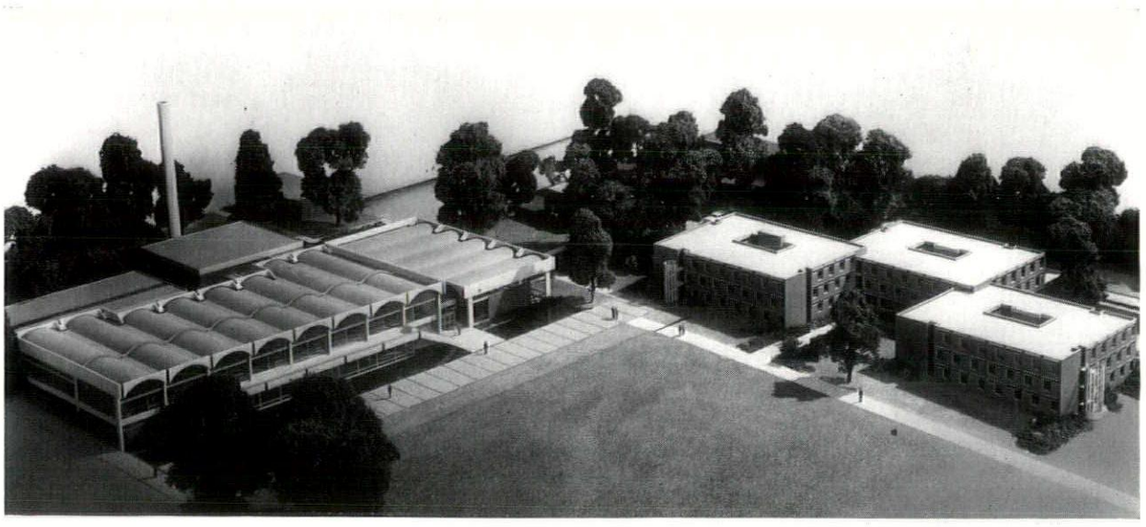


HALLS OF RESIDENCE, LIVERPOOL UNIVERSITY

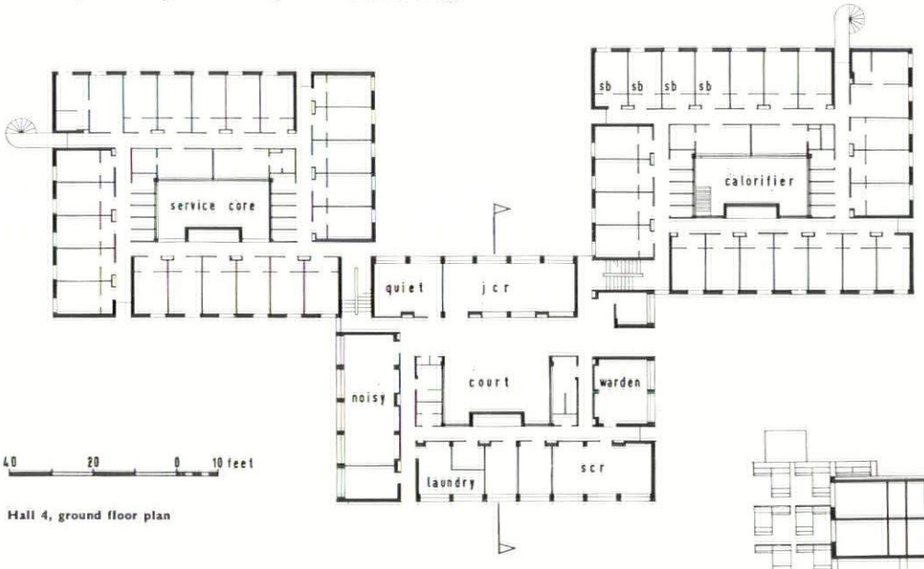
Manning and Clamp

CLIENT: University of Liverpool. Winner of 1962 competition.
SITE: 21-acre landscaped grounds of Carnatic Hall, now demolished.
ACCOMMODATION: Phase I, 2 halls of residence for 400 students each. 20 student bedrooms on each floor, round central service core, with common rooms, etc., on ground floor of each block. Central catering services building with 5 dining rooms (one for 300, 4 for 100). Future phases for 1,400 total.
STRUCTURE AND FINISHES: Loadbearing brick with in situ r.c. floors. Catering services building, r.c. barrel vault.
SERVICES: Hot water from central oil-fired boiler house.
COST: Phase I, £1,004,000. Total cost, about £2,250,000.
BUILDING PERIOD: Phase I, June 1964–June 1966.

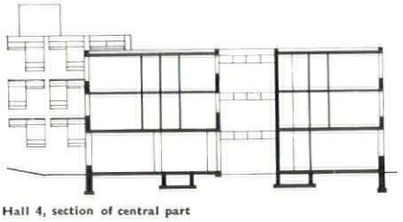
Partner in charge, T. F. A. Manning. Associate in charge, J. E. Ball. Assistants, T. L. C. Freeman, G. D. Locke, D. A. Diggens, B. King-Fisher, J. Watkins. Landscape consultant, M. Pickering.



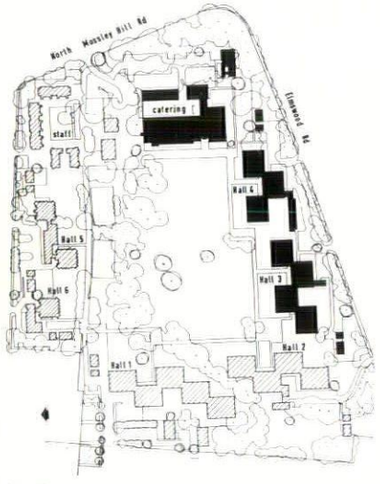
aerial view, with catering services building on left and Hall 4 on right



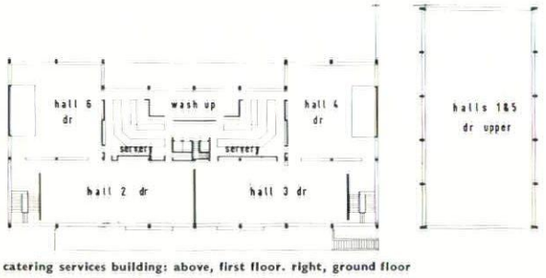
Hall 4, ground floor plan



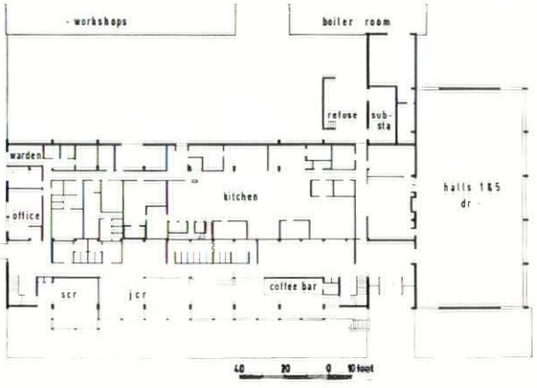
Hall 4, section of central part

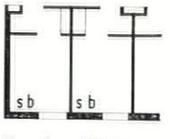


site plan



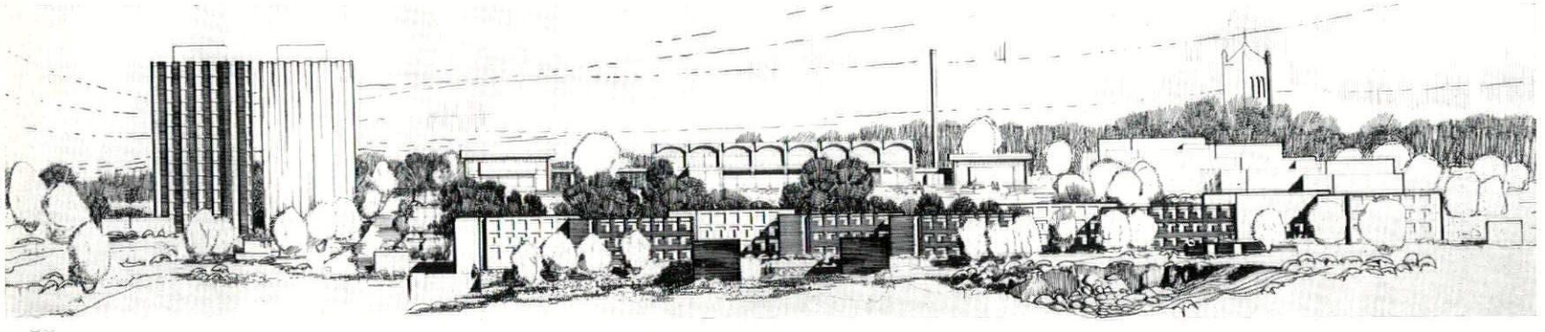
catering services building: above, first floor. right, ground floor





plan of typical study bedrooms

general view of site from west

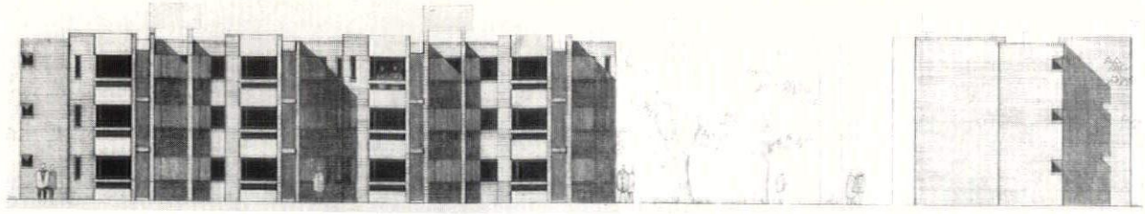


GRADUATE FLATS, OXFORD

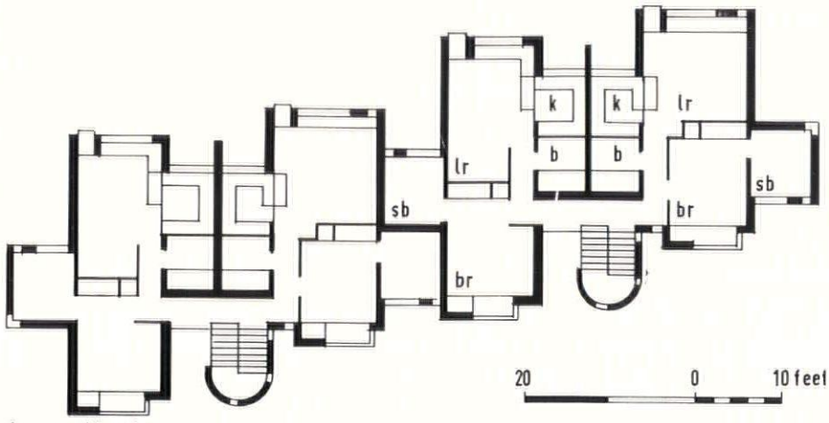
John G. Fryman

CLIENT: Jesus College, Oxford.
SITE: Cowley, by college playing fields.
ACCOMMODATION: Phase I, 12 self-contained flats for married graduates, floor area of 433 sq. ft. Total development, 48 flats.
STRUCTURE AND FINISHES: Loadbearing fairfaced brick and exposed lead, r.c. floors and stairs.
SERVICES: Compact service cores, underfloor electric heating.
BUILDING PERIOD: 1965–1966.

Associate in charge, F. L. Hawes. Assistant, G. T. Jessop. Quantity surveyor, Carless & Adams.

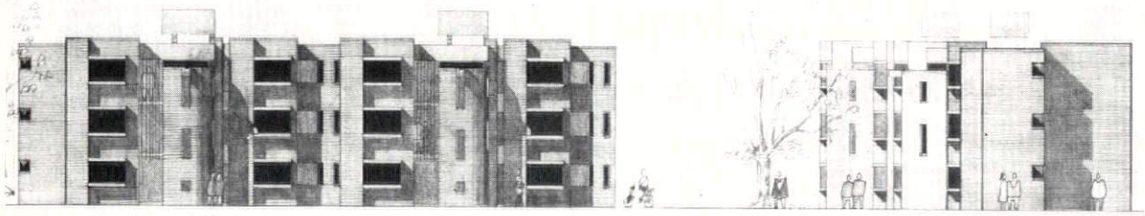


north and west elevations

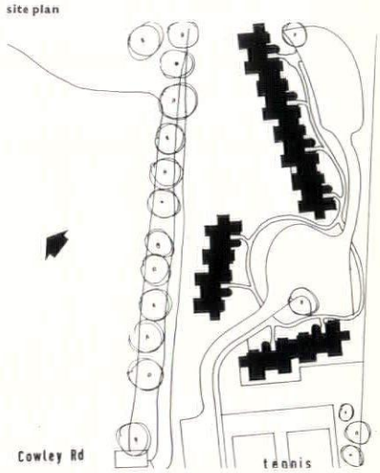


above, ground floor plan

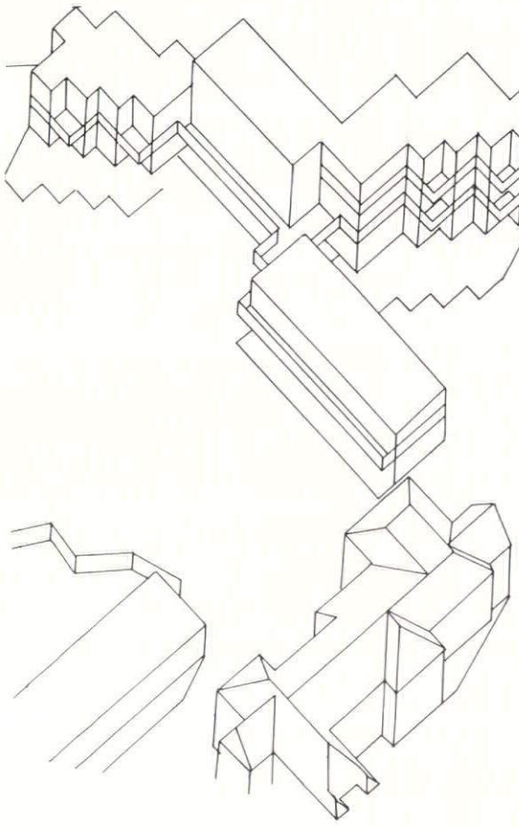
below, south and east elevations



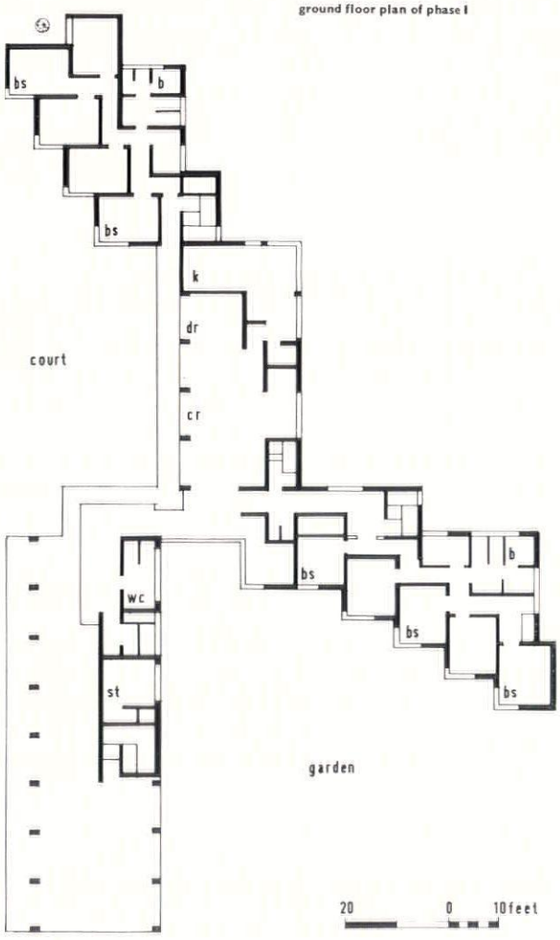
site plan



axonometric of phase I and existing house



ground floor plan of phase I

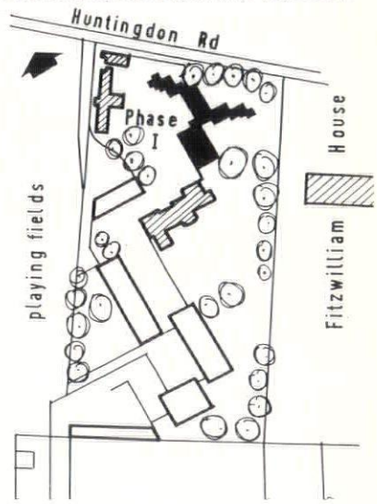


COLLEGE HOSTEL, CAMBRIDGE

Trevor Dannatt

CLIENT: Trinity Hall, Cambridge.
SITE: Wychfield, Huntingdon Road. Existing house built for Darwin family in well treed Victorian garden.
ACCOMMODATION: Phase I, study bedrooms and sets for 40 undergraduates and 2 fellows, with social ancillary accommodation on small scale. Future development for 150 undergraduates.
STRUCTURE AND FINISHES: Loadbearing brick, r.c. floor slabs.
BUILDING STARTS: Phase I, 1965.

site plan, showing entrance from Storeys Way to south

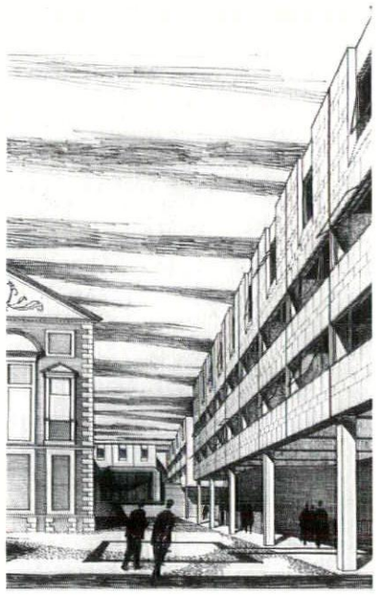


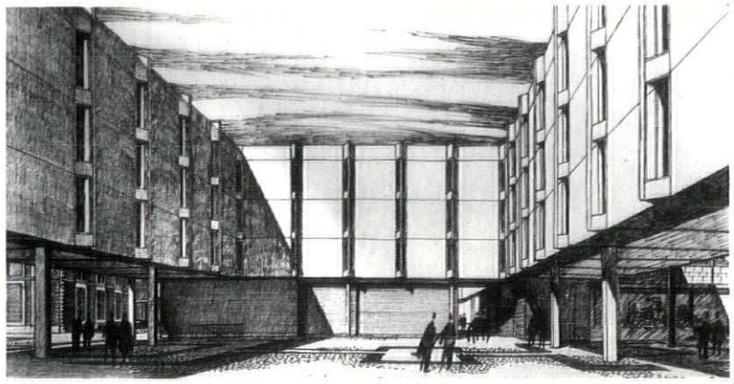
COLLEGE BUILDINGS, CAMBRIDGE

James Cubitt and Partners

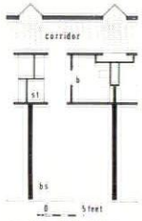
CLIENT: King's College and St. Catharine's College, Cambridge.
SITE: 1.8 acres between the existing buildings of the two colleges, straddling King's Lane which is to be re-located. Short frontage only to Trumpington Street.
ACCOMMODATION: Basement, parking for 50 cars and cycles, services. Ground floor, new kitchen for King's, new hall and kitchens for St. Catharine's, music room for King's, various offices. Upper floors, 135 study bedrooms, 15 sets, offices, sick bay.
STRUCTURE AND FINISHES: Basement and ground floor, in situ r.c. frame with dark purple brick infilling and some Ketton stone. Upper floors, precast concrete floors and walls, precast panels faced with Roachbed Portland stone, stove enamelled steel windows, exposed roof areas in leaded copper. Internally, self-finished concrete walls covered in vinyl sheeting.
SERVICES: Heating by convectors with tangential fan boosters. Forced ventilation to basement areas, kitchens, etc.
COST: £1,000,000.
BUILDING PERIOD: July 1965–1967.

Partner in charge, Fello Atkinson. Associate in charge, John Baker. Assistants, G. Bohutinsky, Bevan Knott, John Garrett, Peter Wilkes, Kenneth McReynolds. Quantity surveyor, W. J. F. Tillyard. Structural, mechanical and electrical consultant, Flint & Neill.

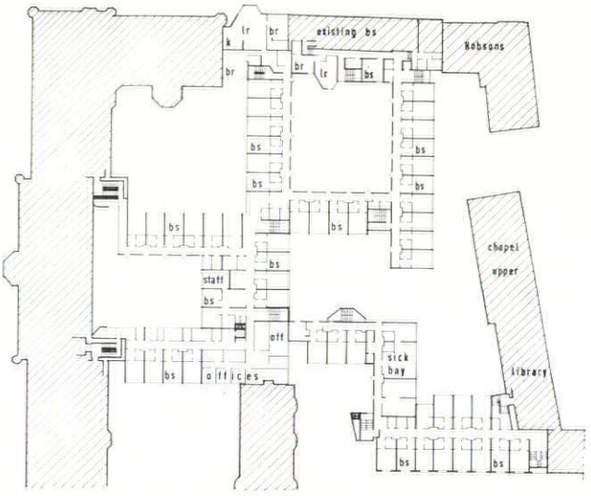


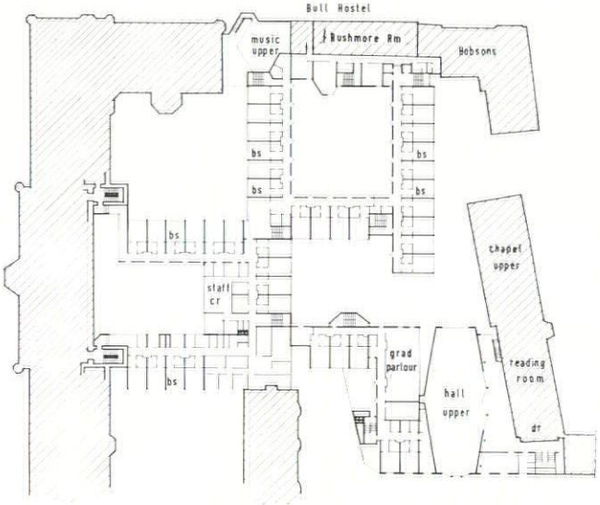


above, view towards new dining hall, with St. Catharine's chapel on left
top right, view of King's Lane Court with chapel at far left

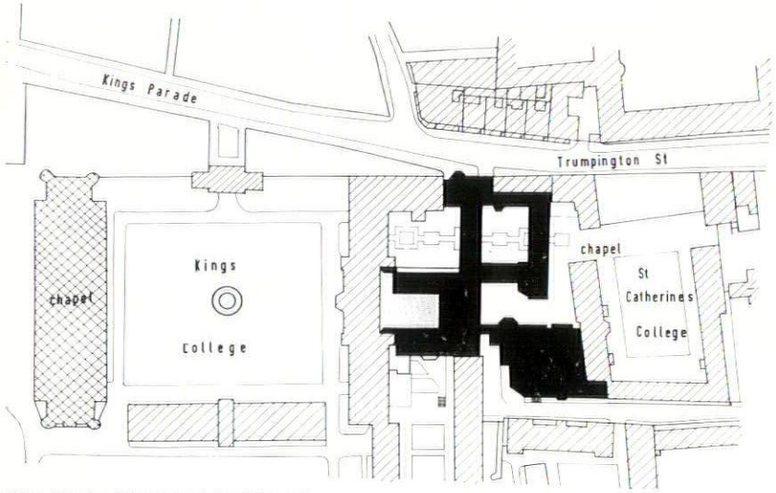


typical bed-sitter

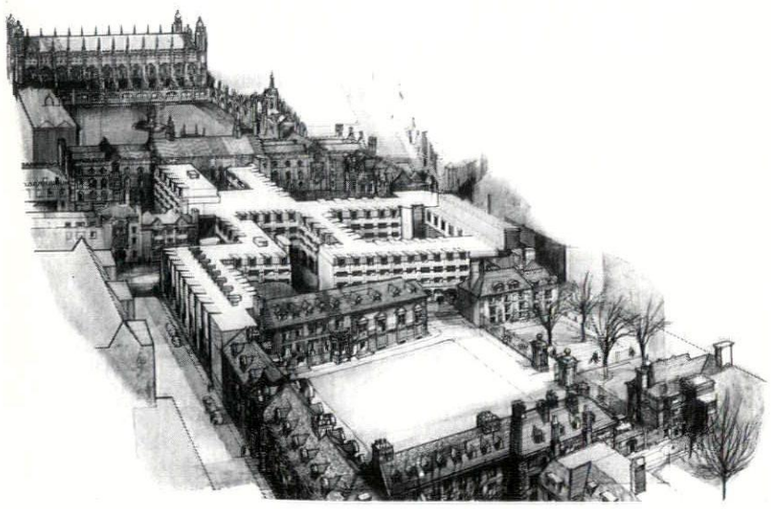


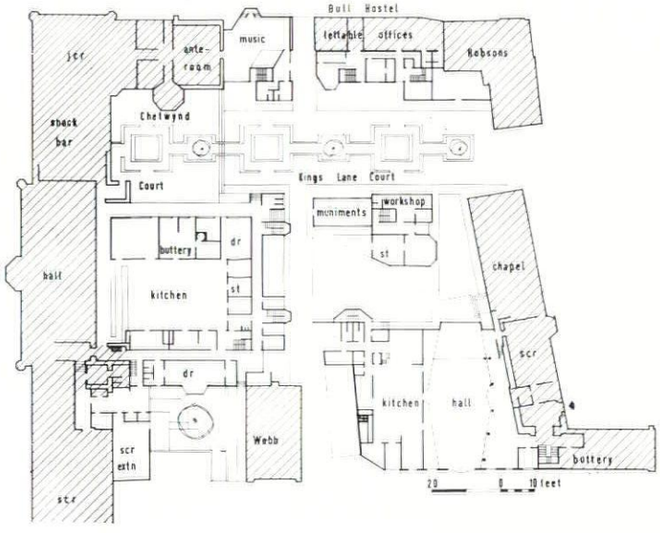


floor plans of whole site: below right, ground floor plan. right, first floor. top right, second floor



above, site plan. below, general view from south



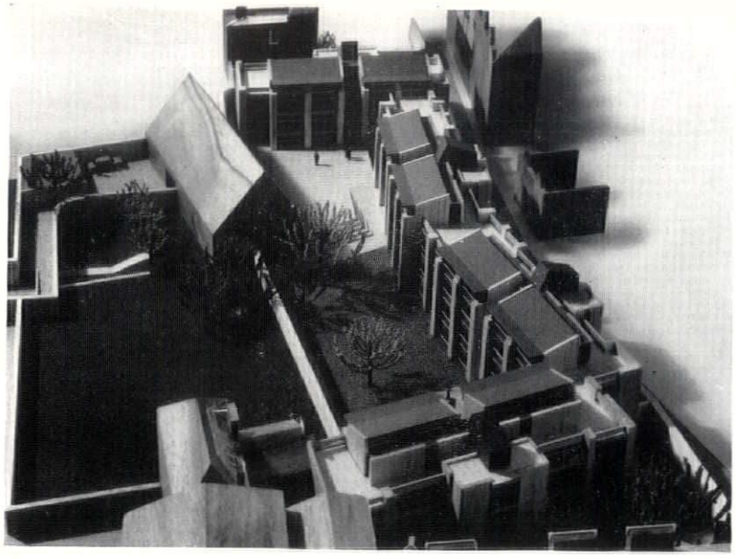


COLLEGE BUILDING, OXFORD

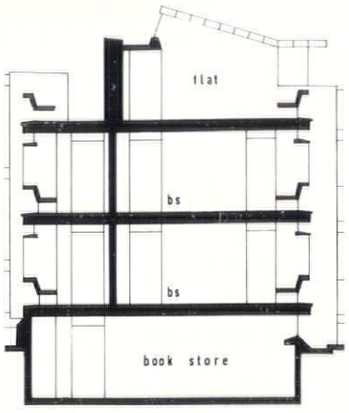
Powell and Moya

CLIENT: Christ Church, Oxford.
SITE: 0.6 acre in Blue Boar Street off St. Aldate's, north of college buildings. Existing brewhouse kept.
ACCOMMODATION: 60 bed-sitting rooms for undergraduates on 4 floors, 8 2-room sets for research lecturers.
STRUCTURE AND FINISHES: Loadbearing brick cross walls with in situ r.c. slabs. Ends of walls widen into piers and are faced with Portland stone. Exposed edges of slabs white concrete with calcined flint aggregate, transomes and cills similar. Windows of black anodized aluminium. Roofs lead covered.
SERVICES: Background heating by electrical off-peak embedded floor coils, topping up by off-peak fan-assisted storage units.
COST: Approximately £260,000, including £30,000 for demolition, alterations and conversions.
BUILDING PERIOD: August 1965–June 1967.

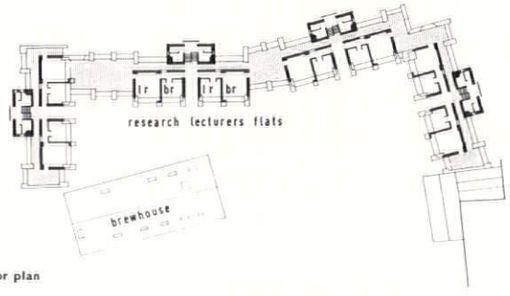
Partners in charge, Philip Powell and Hidalgo Moya. Associate in charge, Geoffrey Burton. Quantity surveyor, G. D. Walford & Partners. Structural consultant, Charles Weiss & Partners. Electrical consultant, Peter Jay and Partners.



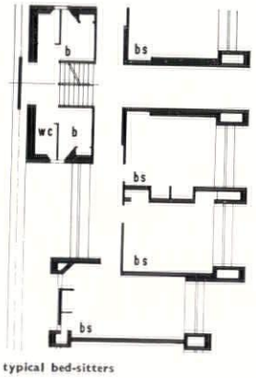
general view from east



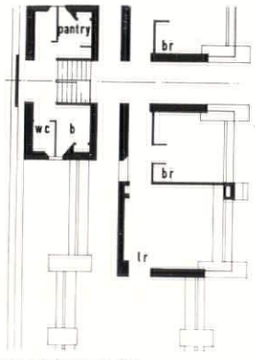
section through west wing



third floor plan

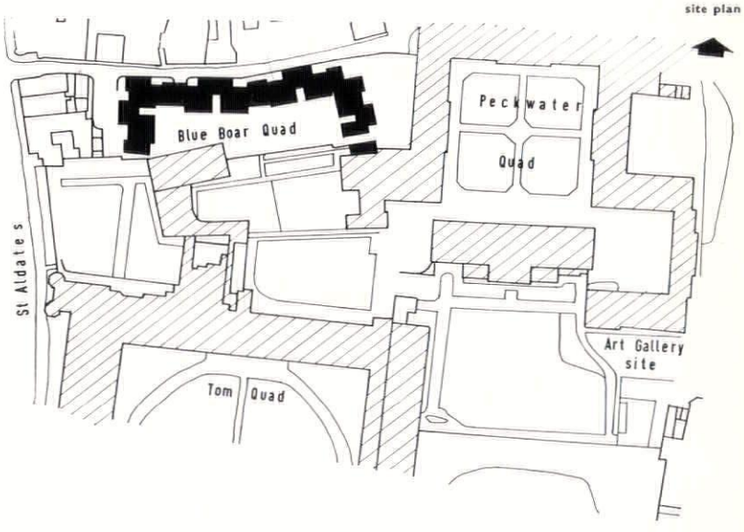


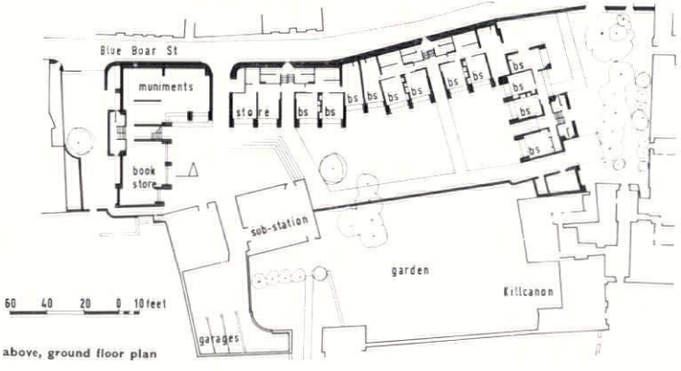
typical bed-sitters



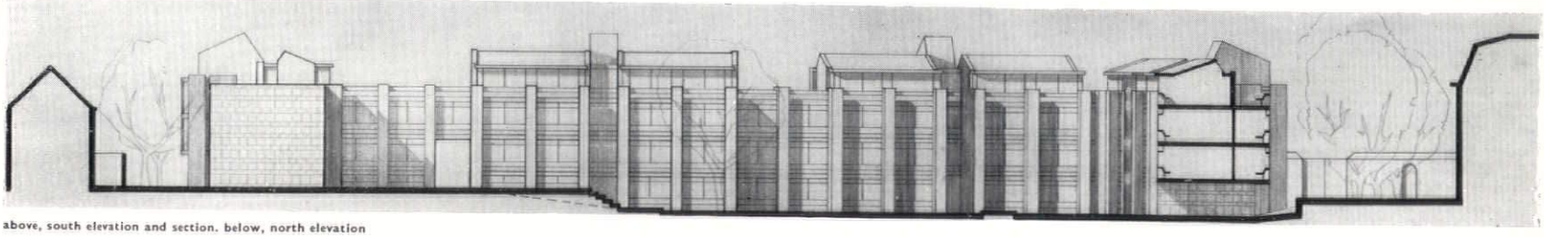
research lecturer's flat

site plan

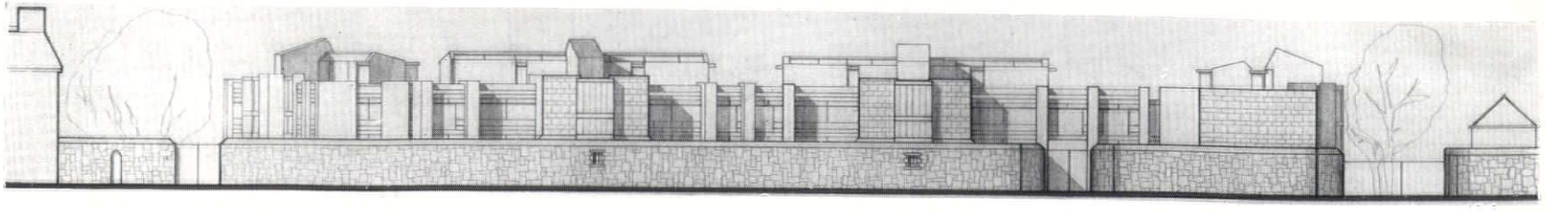




above, ground floor plan



above, south elevation and section. below, north elevation

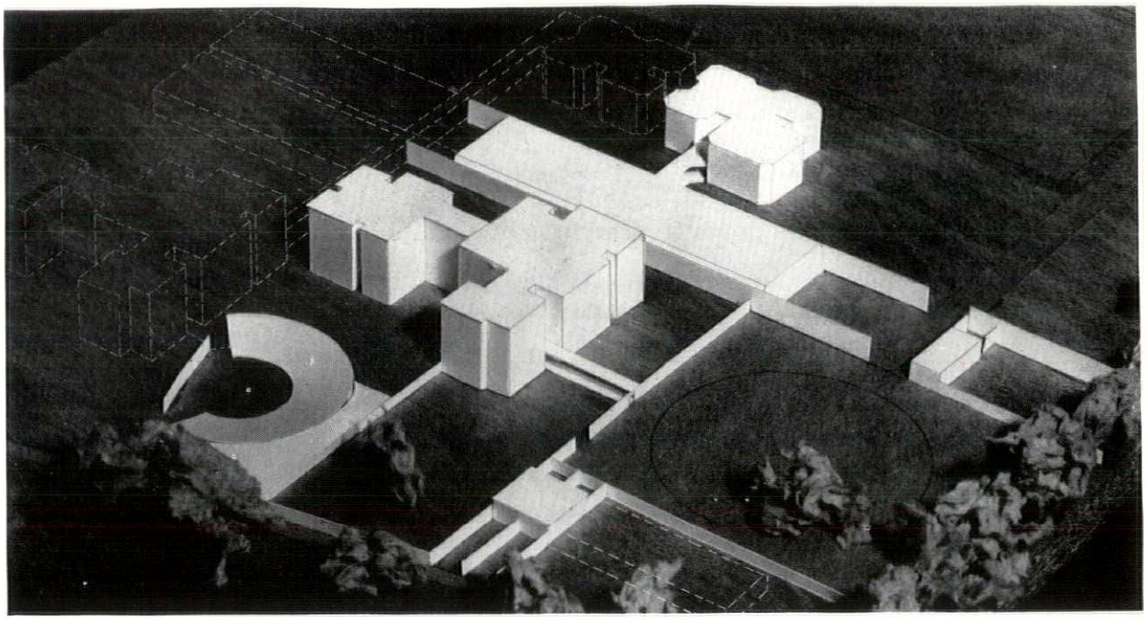


GIRLS' SCHOOL, WALLINGFORD, BERKS

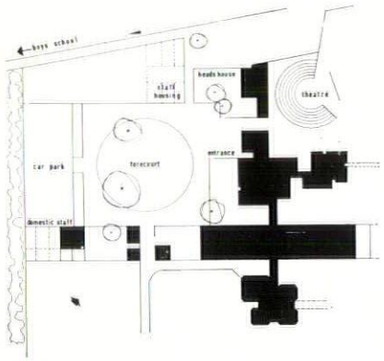
Tom Hancock

CLIENT: The Governors, Carmel College.
SITE: 17 acres of agricultural land overlooking Thames to the west, a quarter of a mile from same architect's Carmel College for boys on same drive.
ACCOMMODATION: Boarding and teaching for 120 girls, ages 13–18. Principal's house, 4 teaching staff apartments, 4 domestic staff flats and porter's lodge. Boarding accommodation on the first floor split into 4-girl bedrooms and 2-girl bed-study rooms.
STRUCTURE AND FINISHES: Residential, sand-lime brick cross walls with in situ r.c. slabs, spandrel panels in brick, plastic wall covering internally. Teaching, brick piers and in situ r.c. slabs. Communal, 18 in. deep steel cartella beams on steel columns, with non-loadbearing brick infill.
SERVICES: Hot water radiant heating plus convectors in large spaces. Own sewage plant.
COST: £250,000.
BUILDING PERIOD: September 1964–May 1966.

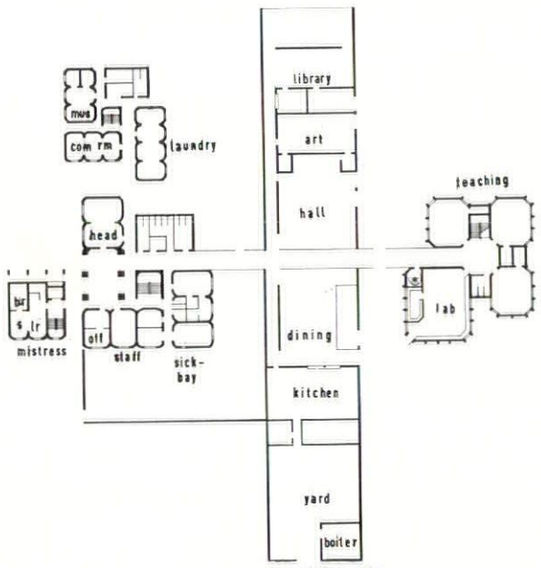
Assistants, Rolf Rothermel, Anthony Smallwood. Quantity surveyor, Davis, Bellfield & Everest. Structural consultant, R. J. Crocker & Associates. Mechanical consultant, G. N. Haden & Sons. Electrical consultant, Goodman & Taylor.



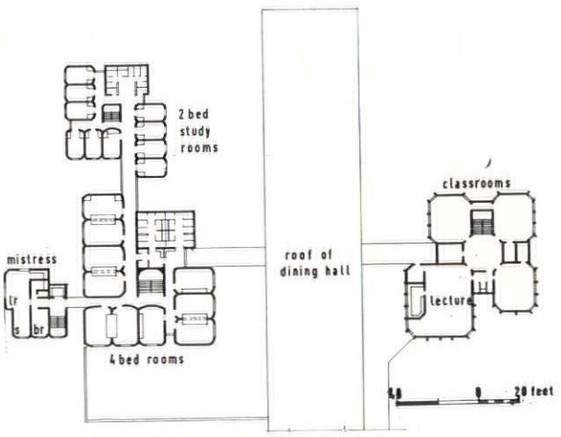
general view from west



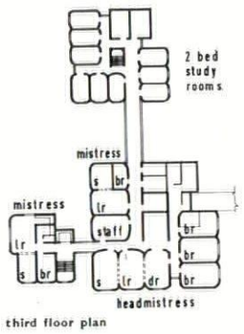
site plan



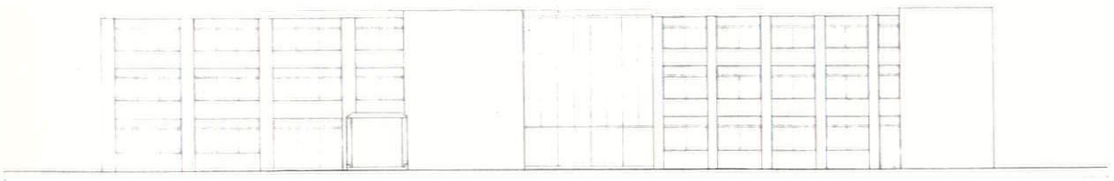
ground floor plan



first floor plan

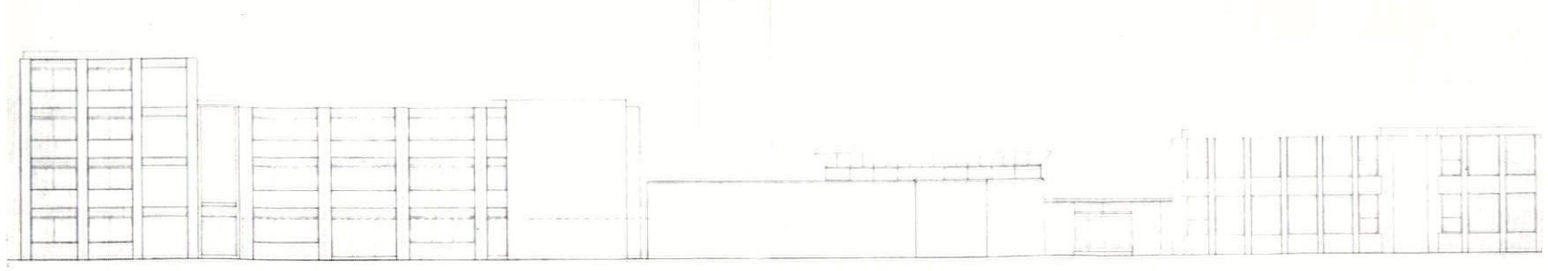


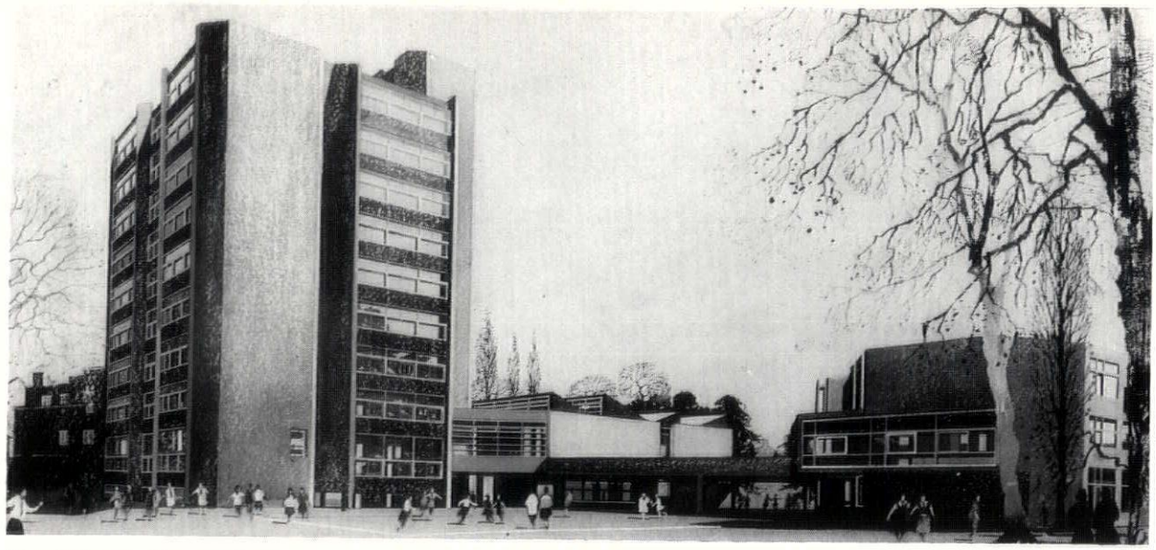
third floor plan



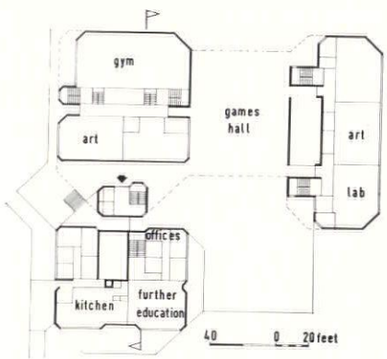
south elevation

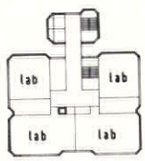
east elevation



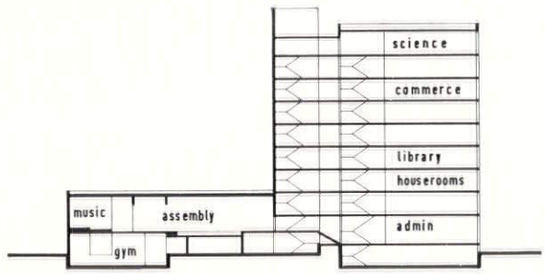


above, view from east. below, ground floor plan





seventh floor plan

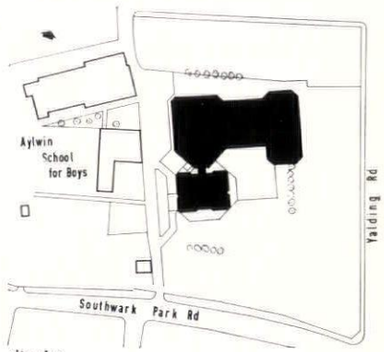


section through tower block and assembly

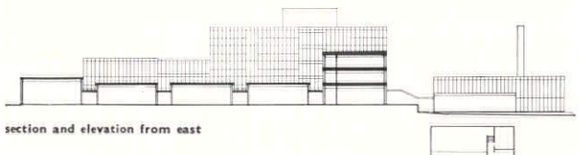
GIRLS' SECONDARY SCHOOL, BERMONDSEY, LONDON

Mayorcas and Guest

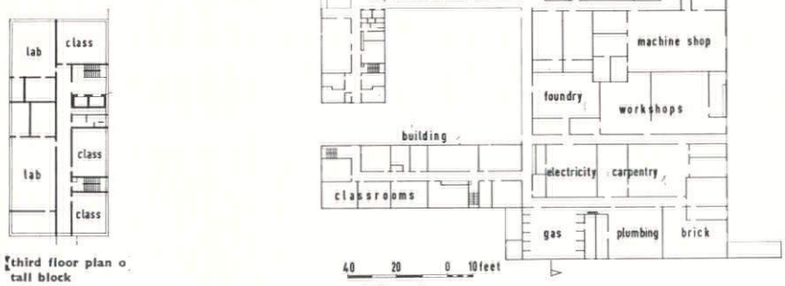
CLIENT: London County Council.
SITE: Monnow School for Girls, 5.75 acres in Southwark Park Road.
ACCOMMODATION: Six form entry for 975 pupils including 75 sixth form. Phase I, 10-storey teaching block and 2-storey communal block. Phase II, 3-storey teaching block. Covered play area between lower blocks.
STRUCTURE AND FINISHES: In situ r.c. frame, with part in situ and part hollow pot floors in multi-storey block, precast concrete panels with compressed aggregate. White tile finish on assembly hall, painted softwood windows and joinery.
SERVICES: Central heating, lifts, etc.
COST: Phase I, £350,000. Phase II, £50,000.
BUILDING PERIOD: December 1965–1967.



site plan



section and elevation from east



ground floor plan

third floor plan of tall block

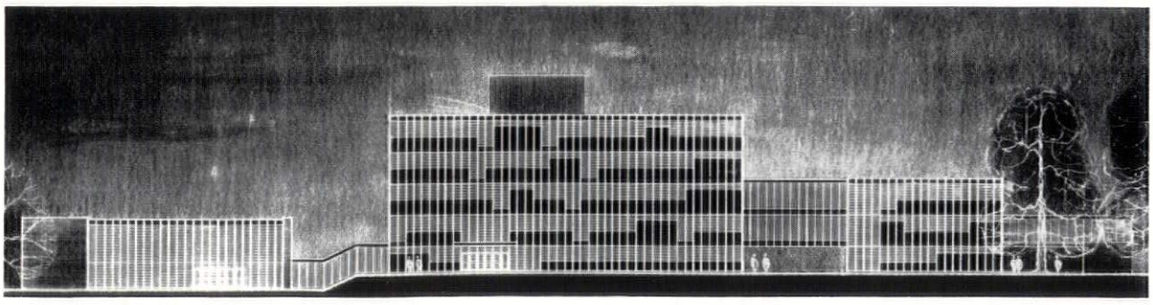
TECHNICAL COLLEGE, CHATHAM, KENT

Robert Matthew, Johnson-Marshall and Partners in association with E. T. Ashley-Smith, County Architect

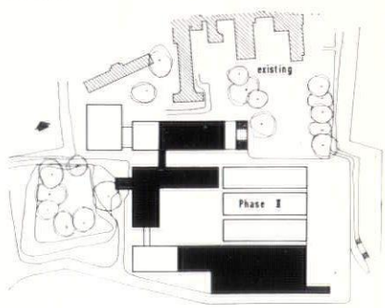
CLIENT: Kent County Council.
SITE: 6.3 acres overlooking Medway.
ACCOMMODATION: Medway Branch College of Technology, 70,000 sq. ft. for 900 students in Phase I, ultimately 132,000 sq. ft. for 2,000.
STRUCTURE AND FINISHES: SEAC 2 ft. 8 in. industrialized system, with steel frame for single-storey buildings and precast concrete frame for multi-storey buildings. Cladding generally galvanized steel curtain walling with asbestos cement panels.
COST: Phase I, £420,000. Complete scheme, £740,000.
BUILDING PERIOD: Phase I, April 1965–April 1967.

Partners in charge, Maurice Lee and Johan van Schaik. Job architect, Patrick Holdcroft.

west elevation



site plan



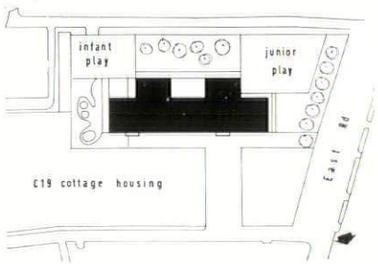
PRIMARY SCHOOL, CAMBRIDGE

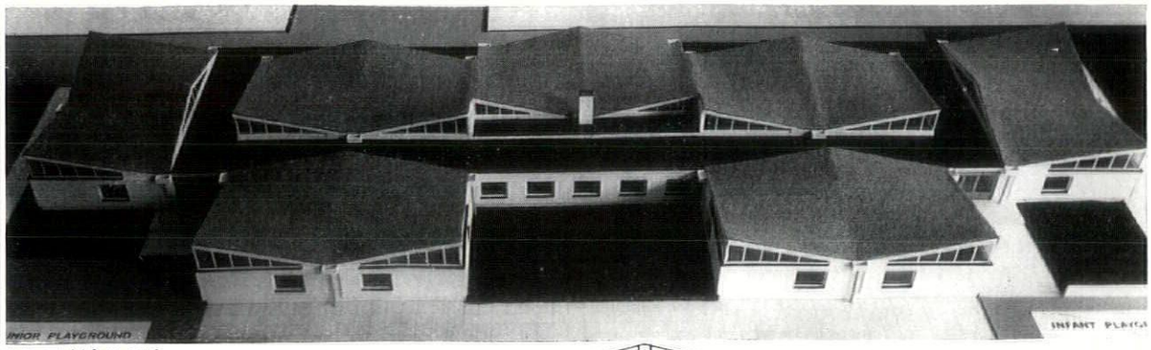
Lyster and Grillet

CLIENT: Church Schools of Cambridge.
SITE: Old school and slum clearance.
ACCOMMODATION: Infants and junior mixed school for 240 pupils plus nursery school for 3–5 year olds.
STRUCTURE AND FINISHES: Unit plan based on competition entry for Wokingham Primary School in 1958, entered by Christophe Grillet and Cedric Price jointly. Hyperbolic paraboloid surfaces sprayed on uncut ply shuttering, finished with sprayed bitumen/fibreglass, finished with white acrylic resin. Undersides sprayed with asbestos fibre insulation and acoustic finish. All walls non-structural, of 6 in. cavity concrete hollow blocks, fairface and painted. Timber roofs. Metal windows.
SERVICES: Low pressure central heating by hot air.
COST: 3 phases, each about £22,000 plus site works.
BUILDING PERIOD: 1964-1966.

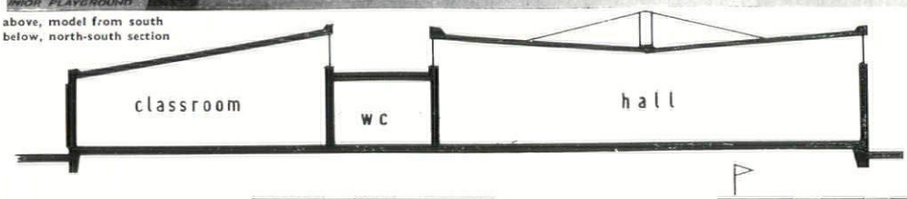
Assistants, Jan Halborsen and Robin Spence. Quantity surveyors, Lewis and Marshall.

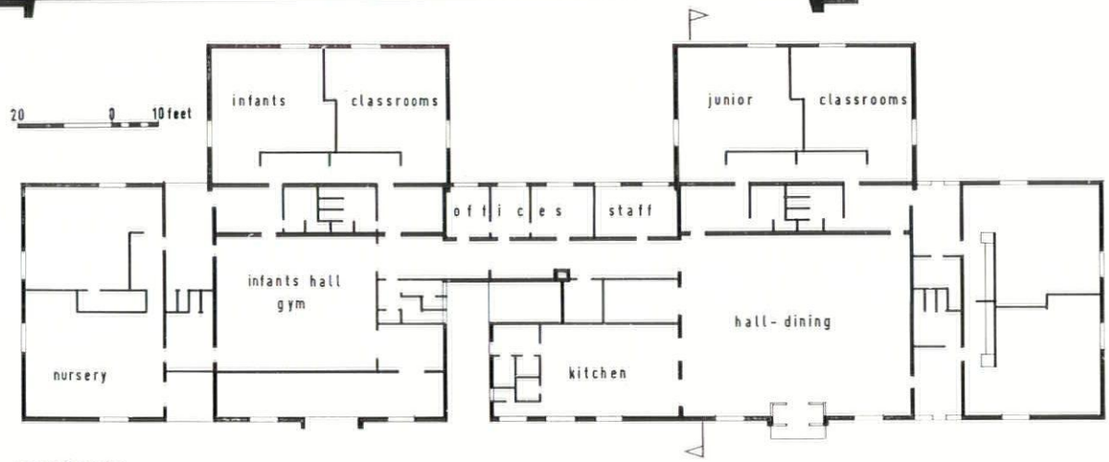
site plan





above, model from south
below, north-south section





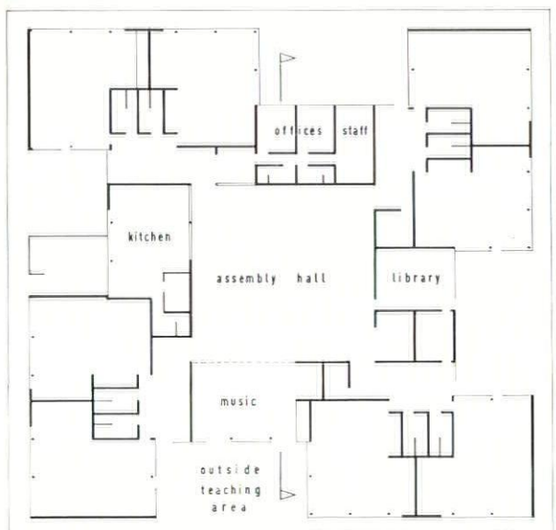
ground floor plan

JUNIOR SCHOOL, WELLINGTON, SHROPSHIRE

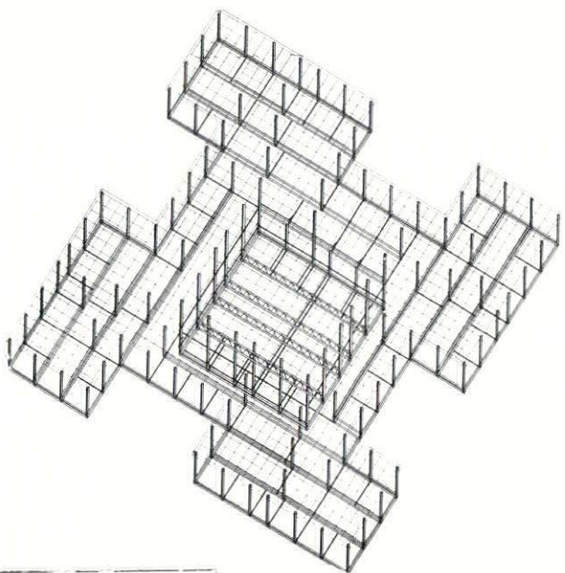
Ralph Crowe, County Architect

CLIENT: Shropshire County Council.
SITE: 1.6 acres next to existing infants' school, Dothill Estate.
ACCOMMODATION: For 320 pupils aged 7–11, 8 classrooms, assembly hall, library, music-dining space.
STRUCTURE AND FINISHES: SCOLA system, light steel frame with suspended ceilings, plain tile hanging and timber curtain walling externally, with stove enamelled asbestos infill panels and aluminium windows.
SERVICES: Low pressure hot water from plant in adjacent school.
COST: £66,779.
BUILDING PERIOD: April 1964–April 1965.

Architect in charge, C. D. Thompson. Job architect, D. A. Saxon. Quantity surveyor, L. C. Wakeman & Partners. Mechanical, chief engineer of dept.

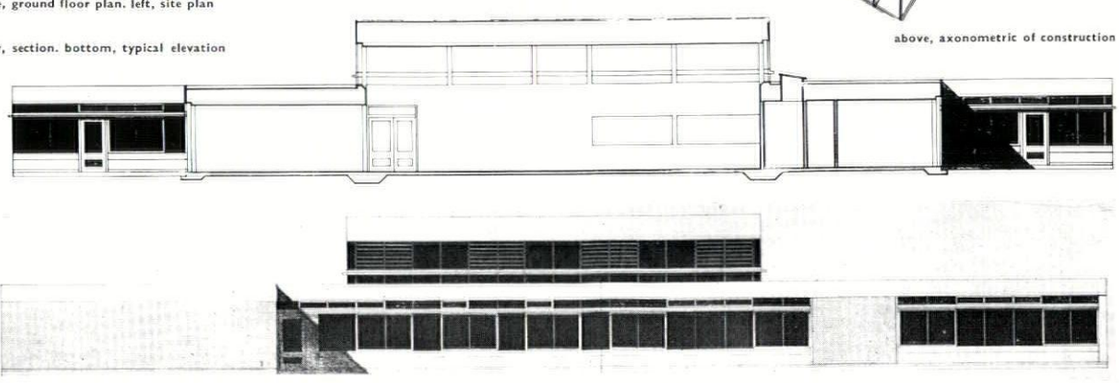


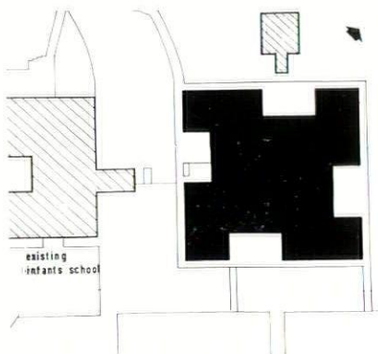
above, ground floor plan. left, site plan



above, axonometric of construction

below, section. bottom, typical elevation





PREVIEW HOUSING

Page	Project	Architects
39	Lillington Street, Westminster	Darbourne and Darke
40	Highfields, Leicester	W. K. Smigielski, City Planning Officer
40	Kelvin Redevelopment, Sheffield	W. L. Clunie, City Architect
41	Southwood Park, Highgate, London	Douglas Stephen and Partners
41	Weston Rise, Finsbury, London	Howell, Killick, Partridge and Amis
42	Bonamy Street, Camberwell, London	F. O. Hayes, Borough Architect
42	North Kenton, Newcastle upon Tyne	Ryder and Yates and Partners
43	Oakley Square, St. Pancras, London	Eric Lyons and Partners
44	Woodway Lane, Coventry	Midlands Housing Consortium Development
44	Vange One, Basildon New Town, Essex	Collister and Davies
45	Hayesford Park, Bromley, Kent	Building Design Partnership
45	Craigshill 1, Livingston New Town, Scotland	Peter Daniel, Chief Architect
46	Slough Lane, Wembley, Middlesex	Clifford Wearden and Associate
46	Heston Grange, Middlesex	Morton, Lupton and Smith
47	Greenwich, London	James Gowan
48	Poplar, London	Trevor Dannatt
48	Old People's Community, Lambeth, London	Edward Hollamby, Borough Architect
49	Mixed Development, Lambeth, London	Edward Hollamby, Borough Architect
50	Avon View, Clifton, Bristol	Joss Mackay
50	Furnace Green, Crawley, Sussex	Peter Phippen and Associates
51	Waterfront Housing, Feock, Cornwall	Team 4
51	Castle Hill, Prestbury, Cheshire	Leach, Rhodes and Walker
52	Glebe Gardens, Stow-on-the-Wold, Glos.	Jefferson, Sheard and Partners
52	Pound Farm Development, Cholsey, Berks.	John Toovey
53	Temple Newsam, Leeds	Derek Walker
54	Park 4, Cumbernauld, Scotland	D. R. Leaker, Chief Architect
54	Ravenswood 5, Cumbernauld, Scotland	D. R. Leaker, Chief Architect
55	St. Mary's Redevelopment, Oldham, Lancs.	Ministry of Housing and Local Government Development Group. Architect for Master Plan, Max Lock and Partners
56	Abbeyfield Road, Bermondsey, London	Hubert Bennett, Architect to the LCC
56	Central Housing, Southampton	Lyons, Israel, Ellis and Partners
57	Ellor Street, Salford, Lancs.	University of Edinburgh Architecture Research Unit
58	Anderston Cross, Glasgow	Scottish Joint Housing Development Unit
58	Army Housing, Tidworth, Wilts.	The Austin-Smith/Salmon/Lord Partnership

The keynote article in last year's 'Preview' issue was devoted entirely to housing—to the rediscovery of the importance of sectional planning and to the emergence of a definite theory of high density low-rise housing in this country. This trend has gathered speed in the past year; if all the schemes shown here are built, it will not be long before the complaints of harassed mothers on the eighteenth floor will be a thing of the past. Of only two traditional point blocks shown here, that at Bermondsey (by the LCC) is combined with an interesting slab of maisonettes on a deck system, and that at Salford (by the Edinburgh University team) shows the rapid emergence of 'heavy' precast construction from its primitive period. The archetypal situation, however, is shown in Building Design Partnership's Hayesford Park housing scheme at prosperous Bromley, Kent (the builder-developer, appropriately, is Ebenezer Howard's grandson). Here, next to the shopping centre illustrated in AR, February, 1964, a tall point block was originally planned. This has now been scrapped in favour of a quadrangle of stepped terraces, not unlike Sir Leslie Martin's Caius hostel, with family houses in front. Even in Glasgow, that city of point blocks, where high building is justified on arguments ranging from necessary density to Scottish custom to morale-boosting, the Joint Housing Development Unit set up by the Government has planned a whole neighbourhood of high density low-rise blocks, using the fall of the ground for car-parking beneath raised terraces.

A single low-rise estate is not necessarily more creative of an urban environment than an isolated point block. In several schemes this year can be seen the search for a continuum, a repetitive urban pattern similar to the terraces of Bath or Bloomsbury. Sheffield's third variation on the Park Hill theme combines a single twisted block with thickly landscaped parkland. Park Hill influence is obvious in Howell, Killick, Partridge and Amis's Weston Rise deck housing at Finsbury, though its aesthetics reflect a smoothly affluent South instead of a tough North. Quite different from this, but equally concerned with continuity of environment, is the army housing for Tidworth on Salisbury Plain by the Austin-Smith/Salmon/Lord Partnership; heavily afflicted by parsimony (such things as chain link fencing), the simple house plan is yet shuffled sufficiently to create considerable variation of light and privacy and open space. Larger still is the Highfield scheme at Leicester, terrifying to look at in the model but sufficiently broken up into small spaces on the ground. Similarly, the Bonamy Street scheme by the Camberwell borough architect is far more diagrammatic in the model than its small, pleasantly varied enclosures are likely to be in fact. The aggressive superimposition of an urban order is most strikingly apparent in the schemes by Darbourne and Darke and by James Gowan, though in each case monotony is wholly avoided by the sectional organization of different types of dwelling.

The most encouraging innovation this year is the attempt of industrialized schemes for low-rise housing to offer a varied environment. Particularly satisfactory is the Park 4 scheme at Cumbernauld New Town, where repetitive timber-framed units will be assembled to form appropriately varied dwellings for an estate of houses for owner-occupation. This must, incidentally, be almost the first use of industrialized methods for houses for sale. Currently the most promising system for general use is the 12M-Jespersen, developed by the Ministry of Housing and Laing's from a Danish 'heavy' system. There is clearly much development still to do: the attractive stepped blocks of maisonettes at Livingston are split up by more primitive two-storey blocks. At Oldham, Max Lock and Partners' vast plan for rebuilding 300 acres of the town centre is being detailed in 12M for its first phase by the Ministry's own Development Unit. Basildon's Vange One scheme, designed by its ex-chief architect, Anthony Davies, shows convincingly how the exigencies of construction can be turned to good account in establishing a repetitive terrace system.

Also encouraging are the first signs of the Ministry of Housing's sizable loans to non-profit-making housing societies, though high land prices are forcing the societies out into the interwar suburbs or beyond. Peter Phippen's Crawley scheme repeats the success of his Cockaigne housing at Hatfield (last year's 'Preview') in fitting a variety of dwelling forms within a repetitive crosswall system. Ivor Smith at Heston Grange uses the deck system he helped to devise as a job architect for Park Hill. Most interesting perhaps is Clifford Wearden's multi-level cruciform plan for his Wembley scheme, not only for its solution of the parking problem, but also for its generous provision of patios at several levels. If these last two schemes will remain somewhat isolated from the urbanism of which they would form a natural part, they will nevertheless bring good architecture to unexpected places, as will Gerald Sheard's Jacobsen-Erskine-influenced housing for Stow-on-the-Wold and John Toovey's square-windowed terraces for Cholsey. Most remarkable of all is the enterprise of a young architect, Joss Mackay, acting as his own developer in the midst of sacred Clifton.

LILLINGTON STREET, WESTMINSTER

Darbourne and Darke. E. J. Edwards, Director of Housing

CLIENT: Westminster City Council. Winner of 1961 competition.

SITE: 9.5 acres enclosed by Vauxhall Bridge Road, Charlwood Street, Tachbrook Street and Rampayne Street about 300 yards north-west of Vauxhall Bridge next to stucco squares of Pimlico. Dominated by 136 ft. spire of G. E. Street's St. James-the-Less Church.

ACCOMMODATION: 777 dwellings at 200 p.p.a., including old people's hostel. 10 basic types of dwelling, with many variations. High proportion of bed-sitters (45 per cent) and one bedroom flats (20–25 per cent). Old people's hostel contains 60 bed-sitters for one person or two people with grouped bathrooms and kitchens. 50 associated old people's bed-sitters and 2-room flatlets with individual bathrooms and kitchens. Interlocking maisonettes with access 'streets' in 8-storey and 4-6-storey blocks. Front and back of maisonette are divided by sliding doors. Houses with roof-garden bed-sitters in 3-storey block. Family dwellings are placed at ground level in houses or in 5-storey maisonettes with large garden, or intermediate or roof level courts and terraces. 2nd bedroom can be divided when children grow older. Parking for over 400 cars mostly covered.

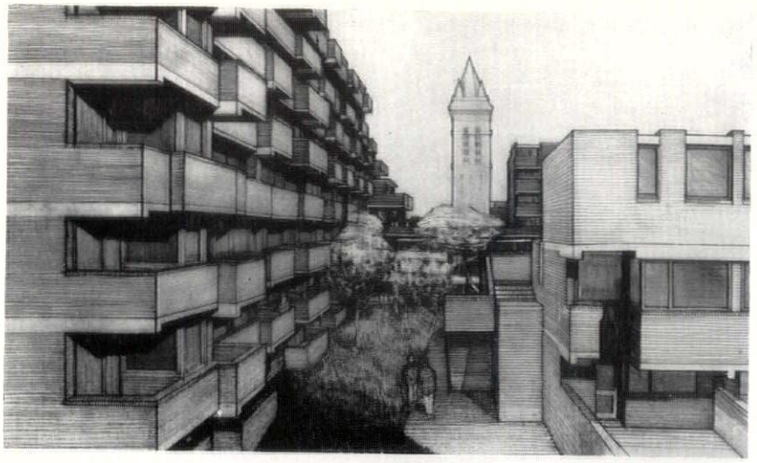
STRUCTURE AND FINISHES: Loadbearing brick cross walls with in situ r.c. beams and floors, interchangeable units on narrow module of 16 ft. 6 in. and 15 ft. 6 in. Wide brick paved 'street' occurs twice in 8-storey blocks and once in 6-storey blocks. Handmade multi-red facing bricks with raked joints, boarded in situ beams, floor slabs. Dark-stained double-glazed timber windows. Setts and brick paving.

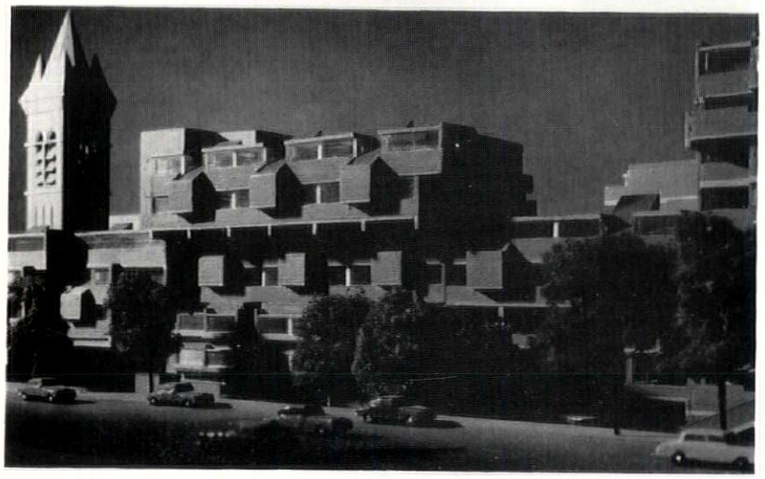
SERVICES: Central boiler house serving tenant-controlled water radiators and convectors. Artificial ventilation to both rooms and car parks.

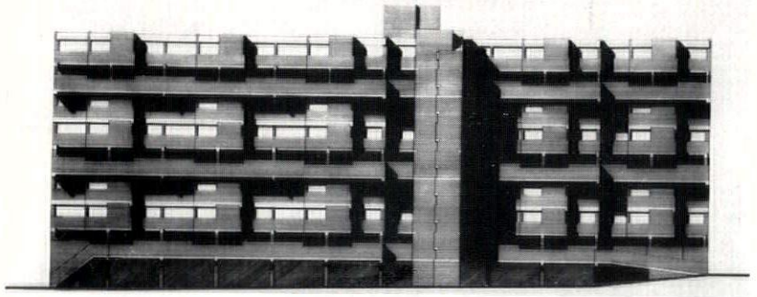
COST: Phase I, £1,200,000. Phase II, £800,000 approx. Phase III, £800,000 approx.

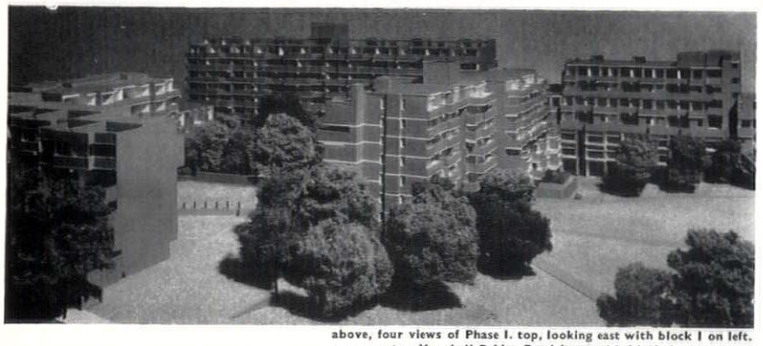
BUILDING PERIOD: July 1964–1970 approx.

Partners in charge, J. Darbourne and G. Darke. Associate in charge, B. Grimes. Assistants, M. Burgess, J. Stanworth, M. Landolt, J. Starling. Quantity surveyor, G. A. Hanscomb Partnership. Structural consultant, Flint & Neill. Mechanical consultant, Kennedy & Donkin (heating).

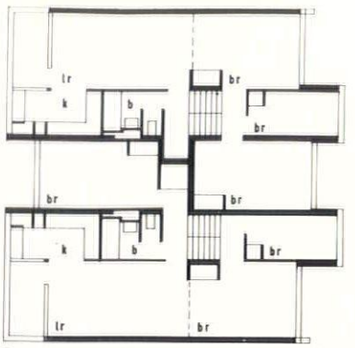




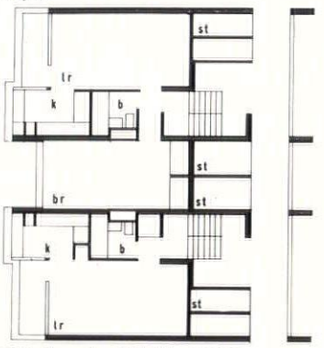




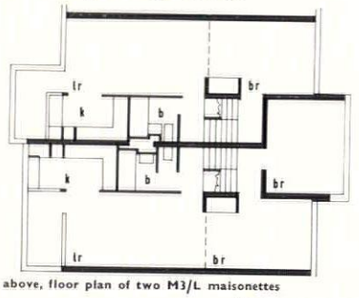
above, four views of Phase I. top, looking east with block I on left. upper centre, Vauxhall Bridge Road front with block I on extreme right. lower centre, elevation of block I to Vauxhall Bridge Road. bottom, view from Tachbrook Street with block I in left background



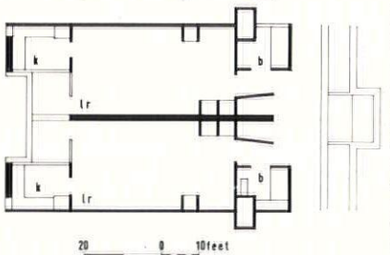
above, floor plan of interlocking maisonettes, M4/VA and M4/VB



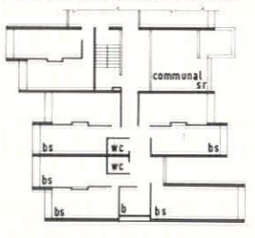
above, floor plan of M2/V and M1/V



above, floor plan of two M3/L maisonettes

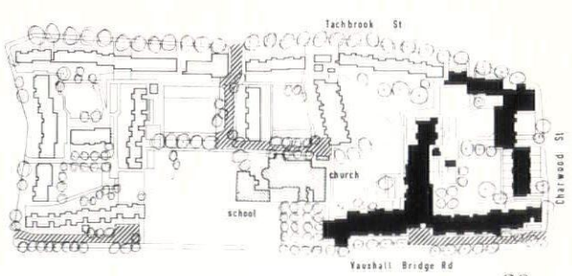


above, two one-bed old people's flats

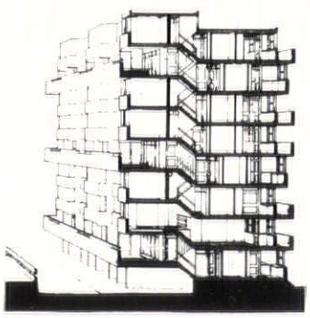


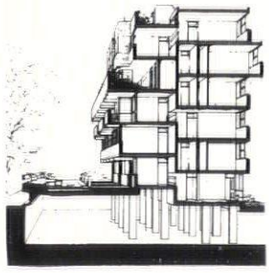
left, old people's hostel, south-west wing floor plan

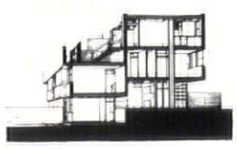
below, site plan showing limited vehicular access



below, left to right, sections of typical 8-, 6- and 3-storey blocks







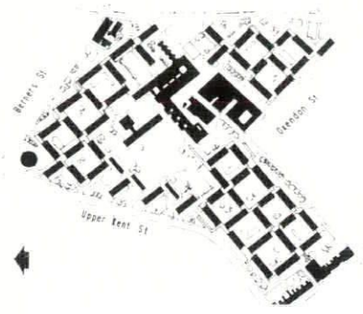
HIGHFIELDS, LEICESTER

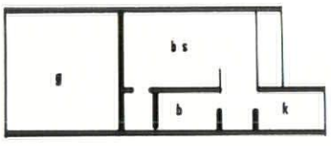
W.K. Smigielski, City Planning Officer

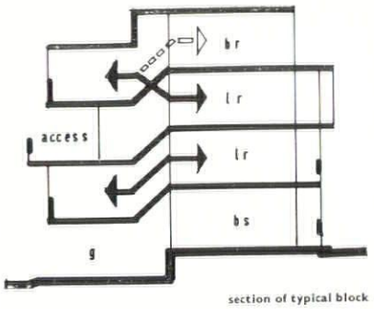
CLIENT: Leicester City Council.
SITE: 29-acre slum clearance area.
ACCOMMODATION: 900 dwellings at 115 p.p.a. 253 1-bedroom flats, 550 2-bedroom flats, 64 3-bedroom flats, 33 bed-sitters. Old people's home for 60 people. 100 per cent garaging in 670 garages and 230 parking spaces. 2-acre school, 25 shops, 5 pubs.
SERVICES: District heating.
BUILDING PERIOD: Early 1965–1968.

Design group, H. Blachnicki, J. Winter, K. Baldwin, E. Fountain, R. Cropper, D. Hayes.

site plan

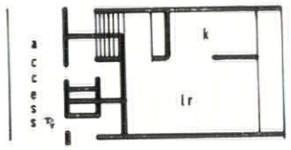




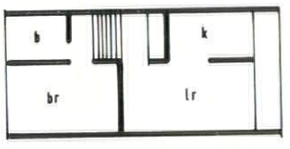


section of typical block

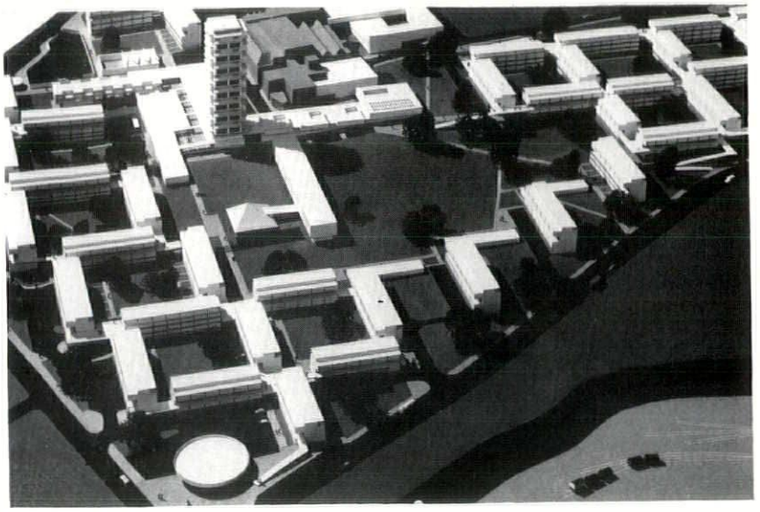




floor plans of typical block. top, third floor. above, second floor. below, first floor. below left, ground floor

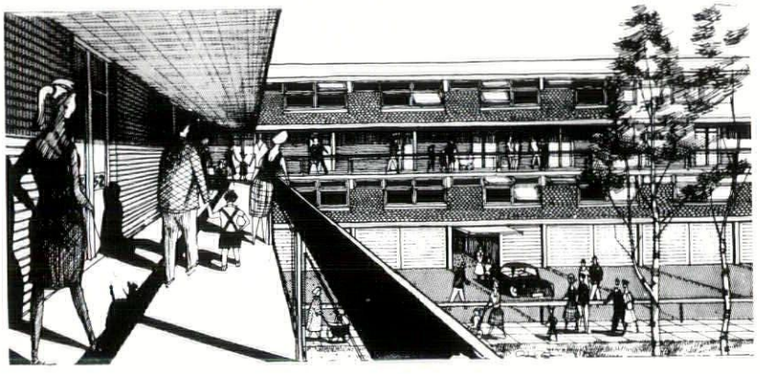






general view of site

detailed view of access ways



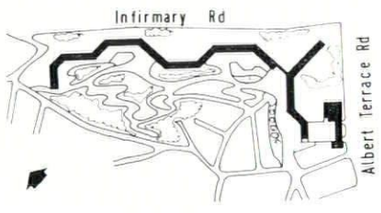
KELVIN REDEVELOPMENT, SHEFFIELD

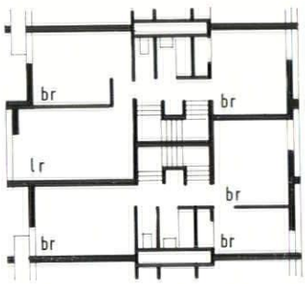
W. L. Clunie, City Architect

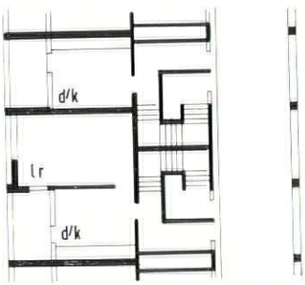
CLIENT: Sheffield City Council.
SITE: 22-acre slum clearance between residential area and heavy industry in Don Valley, ¾ mile from city centre. Triangular, with marked concave cross fall to north-east.
ACCOMMODATION: 948 dwellings at 150 p.p.a., ranging from single-person flats to 6-person maisonettes, 2 pubs, 2 banks, 6 shops, tenants' hall.
STRUCTURE AND FINISHES: R.c. frame and floors, brick infill panels, breeze partitions.
SERVICES: Heating and hot water from central boiler plant, refuse disposal by Garchey tanker system. 5 groups of lifts each with 2 passenger and 1 goods lift.
COST: £3,438,000, including site acquisition.

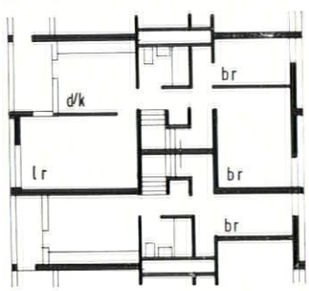
Deputy city architect, B. F. Warren. Assistant city architect, J. Dean. Job architects, D. Cartledge and P. M. Toft. Quantity surveyor, A. W. Lancaster. Structural consultant, Ove Arup & Partners.

site plan

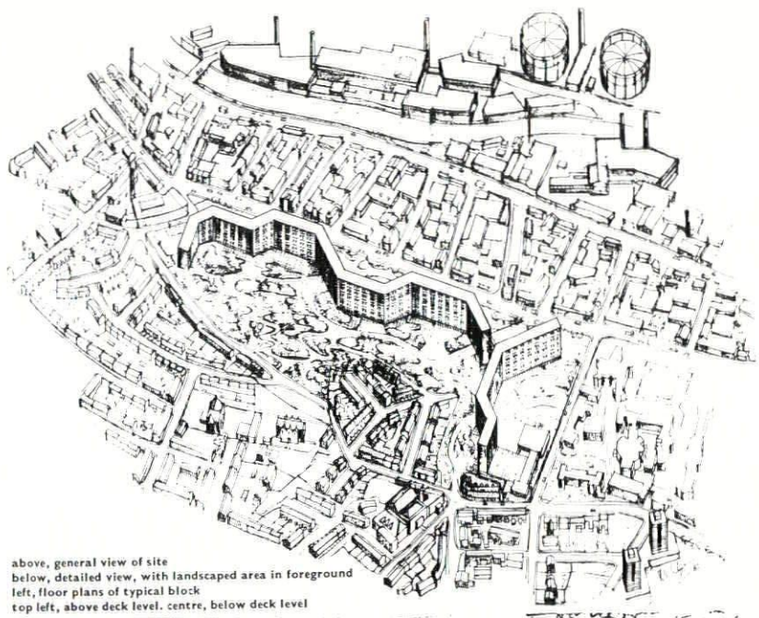






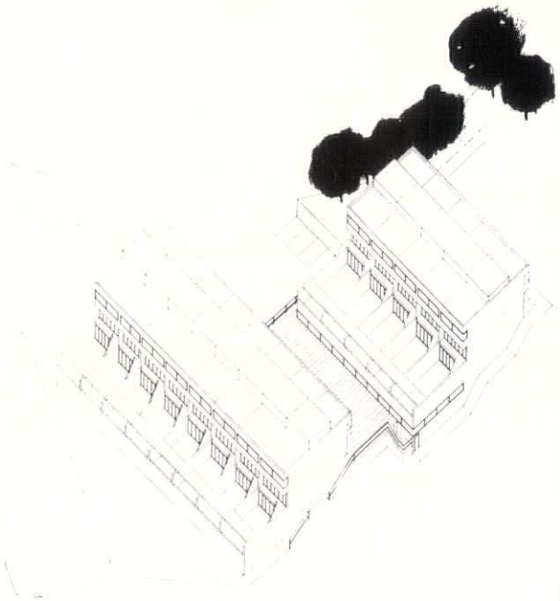




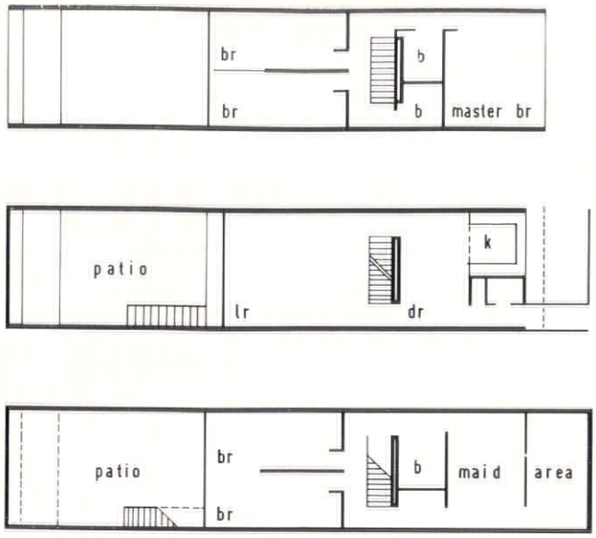


above, general view of site
below, detailed view, with landscaped area in foreground
left, floor plans of typical block
top left, above deck level. centre, below deck level





above, axonometric from south. below, section, showing garages beneath patios



above, ground, first and second floor plans of typical house



SOUTHWOOD PARK, HIGHGATE, LONDON

Douglas Stephen and Partners

CLIENT: Ross Hammond Investments Ltd.

SITE: 1.75 acres in Southwood Lane, N.6. Sloping site with trees and extensive views. Next to housing illustrated in 1964 Preview.

ACCOMMODATION: 13 3-storey terrace houses with gardens with varied interpretations within cross walls at 16 ft. centres. 91 habitable rooms, group garaging for 20 cars with play space over, tennis court, projected swimming pool and club building.

STRUCTURE AND FINISHES: R.c. cross walls and floors, white precast concrete cladding, aluminium windows.

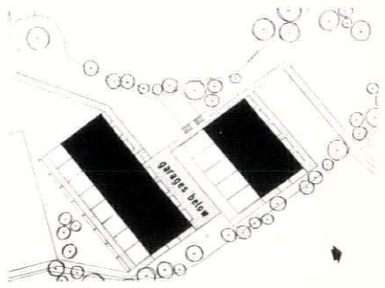
SERVICES: Ducted air heating.

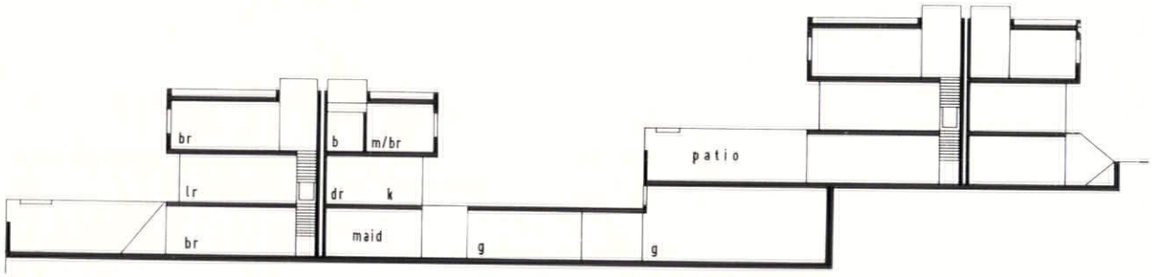
COST: £120,000.

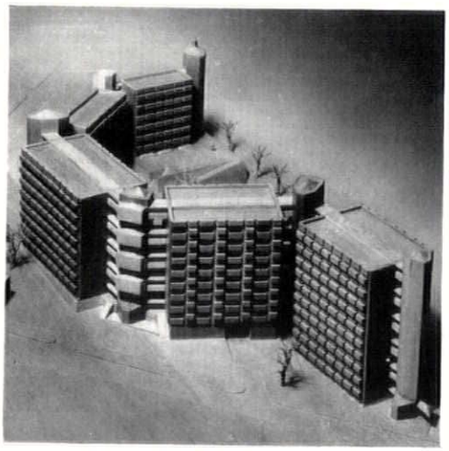
BUILDING STARTS: Early 1965.

Partner in charge, Robert Maxwell. Assistant, Edward Jones. Quantity surveyor, Brian Davis. Structural consultant, A. Hunt.

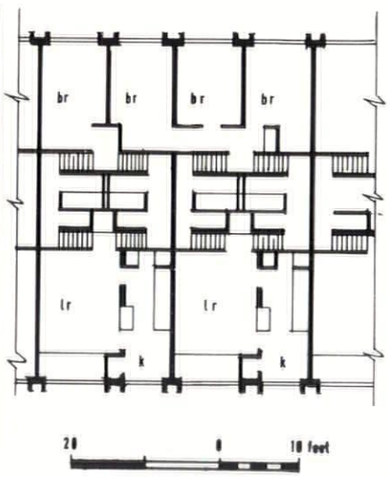
site plan

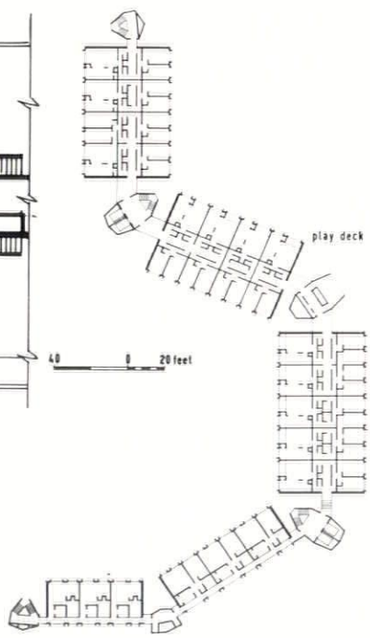






above, model from south-west. above right, plan of typical scissor maisonettes. far right, typical floor plan of whole scheme





WESTON RISE, FINSBURY, LONDON

Howell, Killick, Partridge and Amis in association with Hubert Bennett, Architect to the LCC

CLIENT: London County Council.

SITE: 2-acre triangle, steeply sloping off Pentonville Road.

ACCOMMODATION: 147 dwellings at 195 p.p.a. 18 one-room old people's flats in 6-storey block with balcony access. 21 2-room old people's flats in 7-storey block with balcony access. 108 scissor maisonettes in 8-, 9- and 10-storey blocks. All blocks linked to vertical circulation towers. Fitted playground.

STRUCTURE AND FINISHES: 6¾ in. calculated brick cross walls and r.c. floor slabs with precast exposed aggregate cladding panels. Towers, r.c. with boarded finish.

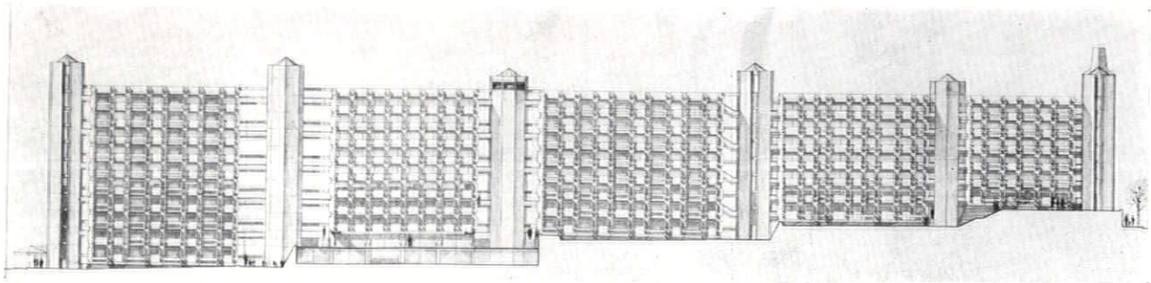
SERVICES: Heating by convected warm air from oil-fired pipes.

COST: £632,000.

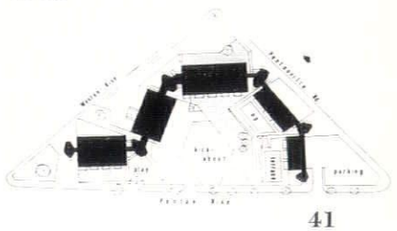
BUILDING PERIOD: Summer 1965-1968.

Partner in charge, J. A. Partridge. Assistant, A. H. Miller. Quantity surveyor, Wakeman Trower & Partners. Structural consultant, Harris & Sutherland. Mechanical and electrical consultant, John Porges.

elevation to Penton Rise



site plan

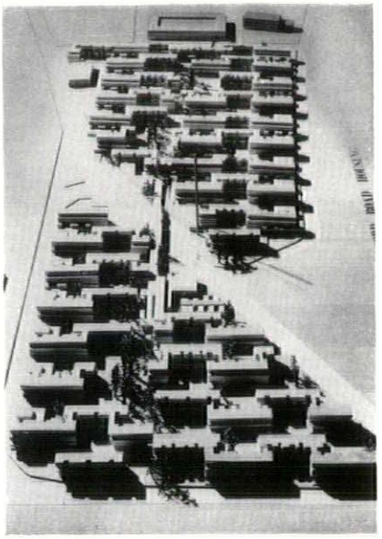


BONAMY STREET, CAMBERWELL, LONDON

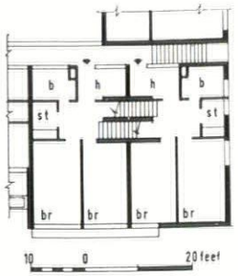
F. O. Hayes, Borough Architect and Director of Housing

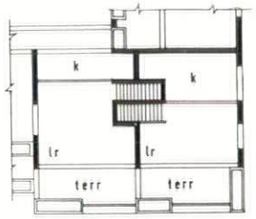
CLIENT: Camberwell Borough Council.
SITE: 24 acres, Rotherhithe New Road, SE16, bounded by Surrey Canal, Old Kent Road, and Bricklayers Arms Goods Depot.
ACCOMMODATION: 919 dwellings, 136 p.p.a., 34 bed-sitting rooms, 212 one-bedroom, 439 two-bedroom, 206 three-bedroom, 28 four-bedroom dwellings. 18 shops, 5 laundries.
STRUCTURE AND FINISHES: Brick cross walls, r.c. slabs, brick cladding.
SERVICES: District heating with warm air units in dwellings.
COST: Stage I (532 dwellings plus central area), £2,763,175.
BUILDING PERIOD: Stage I, June 1964–December 1966.

H. P. Trenton, deputy borough architect. Job architects, N. Clarke, M. J. Stocker.

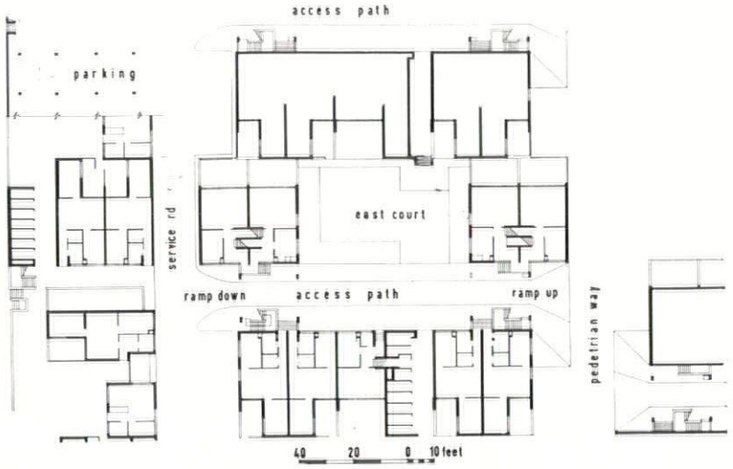


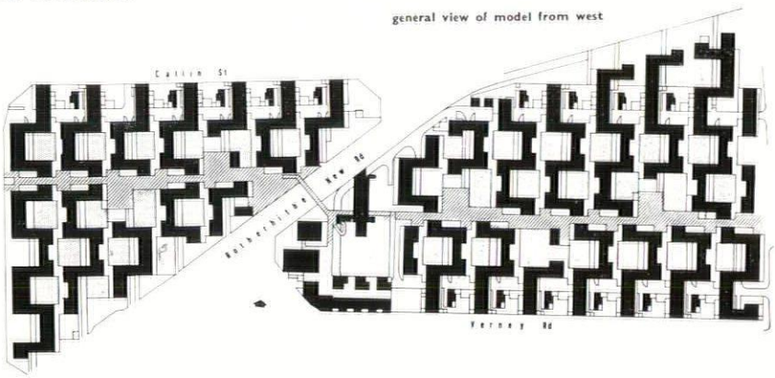
general view of model from west



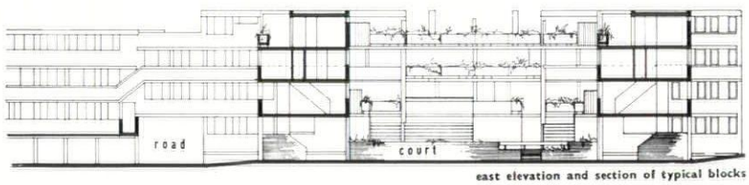


typical maisonettes: left, second floor, right, third floor below, ground floor plan showing layout of typical blocks





site plan



east elevation and section of typical blocks

NORTH KENTON, NEWCASTLE UPON TYNE

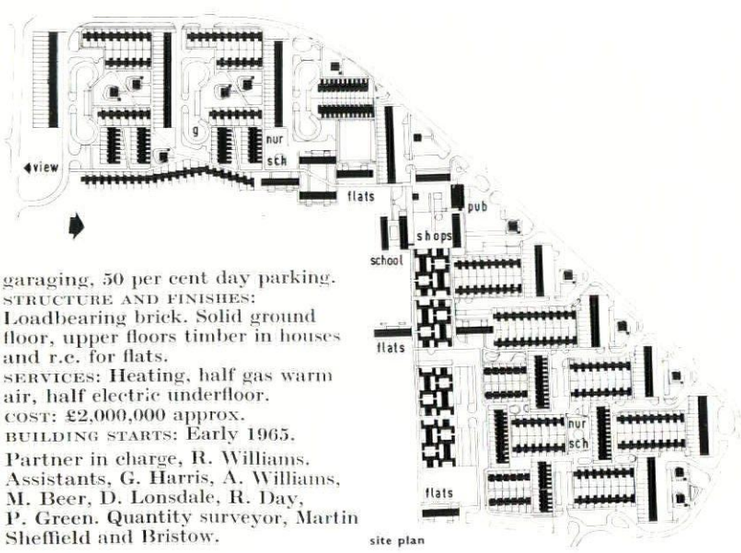
Ryder and Yates and Partners in association with G. Kenyon, City Architect

CLIENT: Newcastle City Council.
SITE: 80 acres gross, 45 acres for housing with fall to north of 1 : 11.
ACCOMMODATION: 632 dwellings at 70 p.p.a. 8 dwelling types: 4 types of 3-bedroom 5-person house, 2 types of 2-bedroom 4-person flat, 4-bedroom 6-person house, 3-bedroom 5-person flat. Flats in 3-storey blocks. 100 per cent garaging, 50 per cent day parking.
STRUCTURE AND FINISHES: Loadbearing brick. Solid ground floor, upper floors timber in houses and r.c. for flats.
SERVICES: Heating, half gas warm air, half electric underfloor.
COST: £2,000,000 approx.
BUILDING STARTS: Early 1965.

Partner in charge, R. Williams. Assistants, G. Harris, A. Williams, M. Beer, D. Lonsdale, R. Day, P. Green. Quantity surveyor, Martin Sheffield and Bristow.



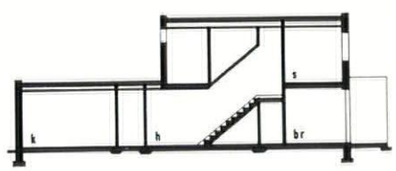
perspective, with three-storey block of flats in centre

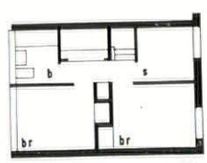


site plan

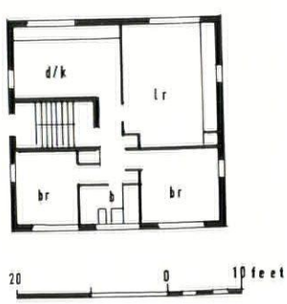


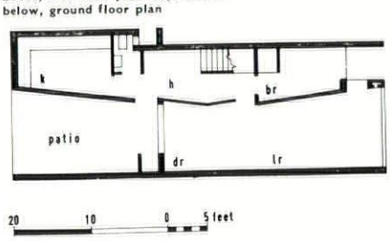
three-storey block of flats
above, section. below, typical floor plan





three-bedroom house, type T3:
above, first floor plan. top, section
below, ground floor plan





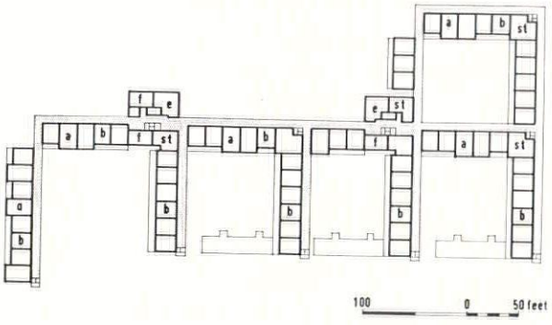


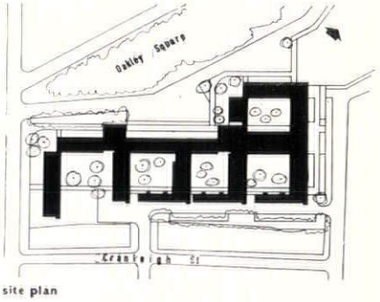
view from Oakley Square

OAKLEY SQUARE, ST. PANCRAS, LONDON

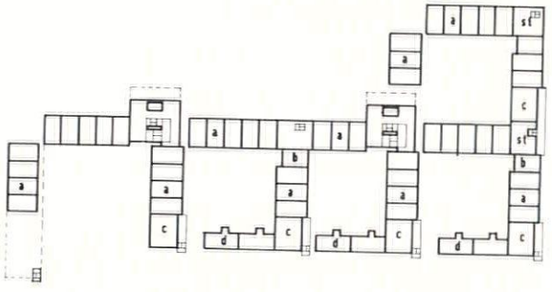
Eric Lyons and Partners

CLIENT: St. Pancras Borough Council.
SITE: 3.5 acres replacing south side of Victorian square in poor condition.
ACCOMMODATION: 181 dwellings at 160 p.p.a. 30 bed-sitting rooms, 28 one-bedroom flats, 5 2-bedroom flats, 54 2-bedroom maisonettes, 58 3-bedroom maisonettes, 6 4-bedroom maisonettes. Covered parking for about 110 cars, open parking for about 80.
STRUCTURE AND FINISHES: 10-storey flat blocks, precast concrete structure with brick and glass infill panels. 4-storey maisonettes, brick cross walls, storey-height glazing frames, painted shiplap boarding, aluminium roofs.
BUILDING STARTS: Mid-1965.
Partner in charge, Ivor Cunningham.

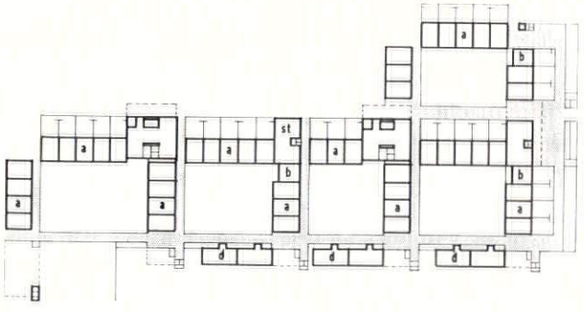


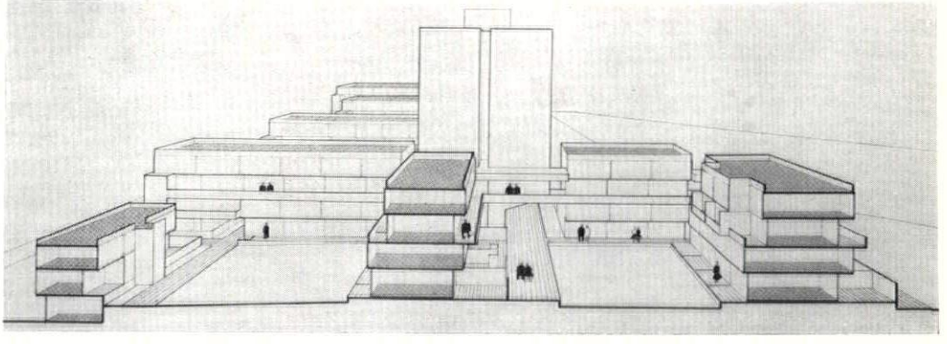


site plan



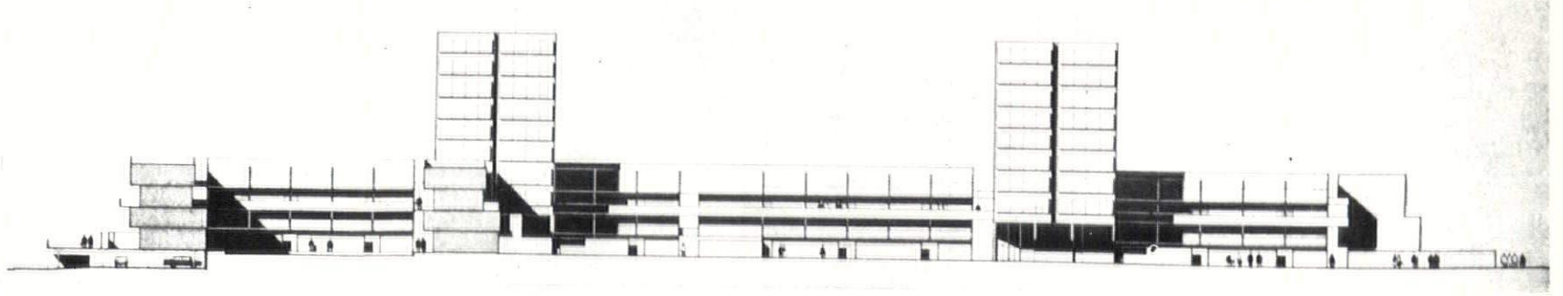
top left, second floor plan. centre left, first floor plan. below left, ground floor plan
key
a, 3-bedroom maisonette
b, 2-bedroom maisonette
c, 2-bedroom flat
d, 4-bedroom maisonette
e, 1-bedroom flat
f, bed-sitter





sectional perspective from south

west elevation and section

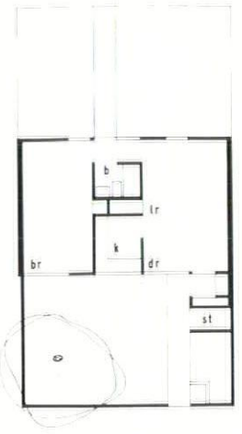


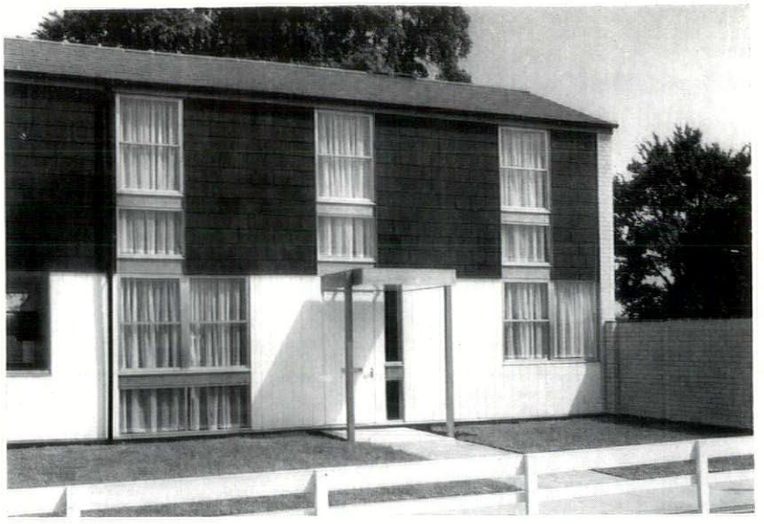
WOODWAY LANE, COVENTRY

Midlands Housing Consortium Development Group

CLIENT: Coventry City Council.
SITE: 7.5 acres, slope to west.
ACCOMMODATION: Pilot scheme of 132 dwellings at 80 p.p.a.
STRUCTURE AND FINISHES: 9 in. brick cross walls, timber stud central core, precut joists, softwood cladding blue asbestos slates.
SERVICES: Traps, waste and vertical single stack plumbing in p.v.c. tubing.
BUILDING PERIOD: Prototype May–July 1964. Whole scheme October 1964–May 1965.

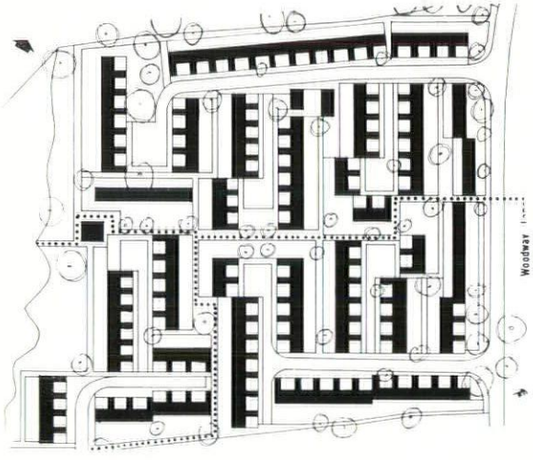
Principal development architect, F. Loyd Roche. Assistants, R. L. E. Harrison, A. E. Mould, R. E. Holt, K. Hatwood.

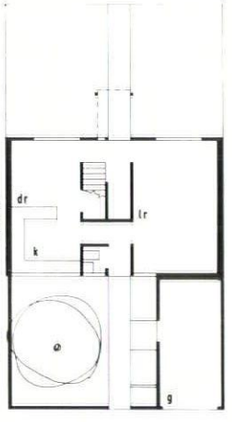


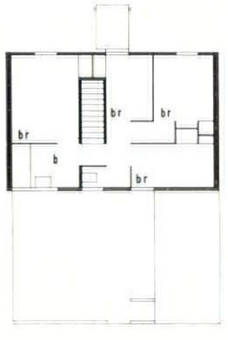


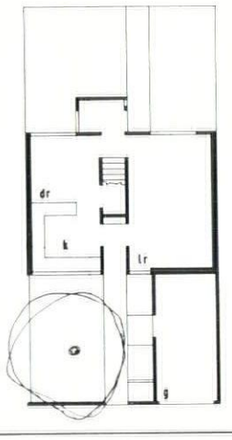
above, two-person bungalow. below, from left to right, five-person house ground and first floors, four-person house ground and first floors

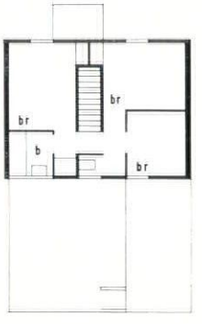
site plan











prototype house
10 0 5 feet

VANGE ONE, BASILDON NEW TOWN, ESSEX

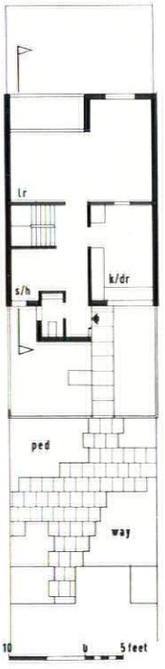
Collister and Davies

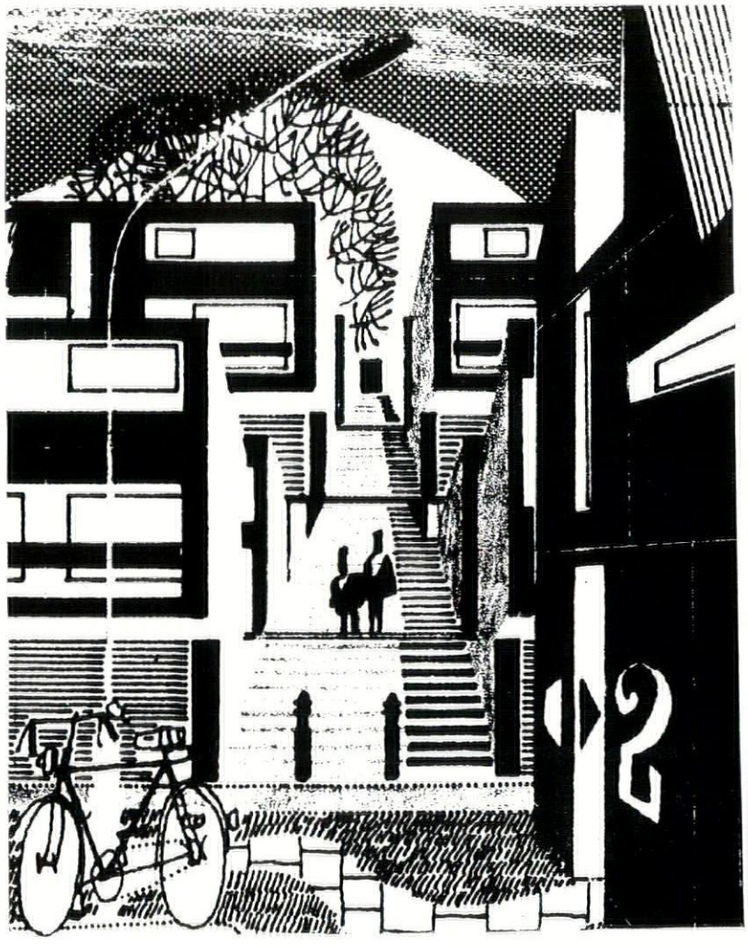
CLIENT: Basildon Development Corporation.
SITE: 27.5 acres sloping to south and east, with some good trees.
ACCOMMODATION: 529 dwellings, 77 p.p.a. 101 flats for one person, 95 houses for four people, 286 houses for five people, 47 houses for six people.
STRUCTURE AND FINISHES: Heavy-weight r.c. wall units of 8 ft. × 14 ft. 7 in., with prefabricated wooden floors, first floors and metal deck roofing. Travelling cranes will move southwards along the lines of the terraces from site factory.
BUILDING STARTS: March 1965.

Partner in charge, Anthony B. Davies. Associate in charge, V. Jeanne Davies. Quantity surveyor, E. C. Harris & Partners. Structural consultant, Collister & Davies.

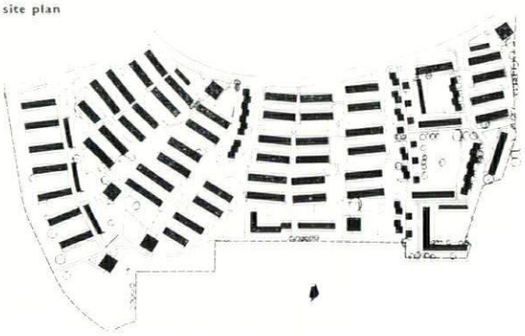


above, first floor, and below, ground floor of five-person house. right, view of pedestrian way

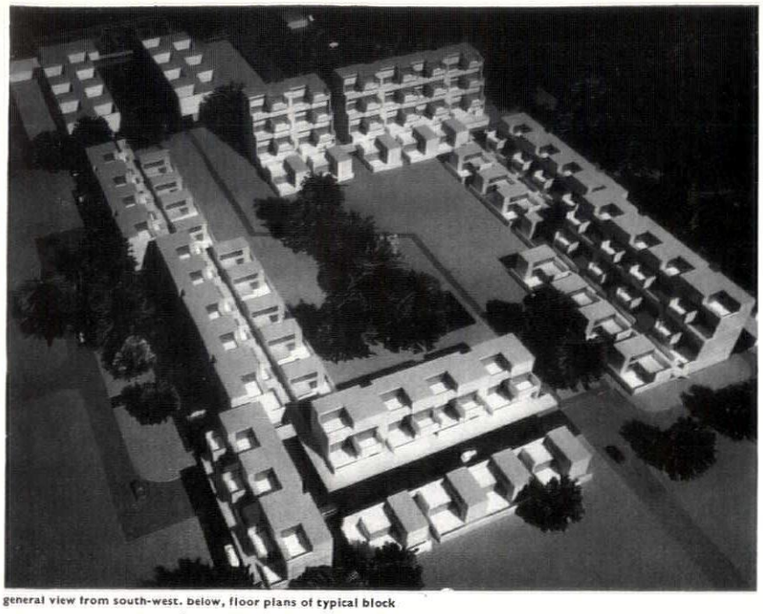




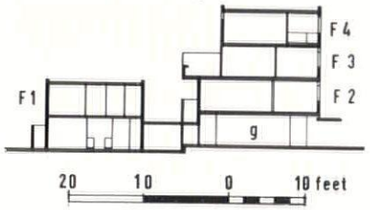
site plan



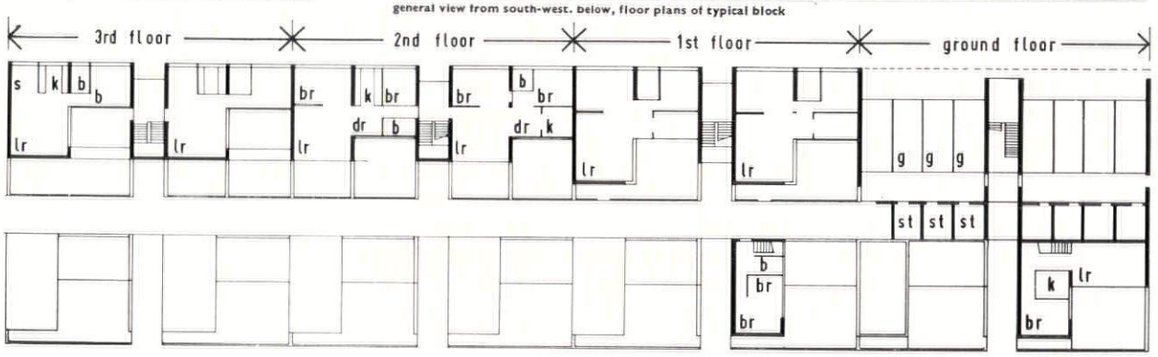




above, view from north, with shopping centre in foreground. below, section of typical block



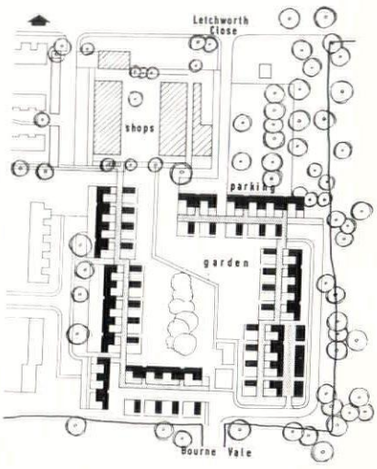
general view from south-west. below, floor plans of typical block



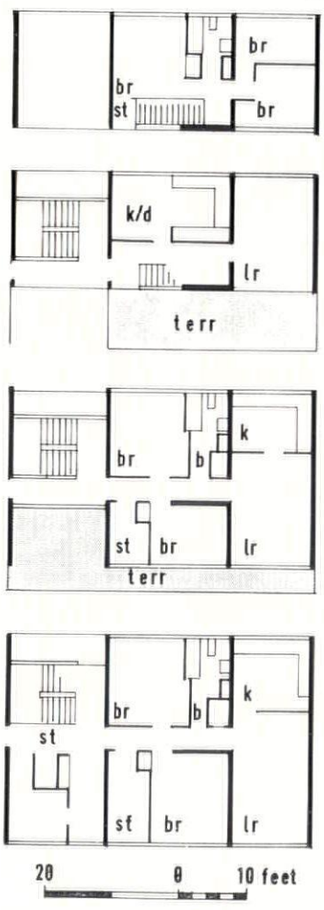
HAYESFORD PARK, BROMLEY, KENT

Building Design Partnership

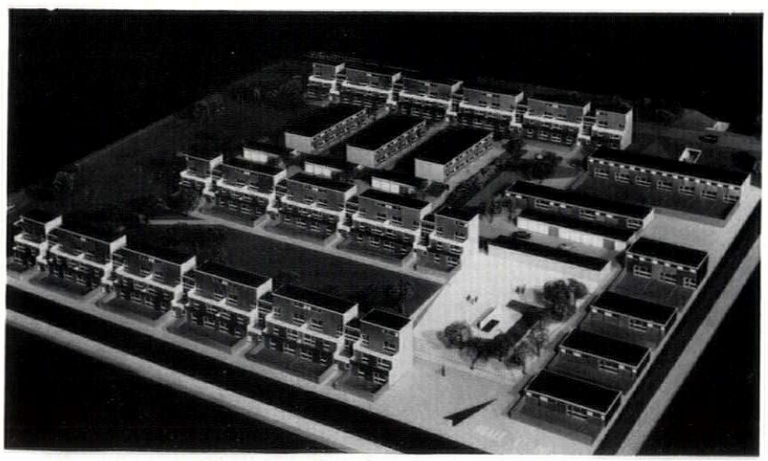
CLIENT: M. Howard (Mitcham) Ltd.
SITE: 6 acres of level ground in corner of housing estate next to completed shopping centre (AR, February, 1964).
ACCOMMODATION: 150 flats for 450 occupants. 88 habitable rooms per acre.
STRUCTURE AND FINISHES: R.c. frame, exposed aggregate concrete cladding panels.
SERVICES: Individual oil-fired furnaces in each flat.
COST: £600,000.
BUILDING STARTS: March 1965.
Partner in charge, David Rock. Assistant, Ian Smith. Quantity surveyor, Keith Arnold (BDP).



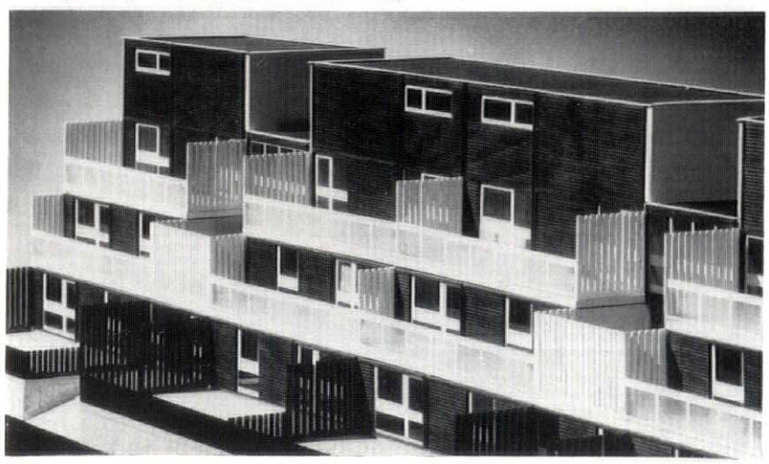
above, site plan



floor plans of four-storey terrace, with ground floor at bottom and third floor at top



above, typical group of houses. below, detailed view of stepped terraces

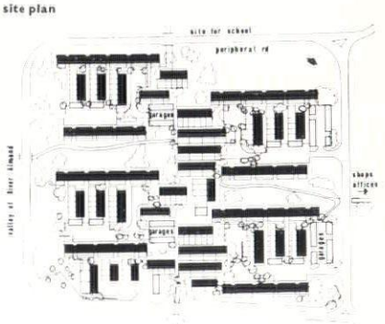


CRAIGSHILL 1, LIVINGSTON NEW TOWN, SCOTLAND

Peter Daniel, Chief Architect and Planning Officer

CLIENT: Livingston Development Corporation.
SITE: 80 acres of new town, windswept slope with views over River Almond.
ACCOMMODATION: 1,000 houses at 56 p.p.a. Linear layout, with central pedestrian mall, containing district facilities, schools, shops, clinics. 60 per cent of dwellings are at ground level, with private gardens.
Rest have private terraces.
STRUCTURE AND FINISHES: 12M-Jespersen industrialized system of precast concrete cross walls, floors and roofs, with timber cladding.
COST: £3.5 million.
BUILDING PERIOD: Site works from April 1964. Housing, April 1965–April 1966.
Principal architect, Denis Browne.

site plan



SLOUGH LANE, WEMBLEY, MIDDLESEX

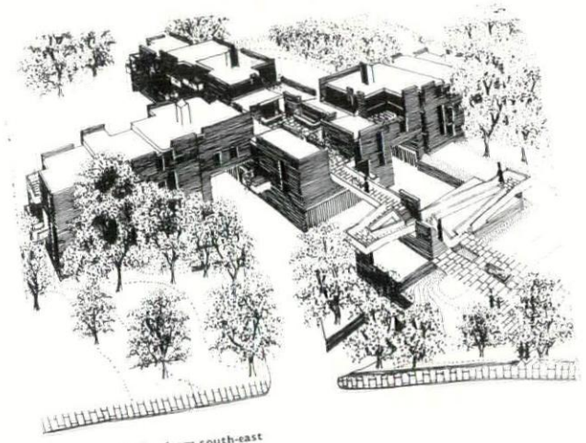
Clifford Wearden and Associate

CLIENT: Hastoe Housing Society Ltd.
SITE: 1.22 acres at northern end of Slough Lane, with many mature trees and fall of 3 ft. 6 in. north-south.
ACCOMMODATION: 37 dwellings at 60 habitable rooms per acre: 9 bed-sitting rooms, 15 one-bedroom flats, 9 2-bedroom maisonettes and 4 3-bedroom maisonettes, 36 garages.
STRUCTURE AND FINISHES: Calculated loadbearing brickwork with 9 in. cross walls and black asbestos copings. Floors, r.c. between units, boarding on timber joists within units. Balconies of textured fairfaced r.c.
SERVICES: Heating by electric oil-fired radiators, immersion heaters.
COST: £126,000.
BUILDING PERIOD: July 1964–August 1965.

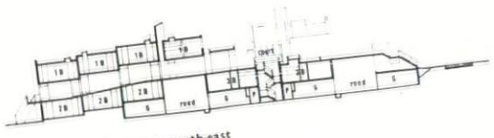
Partner in charge, Clifford Wearden.
Associate in charge, Peter Deakins.
Job architect, Tom Clayton.
Assistants, Maurice Eskenazi and Samuel Bettany.



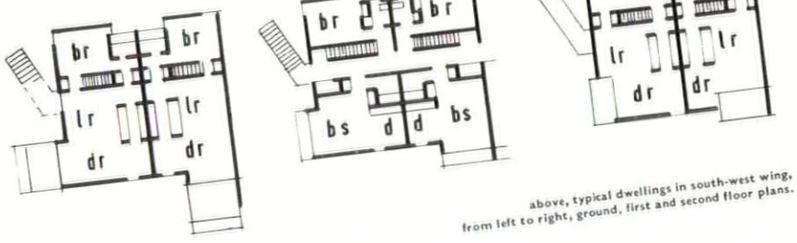
section from south-west to north-east



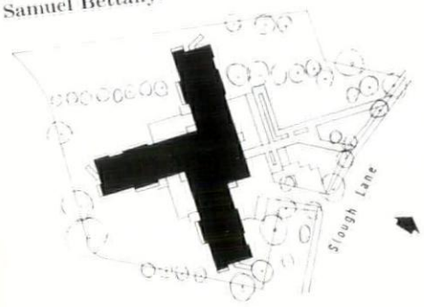
above, general view from south-east



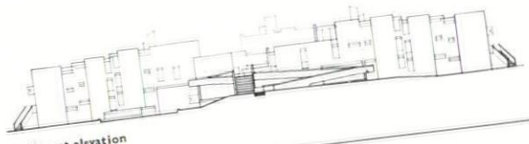
section from north-west to south-east



above, typical dwellings in south-west wing, from left to right, ground, first and second floor plans.



site plan



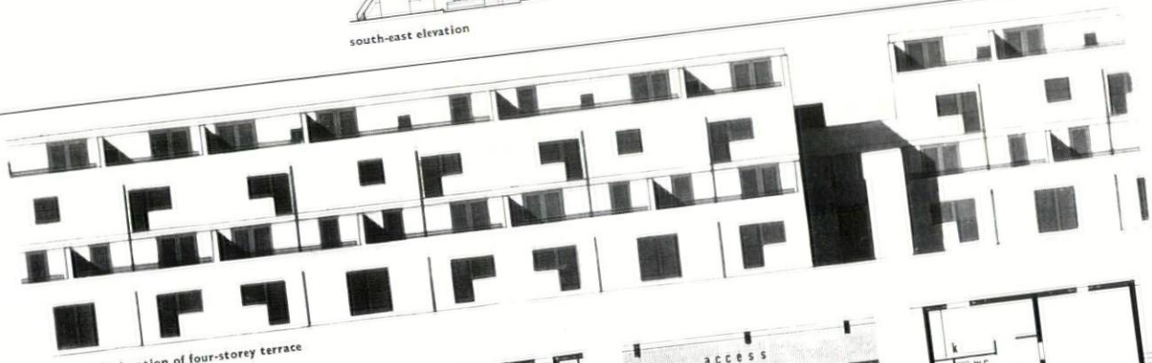
south-east elevation

HESTON GRANGE, MIDDLESEX

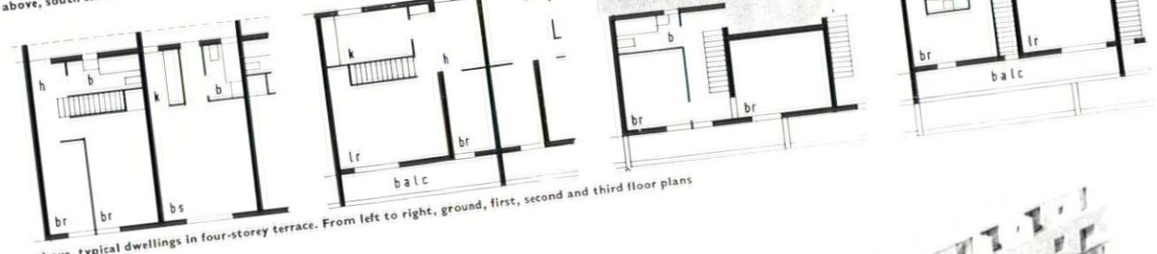
Morton, Lupton and Smith

CLIENT: Northall Housing Association.
SITE: 4.6 acres, 2½ miles from London Airport, next to M4.
ACCOMMODATION: 123 dwellings at 70 p.p.a. Parker Morris standards. 13 houses for 3 people, 22 flats for 1 person, 22 flats for 2 people, 44 flats for 4 people, 22 flats for 5 people.
STRUCTURE AND FINISHES: Loadbearing brick with traditional red facing bricks, r.c. floors, zinc roofs. Internally, traditional plaster, thermoplastic tiles, softwood joinery.
SERVICES: Warm air heaters to houses, small bore boilers to flats, gas-fired.
COST: £360,000 approx.
BUILDING PERIOD: September 1964–February 1966.

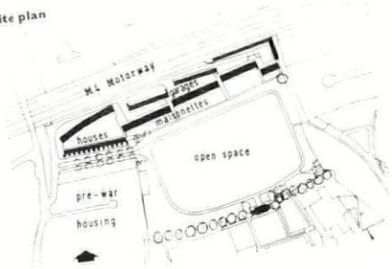
Partner in charge, Ivor Smith.
Assistant, Brian Thompson. Quantity surveyor, Scannell and Manby.



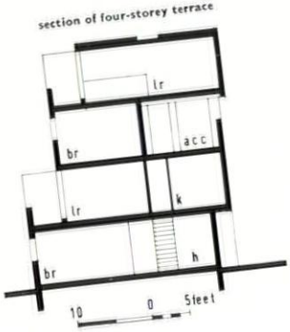
above, south elevation of four-storey terrace



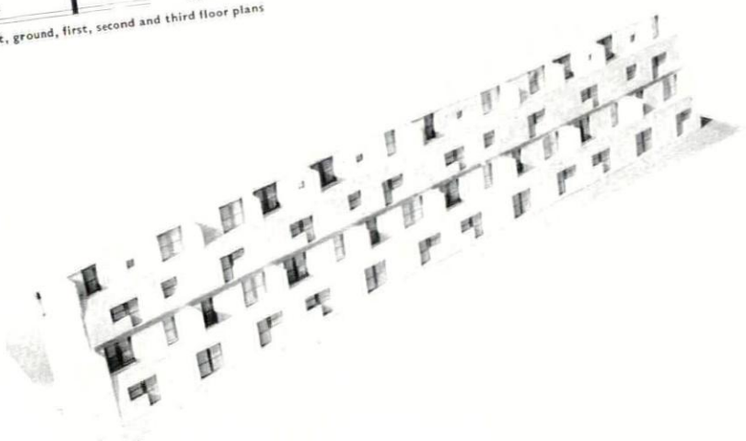
above, typical dwellings in four-storey terrace. From left to right, ground, first, second and third floor plans



site plan



section of four-storey terrace



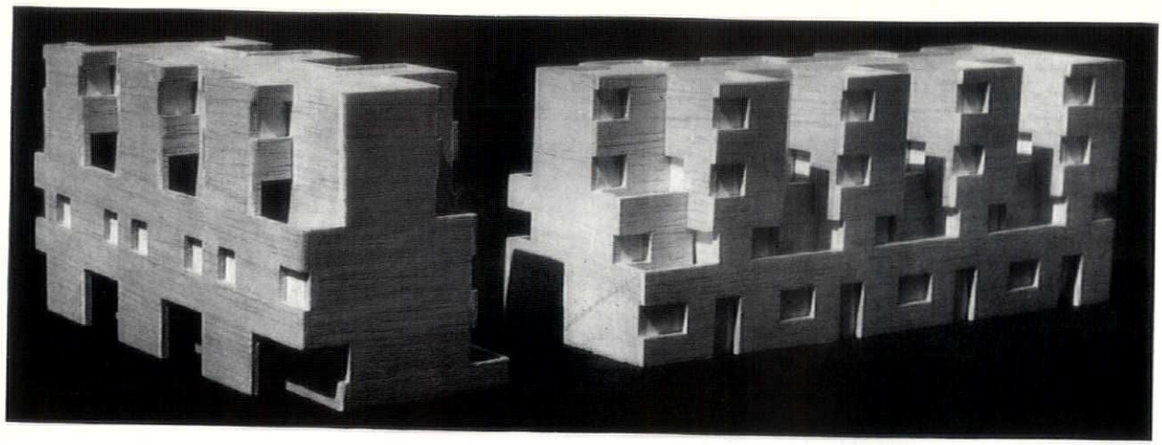
model of four-storey terrace

HOUSING, GREENWICH, LONDON

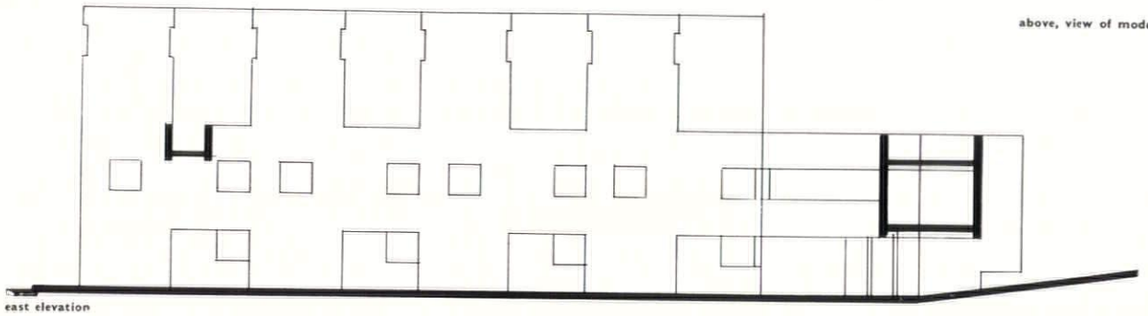
James Gowan

CLIENT: London County Council
SITE: 2 small sites about a mile apart. in Creek Road and Trafalgar Road.
ACCOMMODATION: Creek Road: 20 maisonettes at 96 p.p.a., two-bedroom on 2nd and 3rd floor, three-bedroom on ground and 1st floor, with 17 garages and 15 tenants' stores. Trafalgar Road: 30 maisonettes and 8 old people's flats at 97 p.p.a. 17 two-bedroom maisonettes on 2nd and 3rd floors, 13 three-bedroom maisonettes on ground and 1st floors, 4 bed-sitting rooms on 1st floor of east block, 4 one-bedroom flats on ground floor of east block. 12 garages with remainder in adjacent site, 4 parking spaces, 23 tenants' stores, 8 gardens.
STRUCTURE AND FINISHES: Calculated loadbearing cavity brickwork, in situ r.c. floors with continuous perimeter beams. Intermediate floors in timber, standard metal windows.
SERVICES: Halcyon gas central heating and hot water units.
COST: Creek Road £90,000, Trafalgar Road £161,000.
BUILDING PERIOD: December 1964–late 1966.

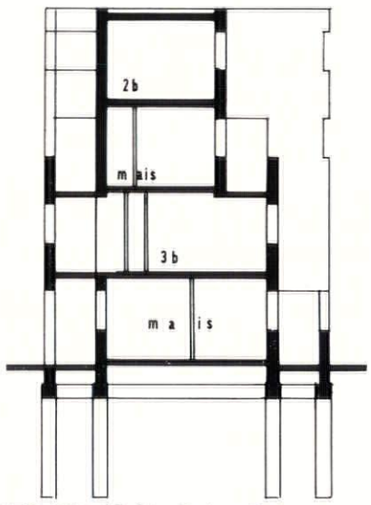
Partner in charge, James Gowan. Quantity surveyor, Monk & Dunstone. Structural consultant, Stephen Revesz. Electrical consultant, Ayr Engineering.

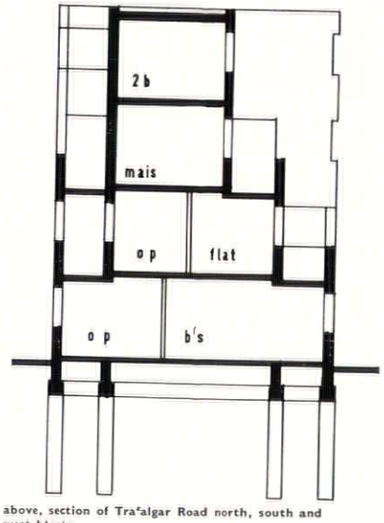


above, view of model



east elevation



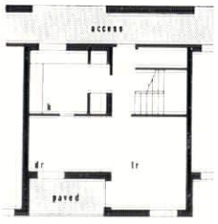


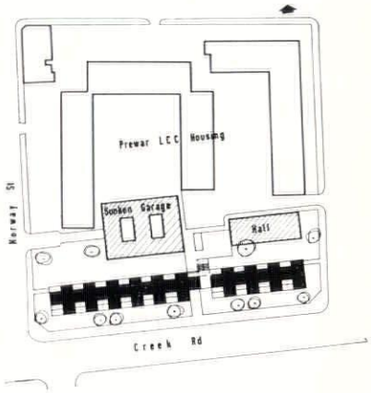
above, section of Trafalgar Road, east block
below, detailed view of model

above, section of Trafalgar Road north, south and west blocks

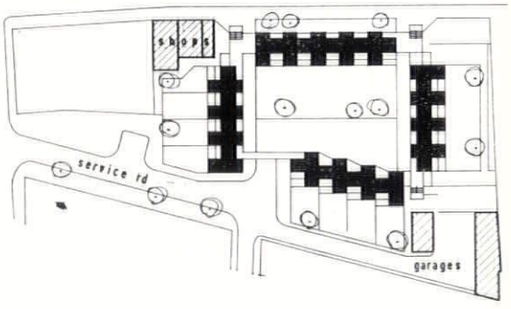


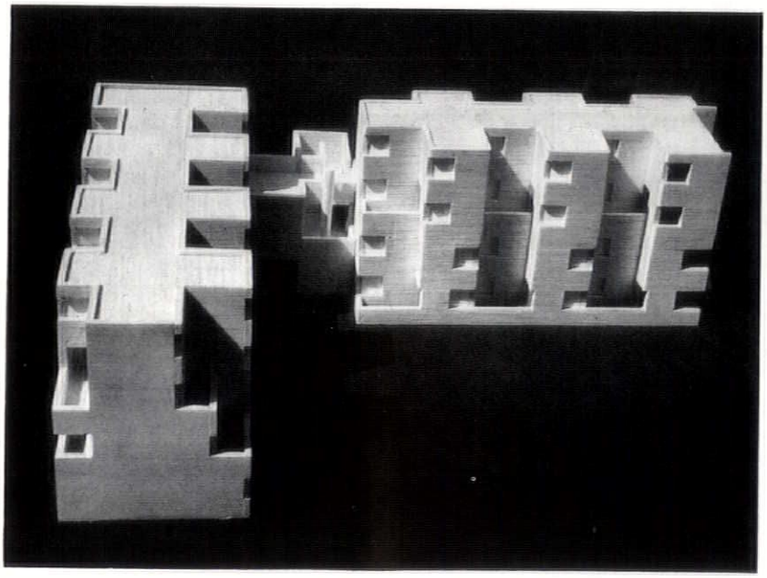
three-bedroom maisonette. above, first floor. below, ground floor





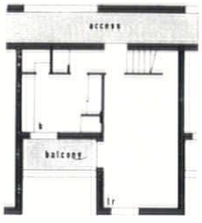
above, Creek Road site plan
below, Trafalgar Road site plan







two-bedroom maisonette.
above, top floor. below, access floor





above, old people's one-bedroom flat. above right, old people's bed-sitting room



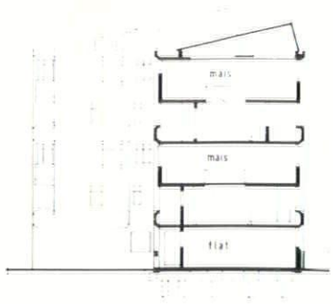
10 0 5 feet

HOUSING, POPLAR, LONDON

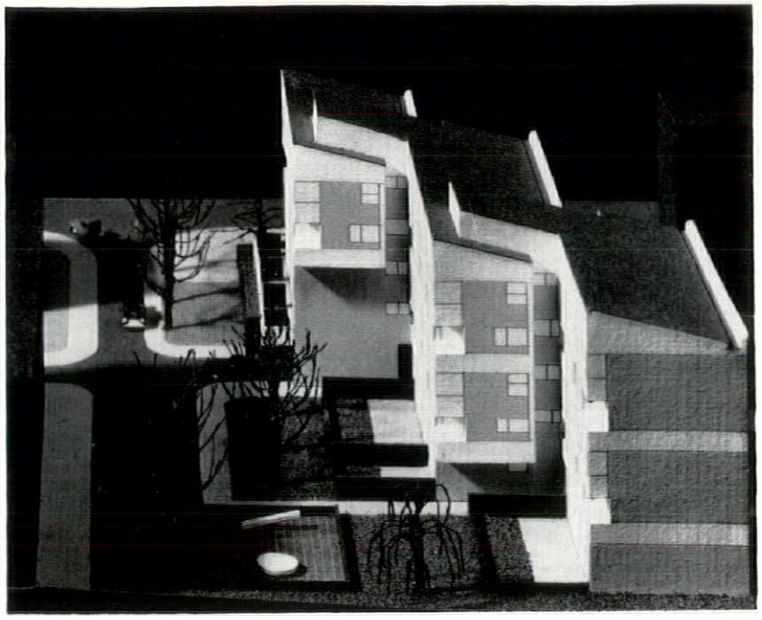
Trevor Dannatt

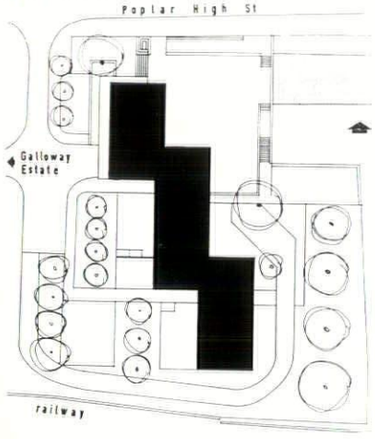
CLIENT: London County Council.
SITE: Derelict land south of Poplar High Street between existing flats.
ACCOMMODATION: 26 houses at 142.8 p.p.a., 16 maisonettes, 3 family flats, 7 flats for old people, estate workshop.
STRUCTURE AND FINISHES: Brick cross walls on pile foundations, concrete floor slabs and edge beams, timber roof. Brick facings, exposed concrete, timber windows.
SERVICES: Central heating from individual forced air convectors.
BUILDING PERIOD: End of 1964–mid-1966.

Partner in charge, Trevor Dannatt. Quantity surveyor, Monk & Dunstone. Structural consultant, Ove Arup & Partners. Electrical consultant, H. A. Sandford & Partners.



above, typical section

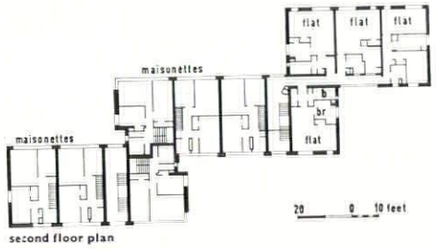

above, general view of model



site plan



first floor plan.

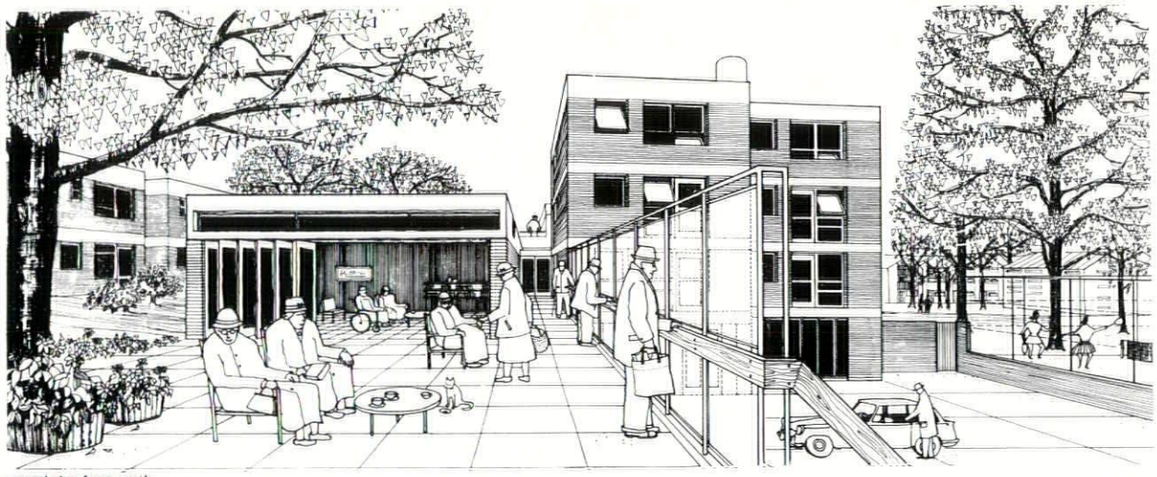


second floor plan

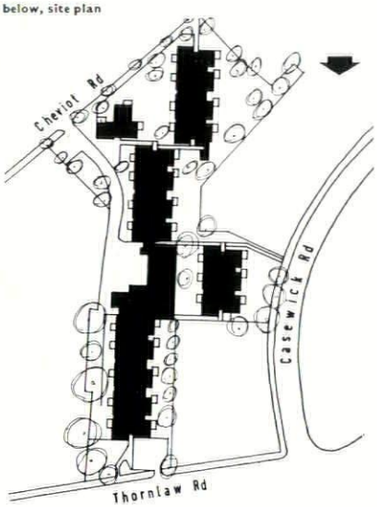
OLD PEOPLE'S HOME, LAMBETH, LONDON

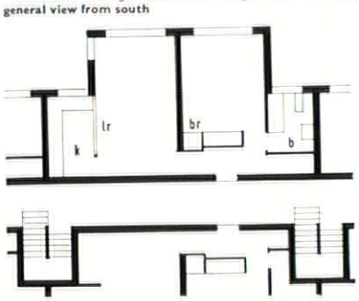
Edward Hollamby, Borough Architect

CLIENT: Lambeth Borough Council.
SITE: 1.5 acres, well treed.
ACCOMMODATION: 109 people at 62.3 p.p.a., 25 one-room, 40 2-room flats, warden's flat, common room, etc.
STRUCTURE AND FINISHES: Loadbearing brickwork, r.c. floors.
SERVICES: Space heating by fan assisted warm air, oil-fired water heating.
COST: £240,000.
BUILDING PERIOD: February 1965–February 1967.

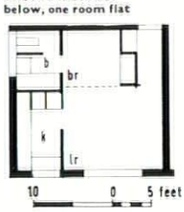

general view from south

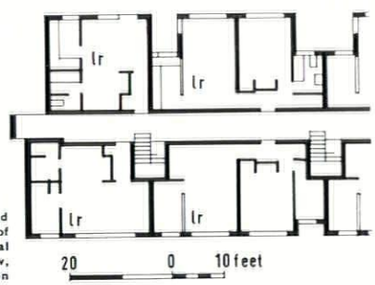
below, site plan



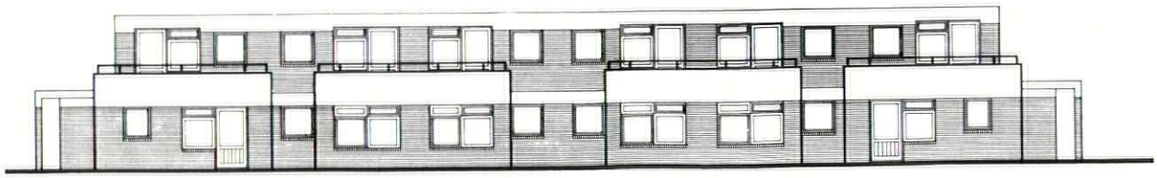


left, two room flat
below, one room flat





right, ground floor plan of part of typical block. below, west elevation



MIXED DEVELOPMENT, LAMBETH, LONDON

Edward Hollamby, Borough Architect

CLIENT: Lambeth Borough Council and private doctors

SITE: Half an acre overlooking park and Imperial War Museum, next to pre-war LCC housing.

ACCOMMODATION: Group practice centre of new type, similar in medical terms to architectural teaching offices, with four consulting rooms, small surgery, students common room, nursing staff accommodation, reception, waiting room and local registrar's office. Old people's luncheon club. Housing at 130 p.p.a. containing 22 maisonettes for 3 people each, 5 flats for 2 people each, and one doctor's flat. 100 per cent underground parking for housing plus parking for doctors and offices. Future hostel on adjoining commercial site.

STRUCTURE AND FINISHES: In situ r.c. frame with external exposed aggregate finish, infilling with timber framed panels, aluminium sliding windows and white asbestos sheets.

SERVICES: Heating by warm air units fed from extension to adjoining slipper baths boiler house.

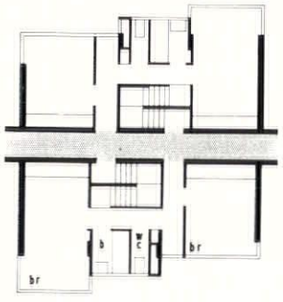
COST: £210,000.

BUILDING PERIOD: August 1965–August 1967.

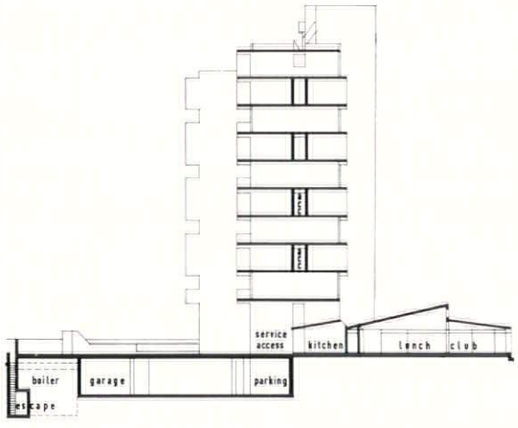
Deputy borough architect, William Kretchmer, Group leader, George Finch. Assistants, Robin Redsull, Donald Gale. Quantity surveyor, Sir William Baird & Partners. Structural consultant, Ove Arup and Partners. Mechanical consultant, Lambeth Department of Architecture. Chief quantity surveyor, Peter Davies. Heating and ventilating engineer, John Burt. Electrical engineer, Donald Roberts.



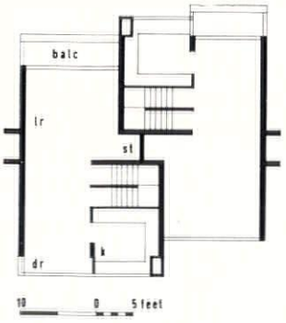
east elevation



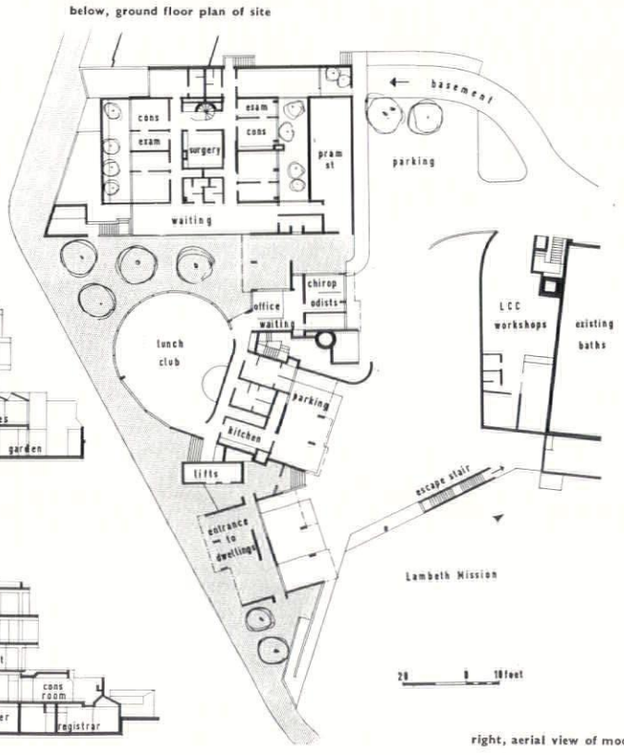
plans of maisonette: above, access level below, level beneath access

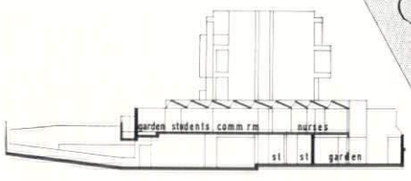


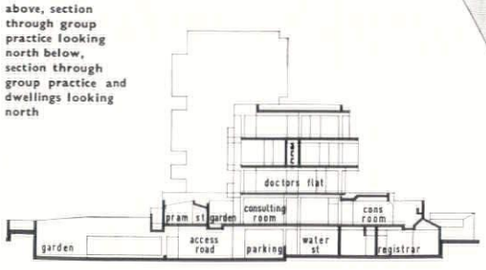
section through housing and lunch club, looking north



below, ground floor plan of site

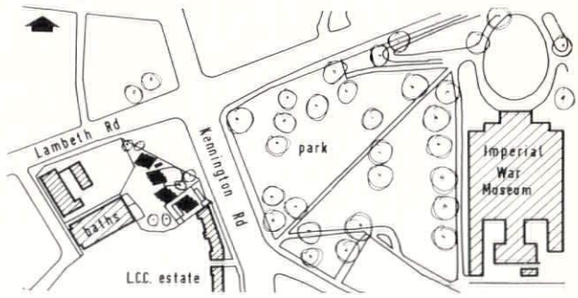


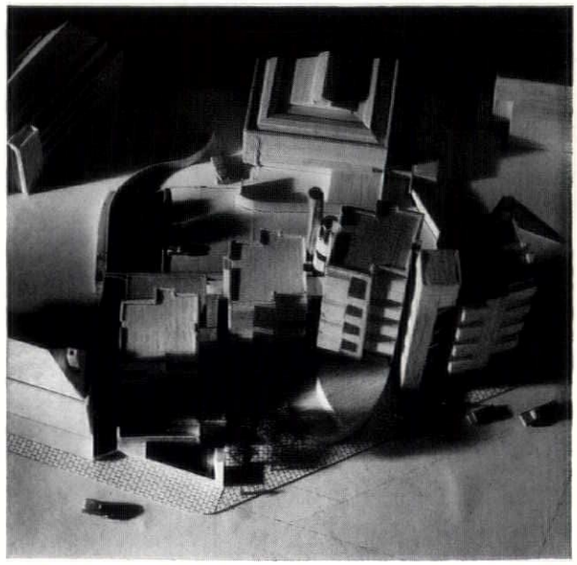




above, section through group practice looking north below, section through group practice and dwellings looking north

below, site plan





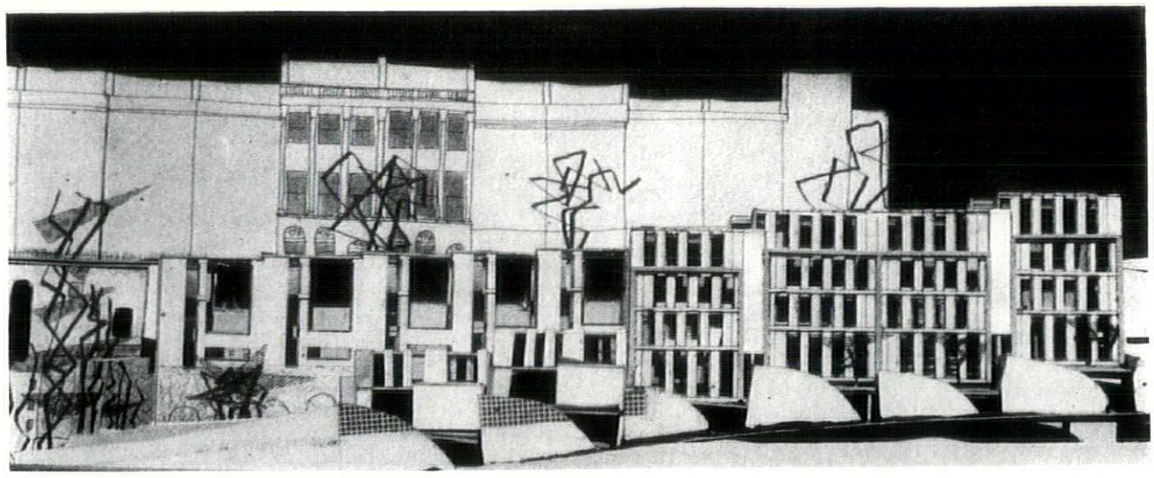
right, aerial view of model

AVON VIEW, CLIFTON, BRISTOL

Joss Mackay

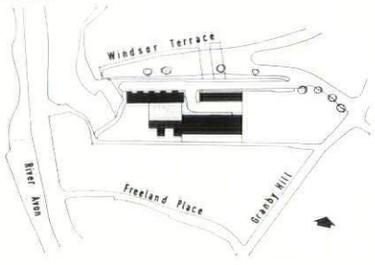
CLIENT: Joss Mackay and P. N. C. Bordewich.
SITE: 1⅛ acres, steep south-facing slope overlooking the Avon Gorge, in front of Regency buildings of Windsor Terrace.
ACCOMMODATION: 23 dwellings, 90 habitable rooms per acre. 5 3-storey terrace houses, 16 flats in 4-storey block, 2 2-storey patio houses. Existing basement to be renovated as club, stables as studios, remainder of garden for viticulture.
STRUCTURE AND FINISHES: In situ r.c., timber cladding treated not painted, aluminium windows.
SERVICES: Gas, electricity, water, t.v.
COST: £100,000 approx.
BUILDING PERIOD: January–November 1965.

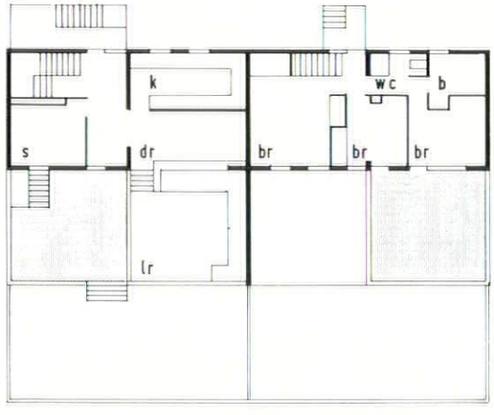
Quantity surveyor, Moughton & Partners. Structural and mechanical consultants, G. C. Mander & Partners.

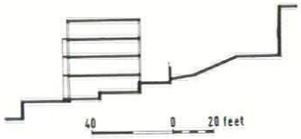


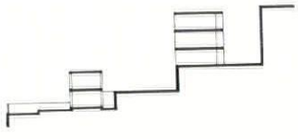
view of model from south, showing Windsor Terrace in background

site plan

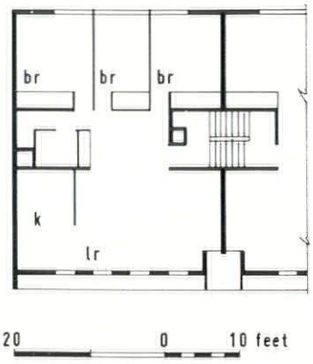








left, ground and first floor plans of patio house. above, section through flats. below, section through terrace and patio houses. right, floor plan of 3-bed flat

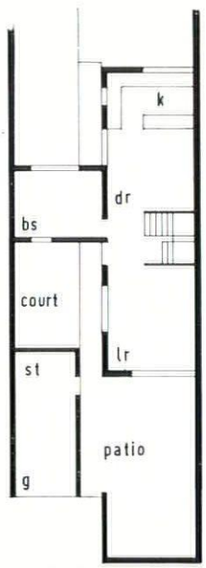


FURNACE GREEN, CRAWLEY, SUSSEX

Peter Phippen and Associates

CLIENT: Crawley Co-Partnership Housing Association.
SITE: 6 acres on town boundary.
ACCOMMODATION: 72 houses, 12 per acre. 5 basic house types: A, 10 2-bedroom, 17 3-bedroom; B, 20 3-bedroom, 3 4-bedroom; C, 3 3-bedroom, 7 4-bedroom; D, 3 3-bedroom, 4 4-bedroom; E, 5 4-bedroom. Brief helped by sociologist's questionnaire. All except 3-storey type have 24 ft. frontage divided into 2 equal bays. Length and height extendible.
STRUCTURE AND FINISHES: Cream coloured concrete facing blocks for all external walls and screen walls.
SERVICES: Gas warm air heating.
COST: £210,000.
BUILDING PERIOD: June 1965–September 1966.

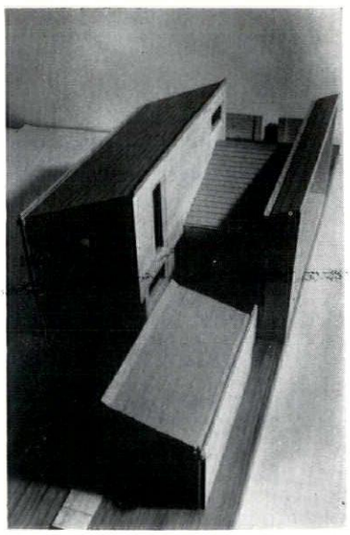
Quantity surveyor, Nigel Rose & Partners. Consultant sociologist, Barbara Adams.



ground and first floor plans of house, type C3

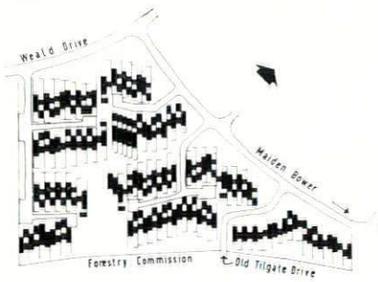


ground and first floor plans of house, type B4

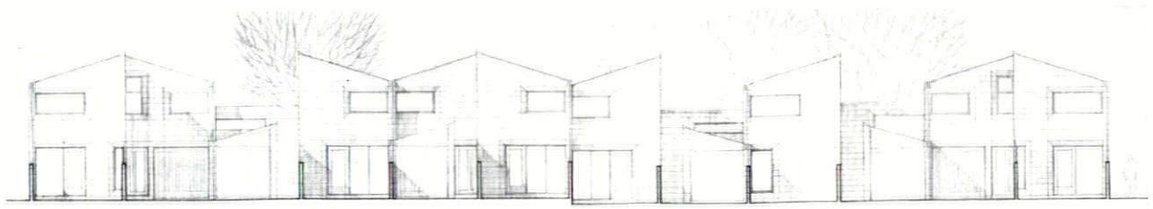


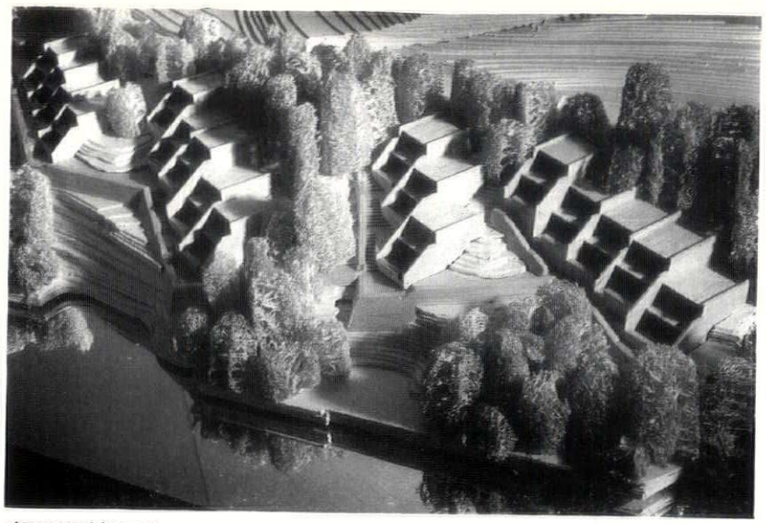
model of typical house

site plan



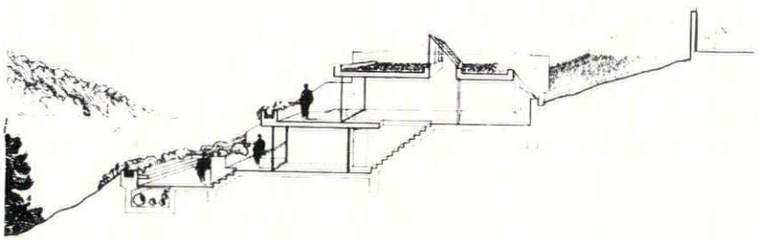
elevation of south entry type houses. From left to right, types A3S, C3, C4, C3, B3S and A3S

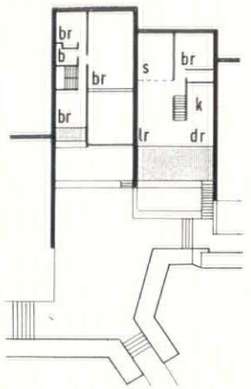




view over creek from east

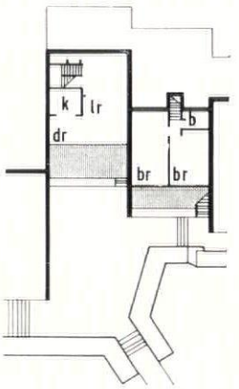
cross-section





below, ground floor. above, first floor

40 20 0 10 feet

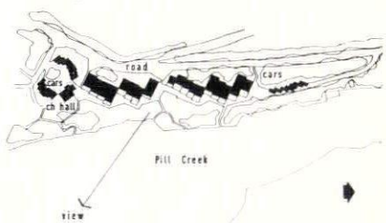


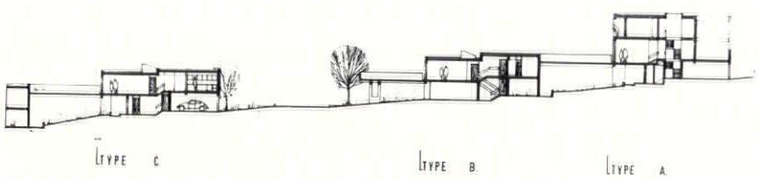
WATERFRONT HOUSING, FEOCK, CORNWALL

Team 4 in association with Harry Gilbert

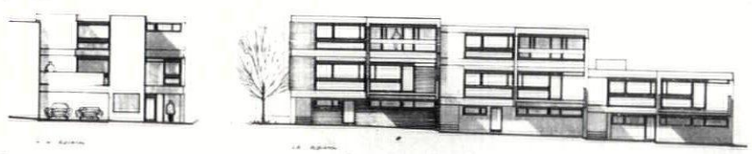
CLIENT: Marcus Brumwell, Esq.
SITE: 3 acres on steep slope above Pill Creek on River Fal, in place of 3 existing houses and out-houses. Half of site will be left wooded.
ACCOMMODATION: 19 houses, with staggered section, varying in size between 2 and 4 bedrooms, with private courtyards leading off living room. Village hall and central heating plant towards existing village.
STRUCTURE AND FINISHES: Concrete block cross walls rendered and painte white. Roofs and terraces, in situ r.c. allowing growth of turf and plants on roof. Local stone footpaths and steps.
SERVICES: Spine and ducts along line of footpath relates to heating plant at south end and sewage disposal plant at north end.
BUILDING STARTS: Autumn 1965.
Quantity surveyor, G. A. Hanscomb Partnership. Structural consultant, Anthony Hunt. Mechanical consultant, sewage, Tuke & Bell Ltd. Landscape consultant, M. Branch.

below, site plan

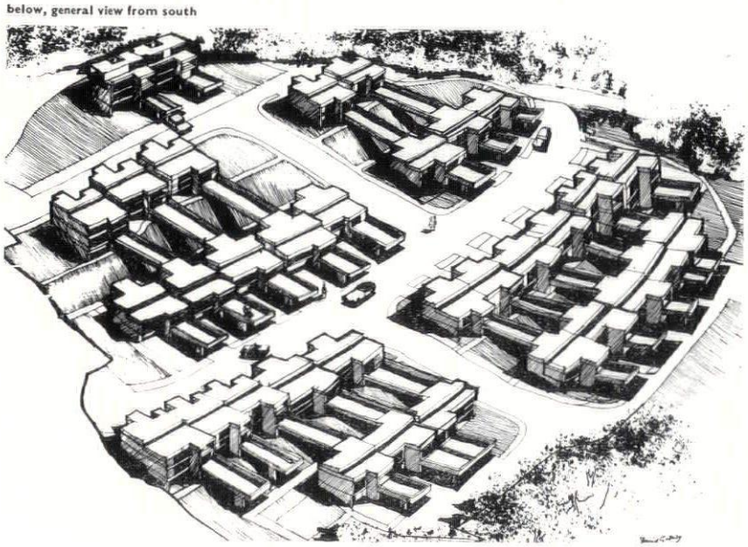


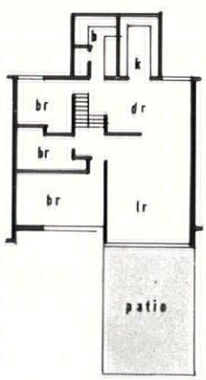


above, section through three types of house. below, north-west and south-east elevations



below, general view from south





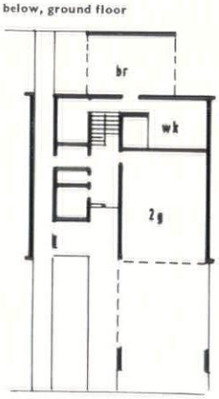
above, first floor

CASTLE HILL, PRESTBURY, CHESHIRE

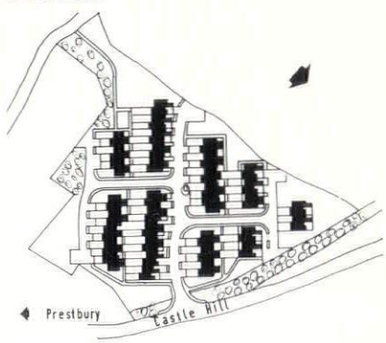
Leach, Rhodes and Walker

CLIENT: Frank Westbrook & Co.
SITE: 5 acres facing south, steeply sloping, with commanding view of hills, mature trees on 3 sides.
ACCOMMODATION: 33 dwellings of 3 different types: 3, 4 and 5 bedrooms. Internally flexible by living on first floor upwards. Double garages, services, storage and entrance below. Linked by patio bridges.
STRUCTURE AND FINISHES: Brick cross walls, timber windows, precast concrete floors, roofs and patio walls. Plaster and fairfaced brick inside.
SERVICES: Warm air heating.
COST: £400,000.
BUILDING STARTS: January 1965.
Partner in charge, S. R. Fisher. Associated in charge, D. Gosling. Assistant, I. C. Savage. Quantity surveyor, R. Wilkinson. Structural consultant, F. Harwood.

below, ground floor



below, site plan

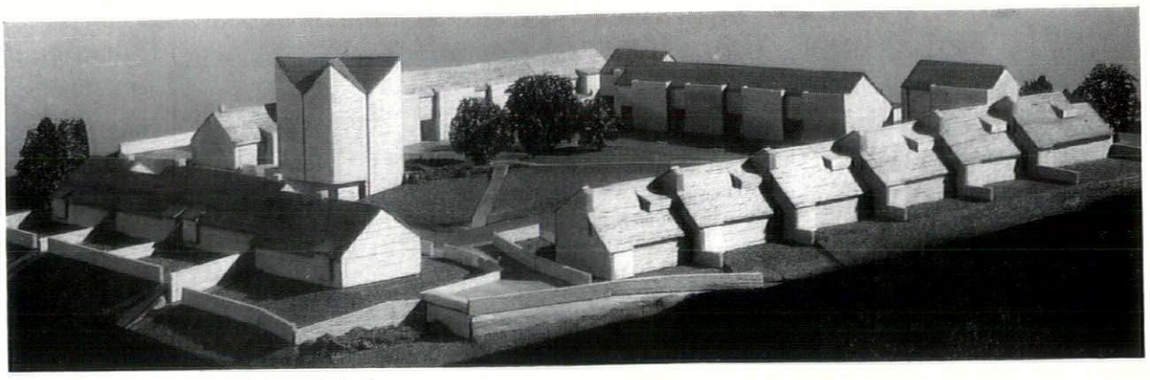


GLEBE GARDENS, STOW-ON-THE-WOLD, GLOS

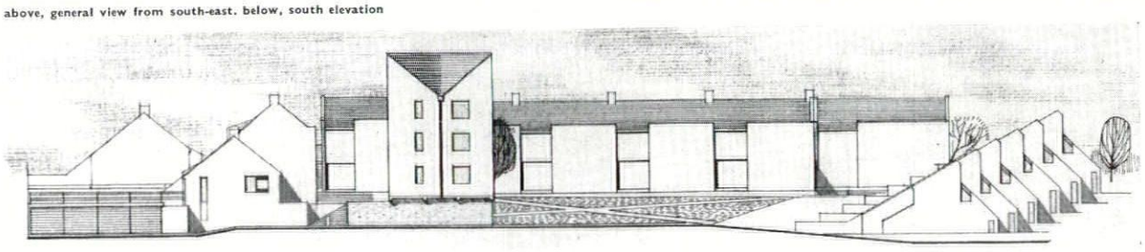
Jefferson, Sheard and Partners

CLIENT: Henry Boot and Sons Ltd.
SITE: 2 acres backing on to existing houses on north-east corner of town square. Views to north-east.
ACCOMMODATION: 27 dwellings at 50 p.p.a., 5 flats in 3-storey tower, 7 single-storey houses, 15 2-storey houses, 100 per cent garaging.
STRUCTURE AND FINISHES: Traditional loadbearing structure, faced with reconstructed stone and boarding.
SERVICES: Electrical under-floor heating to flats, open fires and H.D. back-boilers to houses.
COST: £72,000.
BUILDING STARTS: Spring 1965 approx.

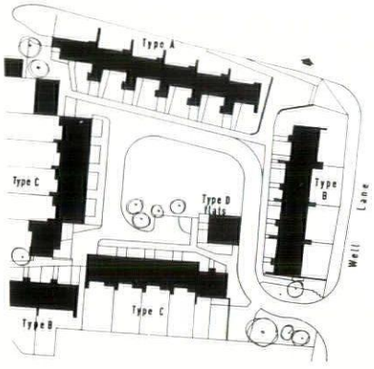
Partner in charge, Gerald F. Sheard.
Associate in charge, I. J. Ballantine.
Quantity surveyor, client's dept.



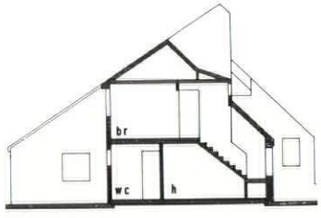
above, general view from south-east. below, south elevation

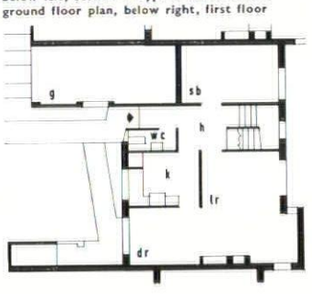


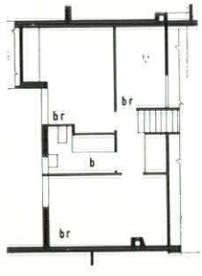
site plan



below left, section of type A house. below, ground floor plan, below right, first floor







below, floor plan of typical flat, type D



POUND FARM DEVELOPMENT, CHOLSEY, BERKS

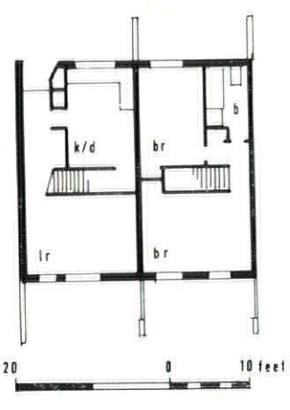
John Toovey

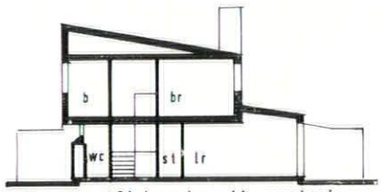
CLIENT: Mark Lane, Esq.
SITE: 2 acres, replacing derelict farm.
ACCOMMODATION: Phase I, 5 lock-up shops with 3 flats over. Phase II, 20 houses: 12 3-bedroom terraced, 6 2-bedroom terraced, 2 3-bedroom paired. Gardens for all houses. 28 garages and 13 car spaces.
STRUCTURE AND FINISHES: Shops, loadbearing brick, semi-in situ concrete first floor, timber joist roof, stained patent timber windows. Houses, loadbearing brick with timber joist first floor and roof.
SERVICES: Electrical, with optional gas central heating for houses.
COST: Phase I, £24,000. Phase II, £67,000.
BUILDING PERIOD: Phase I, Autumn 1964–autumn 1965.

Partner in charge, John Toovey.
Associate in charge, Martin Harms.
Quantity surveyor, Davis Belfield & Everest. Structural consultant, Anthony Hunt.

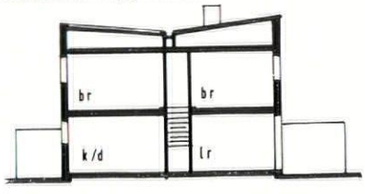


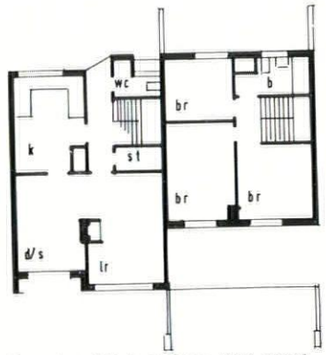
north elevation



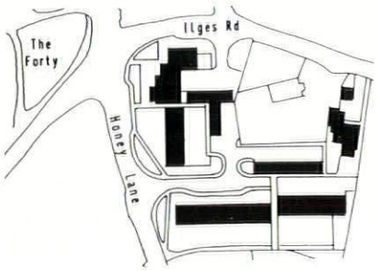


above, section of 2-bedroom house. left, ground and first floor plans

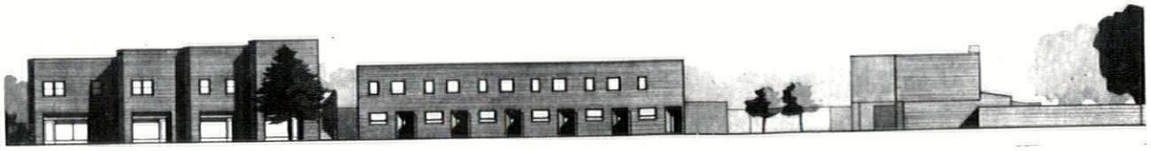




left, section of 3-bedroom house. above, ground and first floor plans



below, west elevation. left, site plan

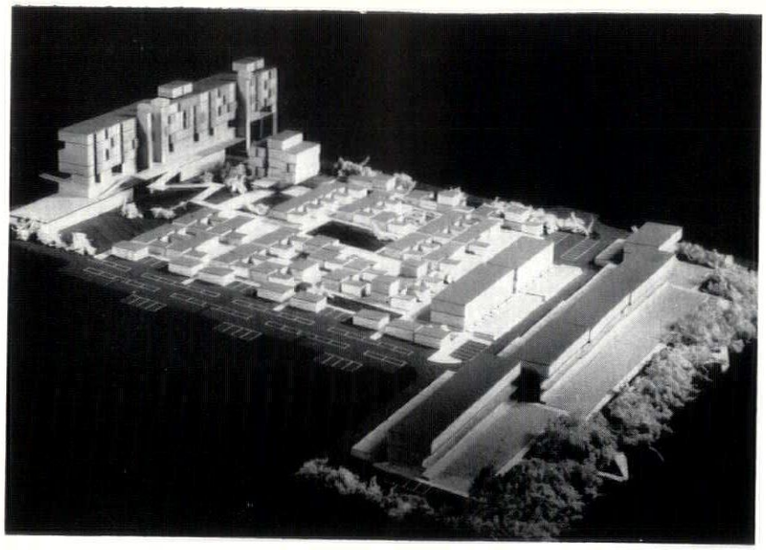


TEMPLE NEWSAM, LEEDS

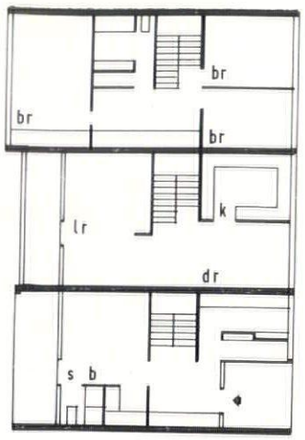
Derek Walker

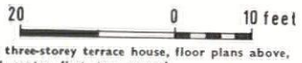
CLIENT: Lord Halifax and Trustees of Temple Newsam Estate.
SITE: 500 acres of well wooded farmland, sloping about 300 ft. north-south, near to Colton Village, on eastern boundary of city of Leeds. Subject to mining subsidence.
ACCOMMODATION: Comprehensive residential development for 25,000 people, self-contained and socially balanced, with shopping centre, communal buildings, etc. Site 1, housing area north-west of New Selby Road. 50 flats in 4-storey blocks, 98 patio houses, 52 terrace houses. Garages for 228 cars.
STRUCTURE AND FINISHES: Housing is being planned as an industrialized building project.
BUILDING STARTS: Sites 1 and 2 1965, site 3 1968. Completion 1980.

Partner in charge, Derek Walker. Associates, Douglas Benneworth, Douglas Hemingway. Assistants, Phillip Ware and Brian Mawtus. Quantity surveyor, Rex Procter & Partners. Structural consultant, Chadwick, O'Heocha & Associates.

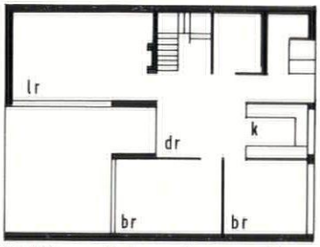


general view of valley housing sloping to stream at right

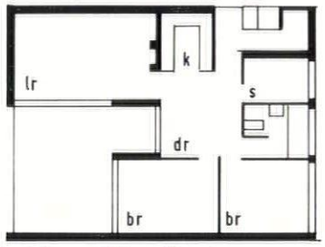




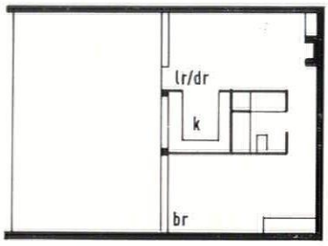
above, three-storey terrace house, floor plans above, ground. centre, first. top, second



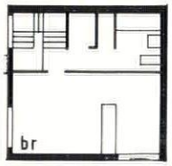
three-bedroom patio houses: above, ground floor plan. below, first floor plan

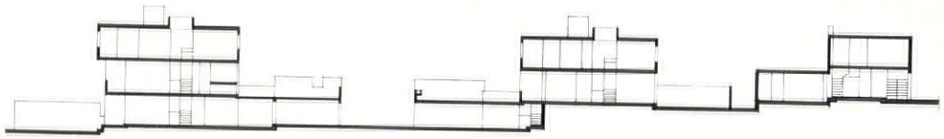


two-bedroom patio house: floor plan

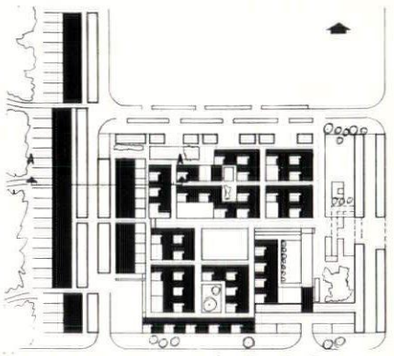


above, one-bedroom patio houses, floor plan

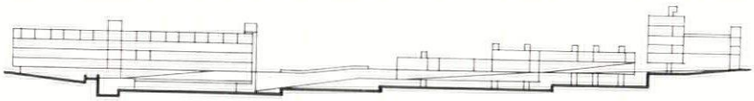




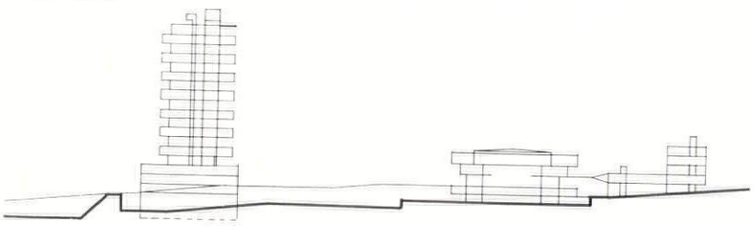
section A-A through valley housing



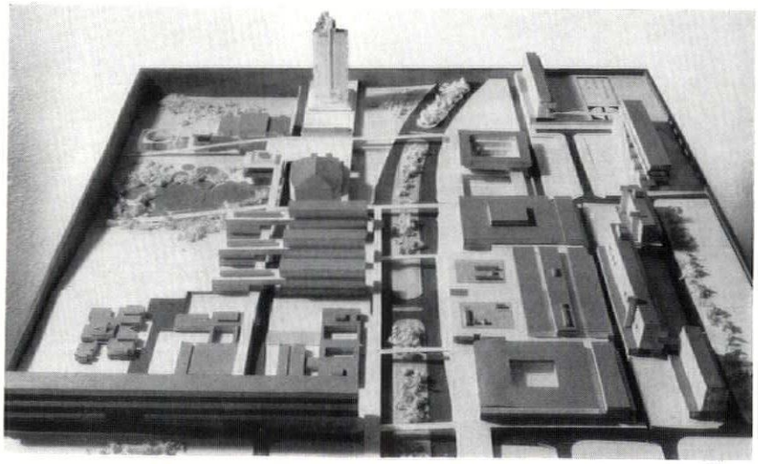
site plan of valley housing



above and below, sections through shopping centre



below, general view of shopping centre



below, master plan of comprehensive development, showing site one, top left, and site two, top right



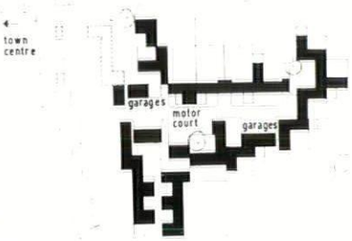
PARK 4, CUMBERNAULD, SCOTLAND

D. R. Leaker, Chief Architect and Planning Officer

CLIENT: Cumbernauld Development Corporation.
SITE: 7 acres north-east of town, 1 in 20 slope to east, views to north.
ACCOMMODATION: First phase, 22 dwellings, 55 p.p.a. 8 three-bedroom single aspect dwellings, 5 three-bedroom patio, 5 four-bedroom patio, 2 three-bedroom two-storey, 2 four-bedroom two-storey. 100 per cent garaging.
STRUCTURE AND FINISHES: Prefabricated timber frames at 6 ft. 8 in. centres, 6 ft. 8 in. × 4 ft. panels of 2 in. planks spanning between frames, concrete tiled roof. 3 walls of loadbearing brick, fourth of prefabricated timber panels.
SERVICES: Common unit, adaptable.
COST: Three-bedroom houses selling at £4,450, four-bedroom at £4,950.

Assistant chief architect, G. Callaghan, in succession to principal architect, R. A. Barlow. Group leader, P. Bailey. Chief quantity surveyor, Jack A. Denton.

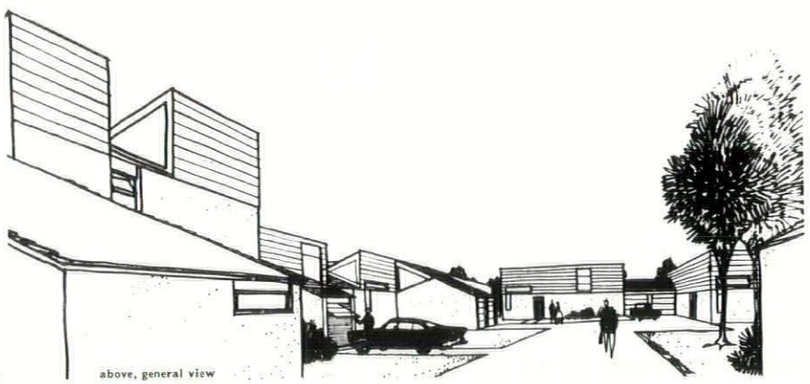
site plan



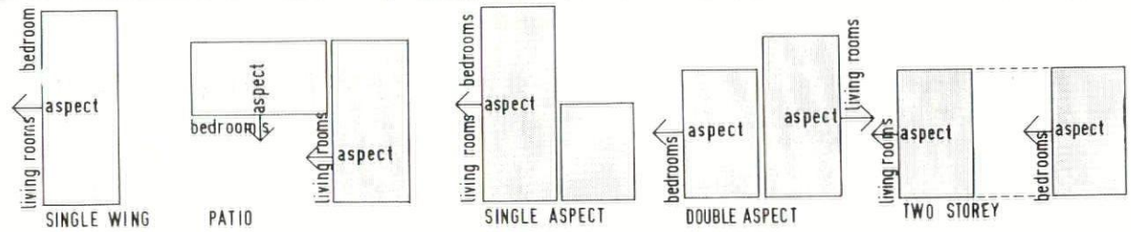


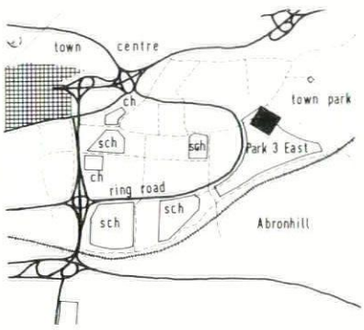
sections through typical wings



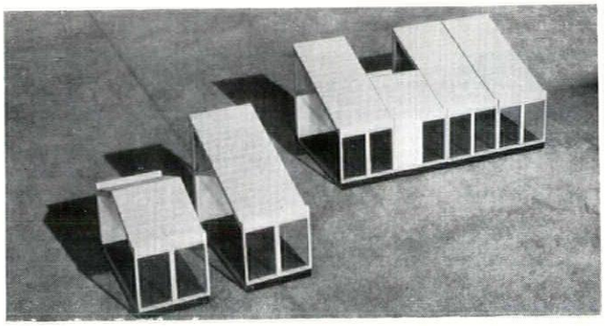


above, general view





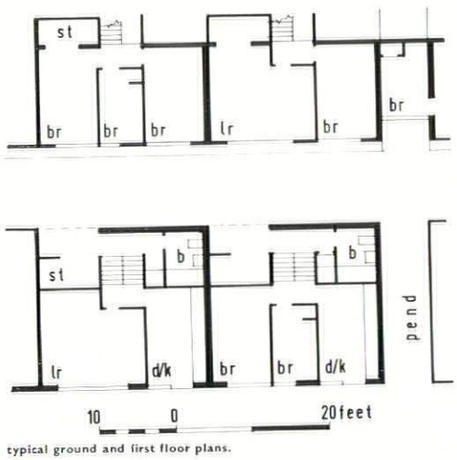
above, diagrams of five different types of layout. left, part of master plan. right, model of standard units



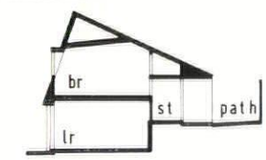
RAVENSWOOD 5, CUMBERNAULD, SCOTLAND

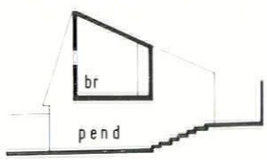
D. R. Leaker, Chief Architect and Planning Officer

CLIENT: Cumbernauld Development Corporation.
SITE: 19 acres, north-west of town, slopes to west of 1 in 6 to 1 in 12.
ACCOMMODATION: 344 houses at 95 p.p.a. Mainly 2-storey 3-bedroom split-level terrace houses. Living rooms face gardens on first or ground floor depending on position. Some 3-storey 4-bedroom houses to south-east.
STRUCTURE AND FINISHES: 2-storey, traditional. 3-storey, cross walls, flat roofs.
SERVICES: All electric, night store block storage heating.
COST: £939,580.
BUILDING PERIOD: Early 1964–December 1965.



typical ground and first floor plans.





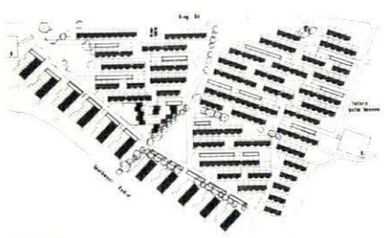
typical sections.



view along pedestrian way

view of courtyard





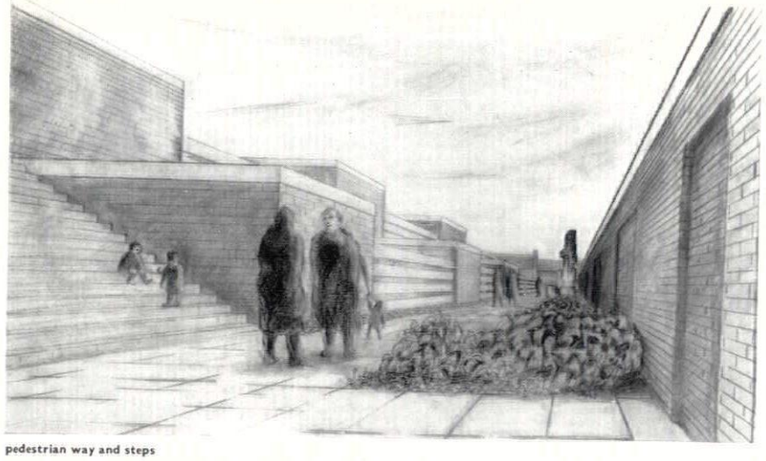
site plan

ST. MARY'S REDEVELOPMENT, OLDHAM, LANCS

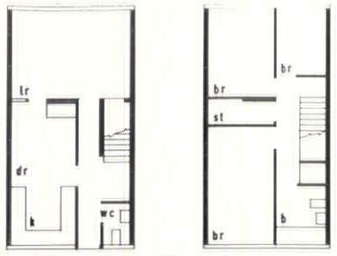
Ministry of Housing and Local Government Development Group in association with T. Cartlidge, Borough Architect. Associate architect for master plan, Max Lock and Partners

CLIENT: Oldham Borough Council.
SITE: 15-acre first phase of 320-acre redevelopment. Close to town centre, slopes south up to 1 in 8.
ACCOMMODATION: 520 dwellings at 117 p.p.a. 338 flats: 53 bed-sitters, 130 one-bedroom, 105 2-bedroom 3-person, 39 2-bedroom 4-person, 11 3-bedroom 5-person. 182 houses: 60 2-bedroom 4-person, 90 3-bedroom 5-person, 5 3-bedroom 6-person, 21 4-bedroom 7-person, 4 5-bedroom 8-person, 2 6-bedroom 9-person.
STRUCTURE AND FINISHES: 12M-Jespersen system of factory-made precast concrete loadbearing walls and floors, decorated direct.
SERVICES: District heating scheme.
BUILDING PERIOD: Spring 1965–summer 1966.

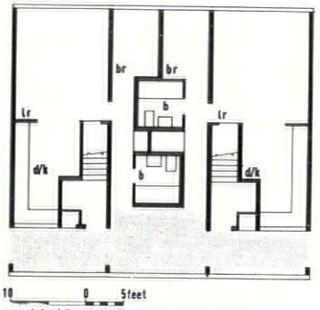
12M system developed initially with John Laing & Sons. Max Lock & Partners: partner in charge, G. J. Easton; job architect, Brian Foyle.



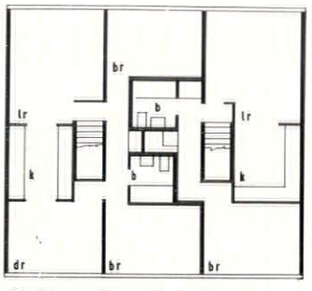
pedestrian way and steps



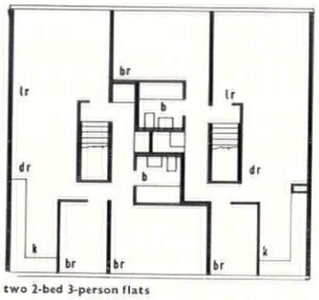
ground floor, and above right, first floor of 3-bed 5-person house



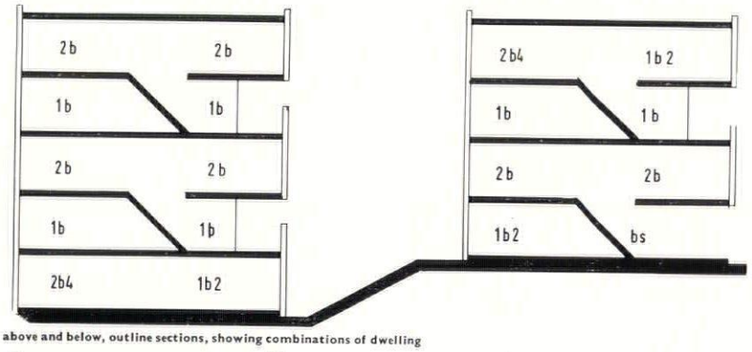
two 1-bed 2-person flats



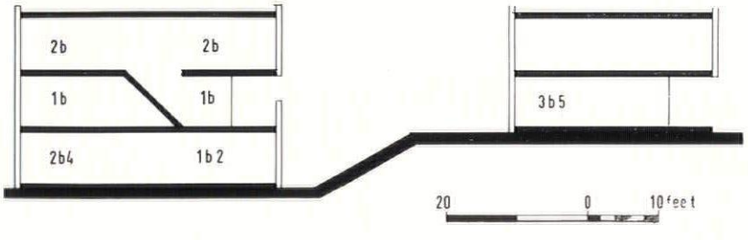
a 2-bed 4-person flat combined with a 1-bed 2-person flat

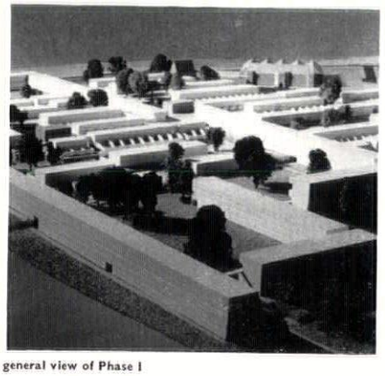


two 2-bed 3-person flats

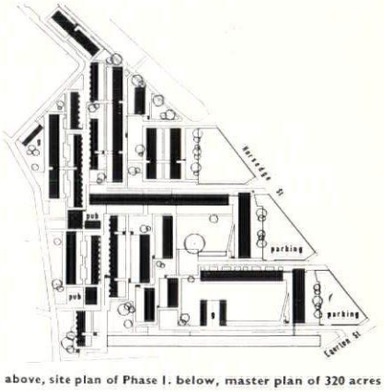


above and below, outline sections, showing combinations of dwelling

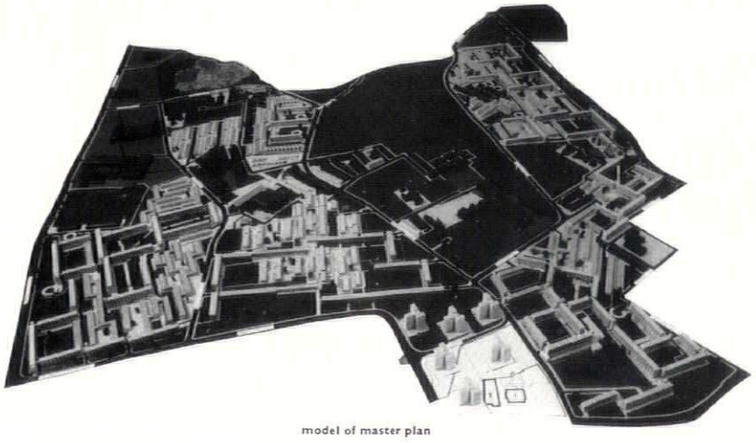




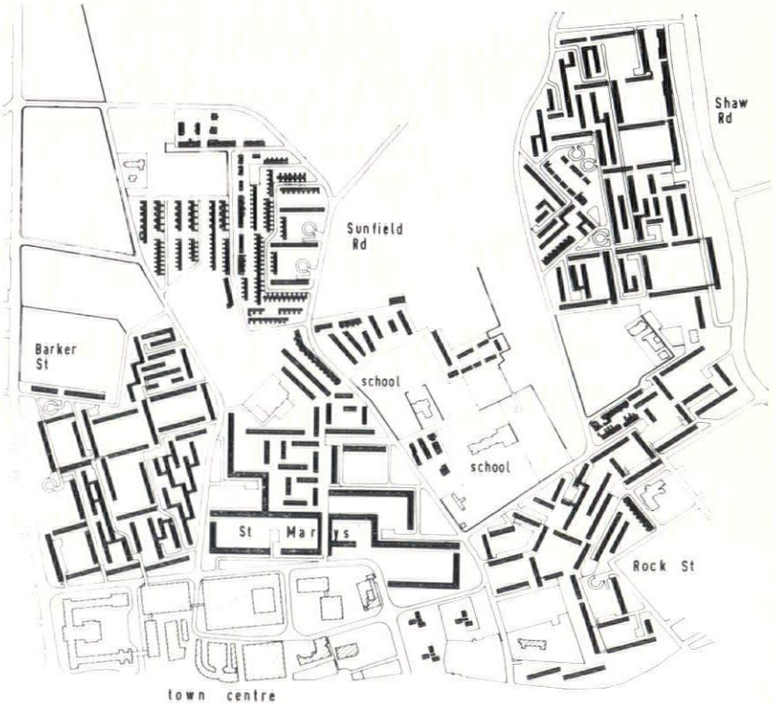
general view of Phase I



above, site plan of Phase I. below, master plan of 320 acres



model of master plan

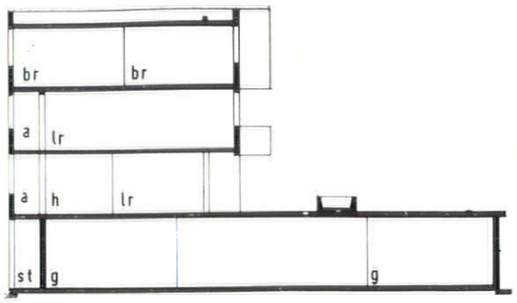


ABBEYFIELD ROAD, BERMONDSEY, LONDON

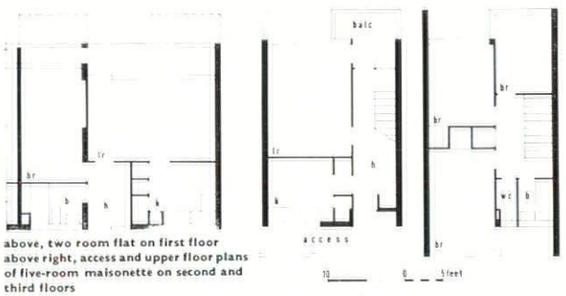
Hubert Bennett, Architect to the LCC

CLIENT: London County Council.
SITE: 3.38 acres bordered on north-east by Southwark Park, SE16, and on north-west by future extension to park.
ACCOMMODATION: 204 dwellings at 171 p.p.a. 144 three-room scissors maisonettes in high block. 26 four-room maisonettes, 2 five-room maisonettes, 11 two-room flats, 21 one-room old people's flats in two lower blocks. Youth club. Covered garaging for 130 cars.
STRUCTURE AND FINISHES: 26-storey block of r.c. cross walls, 4-storey blocks of brick cross walls, with exposed aggregate granite facing throughout.
SERVICES: Space heating from rooftop boiler house on top block, with heat exchanges in dwelling providing warm air. Hot water from electric heaters under draining board. Mechanical ventilation in bathrooms of tall block only.
COST: £895,000.
BUILDING PERIOD: June 1965–June 1967.

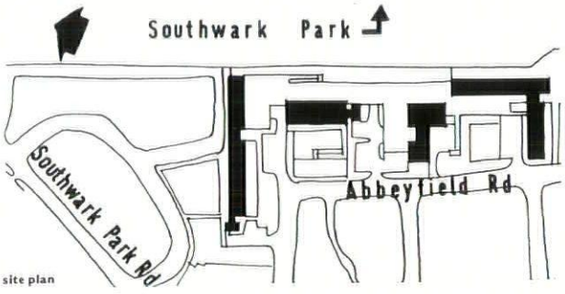
Deputy architect to the council, F. G. West. Principal housing architect, Kenneth J. Campbell. Assistant housing architect, J. G. H. D. Cairns. Section architect, D. F. Grove. Assistants, D. E. Fordham, A. L. Economou. Principal quantity surveyor, M. F. Rice. Structural engineer, J. H. Humphreys. Structural consultant, John Porges. Mechanical and electrical services, P. F. Stott, acting chief engineer.



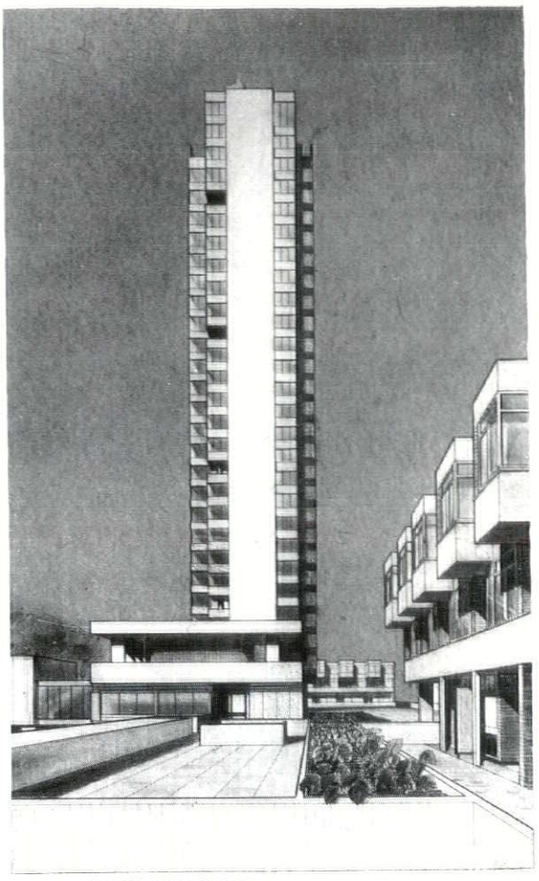
above, section through lower block



above, two room flat on first floor
above right, access and upper floor plans of five-room maisonette on second and third floors



site plan



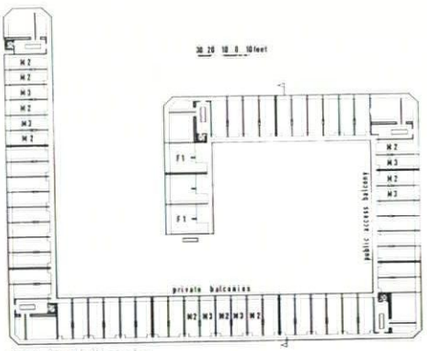
above, view of tall block from terrace

CENTRAL HOUSING, SOUTHAMPTON

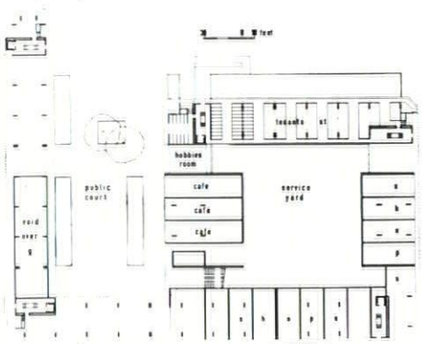
Lyons, Israel, Ellis and Partners in association with L. Berger, Borough Architect

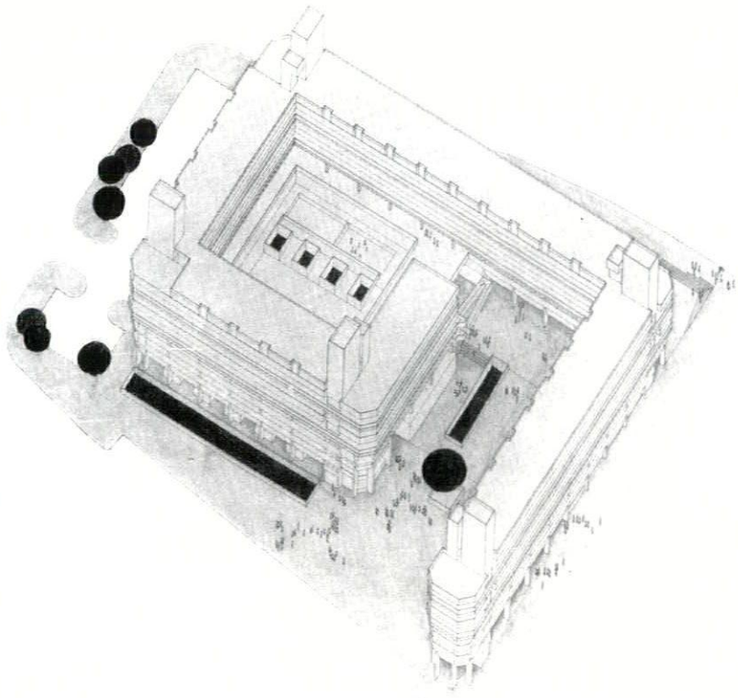
CLIENT: Southampton City Council.
SITE: 3.5 acres between civic centre and station, steep fall to south.
ACCOMMODATION: 113 dwellings. 28 2-bedroom maisonettes, 24 3-bedroom maisonettes, 47 one-bedroom flats, 14 bed-sitting rooms. 13 shops, 3 cafés. Garage space for 143 cars.
STRUCTURE AND FINISHES: In situ r.c. cross walls at 12 ft. centres for maisonettes, carried on in situ r.c. cross walls at 24 ft. centres for flats, carried on in situ r.c. frame at 24 ft. centres. Cladding, precast white Portland stone aggregate panels for maisonettes, rough-shuttered white concrete for flats.
BUILDING STARTS: 1965.

Partner in charge, E. D. Lyons. Associate in charge, F. Linden. Assistant, A. Hume.



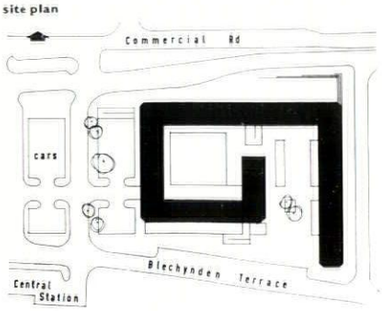
above, fourth floor plan
below, main pedestrian level



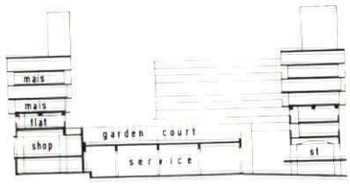


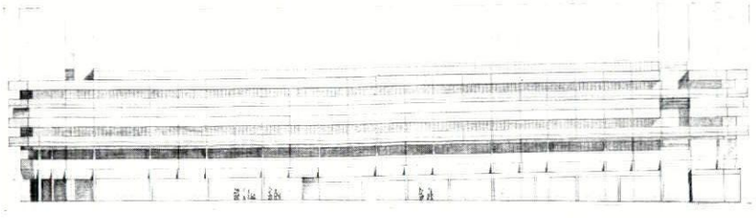
below, north elevation. above, axonometrical view from south-east

site plan



below, section



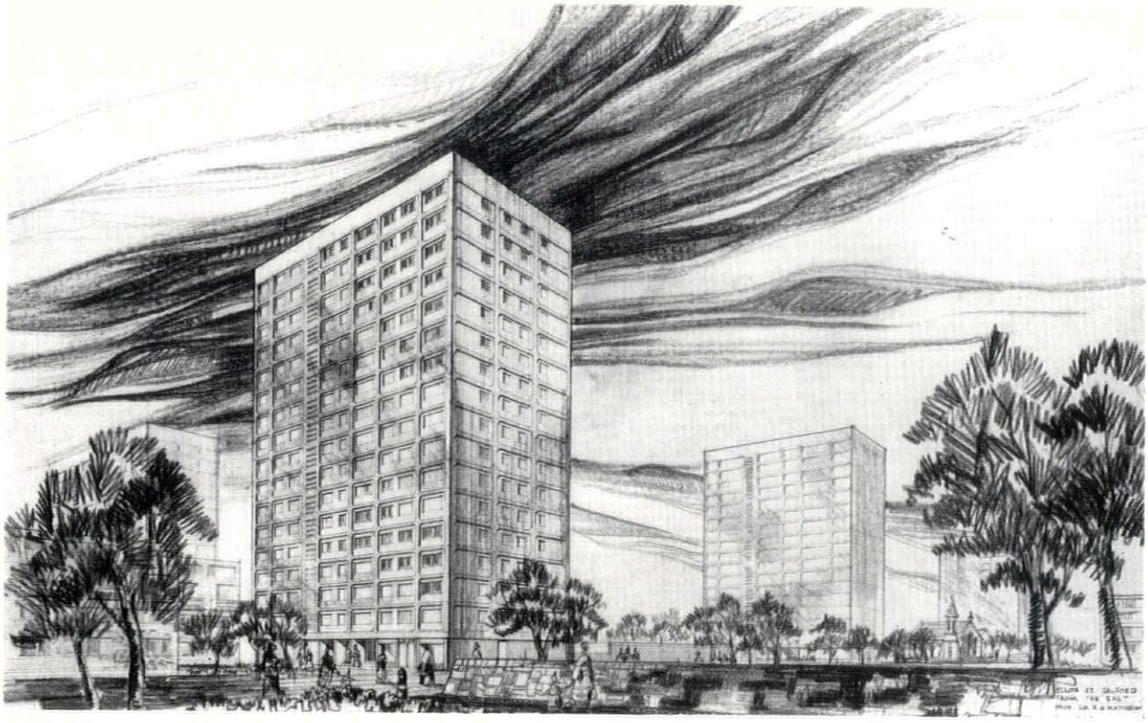


ELLOR STREET, SALFORD, LANCS

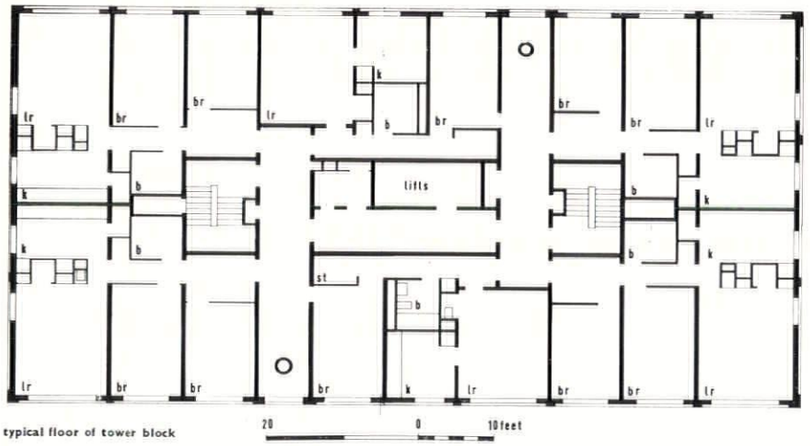
Professor Sir Robert H. Matthew, University of Edinburgh Architecture Research Unit, in association with G. A. McWilliam, City Engineer

CLIENT: Salford City Council.
SITE: Within 89-acre city centre redevelopment area, replacing 2-storey housing.
ACCOMMODATION: Five 16-storey blocks of flats, 480 dwellings at 145 p.p.a. 320 two-bedroom, 160 one-bedroom.
STRUCTURE AND FINISHES: Large panel precast concrete wall and floor unit construction, designed by architect and engineer in collaboration with concrete subcontractor. External finish, ceramic mosaic and fairfaced concrete. Internally fairfaced concrete wallpapered, ceilings of fairfaced concrete painted, floors of chipboard.
SERVICES: Heating by gas-fired ducted hot air. Electric: conduits cast in walls. Plumbing: c.i. single stack with plastic wastes and traps.
COST: £1,430,000 (£2,984 per flat including deep foundations).
BUILDING PERIOD: June 1964–Spring 1966.

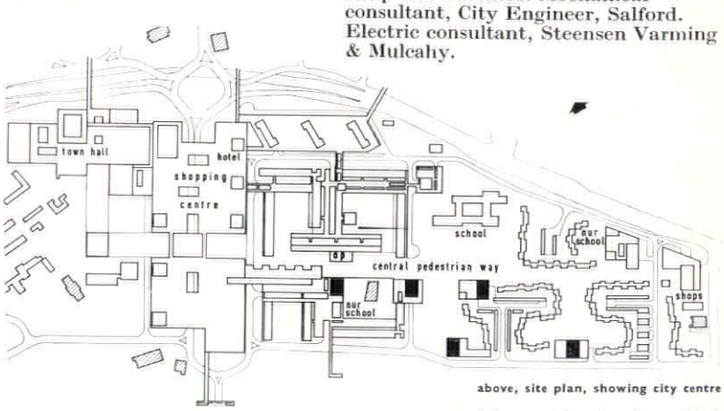
Director, Professor P. E. A. Johnson-Marshall. Deputy director, Charles Robertson. Project leader, Norman Raitt. Assistants, Jean Lawrance, Stuart Hannah, Marjory McKay. Quantity surveyor, George Berry. Structural consultant, Ove Arup and Partners. Mechanical consultant, City Engineer, Salford. Electric consultant, Steensen Varming & Mulcahy.



perspective of tower blocks from east

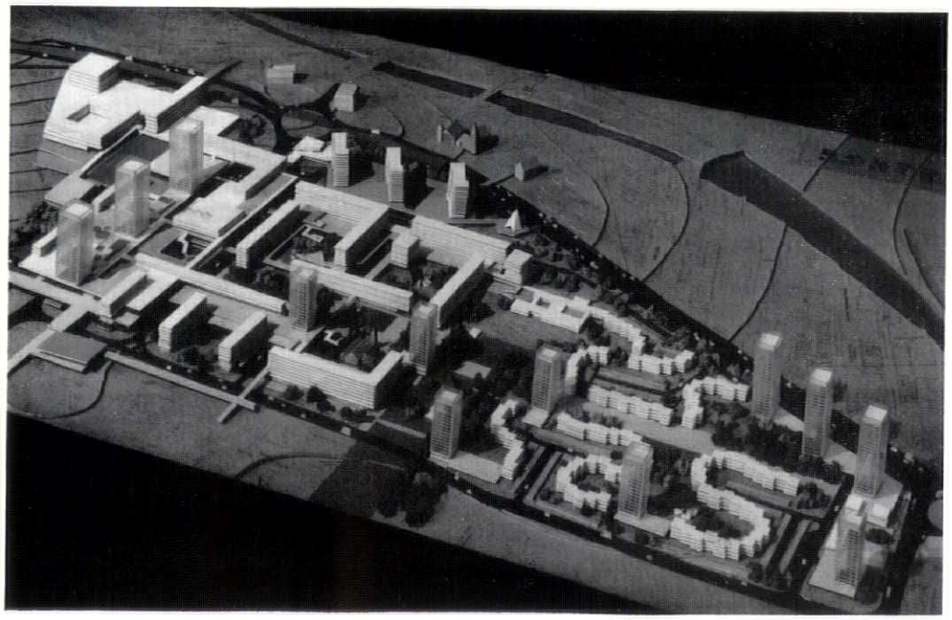


typical floor of tower block

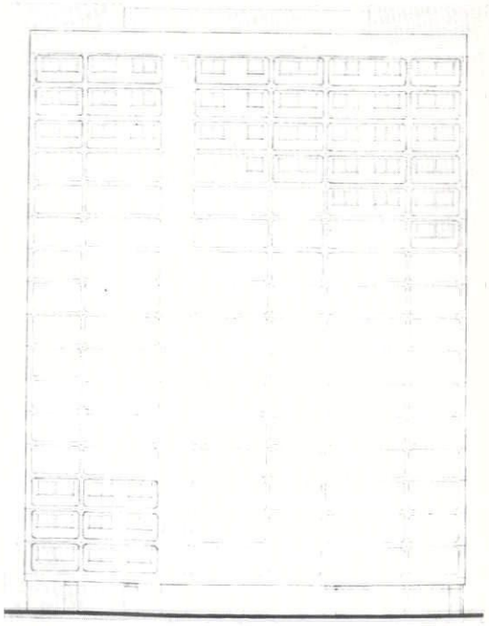


above, site plan, showing city centre

below, east elevation of tower block



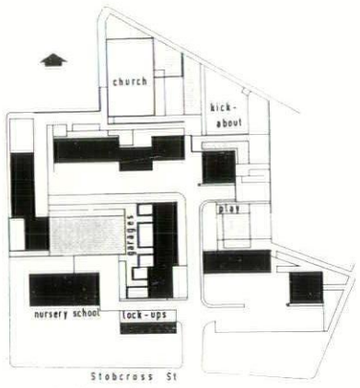
general view of city centre redevelopment from south



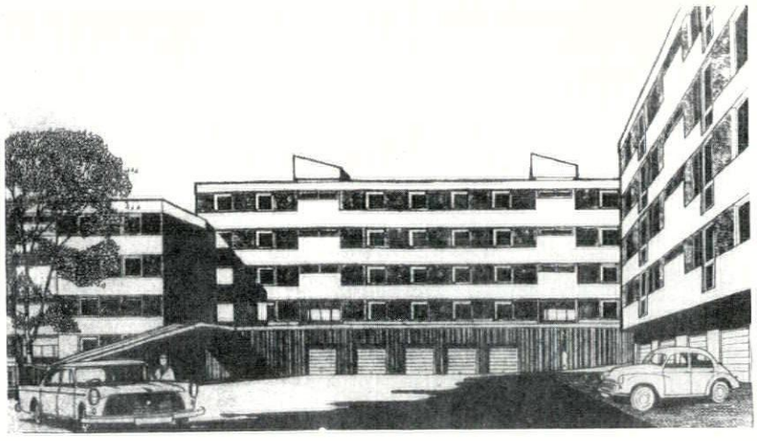
ANDERSTON CROSS, GLASGOW

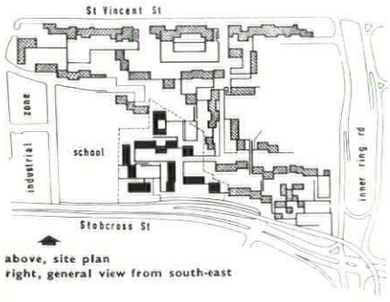
Joint Housing Development Unit of Scottish Development Department and Scottish Special Housing Association

CLIENT: Glasgow Corporation.
SITE: 22.2 acres in central redevelopment area next to inner ring road motorway.
ACCOMMODATION: 1,080 houses on 20.2 acres net at 165 p.p.a. Flats for 2 people, 4 people, 5 people and 6 people each, maisonettes for 7 people and 8 people each. Parking for 942 cars.
STRUCTURE AND FINISHES: Industrialized system, r.c. components with external exposed aggregate finish, internal self finish wallpapered, thermoplastic tile floors.
SERVICES: Gas and electric systems of ducted hot air. Whole house heating with allied drying cabinets.
COST: £6,000,000 approx. overall.
BUILDING PERIOD: In 5 stages over 15 years. Phase I, October 1964-April 1966.



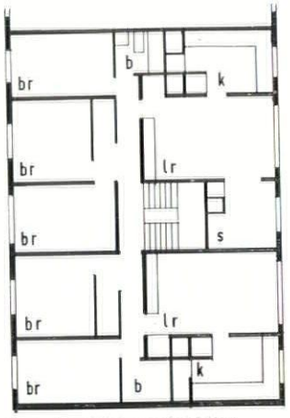
above, site plan of Phase I
right, view of court

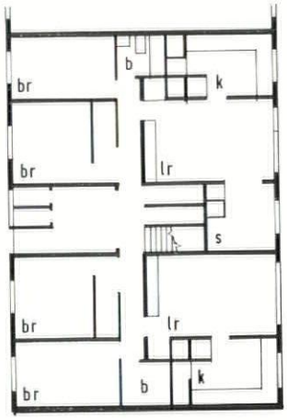




above, site plan
right, general view from south-east







above, plan of first, second and third floors. right, plan of ground floor and pedestrian level

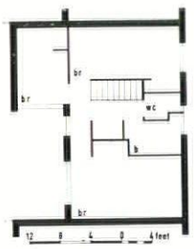
20 0 10 feet

ARMY HOUSING, TIDWORTH, WILTS

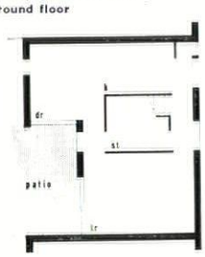
The Austin-Smith/Salmon/ Lord Partnership

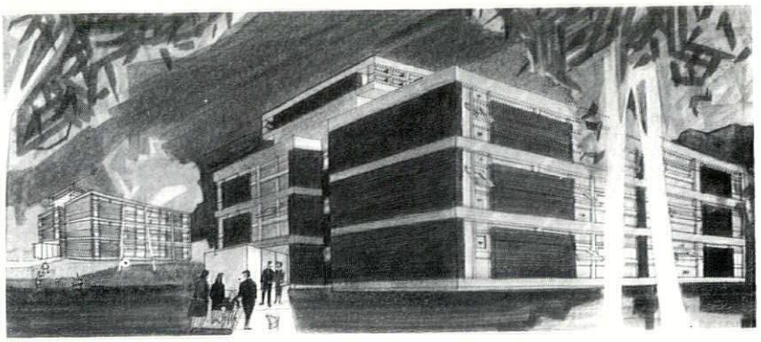
CLIENT: Ministry of Public Building and Works.
SITE: Various sites within Tidworth military town. Existing barracks.
ACCOMMODATION: 2-, 3- and 4-bedroom houses for 4, 5, 6 and 7 people. 2-bedroom 4-person flats in 3-storey blocks. Overall density not exceeding 12 houses per acre. Total of 832.
STRUCTURE AND FINISHES: Whole programme of rationalized traditional construction with large amount of prefabrication within external walls.
SERVICES: Heating, gas-fired warm air for living room and dining area. Common service core.
COST: £2,000,000 approx.
BUILDING PERIOD: May 1964–December 1966 approx.

Partner in charge, P. J. Lord.
Associate in charge, A. N. Watson.



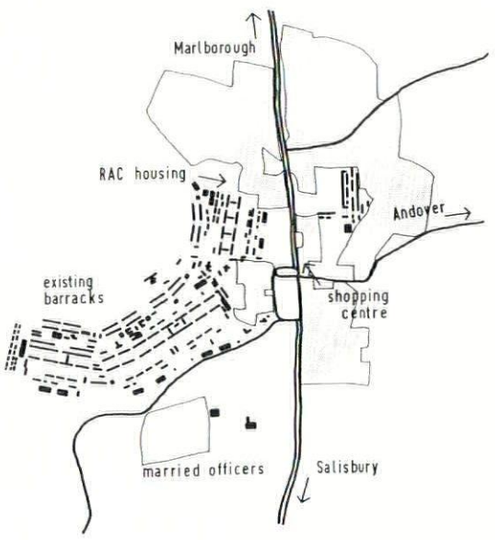
three-bedroom house.
above, first floor. below, ground floor

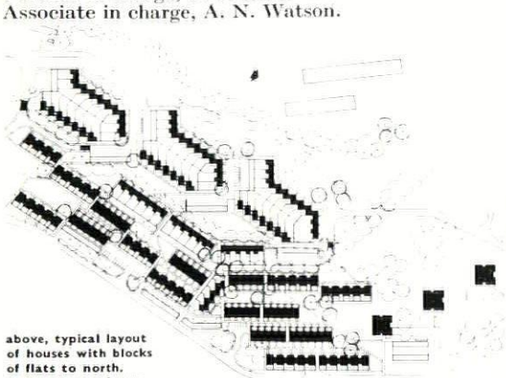




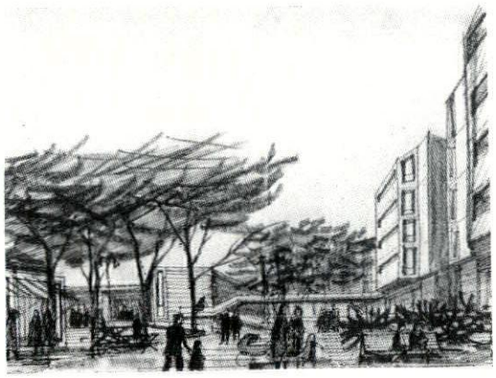
view of three-storey flat blocks

master plan, housing areas shaded





above, typical layout of houses with blocks of flats to north.
right, view of future shopping centre



AREA: INDUSTRY: COMMERCE

Page	*Project*	*Architects*
61	Town Centre, Basingstoke, Hants.	Llewelyn-Davies, Weeks and Partners
62	City Centre, Portsmouth	Viscount Esher of Brett and Pollen
63	Town Centre, Gateshead, Co. Durham	Owen Luder
64	Shops and Offices, Sutton, Surrey	Owen Luder
64	Shopping Precinct, Bath	CLRP Architects. Sir Basil Spence, Consultant
65	Offices, Watford, Herts.	Douglas Stephen and Partners
65	Offices, Parker Street, London	James A. Crabtree
66	Bank Headquarters, Manchester	Casson, Conder and Partners
67	Public House, Dulwich, London	Julian Keable and Partners
67	Bank, Accra, Ghana	Kenneth Scott Associates
68	Central Redevelopment, Barcelona	Ian Fraser and Associates
68	Shopping Centre, Great Parndon, Harlow	Frederick Gibberd, Architect-Planner. Victor Hamnett, Executive Architect
69	Electricity Sub-Station, Sheffield	Jefferson, Sheard and Partners
69	Power Station, Cottam, Notts.	Yorke, Rosenberg and Mardall
70	Factory, Cramlington, Northumberland	Chapman Taylor Partners
70	Water Treatment Works, Pateshill, Scotland	Munce and Kennedy

It may be possible to read too much significance into the number of schemes submitted to 'Preview' in any one category. All the same, it does seem clear that very few of this country's best architects are devoting their attention at present to the urgent work of renewing city centres—work that will go on without them even if they do not wish to take part. Two Luders do not make even one summer. The reasons for the lack of interest are depressingly obvious, and they are political: the continuing imbalance of power towards the hands of speculators. Five years after the Monico site decision, Piccadilly stands still unbuilt. Over a year after Buchanan, the regional development agencies have not been set up and every hack scheme cooked up by an enterprising developer with a quisling local authority is described as 'Buchanan-style.' It is indeed understandable that there is scepticism in the architectural profession. Meanwhile, however, rebuilding goes ahead under the direction of a handful of hack architects whose names can be seen on every other site hoarding.

The only bright spots are in the public sector. Cumbernauld's civic centre goes ahead and so does that of Basingstoke, a major and important departure in the work of Llewelyn-Davies, Weeks and Partners. The essence of town centre design, where so many diverse functions and such changing crowds of people have to be allowed for, is the establishment of a certain overriding order and scale. The Basingstoke scheme shows how this can be done without imposing alien sculpture on the pre-existing site and on the organic growth of the new community. In place of the vast platform of car parks in Allan McCulloch's original plan, Llewelyn-Davies and Weeks move the car parks to one side and let the shopping centre flow irregularly out of the existing space around St. Michael's Church. Close to the station is placed a convincing mini-Dallas of office towers. Owen Luder, in his two schemes for Gateshead and Sutton, adopts a much more vigorous, if rather hectoring, approach. He shows how different commercial spaces can be linked vertically by a consistent structure. There are signs of mannerism in the criss-cross patterning of the Gateshead bowling centre and the heavily articulated service towers above the shops. Order and scale are certainly achieved by Sir Basil Spence in his grandly Roman (aesthetics of association?) shopping centre for Bath. It has still to be seen how far Luder's and Spence's schemes will fit into an overall plan of transportation for their respective towns. The skilful exploitation of an individual site at a very high density is shown particularly well in Ian Fraser and Associates' Barcelona project. Clearly the Spanish planning laws are not as strict as ours. Fraser's close grouping of offices, flats, shops and hotel would excite the envy of any English architect faced with these problems. It is magnificent, but it is not the planning war as we know it.

The existing environment is sometimes vigorous in itself. Viscount Esher, in his careful rehabilitation of the area in front of William Hill's splendid Portsmouth Guildhall, shows the new awareness of the legacy of the nineteenth century—its confidence and grandeur and plasticity. Lord Esher was faced with a difficult problem: the incorporation of two post-war public buildings on unrelated sites, a curtain-walled College of Art and a neo-Georgian Law Courts block (both by the same city architect!). A similar awareness of tradition without resort to period trappings is shown in Casson, Conder and Partners' prize-winning design for the District Bank's headquarters in Manchester. This sheer black monolith should rival in its monumentality the nearby Midland Bank by Lutyens. At the same time, practical considerations, particularly light-angles, have been carefully worked out and the banking hall itself should be surprisingly intimate and informal. Equally sensitive to *genius loci* is Julian Keable's sumptuous pub in Dulwich, and it is only a pity that Mr. Keable is having to remove a *genuine* Victorian pub of some merit before he can erect his own extravaganza.

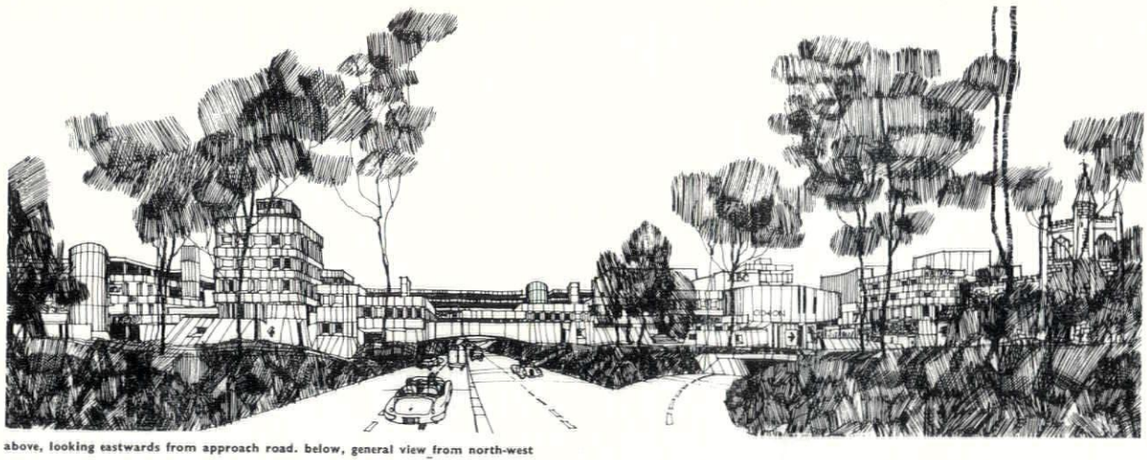
Very few industrial schemes were available for 'Preview' this year—only three factories, of which that at Cramlington by Chapman Taylor Partners stood out, like their Victoria Street office block last year, as a paragon of transatlantic efficiency and modularity. This Miesian or SOM-influenced clarity is rivalled by Douglas Stephen's office block at Watford. The water treatment works by Munce and Kennedy also shows a strong, logical approach, appropriate to its bleak moorland site. At a time of controversy over the aesthetics of electric power, Yorke, Rosenberg and Mardall's power station at Cottam shows a refreshingly clear-cut silhouette. More boldly sculptural is the modestly named 'electricity sub-station' at Moore Street, Sheffield, by Jefferson, Sheard and Partners. Placed at a prominent crossing on Sheffield's 'civic circle,' this sub-station is the size of a medium-large office block and it shows the heavy 'log cabin' detailing in concrete which has come to this country from Tange's Japan.

TOWN CENTRE, BASINGSTOKE, HANTS

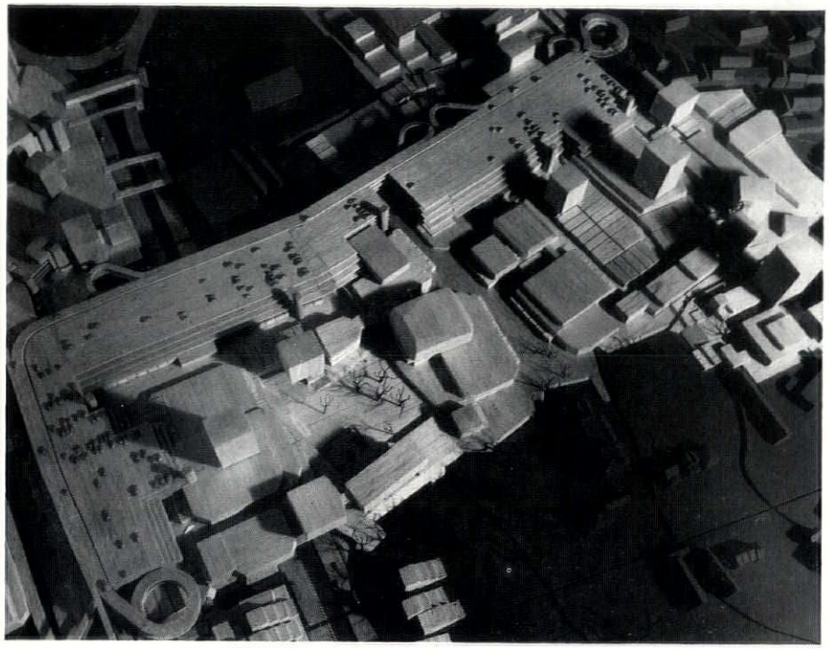
Llewelyn-Davies, Weeks and Partners with Ian Fraser and Associates

CLIENT: Town & City Properties Ltd.
SITE: 16 acres between old town centre and railway.
ACCOMMODATION: New shopping centre of about 500,000 sq. ft., offices, flats, museum, art gallery and library, bowling alley, dance hall, hotel, and indoor sports centre. Service road to bays below shops with trolley service to individual premises. Pedestrian platform with slight changes of level. Multi-level parking for about 3,500 cars, with easy access by lifts to pedestrian level. 2 phases.
STRUCTURE AND FINISHES: R.c.
COST: £10,000,000 approx.
BUILDING STARTS: Phase I, end of 1965.

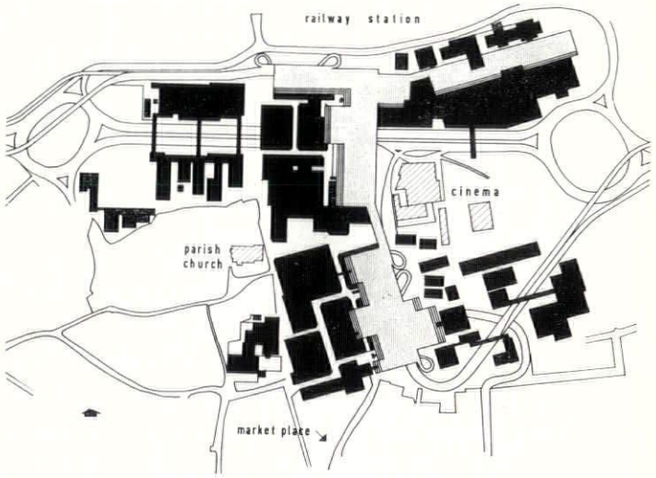
Partners in charge, Lord Llewelyn-Davies and Gwent Forestier-Walker. Project architect, Alan Turner.

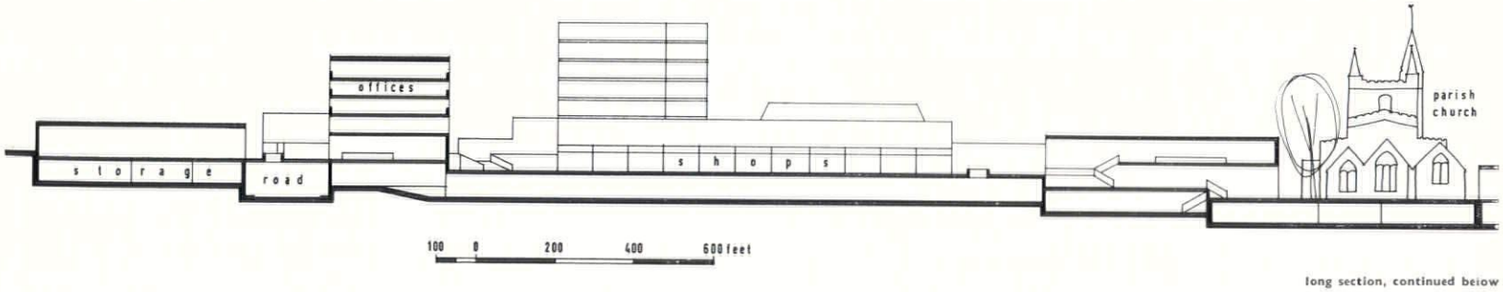


above, looking eastwards from approach road. below, general view from north-west

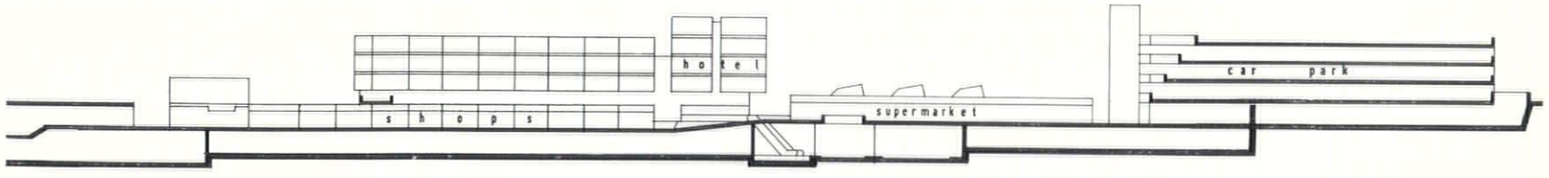


site plan, car park shaded



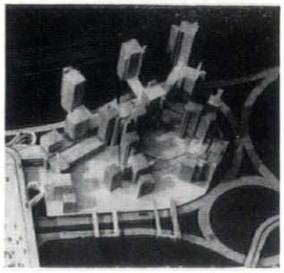


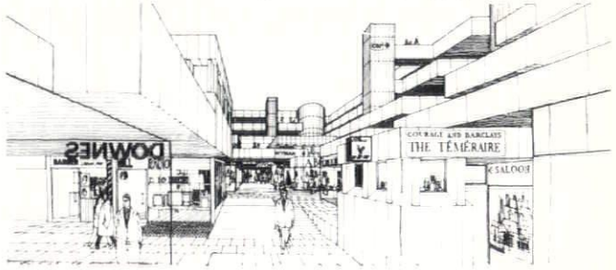
long section, continued below



below, central concourse. below left, office complex next to railway station. extreme left, shopping mall next to car park





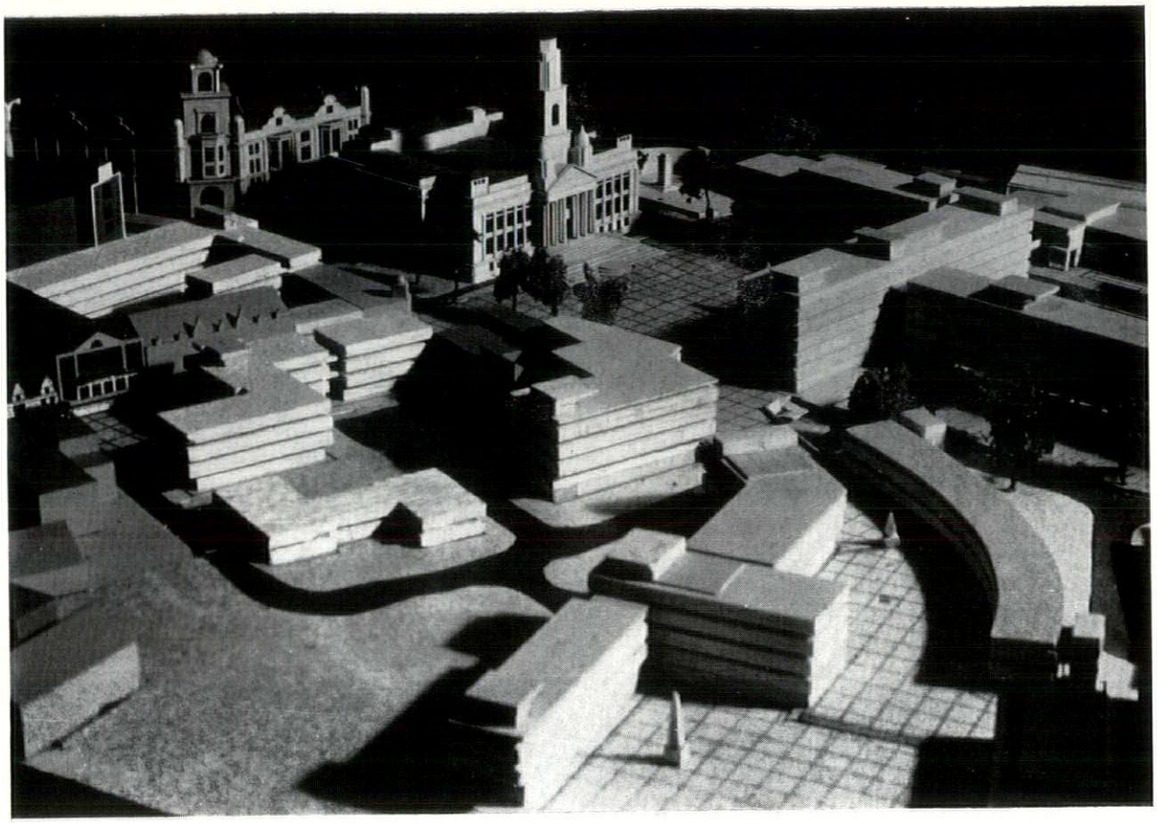


GUILDHALL SQUARE, PORTSMOUTH

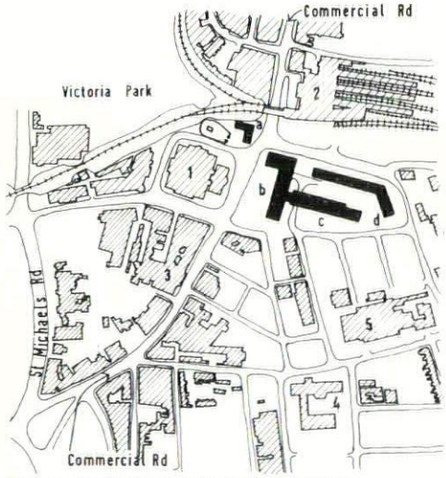
Viscount Esher of Brett and Pollen in association with F. Mellor, Portsmouth City Architect

CLIENT: Portsmouth City Council.
SITE: 38 acres next to Portsmouth Guildhall, severely war-damaged with some good Victorian survivals.
ACCOMMODATION: Municipal offices and central civic space. New frontispiece for station and new station square. Hotel, restaurants, licensed premises, shops. Students' hostel, central library, museum and art gallery, dance hall and cinema, commercial offices, flats, car parks.
BUILDING STARTS: 1965, phased programme dependent on government policy.

Partner in charge, Viscount Esher. Assistant, Harry Teggin. Quantity surveyor and all consultants, Portsmouth City Council.

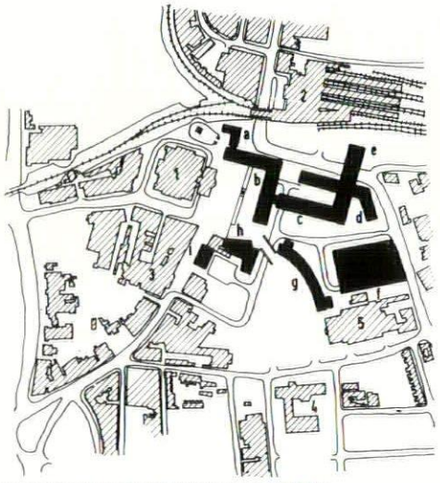


right, general view of site, with Guildhall and municipal college in background and new museum and art gallery in foreground. new buildings are kept to a maximum of 7 storeys to allow continued dominance of Guildhall tower

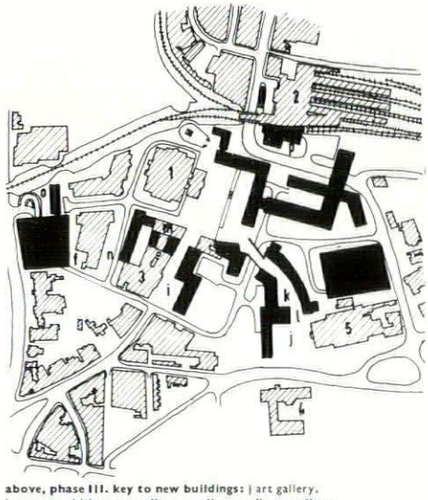


above, phase I of development. key to existing buildings: 1, Guildhall, 2 central station, 3 theatre, 4 college of art, 5 law courts. **key to new buildings:** a public house, b council offices, block I, c council offices block II, d council offices block III

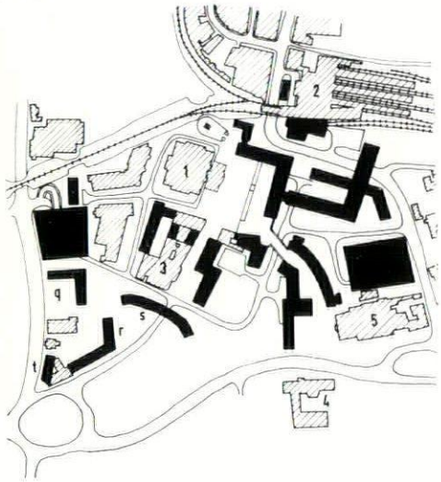
below, phase IV. key to new buildings: p station extension, q r s and t offices and flats. Other buildings as first three phases



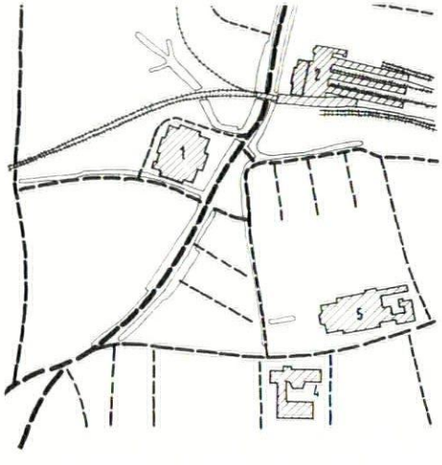
above, phase II. key to new buildings: e council offices block IV, f car park, g flats, h hotel or offices, i offices or flats. Other buildings as phase I



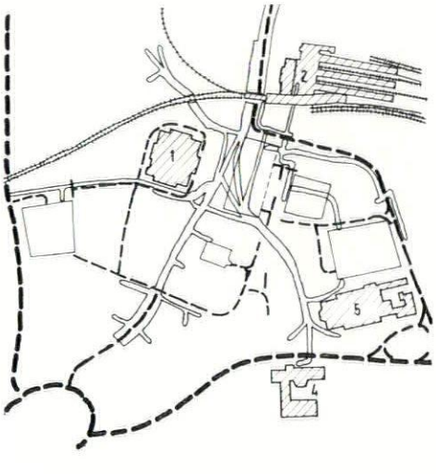
above, phase III. key to new buildings: j art gallery, k museum, l library, m offices, n offices or flats, o offices, f car park, Other buildings as phases I and II.



below, present traffic circulation. Pedestrian routes shaded



below, future traffic circulation. Pedestrian routes shaded

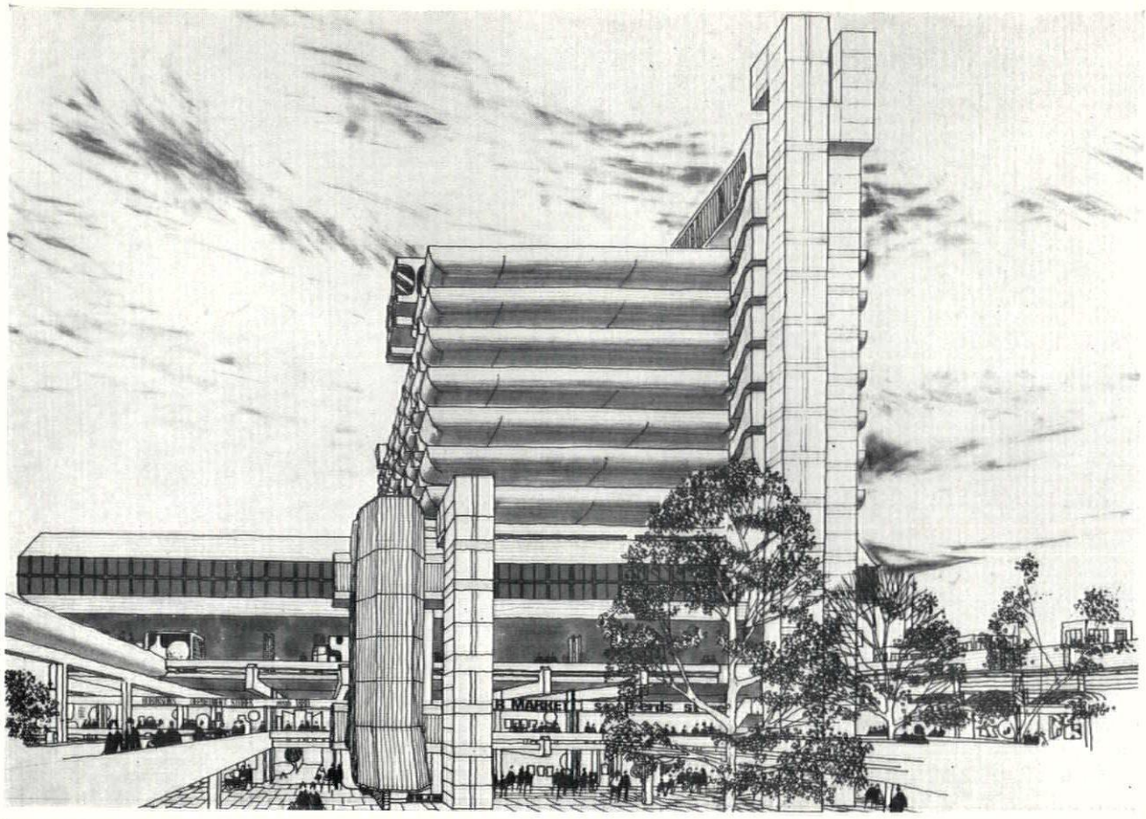


TOWN CENTRE, GATESHEAD, CO. DURHAM

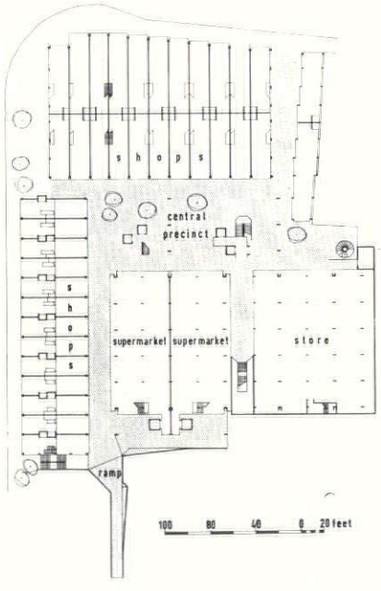
Owen Luder

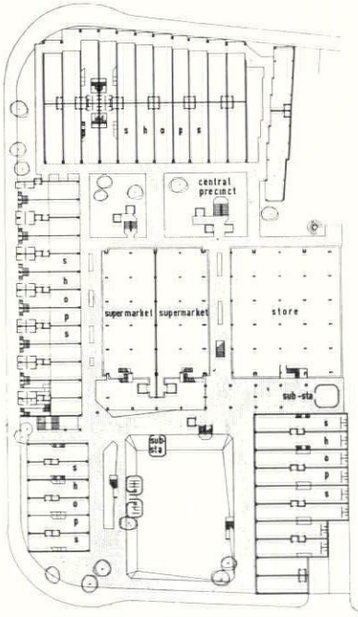
CLIENT: E. Alec Colman Group.
SITE: 4 acres, with steep slope from West Street down to High Street (A1) of 30 ft. Slope of 5 ft. laterally.
ACCOMMODATION: 53 multiple-size shops, 37 with 2 levels, 2 supermarkets, 1 large store, 32-lane bowling alley, park for 474 cars, restaurant for 150–200. Public house with 3-bed flat.
STRUCTURE AND FINISHES: In situ r.c. except for central block which has r.c. frame with patent precast floor system. Shuttered finish to columns and beams, infill panels of patent lightweight r.c. slabs, external finish of applied p.v.c. skin. External finish to bowling alley of glass fibre.
SERVICES: Electric lifts for car park and bowling alley, provision for hydraulic lifts in shops.
COST: £1,250,000.
BUILDING PERIOD: September 1964–May 1966.

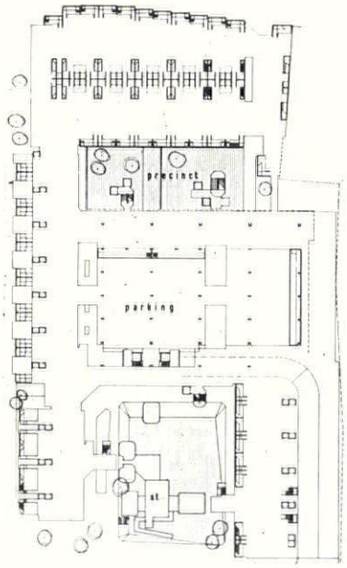
Partners, Owen Luder, Dennis Drawbridge, Rodney Gordon. Associate in charge, Peter Abbott. Quantity surveyor, C. R. Wheeler & Partners. Structural consultant, Gordon Rose.



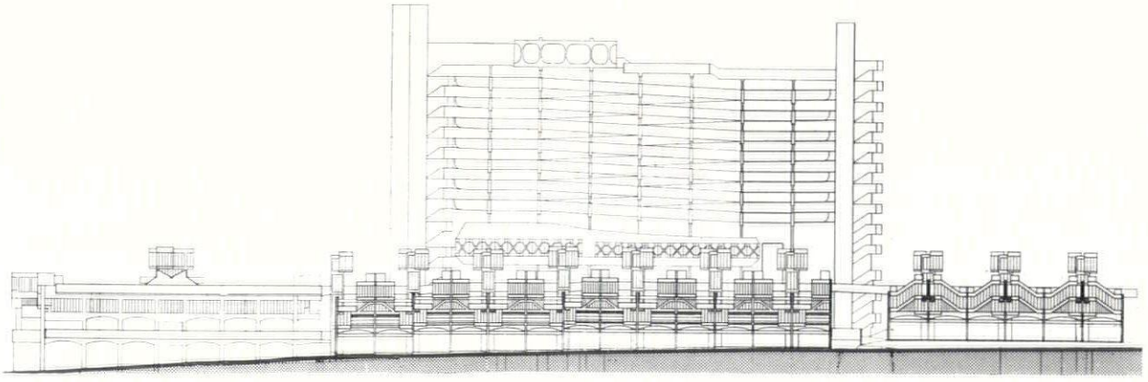
above, general view from central precinct

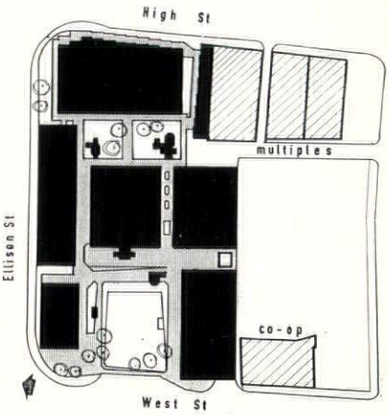




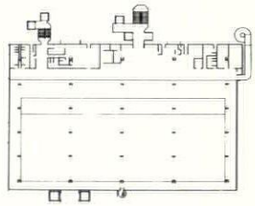


above, left to right, plans of lower ground floor, ground floor, and first floor service level. below, elevation to Ellison Street





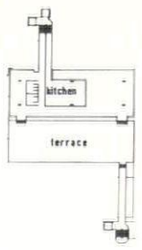
above, site plan



third floor, bowling alley



multi-storey car park



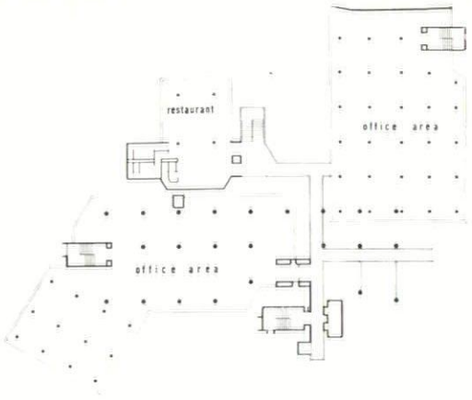
top floor, restaurant

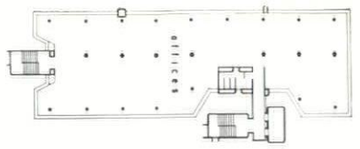
SHOPS AND OFFICES, SUTTON, SURREY

Owen Luder

CLIENT: E. Alec Colman Group.
SITE: 1.6 acres in town centre.
ACCOMMODATION: 49,000 sq. ft. offices, 10,500 sq. ft. business area, 75-seat restaurant, 28-lane bowling, 13 shops.
STRUCTURE AND FINISHES: In situ rough shuttered r.c. with precast panels, patent glazing at 1st floor, metal windows elsewhere.
SERVICES: Perimeter heating to offices, plenum system to bowling alley.
COST: £500,000.
BUILDING PERIOD: November 1964–June 1966.

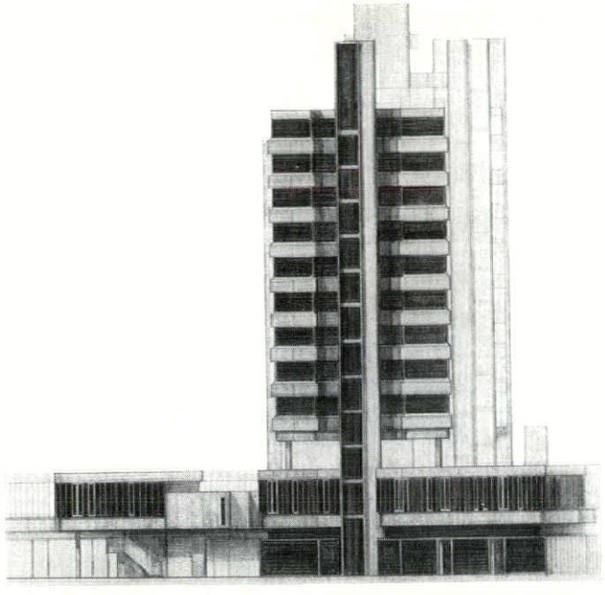
Partners, Owen Luder, Dennis Drawbridge, Rodney Gordon. Assistants, Colin Barnard, Robert Byron, Denis McKenzie, Shantilal Rampuria, Michael Drinkwater. Quantity surveyor, C. R. Wheeler & Partners. Structural consultant, A. D. Bogen & Associates.



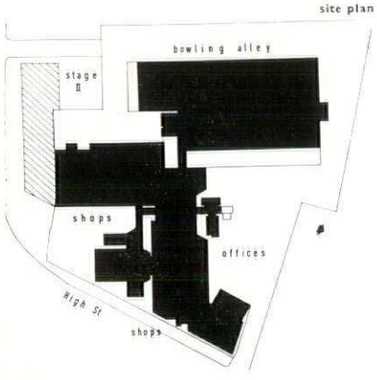


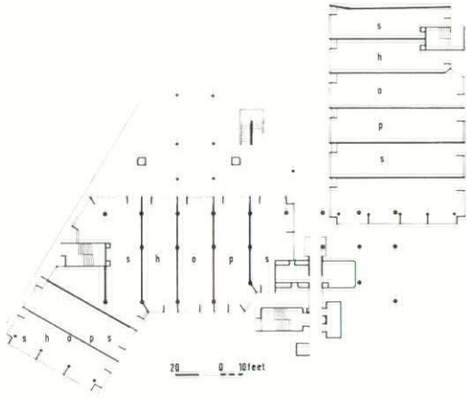
below left, ground floor.
above left, first floor.
above right, typical office floor

below, High Street elevation



site plan

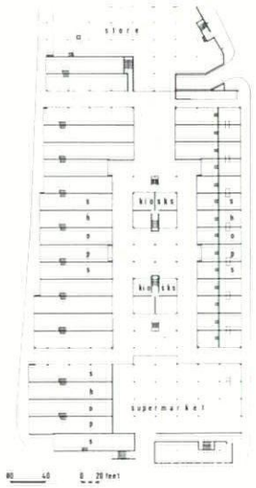


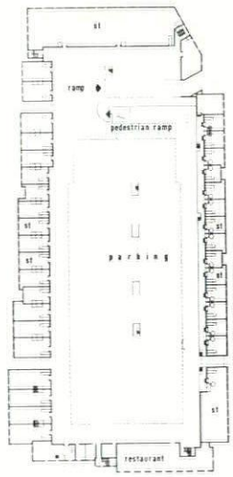


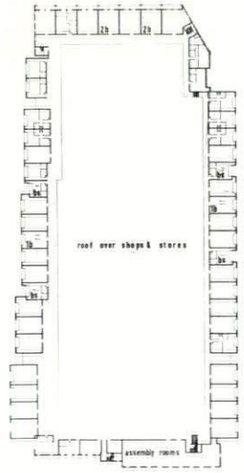
SHOPPING PRECINCT, BATH

CLRP Architects. Sir Basil Spence, Consultant

CLIENT: The City of London Real Property Co. Ltd.
SITE: 2.45 acres in Southgate Street, twilight area of warehouses, wholesalers and small shops on fringe of central shopping area.
ACCOMMODATION: Covered arcade of 49 shops, 8 kiosk shops, department store, supermarket, public house, with small flats mainly for use of shopkeepers above.
STRUCTURE AND FINISHES: R.c. frame with Bath stone and exposed concrete externally.
COST: £650,000.

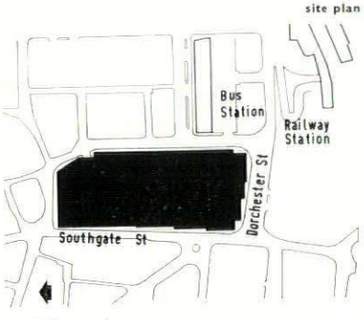


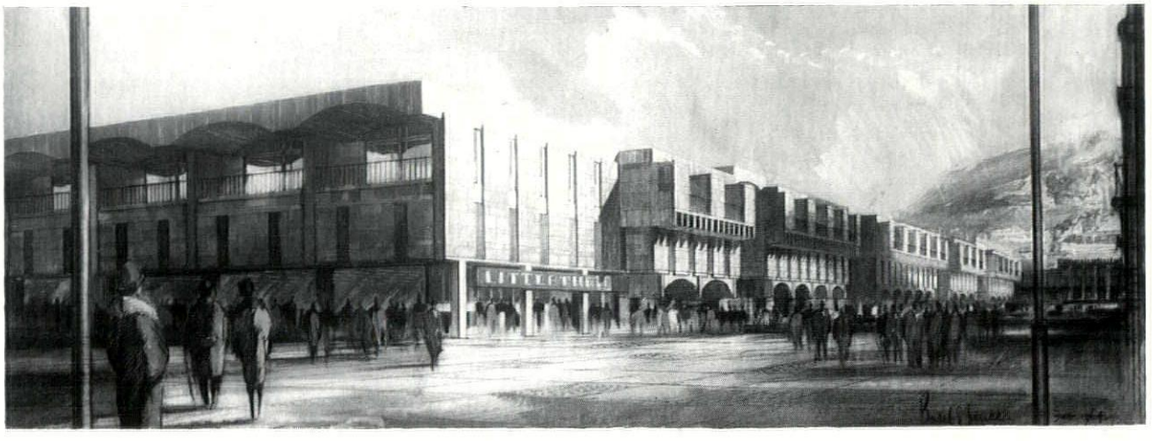


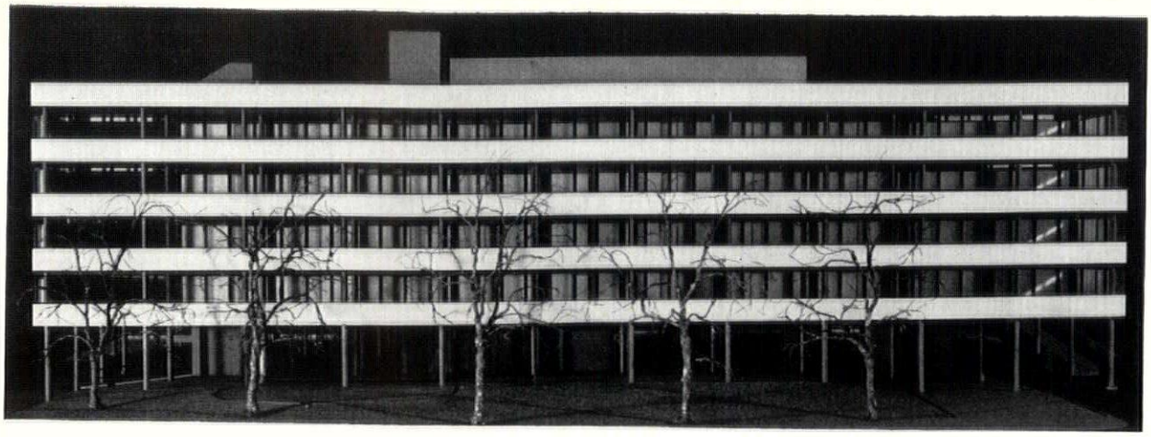


above, from left to right, ground floor, service floor and flats. below, view from west

site plan







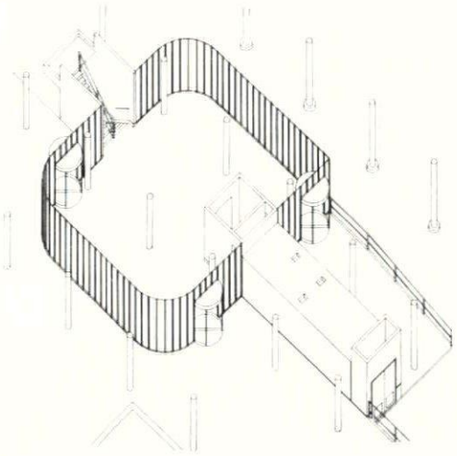
above, south elevation. below left, axonometric of entrance hall. below centre, ground floor plan. below right, typical upper floor

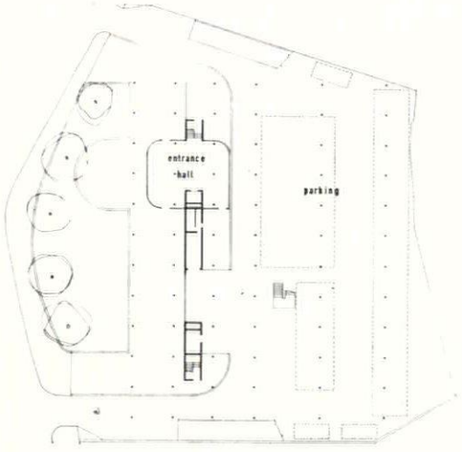
OFFICES, WATFORD, HERTS

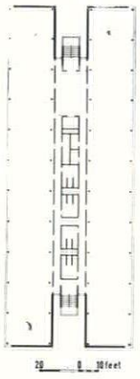
Douglas Stephen and Partners

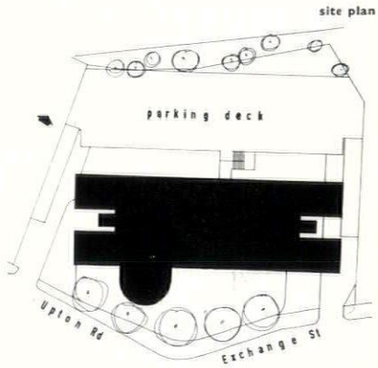
CLIENT: Daystone Estates Ltd.
SITE: Exchange Road, Watford.
ACCOMMODATION: 33,000 sq. ft. of net lettable office space, 42,600 sq. ft. gross.
STRUCTURE AND FINISHES: R.c. frame and floor slabs, with external finish in white tiling.
SERVICES: Electrical underfloor heating and hot water.
BUILDING STARTS: 1965.

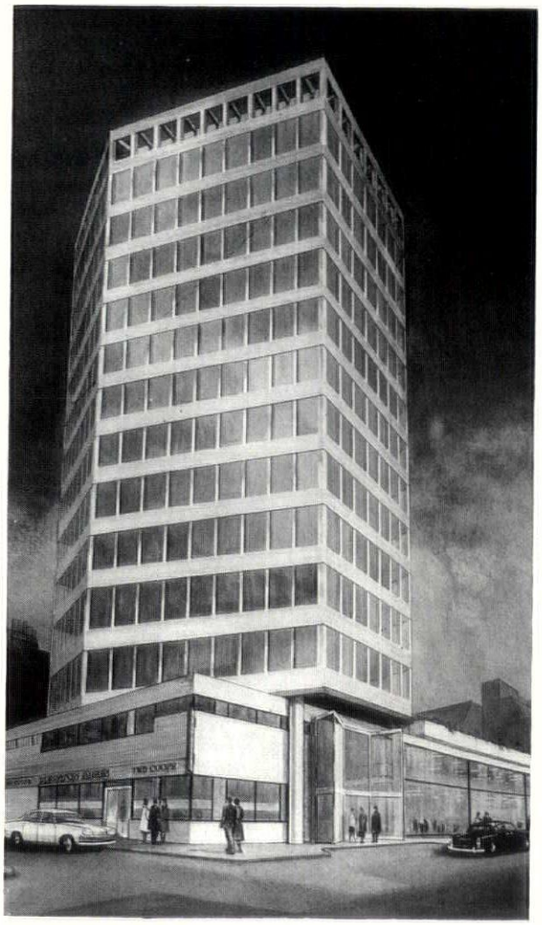
Partner in charge, Douglas Stephen. Assistants, David Wild and Edward Jones. Quantity surveyor, Lionel Simmons & Partners. Structural consultant, R. J. Crocker and Associates. Electrical consultant, Douglas Stephen and Partners.

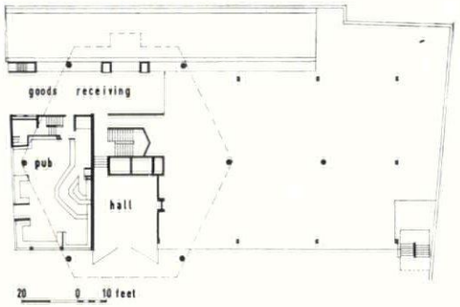




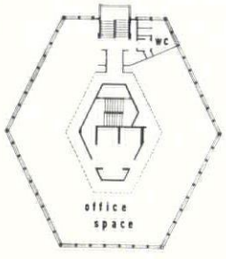


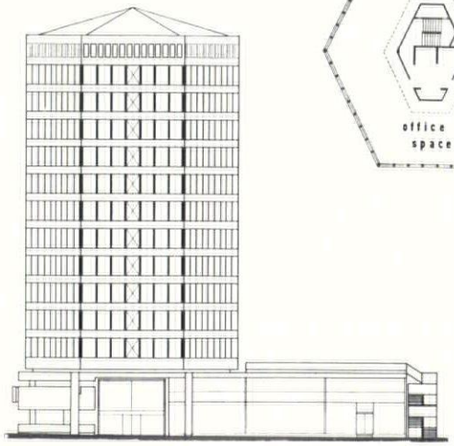






above, ground floor plan. below right, typical upper floor plan. left, view from corner of Parker and Newton Streets





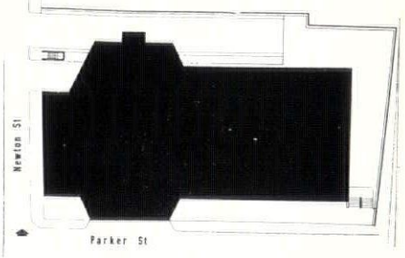
left, elevation to Parker Street. right, site plan

OFFICES, PARKER STREET, LONDON

James A. Crabtree

CLIENTS: Central and District Properties Ltd.
SITE: 154 ft. × 97 ft., plot ratio, 5 : 1.
ACCOMMODATION: 46,850 sq. ft. offices, 2,500 sq. ft. showrooms, 2,500 sq. ft. public house, 1,500 sq. ft. penthouse.
STRUCTURE AND FINISHES: R.c. circulation core, bored pile foundations, r.c. perimeter columns supported on high duty steel ring beam on 6 similar columns from basement to 2nd floor. Porcelain cladding, aluminium mullions.
SERVICES: Full air-conditioning.
BUILDING STARTS: January 1965.

Partner in charge, James A. Crabtree. Assistant, N. S. Bakhle. Quantity surveyor, Cecil F. Baker & Partners. Structural consultant, W. V. Zinn & Associates. Mechanical, electrical and acoustical consultant, L. C. Smith & Associates.

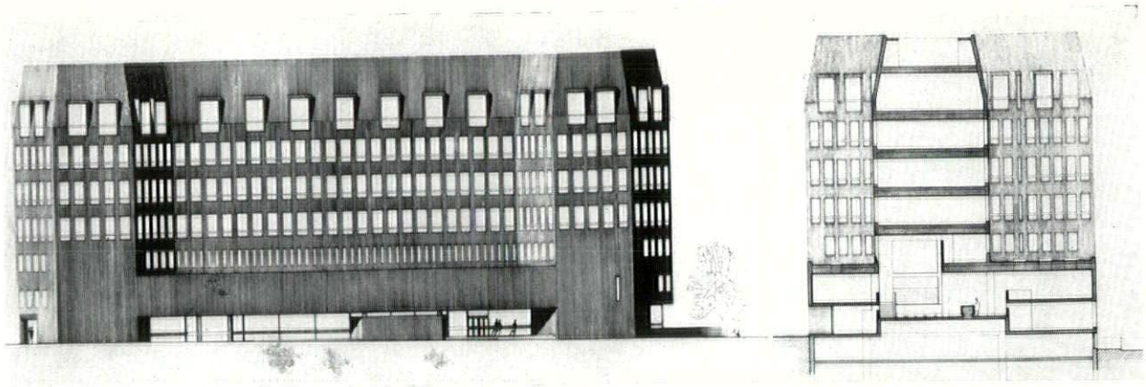


BANK HEADQUARTERS, MANCHESTER

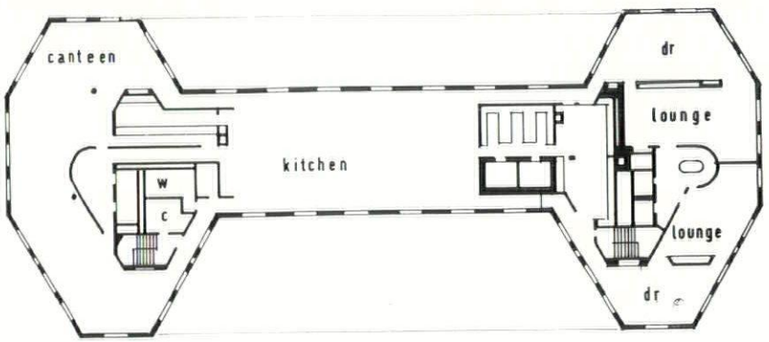
Casson, Conder and Partners

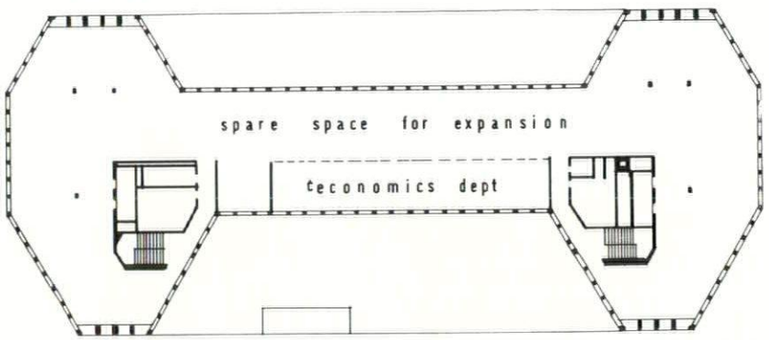
CLIENT: District Bank Ltd.
Limited competition held 1964.
SITE: King Street, Manchester, island site of 220 ft. × 90 ft., severe restrictions caused by light angles on two long frontages.
ACCOMMODATION: 169,000 sq. ft. 4 levels of basements for parking (70 cars), unloading, strong rooms and services. 2-level banking hall off main entrance. 3 floors of headquarters offices, attic floor of dining and recreational rooms.
STRUCTURE AND FINISHES: Granite-faced monolithic r.c. external walls. Internal loads borne on service cores and minimum columns.
SERVICES: Fully air-conditioned. Pneumatic letter carriage. Gantry system for window cleaning.
COST: About £2,000,000.
BUILDING STARTS: Early 1966.

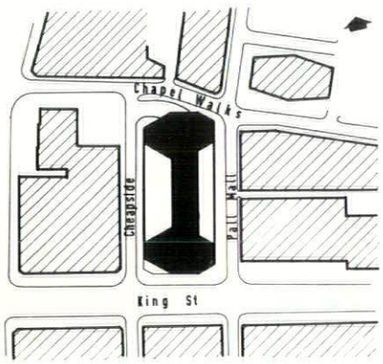
Partner in charge, Ronald Green. Associate in charge, David Ramsay. Quantity surveyor, Poole, Dick and Partners.



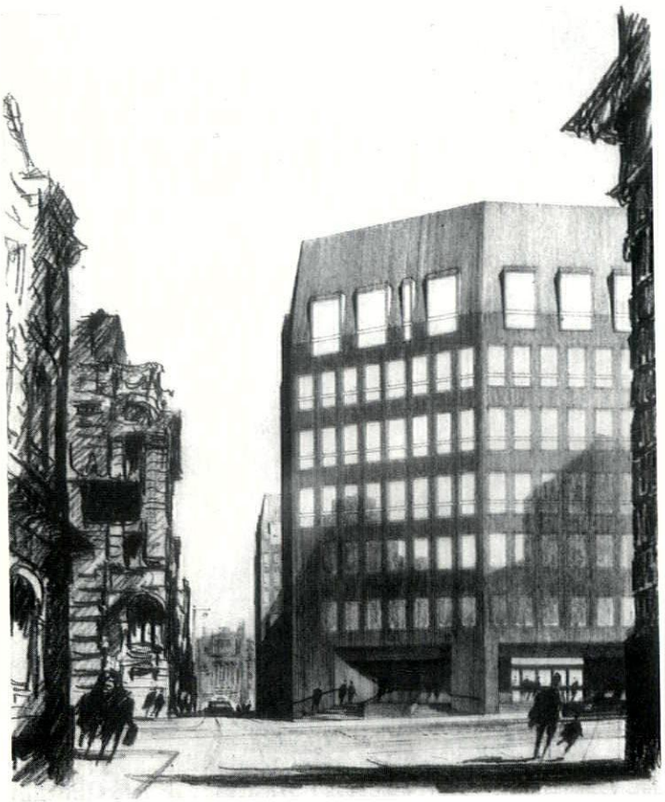
above, east elevation and typical section.
right, fifth f oor plan. below right, second floor

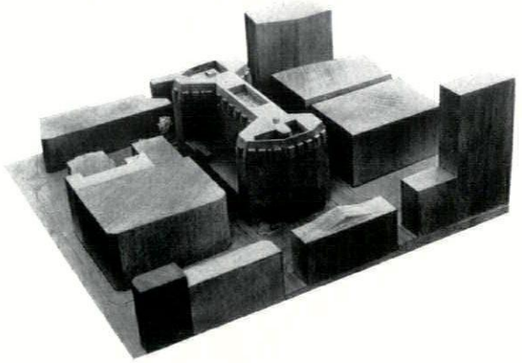




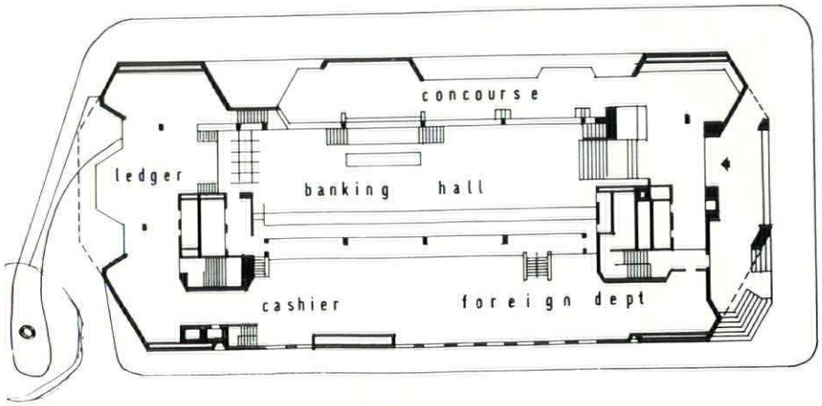


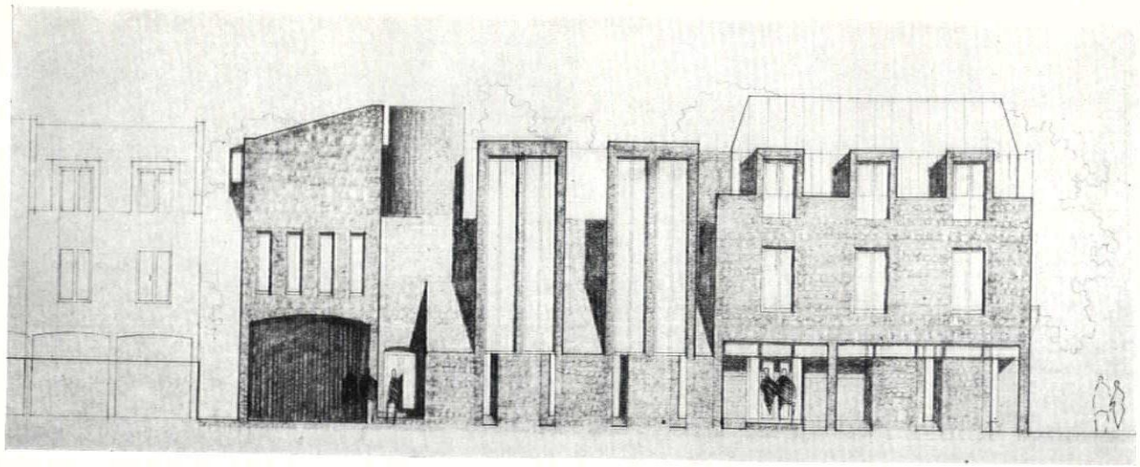
above, site plan. below, view of entrance front to King Street



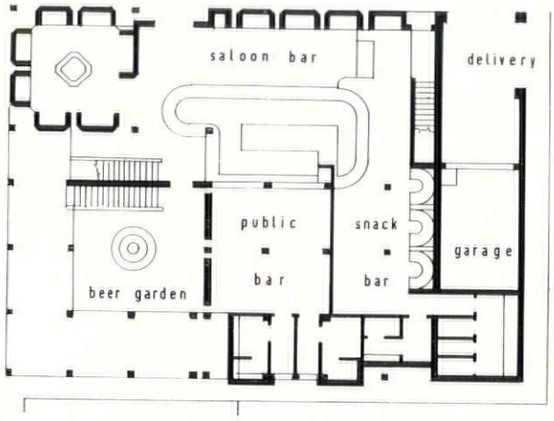


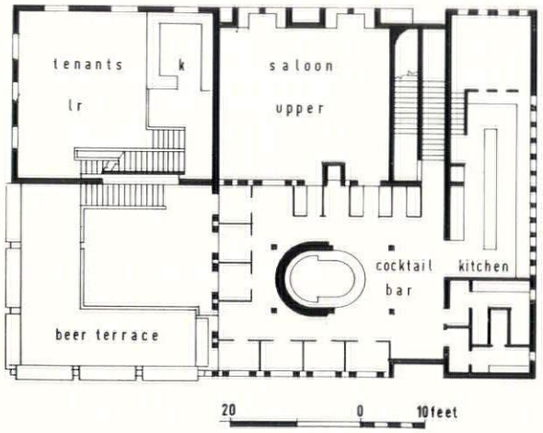
above, block model showing congested surroundings. below, ground floor





above, west elevation. below left, ground floor. below right, first floor



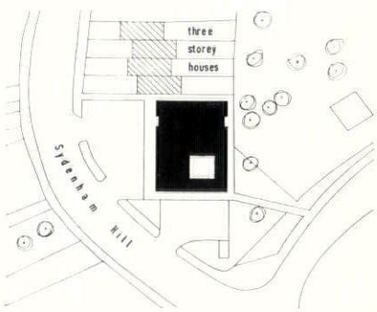


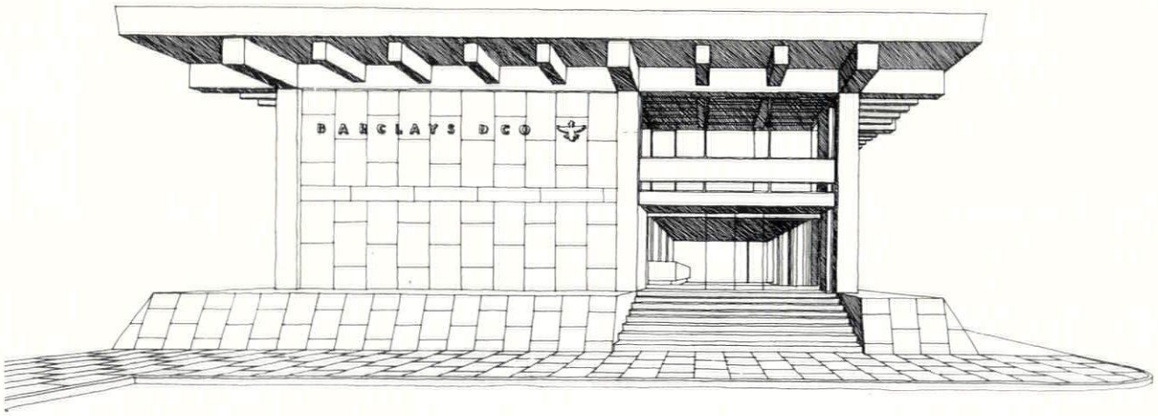
PUBLIC HOUSE, DULWICH, LONDON

Julian Keable and Partners

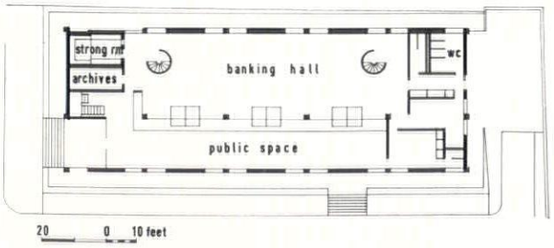
CLIENT: Young & Co. (The Ram Brewery), Wandsworth.
SITE: 0.53 acre including space for 4 private houses at rear, replacing existing 'Dulwich Woodhouse' on Sydenham Hill, SE26. Flat, well-treed corner site with distant views.
ACCOMMODATION: Public and private bars, lunch and dinner restaurant for 60 and cocktail bar, licensee's flat and staff quarters, parking for 22 cars.
STRUCTURE AND FINISHES: Loadbearing dark grey-brown brick r.c. floors, zinc on timber roof and mansard.
SERVICES: Gas- or oil-fired heating.
COST, £83,000.
BUILDING STARTS: Spring 1965.
Partner in charge, Julian Keable. Assistant, Christopher Harris. Quantity surveyor, Stanley Griffith & Partners.

site plan



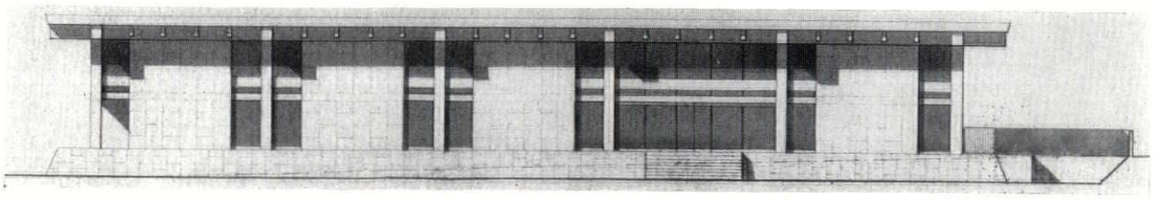


above, view of entrance front from west





above left, ground floor. above right, first floor. below, south elevation

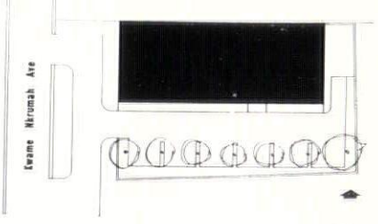


BANK, ACCRA, GHANA

Kenneth Scott Associates

CLIENT: Barclays Bank DCO.
SITE: Kwame Nkrumah Avenue next to Kwame Nkrumah Circle roundabout (future flyover). Slight slope, public park to north.
ACCOMMODATION: 6 tellers, 36 clerical and accounting staff, assistant manager and branch manager, whose office is accessible to public and has direct supervision of banking hall.
STRUCTURE: In situ r.c. frame with infill panels of unpolished travertine on exterior, ceramic mosaic on interior. Steel frame first floor with timber joists, fixed aluminium windows with sliding grilles. Podium faced with precast paving slabs, with stairways in polished terrazzo.
SERVICES: Fully air-conditioned through ducts in the roof spaces, fluorescent lighting.
COST: Approximately £60,000.
Partner in charge, Kenneth Scott. Quantity surveyor, Widnell & Trollope. Structural consultant, Ove Arup & Partners.

site plan

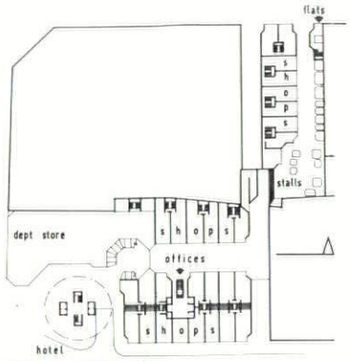


CENTRAL REDEVELOPMENT, BARCELONA

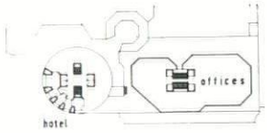
Ian Fraser and Associates

CLIENT: A consortium.
SITE: On Paseo de Gracia.
ACCOMMODATION: 200-bedroom hotel, 100,000 sq. ft. of offices, 40 flats, store, shops, market, parking.
STRUCTURE AND FINISHES: In situ r.c. with designed shuttering finish to all surfaces except precast sunbreakers.
SERVICES: Full air-conditioning.
COST: £3,060,000.

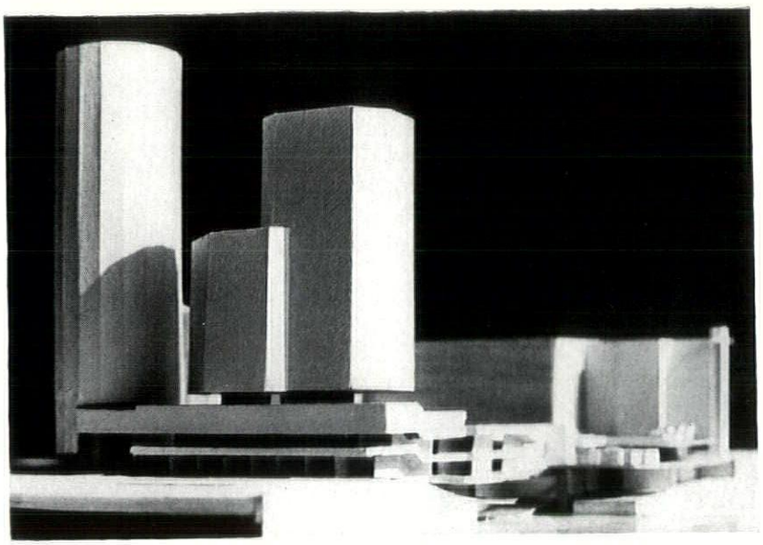
Partner in charge, Ian Fraser.
Associate in charge, R. W. Paterson.
Assistant, G. M. Murcutt.
Quantity surveyor, Leslie G. Dight.



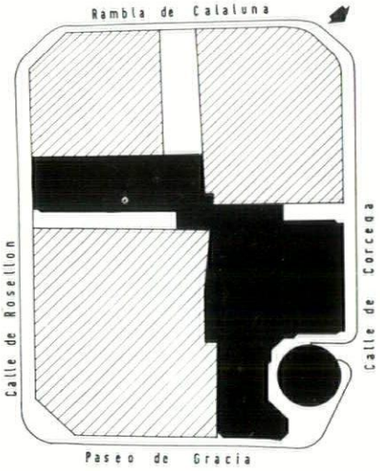
above, ground floor plan

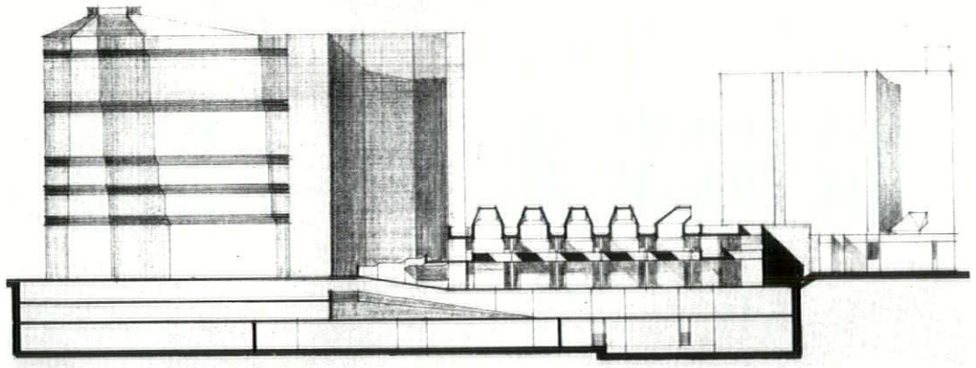


above, typical upper floor. left, site plan



right, general view of model from west





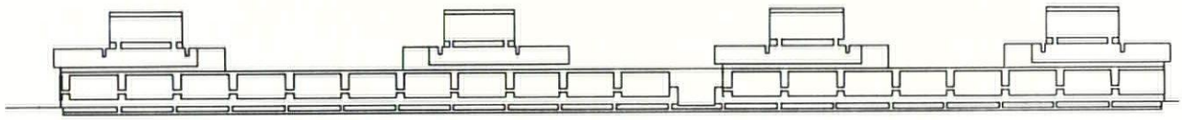
right, section through shopping precinct, as shown on ground floor plan

SHOPPING CENTRE, GREAT PARNDON, HARLOW

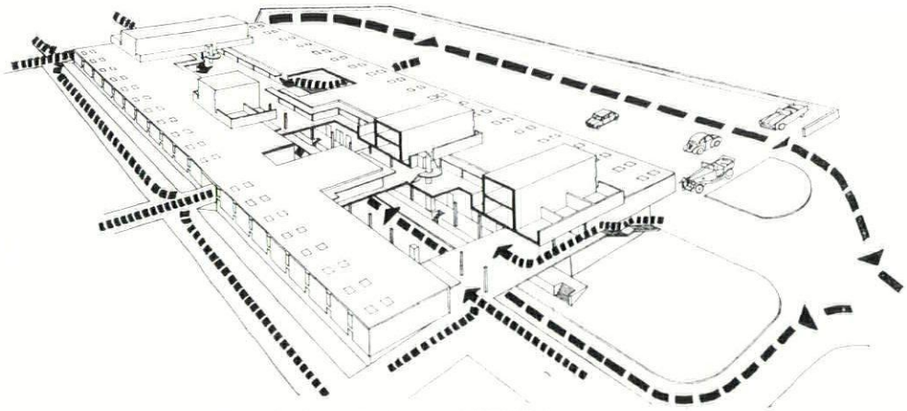
Frederick Gibberd, Architect-Planner. Victor Hamnett, Executive Architect

CLIENT: Harlow Development Corporation.
SITE: Staple Tye Shopping Centre.
ACCOMMODATION: 38 shops at pedestrian level with basement stores, 19 garages and car parking for shop tenants in basement, 4 blocks of 5 maisonettes at first floor level.
STRUCTURE AND FINISHES: Loadbearing cross walls for shops at 18 ft. centres. Maisonettes, r.c. frame.
COST: Phase I, £200,000. Phase II, £300,000.
BUILDING PERIOD: Phase I, September 1963–June 1966. Completion 1968.

Senior architect, A. J. McCowan.
Assistants, J. Bailey, D. J. French, G. E. Brimilcombe, C. J. Bromley, B. W. Pendergast.

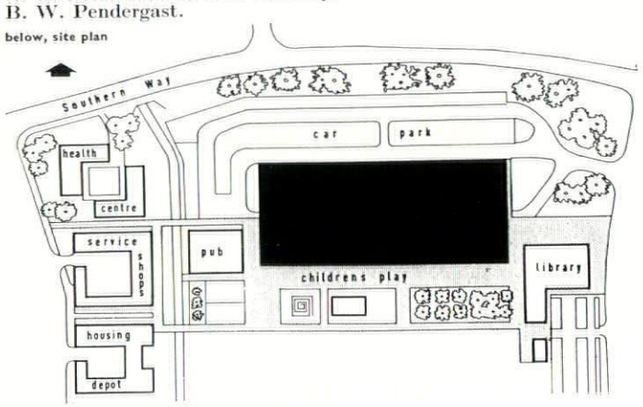


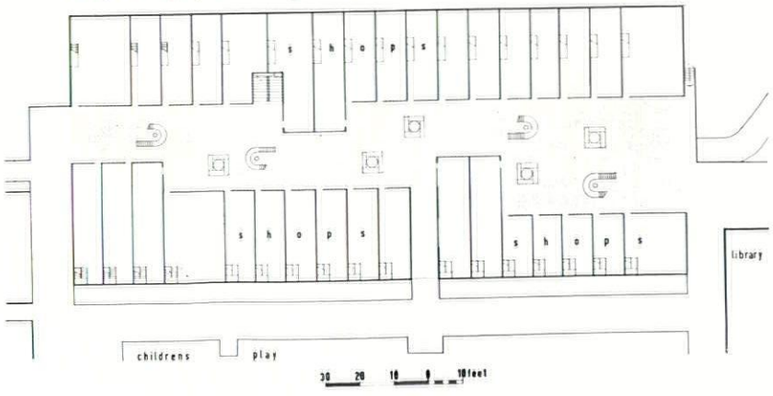
above, elevation



above, sectional perspective. below, ground floor plan

below, site plan





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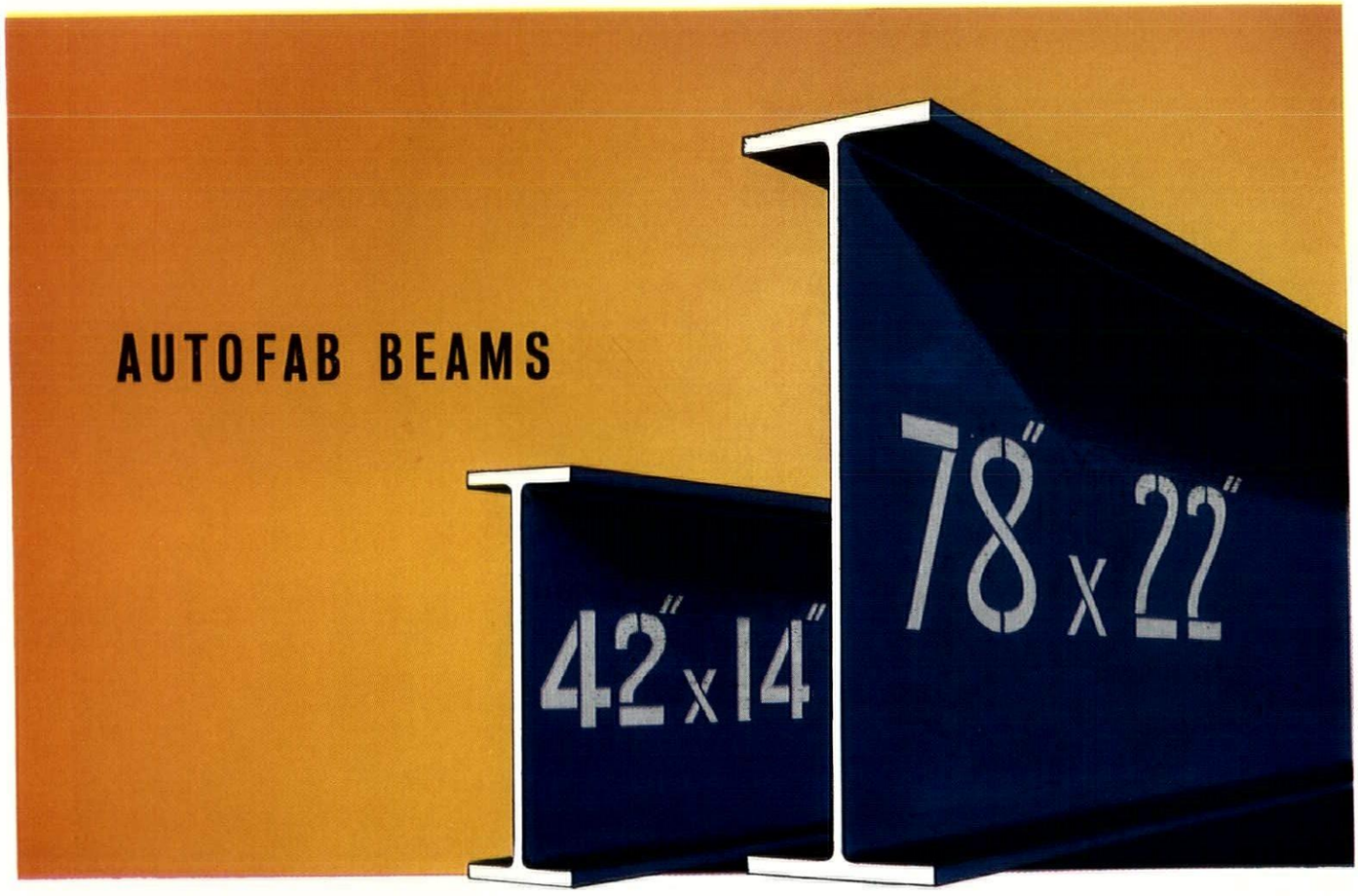
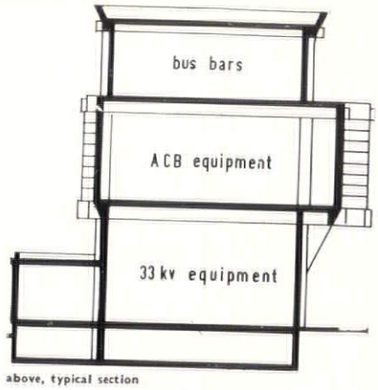
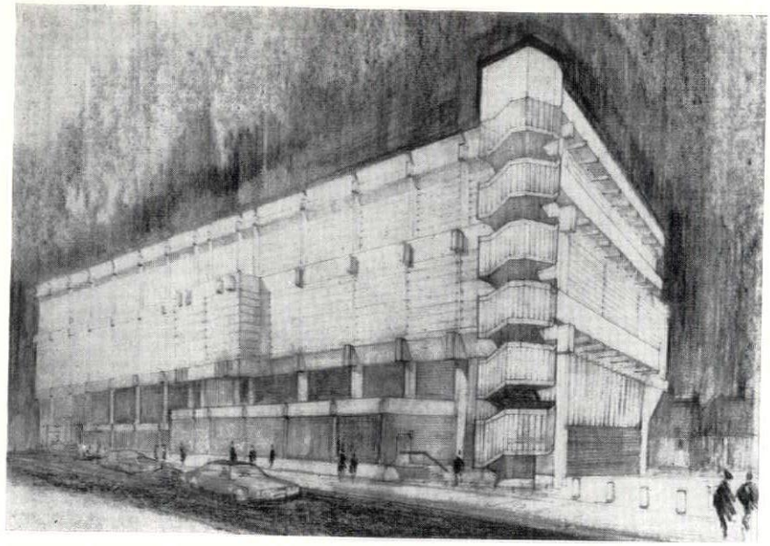


DORMAN LONG STEEL



above, typical section

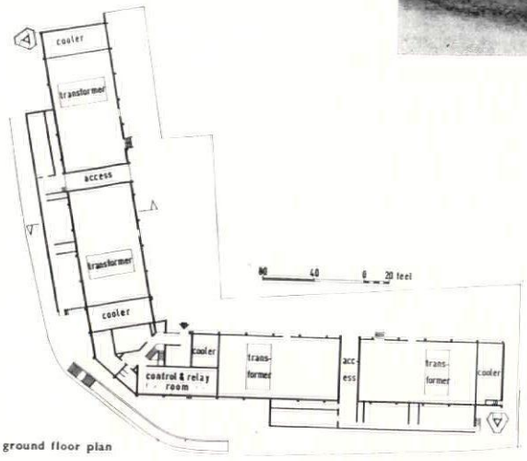


ELECTRICITY SUB-STATION, SHEFFIELD

Jefferson, Sheard and Partners

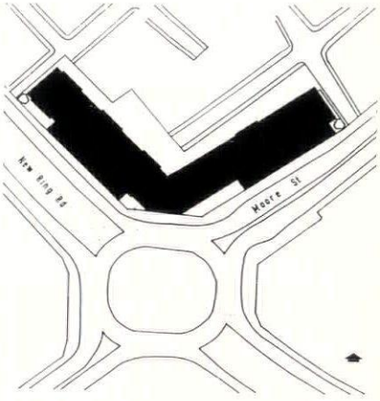
CLIENT: CEGB, North-Eastern Region.
SITE: In slum clearance area on proposed inner ring road.
ACCOMMODATION: Multi-level layout on a confined urban site. Transformers on ground floor, air blast switch gear on first floor, bus bars on top floor.
STRUCTURE AND FINISHES: High standards of sound insulation and structural strength required. In situ r.c. frame with exposed surfaces, blue engineering brick panels to ground floor, precast exposed aggregate cladding panels to upper floors, glazing behind in situ precast concrete mullions. Precast vertical louvres to areas with transformer cooling equipment. Much Profilit glazing.
COST: £500,000 (superstructure).
BUILDING PERIOD: May, 1965–May, 1967.

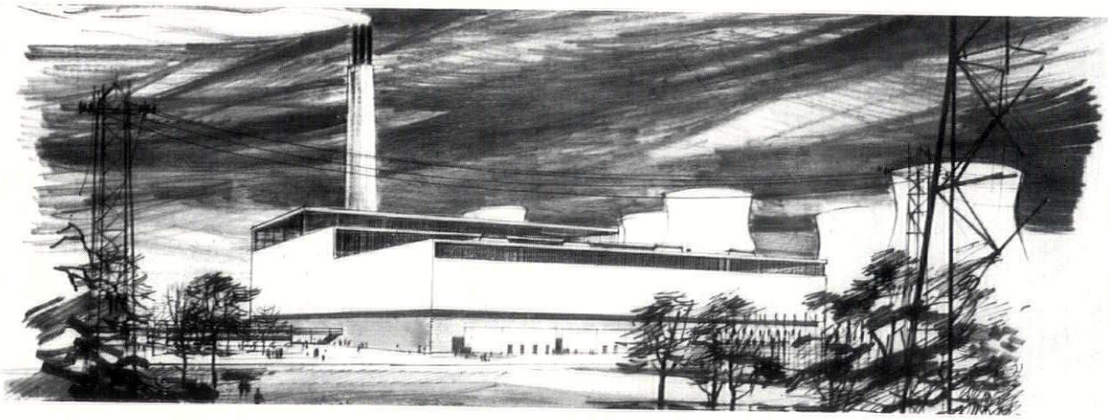
above, view of Moore Street elevation. below, model of elevation to inner ring road. below right, site plan



ground floor plan

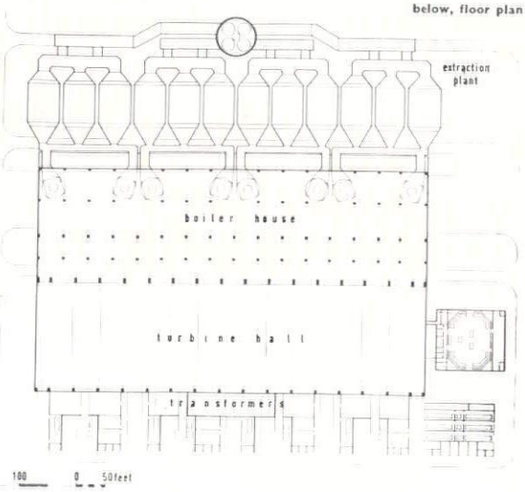




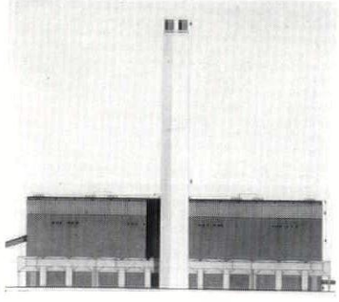


general view from south

below, floor plan



below, north elevation

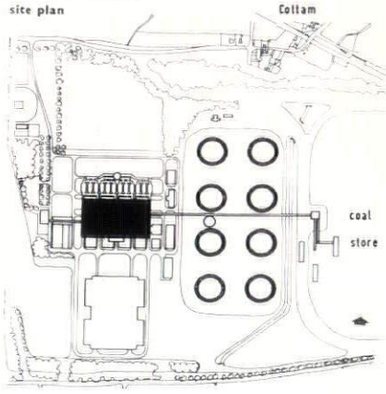


POWER STATION, COTTAM, NOTTS

Yorke, Rosenberg and Mardall. Balfour Beatty & Co. Ltd., Consulting Engineers

CLIENT: CEGB Midland Project Group.
SITE: 620 acres on left bank of River Trent, flat and broad plain.
ACCOMMODATION: 2,000 megawatt power station with turbine hall 700 ft. × 200 ft., boiler house 700 ft. × 204 ft., 8 cooling towers 290 ft. diameter at base, 375 ft. high.
STRUCTURE AND FINISHES: Power house, steel framed with concrete block plinth 40 ft. high, and painted aluminium cladding and glazing above. Other buildings, exposed steel frame with concrete block and glass infill panels.
SERVICES: Heating, underfloor electric. Plenum system of ventilation.
COST: £79,000,000.
BUILDING PERIOD: April 1964–October 1969.

site plan

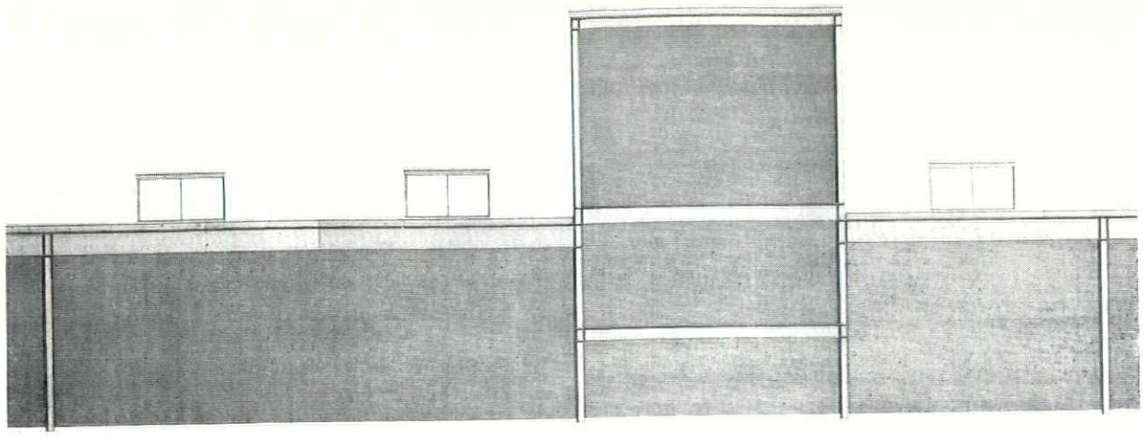


FACTORY, CRAMLINGTON, NORTHUMBERLAND

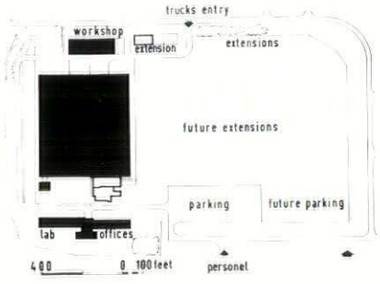
Chapman Taylor Partners

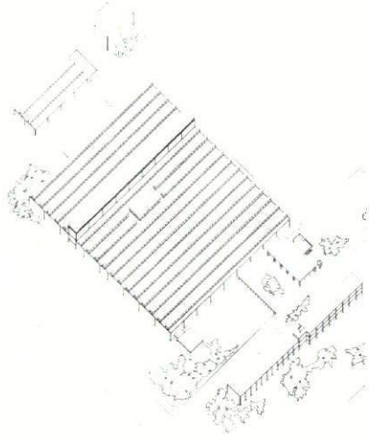
CLIENT: Commercial Plastics Ltd.
SITE: 48.1 acres of sloping ground in industrial estate of new town.
ACCOMMODATION: 450,000 sq. ft. (first phase 250,000 sq. ft.) for production of plastic sheeting and for research.
STRUCTURE AND FINISHES: Exposed steel, painted, with brick panels.
SERVICES: Coal-fired boiler plant, special plant ventilation.
COST: £2,000,000.
BUILDING PERIOD: November 1964–November 1966.

Partner in charge, M. Gordon. Assistants, H. Hartwell, C. O. R. Evans, A. A. Gale, N. S. Brown.

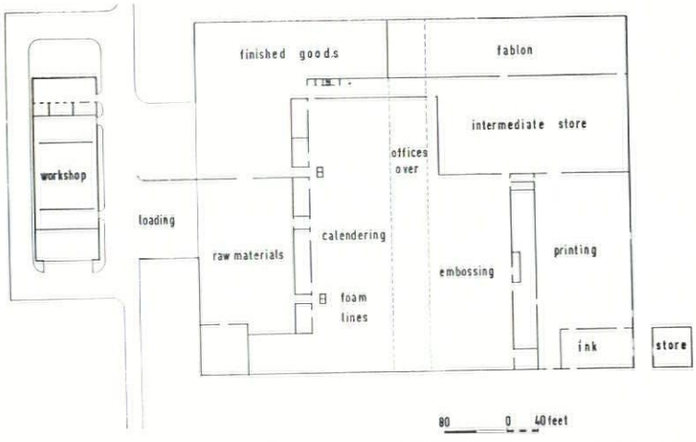


above, production area, elevation. below, floor plan below left, axonometric of site





site plan

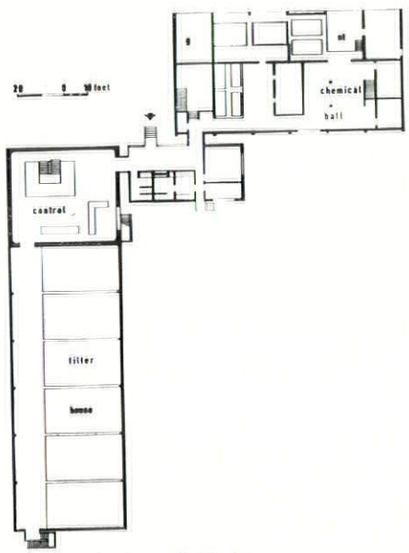


WATER WORKS, PATESHILL, SCOTLAND

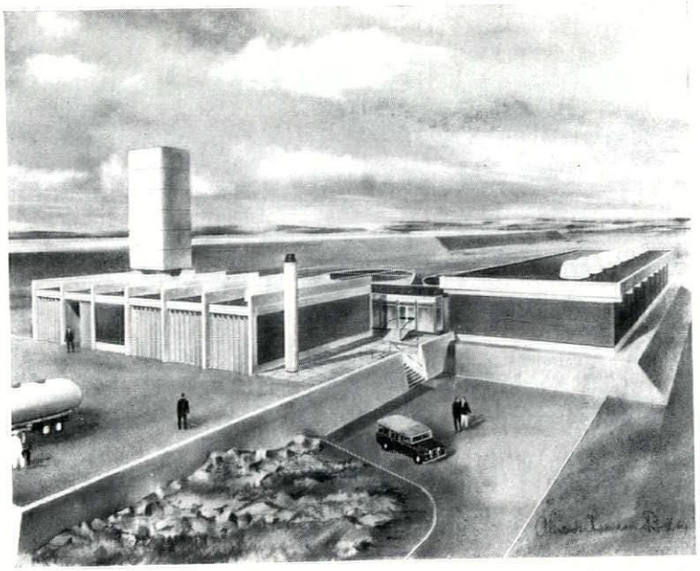
Munce and Kennedy in association with Robert H. Cuthbertson and Associates

CLIENT: Westlothian Water Board.
SITE: Extremely exposed open moorland, 950 ft. above sea level.
ACCOMMODATION: Water treatment works, chemical hall, entrance, filter hall. Filter hall also houses main control room and switch room.
STRUCTURE AND FINISHES: R.c. substructure and frame, cavity wall construction with concrete block inner leaf and engineering brick outer leaf. Precast concrete roof deck and fascia.
SERVICES: 6 ft. wide duct from chemical hall to filter hall.
COST: £65,000 approx.
BUILDING STARTS: Mid-1965.

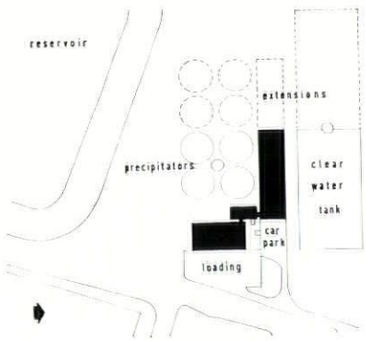
Partner in charge, L. A. Roche. Associate in charge, L. Cassidy. Assistant, B. N. O'Doherty.

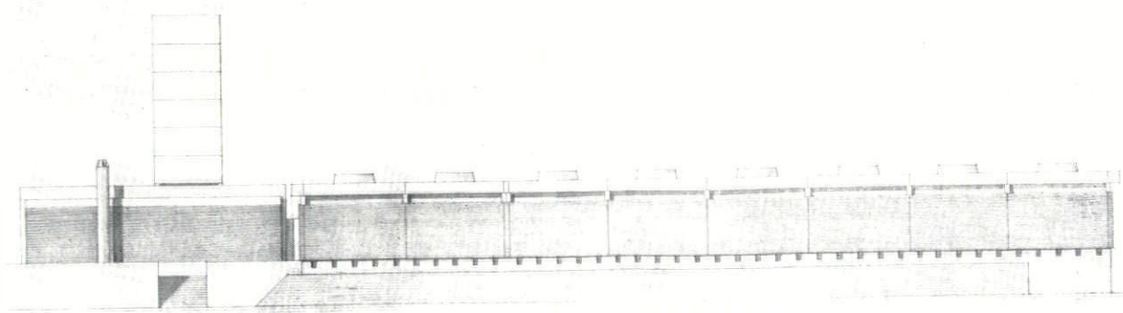


above, floor plan. below left, site plan. below right, elevation



above, general view







Ty Celyn School, Cardiff, is faced with 3,200 sq. ft. of Curran panels. Architect: John Dryburgh, A.R.I.B.A., A.R.I.C.S., A.M.P.T.I.

100% PROOF

Curran panels will not fade or stain. They will not corrode or grow dull.

Vitreous enamel (true glass) is one of the most durable substances known to man. Curran panels are vitreous enamel fused on to steel at a temperature of 860° Centigrade. The surface cannot be stained or corroded, and colours fired into vitreous enamel three thousand years ago are as bright now as they were then. What better proof!

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There are none of the natural colour limitations of other materials such as stone, marble or concrete. You can choose from the 101 colours of the British Standard 2660 range, or special colours can be made up to suit your requirements. Design as delicately or colourfully as you wish; the Ty Celyn School is a particularly good example of the enterprising use of colour to suit a location. Curran vitreous enamelled panels can be made in single facing or cladding sheets, plain or in a variety of shapes. For in-filling curtain walling, they can be laminated with facing backing sheets with insulating cores of varying materials and thicknesses to provide the U. value specified. Curran panels are of the highest quality, and are strictly competitive in terms of price and delivery dates.

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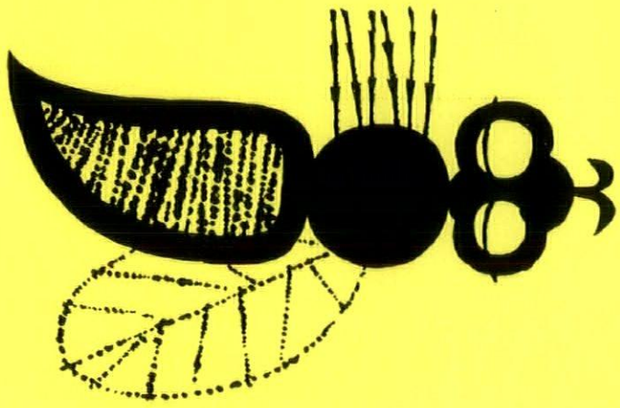

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1. *100% effective shortly after painting*
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4. *Costs no extra*

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PREVIEW PUBLIC

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77	Community Centre, Newcastle upon Tyne	Napper, Errington, Lee, Collerton, Barnett, Allott
78	Swimming Pool, Worthing, Sussex	Architects' Design Group
78	Swimming Pool, Sheffield	W. L. Clunie, City Architect
79	Public Offices, Windsor	Andrew Renton and Associates
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80	Hospital, Kuala Lumpur, Malaya	James Cubitt and Partners
81	Hospital, Northwick Park, Middlesex	Llewelyn-Davies, Weeks and Partners
82	Church, Clifton, Bristol	Robert Potter and Richard Hare
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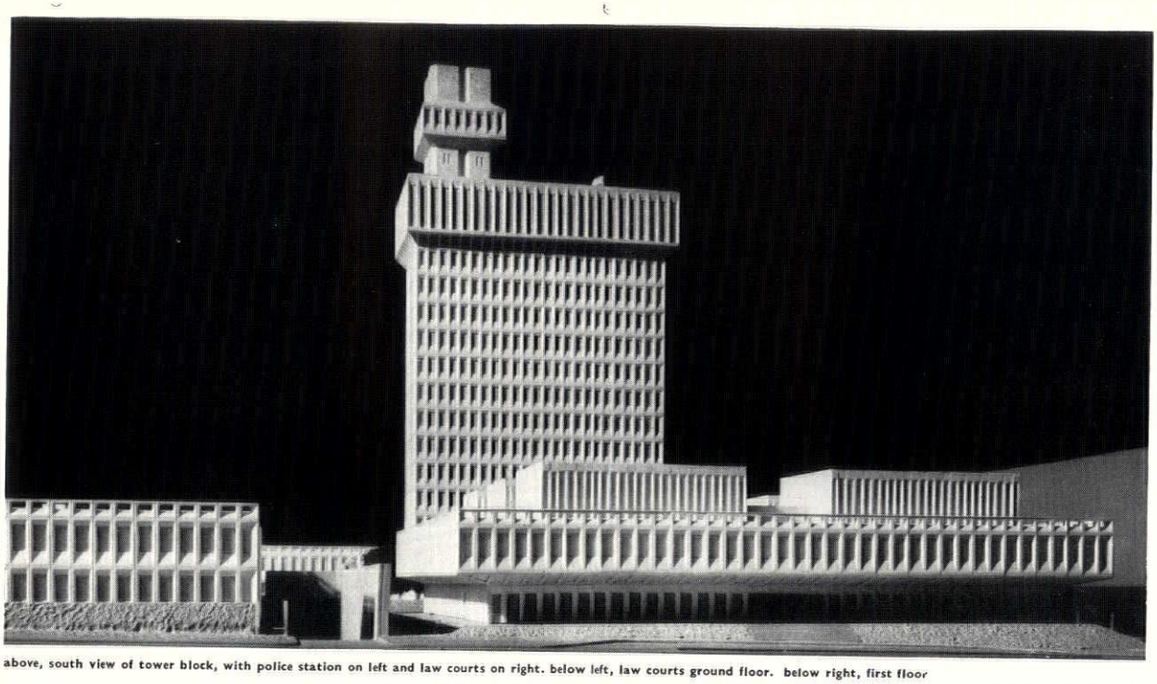
84	Missionary Society Headquarters, London	Ansell and Bailey
84	Seamen's Hostel, Salford, Lancs.	Desmond Williams and Associates
86	Trade Union Headquarters, Ealing, Middlesex	Eric Lyons and Partners
88	Training Centre, Aldershot, Hants.	Building Design Partnership
88	Barracks, Aldershot, Hants.	Building Design Partnership
90	Maintenance Depot, Paddington, London	Bicknell and Hamilton

One of the curious quirks of this year's 'Preview' is that the new techniques of industrialized building are perhaps best shown in the traditionally 'one-off' field of public buildings. It is evidently being realized by clients as well as architects that the 'ideal' conditions of factory production are not only economic for large-scale orders but also produce the sort of perfection in finish that is demanded for prestige office blocks and other places where formal magnificence is appropriate. Frederick Gibberd's civic centre at Doncaster, even though some may criticize its echoes of the skyline of the Palazzo Vecchio, is likely to provide a high standard of environment, besides establishing a repetitive civic order on the grand scale. It must be hoped that this order will be carried through into the adjoining new shopping precinct, for which Mr. Gibberd is consultant. It is a pity that this civic centre is to be crushed by the equally tall, broader, and far less beautiful slab block which the Minister of Housing has allowed the National Coal Board to build in defiance of the local authority.

A similar repetitive order established by precast units will be the unifying influence in the vast county offices, municipal offices and police headquarters scheme for Paisley, won in competition a year ago by three young architects, Hutchison, Locke and Monk. Phase I, the police building, is particularly well planned and intelligently linked to the welfare departments of the county council. Not merely the cladding units but the entire structure will be precast in Andrew Renton's block of offices for Windsor borough council, which develops from his earlier, less completely industrialized building for the Port of London Authority at St. Katherine's Dock (to be illustrated in the March AR). A feature of Renton's building is the flexibility of position of the mullions allowed by the structure. This is repeated at Llewelyn-Davies, Weeks and Partners' vast hospital at Northwick Park, in which flexibility extends to the 'indeterminate' plan around a central pedestrian spine. Linear planning is particularly suitable for hospitals, as is shown also by James Cubitt and Partners' strongly articulated layout for the Federal Teaching Hospital at Kuala Lumpur. A firm control over different types of traffic, combined with a uniform environment composed in the Intergrid industrialized system, can be seen in Building Design Partnership's two projects for Aldershot.

The conservative professions of the Law and the Church supply some of the more interesting projects this year. Law courts by their nature, being spaces twice as high as the ancillary offices surrounding them, allow boldly expressed sectional treatment. Tom Hancock's skyscraper for the Joint Courts at Reading is surprisingly economical in its circulation space. It will overshadow both his own county hall and the adjoining abbey ruins (one remembers with surprise that the virtue singled out in Hancock's county hall design by the assessor, Frederick Gibberd, was that it *kept low* in the face of the historic surroundings). Gibberd himself offers generous, centrally planned circulation for his Doncaster Law Courts. At Paisley the magistrates courts form an independent pavilion at the foot of the police offices. Among the churches, Robert Potter's All Saints, Clifton, is a dramatic and liturgically sound solution to the problem of linking various remains of G. E. Street's great High Victorian church (it is a thousand pities, though, that more of the surviving shell of this was not used). Denys Hinton's South Yardley church, deceptively simple in outward appearance, is a development from his St. George's, Rugby, of 1962–63. Finally there are encouraging prospects on the ideological 'fringe': a Roman Catholic seamen's hostel at Liverpool reflecting enlightened welfare standards in its characteristic hotel (rather than hostel) layout, one of the oldest missionary societies erecting a surprisingly strong and forthright headquarters near to the Old Vic, and one of the more progressive trade unions employing Eric Lyons for a decentralized headquarters at Ealing.

Two swimming baths show a surprising similarity in approach, though the Sheaf Valley at Sheffield and the coast at Worthing could hardly be more different as locations. This strong, plastic, concrete frame aesthetic is as much the establishment style of the mid-'sixties as curtain-walling was of the mid-'fifties. In Bicknell and Hamilton's maintenance depot at Paddington, however, a new approach can be seen corresponding to the 'traffic architecture' ideas of the Buchanan Report and to Viscount Esher's plea at last year's RIBA conference that architecture seen at 60 m.p.h. need not be the same as architecture seen at walking pace. The Paddington depot is hard up against the proposed Harrow Road motorway; here the Futurist aesthetic of fifty years ago has found an appropriate fulfilment.



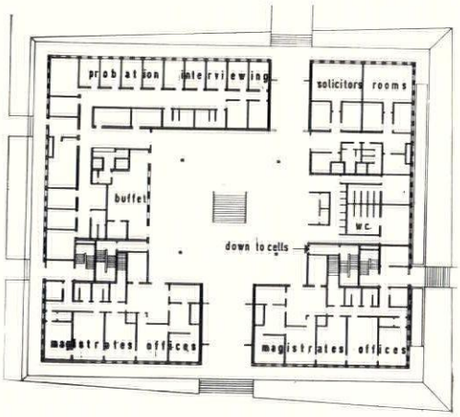
above, south view of tower block, with police station on left and law courts on right. below left, law courts ground floor. below right, first floor

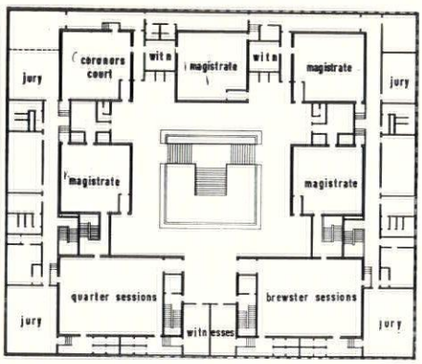
CIVIC CENTRE, DONCASTER

Frederick Gibberd

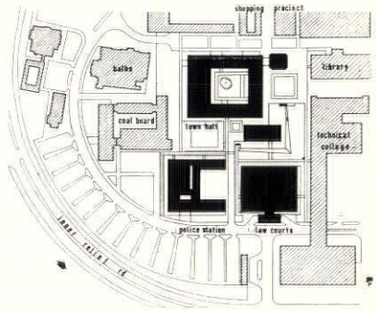
CLIENT: Doncaster Borough Council.
SITE: Glasgow Paddocks, 600 ft. × 440 ft. sloping gently east.
ACCOMMODATION: Town Hall 136,000 sq. ft., Police Headquarters 47,000 sq. ft., Law Courts 49,000 sq. ft.
STRUCTURE AND FINISHES: Precast concrete units throughout, with polished aggregate finish. In situ r.c. for parts of buildings.
SERVICES: Ceiling heating coils, supplied from adjoining National Coal Board HQ. Air-conditioning for 2 large courts, mechanical ventilation for 5 small courts, council chamber, banqueting suite, etc.
COST: Town Hall £1,050,000, Police HQ £376,755, Law Courts £532,422.
BUILDING STARTS: Police HQ and Law Courts, mid-1965. Town Hall late 1966.

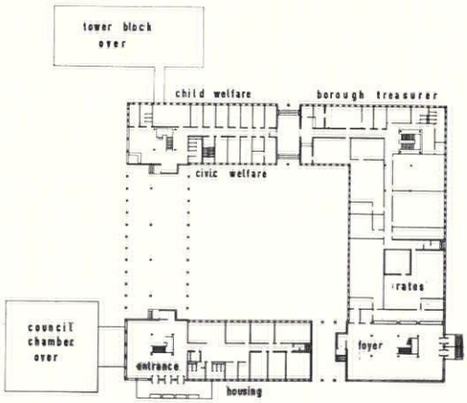
Partner in charge, A. E. Kelsey. Associate in charge, P. J. Hawker. Quantity surveyor, John Watson & Carter. Structural consultant, Harris & Sutherland. Mechanical consultant, A. J. Smith. Electrical consultant, A. J. Smith.

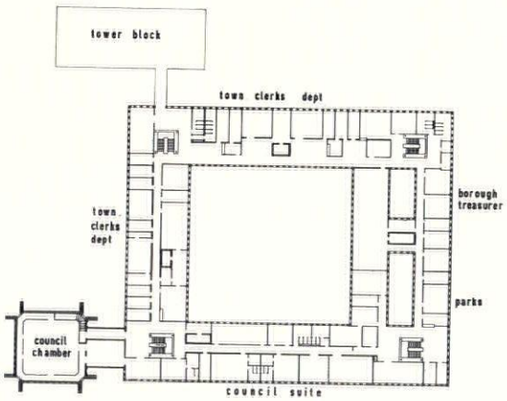




site plan

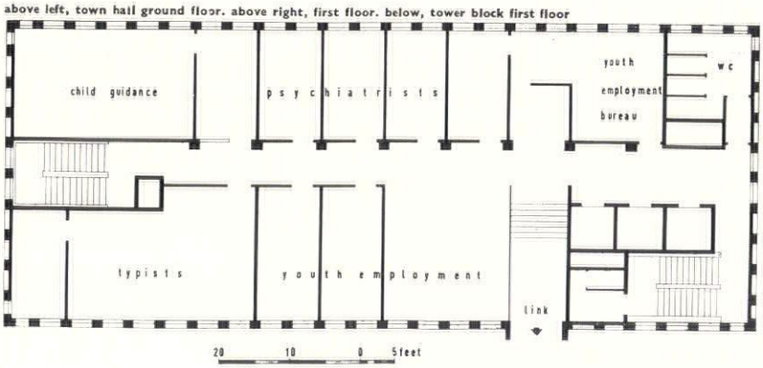




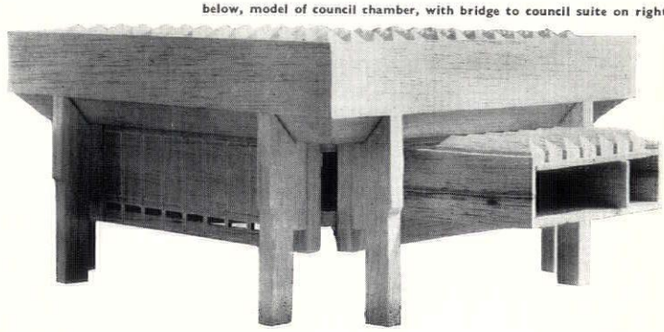




above left, town hall ground floor. above right, first floor. below, tower block first floor



below, model of council chamber, with bridge to council suite on right

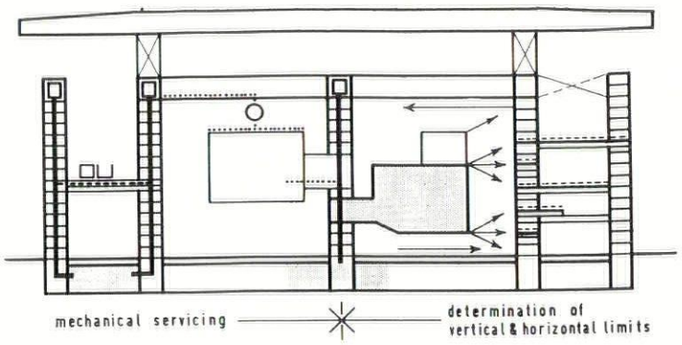


FUN PALACE PROJECT

Cedric Price

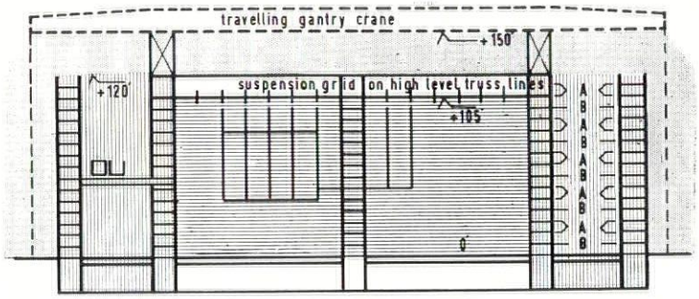
(See frontispiece, page 8)

CLIENT: Fun Palace Foundation.
SITE: 23 acres within Civic Trust's plan for Lea Valley. Derelict land.
ACCOMMODATION: Flexible education and entertainment centre. Large volume enclosures include theatres, cinema, rally and exhibition space, auditoria and general assembly areas. Small volume enclosures include restaurants, workshops, classrooms and exhibition area.
STRUCTURE AND FINISHES: Open framework of towers and high-level trusses (10 years' life) providing support and suspension points for short life enclosures. Protected steel framework and gantry crane, r.c. basement sub-structure. Steel, aluminium and plastic panels and unit enclosures.
SERVICES: Electricity, water, conditioned air, self-contained sewage plant, t.v. and radio (closed circuit, reception and transmission).
COST: Phase I, £2½–3 million.
BUILDING PERIOD: 18 months–2 years.
Chief assistant, Stephen Mullin. Quantity surveyor, Douglas Smith & Ruddle. Structural consultant, Felix J. Samuely & Partners. Special consultant on cybernetics, Gordon Pask, Systems Research Ltd.



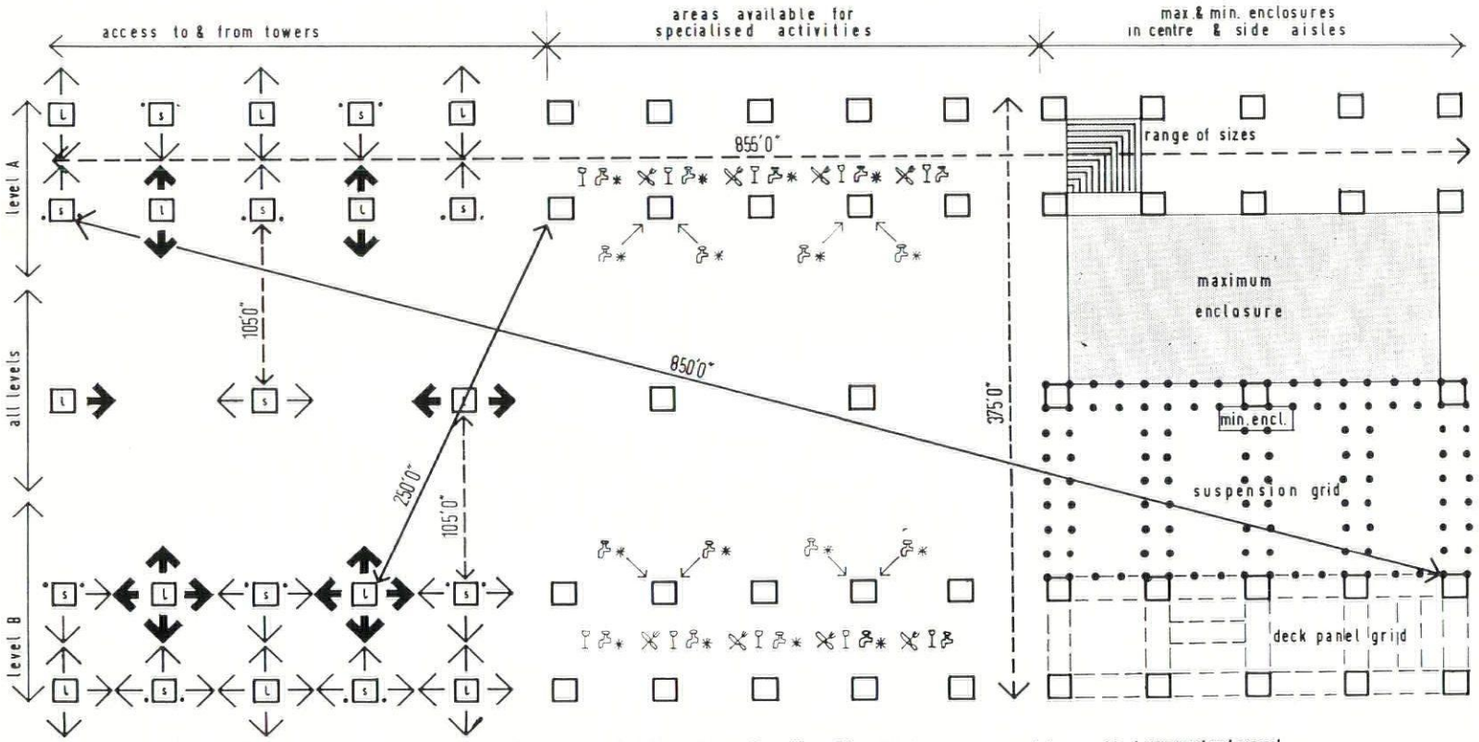
section, showing vertical size determination and mechanical servicing

key
piped, ducted and cabled service leads, permanent
services booster
'inbuilt' link temporary
'packaged' plant, temporary
flexible links, temporary
service plant



section, showing crane handling and major floor levels

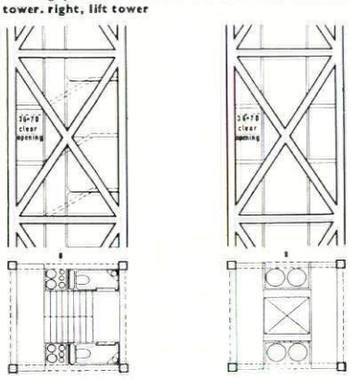
key
unloading, high level storage and interchange zone
total control zone, large suspended units
partial control zone, beams and slabs



above, typical plan, showing services and movement. From left to right, access to and from towers, areas available for specialized activities and maximum and minimum enclosures in centre and side aisles. Different levels in the side-aisles are shown

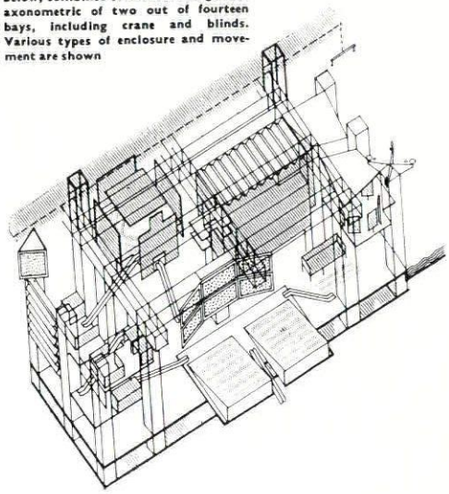
key
access to wc's in tower
lifts
stairs
ground-level walling
general access
high-level travelator or walking
access by wheelchair possible
washing
changing and wc's
eating
drinking

below, plans and part elevations of steel-framed towers, showing points of entrance and exit. left, staircase tower. right, lift tower



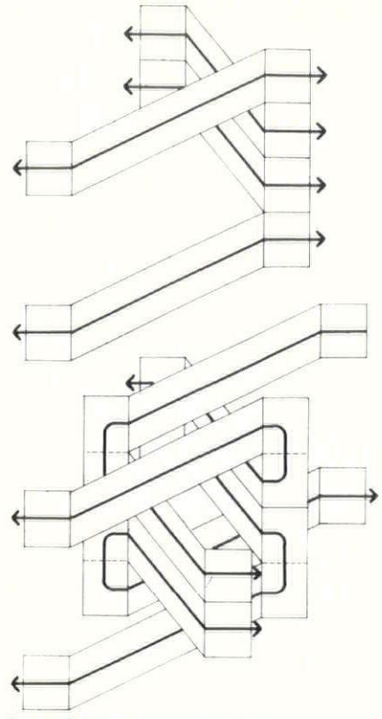
The aim throughout is that there should be the maximum opportunity for random routing and selection of activities by individuals. Major routes will be altered more frequently than the enclosures. The small-scale enclosures are built up from lightweight units on temporary structural decks which provide both support service leads and inter-tower bracing. The large-scale enclosures are built up horizontally and vertically of standard panels suspended from the grid

below, combined structural and general axonometric of two out of fourteen bays, including crane and blinds. Various types of enclosure and movement are shown



HORIZONTAL ACCESS centre aisles & centre aisles to side aisles			
	105'-0" 90'-0" travelators		
	max rise	max horizontal distance	max time
horizontal	-	105'-0"	50 secs
inclined	22'-6"	90'-0"	50 sec
HORIZONTAL ACCESS side aisles & side aisles to centre aisles			
	15'-0" 7'-6" dog leg stairs		15'-0" 15'-0" straight up stairs
max rise	15'-0"		15'-0"
min "	7'-6"		7'-6"
max time	12 steps = 2 [1 flight]		12 steps = 2 [1 flight]
min "	12 steps [1 flight]		12 steps [1 flight]

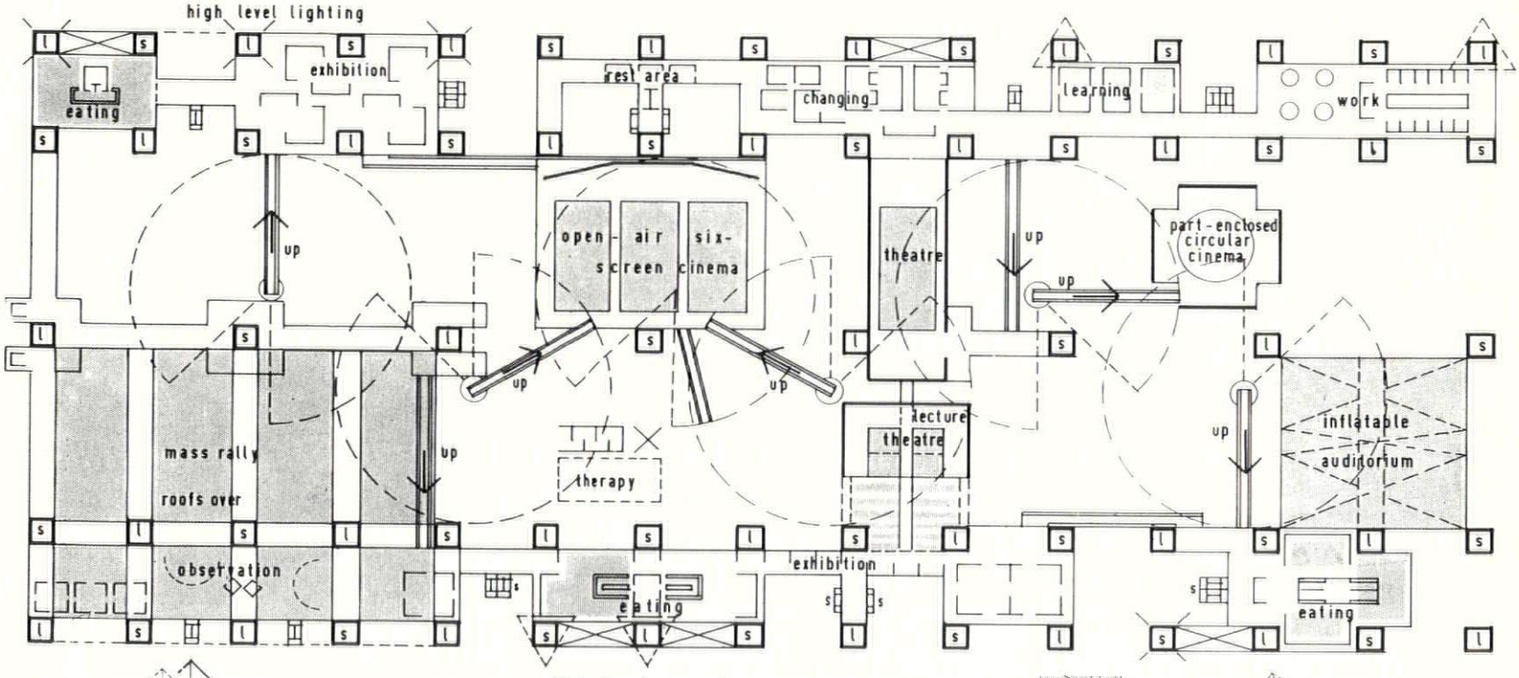
above, diagram of horizontal access



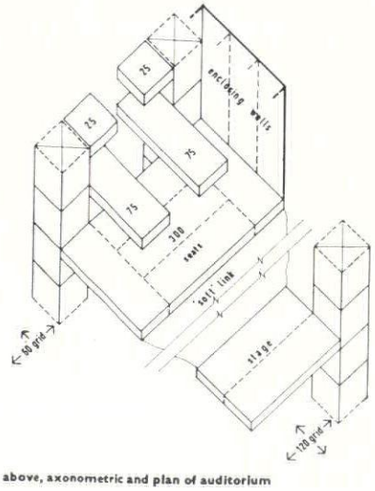
above, typical combinations of stair units

VERTICAL ACCESS centre aisles				
	lifts	emergency stairs	80'-0" escalators	
max. distance	90'-0"	105'-0"	45'-0" [up]	80'-0" [along]
min "	15'-0"	7'-6"	—	
max time	30 sec	9 steps = 28 [1/2 flight]	1 min 5 sec [slow]	75 sec [fast]
min "	5 sec	9 steps = 2 [1/2 flight]	-	-
VERTICAL ACCESS side aisles				
	lifts	emergency stairs		
max distance	90'-0"	105'-0"		
min "	15'-0"	7'-6"		
max time	30 sec	9 steps = 28 [1/2 flight]		
min "	5 sec	9 steps = 2 [1/2 flight]		

above, diagram of vertical access

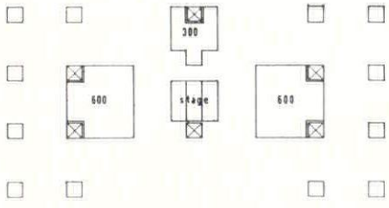


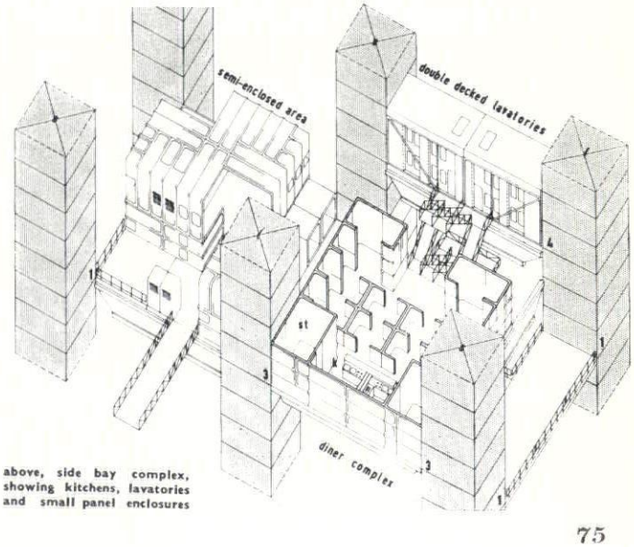
above, typical plan, showing enclosures and organization. It includes cinemas (open-air and part-enclosed), inflatable auditorium, mass rally hall, theatre, exhibition areas, eating, changing and learning areas



above, axonometric and plan of auditorium

below, plan, showing grouping of auditoria for 1,500 people



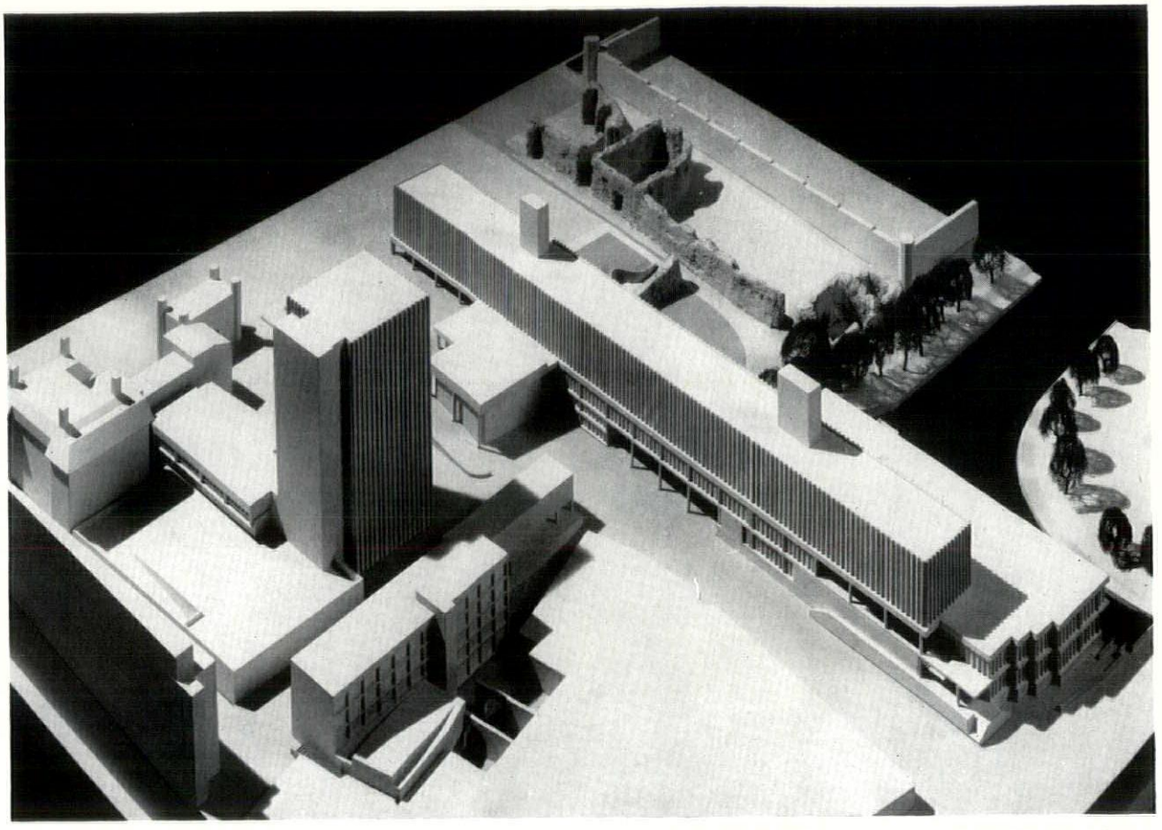


above, side bay complex, showing kitchens, lavatories and small panel enclosures

JOINT COURTS, READING, BERKS

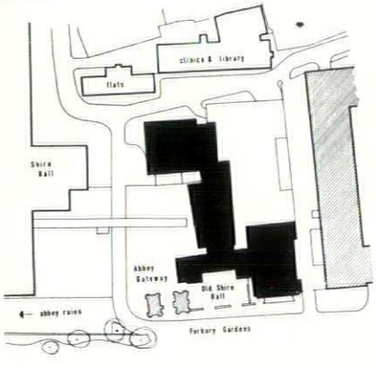
Tom Hancock

CLIENT: Berkshire County Council and Reading Borough Council.
SITE: 1 acre of Abbey Precinct next to existing Shire Hall and Abbey Gatehouse on north, new Shire Hall and Abbey ruins on east, Abbey Square on south, new Prudential Building on west.
ACCOMMODATION: Tower block with 2 assize courts and 4 magistrates' courts, line block with main entrance and offices, existing Shire Hall to contain 2 adjoining courts and probation services. Parking for 229 cars on three lower levels.
STRUCTURE AND FINISHES: Tower block, smooth precast concrete perimeter mullions with in situ internal walls and slabs. Lift shaft clad with silver grey Ibstock bricks. All courts panelled in cedar. Link block, in situ r.c. columns and beams with precast floor slabs.
SERVICES: 5 high speed lifts in tower block, all courts air conditioned, remaining areas heated by incremental conditioners.
COST: £1,014,100.
BUILDING PERIOD: Early 1965–1968.

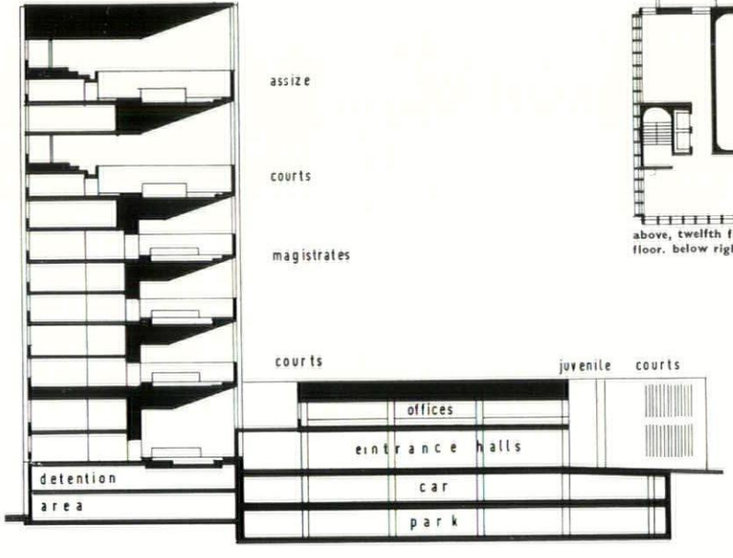


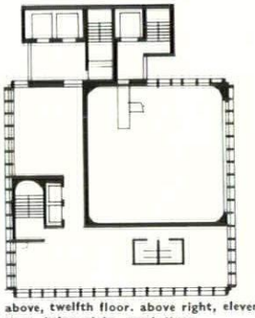
model from south-west, with joint courts on left, shire hall and abbey ruins on right

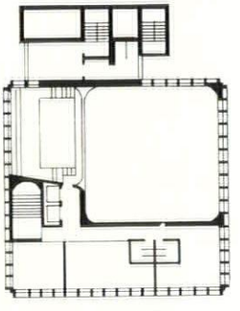
site plan



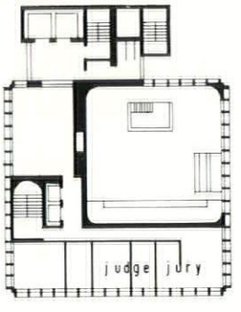
below, north-south section



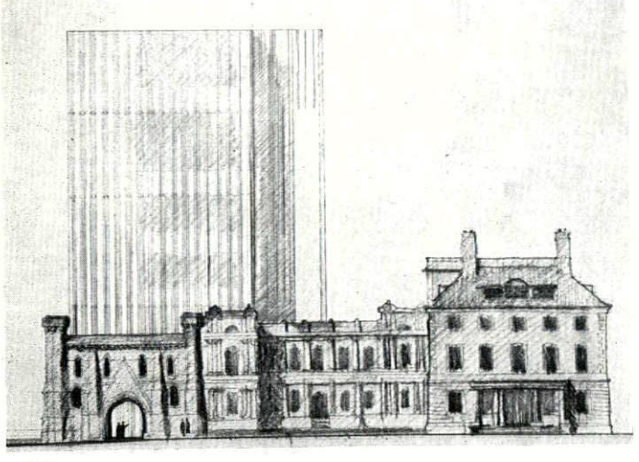


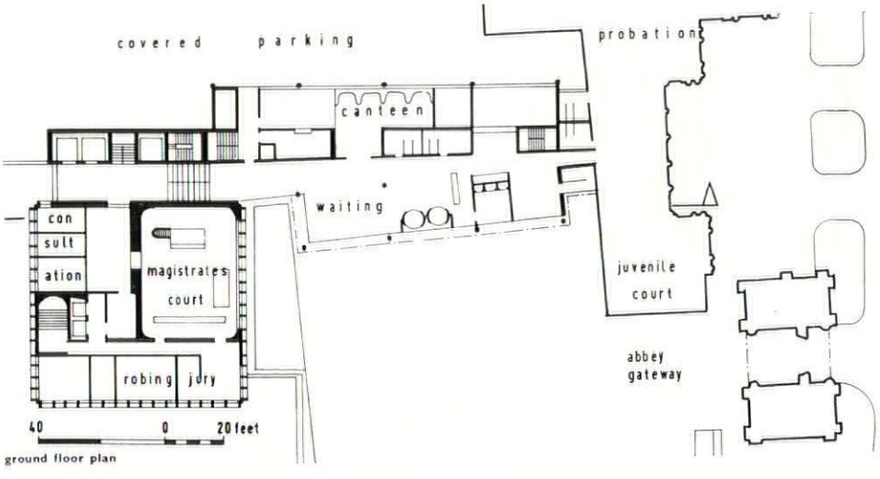


above, twelfth floor. above right, eleventh floor. below right, tenth floor

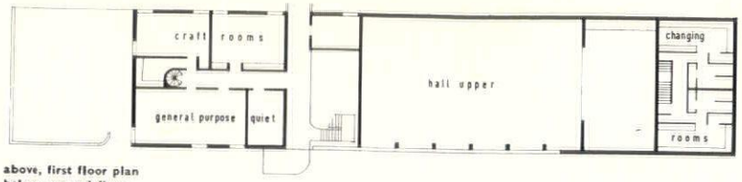


below, north elevation, with abbey gateway and old shire hall in foreground

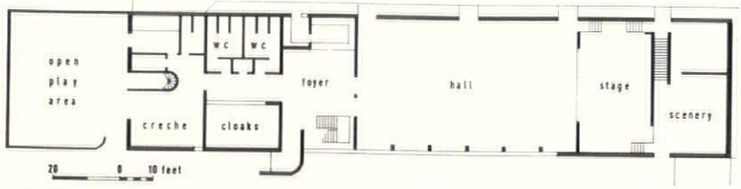


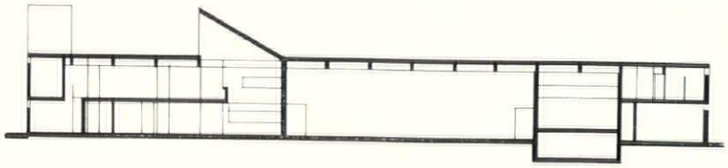


ground floor plan

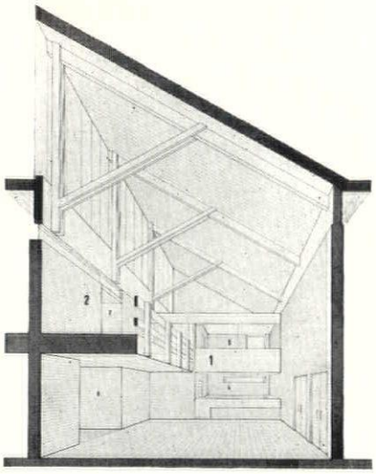


above, first floor plan
below, ground floor





below, general view from south



above, interior perspective. below left, long section

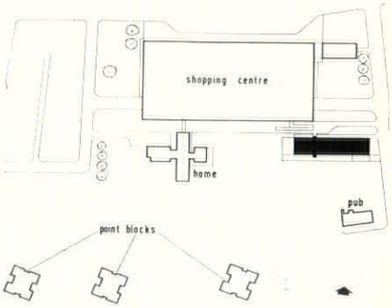
COMMUNITY CENTRE, NEWCASTLE UPON TYNE

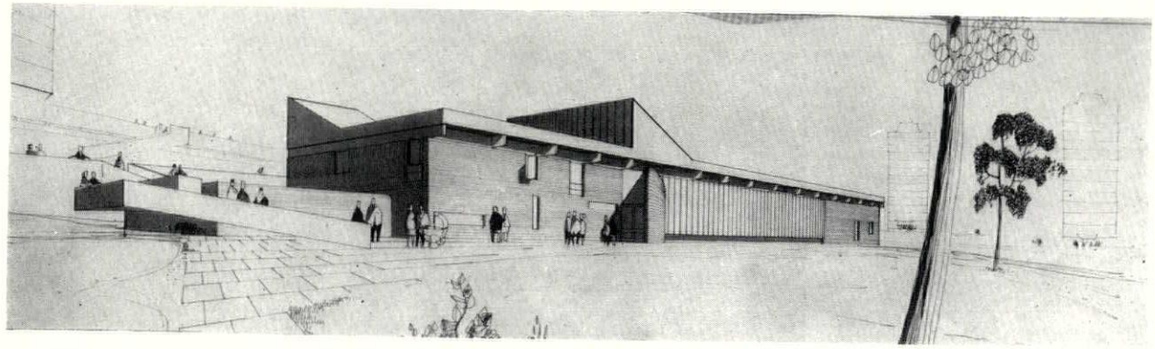
Napper, Errington, Lee, Collerton, Barnett, Allott

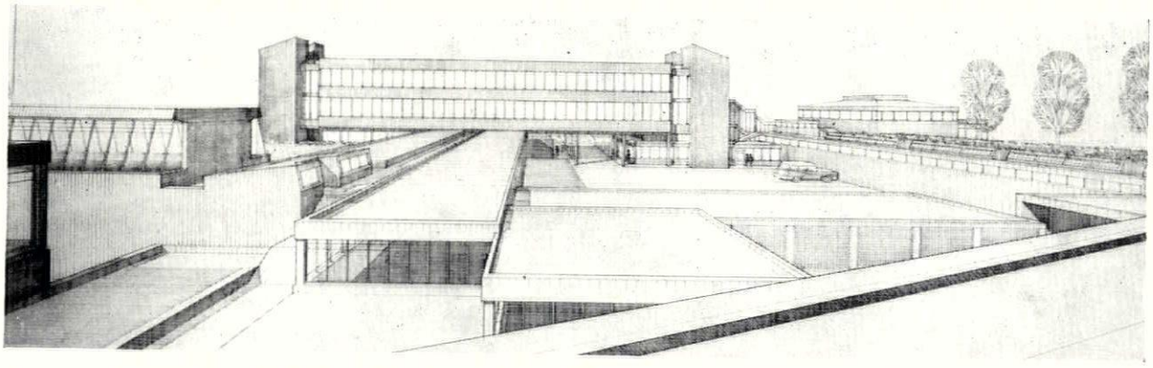
CLIENT: F. W. Chapman Trust.
SITE: Steep slope from north with link at first floor level to pedestrian terrace of shopping precinct.
ACCOMMODATION: Foyer/common room with coffee bar, cloaks and lavatories for 300, creche with lavatories, pram and toy store, multi-purpose hall seating 300, stage, changing rooms, 2 workshops, 2 craft rooms.
STRUCTURE AND FINISHES: Loadbearing brickwork with laminated timber roof beams. Fairface brick walls.
SERVICES: Gas-fired ducted warm air space heating off 5 separate units. Water heating by gas heaters.
COST: £55,000 approx.
BUILDING PERIOD: Autumn 1964–summer 1965.

Assistant, David Curry. Quantity surveyor, Davis, Belfield & Everest. Structural consultant, D. W. Cooper. Mechanical consultant, R. W. Gregory and Partners.

below, site plan







above, general view from west, with gym on left and welfare departments in foreground

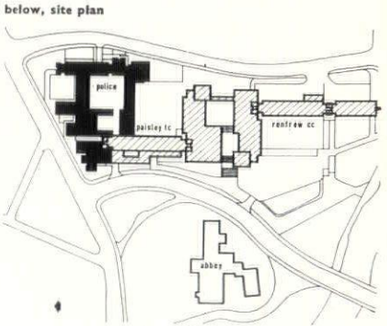
POLICE HEADQUARTERS, PAISLEY, SCOTLAND

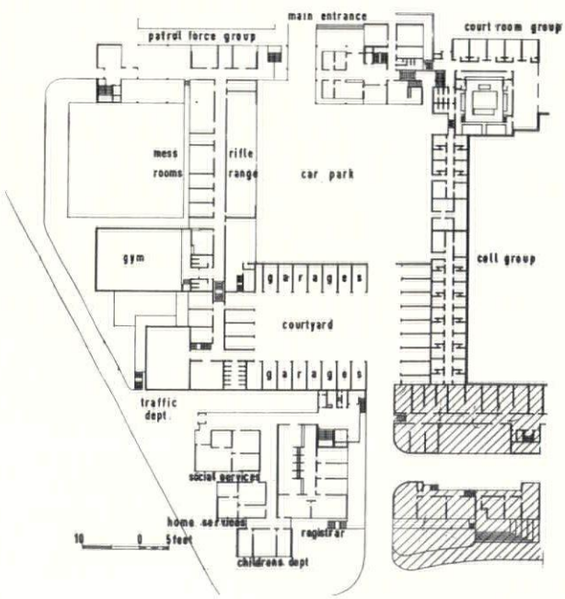
Hutchison, Locke and Monk

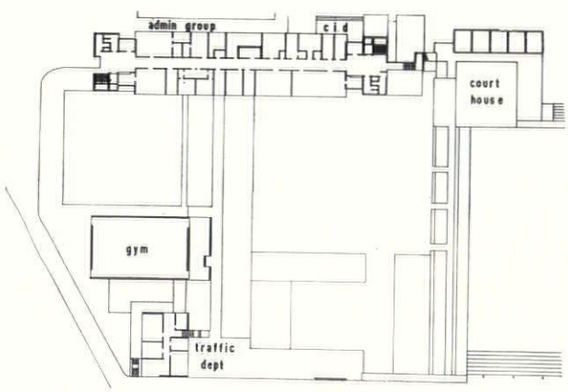
CLIENT: Paisley Town Council. Winner of 1964 competition.
SITE: 400 ft. × 280 ft., north portion of civic centre site in town centre, dominated by Abbey. Phase I of county and municipal buildings.
ACCOMMODATION: 33,000 sq. ft. of floor space, police offices and cells, magistrates' court, traffic dept., 25 police cars, open parking for 50.
STRUCTURE AND FINISHES: Generally precast and in situ r.c. frame, with exposed concrete finishes.
SERVICES: Perimeter heating. Mechanical ventilation to courts and cells.
COST: £335,000.
BUILDING PERIOD: March 1966–June 1967.

Partner in charge, D. A. Hutchison. Quantity surveyor, Ray E. Timms. Structural consultant, C. Weiss and Partners. Mechanical consultant, David Kut. Electrical consultant, Peter Jay and Partners.

below, site plan







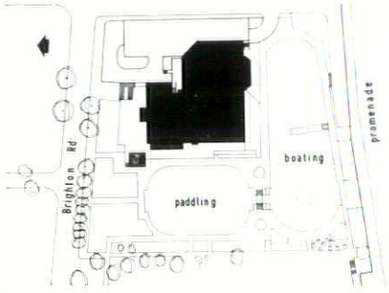
left, upper ground floor plan. above, first floor plan

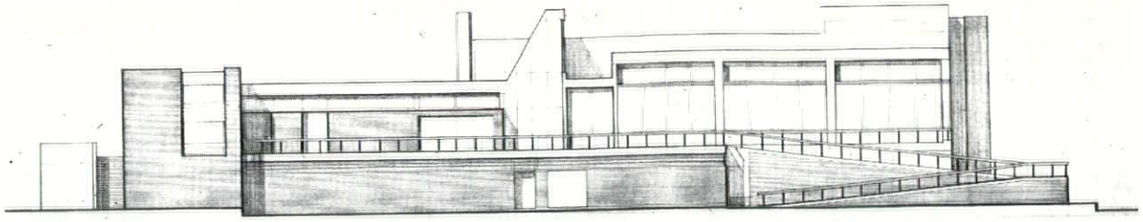
SWIMMING POOL, WORTHING, SUSSEX

Architects' Design Group in association with B. Bancroft, Borough Architect

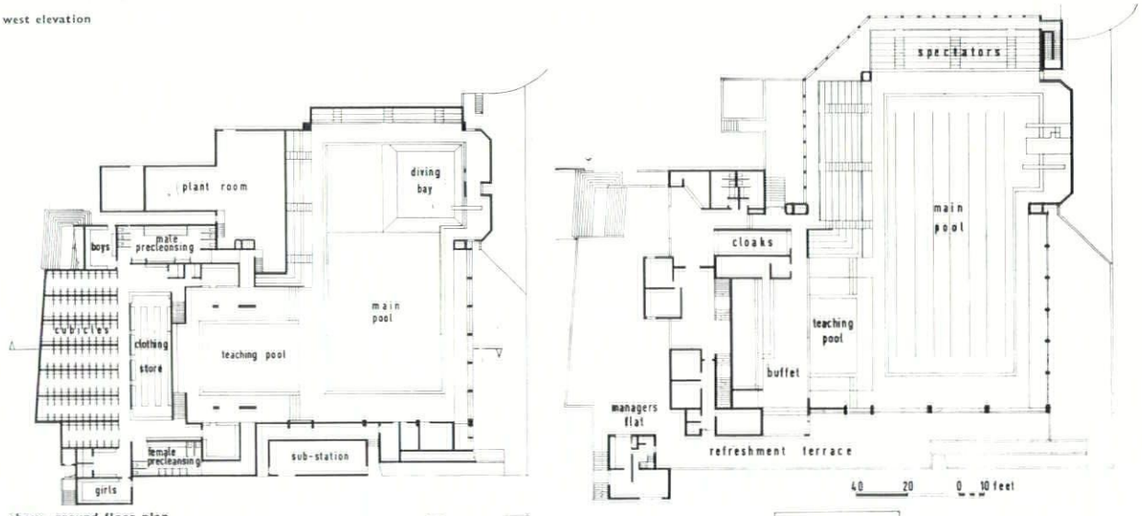
CLIENT: Worthing Borough Council.
SITE: Beachfield, Brighton Road. 1.1 acres on sea front.
ACCOMMODATION: 110 ft. × 49 ft. pool with 3- and 5-metre diving boards and side diving bay. Teaching pool 41 ft. × 30 ft., seating for 500, café for 100, lavatories and cloakroom, 120 cubicles.
STRUCTURE AND FINISHES: R.c. frame, precast concrete trough roof beams, brick walls, double glazing.
SERVICES: Oil-fired boiler, radiant heating panels and plenum warm air system. Sand pressure filters.
COST: £300,000.
BUILDING PERIOD: April 1965–December 1966.

Consulting architect, R. I. Savidge. Partner in charge, M. J. Attenborough. Associate in charge, B. G. Jones. Assistants, J. Taylor, C. Partridge. Quantity surveyor, Gleeds. Structural consultants, Chadwick, O'Heocha & Associates.

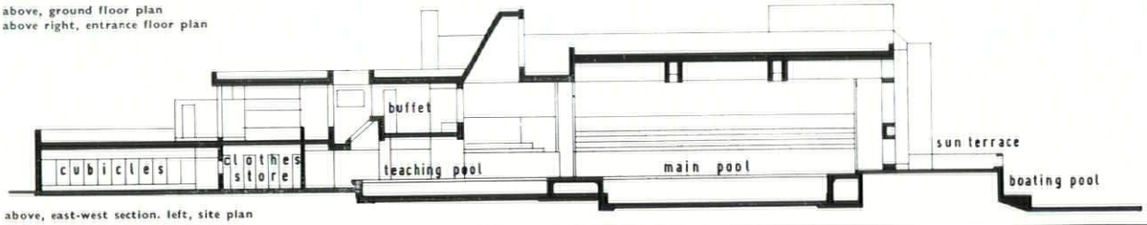




west elevation



above, ground floor plan
above right, entrance floor plan



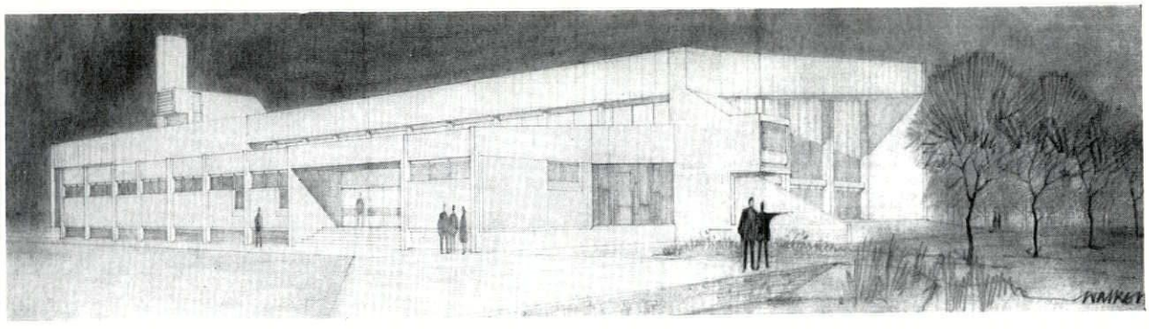
above, east-west section. left, site plan

SWIMMING POOL, SHEFFIELD

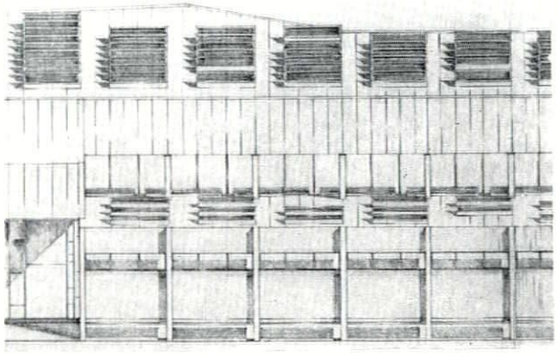
W. L. Clunie, City Architect

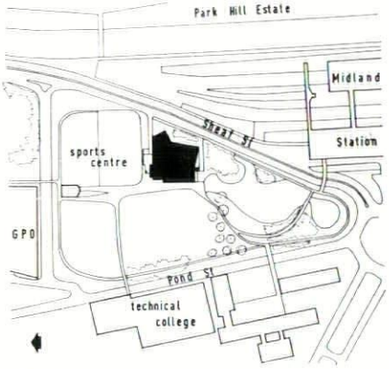
CLIENT: Sheffield City Council.
SITE: Part of Sheaf Valley redevelopment between Park Hill and centre.
ACCOMMODATION: 110 ft. × 40 ft. main pool, 45 ft. × 37 ft. 6 in. diving pool, 42 ft. × 20 ft. learners' pool. Seating for 320.
STRUCTURE AND FINISHES: Generally r.c., copper-covered roof with steel space grid and sprayed exfoliated vermiculite to coffered ceiling. Externally, boarded finish.
SERVICES: Water level deck system with metafiltration. Oil-fired heating.
COST: £300,000.
BUILDING STARTED: Early 1964.

Deputy city architect, B. Warren. Assistant city architect, K. Kot. Project architect, R. W. Walker. Assistants, P. Knowles and L. G. Yates.

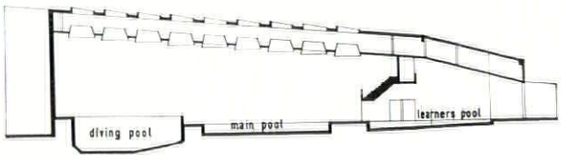


above, perspective from south-west. below, detail of north elevation

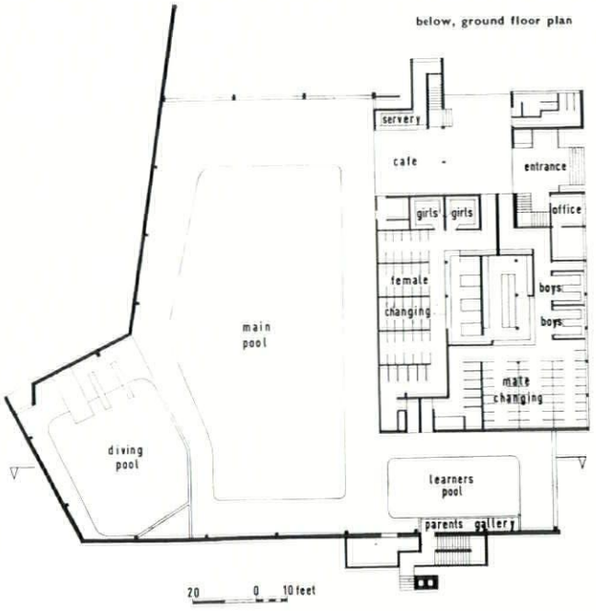




left, site plan. below, east-west section



below, ground floor plan

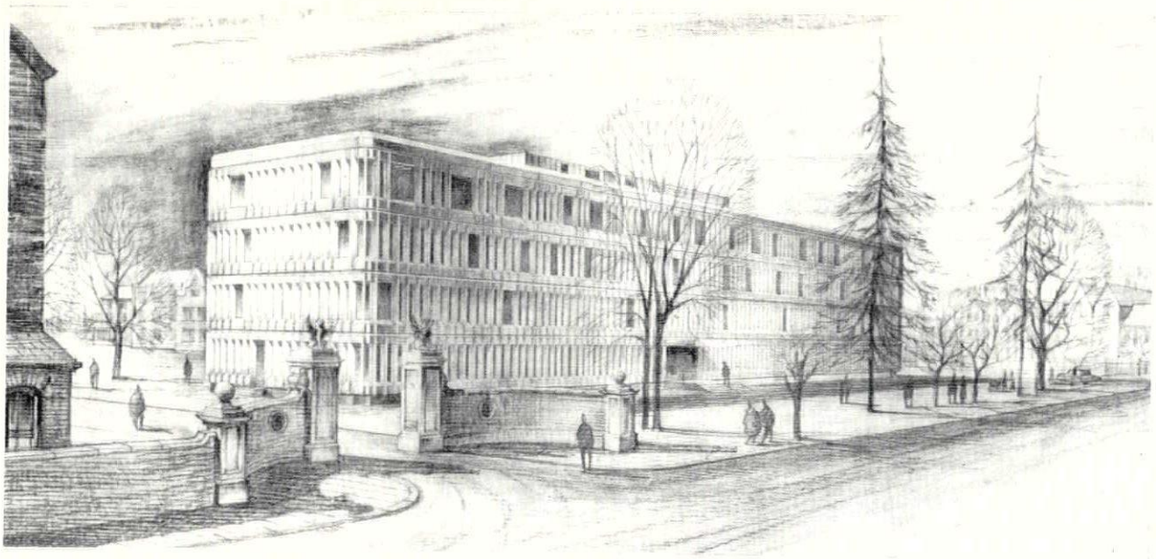


PUBLIC OFFICES, WINDSOR

Andrew Renton and Associates

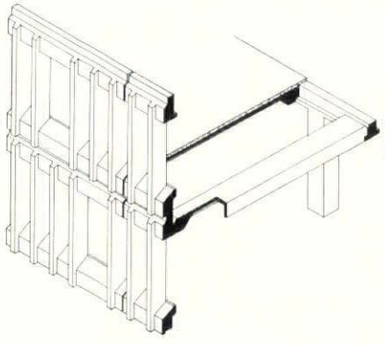
CLIENT: Windsor Borough Council.
SITE: 1.2 acres of Imperial Service College estate, next to present municipal offices.
ACCOMMODATION: 25,860 sq. ft. of offices on 4 storeys, penthouse with caretaker's flat and staffroom, parking bays for 55 cars. Spine corridors with offices of 12 ft. depth and 18 ft. depth.
STRUCTURE AND FINISHES: Planning module of 2 ft. r.c. throughout, in situ lifts, stairs and lobbies, the rest precast. External wall units, storey-height panels 12 ft. long, with textured finish. Floor slabs span from wall units to spine beam on columns.
SERVICES: Heating by oil-fired boilers, hot water to under-cill radiators with thermostatic control.

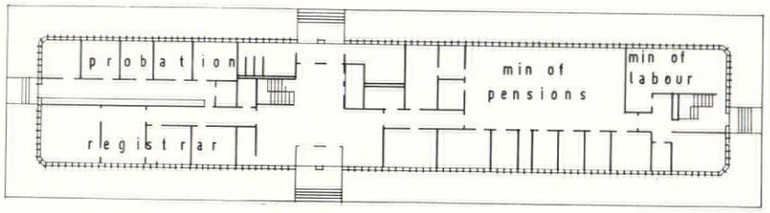
Partner in charge, Andrew Renton. Associate in charge, Humphrey Wood. Assistants, Kenneth Morrice and John Kennett. Quantity surveyor, Reynolds & Young. Structural consultant, Ove Arup & Partners. Mechanical and electrical consultant, J. Roger Preston & Partners.



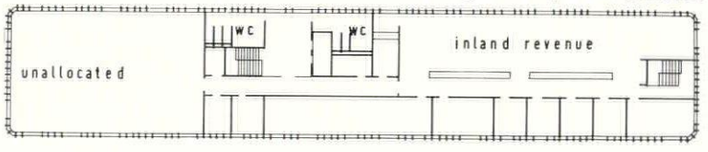
view from Alma Road

below, typical structural unit

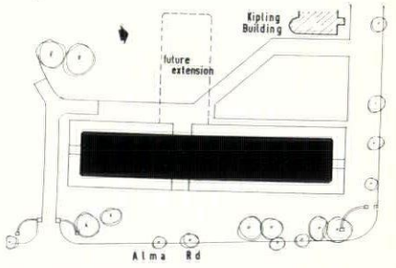




above, ground floor plan. below, third floor



site plan

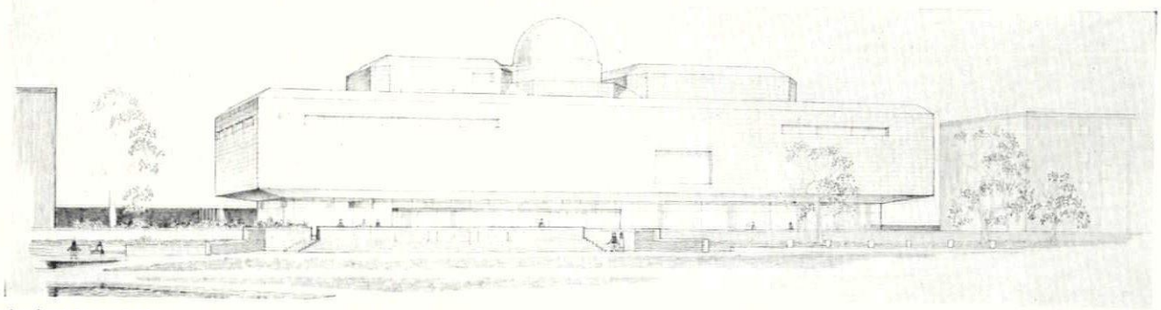


MUSEUM, HULL

Frederick Gibberd

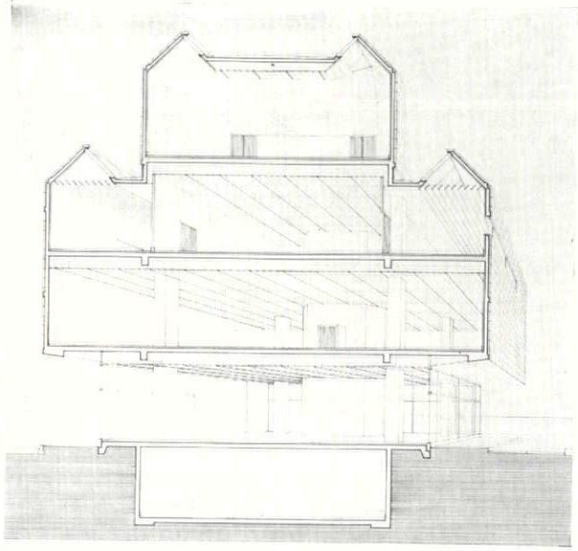
CLIENT: Hull City Council.
SITE: On north side of Queens Gardens, which is being developed as civic centre.
ACCOMMODATION: Aquarium, fishing gallery, general and specialized galleries, administration and work rooms, coffee bar, public lecture hall, planetarium.
STRUCTURE AND FINISHES: R.c., clad externally with Portland stone.
SERVICES: Heating and artificial ventilation by use of controlled ventilated ceiling over all areas.
COST: £530,000.
BUILDING STARTS: 1965.

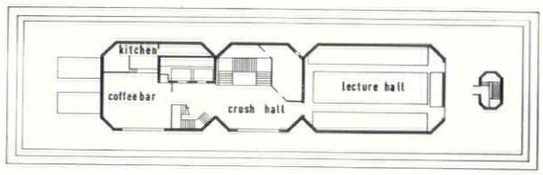
Partner in charge, A. E. Kelsey. Associate in charge, J. B. Forrest. Quantity surveyor, John Watsor & Carter. Structural consultant, Scott & Wilson, Kirkpatrick & Partners. Mechanical consultant, Roger Preston & Partners.

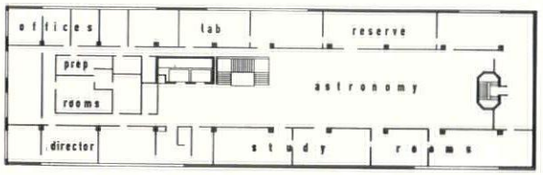


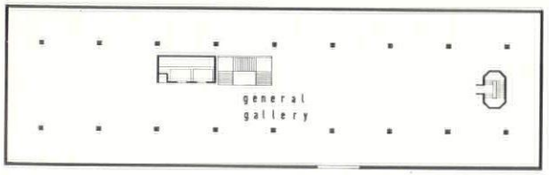
view from Queens Gardens

below, sectional perspective



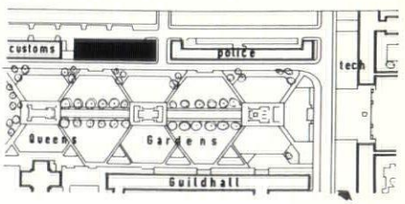






top left, third floor plan
centre left, second floor plan
bottom left, first floor

site plan

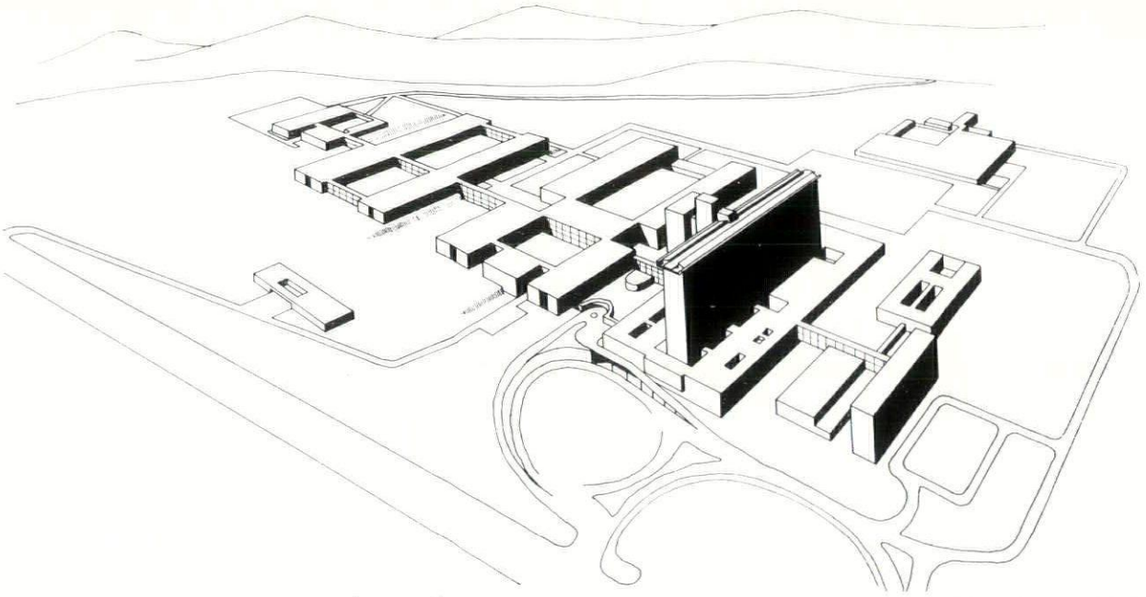


HOSPITAL, KUALA LUMPUR, MALAYA

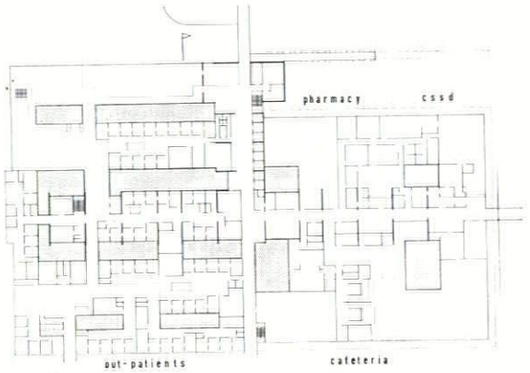
James Cubitt and Partners

CLIENT: Government of Malaysia.
SITE: About 1,000 acres in hilly country next to University site.
ACCOMMODATION: Medical faculty for intake of 65 students per year. 800-bed hospital, 500 outpatients per day. 100 doctors and housemen, clinical year students, 200–300 nursing staff housed on site.
STRUCTURE AND FINISHES: R.c. frame with diaphragm walls for wind resistance in high blocks. Exclusion of sun mainly by structural members.
SERVICES: Partial air-conditioning to labs, operating theatres, etc.
COST: Medical faculty, £1,100,000. Hospital: Phase I, £3,500,000. Completed hospital: £4,650,000.
BUILDING PERIOD: Medical faculty, June 1963–December 1964. Hospital: Phase I, May 1964–May 1966.

Quantity surveyor, Langdon & Every, Malaya. Structural consultant, Steen Sehested & Partners, Malaya. Mechanical consultant, Thomas Anderson & Partners, Kuala Lumpur.



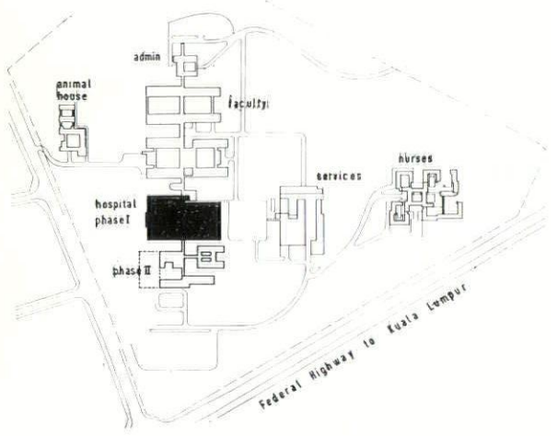
aerial perspective from south-west



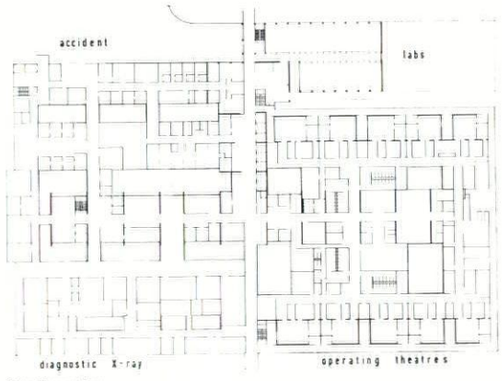
ground floor plan



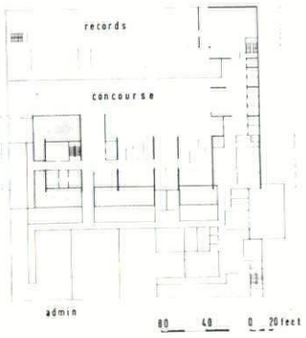
typical upper floor plan of ward block



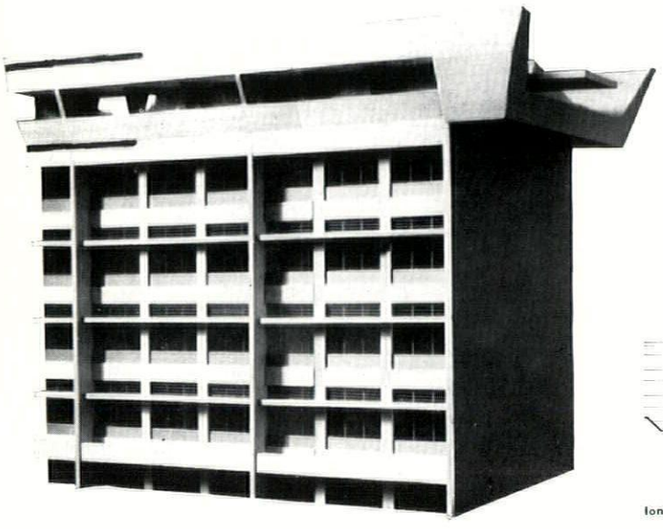
above, site plan. below, model of upper floors of ward block

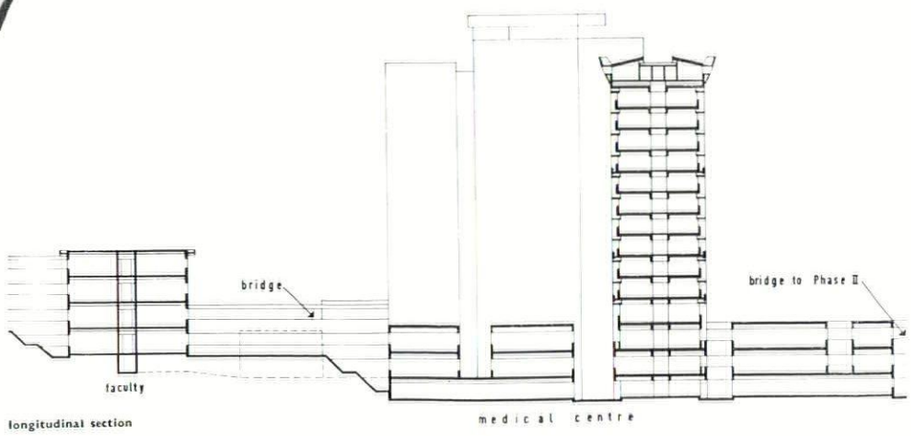


first floor plan

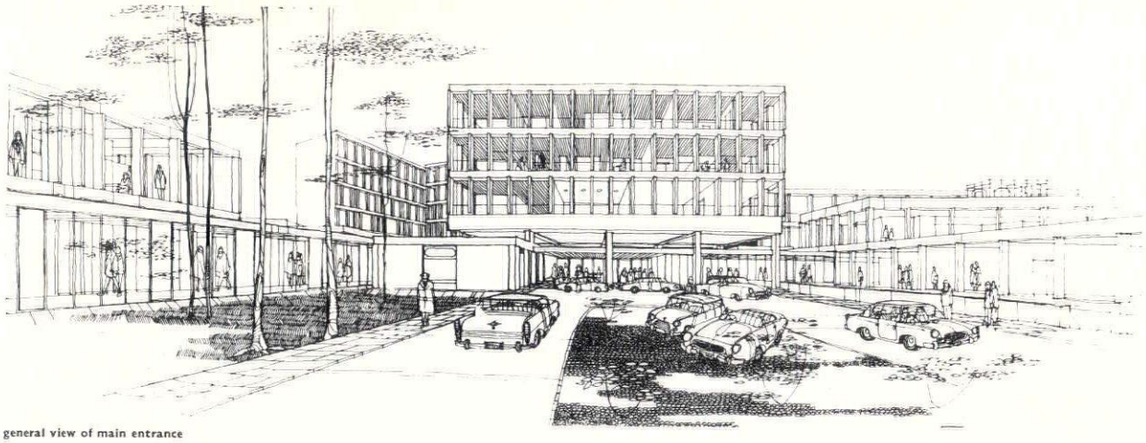


second floor plan





longitudinal section



general view of main entrance

HOSPITAL, NORTHWICK PARK, MIDDLESEX

Llewelyn-Davies, Weeks and Partners. John Musgrove, Consultant on Laboratories

CLIENT: North-West Metropolitan Regional Hospital Board and Medical Research Council.

SITE: 46-acre former golf course on Watford Road, with Harrow School playing fields on 2 sides.

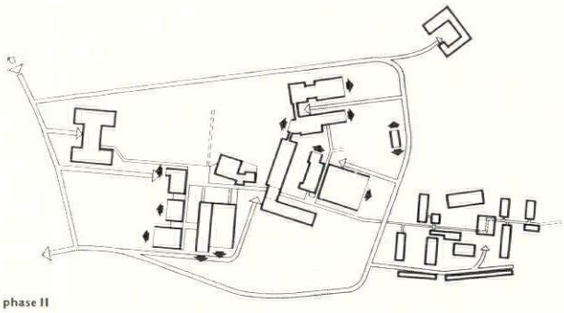
ACCOMMODATION: 800-bed hospital with laboratories and residential accommodation, and parking for 1,100 cars. Planning based on system of enclosed streets originating at main entrance and connecting blocks containing individual or small groups of departments. It provides for growth by extension of departments and of the street system itself.

STRUCTURE AND FINISHES: Repetitive structural system, based on coffered r.c. slab to constant grid, internal column system of limited flexibility and precast external walling system of beams and structural mullions. Mullions are of constant section and spaced relative only to loading imposed. Universal window wall encloses structure behind mullions. Limited areas of in situ concrete. Plant rooms enclosed in patent glazing. Piled and/or rafted foundations.

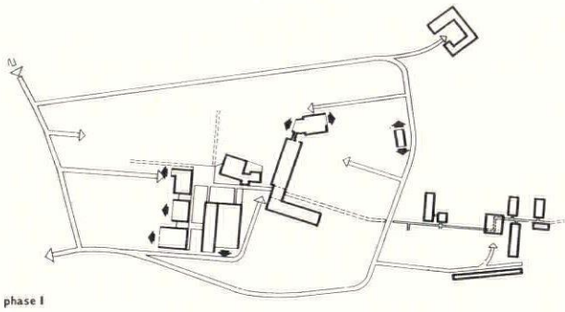
SERVICES: Mains distribution incorporated in street system to allow for gradual construction and expansion. Air conditioning and artificial ventilation to some areas, complex servicing to laboratories.

BUILDING PERIOD: 1965–1971.

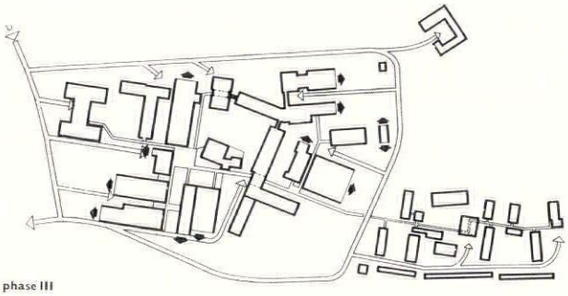
Partner in charge, John Weeks. Associate in charge, Alan P. Warren. Quantity surveyor, Gardiner & Theobald. Structural consultant, Ove Arup & Partners. Mechanical and electrical consultant, Steensen, Varming & Mulcahy.



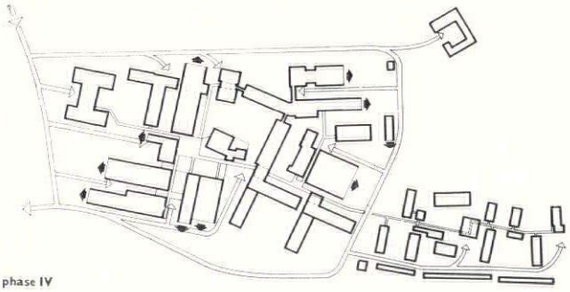
phase II



phase I

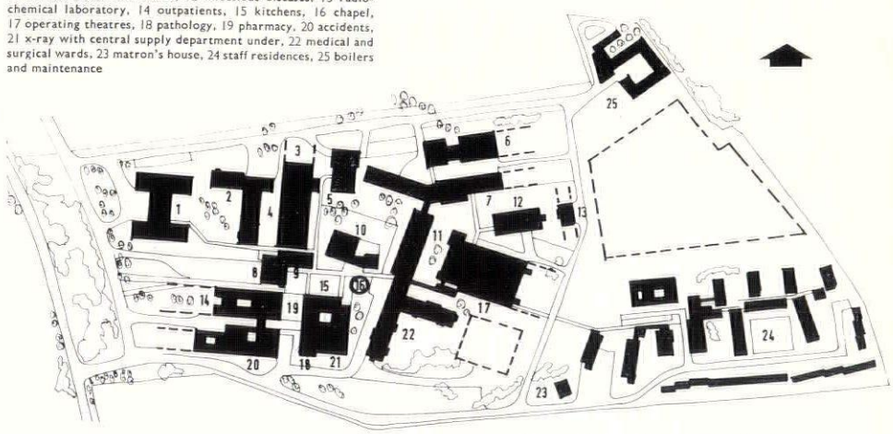


phase III

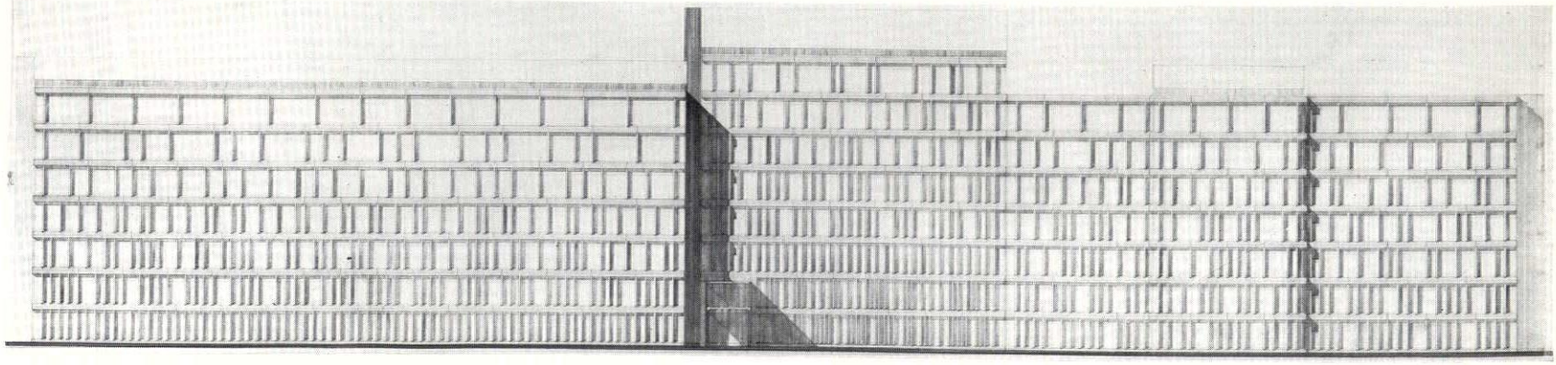


phase IV

site plan. key:
1 maternity, 2 psychiatry, 3 physical medicine, 4 medical illustration, 5 library and lecture hall, 6 veterinary, 7 research, 8 administration, 9 shops, 10 staff dining and clinical lecture theatre, 11 clinical assessment wards, 12 infectious diseases, 13 radiochemical laboratory, 14 outpatients, 15 kitchens, 16 chapel, 17 operating theatres, 18 pathology, 19 pharmacy, 20 accidents, 21 x-ray with central supply department under, 22 medical and surgical wards, 23 matron's house, 24 staff residences, 25 boilers and maintenance



below, west elevation of clinical research centre and diagnostic hospital wards

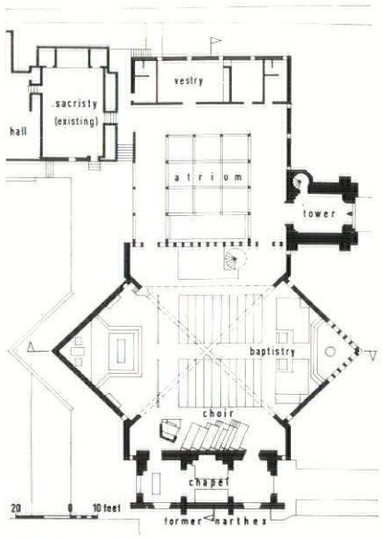


CHURCH, CLIFTON, BRISTOL

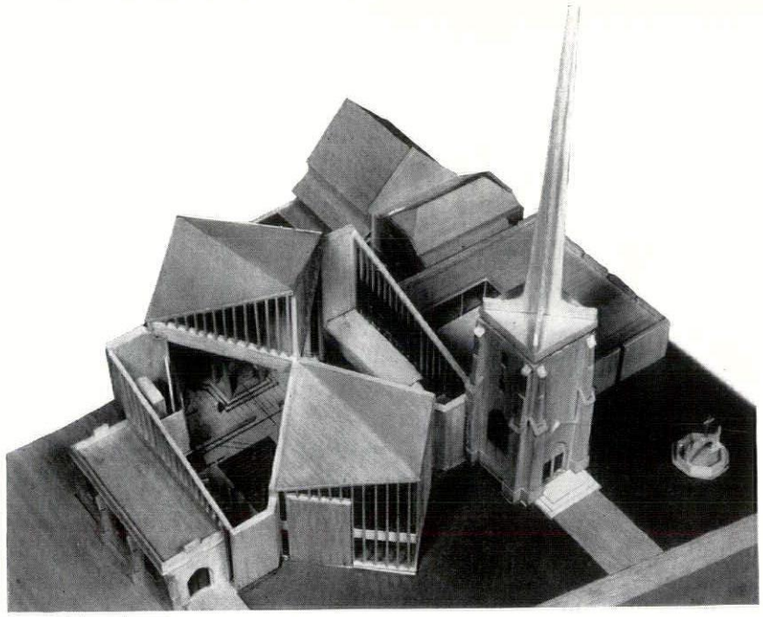
Robert Potter and Richard Hare

CLIENT: Vicar and Parochial Church Council.
SITE: Pembroke Road. Rebuilding of bombed All Saints' by G. E. Street, retaining tower, narthex and sacristy.
ACCOMMODATION: Seating for 600, 2 chapels with vestries off atrium.
STRUCTURE AND FINISHES: Walls and frame of in situ r.c. point tooled, externally faced with random stone walling. R.c. coffered and folded plate roofs, copper covered.
SERVICES: Oil-fired underfloor low pressure hot water, fan convectors.
COST: £120,000. Stained glass £10,000.
BUILDING PERIOD: Autumn 1964–1966.

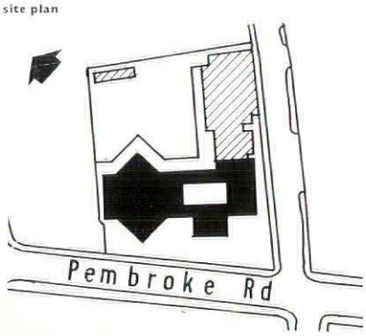
Partner in charge, Robert Potter. Associate in charge, Kenneth Wood. Quantity surveyor, Bernard & Son. Structural consultant, E. W. Gifford and Partners. Mechanical and electrical consultant, W. S. Atkins. Special consultant, glass, John Piper.



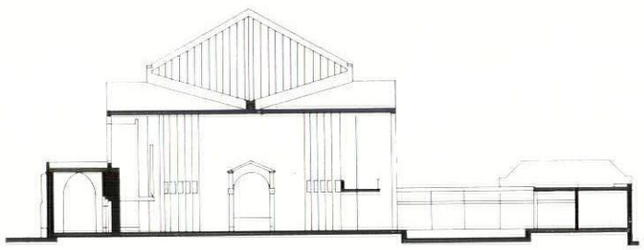
ground floor plan


above, cutaway model, looking from west. below left, north-south section. below right, east-west section

site plan





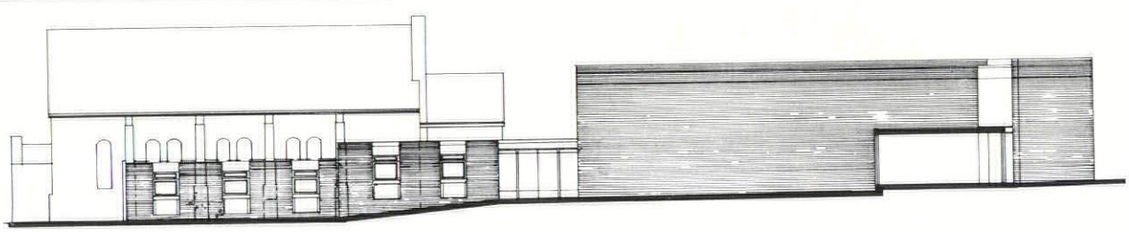


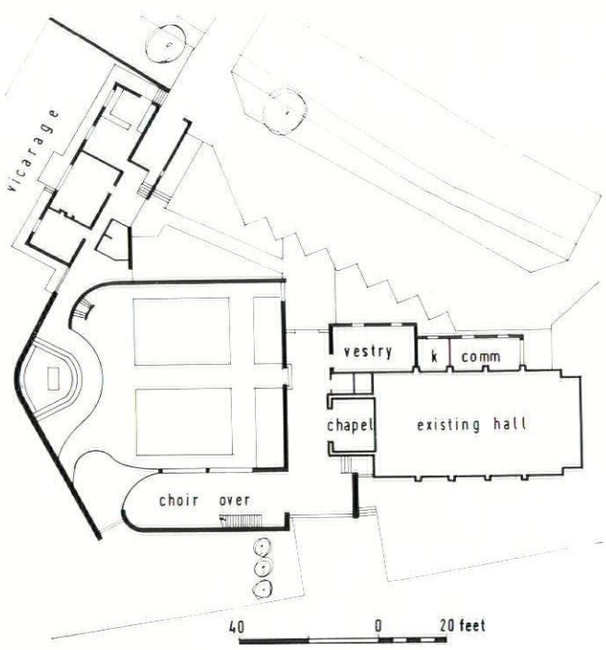
CHURCH, SOUTH YARDLEY, BIRMINGHAM

Denys Hinton and Associates

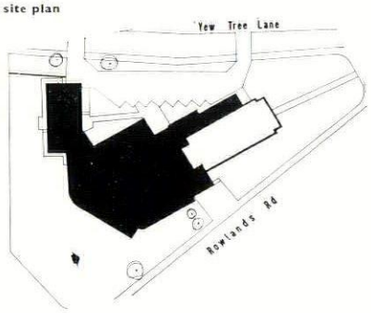
CLIENT: Diocese of Birmingham.
SITE: Triangular surburban site with fall to existing church hall at north.
ACCOMMODATION: St. Michael's Church seating 400, organ gallery seating choir of 30. Narthex connecting to hall, with new vestries, kitchen and committee room. Vicarage linked.
STRUCTURE AND FINISHES: Loadbearing brick walls, roofs covered with aluminium, supported by made-up timber beams in church spanning 56 ft., joists elsewhere.
SERVICES: Gas-fired boiler, low pressure hot water heating to vicarage, existing gas-fired system in vestries, electric thermal storage floor heating in church.
COST: Church £28,000 excluding organ. Vicarage £9,000.
BUILDING PERIOD: August 1964–July 1965.

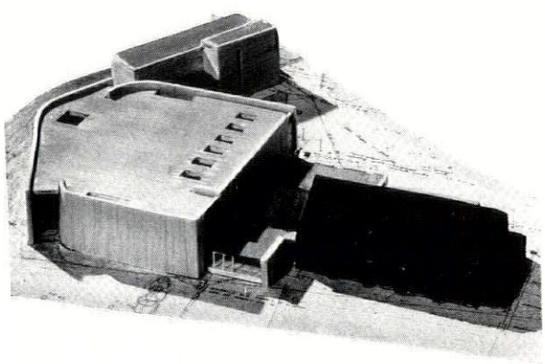
Partner in charge, Charles Brown. Associate in charge, John Portlock. Assistant, Christopher Langstone. Quantity surveyor, Silk and Frazier.


above, west elevation and section
below, ground floor plan
below right, general view of model from north-east



site plan





* *Full details in BARBOUR INDEX.*

In Toronto

EXCELSIOR LIFE



chose BROUGHTON MOOR GREEN SLATE for life!

Broughton Moor light sea green slate – 4,500 sq.ft. of it, $1\frac{1}{8}''$ thick and finely rubbed – has been specified for the external cladding of the Excelsior Life Building in Toronto by architects Marani, Morris & Allan. 5,500 sq.ft. of Spoutcrag frame sawn and milled slate, $\frac{3}{4}''$-$1\frac{1}{2}''$ thick, will be used for internal and external paving.

Broughton Moor Green Slate is being specified for so many of the world's currently-growing fine buildings because its colour and texture will outlive centuries of climatic and atmospheric attack. You will find details in the Barbour Index, or please write for technical data sheets on Flooring, Facings, Copings, Cills, Riven Face Slabs.

Broughton Moor

GREEN SLATE QUARRIES LTD
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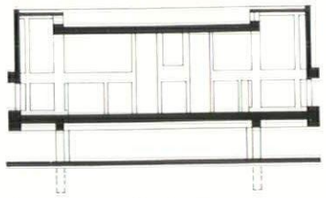
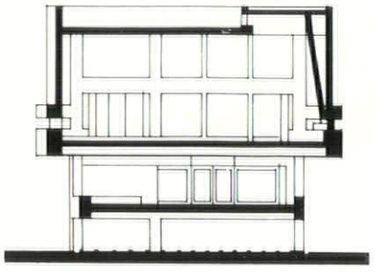
MISSIONARY SOCIETY HEADQUARTERS, LONDON

Ansell and Bailey

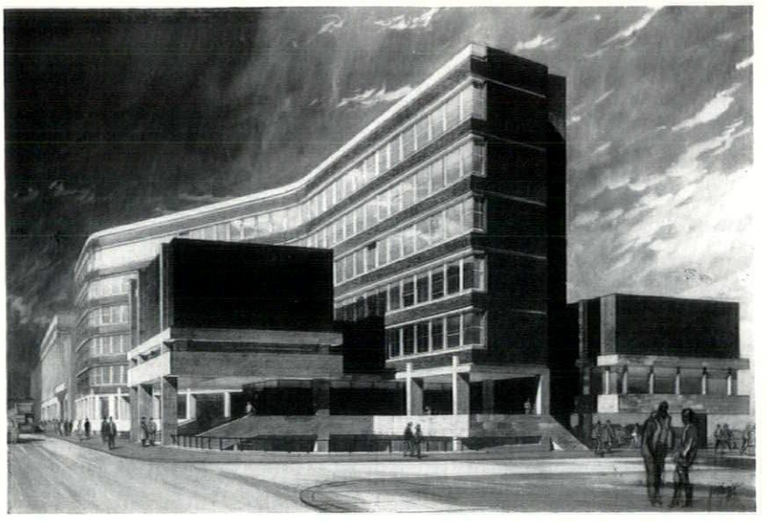
CLIENT: Church Missionary Society.
SITE: 157–183 Waterloo Road, SE1. Urban site near Waterloo railway station.
ACCOMMODATION: Chapel, conference block and administrative block, 52,000 sq. ft. Parking for 40 cars.
STRUCTURE AND FINISHES: R.c. frame, reconstructed stone and dark purple brick facing, aluminium sliding sash windows. Internal rough shuttered concrete, fairface brickwork, acoustic tile ceilings.
SERVICES: Heating, low pressure hot water from oil-fired boilers.
BUILDING PERIOD: August 1964–May 1966.

Partner in charge, Arthur Bailey. Quantity surveyor, Mardall and Wood. Structural consultant, Considere and Partners Ltd.





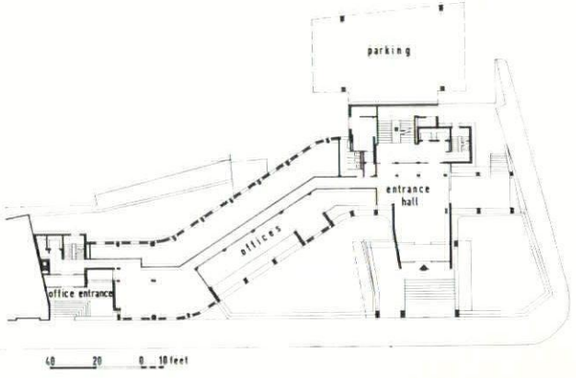
above, section of conference room
below, section of chapel

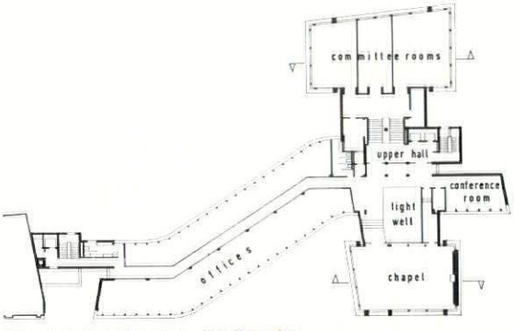


view from south along Waterloo Road

site plan







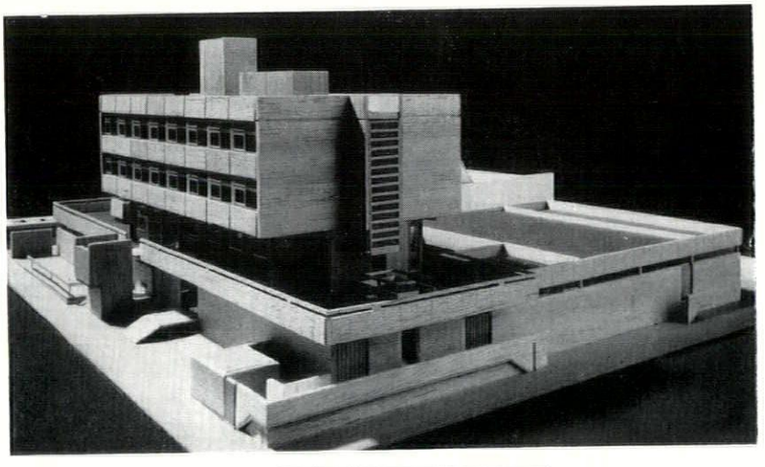
left, ground floor plan. above, first floor plan

SEAMEN'S HOSTEL, SALFORD, LANCS

Desmond Williams and Associates

CLIENT: Rev. Father A. Keegan.
SITE: Stella Maris Hostel, 1,550 sq. yds. in redevelopment area.
ACCOMMODATION: 22 single bedrooms, 2 double bedrooms, chaplain's flat, manager's flat. Ballroom 1,800 sq. ft., restaurant seating 50, swimming pool 30 ft. × 20 ft., lounge with bar.
STRUCTURE AND FINISHES: R.c. frame to first two floors, loadbearing construction above with 4 in. thermalite walls, 6¾ in. Neolith floors. Ground floor faced with engineering brick, precast panels and in situ concrete with exposed aggregate above.
SERVICES: Low pressure hot water with radiators and oil-fired boilers.
COST: £100,000.
BUILDING PERIOD: August 1964–February 1966.

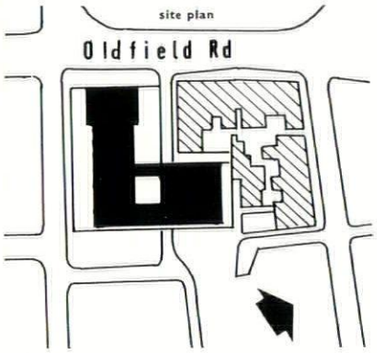
Partner in charge, D. J. Williams. Associate in charge, D. Hinch. Assistant, J. Clancy.

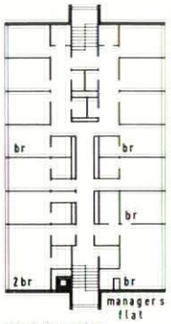


above, view of model from south

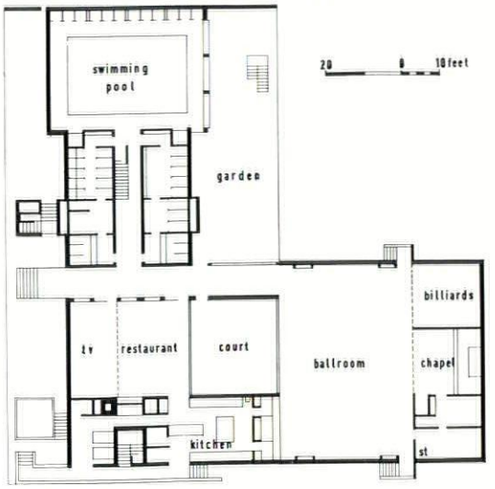
right, ground floor plan

site plan





third floor plan





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the first pitch polymer dampcourse
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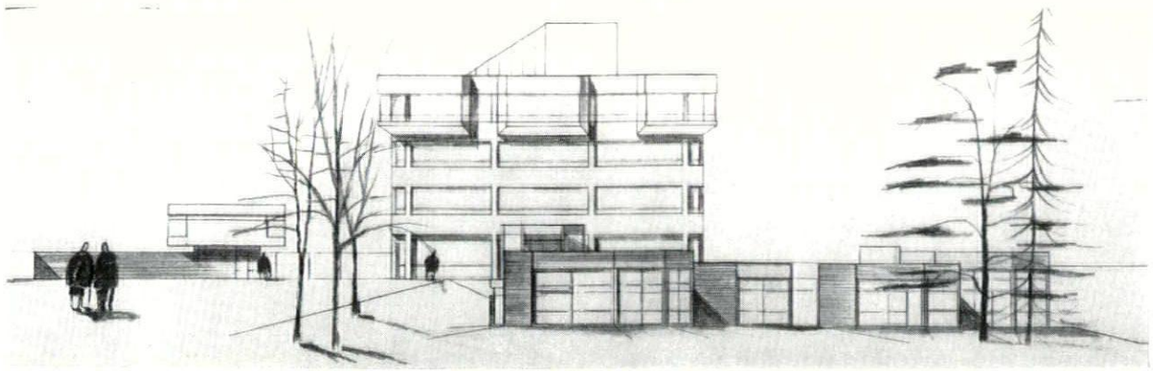
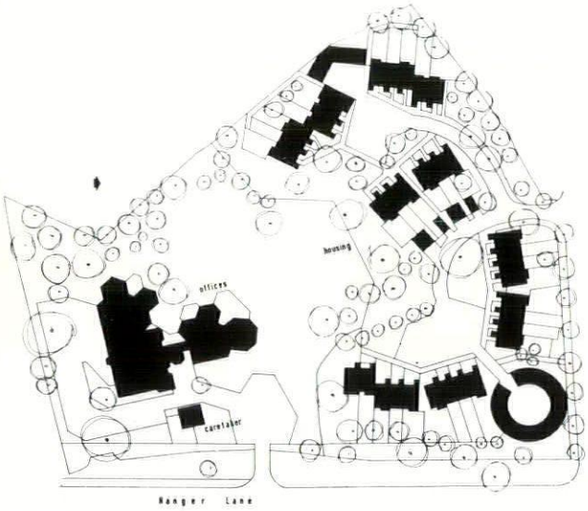
TRADE UNION HEADQUARTERS, EALING, MIDDLESEX

Eric Lyons and Partners

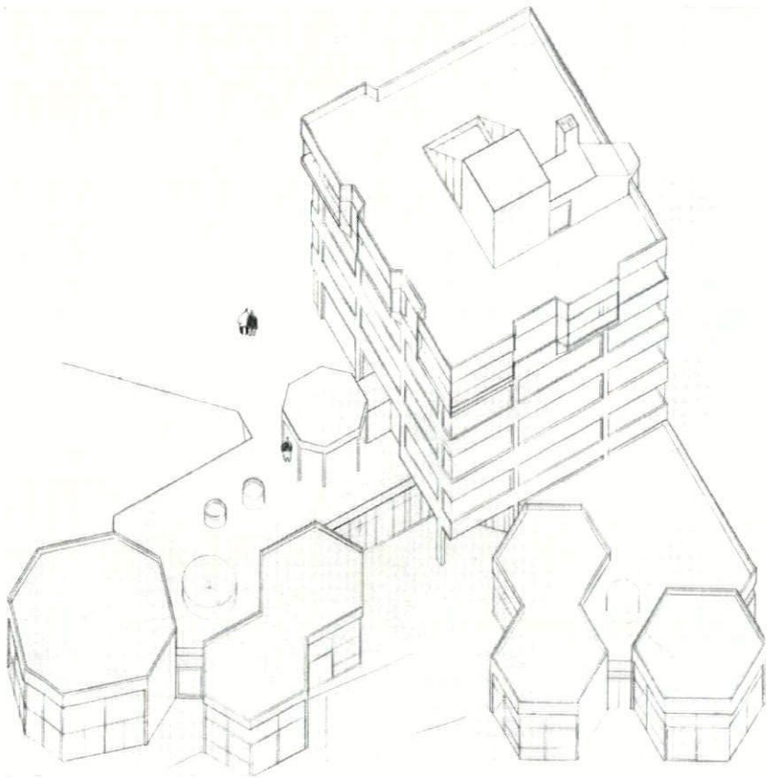
CLIENT: Post Office Engineering Union.
SITE: 5 acres of landscaped garden with many fine trees and shrubs, replacing Greystoke House, Hanger Lane, W5.
ACCOMMODATION: 20,000 sq. ft. office space. Residential, 189 habitable rooms.
STRUCTURE AND FINISHES: Offices, precast concrete frame with selected brick facing panels and glass insert panels. Housing, loadbearing brick cross walls, storey height glazing frames, painted shiplap boarding, aluminium roofs.
BUILDING STARTS: Early 1965.
Partner in charge, Ivor Cunningham.



south-west elevation

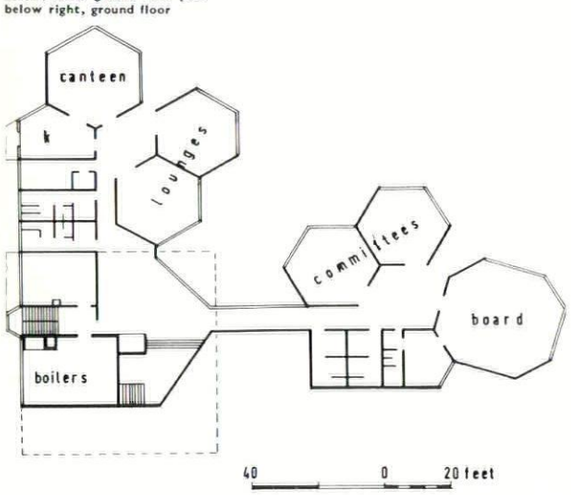


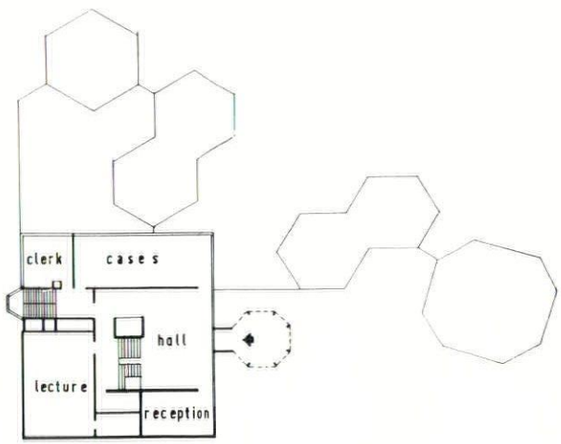
site plan



axonometric from west

below, lower ground floor plan
below right, ground floor

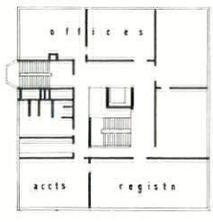






third floor plan

first floor plan



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6000 yards of **Lignacite**

Chosen once again for an important modern building, Lignacite was used extensively in the partitioning of this strikingly designed civic centre. 4 in. solid blocks were used, giving satisfactory sound conditions, and representing considerable saving over conventional 4½ in. brickwork.

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LIGNACITE BUILDING BLOCKS

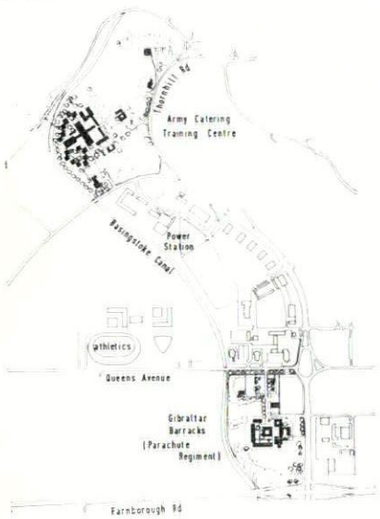
TRAINING CENTRE, ALDERSHOT, HANTS

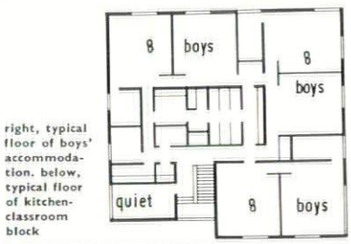
Building Design Partnership in collaboration with Ministry of Public Building and Works

CLIENT: Ministry of Defence.
SITE: 76-acre St. Omer Barracks site in Aldershot military town, next to Basingstoke Canal. Ground level raised by 30 ft. spur.
ACCOMMODATION: Residential training college for about a thousand students at any one time including officers, soldiers, apprentices, naval personnel, civil defence and service women.
STRUCTURE AND FINISHES: Intergrid system of precast prestressed concrete.
SERVICES: Heating by central plant and hot water, district heating mains.
COST: £2,300,000.
BUILDING PERIOD: April 1965–December 1967.

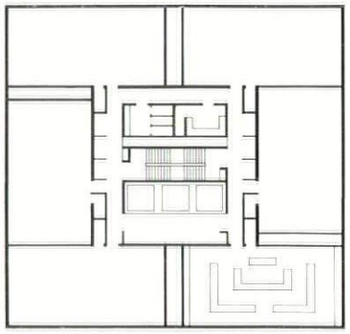
Partners, J. Wilkinson, P. T. Renninson. Associate architects, M. F. Cross, R. K. Dewhirst, R. Wilkinson, W. Nixon. Structural consultant, Lowe and Rodin. Mechanical consultant, Ministry of Public Building and Works. Special consultants, W. V. Zinn & Associates (civil), Production Engineering (Catering Survey).

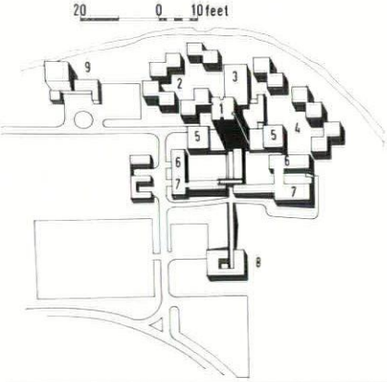
site plan

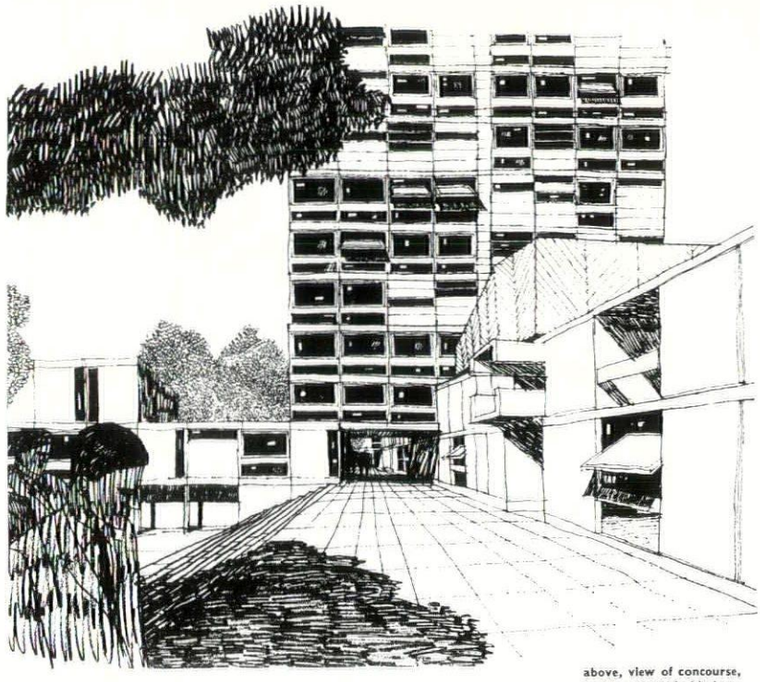




right, typical floor of boys' accommodation. below, typical floor of kitchen-classroom block

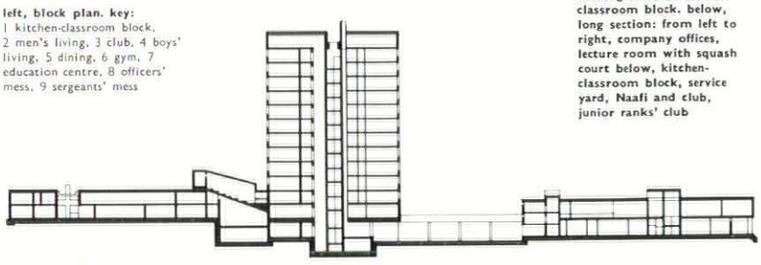




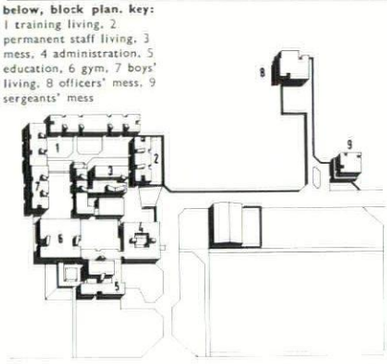


above, view of concourse, looking towards kitchen-classroom block. below, long section: from left to right, company offices, lecture room with squash court below, kitchen-classroom block, service yard, Naafi and club, junior ranks' club

left, block plan. key: 1 kitchen-classroom block, 2 men's living, 3 club, 4 boys' living, 5 dining, 6 gym, 7 education centre, 8 officers' mess, 9 sergeants' mess

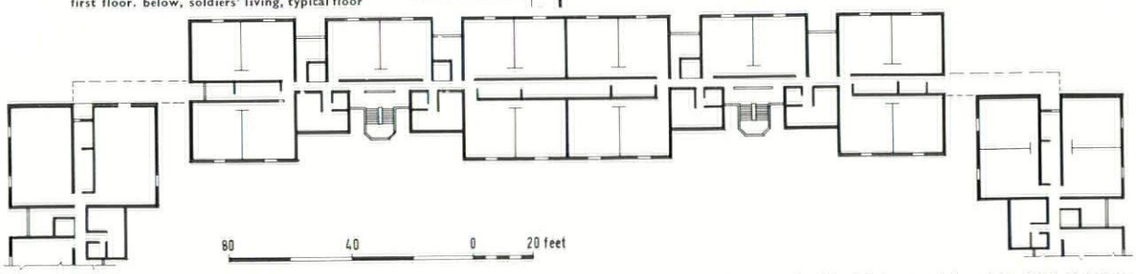


below, block plan. key: 1 training living, 2 permanent staff living, 3 mess, 4 administration, 5 education, 6 gym, 7 boys' living, 8 officers' mess, 9 sergeants' mess

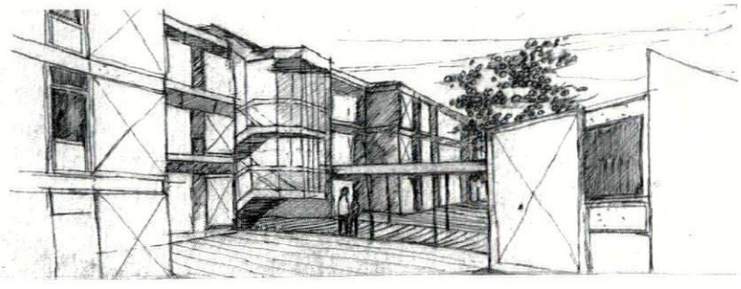


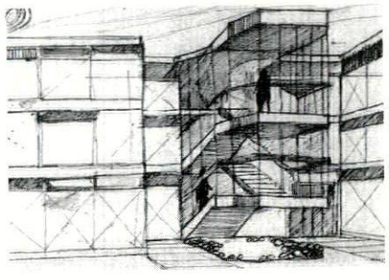


right, administration ground floor. far right, first floor. below, soldiers' living, typical floor



below left, view of soldiers' living area. below right, detail of staircase



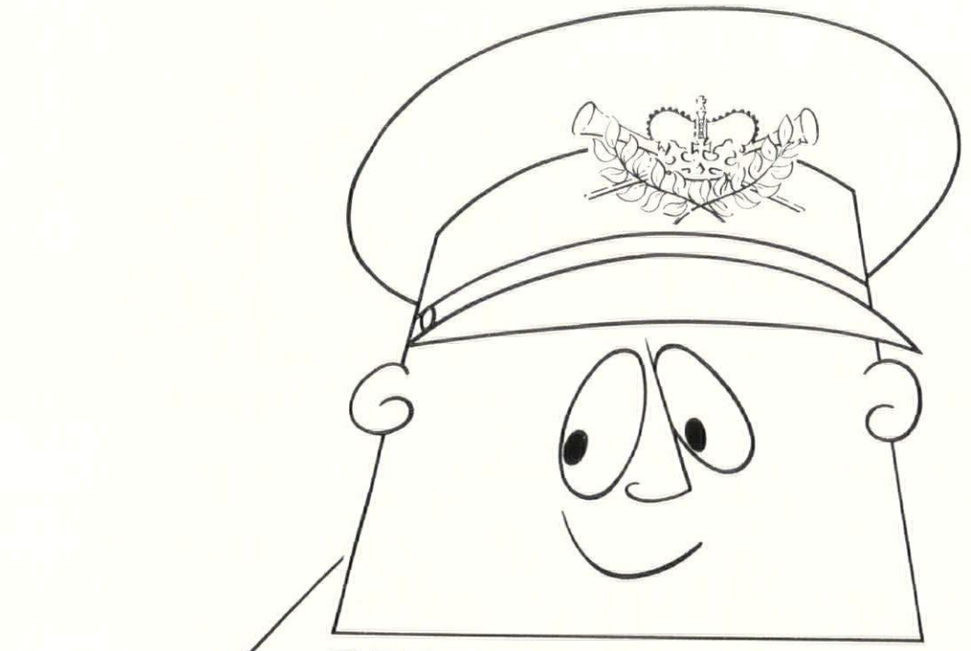


BARRACKS, ALDERSHOT, HANTS

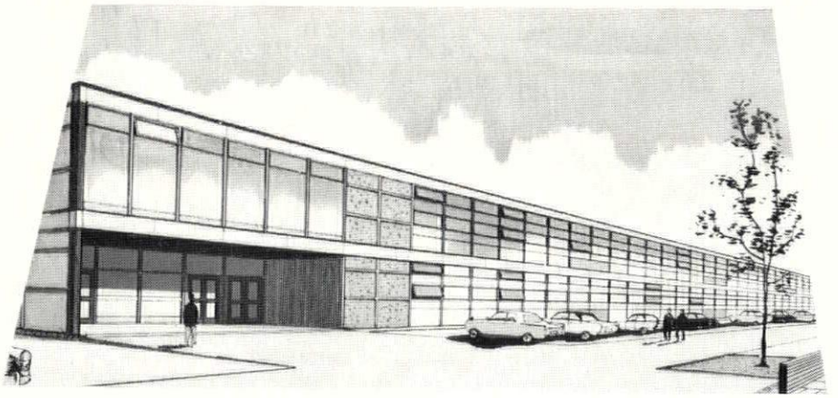
Building Design Partnership in collaboration with Ministry of Public Building and Works

CLIENT: Ministry of Defence.
SITE: 33-acre Gibraltar Lines site in Queens Avenue.
ACCOMMODATION: Residence for 620 men, 70 boys, 36 sergeants and WO's and 38 officers with messing, offices, stores, recreational and training facilities.
STRUCTURE AND FINISHES: Intergrid system of precast, prestressed concrete.
SERVICES: Heating by central plant, district heating mains.
COST: £1,200,000.
BUILDING PERIOD: April 1965–July 1967.

Partners, J. Wilkinson, P. T. Renninson. Associate architects, M. F. Cross, N. Isham, R. Coffin, J. Charter. Structural consultant, Lowe & Rodin. Mechanical and electrical consultant, Building Design Partnership. Special consultant, W. V. Zinn & Associates (civil).



MIDDLESEX
DELIVERED ON TIME



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This 143,000 sq. ft. Mail Order Headquarters in Sunderland was constructed in a third of the normal time using "Middlesex" Industrialised contracting methods. Just 26 weeks after site work commenced, 1,500 employees of this large mail order company were processing and despatching goods advertised in their autumn catalogue. Cost details of this and eleven other schemes are given in a new publication entitled "12 Projects" - ask your secretary to send for a copy.

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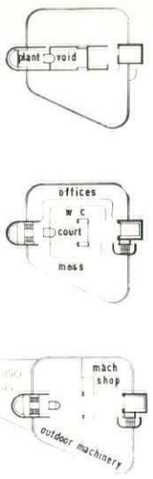
MAINTENANCE DEPOT, PADDINGTON, LONDON

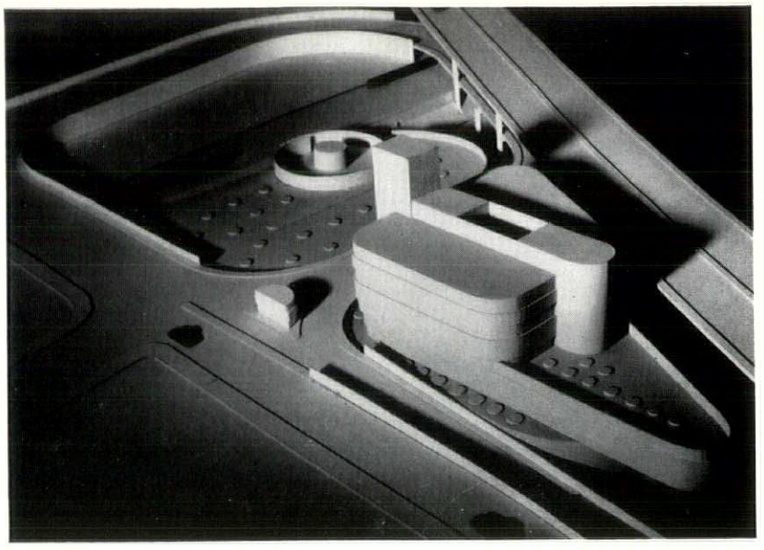
Bicknell and Hamilton

CLIENT: London County Council, for British Railways, Western Region.
SITE: 3 acres of Paddington Goods Yard. Existing workshops displaced by Western Avenue Extension Motorway project.
ACCOMMODATION: 70,000 sq. ft. for road vehicle maintenance facilities, stores and staff amenities, 20ft. headroom in workshops.
STRUCTURE AND FINISHES: R.c. frame, unglazed ceramic externally.
SERVICES: Oil-fired central heating, forced ventilation for part of building.
BUILDING STARTS: End of 1964.

Partner in charge, Paul A. Hamilton. Quantity surveyors, C. John Mann & Son and Yeoman & Edwards. Structural consultants, G. Maunsell and Partners. Mechanical consultant, Oscar Faber and Partners.

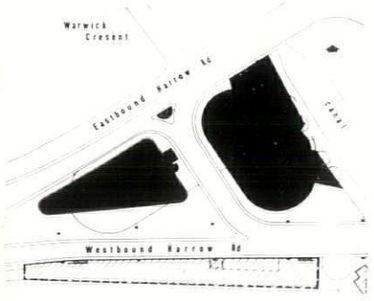


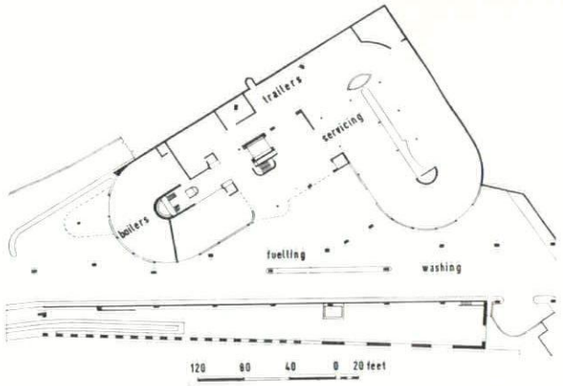
below, ground floor plan.
above, second floor, third floor, and top, fourth floor



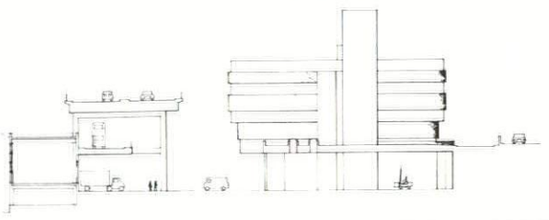
general view from west

site plan





elevation and section through motorway



CONTRACTORS, etc

History Faculty, Cambridge University. *Architect:* James Stirling. Sir Hugh Casson, Consultant for Development Plan. *General contractor:* William Sindall Ltd. *Sub-contractors: Glazing:* Faulkner Green & Co. *Tiling:* Carter Tiles Ltd.

College, University of Kent, Canterbury. *Architects:* Sir William Holford and Partners. *General contractor:* Gilbert-Ash Ltd.

University of Essex, Colchester. *Architects:* Architects Co-Partnership. *General contractor:* Holloway Bros. (London) Ltd. *Sub-contractor: Precast concrete frame:* Modular Concrete Ltd.

Mathematics Court, Leeds University. *Architects:* Chamberlin, Powell & Bon. *General contractor:* F. Shepherd & Son Ltd.

Halls of Residence, Coventry. *Architect:* A. G. Ling, City Architect and Planning Officer. *General contractor:* C. Bryant & Son Ltd. *Sub-contractor: Precast wall frame structure:* Concrete Ltd.

Halls of Residence, Liverpool University. *Architects:* Manning and Clamp. *General contractor:* Holland and Hannen & Cubitts (North West) Ltd. *Sub-contractors: Electrical:* Speedes (Widnes) Ltd. *Heating:* Richard Crittall & Co. *Plumbing:* Merseyside Plumbing Co. *Hot and cold water installation:* G. N. Haden & Sons Ltd.

Primary School, Cambridge. *Architects:* Lyster and Grillet. *General contractor:* R. Slingsby & Son.

Housing, Bonamy Street, Camberwell, London. *Architect:* F. O. Hayes, Borough Architect and Director of Housing. *General contractor:* Kirk & Kirk Ltd. *Sub-contractors: Piling:* Frankipile Ltd. *Heating and ventilation:* Andrews Weatherfoil Ltd. *Electrical:* Drake & Gorham Ltd.

Housing, Hayesford Park, Bromley, Kent. *Architects:* Building Design Partnership. *General contractor:* M. Howard (Mitcham) Ltd.

Housing, Heston Grange, Middlesex. *Architects:* Morton, Lupton & Smith. *General contractor:* William Moss & Sons Ltd.

Housing, Slough Lane, Wembley, Middlesex. *Architects:* Clifford Wearden and Associate. *General contractor:* Mullen & Lumsden Ltd.

Housing, Ellor Street, Salford, Lancs. *Architect:* Professor Sir Robert H. Matthew, University of Edinburgh Architecture Research Unit, in association with G. A. McWilliam, City Engineer. *General contractor:* Direct Labour Building Dept., Salford. *Sub-contractor:* Fram Reinforced Concrete Co.

Offices, Watford, Herts. *Architects:* Douglas Stephen and Partners. *General contractor:* J. Jarvis & Co. *Sub-contractors:* Tyrham Ironworks, Parkinsons Ltd., Ajax Aluminium Ltd., Dunlop Semtex Ltd., Asphaltic (London) Ltd., Aygee (Metal Windows) Ltd., J. W. Gray & Son Ltd., Isocrete Co., Duncan Watson Ltd., Marryat & Scott Ltd., Eadem Ltd., Adamsez Ltd., Hunts Mill Steelworks.

Church, Clifton, Bristol. *Architects:* Robert Potter and Richard Hare. *General contractor:* William Cowlin & Son Ltd.

Church, South Yardley, Birmingham. Denys Hinton and Associates. *General contractor:* J. R. Deacon Ltd.

Missionary Society Headquarters. *Architects:* Ansell and Bailey. *General contractor:* Ashby & Horner Ltd. *Sub-contractors: Foundations:* Pressure Piling Ltd. *Heating:* Rosser & Russell Ltd. *Windows:* Luxfer Ltd. *Electrical:* Grierson Ltd. *Lifts:* Otis Elevator Co. *Joinery:* Samuel Elliott & John White Ltd. *Bricks:* Henry J. Greenham.

Seamen's Hostel, Salford, Lancs. *Architects:* Desmond Williams and Associates. *General contractor:* William Thorpe & Son.

Building techniques, materials and equipment, furnishings and fabrics are the tools that architects must use. Many British and foreign products introduce themselves by way of the REVIEW'S *advertisement pages—and the AR Reader's Enquiry Service, contacted by using the reply-paid form at the back of the magazine, will produce more detailed information without waste of time.*

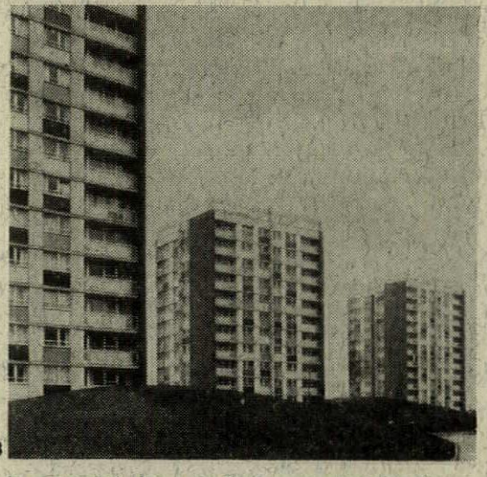
STOP PRESS

A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn and illustrated by Kenneth Browne.

OUTRAGE

LIVERPOOL
The present state of the site of St. Margaret, Anfield, 1 (see AR June 1963). The replacement had better be worth while.

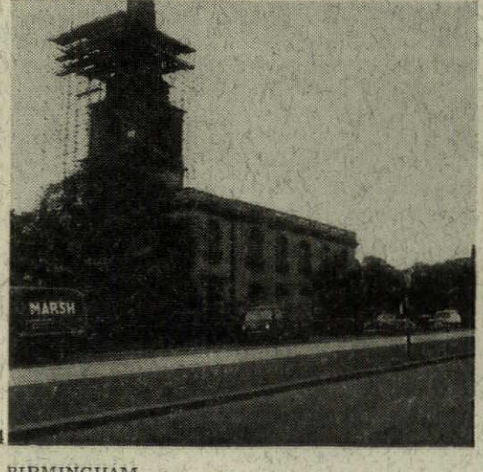
ARCHITECTURE AS SHE IS SPOKE
New flats at Heywood, Lancs, 2, and at Rainham, Essex, 3. Modern architecture



3

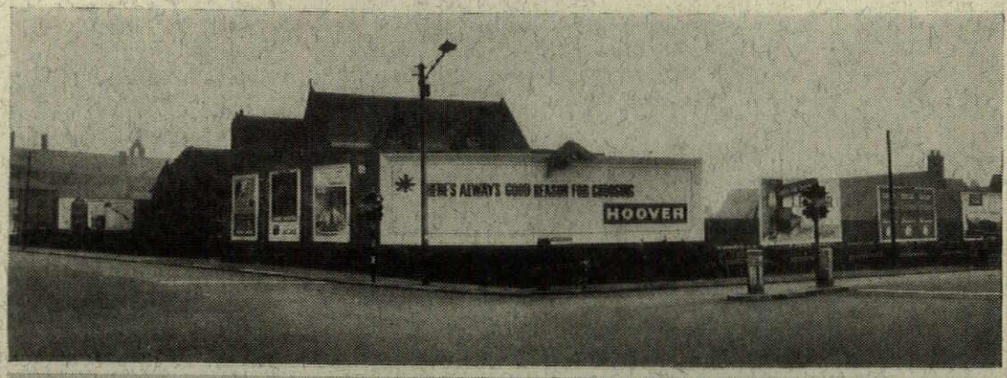
has sowed the wind of arrogance and insensitivity, and here comes the whirlwind roaring back.

WOLVERHAMPTON
The Georgian church of St. John was once surrounded by a square of houses. They decayed, but could have been replaced by new designs. Instead, there is a ring road—a notable improvement, 4.



4

BIRMINGHAM
A slight mis-alignment in a new shopping centre off Corporation Street, 5—or is it



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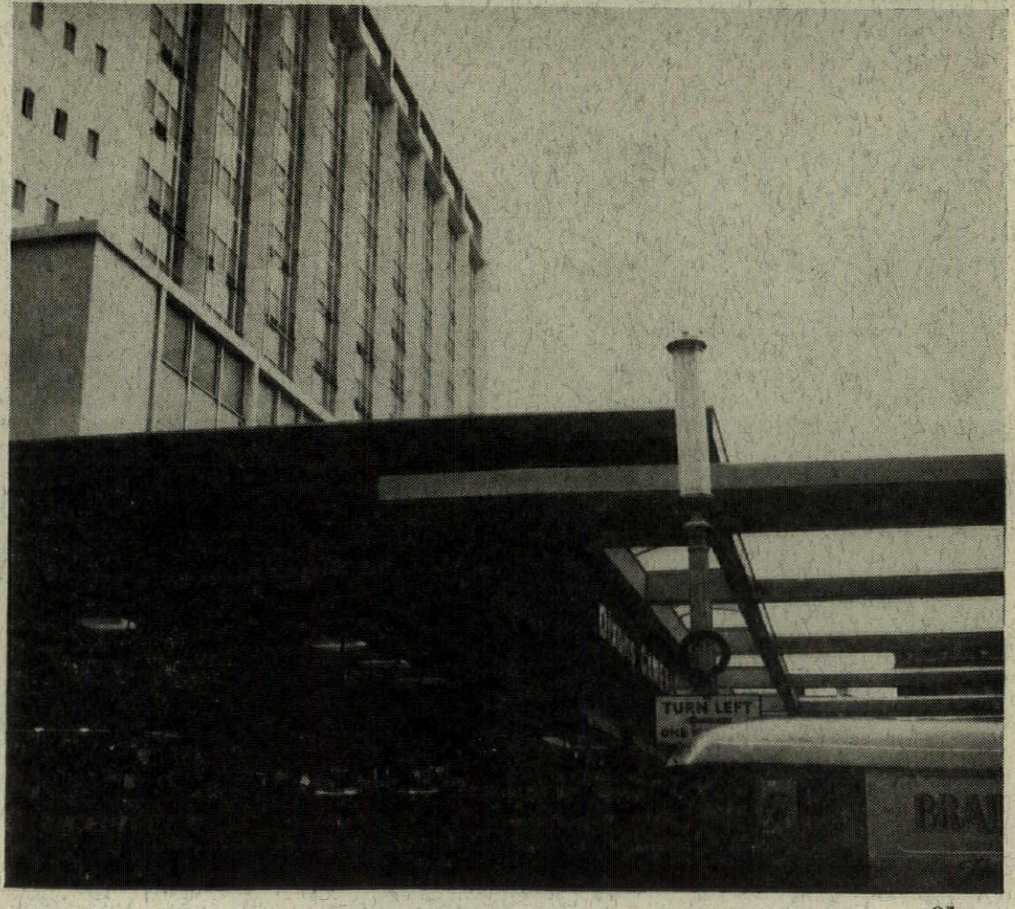


5



6 Market Place — Melton Mowbray KB.

an 'interesting effect of interpenetration'? Come off it, gents; the public is not mocked.

CREDIT

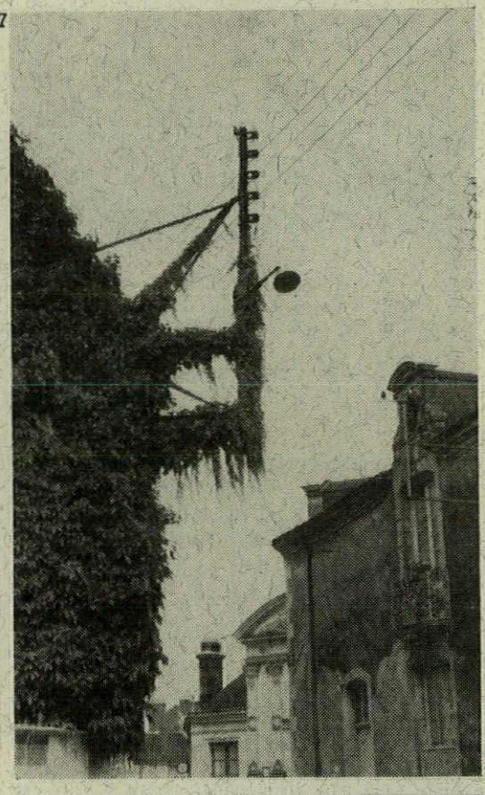
MELTON MOWBRAY
A country market-place, 6, apparently immemorial. Yet this space which seems exactly right for the town has been created by demolishing a block of buildings. This has obvious dangers, but it has certainly succeeded here.

LE LUDE, FRANCE
An unexpected and inexpensive way of claiming back the town's personality from an overhead electricity system, 7. It suggests many other applications.

OPPORTUNITY

HAVERHILL, SUFFOLK
The busiest junction in the old centre of this expanded town, 8, 9. Now, it is a desert of backsides and parked cars; but it could become a splendid centre.

7





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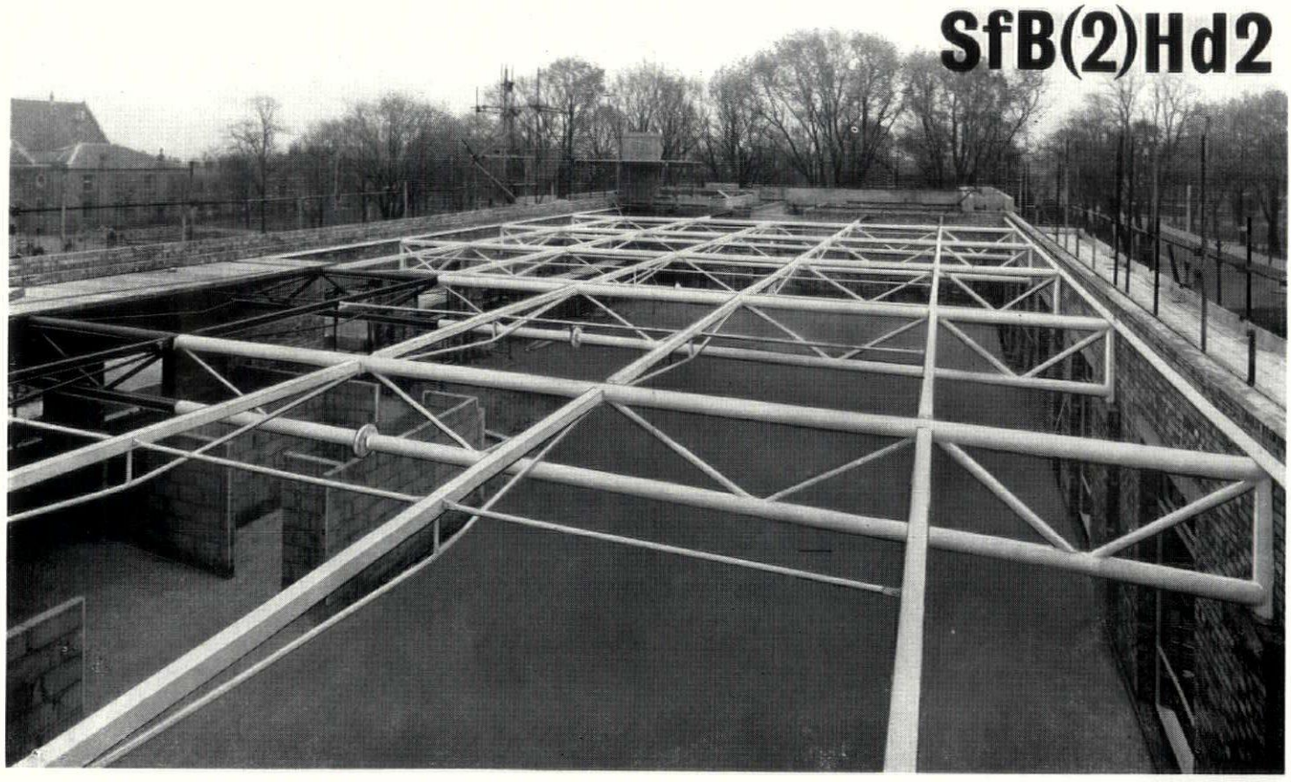

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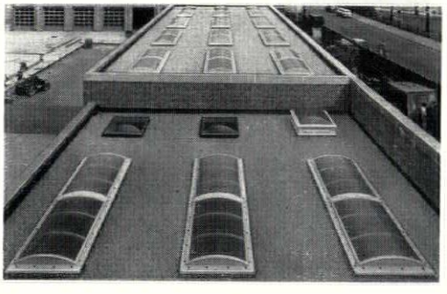

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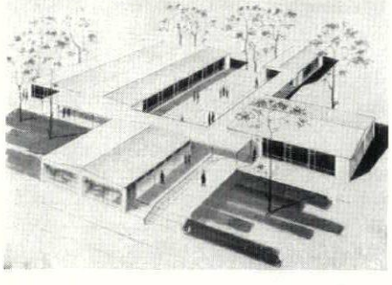

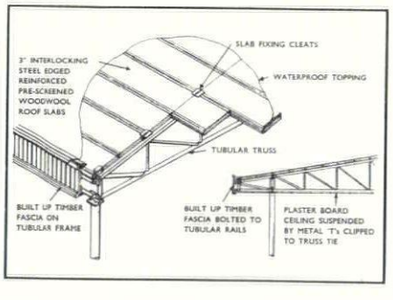

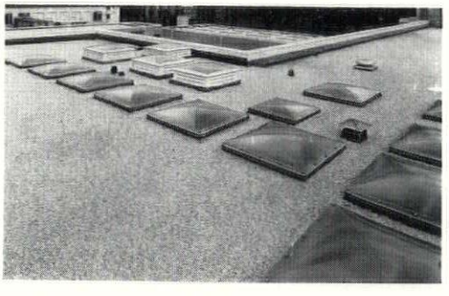

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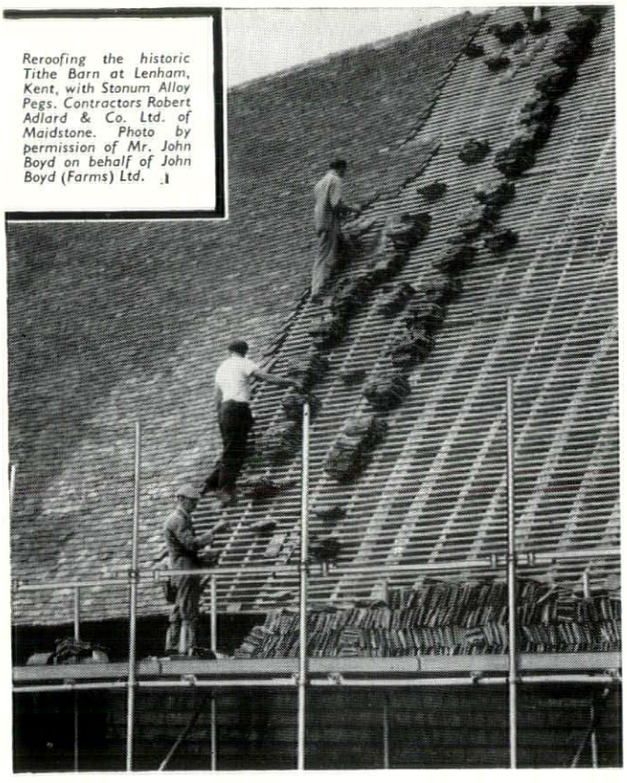

Reroofing the historic Tithe Barn at Lenham, Kent, with Stonum Alloy Pegs. Contractors Robert Adlard & Co. Ltd. of Maidstone. Photo by permission of Mr. John Boyd on behalf of John Boyd (Farms) Ltd.

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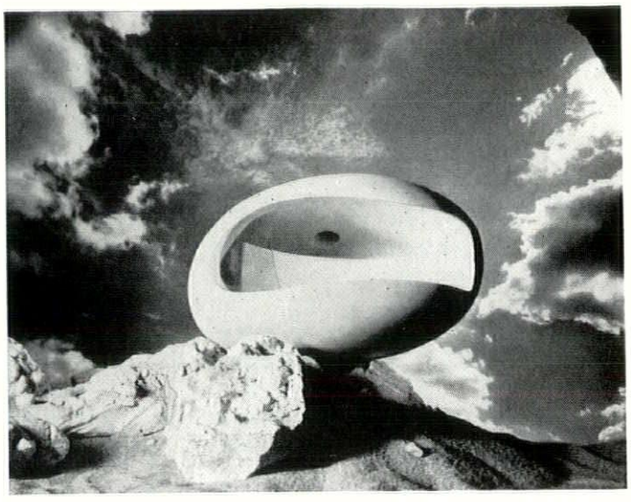
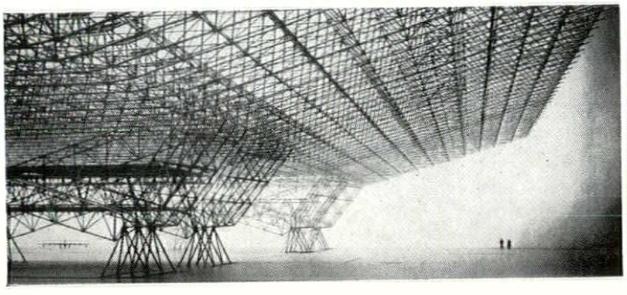


FANTASTIC ARCHITECTURE



by Ulrich Conrads and Hans G. Sperlich

People who say that modern architects can think of nothing but glass boxes should read this book and hold their peace, for here are the irregular inspirations and informal fantasies which for the most part have been lying hidden in architects' minds and sketchbooks, awaiting the day when there would be the clients willing to pay for them, and the technical means to construct them. Some of these fantasies are purely decorative, others soberly structural; some are the product of imaginative exuberance, others the consequence of logic ruthlessly applied to unconventional situations; some are the expression of untutored folk-fantasy, others the product of sophisticated technology. This is the other half of modern architecture, the half that mostly failed to get built, largely for reasons beyond the architects' control or desire, but it represents tendencies and ambitions always waiting to break free and now—given less hide-bound patronage and even more capable engineers—on the point of realisation, or even built.

Many of the documents in this fascinating study have never before been published. The personalities discussed include Castiglioni, Chernikov, Cheval, Finsterlin, Fuller, Gaudi, Goff, Kiesler, Le Corbusier, Lissitsky, the Luckhardts, Mendelsohn, Niemeyer, O'Gorman, Otto, Poelzig, Rodilla, Sant'Elia, Soleri, the Tauts, Wachsmann, and Wright.

Size 11¼″ × 8¼″, 184 pages. Price: 73s. 6d. Postage 2s.

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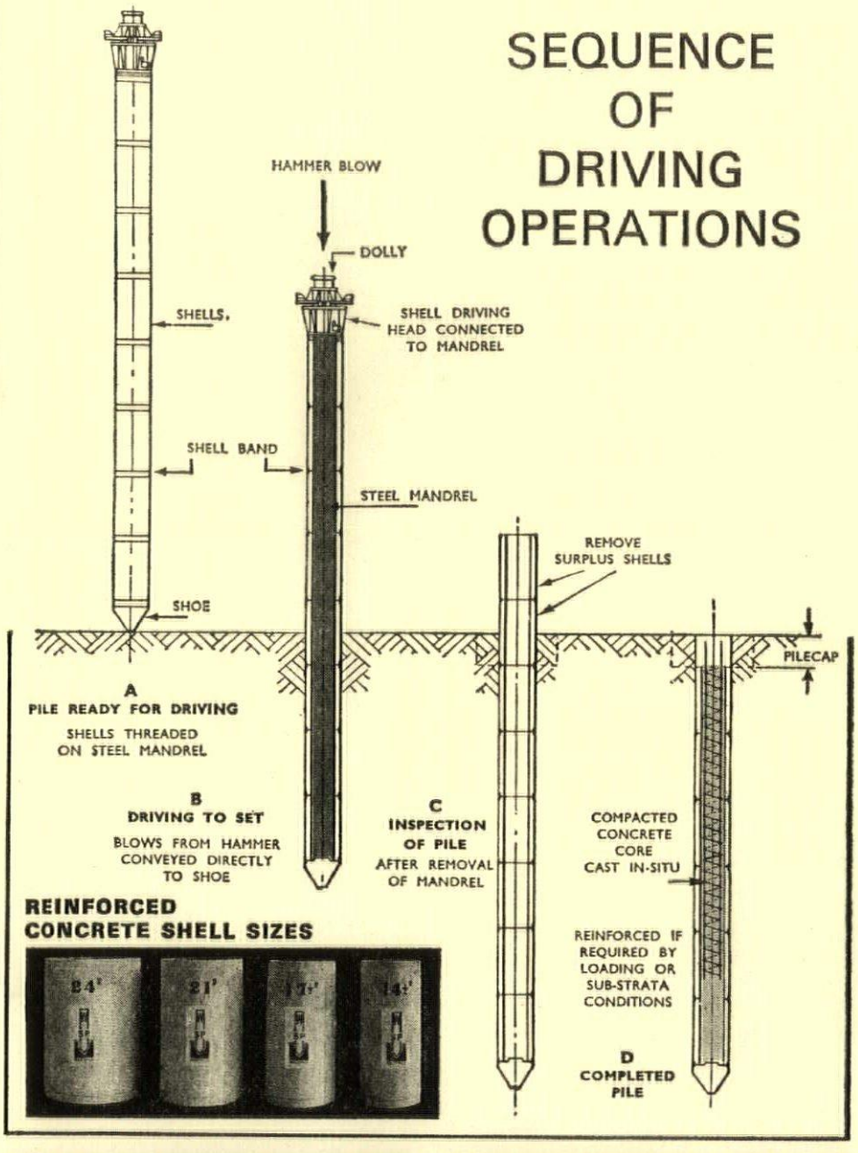

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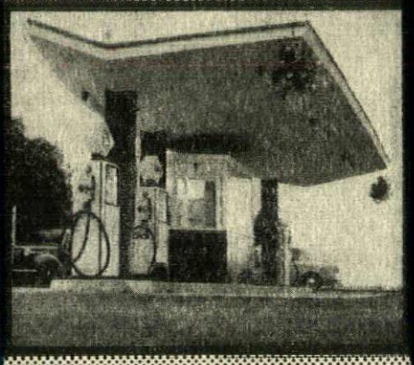

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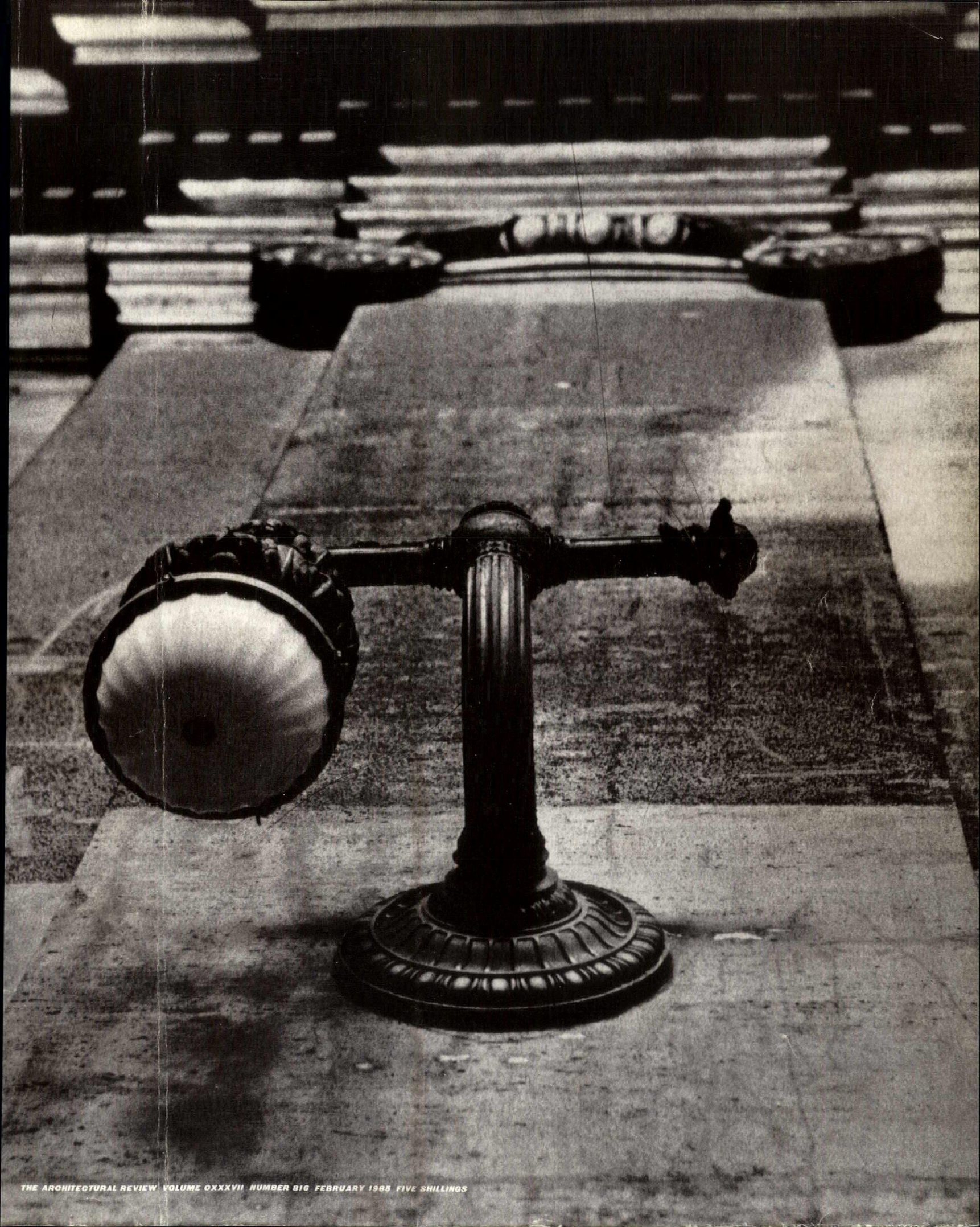

THE ARCHITECTURAL REVIEW VOLUME OXXXVII NUMBER 816 FEBRUARY 1965 FIVE SHILLINGS

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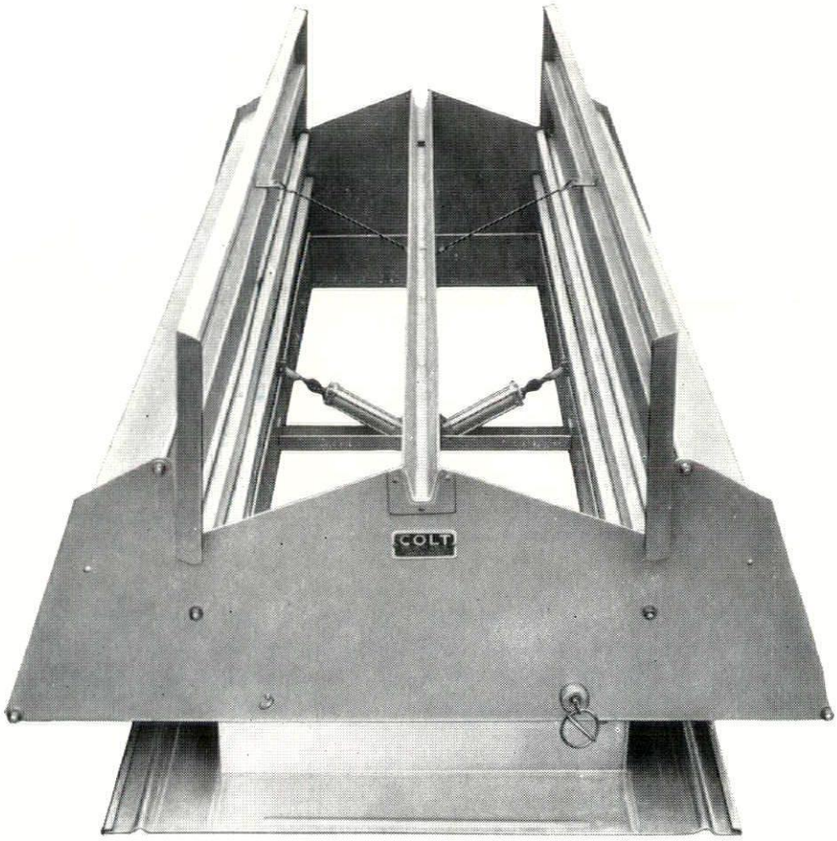

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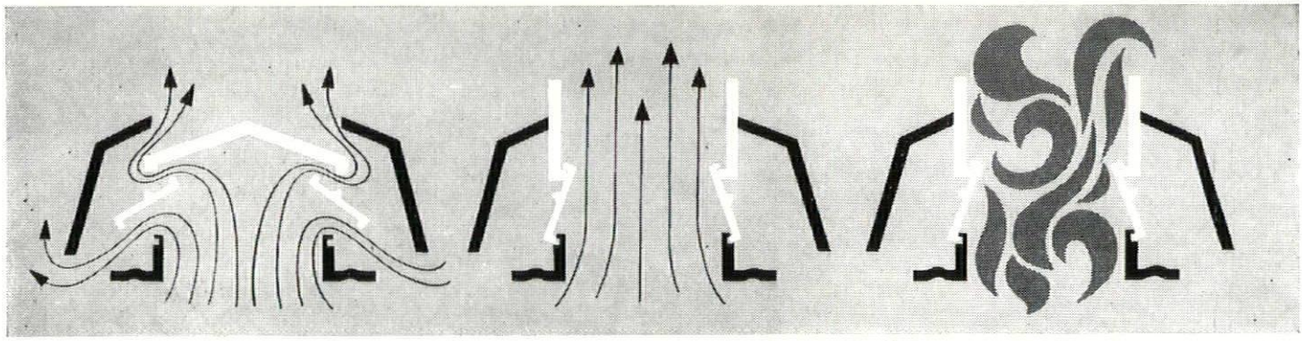

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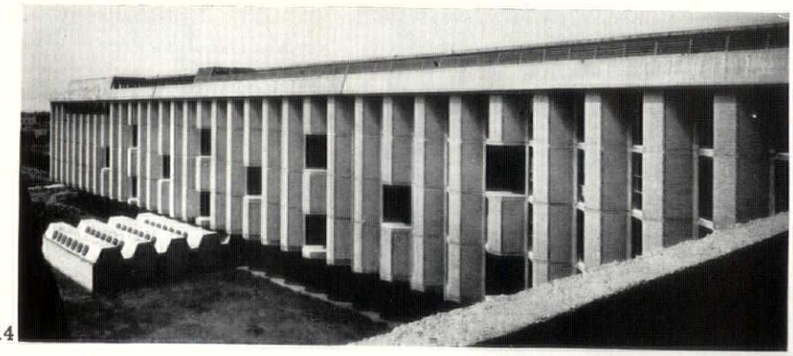
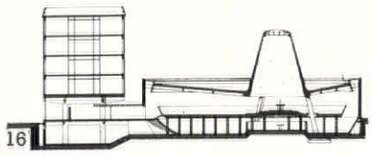


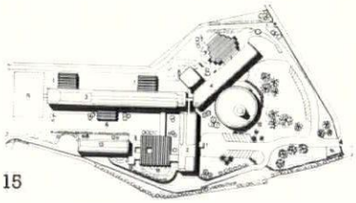
14

Lancaster University (in last month's 'Preview' issue). The plan shows games room (5), small hall (6), music room (7), library (8), great hall (9), chapel (10) and refectory (11). The section, 16, through the link to the chapel and crypt emphasizes the cone-shaped rooflight over the altar.



16

continued in the chapel, 17, which follows the pattern of Yvetot or Saarinen's MIT chapel, in placing the altar off-centre in a circle. The particular interest lies in the general layout, 15. This use of three standard units of staff and student living as the core of a linear plan is similar to



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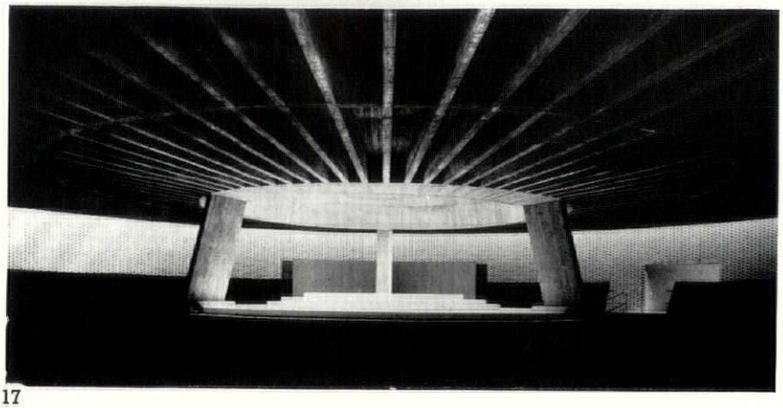

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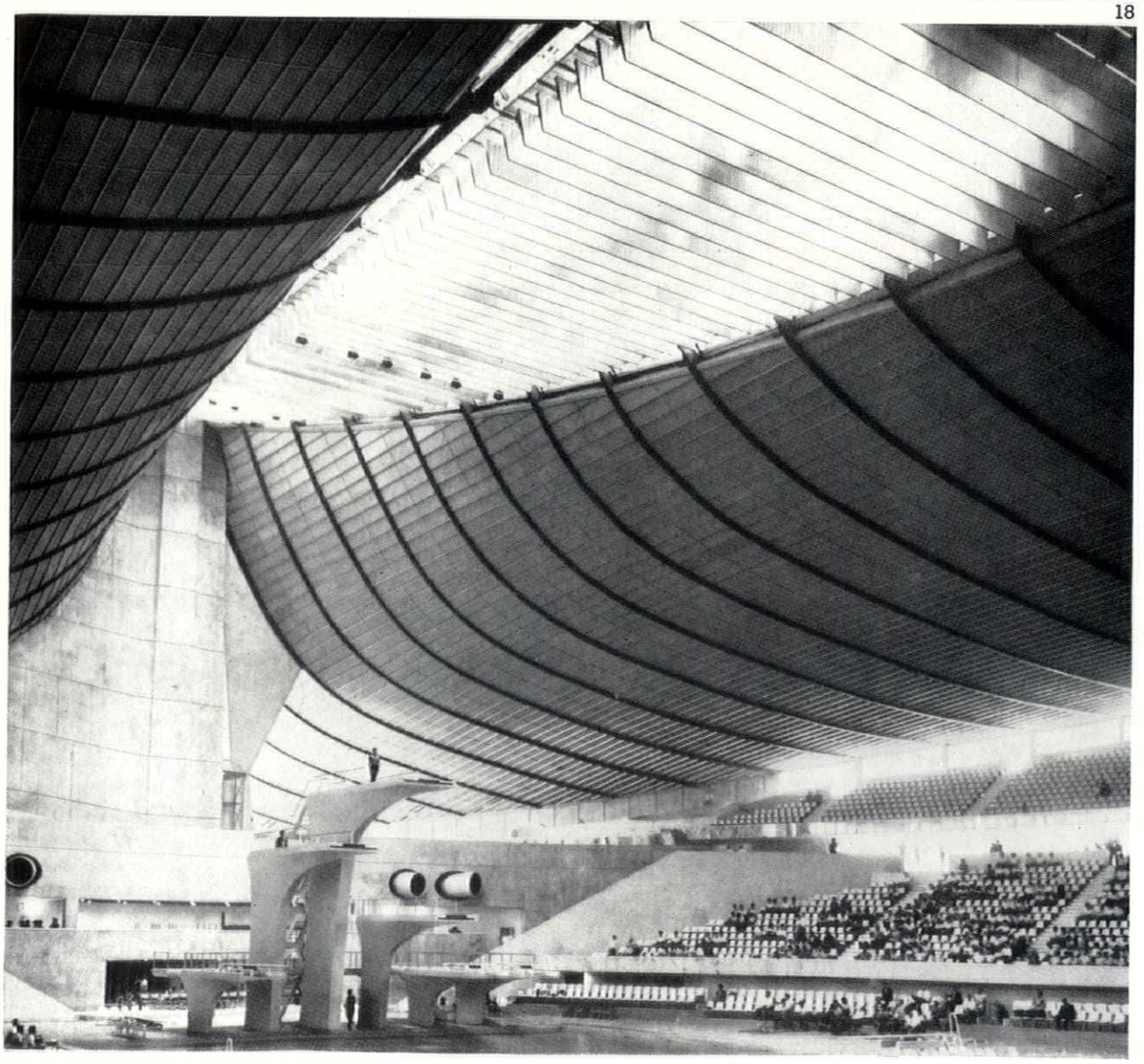
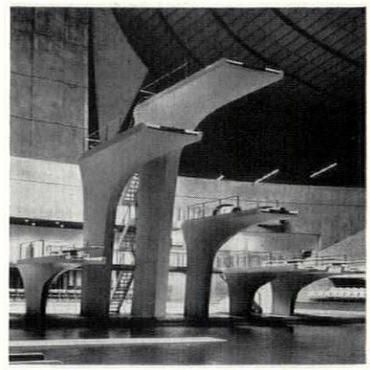


18

GOLD MEDALLIST

Possibly because of the 'temporary' significance of the Olympic Games, Kenzo Tange's two permanent buildings in Tokyo's Yoyogi Sports Centre were not generally given the notice they deserved until their publication by *Japan Architect* in November. The National Gymnasium, 18, must surely be one of the finest interiors of the decade, and alone justifies the award to Tange of the RIBA Gold Medal for 1965. If Tange seems to owe something to Saarinen's Hockey Rink at Yale, this is probably only because of the superficial similarities of tensile structures. Tange says that his choice was based partly on economy of structure and services, but mainly on his wish to create an 'open form,' a limitless space of gently diffused light. The main gymnasium, seating 15,000 and at present fitted for swimming or ice-skating, is joined to the small gymnasium, 20, by a link building and promenade. The main entrance is halfway up the stands.

The two main steel cables link towers at each end, and from them a multitude of smaller cables tie up with the cantilevered concrete arcs formed by the back of the stands, 21. Tange has



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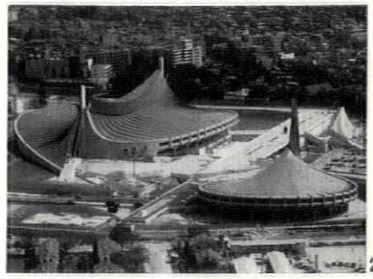

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TOKYO OLYMPICS



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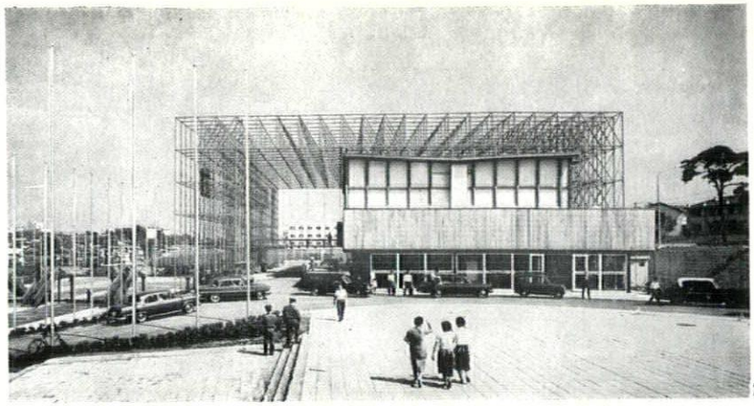
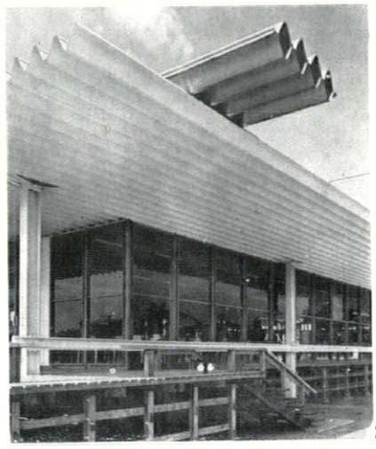


23

been extraordinarily successful in unifying space and mass and structure, from the serene sculpture of the diving boards, 19, to the dramatic entrances at each end, 22, where the cables are reassuringly open to view.

Of the many other excellent Olympic buildings, the athletes' village contains two: the delicate space frames of the main gate, 23, by Prof. Kiyoshi Seike and students, and the corrugated dining room, 24, by Kiyonori Kikutake. The other main centre, the Komazawa Olympic Park is dominated by Yoshinobu Ashihara's gymnasium, 25. In the background can be seen the stadium by Masachika Murata; its 'petals,' which look deceptively like the supports of a concrete dome, are in fact the canopies over the stands.



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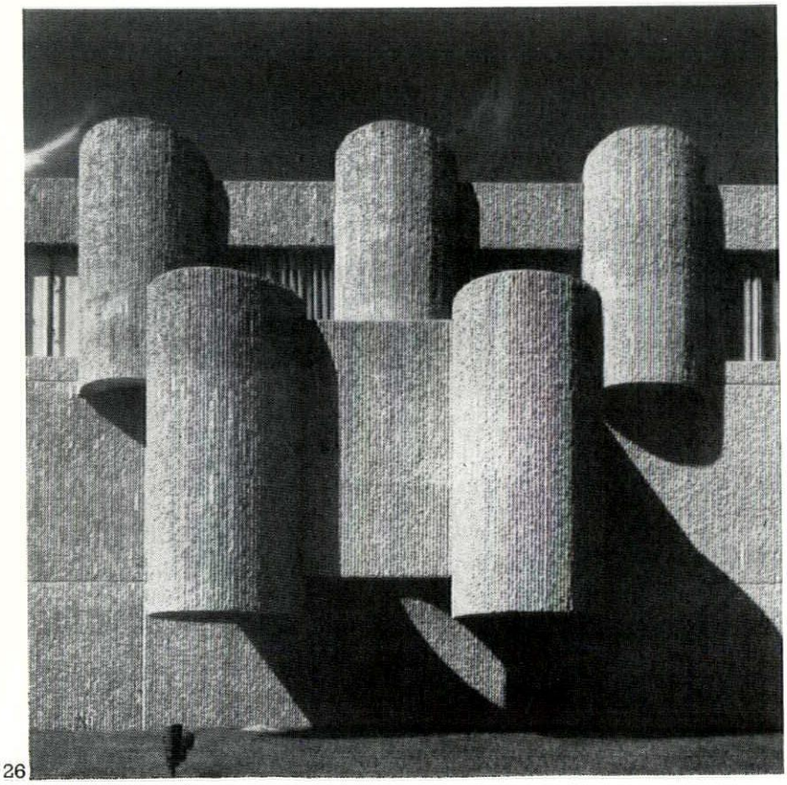
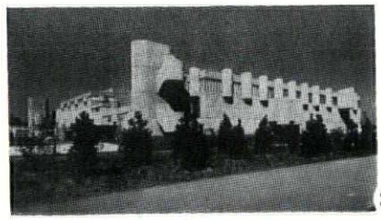


26

CHATEAU ENDO

The recent exhibition of Paul Rudolph's work at the U.S. Embassy in London included his latest completed work, the Endo pharmaceutical laboratories at Garden City near New York. This uses exactly the same ribbed concrete finish, 26, as the Art and Architecture Building at Yale (where Rudolph has recently resigned his professorship because of his expanding practice). The extraordinary turreted silhouette on every side, 27, is in part a reflection of a compact and well-organized plan, with administration and research placed over the top of the two main production levels. The turrets, besides their structural function as coupled columns, accommodate alcoves and executive desks and ducts, but many of them are superfluous ornament. Those on the lower floors hide such things as air intakes and exhausts. The concrete finish is continued within, with a disconcerting violence of scale. The final *pièce de résistance* is the visitors' approach to the second floor by means of a broad Baroque stairway, 28 (the influence of Corb's Harvard Arts Centre?).



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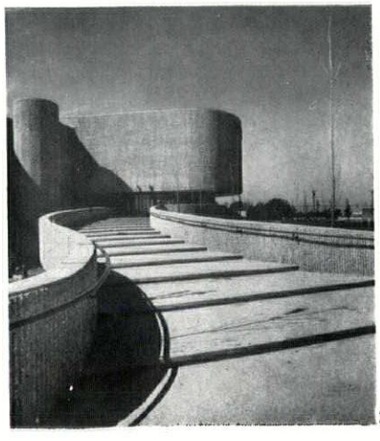


28

VIEWS AND REVIEWS

marginalia

SULLIVAN SALVAGED

In the New World as well as the Old the process continues of evaluating buildings of the immediate past and sifting out those which deserve to rank as historic monuments. In the Old World we are used to discovering that the monuments we decide should be valued most highly are not the ones it is most easy to preserve, and we suffer many losses due to ignorance, philistinism or the less avoidable exigencies of city renewal. In the New World it is no doubt the same, and the two photographs from New York, taken by Mr. Adam Ritchie and reproduced on the cover of this issue and as the frontispiece (page 100), illustrate something of the profit and loss account that has to be regularly struck. They also suggest that sometimes at least buildings lost are compensated for by more important buildings saved.

The cover shows a building now in the process of being lost: Pennsylvania Station, New York, built between 1906 and 1910. It is one of the more notable of the monumental city buildings to come out of the office of McKim, Mead and White and one of their suprisingly successful attempts to adapt the style and proportions of the Roman bath to a new purpose the Romans never knew. It is a building that many will regret, representing as it does an important episode in American architectural history. Expert opinion in America, however seems to take varying views of the building's importance. The building on the frontispiece, on the other hand, Louis Sullivan's no. 65 Bleecker Street, is of vital importance. It stands in an area, south of Washington Square, that is subject to much redevelopment, and is being preserved at the cost of sacrificing some of its sculptural ornament through the remodelling of its ground floor.

Even this ornament, moreover, is being saved by being transferred to the Brooklyn Museum. The accompanying picture, 1, showing some of it being prised off the face of the building, was published in the *New York Times* in October with an article by Ada Louise Huxtable in which this salvage operation was described.

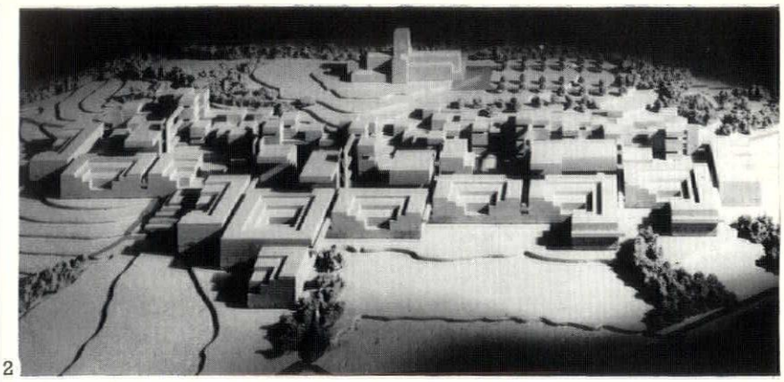
Previously known as the Bayard Building and then as the Condict Building, it was Louis Sullivan's only building in New York; it is a text-book example of the Sullivan office building richly encrusted with ornament—in this case of terra-cotta—and yet highly expressive of its twelve-storey steel-frame structure. It was built in 1897/98, and according to Mrs. Huxtable's account its lower storey was partly destroyed about 15 years ago when the upper parts of the original shop-fronts were covered with breeze block and plaster to solve some weatherproofing problem, hiding the original Sullivan treatment which included elaborate foliated column capitals. The ground floor is now being given a new facing of granite and aluminium, 'standard contemporary' in style. The original glass area is thereby being restored, but the capitals are being removed.

The architect for the remodelling is Gustave W. Iser and both he and the owner of the building, Mrs. Huxtable reports, are aware of the building's status and uniqueness. The main part of the facade therefore is to remain and the frontispiece photograph of its upper part shows that the ornament is still in reasonably good condition.

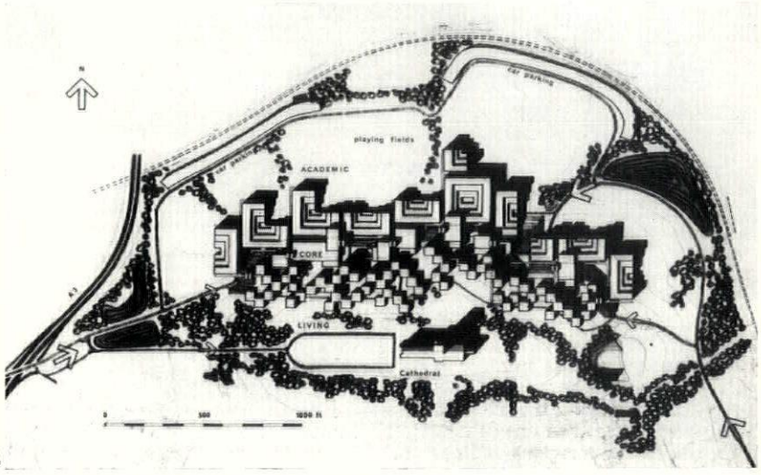
The salvage operation which rescued the capitals for the museum was the work of a group of enthusiasts called the Anonymous Arts Recovery Society. Under the leadership of Ivan Karp the society keeps a watch on buildings due to be demolished and takes what steps it can to ensure the preservation of important and characteristic sculpture and ornament.

1, *ornament on the Sullivan building on Bleecker Street, New York, being removed for preservation in the Brooklyn Museum. See note above.*





2, *University of Surrey, seen from the north, with Guildford cathedral in the background.* 3, *site plan.*



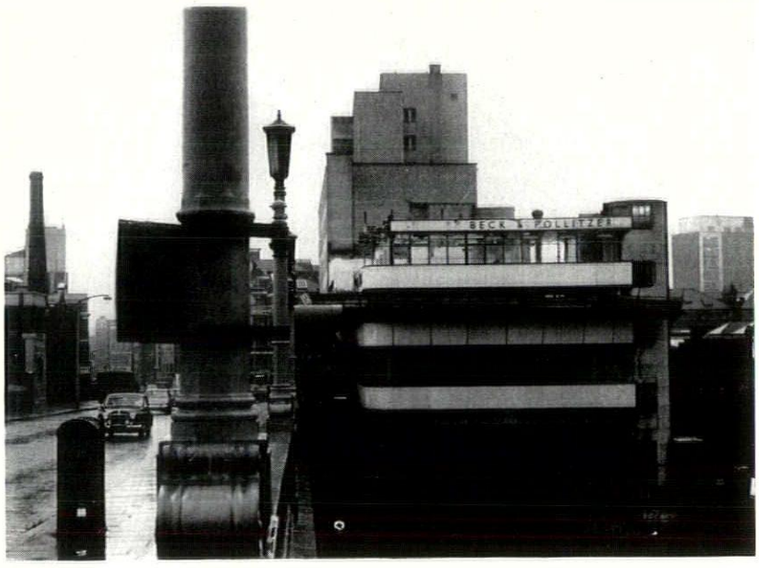
UNIVERSITY OF SURREY

Sir Edward Maufe's chastely post-Gothic cathedral has always sat rather uneasily apart from the rest of Guildford on the eminence of Stag Hill. This isolation is to be abruptly ended when the Battersea College of Technology achieves its promotion as the University of Surrey. This, the latest of university plans, prepared in only nine months by George Grenfell Baines of Building Design Partnership, aims at combining the urban compactness of Essex and Norwich with the industrialized building techniques of York. The urban solution was chosen deliberately: the Stag Hill site is only 80 acres, and when it is filled, expansion will have to move across the A3 by-pass to the 294-acre Manor Farm site, which will from the first contain research institutes and playing fields.

The architects' plan for the Stag Hill area, 3, shows the grouping of buildings in three bands: residential blocks nearest to the cathedral, communal and administration buildings in the centre, and academic faculties and laboratories spreading northwards down to the railway. For the academic buildings complete flexibility is intended. The basic unit will be L-shaped, with a stepped section containing small offices and studios on the top floor, medium-sized classrooms and laboratories in the centre, and large ground-floor spaces for large laboratories and heavy machinery. Besides its remarkably close proximity to the existing town centre and its strong bias academically towards technology, the main feature of the plans for the University of Surrey is the remarkable speed at which it is proposed to build it. The first buildings will be ready for about half the present number of 1,600 students in 1967-68 and for the other half not more than a year later. Thereafter numbers will rise to the target of 5,000.

'EARLY MODERN' AS ANCIENT MONUMENTS

If we are going to list buildings for preservation (or conservation, whichever word is preferred), why should we stop at 1914? This question is not as outlandish as it may sound. In 1962 the Buckinghamshire county architect, Fred Pooley, saved Connell & Ward's 'High and Over' at Amersham (1928) from demolition by successfully imposing a preservation order. The ever more rapid reappraisal of buildings designed by previous generations is paralleled by the equally rapid turnover of demolition and rebuilding. Buildings barely thirty years old are already being threatened with redevelopment, not because of structural decay or functional inadequacy but simply because of the profitability of exploiting their sites. Two such cases have occurred recently: the Curzon Cinema, a fine Dudok-style building by Sir John Burnet, Tait & Lorne of 1933 (and the most comfortable cinema in London) has been demolished to make way for a new cinema-



4. *Universal House, by Joseph Emberton, in course of demolition.*

plus-office block designed by the same firm; the late Joseph Emberton's Universal House, built for Beck & Pollitzer at the southern end of Southwark Bridge also in 1933, has been removed for a large office block designed by Stone, Toms and Partners.

The Emberton building, 4, with its three storeys of glass-walled offices above a toughly detailed brick ground-floor storage area, was one of the few Thames-side commercial buildings of real merit. It was in fact designed to carry the load of three extra office floors, but the LCC gave permission to its owners (who thereupon sold it) to develop the site 'comprehensively' with the two neighbouring wharfs. It will be seen next year whether the new building is as good as the old. Even if it is, there must surely be a case for a 'short list' of pioneer buildings of 1919-39 to be prepared by the Ministry of Housing for the guidance of local authorities. An Emberton fan can hardly be accused of being olde-worlde.

50 YEARS OF DIA

The fiftieth anniversary of the Design and Industries Association is celebrated by an extra large *Year Book* for 1965, with an appropriate golden cover designed by Ian Bradbery; the typography is by Michael Bennett. The interest of the *Year Book* to non-members of the DIA lies mainly in a massive and characteristic Jubilee history of 18 pages by Nikolaus Pevsner, who traces the development of informal interest in modern industrial design by quotation from the many defunct journals spawned by the association. Dr. Pevsner is unsentimental—he makes no secret of the DIA's adherence to Georgian 'good taste' in the late 1920's or of its stagnation in the late 1940's. The peaks of achievement are illustrated by interesting, long-forgotten photographs: the early appreciation of the beauty of mechanical objects such as aeroplanes, the introduction of international modern architecture in Bassett-Lowke's house at Northampton, the pioneering outbursts against subtopia under the presidency of Clough Williams-Ellis, the publicity given to Breuer and Yorke's design for a modern city in 1936.

What of the DIA itself and its future? Obviously, as Pevsner notes, most of its earlier functions in liaison between manufacturers, artists and public have now been taken over by such official bodies as the Council of Industrial Design. However, educational work by an independent body is as necessary as ever, now that the choice is not so much between 'traditional' and 'contemporary' as between various brands of 'contemporary,' in which gimmick poses as function and *vice versa*. After remarking on the sudden increase in DIA membership from 700 in 1962 to 1,400 in 1964, Pevsner finishes with the hope that 'the new men of the DIA with their scorn of gentility' can use 'a new kind of critical tenacity' and 'embark on the Great Sifting.'

US ARCHITECTS IN LONDON

The US Embassy is staging in Grosvenor Square a series of small but well presented photographic exhibitions, each dealing with the work of a leading American architect. The subject of the first (November-December, 1964) was Paul Rudolph. It was seen by some 6,000 people and has since been sent on tour. In January it was at the University of Bristol, and it will subsequently be shown at the Universities of Edinburgh and Leeds and at Glasgow School of Art.

The second exhibition (December, 1964, to January, 1965) was on Philip Johnson and, like the Rudolph exhibition, was retrospective, illustrating the consistently cerebral, but increasingly formalistic, nature of Johnson's work. At the time of the exhibition's opening Johnson made an impressive and characteristically articulate appearance on the BBC Monitor programme.

FUN PALACE

On page 74 of the January 'Preview' issue, devoted to Cedric Price's Fun Palace project, two of the captions explaining the key to one of the diagrams were regrettably transposed. The diagram was entitled 'section, showing crane handling and major floor levels'; and the caption in the key, reading 'total control zone, large suspended units' should be transposed with the caption reading 'partial control zone beams and slabs.' The former refers to the centre aisles, the latter to the side aisles.

BURLE MARX

All the photographs reproduced in the November, 1964, AR with the article 'The Versatility of Burle Marx' were, with the exception of those illustrating Burle Marx's jewellery, taken by Mr. Guy Playfair, the author of the article.

SUSSEX LIBRARY

The general contractors were wrongly named when the library at Sussex University, designed by Sir Basil Spence, Bonnington and Collins, was illustrated in the December AR. They should have been given as James Longley & Co. Among the sub-contractors should have been included H. J. Cash & Co. and Electrical Installations, Ltd.

SHIPPING OFFICES, LAGOS

The louvres covering the outside walls of the above building, designed by James Cubitt and Partners and illustrated in the December AR, are of vitreous-enamelled steel (not stove enamelled as given in the text). The manufacturers were Stewart & Gray Ltd., of London.

resurrection

ARCHITECTURAL FORUM: 1965

Happy the man who reads his own obituary. The REVIEW has no dogmatic certainty that the heading 'resurrection' will be used as frequently, but there could be no better first recipient than *Architectural Forum*, which will re-appear this next April, long after hope for its continuance was thought to have perished. The miracle-worker is the American Planning and Civic Association (president—Harland Bartholomew), which is the nearest equivalent to our own Civic Trust and was founded as long ago as 1904. The association has bought *Forum* from Time Inc. and plans to run it basically as it was before publication ceased last September. Peter Blake will be editor, Douglas Haskell will head the board of contributors, and many of the old staff are back in their former or higher positions.

This news—and the knowledge that *Forum's* new owners will encourage concentration on townscape and civic design—is at once a vindication of the magazine's previous policy and a slap in the eye for those who surrendered so weakly to the pressure of the market. The REVIEW wishes every success to *Forum* and its staff in their second incarnation.

correspondence

THE BLACK FRIAR

To the Editors.

SIRS: Congratulations on your article and illustrations in November's issue, and the expression that 'uniqueness of the decoration gives a demand for preservation.' The date you give for the building of the Black Friar public house in Queen Victoria Street (about 1905) is probably correct for the corner triangular building, but the 'snack bar' under the adjoining railway arch was not constructed until 1920. This 'priceless work of art' contains, as described in your article, interesting modelling by Henry Poole, but may I add that the following items were commissions entrusted to myself:

Sixteen small caps illustrating Aesop's Fables, and ten blocks on the cornice depicting nursery rhymes. These were carved in veined statuary marble (not alabaster as stated).

The three fibrous plaster circles in the ceiling, each enriched with eight small panels with animals, and twenty-nine insects; also some of the mosaic and the lettering.

I remember the lively interest taken by the client, Mr. Pettitt, and the enjoyment of the architect, Mr. Fuller-Clark, in the production, both working with love to create something unique and free for all to see and admire, in contrast to all the work behind closed doors.

Yours, etc.,

A. T. BRADFORD

Borough Road, London, SE1.

Nicholas Taylor, the author of the article on the Black Friar, writes: I am very grateful to Mr. Bradford. His letter is a fascinating enlargement of my article, which was severely

5, *detail of the Snack Bar in the Black Friar, with carving by A. T. Bradford—see his letter above.*



hampered by the fact that Poole and Fuller-Clark were both long dead and that I was unable to contact the Pettitt family. Little did I know (or guess) that the snack bar was as late as 1919-24 in date (if not in style) and that *The Architects' Journal*, on January 9, 1924, published an illustrated feature on the newly completed work (though without the credits due to Mr. Bradford).

Mr. Bradford has told me more in conversation. H. Fuller-Clark, the architect of the Black Friar, was a poor, hard-working assistant in t[illegible] architects' department of one of th[illegible] 'Big Five' banks (almost certainly Barclay's). His work for Alfred Pettitt was done 'on the side' (hence his obscurity), starting with the saloon bar in about 1905. He also designed a gravestone at Wivenhoe, Essex, carved by Mr. Bradford, in memory of Pettitt's niece, Alice Hibbs, who died in 1923. In the later work at the Black Friar, Henry Poole, who had hitherto done all the sculpture, did only the larger panels and reliefs—E. J. and A. T. Bradford did the rest.

Mr. Bradford, who is 89, is probably the last of the old-style architectural sculptors still practising (his son runs the firm with him). Among his many works, he carved most of the sculpture for Trehearne & Norman in Kingsway and for Frank Verity (and the young A. E. Richardson, his assistant) in Regent Street and Portland Place. He also worked for J. J. Joass, G. H. Fellowes-Prynne and Sir Edwin Cooper.

Since writing the article, I have discovered by chance what I think was the first commission for Henry Poole from Alfred Pettitt. In the central precinct of Brompton Cemetery is a tall stone obelisk, with a finely cut inscription and a statue (of an angel or muse) in bronze, to the memory of Alfred Pettitt's wife, who died in 1896 aged 38. Stylistically, this seems likely to be Poole's work. Alice Hibbs was Pettitt's companion after his wife's death.

One final correction: the Hand in Hand Insurance Company, the imposing red sandstone *cinquecento* office block next to the Black Friar, demolished in 1964, was designed, not by J. H. Christian as I stated, but by Henry Dawson, the architect of Reed's School, Watford, and father of Lord Dawson of Penn. I am grateful to Mr. Gurney, the present senior partner of Henry Dawson & Son, for this information. J. H. Christian probably designed Bridge Street Chambers, the adjoining block, also demolished last year.

WORLD PARLIAMENT

To the Editors.

SIRS: In Mr. John Ritter's interesting article, 'World Parliament,' published in your July, 1964, issue, Mr. Ritter discusses and points out the highly significant project submitted to the competition by Richard Neutra. He is in error in asserting that this project was by Neutra only. It was in fact a joint project of R. M. Schindler and Neutra, and it was submitted by the two of them together. A study of the project, and a study of the original sketches and the then-current work of Schindler and Neutra, shows that there is as much Schindler in this project as Neutra. Neither one of them could have designed such a building entirely on his own. I strongly feel that the historical record should be made clear on this authorship. In mentioning this, I do not wish in any way to take credit from Neutra, who has been and is a very important figure in the history of twentieth-century architecture. Rather, I wish their submission to the competition to be seen as a gathering together, in one work, of the ideas of two highly gifted designers.

Yours, etc.,

DAVID GEBHARD

Mr. Ritter writes: I am grateful to Mr. Gebhard. I did know that R. M. Schindler was in some way involved, but had no idea how much; and the League's list, from which I took most of the competitors' names, did not mention him with Richard Neutra. I agree that they should both be given credit for a very important project.

book reviews

LINCOLNSHIRE REVEALED

THE BUILDINGS OF ENGLAND: LINCOLNSHIRE. *By Nikolaus Pevsner and John Harris. Penguin Books.* 27*s.* 6*d.*

This series has always been 'indispensable.' It is fast becoming enjoyable too. Following the successful Pevsner-Nairn partnership for *Surrey*, with Pevsner captain but with Nairn batting most of the time, another combination has been tried on *Lincolnshire* in which the boss has described all the churches and some medieval buildings of other types, and John Harris of the RIBA library has done all the preliminary research and has described all the remaining secular buildings—a vast number. The amount of original research is tremendous, for Lincolnshire books are rare and poorish, and anyone looking at buildings in the county has often, up to now, been reduced to Dr. J. C. Cox's *Little Guide* and *Kelly's Directory* for printed information.

Lincoln, Boston, Louth, Spalding, Stamford—where does one look for some description of their architecture? Three or four articles in old numbers of *Country Life* are the only answer. Where does one find a good modern description of the cathedral? One didn't, until now. And the present description is top-notch Pevsner. He gets a real grip on a subject like this and his analytic-descriptive method, relating the parts to the whole like a drawing by a fine late-Victorian architect, and then relating the whole to the rest of Europe, works beautifully—as it doesn't with some lesser churches. Everything has justice done to it—the Romanesque west front receives full treatment in the light of Zarnecki and other modern research, so does the vaulting (always a pet bee of the Professor's), and Wren, and the Victorian stained glass for the first time—though I would suggest that 'not at all bad' is a bit grudging for Ward and Hughes' glass in the east window, which has always seemed to me a Victorian masterpiece in its own restrained way. (Maybe they were lucky here after all; I see that in three other churches in the county their work is described as 'really terrible,' 'only too unmistakable' and 'with much pink, and terrible.')

We shall clearly be seeing a lot more of John Harris's writing on buildings in future, and the sooner the better. Bayons Manor, Harlaxton and some of the 'perambulations' are beautifully done. His touches of atmosphere are welcome as the flowers in May: the Brocklesby grotto is 'like a dark London tube,' and he praises the unsophisticated inns of the county for having 'real ostlers and ironed newspapers.' His opinions when he gives them are worth having: 'It could not be expected in 1933 that Cranwell College would choose any other style than that of between-the-wars Neo-Georgian confidence. As such it is a failure.'

The village church descriptions mostly disappoint me. I recognize that we need straight architectural descriptions of what is *there*, the bread, in fact, before the jam (or the lemon curd, or sandwich spread) of sentimental historicizing. But take Hacconby, for instance: 'St. Andrew. We start with the priest's doorway, which seems to be of *c.*1200. Then the E.E.arcades. Three bays, circular piers and abaci, double-chamfered arches. After that the W tower, of banded ironstone and grey stone. It is of the late C13 to early C14; see the W window, the triple-chamfered arch to the nave dying into the imposts, the twin bell-openings . . .' and so on. It takes me back forty years to the Victoria County History of Surrey, got with great difficulty from some early County Library, and to my youthful sense of disappointment. Churches are not like that, I felt. I still feel it.

Houses are for living in: churches are for worshipping in and looking at. There is no sense throughout the description of Hacconby that here is a church finely proportioned and finely sited, obviously thought of by its architect as related to the neighbouring fen, preserving some medieval atmosphere in spite of too many intervening rebuilding works; but in colour and light a handsome thing, and a much more exciting church visually than many of its neighbours. Surely these exact (but never, in any case, *complete*) architectural descriptions are better done by drawings or photographs? The English language boggles at them, as it does with the V.C.H. and R.C.H.M. descriptions. We wouldn't know that at Algarkirk is what amounts to almost a rebuilding by R. C. Carpenter of a grand medieval church, producing a total Victorian effect as beautiful in its way as what it supplanted—with the most complete all-of-a-piece Victorian glazing scheme in the county, by Hardman and Clayton & Bell—though architect, artists, dates are all clearly stated. Somehow the reality, the *fact* of Algarkirk, as I know it and recall it, has got lost.

Nobody could possibly know from the information here that Quadring, riding above the flat reedy fields like a ship in full sail, has a sadly done-up interior while Gedney, ditto, ditto, is a church-crawler's paradise. Maybe I am eccentric in wanting to know these things. Opinions, judgments, feelings—I *expect* them from a book about the buildings of England—and indeed I get them in many places. 'Coningsby . . . Baptist Chapel, 1862, and without any question terrible,' makes me want to go there and see it at once. It is opinions that make the wheels go round; there is no constructive method of recording architecture, or art, in words except by some sort of opinionated writing. Of Langton-by-Partney—a well-described eighteenth-century church with original furnishing—we read: 'Cox in his *Little Guide* says of all this "a comparatively modern brick church." This blindness to the C18 is his one shortcoming.' But shortcomings like this don't matter if one can translate them. I have always made a point of visiting eighteenth-century churches dismissed with a line by Cox. One knows where one is with him.

Useful illustrations. Good introductions. A few plans. An excellent study of Lincolnshire tracery, assisted by David Etherton. Why no bibliography? What is White's *Guide* (p. 191). Where do the line illustrations of coped stones and brasses come from? These are not grumbles. Nobody should be allowed to grumble about these 760 odd pages of hard-won, useful, often entertaining and occasionally indigestible information. Lincolnshire has at last a decent topographical book to its name.

JOHN PIPER

BRISTOL CHRONICLER

BRISTOL 1950-53. *By Reece Winstone with a Preface by John Totterdill. Published by Reece Winstone, 23 Hyland Grove, Henly Hill, Bristol, 9.* 15*s.*

It is to be hoped that a future successor to Mr. Reece Winstone will have an opportunity to illustrate the Winstone Memorial and tell his readers why Mr. Winstone received a public monument and how much Bristol owes him. Thanks to him, seven volumes of pictorial history of Bristol from 1880 to—so far—1953, are in the hands of Bristolians and non-Bristolians. Bristol's history is far more closely documented than that of any other town in Great Britain. The seven volumes together contain well over a thousand pictures. Of course there is chaff in them, but Mr. Winstone has a knack of photographing the unexpected object and finding the unexpected information. The present volume contains for instance The Rape of College Green, i.e., the chopping down of the old trees and the erection of a building whose 'exterior is unfortunately ugly,' and the story of the Arnos Court Bath House, jettisoned by Bristol and given asylum in Mr. Clough Williams-Ellis's home for fallen buildings.

N.P.

BOOKS RECEIVED

THE FAMILY HOUSE IN ENGLAND. *By Andrew Henderson. Phoenix House.* 21*s.*

COST PLANNING OF BUILDINGS. *By Douglas J. Ferry. Crosby Lockwood.* 21*s.*

ANNUAL OF ARCHITECTURE, STRUCTURE AND TOWN PLANNING. *Vol.* 4. *The Publishing Corporation of India*, 1963.

TODAY'S VILLAS. *By Roberto Aloi. Hoepli. L.*1500.

NEIGHBOURS. *By H. E. Bracey. Routledge & Kegan Paul.* 28*s.*

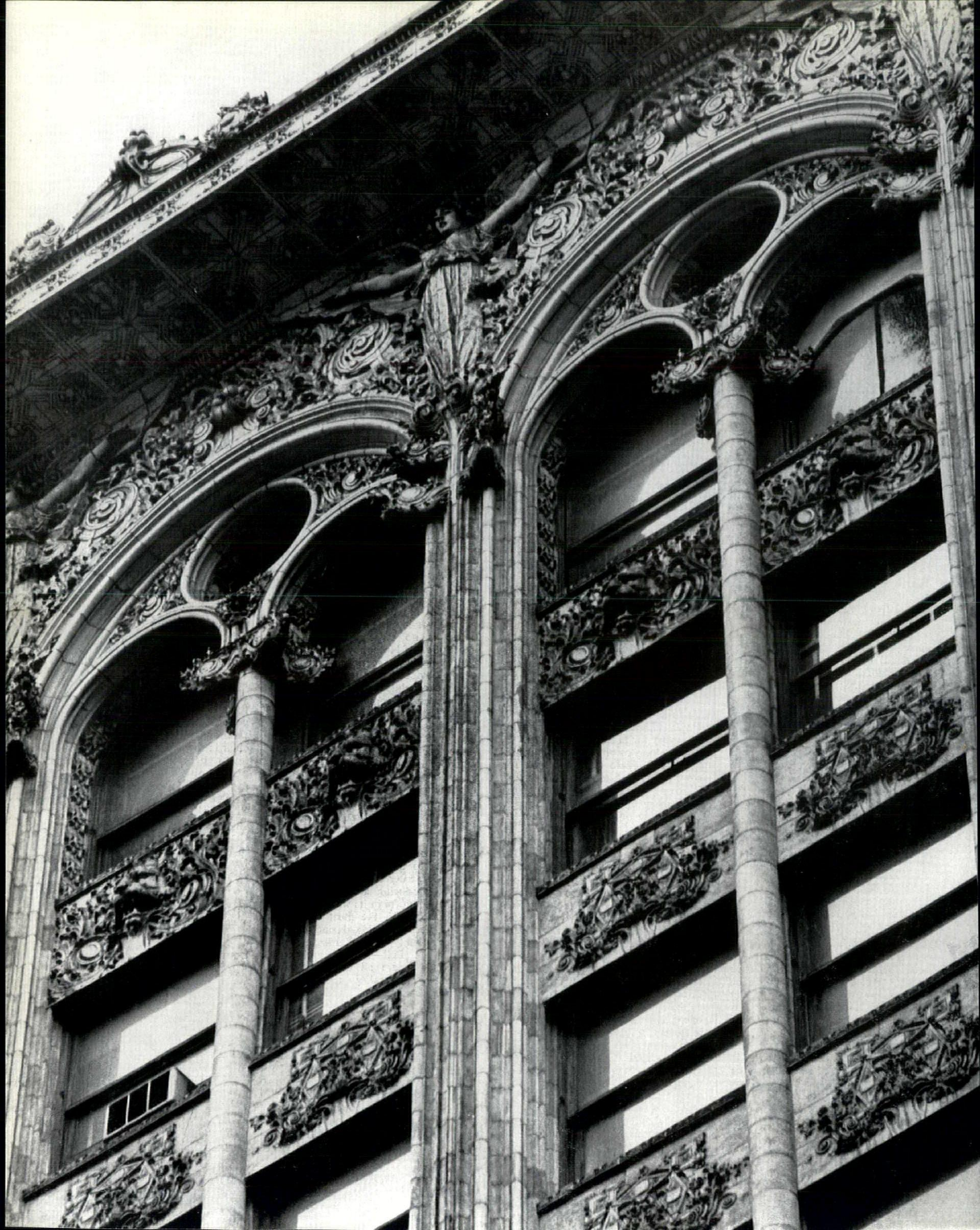
PRINCIPLES AND PRACTICE OF TOWN AND COUNTRY PLANNING. *By Lewis Keeble. The Estates Gazette.* 55*s.*

CONCRETE MIX DESIGN. *By J. D. McIntosh. Cement and Concrete Association.* 25*s.*

COLLECTED PAPERS ON ACOUSTICS. *By Simon and Schuster. Wallace Clement Sabine.* 16*s.*

SLUMS AND SOCIAL INSECURITY. *By Alvin L. Schorr. Thomas Nelson.* 30*s.*

GREEK ART. *By John Boardman. Thames and Hndson.* 35*s.*



Louis Sullivan's reputation is founded simultaneously on the directness with which he expressed the new frame structures of his Chicago office buildings and on his genius for inventing and applying ornament. In his only New York building, no. 65 Bleecker Street, these two qualities are closely and intricately combined, as the photograph  *opposite, taken recently by Adam Ritchie, shows. A note on page 97 of this issue records the decision to preserve the upper part, seen here, of the twelve-storey building while remodelling the lower floor, and describes the salvage operation that has resulted in some of the lower-floor ornament being transferred to Brooklyn Museum.*

Donald Smith

TOWARDS A THEORY

'Today we lack a satisfactory *theory of architecture*. . . . The architects have shown themselves rather unwilling to work out a theoretical basis for their field, mostly because of the prejudice that theory kills the creative faculty. In this study an attempt will be made to prove that this view is erroneous.'

These words come from the preface of Christian Norburg-Schulz's recent book, *Intentions in Architecture*[1]. There are many architects who would agree with him. In a survey of architectural education published last year[2], summarizing the responses to a circulated questionnaire, an anonymous student author wrote: 'There is still almost a total lack of a generally accepted basis for saying that x is a more suitable solution in the stated problem than y. Until this exists, there is little point in design problems anyway.' This puts the case succinctly, and it was the same obvious lack which led me to write[3] in response to an article by Maurice Cranston[4]: 'Architects haven't much to give support to their artistic authority. The central subject of most professionally recognized architecture courses *is* design . . . but . . . should you ask a design lecturer what is the basis of his criticism, he will usually give the self-contradictory reply that there is no theoretical basis because the principles of design are fluid.'

Mr. Norburg-Schulz's attempt at putting an end to this state of affairs consists essentially of proposing a vocabulary to identify a number of designers' devices in terms of what they imply to the beholder. The rounded corner implies solidity, the glass corner emphasizes the light and separate quality of the walls, the strip window below the eaves leads us to see the building in terms of horizontal layers, and so on. This is valuable, because it corresponds to real thinking behind the design work in the architect's office.

But this is hardly the answer to the need for a theory of architecture if we take 'theory' to be that which gives the architect some positive direction as to what *kind* of expression he should give the building.

In the following pages I shall examine this question first historically and then in terms of the development of the theories themselves. By reviewing distinguishable styles in current modern architecture, an attempt will be made to see which kind of theories appear to be operative at present. A comparison of these theories

[1] Published by Universitetsforlaget, Oslo. English publishers, Allen & Unwin, 1963.
[2] *Architects' Journal*, January 26, 1964, p. 191.
[3] *Apollo*, June, 1962, p. 117.
[4] *Apollo*, May, 1962, 'The Twilight of Aesthetics.'

should show in what ways they are similar—and therefore what is the essence of modern architecture—and in what ways they are different and the significance of these differences. This leads to the final problem of determining how these theories measure up to the role of architecture in the world today.

In the seventeenth and eighteenth centuries, artists and particularly architects derived their architectural theories from their patrons. In the main, the patrons told them what the building should look like. The patron in turn ultimately derived his ideas from the philosopher.

This pattern is particularly well illustrated in the events behind the Palladian revolution engineered by Lord Burlington. Early in the eighteenth century, the third Earl of Shaftesbury advocated a return to the harmony of nature and criticized Wren's work, which he regarded as unnatural. Lord Burlington actively promoted this view by his patronage of Kent. These were the moves that brought about the Palladian revolution. These three men represent the three steps in the eighteenth-century programme for the production of architecture: the formulation of a theory as to what architecture should be about by the philosopher (Shaftesbury), the promotion of the doctrine in a particular field by the patron (Burlington) and the production of the actual designs by the artist (Kent).

In the nineteenth century, the professional artist and architect began to outstrip the philosopher and patron as makers of theory. It was they who undertook historical research and they who outlined the theory of what art and architecture should be about. The theorist-architect Pugin brought historical and moral arguments to bear on his programme for a new architecture, and the theorist-artist Ruskin elaborated and polished the arguments in essay after essay. The patron was now silent and the artist had taken over the role of art-theory maker. By the end of the century it was apparent that as far as theory-making was concerned the artist-architect was intellectually bankrupt[5]. 'Art for Art's Sake' was not a valid theory nor could it long sustain the active production of art and architecture.

In the twentieth century, more positive theories began to appear as the architects sought fresh sources of instruction. Louis Sullivan's idea of the form of a building following its function was expanded (and misinterpreted) into the doctrine of functionalism. Viollet-le-Duc's rationalist proposition that structure should be expressed was filled out by Choisy into a corpus of architectural theory. Some writers broke new ground. Marinetti proposed to derive the rules for art from an aspect of the latest development of the architect's environment: 'We must draw our inspiration from the tangible miracles of contemporary life'[6]. Others sought to derive from their own sensitivity to the materials they used a theory to sustain their work, and so the idea of Truth to Materials took on a new and sacrosanct character.

The Expressionists sought to express violent emotion for its own sake, but as an art programme this was no better than an instruction to express the material, the structure, the contemporary environment or the use to which the building was to be put.

The reactionary Geoffrey Scott[7] appealed for yet one more look at the past in the name of Humanism. In response to his call, 'humanist' architects littered the world with inhuman and remote recollections of Renaissance Italy. More recently, Sigfried Giedion's *Space, Time and Architecture* made its appearance. His 'space-time' concept hypnotized the architecture schools of the world until Vincent Scully drew our attention to the emperor's lack of clothes. 'This cabalistic conjunction had both the qualities necessary for an acceptable architectural slogan: at once a spurious relation to science and a certain incomprehensibility except in terms of faith. Like all the best slogans it could mean anything because, even as one shouted it, one might entertain the comfortable suspicion that it need not, in fact, mean anything at all'[8].

Yet Giedion is really no worse than all the other twentieth-century architectural theorists who came before him. They are all incomprehensible 'except in terms of faith,' or, more precisely speaking, they are useful and stimulating, only as long as architects are reacting against the particular aesthetic which the theory in question aims at reforming. The reason for this is that none of these theories can tell the architect satisfactorily why he should express the qualities they claim to be desirable. Emphatic but vague, they are unaccompanied by any philosophical justification whatsoever. This is the essence of their weakness.

Today there are a number of 'theories of architecture', and the fact that none of them is philosophically or scientifically valid is the real reason why architecture as it is taught today is hardly an academic discipline. Some of these theories have been given the dignity of actual exposition, others yet remain implicit in the latest creations of the avant-garde architects.

They can be classified as follows:

function
material potential
skin
bones
structural potential
brutalism
new expressionism.

The list is not exhaustive but is intended to cover the theories which appear to lie behind the *bulk* of building put up in the last decade. What follows is not a description of the buildings involved. It is an attempt to make some conjecture at the theories which the styles themselves imply.

Firstly, *function*. There still remains an adherence to the ideas of Functionalism but this has now been elaborated into the 'science' of user requirements. The most extreme doctrine of this school is that if all the user requirements are gathered together with sufficient care they can then dictate the form of the building. The difficulty in giving examples of applications of this theory to real building lies in that no building exists to

[5] And the failure is reflected in the failure of Lethaby to find terms of reference in his literary work outside art, architecture and building itself. The group that followed Webb succumbed in popular esteem to the inferior 'humanists' because the latter were armed (by Geoffrey Scott and others) with a 'neo-neo-Platonic' theory.

[6] From the *Manifesto of Futurist Painting* (Feb. 11, 1910) signed by Marinetti, Limberto, Boccioni, Carlo Carrà, Luigi Russolo, Giacomo Balla and Gino Severini.

[7] Geoffrey Scott: *The Architecture of Humanism* (1914). Reissued in University Paperbacks, Methuen, 1961.

[8] Vincent J. Scully: Modern Architecture—towards a re-definition of style. *Perspecta:* Yale Architectural Journal, VII (1957), pp. 5–10.

illustrate this central assertion. Nor can it exist. It is true that the more reasonable followers of this doctrine produce the bulk of good buildings in this country (the Hertfordshire schools and Roehampton owe much to this thinking). However, if these buildings are satisfying to look at, they are so because their designers, perhaps unconsciously, realized the limits of user-requirements research and drew on their own intuitive design resources. In fact, these buildings also owe something to the second theory.

The material potential. A special version of Truth to Materials, it concentrates on the machined or manufactured potential of the material concerned. The characteristic of its followers' work is elegance. They love huge expanses of glass, miraculously set in a single reflecting plane, and mild steel polished to the brilliance and precision of neo-Classical silver. When they use traditional materials, such as marble, it is not to give us timeless evocations of the history of building but to demonstrate the brilliant results of the mastery of modern machining over these materials. All the design elements including space are exploited to reinforce this effect. Mies van der Rohe heads this school and his Barcelona Pavilion may be considered as the architypal example of it.

The skin. Perhaps the first complete expression of this theory in England was produced by Lutyens in 1933 in the Page Street flats in Westminster. Here the external elevations were reduced to a non-structural chequerboard, a wrapping disguising floor levels and plan. In the courtyards, Lutyens avoided expressing the structure, in spite of access galleries and the necessarily exposed supporting piers, by staggering the supports, alternate storeys having supports placed over the centre of a bay. Floor and balustrade were fused into a plain band transforming the whole elevation into a species of non-structural screen. So the skin theory is ingeniously sustained in the most unsympathetic circumstances.

Both these techniques were used again in Denys Lasdun's flats in Paddington, which in turn sired many essays on these lines. This theory is still current. The simple chequerboard of the Westminster flats has been developed into the Alcoa building at Pittsburgh swathed in its faceted wrapping by Harrison and Abramowitz, while the screen-like quality of the courtyard supports at Westminster has reached its ultimate development in the pierced masonry Ed Stone uses to mask his buildings. Such screens are not to keep out the sun; they are not functional. Instead they are clear evidence of the implicit central doctrine of this style—that architecture must express the idea that a building is a wrapping or a skin.

The bones. The followers of this theory concentrate on expressing the supporting structure. Its most characteristic form is a stack of wafer floors penetrated by columns which are drawn to our attention in a number of ways. Sometimes the school merges with the new-materials group and makes the supports visible by using glass walls, sometimes parts of the building are cut away so that we can see the columns in the gap, or the building is raised so that they can be seen rising from the earth. Sometimes the architect saves himself from these demanding techniques by bringing the columns on to the face of the building, where, for a more telling effect, he may detach them altogether from the building surface, like the columns of a giant portico, or incline them in a heavy diagonal lattice. In such cases the beam ends (evidence of the horizontal bones) are often worked into the design.

The structural potential. This is not to be confused with the bones theory which leads to emphasizing vertical and horizontal supports in a simple structure. The structural potential is an engineer's theory of architecture in which our attention is drawn to the structure by the ingenuity of its form. Buckminster Fuller and Pier Luigi Nervi are names I connect with this theory.

These first five 'theories of architecture' have all been current for some years now. The first is an unrealizable 'scientific' ambition; the next, an expression of the finish of the component materials; the third, the expression of the idea that the building is a wrapping; the fourth, an expression of the architect's concept of structure; and the last, the engineer's concept of structure. It will be seen that they have in common a great poverty of philosophical invention and that they are, as it were, introspective, because they seek to derive an aesthetic programme from the conditions of one set of problems set by the task itself, without any further reference to the external world.

These theories seem to lie behind the bulk of advanced architecture between 1915 and 1950 which collectively gives meaning to what we understand by the term modern architecture. It will be seen that what distinguishes 'modern architecture' from all preceding styles, both in its creation and in its expression, is the common characteristic of all its underlying theories—an introspective preoccupation with the potentials of the materials and structures themselves for their own sake. This is an unsatisfying aesthetic programme and has recently given rise to two theories which conclude my list. The first one is a variant and the other a rejection of the preceding five.

Firstly, the variant. This is a style originally described in this country as the New Brutalism. The theory behind it would seem to reject the false promises of the new-materials' style and insist on a forceful emphasis on the building itself. This style, with its frequent use of traditional materials, its notched outlines[9], and its heavy members, suggests an underlying doctrine which is a denial of the elegant rationalizations of the previous theories discussed. I am using the term Brutalism in its widest sense because the Brutalists of England, the designer of the Maison Jaoul in France and the architects of the now countless heavyweight buildings from Tokyo west to California appear to agree that it is the building which must be emphasized, not as an expression of the materials' perfection or as architectural skin and bones, but as a building itself. To do this they must confront the beholder with images which correspond to his idea of what a building *is*. It is not any mathematical or formal concept of building but a concept of emphatic bits and pieces. It is like the previous theories in that it is introspective, deriving its programme from the building itself, but unlike them in

[9] One prominent architect in this country who produces a personal version of this style designs not with pencil and paper but with surgical scalpel and small balsa models.

that it is prepared to sacrifice their reasonableness in order to achieve this self-emphasis.

The second stream of theory behind the 'new' styles differs from all the others in that it does not attempt to formulate its aesthetic programme in terms of the building itself. This is what makes it seem both novel and old-fashioned and has earned it various names such as Neo-Expressionism, Neo-Liberty and Neo-Organic. I intend the term Neo-Expressionism to be taken as comprehending all these and all buildings which suggest that the architect is trying to do more than make an immediate reference to the building itself. The work of the South American group headed by Niemeyer and of Candela provide early examples of this. In Europe Ronchamp is perhaps the most famous and is particularly significant since it was this building that Scully chose to celebrate as 'primitive and . . . detached, like modern humanity,' adding, 'it rises up desperately in violent challenge.' And, since Ronchamp, the number of buildings designed to make violent challenges is steadily increasing: the railway station at Rome[10], the Sydney Opera House by Utzon, the Congress Hall at Berlin by Stubbins, and the Idlewild Air Terminal by Saarinen, to name a few.

Professor Pevsner has drawn attention to the fact that some of these buildings have a special function (the pilgrimage chapel), or are subject to a particular environment (the railway station among the Roman ruins or the opera house above the yachts on Sydney Harbour) and has urged that where no such special considerations prevail recourse ought to be made to the doctrines of functionalism. The difficulty here is that every building is a special one, and the ambition of architects to make a general comment is a proper one. The most extensive collection of functional requirements or, for that matter, the most rigorous restrictions of economy, still leave much to the designer, and architects will persist in doing what they have always done, that is making a species of comment on the world about them.

Shaftesbury saw the world as based on the harmonic patterns of nature and urged architects to express this; Pugin saw the world as morally corrupted by the decay of art and urged architects to revitalize it by drawing inspiration from ages in which he believed a different state of affairs prevailed. I think they were right in assigning to architecture the role of contributing to the realization of an ideal world, and anyone interested in formulating a useful theory of architecture must first attempt to form an idea of how he regards the world in which he lives and then to formulate the role of architecture in that world.

Two outstanding qualities characterize our age—Mystery and Danger. Fifty years ago, even a child playing with his Meccano set and his donkey engine could get a little insight into the techniques that governed his world. That was a machine age. The child of today lives in a dream world. He plays with toy satellites and talks of atomic bombs with no understanding whatsoever of their control or operation. His parents are no wiser. They live in a world in which computers perform unimaginable feats of the mind by means which seem magical, in a world orbited by mechanisms of a complexity of design and of a purpose beyond their understanding; they learn from the anonymous newspapers of bombs, the location and size of which are secret and unknown. The age of today is smooth, ominous and dream-like. That is what I mean by 'Mystery.'

The 'Danger' is obscured by the apparent increase in our material resources, but the facts are that there are 3,000,000,000 of us; 1,000,000,000 of us are starving; 1,000,000,000 of us are poor and the remaining 1,000,000,000 of us spend our surplus resources in accumulating explosives expressly designed to blot out reality for ever.

The role of art and architecture is to wake us from the dream that makes this state of affairs tolerable. The power of architecture must be used to give us an awareness of the reality of ourselves. For 'architecture creates the semblance of that world which is the counterpart of self. It is the total environment made visible'[11]. This seems a long way from bricks and mortar and window details but it is a starting point and it is a proper one, for the Mystery and Danger of the world today have been produced by the lulling of our awareness; and, in Collingwood's[12] phrase, art is 'the antidote to the paralysis of consciousness.'

When architecture is seen in the light cast by such writers as Collingwood and Langer, I believe the exaggerated and hysterical forms (as I think Saarinen's and Stubbins's work may be described) will be replaced by an architecture not bent on promoting the present state (as I believe these fantasies unconsciously are) but which rectifies it. For when I say architecture should interpret its environment I mean it must do so with an insight which is corrective. The good buildings of this age, and I have already instanced some—the Hertfordshire schools and Roehampton—do give us a heightened sense of our own reality, but they remain as it were incidental until they are related to a theoretical background which will enable architecture to develop in terms of a philosophical theory.

Having projected the context, the next step is the development of a theory of architecture itself; that is, a theory which lays down what it is that architecture should express. It is no good saying that architecture must express the potential of the manufactured materials, structure, covering or utility of the building it constitutes. To advocate only the emphasis of these things is not to produce a *real* theory of architecture which must be concerned primarily with how and to what purpose the building obtains its 'delight.' This is a task for the philosophers, but it is so long since it was demanded of them by patron or artist that they have forgotten the need. It is now a job for the architects and it is time we began.

[10] By Calini, Castellazzi, Fadigati, Montuori, Pintonello and Vitellozzi.

[11] Suzane K. Langer: *Feeling and Form*, p. 98.

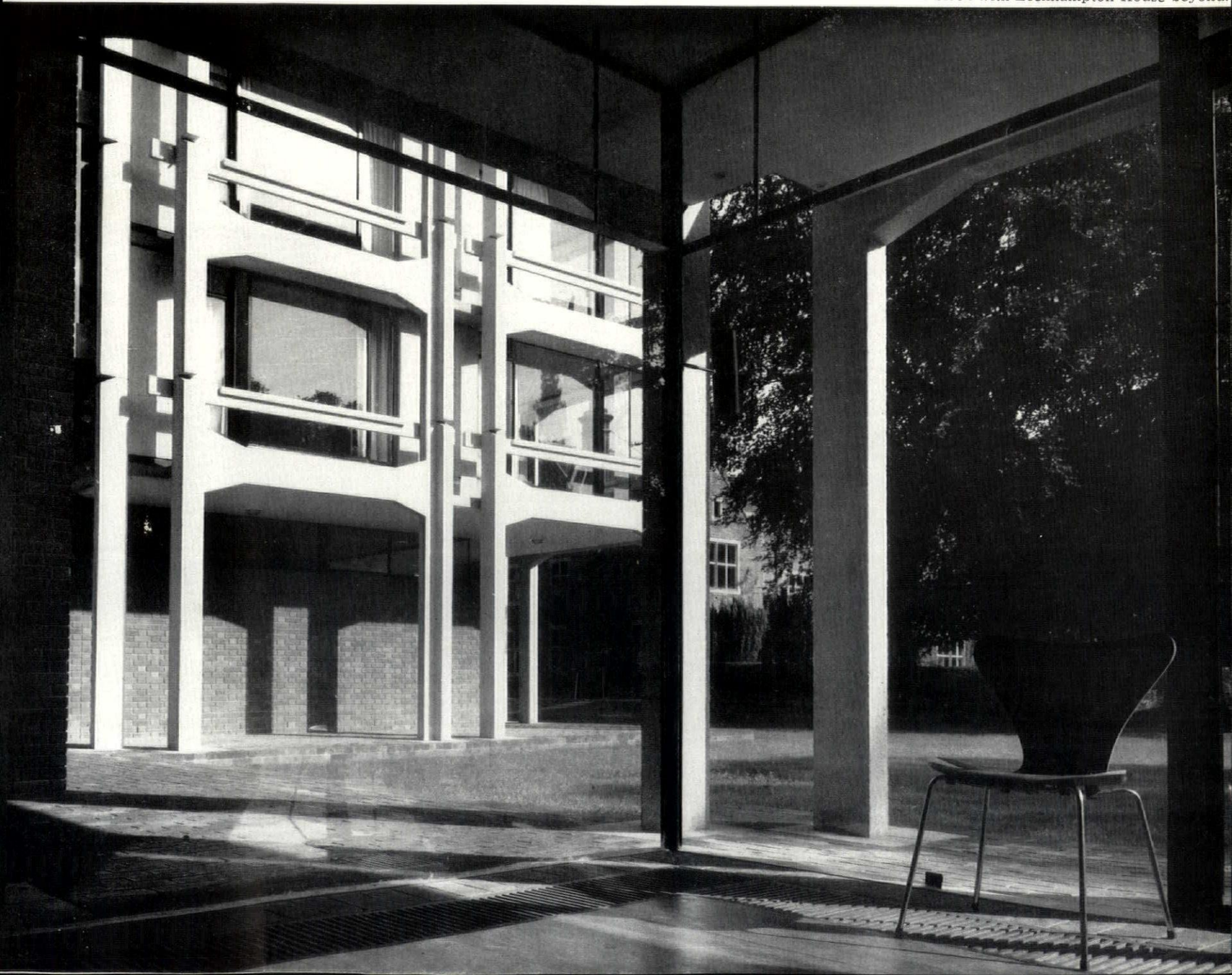
[12] R. G. Collingwood: *Principles of Art.*

HOUSING THE GRADUATE

1 GRADUATE BUILDING, CORPUS CHRISTI COLLEGE, CAMBRIDGE

architect **PHILIP DOWSON OF ARUP ASSOCIATES** | *photographs by Colin Westwood*

1, looking from the recreation room to the north block with Leckhampton House beyond.



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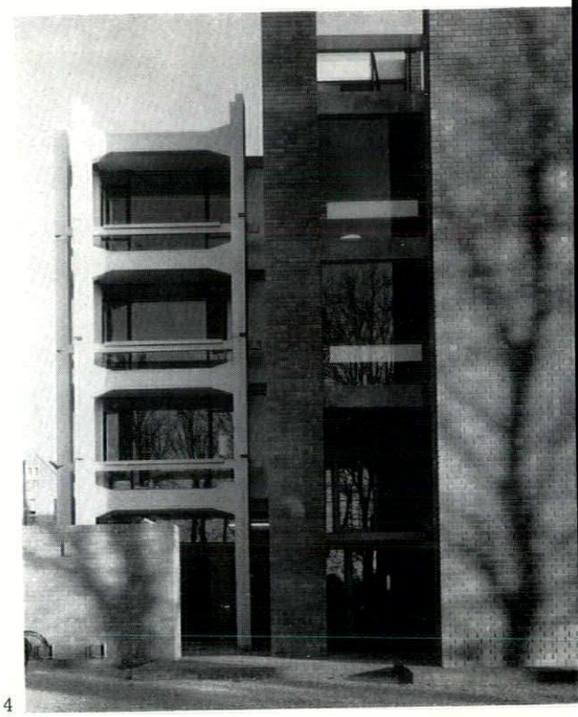
GRADUATE BUILDING, CORPUS CHRISTI COLLEGE, CAMBRIDGE



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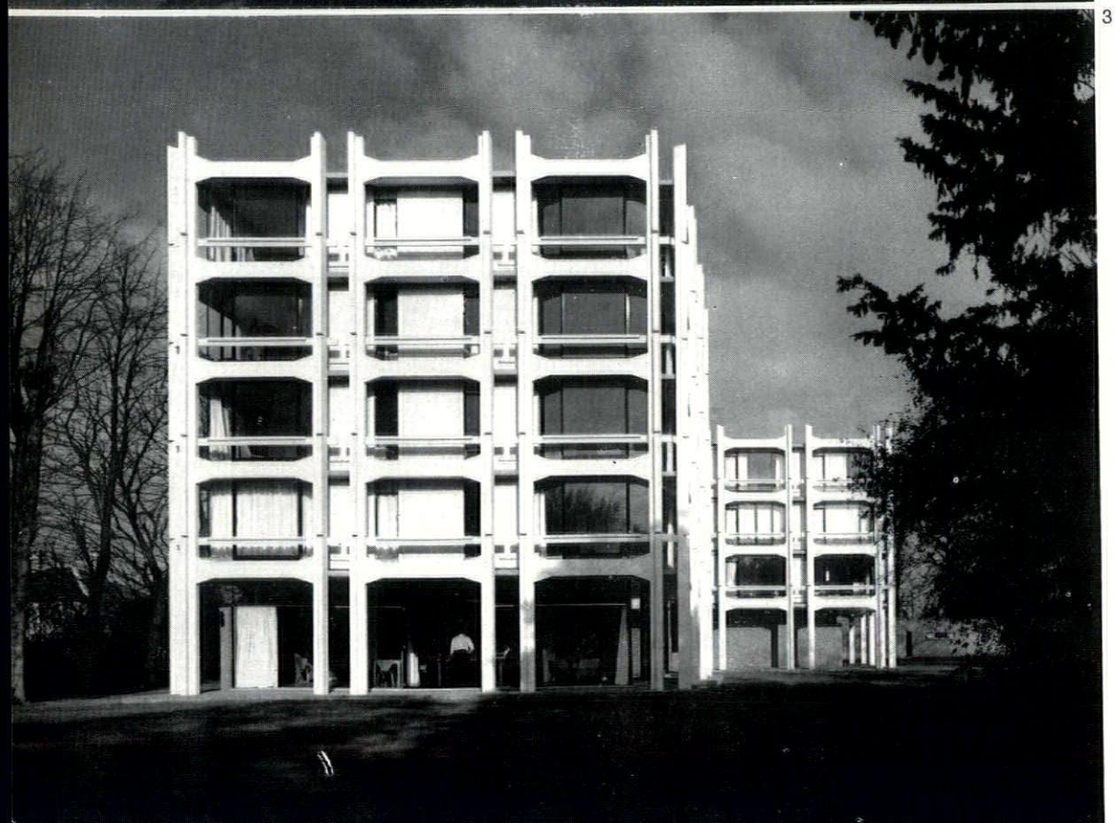
2, from the south, with the recreation room on the left. 3, the south elevation of both blocks. 4, the west end of the north block. 5, looking out from the link towards the south block.

3



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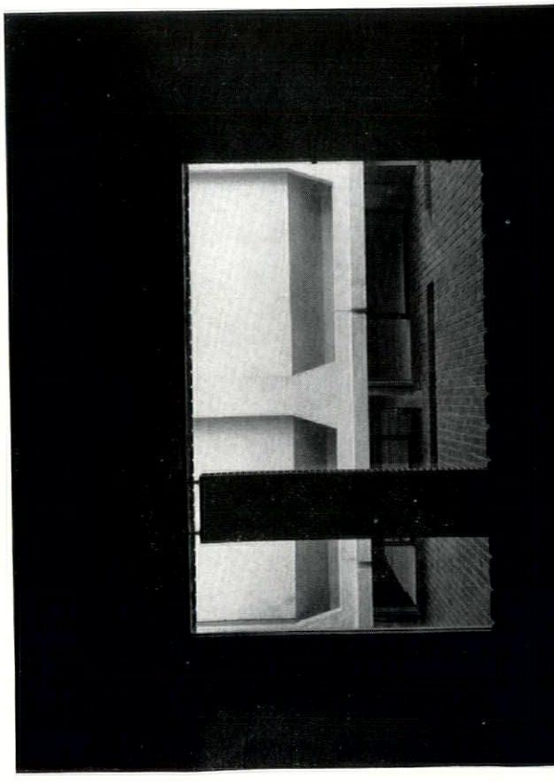
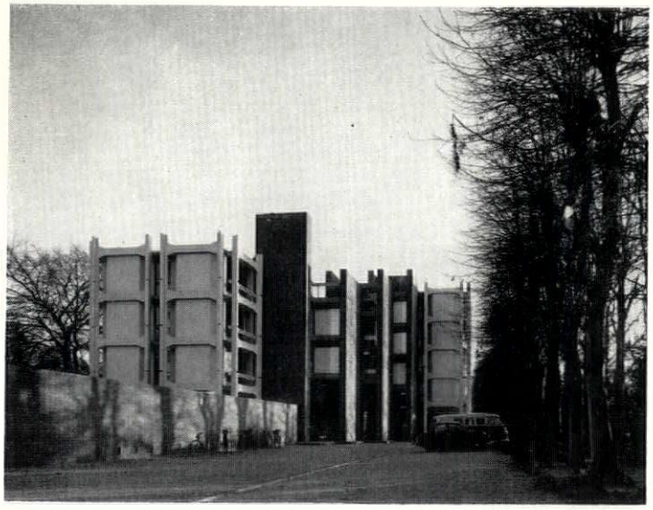


The Ph.D. has become a spectacular growth industry at Oxbridge. Graduate students from other countries or universities are excluded from the official lodging houses for undergraduates and have to rent 'digs,' often in suburbs distant from their adopted colleges. Only recently have some colleges begun to provide accommodation specially for graduates; Philip Dowson's two buildings on contrasting sites for Corpus Christi, Cambridge, and Somerville, Oxford, opened last October, are the first attempts to devise a distinctive architectural solution.

The Corpus building is in the eight-acre grounds of Leckhampton House, a community housing research Fellows, research students, and graduates of the college. Accommodation for 30 research students, five bachelor Fellows, the warden and five married Fellows, together with common-rooms, dining-rooms and the like, are provided partly in the existing house and partly in the new building.

The new building provides rooms for 24 research students, four bachelor Fellows and three rooms for use by married Fellows. All the living accommodation is above the ground floor, which contains the common-room and service areas such as a laundry, a furniture store and a boiler room to serve both the new building and the existing house.

The new building consists of two blocks, each with its own staircase, linked by service areas. The disposition of the blocks is related to the existing

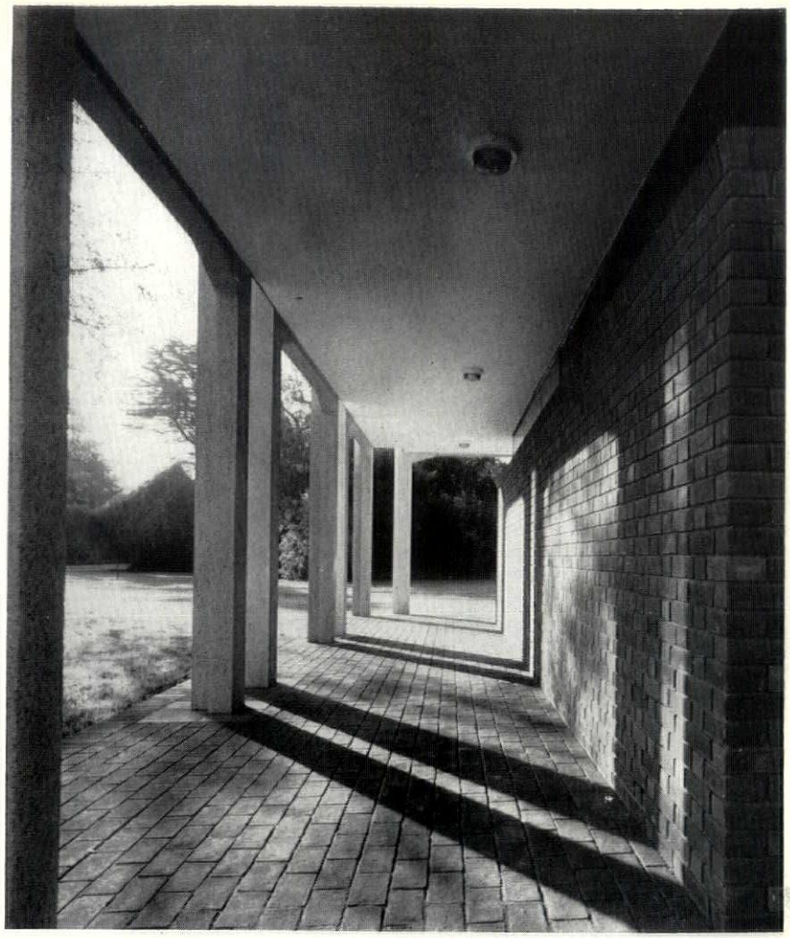


6

trees and lawns and the need to preserve them, and to the possible need for future extension in case Leckhampton House should become a graduate college. The rooms are planned round the staircase in traditional fashion, with the link building, which forms part of the circulation, on the mezzanine level. The car-parking and rear entrance are screened from the garden by a wall and by stepped brick piers which form an open link between the two staircases. The main communal rooms, opening on to the garden, are visible from this covered entrance, and thus provide the focus of the building's activities.

The structure is a series of white precast H-frames with a light tooled finish using a limestone aggregate. Its design is based on the following considerations:

1. Precast concrete has to be detailed with a view to weathering, and dirt-laden water from glazed surfaces must be prevented from discharging over precast units.



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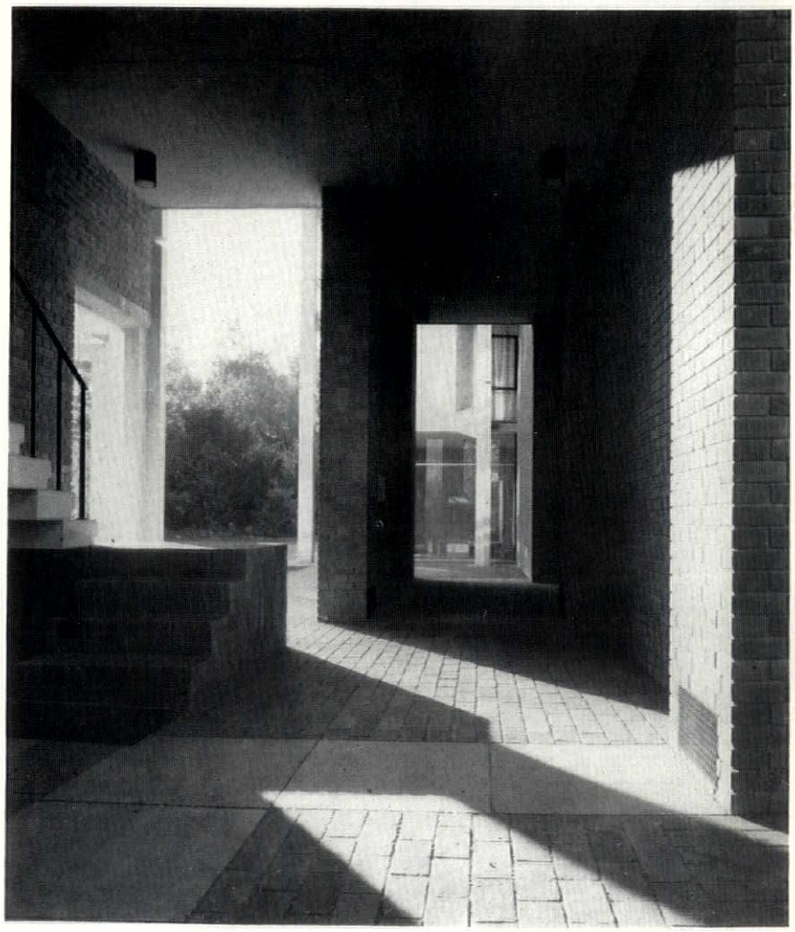

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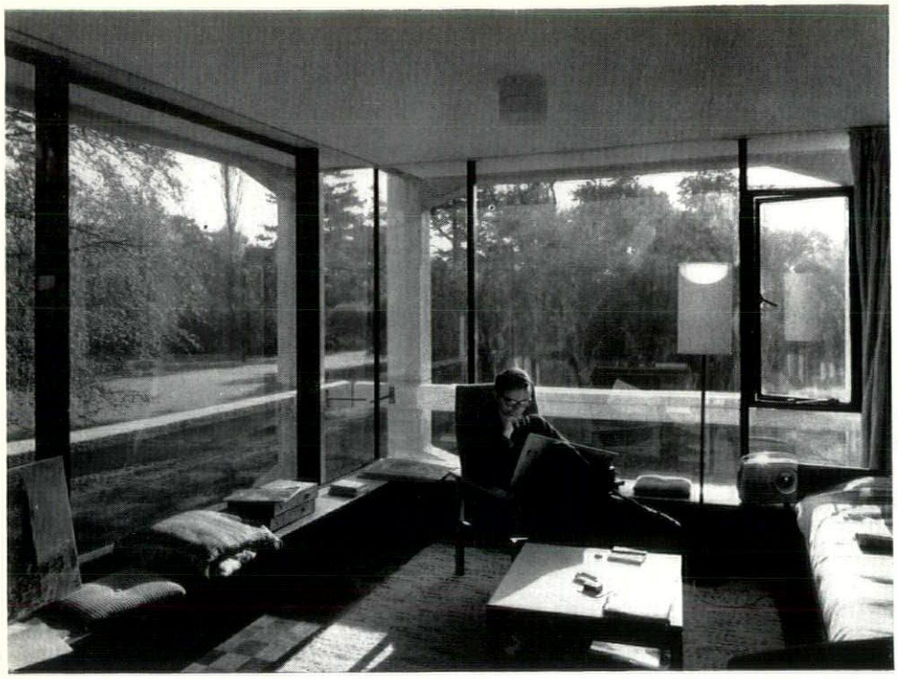
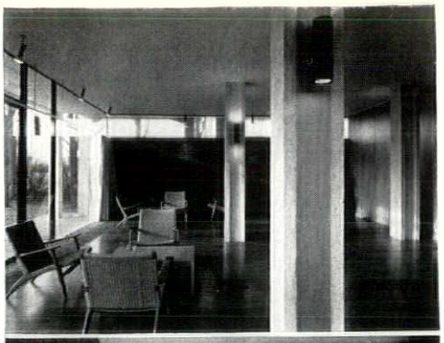
6, distant view from the car park with the staggered service link block in the centre. The link is planned so that additional blocks can be connected to it if necessary in the future. 7, looking south under the arcade of the north block. 8 looking south from the entrance to the north block, through the link to the south block beyond.





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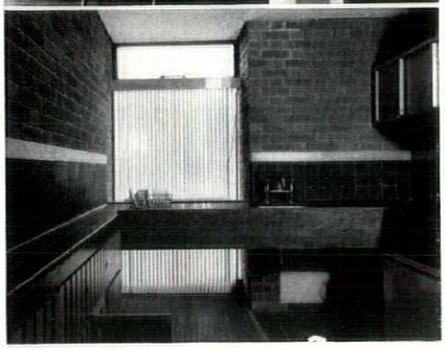


11

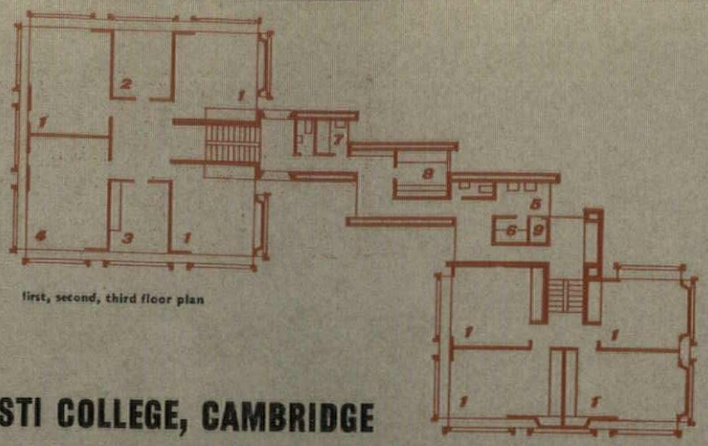
9. one of the bachelor Fellow's sitting rooms. 10. the recreation room. 11. one of the kitchens in the service link. 12. distant view from the south-east, with sculpture by Henry Moore in the foreground.

2. By extending the floor and ceiling plane of the rooms, it is practicable to glaze down to the floor and thus obtain a down-view of the ground. This prevents the feeling of isolation that results from a high cill. The ceiling extension reduces glare, improves the quality of the light and protects the large windows from the sun.

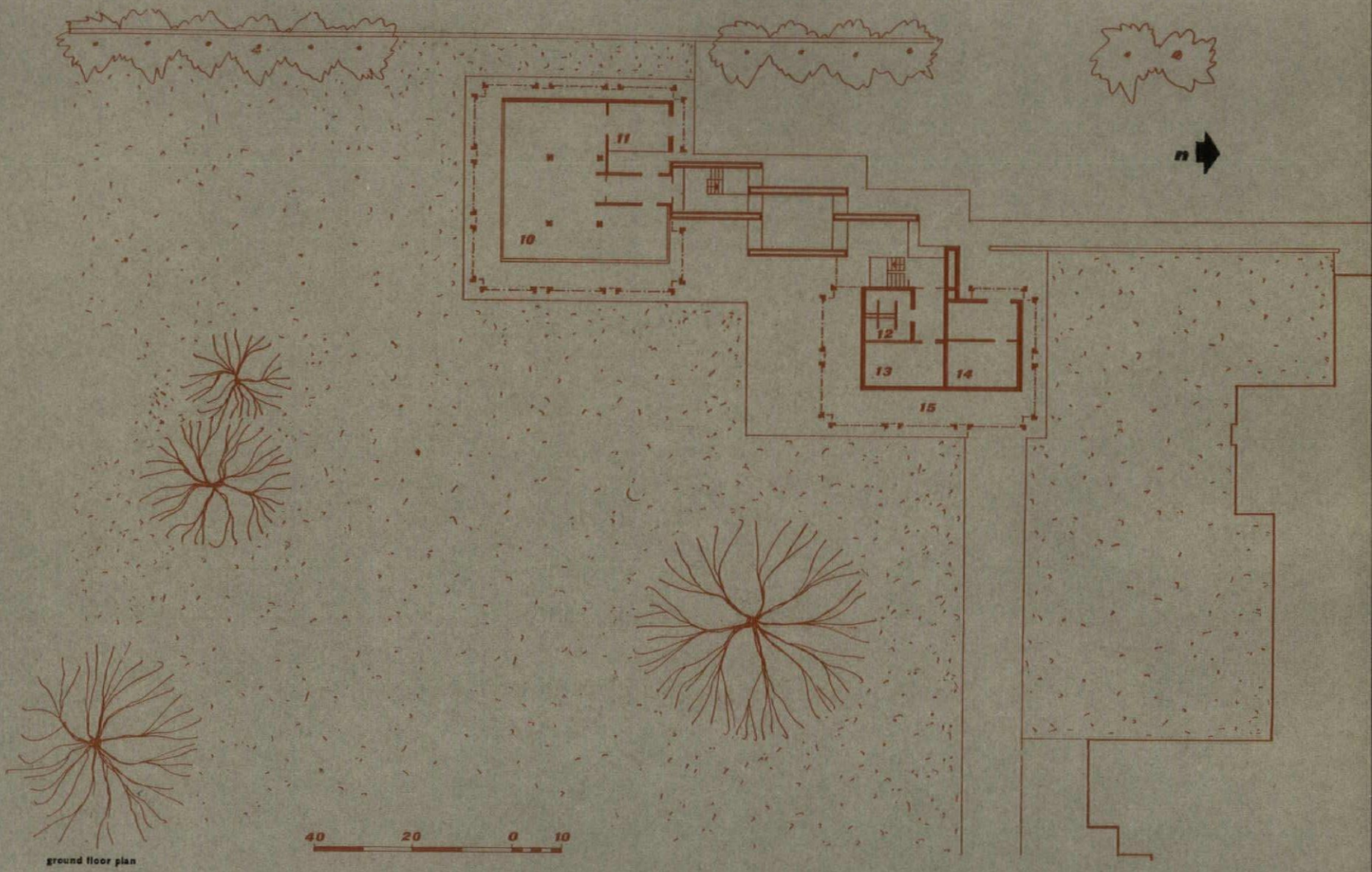
3. The precast cills, transomes and mullions include in their sections provision for sliding or casement windows and for heating convectors which can with advantage be kept separate from the main structural frame.
The link has brick load-bearing walls, similar to those of the existing house.



12



GRADUATE BUILDING, CORPUS CHRISTI COLLEGE, CAMBRIDGE



ground floor plan

criticism

These two buildings and the point block of flats for young executives at Bracknell New Town completed last year were designed by Arup Associates as developments of a theme, both structural and functional. Arup's had for some time been worried both by the poor weathering qualities of concrete in the English climate and by the psychological blight of isolation experienced in the conventional high-rise block of flats. Both Somerville and Corpus considered it most important that the traditional sense of 'place' and community should be paramount, yet adult graduates should not be 'enclosed' within their college in the traditional monastic sense. The two sites, utterly diverse in character, both made a high standard of permanent finish essential.

Philip Dowson's structural solution, a repetitive precast 'peristylar grid,' is similar in position to those employed in recent years by Skidmore, Owings & Merrill. But whereas the John Hancock Building and the Banque Lambert are in the grandest palazzo manner, Dowson's neatly detailed grids are entirely suited to their English situations. Somerville's graduate house faces Little Clarendon Street, a narrow thoroughfare of many periods which the grid helps to unify as well as lightening the apparent bulk of the five-storey block. Towards the college, appearing above a grassed podium, the grid succeeds against all expectation in forming a satisfactory enclosure with the pre-war neo-Georgian chapel. Corpus Christi's graduate society, by contrast, is more than half-a-mile from the centre of the town, though not far from the Library and Arts precinct on the west side of the Backs. The new building is set in the beautiful eight-acre wooded garden of Leckhampton House, a handsome brick villa of 1880 designed for F. W. H. Myers the spiritualist by T. G. Jackson's friend William Marshall. In order to preserve as much as possible of the garden and give as many rooms as possible a south or east aspect, Dowson has divided the new accommodation into two square pavilions of differing heights. The relationship of these with the house, and with the Henry Moore figure seated on the lawn, is wholly delightful.

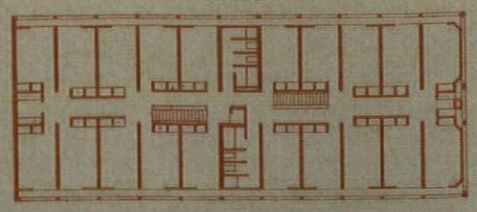
Within, the large bed-sitting rooms (190-220 sq. ft. at Leckhampton, 160-180 sq. ft.

at Somerville) are involved with the world outside through fully glazed window walls. Yet, because these are set back behind the structural grid, there is a remarkable impression of security and privacy, and none of the effects of vertigo which make Jacobsen's fully glazed rooms at St. Catherine's such a hair-raising experience. Throughout there is a stimulating connection and reaction between internal and external spaces, with openness and privacy subtly balanced, particularly in the high walls at Leckhampton which link the new building, the house and their service yard with the garden. The humanism of these collegiate buildings for adults, a contrast to some recent Oxbridge designs, is shown well in their flexibility of furnishing, particularly at Somerville, where little is built in. Unity of appearance is maintained by the structural frame and the chunky Columbian pine joinery. Sound insulation between rooms is slightly deficient, but graduates are generally quieter than undergraduates.

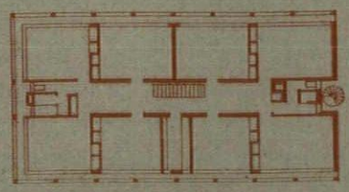
Their slenderness in section and the superb quality of the tooled finish to the limestone aggregate make the structures a constant background pleasure which does not intrude. Admittedly, Somerville's frame, designed originally in 1957 for casting in situ, is less satisfactory than the consistent H-frames of Corpus. The joints between the units at Somerville are not expressed but only partially disguised, and there is a clash internally between the rigid horizontal emphasis of the guard rail, partly fairfaced and partly tooled, and the curved shapes of the bays. Corpus gains greatly by having a single finish for frame, guard rail and infill panels, and the carefully articulated joints seem more likely to promote the desired weathering.

Unfortunately, in both buildings the high standard of design deteriorates in the service rooms. In the street arcade at Somerville (the arches bear little relation to the rooms behind), and even more in the staggered range of cross-walled service rooms at Leckhampton, there are too many signs of that imposition of artistic effect which has distorted recent Oxbridge building. At Somerville there is an obtrusive vertical joint and a failure to match the same shade of purple brick, where the arcade has been continued for the shops beneath the undergraduate block (this blemish can be seen in 15, opposite). The brick paving of public spaces in both buildings is beautifully executed, but at Leckhampton the double-height ground floor space between entrance and games room is jaggedly broken up by the cross walls. The fairfaced concrete ceiling has already weathered badly and the bottom of the staircases is sufficiently confusing for the absence of handrails to be dangerous. The Leckhampton bricks, bright red in colour, blend well with the Victorian villa and have an attractive texture, but the insistent raking of the joints and occasional use of vertical courses tire the eye. The lack of any proportional relationship between differently sized bricks of the same colour means that there is a continually unhappy joint where cross wall meets pavement. Such is the excellence of the concrete in these two buildings that anything below standard in the brickwork is clearly apparent.

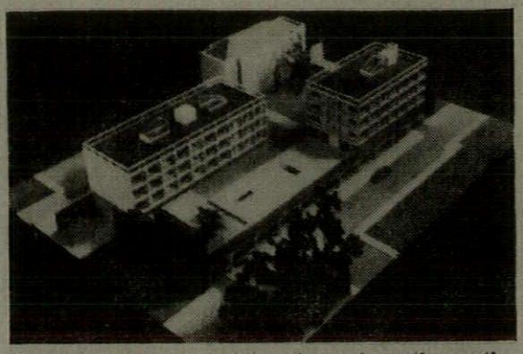
N.T.



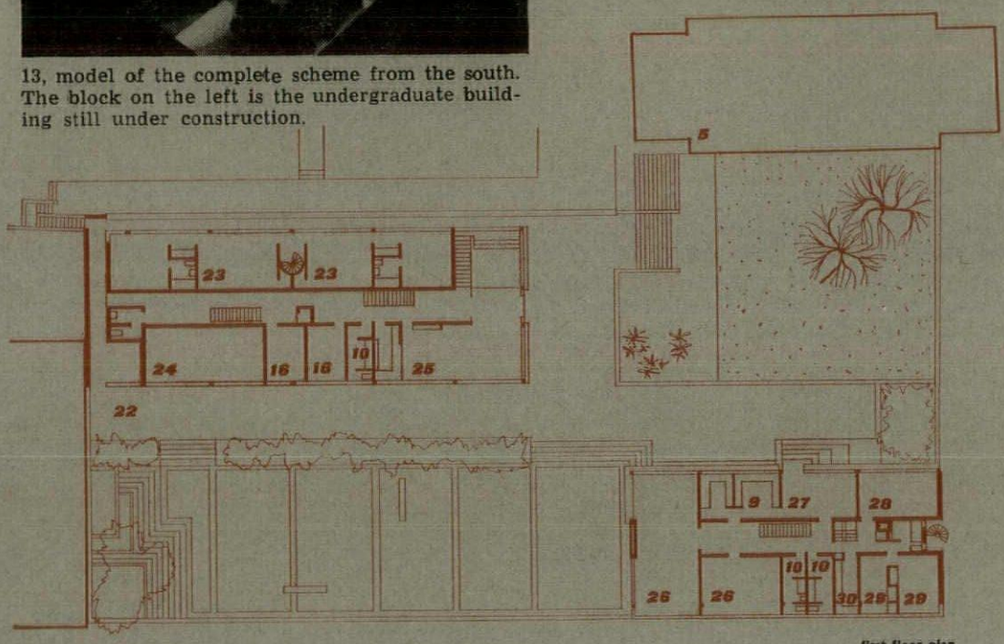
key
1, college entrance
2, service access
3, shops
4, garage
5, existing chapel
6, fellows' entrance
7, common room
8, dining
9, kitchen
10, cloaks
11, study
12, hall
13, bicycles
14, store
15, laundry
16, music room
17, storage
18, entrance hall
19, transformer
20, boiler room
21, laundry
22, roof garden
23, fellow's flat
24, void over music room
25, junior common room
26, common room
27, dining room
28, caretaker's living room
29, caretaker's bedroom
30, caretaker's kitchen



second, third, fourth floor plan

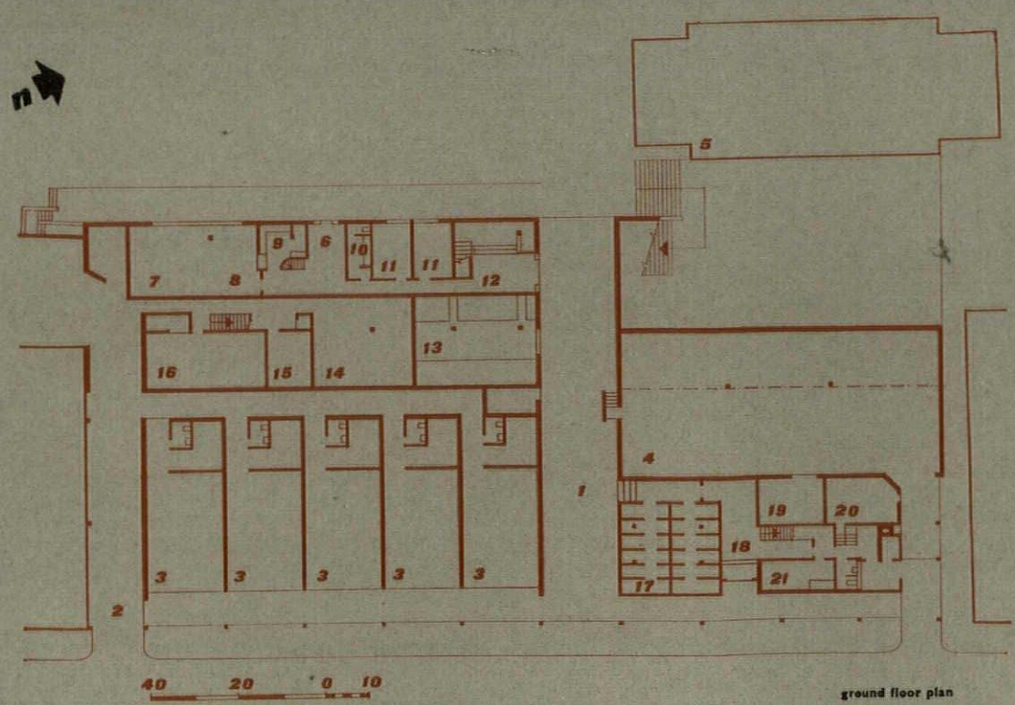


13, model of the complete scheme from the south. The block on the left is the undergraduate building still under construction.



first floor plan

SOMERVILLE COLLEGE, OXFORD



ground floor plan



14

14, 15, two views from Little Clarendon Street, showing the arcade underneath the first floor roof garden.

2 GRADUATE BUILDING, SOMERVILLE COLLEGE, OXFORD

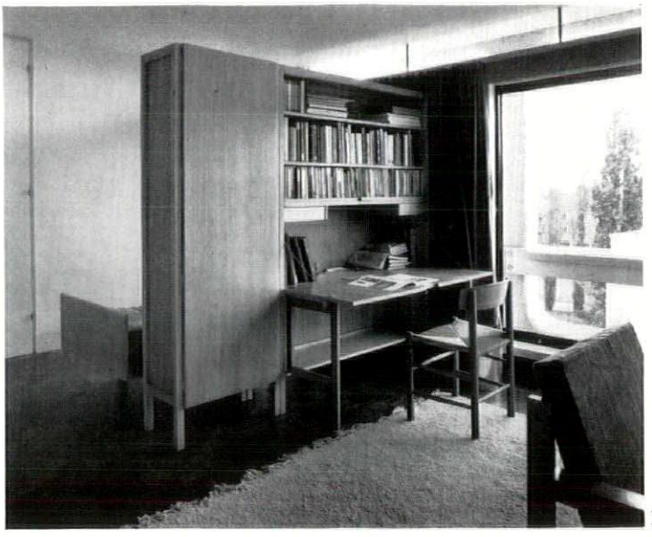
architect **PHILIP DOWSON OF ARUP ASSOCIATES**

photographs by Colin Westwood

15

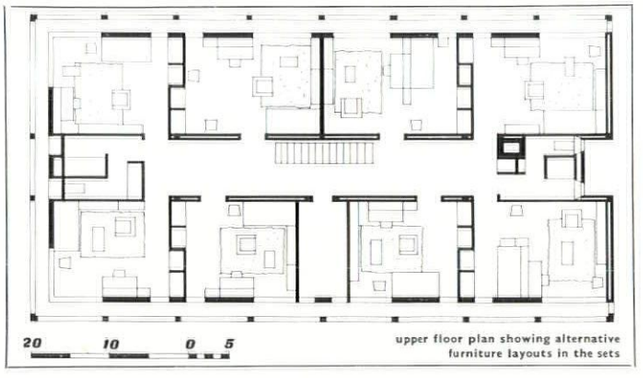


16



18

16, the arcade off Little Clarendon Street with the entrance on the left. 17, looking along the west side of one of the upper floors. 18, interior of one of the sets.



upper floor plan showing alternative furniture layouts in the sets

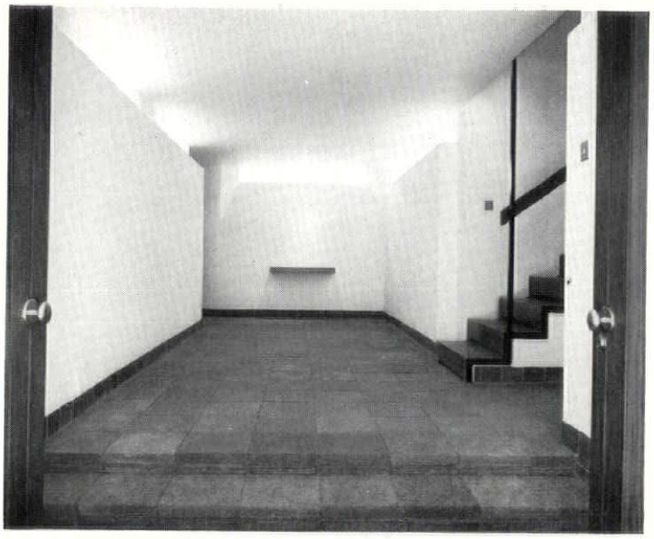


17

Although accommodating only 24 graduates, this building is intended to be a centre for all Somerville graduates, and a focus of their life in Oxford. Provision has therefore been made not only for a common room and buttery, but also a writing room and a private dining room and kitchen. There is also a separate small kitchen on each floor.

It was a request of the college that some of the rooms, which vary in size and shape, should be adaptable to several arrangements of furniture. Bookcase/writing desk units and cupboards have been designed so that these can form a screen providing a separate sleeping alcove, or alternatively the desks can be sited against the external panel wall in each room, providing in effect a bed-sitting room.

The site lies between Little Clarendon Street and the main buildings of the college, and the accommodation that had to be put on it included, in addition to the graduate building, a row of shops along the street frontage and a separate building housing 60 undergraduates. This latter building, which is now under construction, also contains two Fellows' flats, and a Fellows' private dining-room and kitchen, serving the whole college. The accommodation required meant that the site had to be densely developed. The shops, service areas, garages, etc., have been placed under raised courtyards and terraces, which allows the habitable areas to be raised above Little Clarendon Street, and the first sets two floors above the street.



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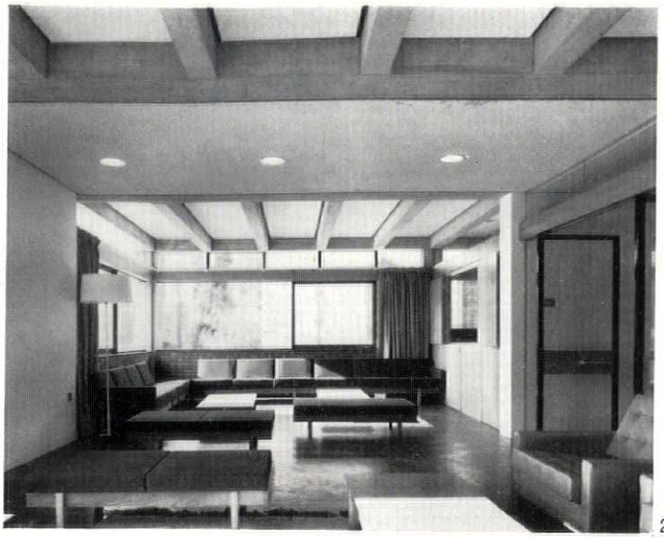

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The screen wall at first floor level defines the boundary of the college quadrangle. It was felt important that these raised courtyards should be visually an extension of the main quadrangle, and to achieve this they are raised in two graduated steps. The first courtyard, which covers the garage and lies between the chapel and the graduate building, is landscaped and grassed, and is 4ft. 6in. above the main quadrangle; the second terrace, on to which the graduate and undergraduate common rooms and communal areas look, is a further 4ft. 6in. higher. The main access from Little Clarendon Street is via a wide tunnel with a long view of Somerville quadrangle and the chapel entrance. From this access is obtained both to the graduate and to the undergraduate house, and to a large bicycle shed and underground garage.

The structure is a precast concrete frame, with precast concrete cladding. The concrete has a light tooled finish with a limestone aggregate, eliminating right-angle corners. The basic structural idea, worked out first for this building, was later used for the graduate building of Corpus Christi, Cambridge (see page 107). The lower storey of the building is of brick, on a segmental precast concrete arcade. The main walls are of cavity construction, the cavities being used as service ducts.

19, the entrance hall. 20, the common room. 21, the dining room, looking inwards to the college chapel.



21



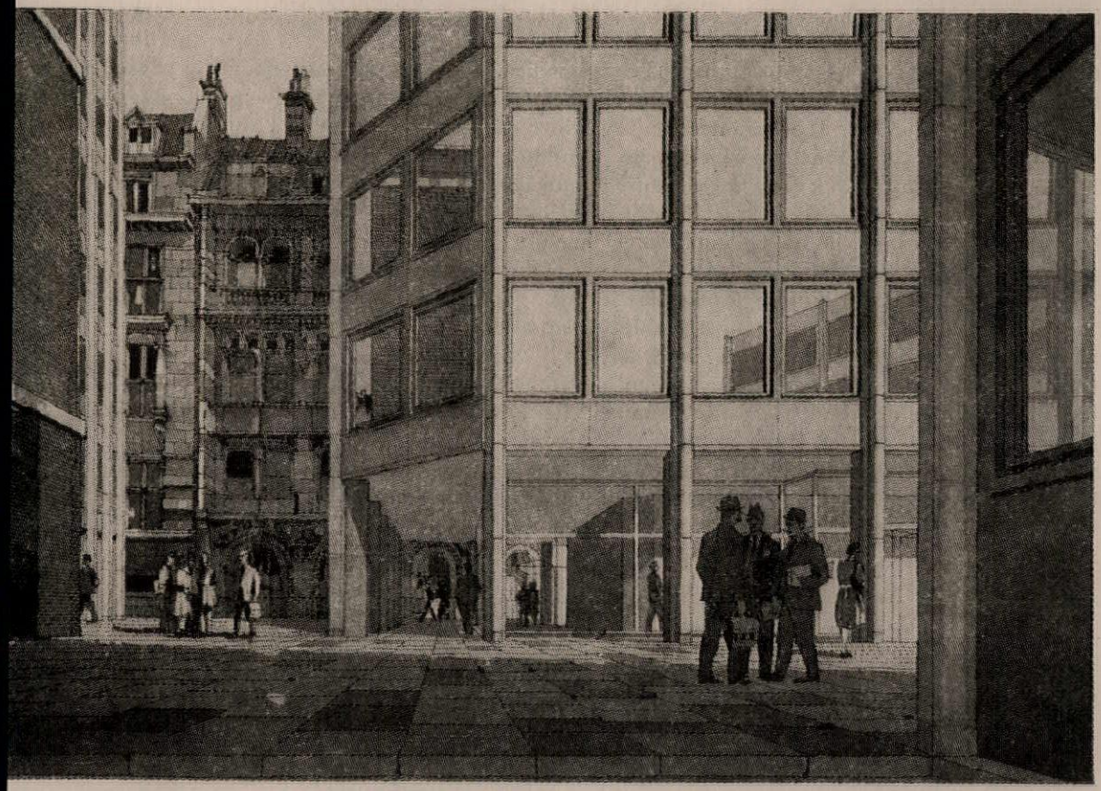
criticism

Gordon Cullen

Architects: Alison & Peter Smithson

The 'Economist' Buildings, St. James's

2



This strange photograph (1, *facing page*) *reminds one of those instantaneous, all-or-nothing shots one sees in* Paris Match: *the moment of explosion or accident, out of focus and with such enlargement of a fragment of the negative that one can hardly see the subject for grain. What relevance has this to architectural photography? Only that in this picture one senses the same contact with reality and urgency missing in such drawings as the author's own,* 2 (*above*). *This although it illustrates the main points of the scheme—the four buildings, the raised central piazza with its variations of space and the florid architecture of the surrounding streets—remains at arm's length. Opposite, the little gnomes are stumping down out of the parental ambience and into the street, into the surrounding world. As architecture it may seem inarticulate, yet the place is alive with personalities using their own language, and it is this quality of inner life which the photograph has seized.*

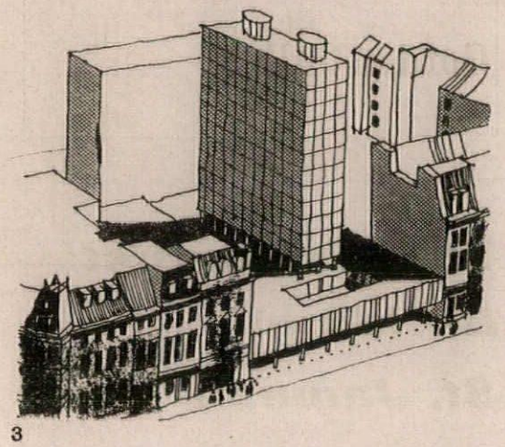
The Possessed Landscape

Some years ago I wrote a piece which never saw the light of day. I quote a little from it here . . . 'the technique is to extend the force of the cathedral outward. If we have been guided to this place by the Stations of the Cross (as public sculpture) we still have to create a charged landscape. Take a typical situation: a gap in the street reveals the front of the cathedral; we shall be looking south into the sun so that the view of the building will be flat and without modelling. Fountains and cascades however are best seen against the sun since they profit in sparkle and luminosity so that if we screen the view with jets of water it will be revitalised. This is one statement. The other is the group consisting of Christ, Pilate and the soldiers. If we now bring the two together, if Pilate stretches out his hands into the cataract, then suddenly the two worlds fuse and mingle (and Pilate took water and washed his hands). An indefinable sense of tension and involvement is created by this simple gesture, a sudden identity of sunshine, silhouette, water, guilt and foreboding and ourselves. Together. Now.'

This is an acute and untypical example, but when shapes, planes, spaces and objects are put into relationship through a knowledge of the visual structure, then the atmosphere becomes charged. In the particular example of the Economist buildings there are two elements which are put into relationship, into stress the one with the other. First the richly decorated or inlaid empty box of Boodle's Club flank wall, Bury Street, Ryder Street and St. James's Street. And second the internal family life of the group of buildings that have come to live there. It is the interplay between these two that we shall follow in the succeeding pages.

On High Buildings

The site (of 19,600 sq. ft.) has a plot ratio of 5 to 1. If we include Boodle's Club into



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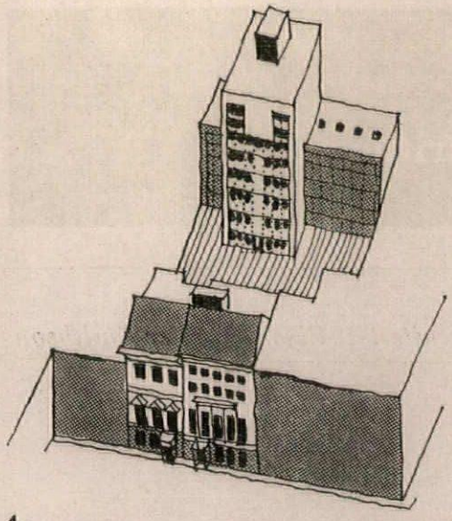

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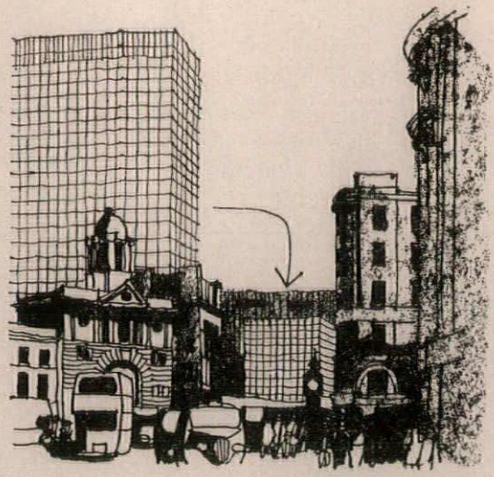
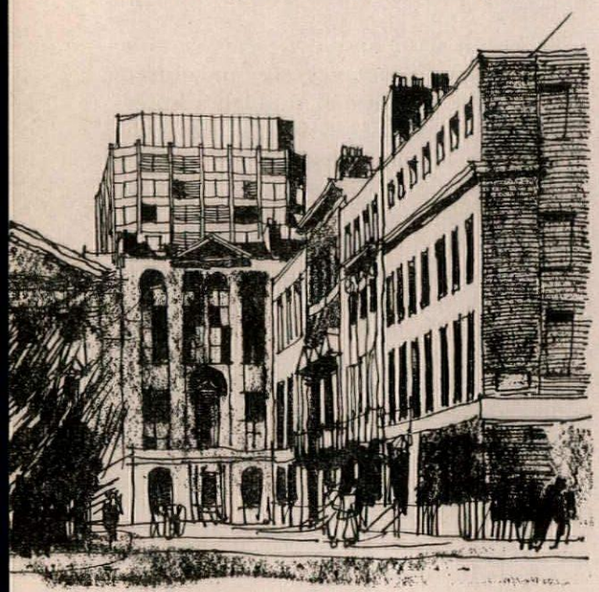


5

the complex we get a site that is nearly square. For reasons that may become clear later it was decided to take a part of the building up to a height of sixteen floors in the form of a tower, seventy feet square. This meant that the tower would be seen from St. James's Park, where it joins the Hilton Hotel and New Zealand House; also from St. James's Square, where the top four floors are seen over the London Library, 6. In Bond Street it assists in closing the vista and it is noticeable in Green Park. This brings it into the problem category of high buildings.

There are at least four ways in which a high building can be sited. First it can just happen—take down a five-storey building and put up one of fifteen. This results in an odd but typical street facade. The second type is the plot ratio tower isolated over its two-storey base, 3. This often destroys the unity of the street by the gap and the alien tower. Third is the high building which has to observe the proprieties, for instance the development of Nos. 11 and 12 St. James's Square, 4, in which a high building has been permitted in the garden behind the existing buildings provided it is not visible by the pedestrian from the other side of the square. The fourth type is hinted at in this sketch of the Victoria Palace, 5. It is granted that we must have these vast blocks which belong to another world, yet notice how the new development puts out a friendly hand right down into the busy, small-scale ground activity. Recognition.



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The attitude to high buildings taken by the Economist scheme is complex and arises out of the local conditions. There is a tower but it is not outrageously high; seen from the Park it has about the same visual impact as the Foreign Office wing. At many relevant places the tower observes the proprieties and remains invisible. Meanwhile the unity of the street is maintained.

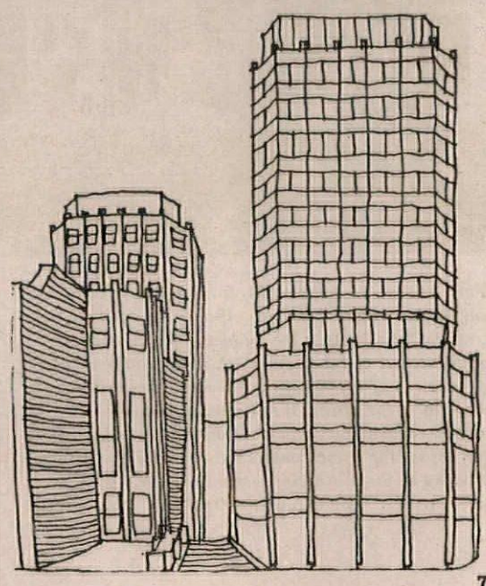
Taking to Pieces

Such flexibility in the solution of neighbourly problems is possible if the programme can be broken down into separate 'quanta' which can then be assembled to advantage. This process of taking to pieces and assembling with skill and insight is at the root of creative planning. Serial vision itself is not a continuity, but the repeated juxtaposition of two things: the existing and the revealed view. The only way we can humanize the environment is to discover how it falls apart so that we can get inside the synthesis. The art of site assessment lies in finding the lines of cleavage.

In the case of the Economist buildings it is quite possible that all the accommodation could have been obtained in one structure, yet it has fallen into four separate buildings: the Economist tower (thirteen floors of office space each 4,500 sq. ft., a residential top floor, entrance floor, a sub-plaza floor containing restaurant and a basement); the bank building (cf four floors, each of 3,000 sq. ft., comprising two office floors, the banking hall and pavement level shops); a residential block of seven floors each approximately 1,500 sq. ft. (three floors of bedrooms for Boodle's Club with four floors of flats above); and the bay window to Boodle's which overlooks the piazza. This ranks as a building in fact and is part of the ladies' annexe to the club, giving it an additional area of 4,000 sq. ft. These are the separate members of the family which are brought together in the richly inlaid brick and stone box that was revealed after the demolition men cleared the site at the end of 1962.

Family Characteristics

The four elements have a characteristic shape, profile and detail which arise out of function, construction and the example of neighbourly buildings, 7. All have a reinforced concrete structure; the floors are flat slabs spanning between the outer T-shaped columns and the service core walls. The external skin is of Portland stone with fixed plate-glass windows, and the trim is of grey stove-enamelled aluminium. The module of the tower and bank building



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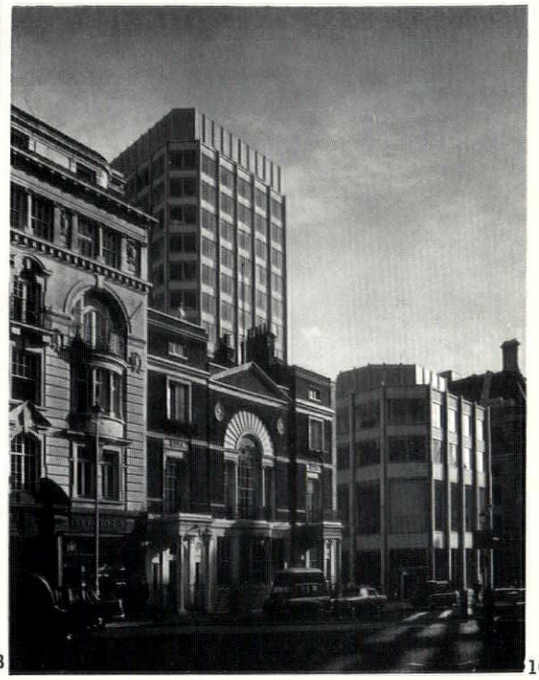

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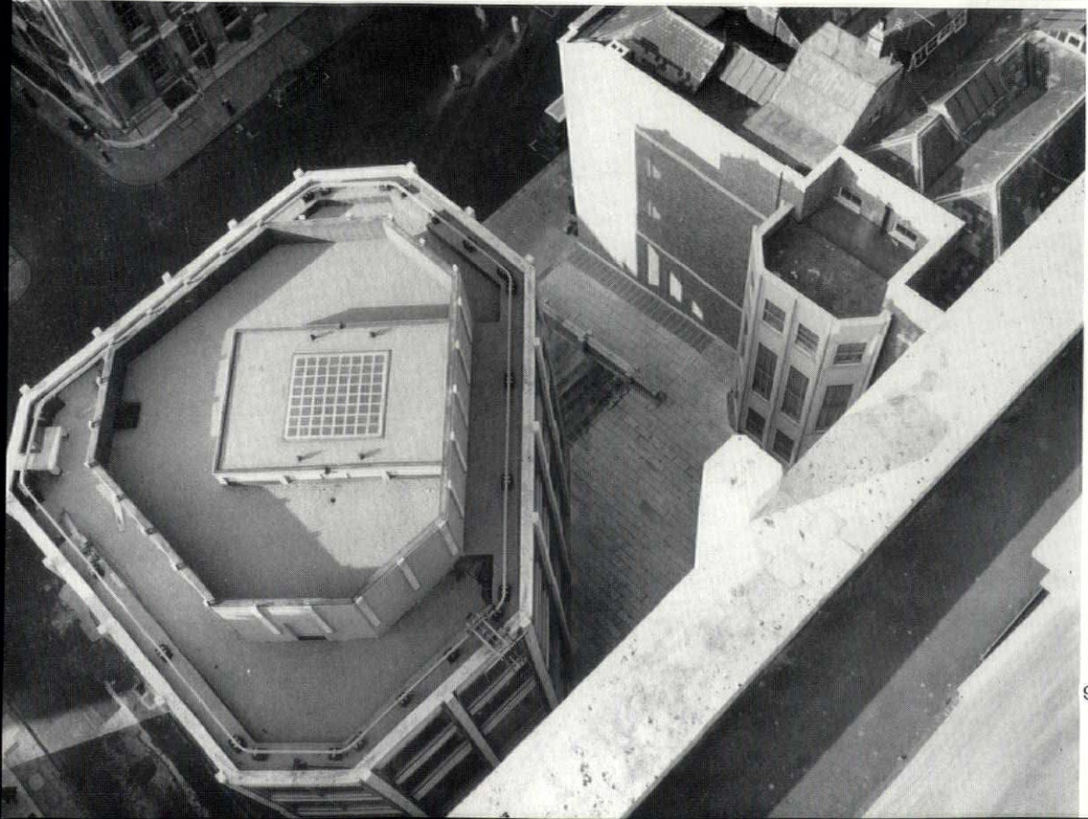
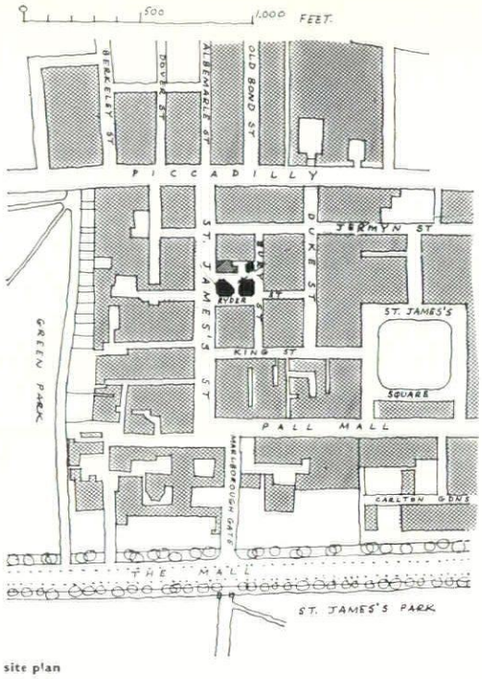


9

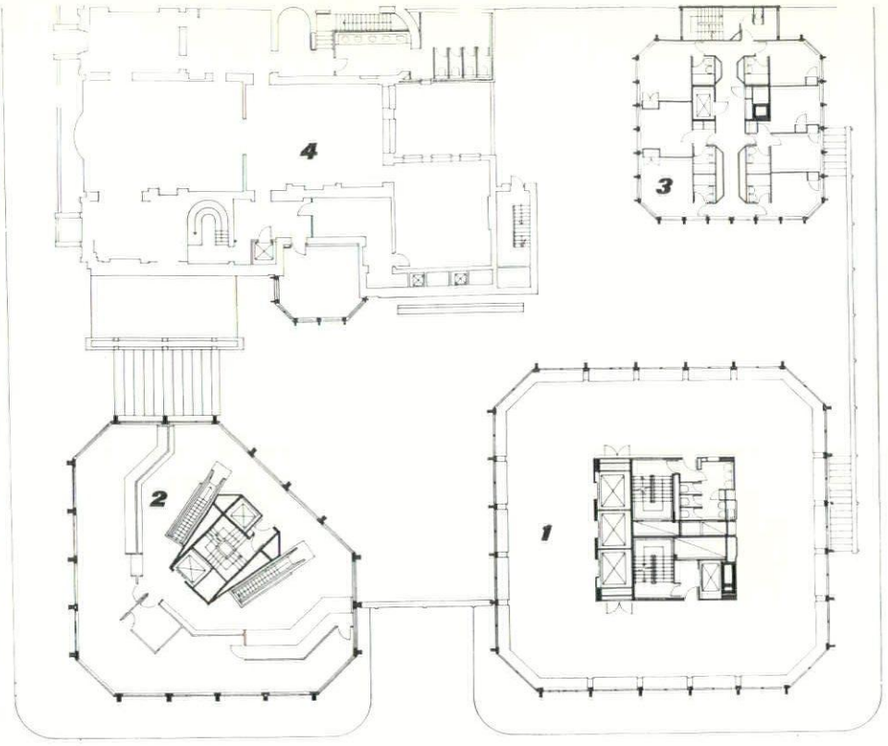
The 'Economist' Buildings, St. James's

8, the view up Ryder Street, with two of the three elements that form the Economist *group on the left: the low block continuing the St. James's Street frontage, with the corner entrance to the first-floor bank, and the tower block rising behind.* 9, *looking down on the roof of the St. James's Street block, showing the chamfered corners all three blocks have in common as well as the new bay window of Boodle's Club seen across the piazza.* 10, *Boodle's Club and its new neighbours, the two* Economist *blocks beside and behind it.*



site plan

11, *staircase and balustrade detail (Ryder Street side), showing also the Portland stone ribs that cover the reinforced concrete structural columns and the aluminium window trim.*



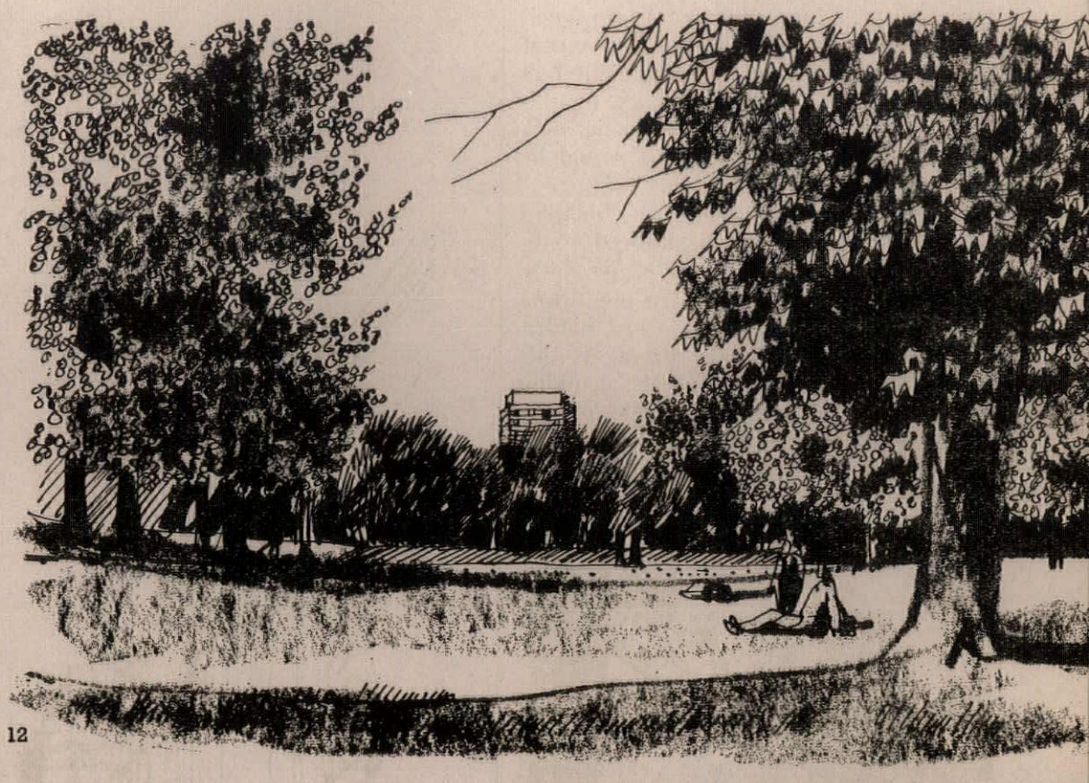
key 1, 'Economist' tower, typical floor 1-13. 2, bank, first floor. 3, residential block, typical floor 1-3. 4, Boodle's Club, ground floor.

continued from page 116

is 10 ft. 6 in. (the basic two-man room) whilst that of the residential block is 5 ft. 3 in.

The distinctive chamfered corners of the buildings permit a certain flexibility in planning since the angle dimension, being ambiguous, is relatively fluid as opposed to the inevitability of the module, and in a site where inches count this has its virtues. It also reduces the apparent bulk of the buildings and opens the possibility of cross views between the buildings, a point I shall pick up again later. Incidentally there is no lack of precedent for this in the existing buildings of St. James's Street and in St. James's Palace.

Granted this overall resemblance then, there are variations in scale and temperament, not a rigid application of the pattern. If the tower building is taken as the norm or father figure, then the residential tower is a more delicate copy to half scale, the bank building has tall windows on the *piano nobile* facing St. James's Street whilst the windows of the projecting bay are domestic and elegant in proportion. I would have been glad to see even more variation in detail and finish.



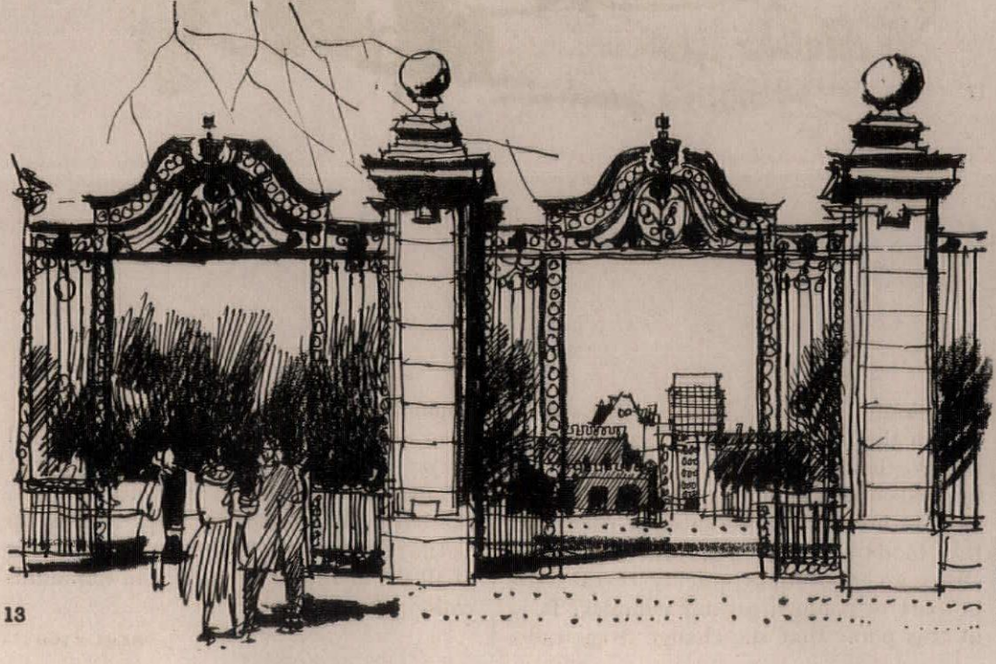
12

Stalking

From St. James's Park, 12, the tower building is visible, and personally I am an anti-high building man if high building is to be indiscriminately used to confuse the perfectly reasonable and human scale of Mayfair and Bloomsbury. But the Economist tower does not fall into the Hilton Hotel and New Zealand House category; scenically it is more aligned to the Foreign Office pavilion seen over the lake. This cannot be said of its impact in St. James's Square, where four floors oversail the London Library, the only good corner left, a corner which ironically contains the Nos. 11 and 12 already referred to. Spires and towers are meant to be seen from afar and in all contexts because they display (see the Post Office Tower). Buildings which are of their own locality should stay there unless they too are prepared to display. If the ground were anonymous it would not matter but the ground is made up of places.

As one leaves St. James's Park by Marlborough Gate the tower appears sturdily on the axis, 13, but it disappears behind Pall Mall as one approaches St. James's Street, 14. This raises a point: if approval is given to this cutting off of the tower, it means that its height, bulk and scale are considered unsuited to the surroundings. In what circumstances then are they suitable? Are there two values . . . a form of double-think?

The Economist buildings are seen in different contexts and, by being broken down into different entities, have the possibility of being all things to all men. The only point I would make here is that if the top residential floor of the tower had been increased to two and the roof detailing brought into the scheme, a separate entity could have been created to float over the



13

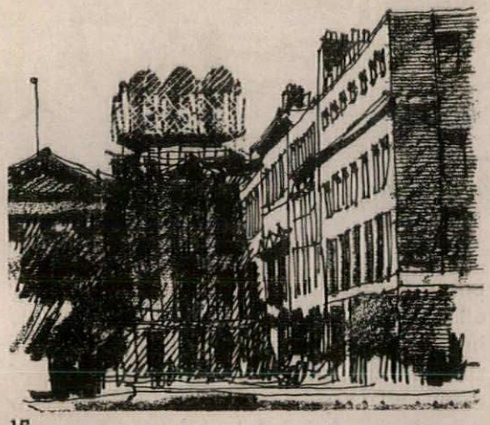


14

Park and St. James's Square, 15, in much the same way that the Grecian pavilions of the Air Ministry float over the Whitehall Court-Horse Guards view; its scale moulding and profile pitched for the long view since looking up from below it would be hardly seen.*

Once in St. James's Street the building containing the bank is noticed only because it is new and white, perfectly adjusted street architecture. As one draws close to the site, the tower is just hidden behind the roof-line of the street. At this point the tall windows of the banking hall reflect the prevailing scale of the street, 16. At the same time this is the first close view of the building, the extrovert of the family. All the traits are there, the Portland stone and grey colours, the splayed corners and projecting nibs. Rather like setting a sprat to catch a mackerel, this modest and well adjusted piece of street architecture is quickly revealed to be part of a much greater complex. It is at this point that the change from traditional street-by-street planning to a pedestrian precinct-group complex occurs. All is revealed: the dominant tower, the echoing but delicate residential block, the bay window and the steps leading up to the raised piazza where the relationships of all the members exist in calm communication, 17.

*Or the tower buildings of Harlow town hall.



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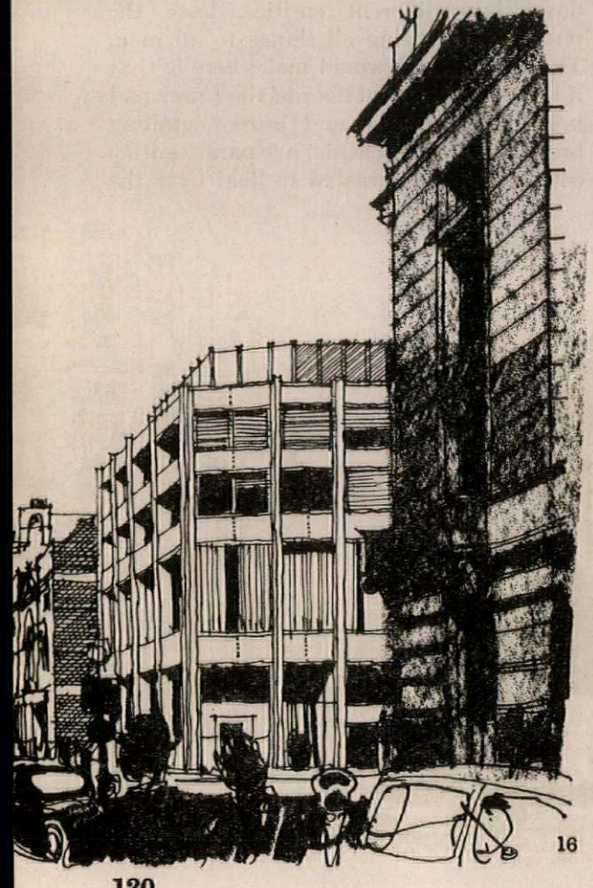

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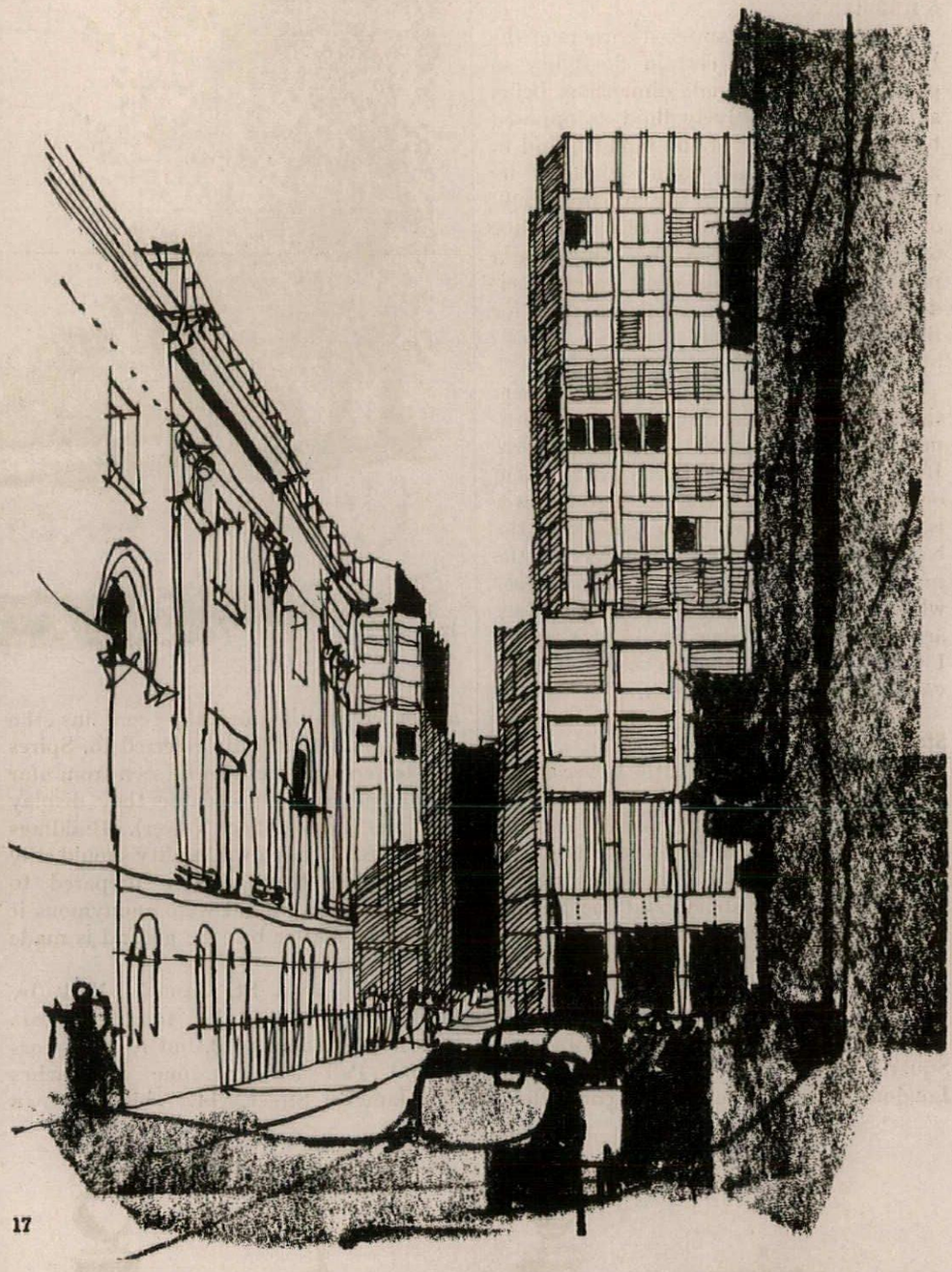

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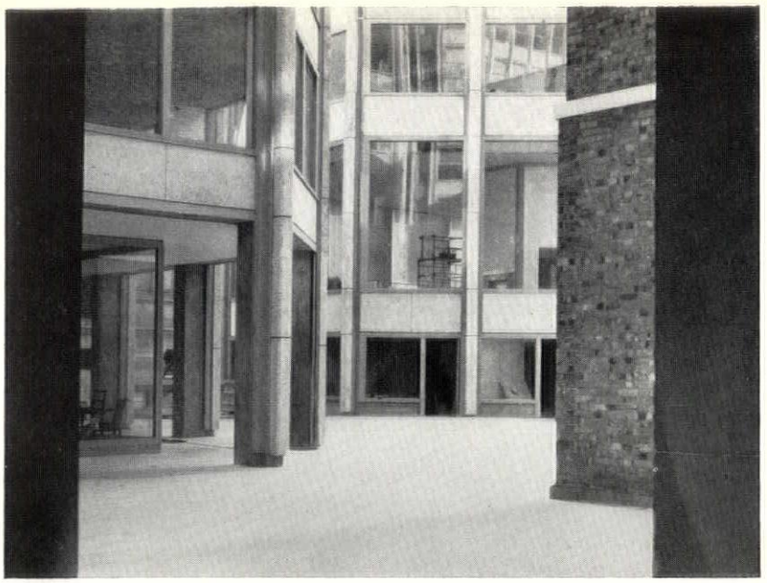
18



19

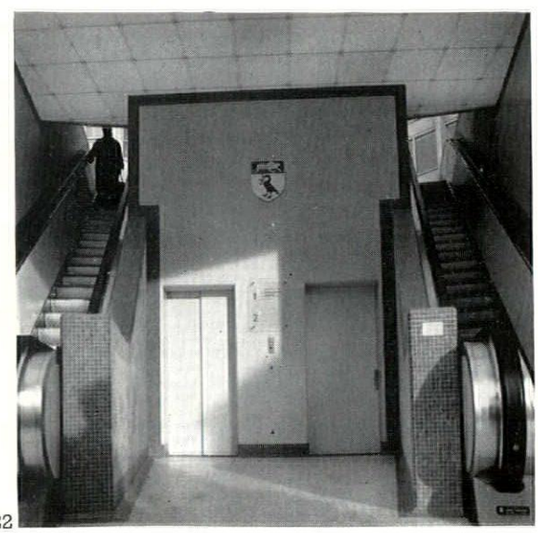
18, looking across the piazza from the ground-floor colonnade of the tower block. 19, *irregular piazza space enclosed by the old* (Boodle's) *and the new* (Economist) *buildings.* 20, *approach to the piazza from St. James's Street—the internal space is given stability by the plain brick flank wall of the club.*

20



21

21, *the raised banking hall on the St. James's Street front, with its tall windows echoing the* piano mobile *treatment up and down the street. It can be regarded as a second piazza suspended in the surrounding architecture of London.* 22, *the pair of escalators by which the first floor banking hall is reached from pavement level.* 23, *bank interior with view outwards to the buildings on the opposite side of St. James's Street.*



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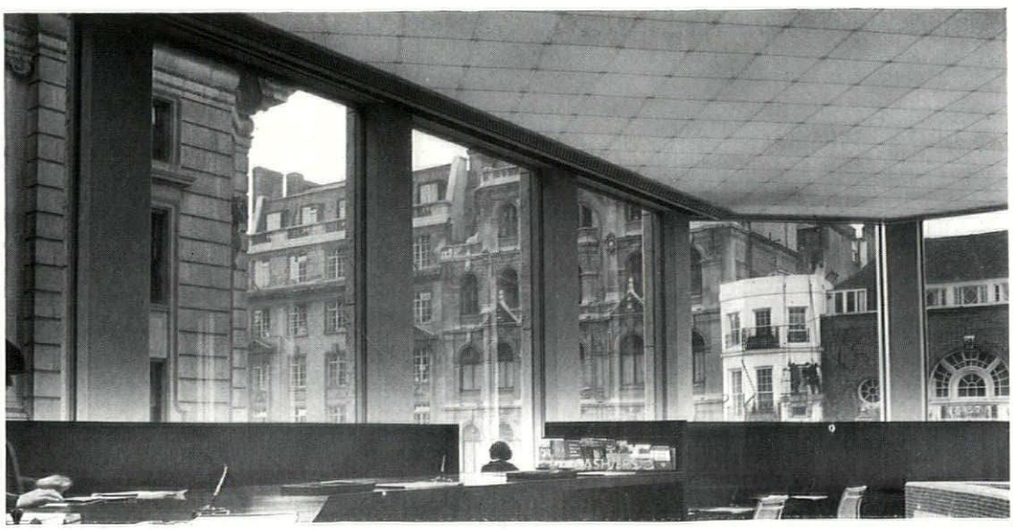

23

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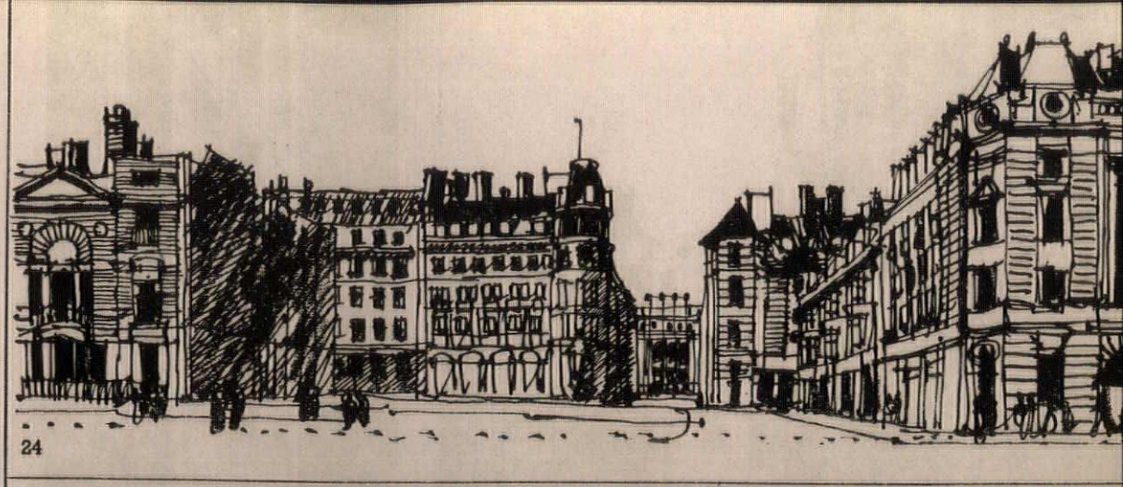
The Internal Correspondence

The two main elements are the enclosing box of existing buildings, 24, and the new group, 25. Compared to the florid Edwardian neighbourhood, the new family may be thought somewhat reticent and, compared to Boodle's, a trifle blunt. But there it is, the one thing the buildings express is the sentiment 'We stand here, we can do no other,' yet their disposition and behaviour is as lucid and significant as a Steinberg drawing. These separate buildings achieve a deeper personality through their siting. The flank wall of Boodle's, which commands the piazza, contains the bay window which takes on the characteristic of French windows opening on to a terrace. The siting of the main tower causes a narrowing of the piazza, and through this gap we enter the hidden space which contains the delicate residential block, recessive and quiet, whereas the banking hall of columns hangs suspended in the air right in the heart of the complex.

This communication between the members of the group, when related to the enclosing box, creates a Possessed Landscape. One notes that the group is very reminiscent of London Transport's building in Broadway: the same colour and splayed corners, the same insistence and bulkiness, the same self-disciplined use of scholarship. The older building broke away from the enclosed, light-well type of layout in a classical manner, whereas this syncopates its masses to obtain a deeper integration into the structure of London.

The interplay between the group and its enclosure is emphasized by the raised level of the piazza which has the effect of excluding much of the neutral streets and vehicles, so giving a direct contact between the Steinberg-like central diagram and its foil. Again, the blocks are so placed that it is possible to see between them throughout the complex; i.e. the piazza never appears as an enclosure of itself but as a space in relation to the outer space. Sometimes the gap is only a few inches wide, 26; but this is enough, when one is moving, to explain the position. The splayed angles are useful in achieving this and, incidentally, in providing the required protractor angle of 5 degrees for daylighting in this very restricted site.

From the plan the piazza space would seem to be cut up into arbitrary shapes, but the arcading and glazed ground floor so increase the effect of space that it flows and develops calmly and lucidly, anchored by the blank wall of Boodle's. One dead area, for me at least, is the space between the residential block and the back of Boodle's. One turns into it through the narrows under the tower block to find a thoroughly romantic London view which



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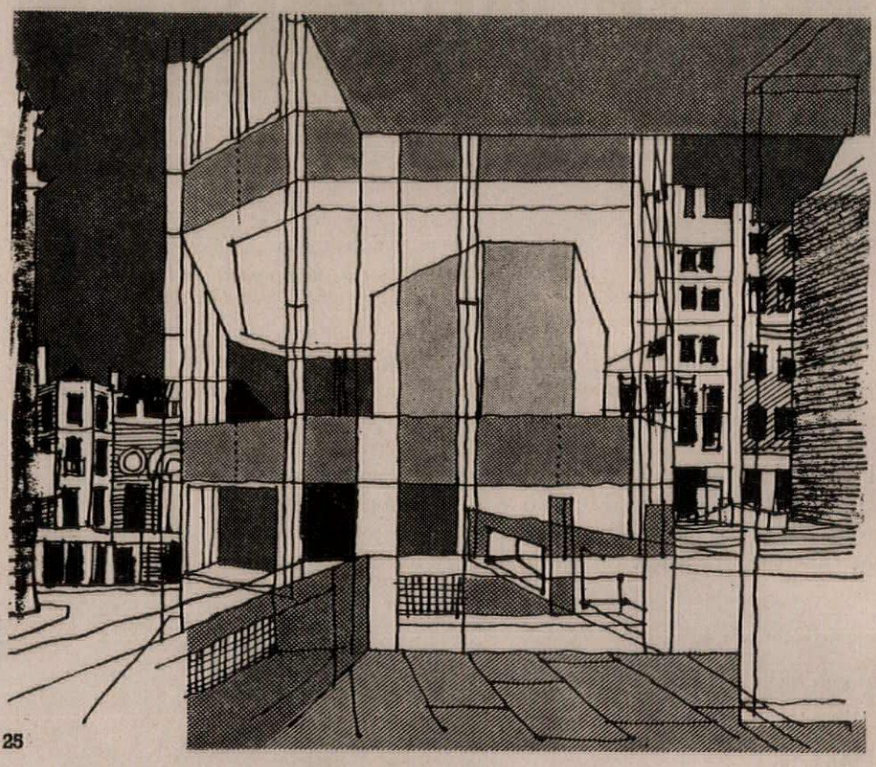

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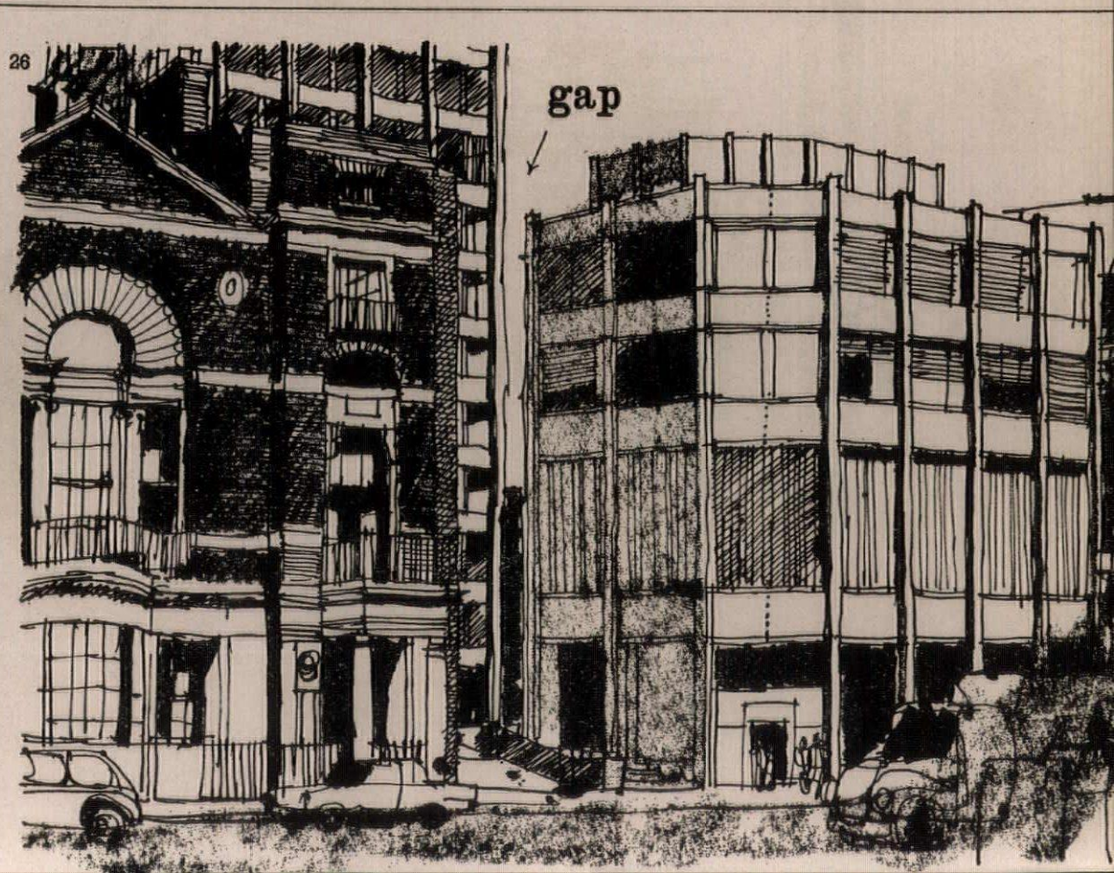

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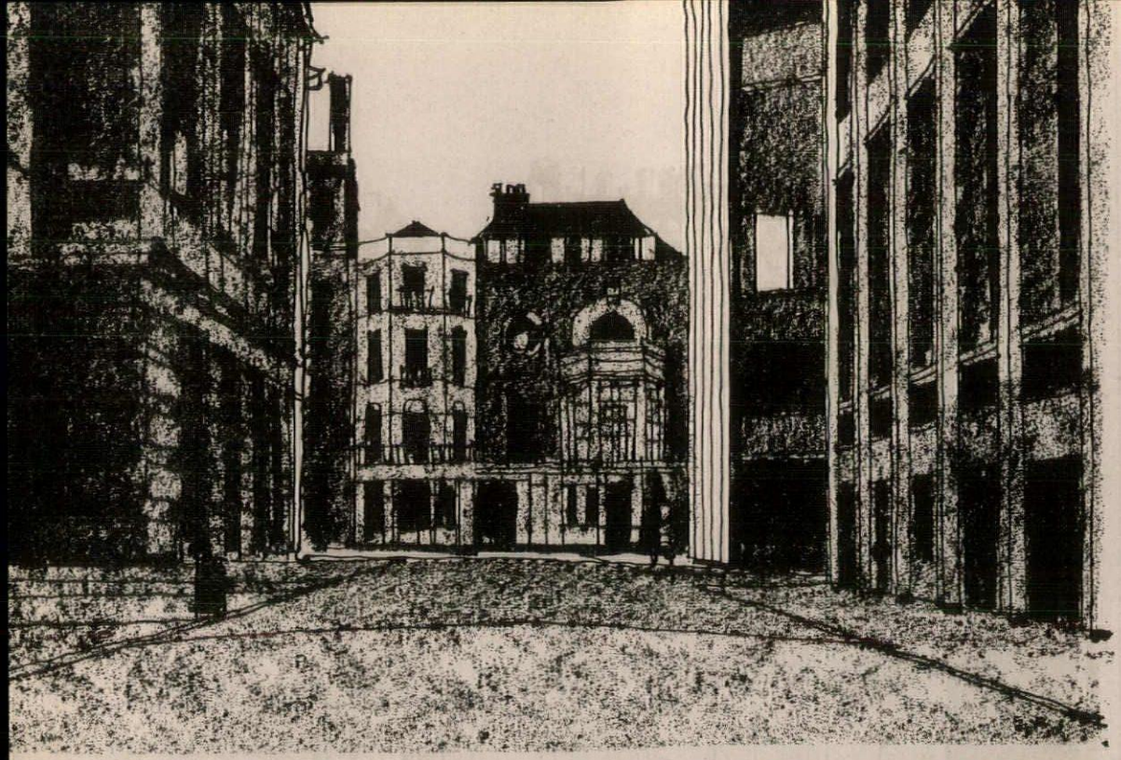

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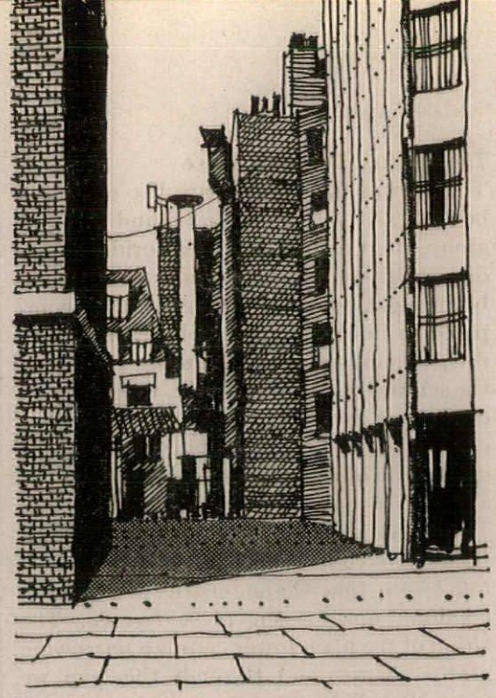


28

27, inside the carefully proportioned antique frame the columns stand directly on the floor: perspective—Chirico.
28, the missing view. Blocked by a wall.

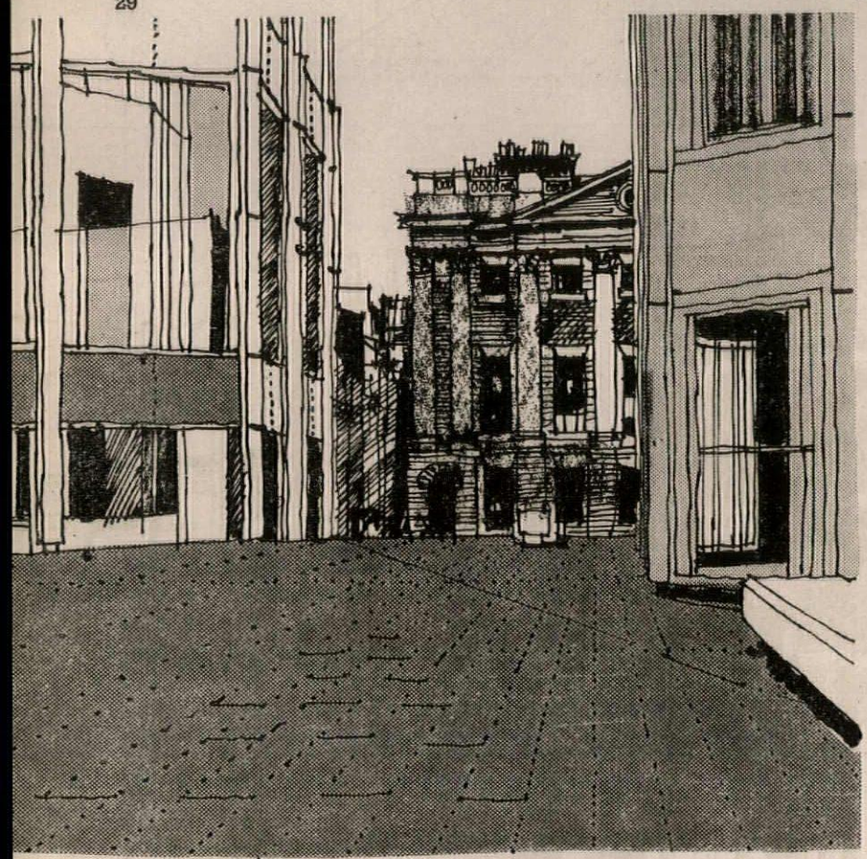
is blocked off by a suburban looking wall. At this point the internal space does not flow outwards as it does in the colonnade view, 30.

The main space is linked by escalator to the upper space of the banking hall, and this transference from the one to the other is exciting in that the upward flow draws the hard, external materials up with it, in the same way that a ramp continues the floor material, and lands one overlooking the internal piazza in the great room floating, again, in the enclave.

A thought occurs . . . when the carved enclave goes, what then? At the moment they need each other and it works, but the cuckoos in the nest aren't going to fly away. It is the nest that will be blown away in the south-easterly gales. But then a new situation will have arisen and the game of leap-frog will go on; the golden thread of exploiting the given situation and not trying to solve all the problems in the ideal building.

29, this view sums up the interplay between the central complex and the netting of the outside world.
30, a raised colonnade captures a vista.

29



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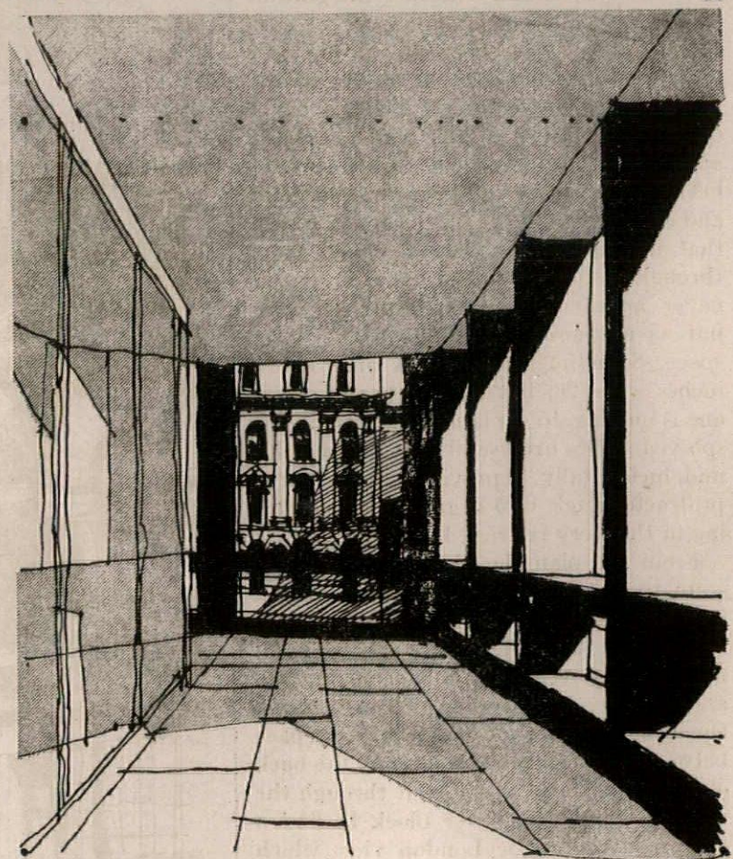
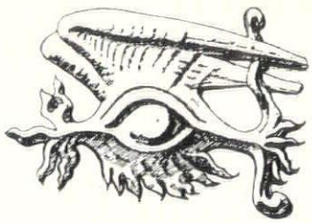




the exploring eye

The construction of the present town of Mogador (known by the Moroccans since they became independent as Essaouria) was begun in 1765 by the Sultan Sidi Mohammed, who reigned from 1757 to 1789. On the Atlantic, a hundred miles due west of Marrakesh, it provided him with a base from which he could control his precariously held coastline, and replaced a Portuguese fortress and a harbour which had sheltered pirates preying upon the rich galleons returning from America and India. The design was by a French engineer, P. Cornut, a native of Avignon. Standing on a flat sandy peninsula, the town is geometrically laid out around an attractive open market, and is still enclosed within continuous crenellated stone walls, at the southern end of which the Sea Gate gives access to the harbour; this was commanded by a battery (the 'Skala du Port'); and so was the town itself on its seaward western side by the 'Skala de la Kasba.' The freshly built town, having been designated a free port by the Sultan in order to attract European trade, is said to have been speedily filled with new inhabitants. Although completely preserving its eighteenth-century appearance, the town is still very much alive, and is in no way overshadowed by a modern suburb spreading southwards along the sandy beach.

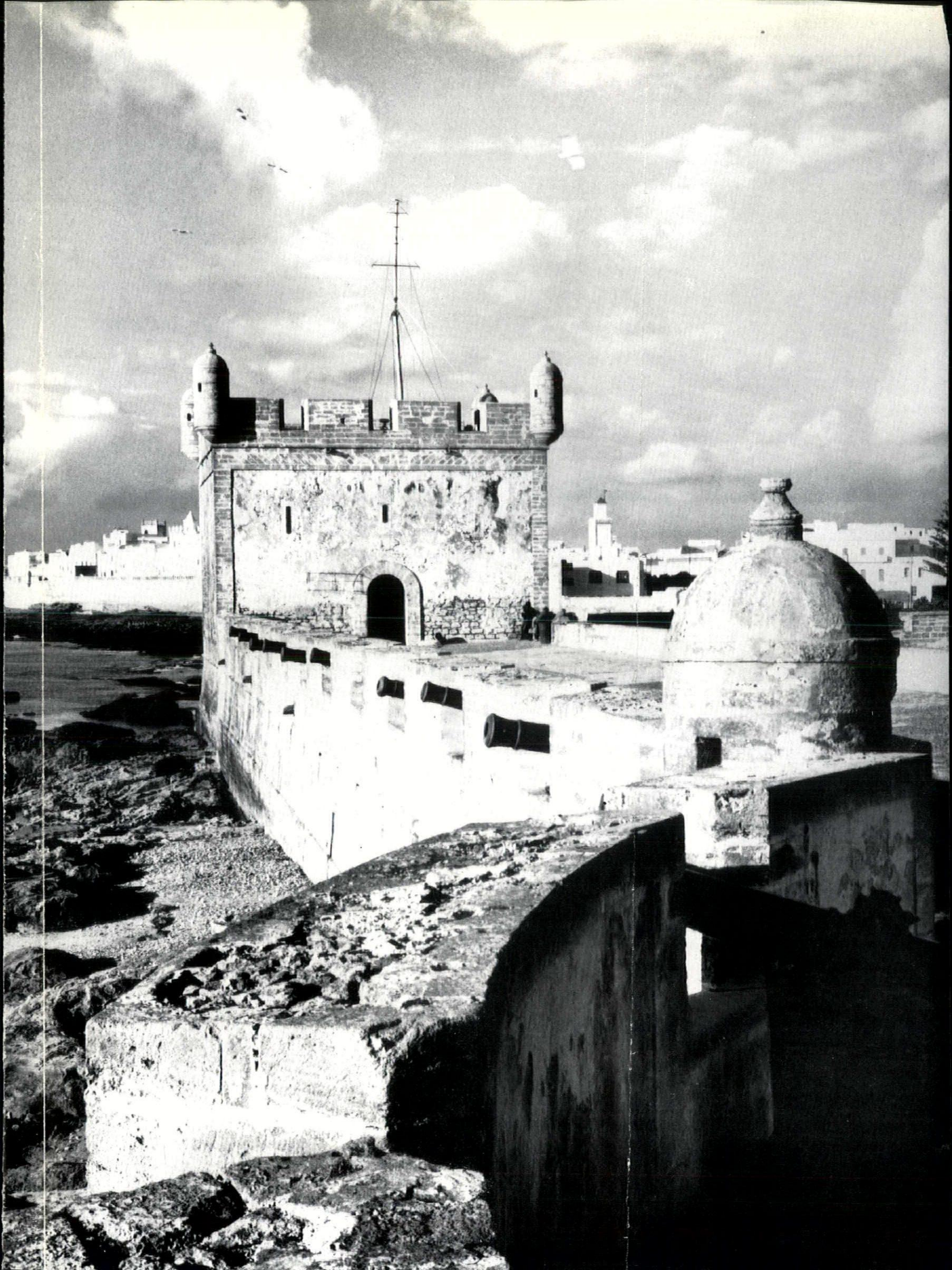


1

1, the harbour of Mogador with the seagate in the background. 2, the bridge across the channel linking the inner and outer harbours.



2





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4



5

3, 4, *two more views of the bridge and sea gate at Mogador (now Essaouria). The Arabic inscription over the gate is said to date its construction to* 1769, *in the reign of Sultan Sidi Mohammed* (1757-1789). 5, *the 'Skala du Port,' the town of Mogador in the background.*

photographs by Stephen Harrison

TWO SHOPPING CENTRES

1 SHOPPING CENTRE AT REDCAR

architect **FREDERICK GIBBERD** | *photographs by Henk Snoek*

1, the pedestrian square, showing shops with maisonettes above.





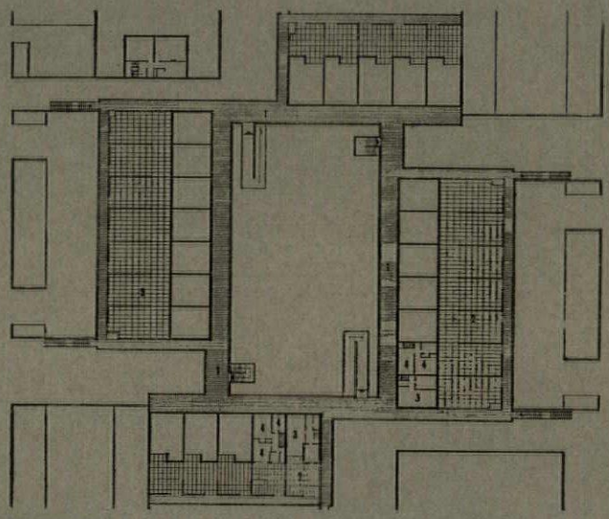
2. view across the square from the south-east corner.

Roseberry Square is a two-level centre for the Lakes neighbourhood of Redcar, the ground floor being a shopping and social centre and the upper level housing. The centre serves a population of some 13,000 and is placed in the heart of the neighbourhood, on the site of an old farm, so that existing tree belts could be incorporated in the design. To concentrate as many different activities as possible, an area of service industry is placed adjacent to the square on the east side and on the south are playing fields. Much of the neighbourhood is by private developers, and to contrast with its open and loose character the centre is designed as a compact group of rectangular buildings, with no through views. The basic form is a paved rectangle on a north-south axis, with an entrance on each corner, the four buildings that form the rectangle being overlapped to close the views.

At ground level are shops facing the square, with their servicing in enclosed yards on the perimeter. The first floor is designed as a deck on which are placed four terraces of two-storey, two- and three-bedroom houses. A pavement runs round all four sides of the square and is approached by ramps and staircases rising out of the four main points of entry. The pavement gives access to the front doors of the houses, and the area behind the houses (the roofs of the shops) is designed as patio gardens for each individual house. At the north-west corner of the square is a public house and in the diagonally opposite corner, in contact with the playing field, are sited a library, clinic and hall.

The buildings are of load-bearing brickwork, with brown sand-faced bricks for facings. The shops have a standard design of front. The houses have rendered lower floors and white-painted weatherboard panels. The square is divided by brick pavings into large rectangles, filled with concrete slabs and granite setts with pitch-filled joints, in local tradition.

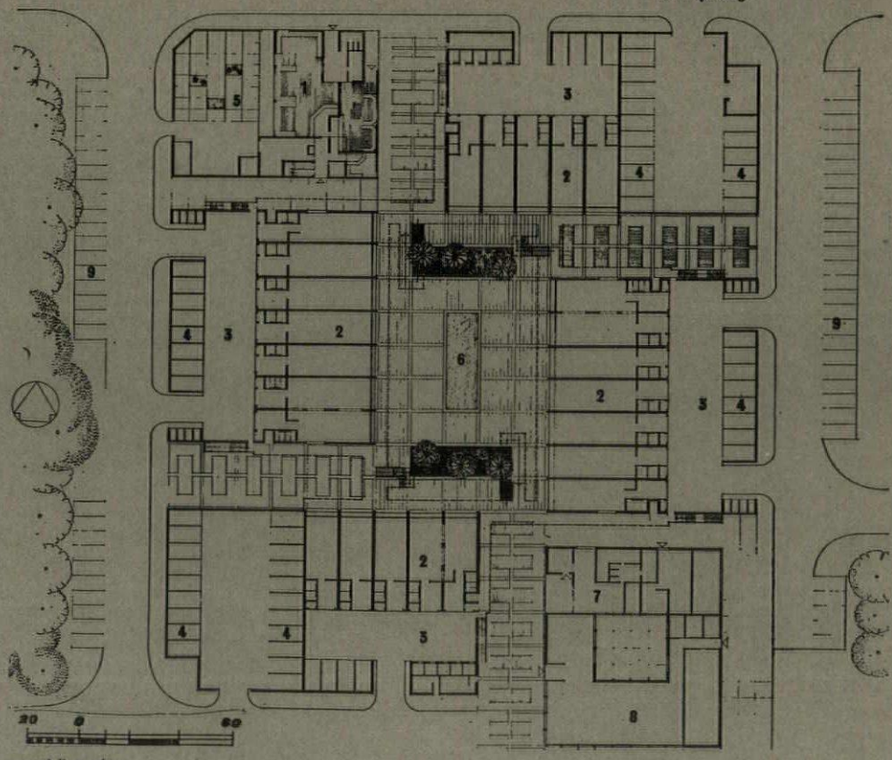
Partner-in-charge, G. T. Goalen. Associate architect, D. S. Roberts. Structural consultant, P. W. Wood. Quantity surveyors, Langdon & Every.



first floor plan

key
1. pavement
2. garden
3. living room
4. bedroom

key
1. public house
2. shops
3. service yard
4. garages
5. beer garden
6. pool
7. clinic
8. library
9. car parking



ground floor plan

2 SHOPPING CENTRE AT WINCHESTER

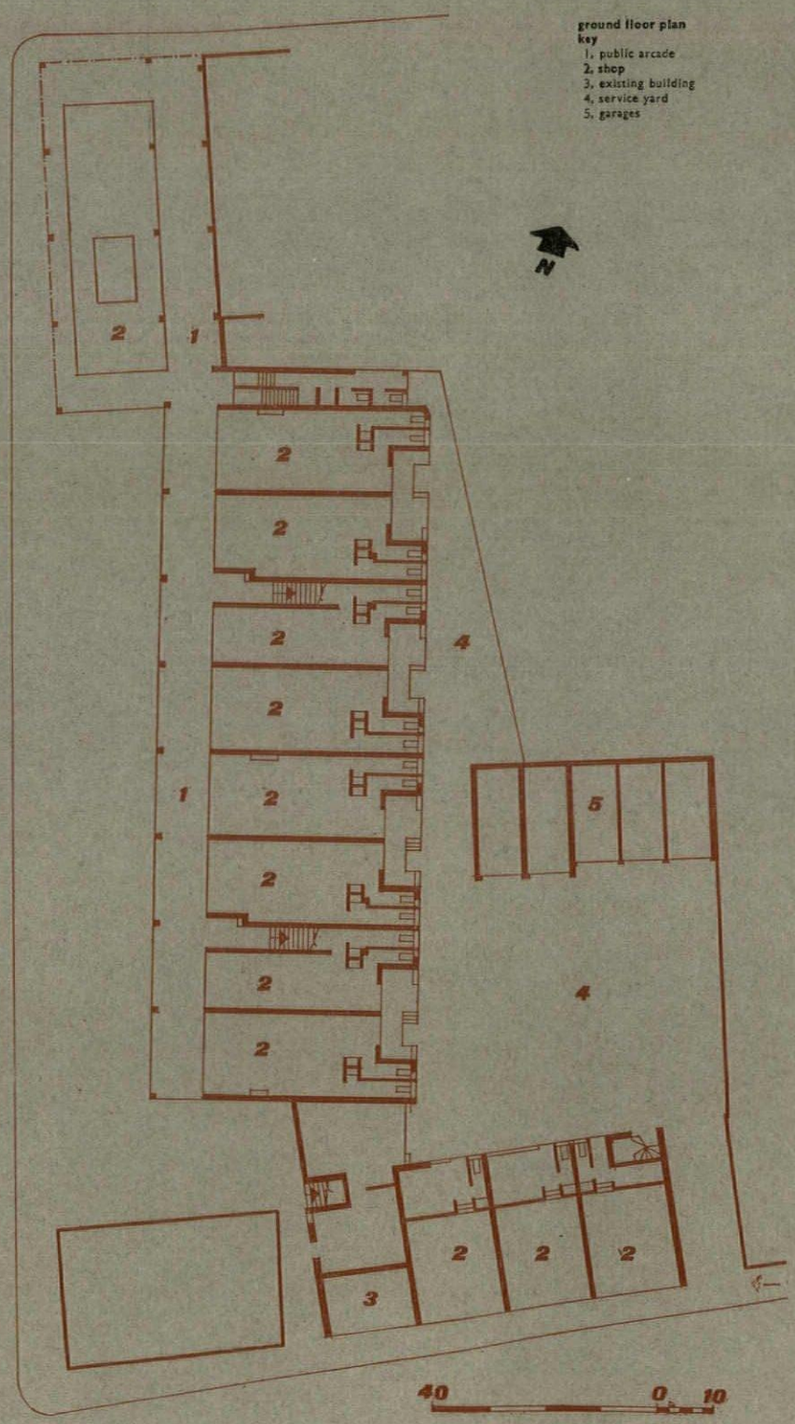
architects **CASSON, CONDER AND PARTNERS** | *photographs by Colin Westwood*

The St. George's Street shopping centre was designed for Winchester city council to provide shops, offices and flats (or maisonettes) on a site which leads directly into the Brooks area of Winchester. A plan for this area was originally prepared by the late Sir Patrick Abercrombie, but has since been revised by the present consultant to the city, Mr. Peter Shepheard. The St. George's Street site is a pilot scheme for this overall development. The street runs parallel with the High Street and is, in effect, the downstream half of the High Street. One of the main car parks in the city lies at the bottom of St. George's Street and faces a short side of the rectangular site. In the corner of the site itself there is a Georgian building—the offices of the *Southern Evening Echo*—which had to be incorporated in the new development.

The site falls approximately 5ft. in its length and, although facing south, has an uninteresting outlook on to the back elevations of the High Street properties. The building was set back from the street to minimize this disadvantage and to take advantage of the sunlight angle across the roofs of these properties; and the fall on the site was taken up within this by the formation of steps and slightly ramped granite setts which lead to arcaded shops on the ground floor. Trees were planted close to the road to give interest to this paved area and to extend visually the line of the street. The scale of the building aims to relate it fully with the domestic but urban scale of the adjoining and surrounding properties, as well as to make possible a logically divisible unit for the office spaces on the two floors above the shops. The arcade provides cover for the full length of the site from an underpass—a traditional device in Winchester—running between the existing Georgian building and one part of the new block opposite the car park; through the paved area, and out through a secondary enclosed arcade formed between the existing and new properties into another shopping street.

The building is of precast concrete frame construction, with concrete floors and infilling brick and insulating block external walls. The windows are, in the main, metal framed in wooden sub-frames. The roof is asphalt and lead. The shops themselves were built in carcass form and the shop-fitting done under separate contracts by the tenants.

Partner-in-charge, Ronald Green. Associate-in-charge, David Ramsay. Quantity surveyors, A. S. Wilson & Partners.



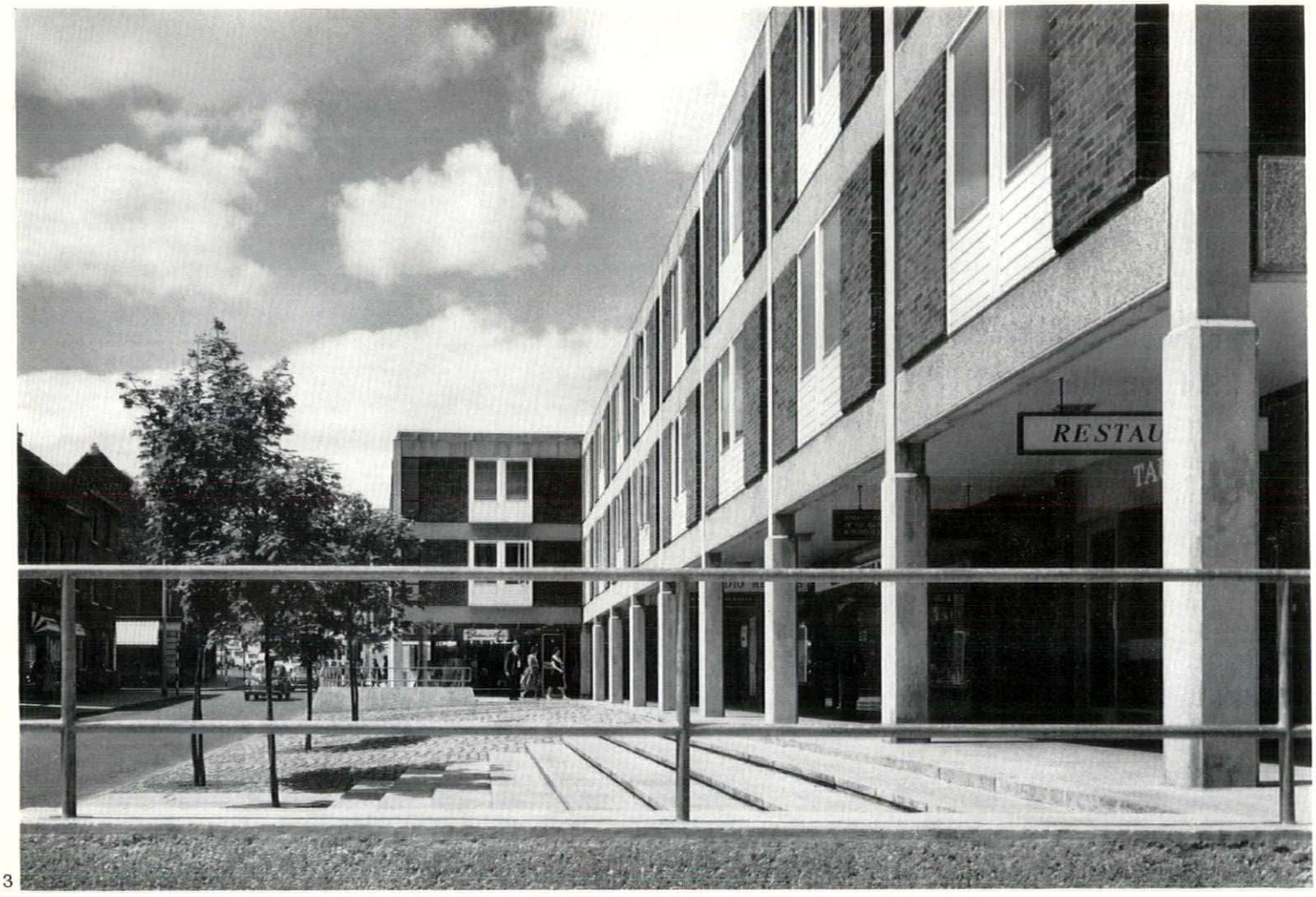


1

1, general view of the site from the south-east.

2, the paved area and arcaded shops in St. George's Street.

2



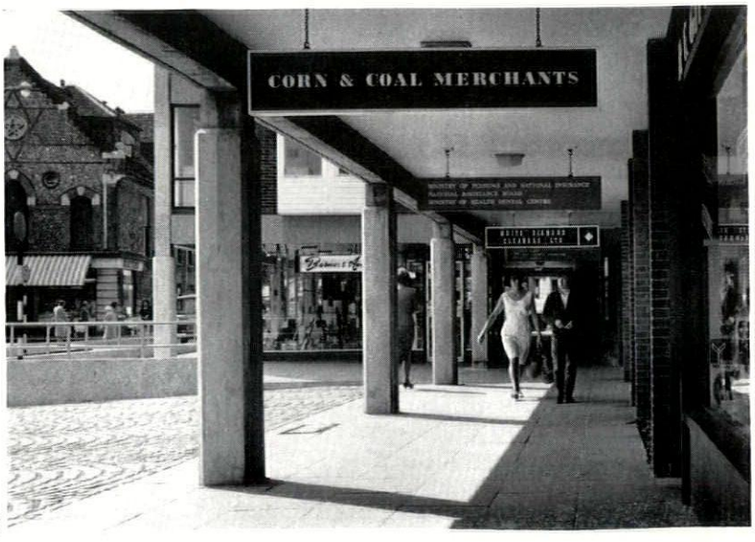
3

SHOPPING CENTRE AT WINCHESTER



4

3, oblique view of the courtyard showing the steps and granite setts.
4, the public arcade running parallel to St. George's Street, seen from the west, and 5, from the east.



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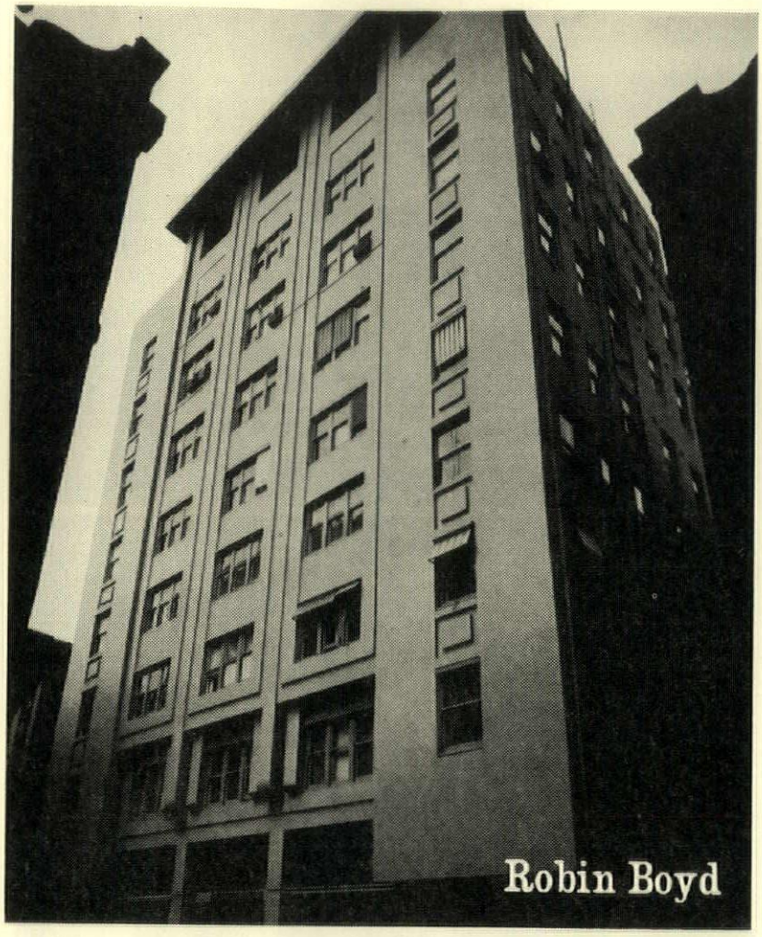


1

GRIFFIN IN MELBOURNE

Walter Burley Griffin (1876–1937) might be described as the brightest boy at Louis Sullivan's kindergarten, and the last graduate of the Chicago School. He was six years younger than Frank Lloyd Wright but regarded him as a contemporary. They shared an office for several years after 1900 and it seems certain that Griffin took charge of design at times when Wright was preoccupied with personal difficulties. In 1912 Griffin won the international competition for the plan of Canberra and went to Australia. To Wright's awful displeasure he took with him as his wife the star perspective draftsman of the office, Marion Mahony.

Today, of course, Griffin inevitably is measured against the acknowledged master, but in the early years of the century in Chicago there were some who saw the youngster Griffin as the more brilliant and erudite of the two. Griffin himself was genuinely modest, but if it came to a point he considered that he could do better than Wright. However, he never managed to get even as many opportunities as Wright did to prove his great talents. Canberra in his time was a fiasco. In Chicago, Sydney, and later in Lucknow where he died, he found modest success but also a good deal of professional frustration. His most productive period—his forties—and his most consistent run of sizeable commissions coincided in Melbourne during a ten-year period after he opened practice there in May, 1914.

For an artist at that time to be Down Under was to be down and out of the international picture. Thus the rest of the world knew practically nothing of this quiet American who won the competition for Canberra and then in pursuit of it disappeared into the bush. Yet in his Melbourne period he produced a family of buildings which might have created, had they been more accessible to the historians, one of the great reputations of the first half of twentieth-century architecture.

Griffin was a romantic idealist, the ideal being a civilization in which everyone lived at home with nature and each other. He wanted to help build an ordered environment of tranquil beauty in which men and women possessed of the same sort of goodwill that was natural to himself could live co-operative and creative lives. Architecture was essential to this vision, but it was not the dominating element. His second art, landscape architecture (he never called himself a town planner), was in fact of more visual importance. Like all great architects, he preferred trees. Intimacy with botany was one of his numerous academic accomplishments, or talents. He soon became an authority on Australian flora, and his own fingers were green. In his ideal community buildings would appear suddenly, like natural outcrops, as one followed gravelled paths round the contours through a supernatural landscape. Here and there a space would open wide to form a playground on a level plane, or an outdoor theatre where the ground sloped steeply enough. And here no doubt one would find the community repertory company in rehearsal of a play written by one's neighbour, or a small group deep in liberal discussion. Private property lines might be a legally necessary convention, but they would not be marked on the ground. If there were any fences, these would not be used for separating private titles; on the contrary they might run at right angles across property lines and were intended only to define or compose spaces visually. One of Griffin's first works in Melbourne was the planning of an estate directed towards this vision on the steep hilltop of the then outer suburb of Eaglemont, and his last major work in Australia was the much larger self-contained community of Castle Crag on the precipitous banks of a reach of Sydney Harbour.

There may have been in this concept little that was new or not to be expected from a liberal North American of the early century and an architect of the Chicago School. The remarkable thing was that a man holding dear this sentimental vision should fall in love with Australia (while never relinquishing his U.S. citizenship) and should choose to try to realize the vision in, of all places in the nineteen-twenties, Melbourne. Here he found a text-book example of non-co-operative living, with the world's greatest mileage of fences per head of population.

At that time about a million people lived in some two hundred thousand separate houses in what was already a giant sprawl of suburbs. The Norman Shaw brickwork and Art Nouveau fretwork of the houses must have distressed Griffin less than their gardens of annuals where nothing grew higher than the six-feet paling side-fences that guarded the privacy of each allotment.

Then why did Griffin choose Melbourne? Because he was a born crusader and saw in us potential material for salvation. He had no serious formal religion but he was moved religiously by an intense conviction in humanity and total democracy. And while he was theoretically involved with the concept of human equality he discovered that the most humble tradesman on an Australian building job took it for granted and practised it with sometimes devastating effect. One of Australia's few traditions was the idea of the noble common man, and in this it nursed a good deal of idealistic thought.

None the less, Australia also had a stiff conservative streak which was frustrating enough to her own native-born artists and exasperating to an eager newcomer. Griffin was always at loggerheads with the stodgy building regulations which were framed to protect the conventional suburban domestic image. He wanted to cut about three feet from the regulation ceiling height. He considered the laws which demanded double brick walls to be a conspiracy of the brick companies. The building authorities grew to dread his approach. Never angry, always impeccably polite, he slowly wore down most of their resistance. He patiently devised acceptable compromises such as a coved ceiling which gave his houses the regulation ceiling height in the centre and the low perimeter walls which were essential to his own horizontal image of domestic comfort. Soon after arrival he built, outside the regulations, a children's playhouse in a garden at Eaglemont. It was twenty feet square under a low pyramidal roof and had an alcove in each corner, for washing, cooking, dressing and sleeping. He called it jokingly the house of five rooms, each room being twenty feet square. Griffin and his wife Marion moved into it, and lived in it for years, to the great irritation of some neighbours and the local council.

The Griffins had arrived in Melbourne amid fanfares of publicity. He addressed the Royal Victorian Institute of Architects in 1913 and in the nine months before he opened practice he was approached by several of the most successful architects in the city and offered a partnership. He declined all such offers, but he did accept a commission from the architect A. S. Eggleston to consult on the design of a city office building. This was Collins House, 1, a ten-storey block facing narrow Little Collins Street. Griffin treated the façade in plain Chicago style with strong vertical supports holding recessed strips of windows and spandrils. He extended a few of the vertical members above the parapet and made them hold a sort of pergola or sunshade over the roof, and he added three odd little triangular balconies from the roof garden projecting out over the street. All this displayed to Melbourne for the first time, and at quite large scale, the character of Griffin's design: simple, strong, and likely to be decorated sparely but arbitrarily with chunky prismatic ornament personally designed for the occasion. Many who had been carried along by Griffin's reputation and personal charm were shocked by

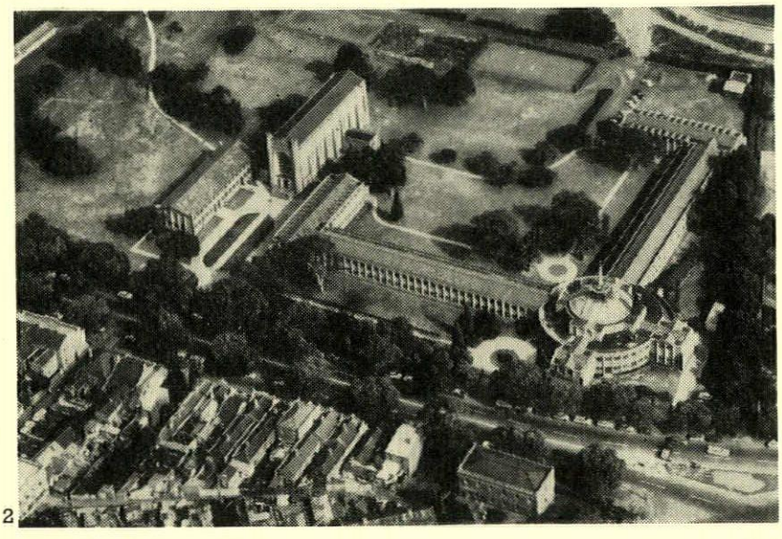
this first example of his work. *Building* magazine, which had supported Griffin strongly during his political difficulties in Canberra, was appalled. 'Freakish and faulty architecture,' it wrote in December, 1915. 'The attention of the authorities should be drawn to this danger. . . .' This was mild compared with later criticisms, when his clients also were berated for choosing him. Yet despite all opposition his private practice grew.

Griffin was retained by the Commonwealth Government at a thousand guineas a year on a half-time basis to develop the Canberra plans. He had rooms for this purpose in a Government building, and he did his private work in the next street, in an office at 395 Collins Street. The latter was a little American colony, at a time when Americans were hardly known in Australia. There were only four of them at first: Walter Burley and Marion Griffin, his brother-in-law Roy Lippincott—for whose children the garden playhouse had ostensibly been built—and George Elgh from the Wright office, who had helped on the Canberra competition plans back in Chicago on the promise of a trip to Australia if they won. The first Australian to join them was a young graduate dissatisfied with the training in Gothic and Classical details at Melbourne University: Edward Billson. Today Billson recalls an atmosphere of co-operative devotion to Walter and to the work, which lasted long into the night and sometimes through week-ends, for the Griffins had no time for clocks and no family to draw them home. Besides, Walter often worked a full day at the Government office and had to attend to his private work after hours.

Marion attracted Walter as an opposite. She complemented him in social contact as she did in the office. He was gentle, never angry; he recognized no enemies even among those, like Frank Lloyd Wright, who treated him most disgracefully. She was older than he, a relentless debater on her favourite subjects such as Single-Taxing, and a fighter for Walter's rights. He visualized form in three dimensions and was not interested in drawing, nor very good at it. She was the brilliant draughtsman of the perspectives which helped to make Wright's early reputation in Europe, and of the romantic visions which helped to win the Canberra competition.

Griffin lived for ideas. When he found the one he sought to solve a specific problem he would describe it with the help of the roughest sketches to the draughtsmen. The only exception to this which Edward Billson can remember was when Walter himself drew completely the façade design for the Chinese Nationalist Association building in Melbourne's Chinatown district. But then this was not an idea building; it was just the remodelling of an old member of a brick terrace. It was pure decoration, and Griffin, unlike Louis Sullivan, had no guilty conscience about his enjoyment of his own ornaments. In his early efforts to establish a practice while feeding five mouths he was pleased to accept a few unenticing remodelling commissions. As well as the Chinese building there was a big restaurant, the Café Australia, in 1916, and an enormous *Palais de Danse* in 1920 at the beach resort of St. Kilda. In all of these he relied heavily on ornamentation and in the last mentioned he even introduced, for perhaps the only time in his life, ornaments that could not be drawn with a 45-degree set square. Whenever he had the opportunity to create form freely, and whenever he was clearly most satisfied with the form he created, he would restrict the ornament in order not to sully the form. But he never could resist a little prismatic decoration somewhere.

His first big straightforward commission in Melbourne was Newman College, a new Roman Catholic college at the University of Melbourne, built in 1916. He planned it in two-storeyed wings



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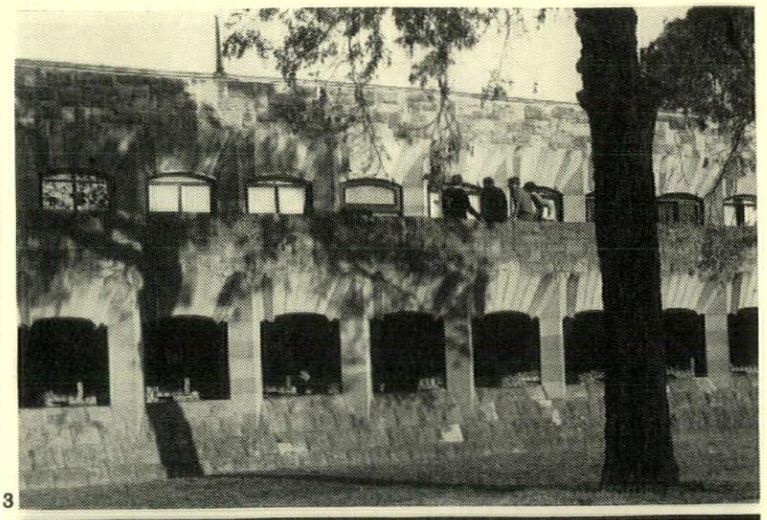

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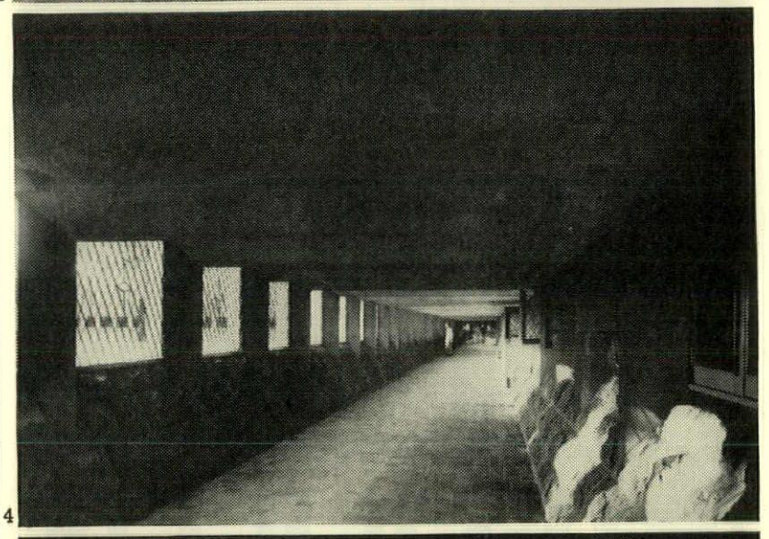

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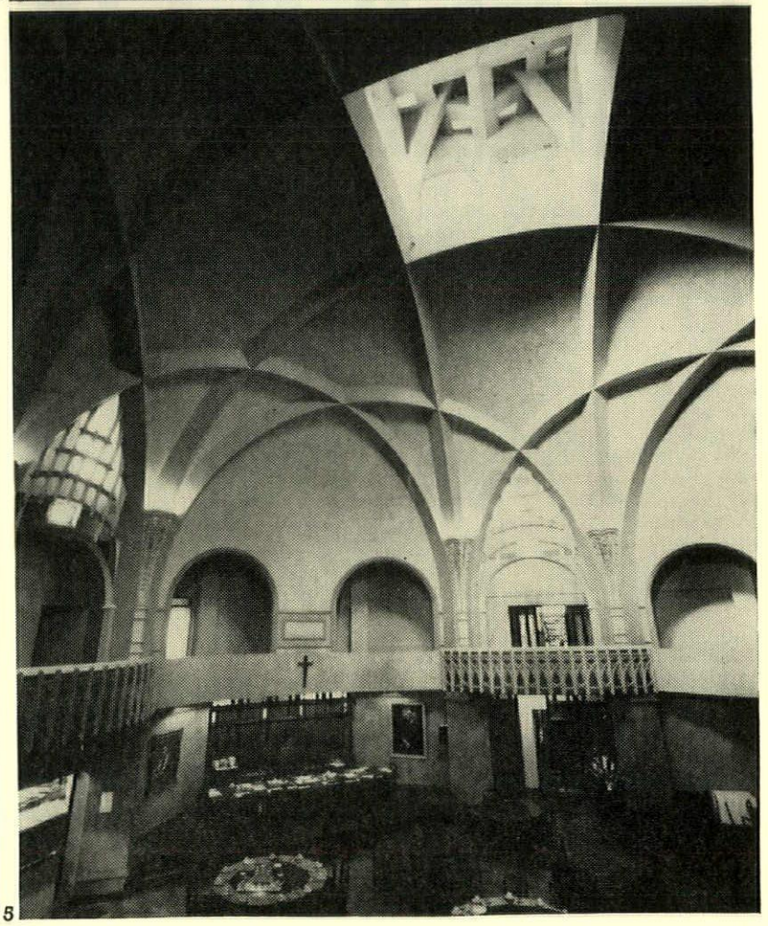

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NEWMAN COLLEGE 2, *Griffin's work on the right: two arms from the circular hub. The chapel (left) is where he planned it, but it is not his design. He intended a symmetrical plan about the chapel, reflecting the original wings.* 3, 4, *the open cloisters.* 5, *the refectory.*

spreading wide open arms from refectory and office hub, 2. A module of seven feet applied everywhere. The students' rooms in their long straight rows were approached from open cloisters, 3 and 4. Rough faced stone walls were built with a relaxed, if structurally redundant, batter. The refectory, at the centre of the hub, was roofed by a reinforced concrete dome with triangular ribs crossing on the soffit, 5. In places an opening was cut out below the crossing of two curved ribs, revealing a Gothic arch shape which gave symbolic satisfaction to the client. The dome was surmounted by a tall thin spire surrounded by twelve smaller pinnacles representing the twelve apostles. A gallery circled the refectory rotunda at first floor level, and through arches at intervals one looked down at the diners or up to the square lantern in the centre of the dome. Here in confined and curving spaces, and again outside in the long straight perspectives of the cloisters, Griffin displayed for the first time his fascinated ability with spatial patterns. As he developed this further in later buildings he was more inclined to allow the ornament to lapse.

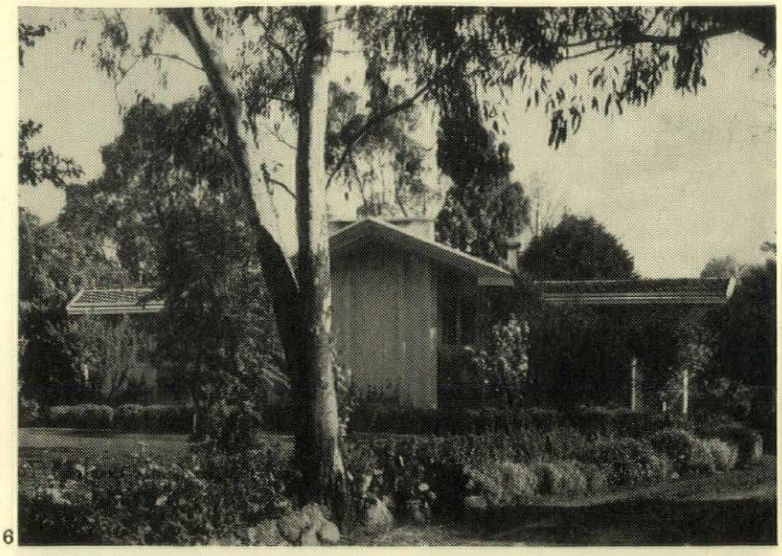
Griffin had a number of shortcomings as a practising architect, not the least being his lack of concern for money. He would seek a design idea for a project patiently, but once he found it patience would desert him. The idea would consume him and the project. A module must be applied ruthlessly; a spatial pattern or structural theme had to be pursued to the last closet. When the idea had been developed to his satisfaction in his mind and recorded on sketches, the intensity of his interest was inclined to diminish. He avoided the problems of site and administration as much as possible. He made few supervisional visits to the jobs. Building finish or craftsmanship had no special fascination for him. But he had one rare quality, invaluable for a practitioner, which made it possible for him to maintain always, in the very face of professional calamity, an indomitable will to experiment and a conviction that any invention was better than a convention.

This happy quality was an incapacity for worry. When his little inventions went wrong, as they did fairly frequently for want of thorough investigation—he was so sure of his hunches—he rejected personal involvement and he would never allow any blame to rest on the design idea. He would not pass the blame specifically to any other person, but he wrote off any minor practical shortcomings of his buildings against the unco-operative and contrary nature of the building industry as a whole, and especially perhaps to the 'she'll do, mate' attitude of the Australian carpenter. So he persisted in such devices as using four-inch nails as pivots for hanging casement sashes and strange devices for fastening cupboards or for constructing doors. He felt somehow that one of his obligations for the privilege of being an architect was to design everything anew in every building from the ground up. Thus he was led to the development of the structural system which he patented under the name of Knitlock.

Knitlock was based on a series of interlocking precast concrete blocks for walls and another for roofs. They were erected almost dry. Griffin intended them to be so easily handled and foolproof that any handyman could use them to erect his own house. (The do-it-yourself movement was already well established in Australian suburbia in the 1920s.) Knitlock was remarkably similar to the concrete block system used by Wright in the USA at the same time, which has given rise to a good deal of speculative comment about the origin. Edward Billson, who detail-designed the whole Knitlock patent system, knows that it was devised by Griffin painstakingly from first thoughts, whatever the stimulus. The basic Griffin block was plain and twelve inches square. Two of them, locked back to back with staggered joints, made a wall two inches thick. At every third block horizontally the wall thickened into a vertical rib in which reinforcing rods were threaded. Windows were fitted where required between the vertical ribs. The roof-blocks or tiles were also square, but were laid on the diagonal. The two lower edges of each tile had downturned flanges which fitted over the upturned upper edges of the tiles laid below them.

Knitlock ran headlong into trouble with the building authorities, and many municipal councils never accepted it. But Griffin succeeded in convincing a few councils, including that of the rich suburb of Malvern, and went on to use Knitlock in a dozen or so houses, small offices, and pavilion structures. The modular ribs and low-pitched diamond tiled roofs gave these buildings a sedate and unmistakable character. It would have been impossible for the most inexperienced amateur or cynical builder-designer to make a bad house of Knitlock without deliberately distorting it. Two or three of Griffin's exercises in the system in 1923, including the Paling and Salter houses in Toorak, 6, deserve listing among the finest house designs of the century. Yet they are mentioned in none of the histories; even the Australian Raymond McGrath forgot them when he compiled his book *Twentieth Century Houses* in London in 1934. Two little holiday cottages above the bay at Frankston, called by Griffin 'The Gumnuts' and based on the original children's garden house, still stand as little gems of integrated design in the pure Knitlock form.

Griffin's best known and most popular building was the Capitol theatre, 7. It was one of the super cinemas of the era, combined with shops and office space and built in



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the heart of the city between 1922 and 1924. In designing it he made some daring innovations and took some perilous risks. His task was to combine on the narrow city site a cinema seating two thousand, full theatre stage facilities, shops at street level, grandly spacious foyers, and a heavy stack of office floors rising above to the 132-feet height limit then in force. The intricate interlocking of functions that he planned called for structural gymnastics, including offices suspended on tensile droppers from giant beams spanning the width of the site, and one major internal lattice beam through which one walked to the dress circle. All of this was in reinforced concrete. He believed in the organic nature of monolithic construction and never employed steel frames. No permit for the building as a whole was ever issued by the city authorities. The bewildered and sceptical inspectors reluctantly passed it floor by floor as each alarming element was completed.

The interior of the auditorium, 8, was the climax of Griffin's Melbourne era. At the outset one of his clients showed him a handful of coloured crystals he had picked up in Vienna. He wanted a ceiling



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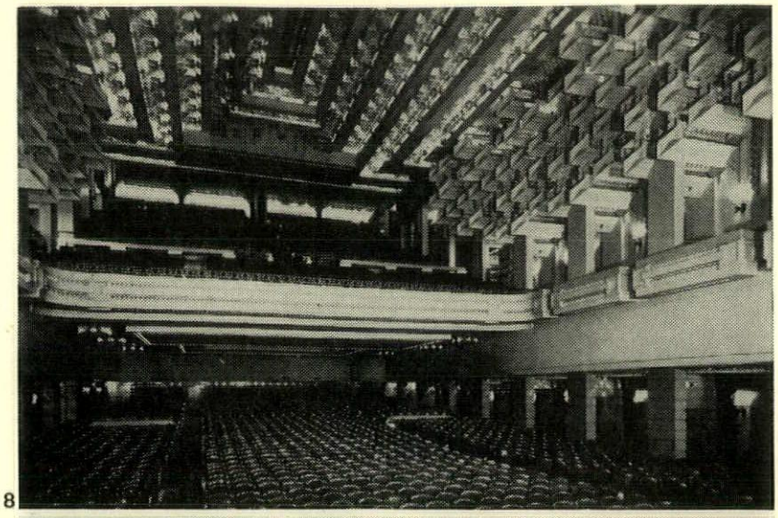

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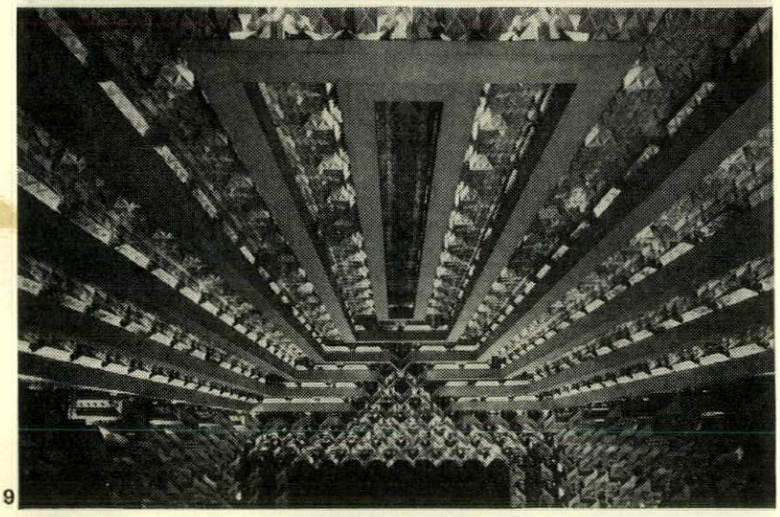

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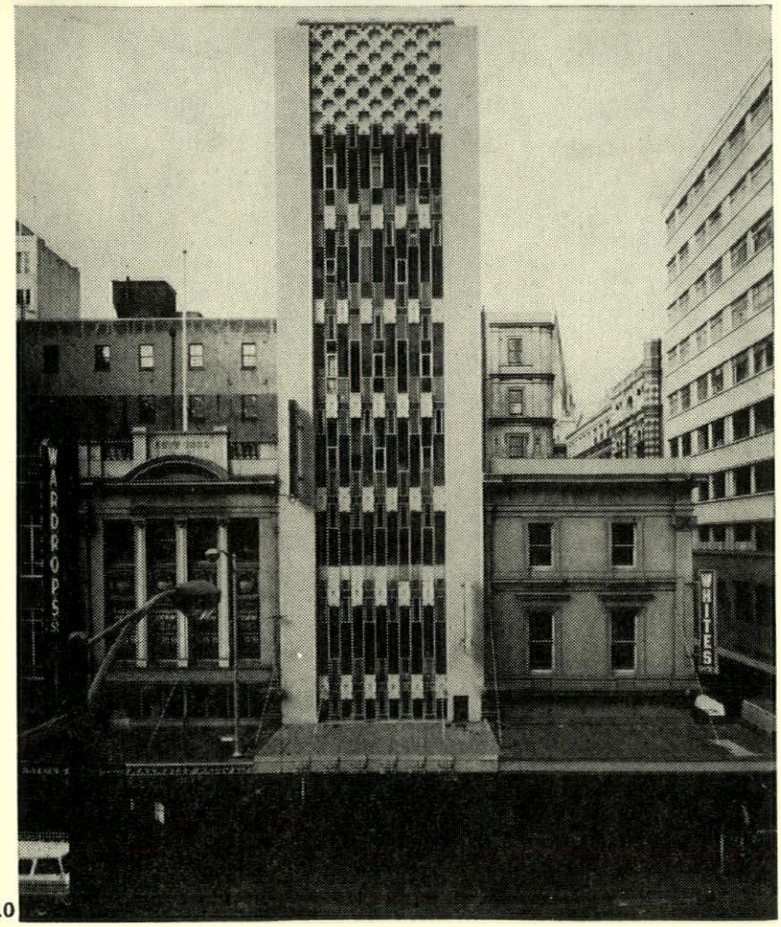

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like that. Griffin accepted the idea with enthusiasm, but he saw the crystals enlarged a hundred times, and, to be practical, made of plaster, but transformed by crystalline light. His idea was to paint the white plaster with the glow of thousands of primary coloured lights—red, blue and green—concealed in projections of a ceiling intricately broken to give acoustical diffusion. A sort of prismatic torpedo shape some ten feet long became the basic element, cast in fibrous plaster and repeated scores of times. These projected from the upper part of the walls like horizontal stalactites, and above them the ceiling itself rose in a hollow pyramid of wide white solid bands separated by strips of prismatically textured plaster, 9. Six thousand coloured globes were concealed in the solid torpedoes and bands, and each was controlled by rheostat from a light-organ console backstage. The ceiling came alive between movies, the 'paint' continuously changing colour, flooding and retracting between the bands, spotting and diffusing in new shades, then glowing as a mysterious fluid white made up of all the lights together.

Those who knew Griffin best invariably speak of his gentle strength and integrity, and are inclined to ascribe a Christlike quality to him, and to remark that he was too good for this world. Yet he was not foolish in his humility. The Capitol was erected on a cost-plus-profit basis and not unexpectedly was subject to improvisations and improvements along the way. When the structure was at its most promising stage, a shell awaiting finishing trades, while the prefabricated torpedoes were building up mountainously in the plaster workshop, Griffin received a stunning blow. Costs were rising relentlessly and his client, A. J. Lucas, was counselled by others to the effect that the impractical and arty architect was squandering his money. Griffin received out of the blue a letter dismissing him from the project. He filed the letter. A few days later he called on his ex-client and explained that he had an idea to improve the building. Mr. Lucas reminded him that he was no longer the architect. Griffin dismissed this notion. He said that the idea would return several thousand pounds annually by increasing the rentable area. Lucas repeated that Griffin was sacked, but with less conviction. Griffin showed him the idea: offices could be suspended round the perimeter of the auditorium outside the plaster ceiling. This was agreed, and the letter of dismissal was never mentioned again.

Griffin's last important building in Melbourne was Leonard House, 10, a beautiful miniature curtain-walled office block completed in 1925. It was a project which began with Leonard Kanewski, the owner, borrowing £1,500 from his architect to finance his purchase of the land. While Leonard House was building the Griffins made plans to move to Sydney to develop Castle Crag. The office continued in the charge of E. M. Nicholls, but the practice trailed off sadly into the Depression. After Griffin left, his personality and reputation soon faded from Melbourne memory. The estates he planned filled with ordinary suburban houses and high fences, and the community playground spaces he left at the rear of properties filled with weeds. Knitlock was used a few times by ex-members of the office, but no outsiders took it up, and no handyman did it himself. The Capitol theatre management continued to paint the ceiling with light for many years, but changing the coloured globes from the catwalks behind the plaster was a slow job, and they had other worries: parking and television. Some years ago the coloured globes were replaced by white ones, and no one played with the rheostats any more. In February, 1964, the cinema closed. Now a shopping arcade is being driven through the stalls. About 1950 the spire and apostles on Newman's dome gave trouble and were removed.

But gradually Melbourne's appreciation of Griffin is growing again. The official revival in 1956 of the Griffin plan for Canberra, the naming of that city's artificial lake 'Lake Burley Griffin' and the appearance of Griffin's head on a postage stamp, all reflected a revival of interest. Every threat to a Griffin building arouses voluble and partly effective opposition. There is still hope that the Capitol theatre will be reopened soon, in a shallower version above the arcade. His best house, the Salter House, in Glyndebourne Avenue, Toorak, appears to be safe now after a scary episode, and the spire and apostles are to be replaced on Newman College under the direction of the present rector, Father Michael Scott. The first of a number of long-promised biographies of Griffin, that by James Birrell,* appeared in 1964.

Griffin did not bring the first breath of modern architecture to Melbourne. When he arrived two men at least were practising original architecture far removed from the traditional spirit, both ten years older than Griffin: the somewhat antic Art Nouveau man, Robert Haddon, and the erratic but advanced Functionalist, Harold Desbrowe Annear. But Griffin accelerated development beyond the normal Australian rate for progress in the first half of the century. His influence was partially direct, his personality and works acting on his Australian colleagues—Billson, E. M. Nicholls, Frederick Ballantyne and others—whose work for some years was strongly coloured by his approach. This influence faded in time, but for years longer his work remained a healthy irritant to the architectural establishment and an inspiration and stimulation to young designers. And today Melbourne claims him as her own.

* *Walter Burley Griffin*. By James Birrell. University of Queensland Press. Price 105s.

Public House, Pimlico, London

architects: John & Sylvia Reid

ID

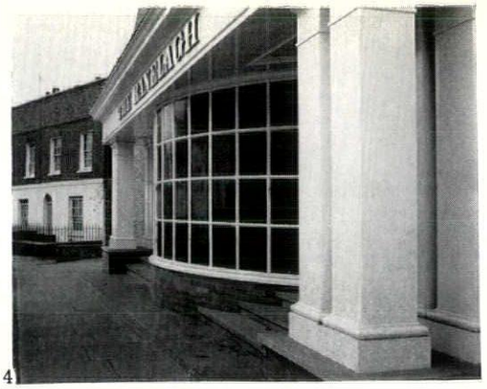
a monthly review of interior design

1, view down the stair well showing the main restaurant area with the buffet table in the centre.



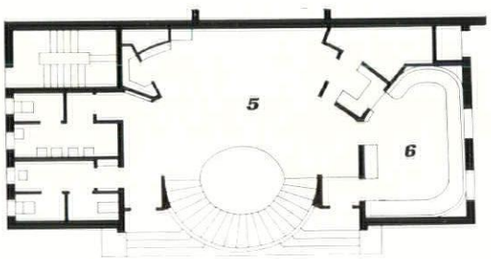


2

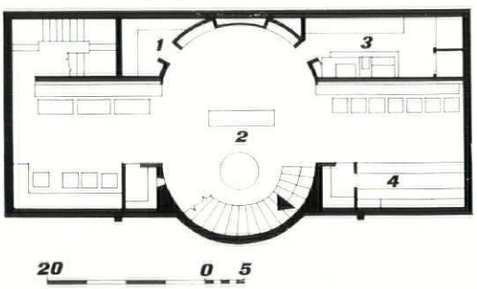


4

As the ground landlords, the Grosvenor Estate, insisted that the exterior of this public-house and restaurant—the Ranelagh, Ranelagh Grove, Pimlico—should be Georgian in appearance, the architects produced an elliptical bow window which forms the shape of the main bar and contains the sweep of a circular staircase. This use of a stair well as the main feature of the pub means that all the available facilities of the house (bars, restaurant, snug, etc.) can be seen immediately on entering. The cellar, however, has had to be positioned on the first floor with the storerooms and services.

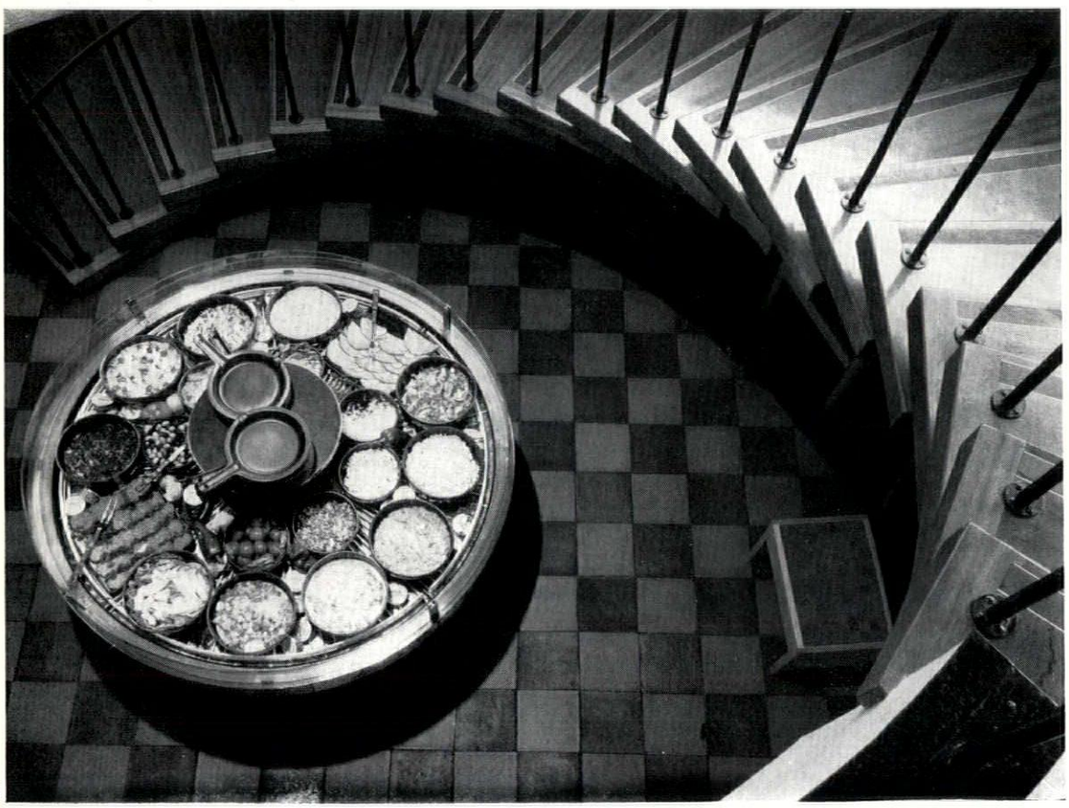


ground floor plan



basement floor plan

key
1. wash-up
2. restaurant
3. kitchen
4. bar
5. main bar area
6. snug bar

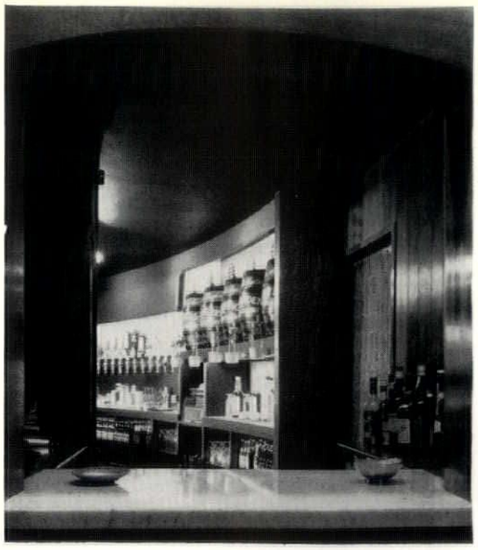


3

2, the elliptical staircase leading down to the restaurant floor.

3, view showing the cold buffet at the foot of the staircase, displayed on a slowly revolving refrigerated table. The floor is of red and brindled quarry tiles, the ceiling covering the central area being warm brown. The kitchen range with a copper canopy stands in the middle of this area.

4, exterior, showing ground-floor bow window.



5

Traditional pub materials, 5 and 7, are used throughout the building. The walls of the bar are lined with mahogany panelling, and the bar top itself is white Sicilian marble. Timber casks containing draught sherries and ports, and illuminated bottles and spirit optics, are used as a decorative feature across the back of the bar.

The snug bar, 6, is lined with high-backed settles in dark green p.v.c. upholstery and furnished with circular white marble-topped tables and red Magistretti chairs.

Public House, Pimlico, London

ID



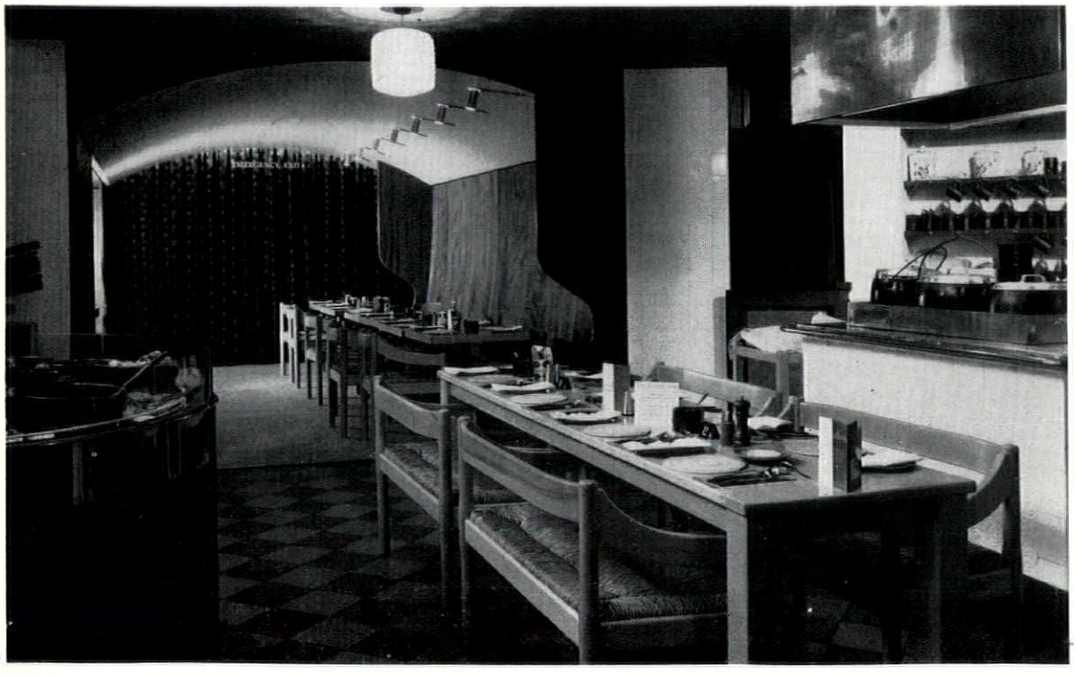
6



7



8



9

8, a typical table setting in the restaurant with the kitchen range on the right.
9, view along one of the barrel-vaulted wings which extend to either side of the main basement area. The ceilings reflect the orange carpeting and the walls are lined with formed mahogany panelling serving also as the backs of bench seats. The chairs here are of natural beech.
Quantity surveyors, Davis, Belfield and Everest.

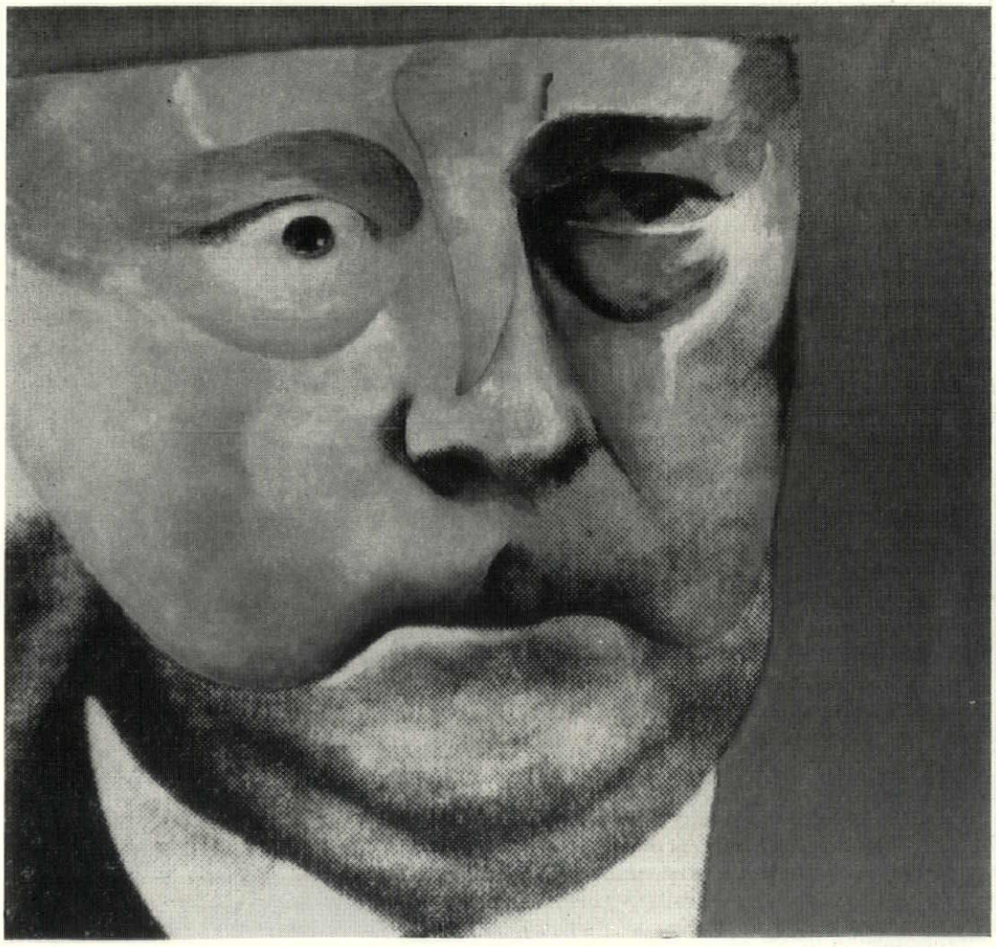
photographs by Arphot (H. de Burgh Galwey)

IMAGES AND TITLES

Robert Melville

It is perhaps a negative virtue of the paraphrasers, collagists and assemblers that they have not, as far as I know, tampered with the photographs of starving children which appear in the publicity of certain charitable organizations. These powerfully emotive images would undoubtedly yield a further frisson, though probably of another order, in the hands of expert revisionists, or add *outré* morsels to some of the more amblongus recipes for silk-screen prints, and it is interesting to find that an art which so confidently interferes with existing images for their own good appears to acknowledge a forbidden area.

I mention the matter because ever since Sartre had the harrowing experience of seeing children dying of starvation he has been appealing to the *avant-garde* to stop celebrating the farcicalness of the human condition, forgo complacent obscurity and find out if what it has to say could be said to the oppressed, the tortured and the underfed without insulting them. It would make a harsh test, and it is a sign of the problems involved that Sartre's appeals scarcely emerge from a cloud of paradoxes, obscurities and qualifying clauses. But I think that many artists are fascinated by the idea of creating images with a universal appeal, and that it is the hidden objective behind some of the most complicated products of the techniques of revision, adaptation and juxtaposition. Certainly no self-respecting artist would set out deliberately to confuse the consciousness of the people, and I have noticed that some bold and comparatively straightforward images in recent exhibitions have had obscurity thrust upon them by titles and catalogue notes intended to provide the spectator with clues to their meaning. These clues, although interesting in themselves, seem to me to refer almost invariably to selected strands from the webs of thought that accompanied the *making* of the images rather than to the images themselves.

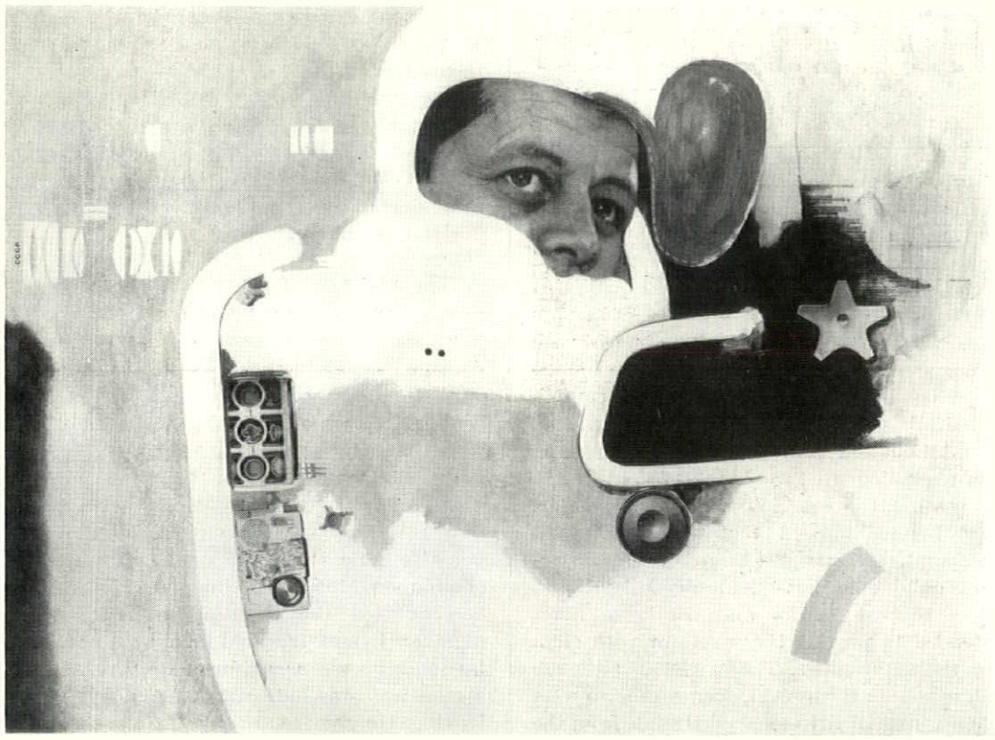


1

The portrait of Hugh Gaitskell, 1, in Richard Hamilton's one-man show at the Hanover Gallery is a good example of what I have in mind. This harsh, brightly coloured, instantly recognizable likeness is one of the few good portraits to have emerged from the Pop Art enterprise and—apart from his huge picture of an American lapel button bearing the message 'slip it to me,' which is well executed but falls flat as a joke and drops dead as a painting—it is much closer to the spirit of Pop Art than the remote, cool, fragmented commentaries on consumer situations which were the main feature of his show.

I understand that the Gaitskell portrait aroused some adverse comment, but I think that this must have been due to the provocative title—'Portrait of Hugh Gaitskell as a Famous Monster of Filmland.' If Hamilton had omitted the insulting reference to a monster, I think it would have been accepted by most people as an unsparing likeness of a man who was not, after all, notably good-looking. He gives his reasons for the title in a catalogue note: 'A positive hatred for Gaitskell's influence on British politics (he almost succeeded in breaking the left wing of the Labour Party) combined with a mild interest in making a monster picture to initiate the project of a satirical painting. . . . A press photograph of Gaitskell and a cover of *Famous Monsters of Filmland* showing Claude Rains in his make-up for *The Phantom of the Opera* began to coalesce from the gathered material.' The *F M of F* cover no doubt gave him the idea for the high, cosmetic colour; and by painting only part of the enlarged newspaper photograph printed on the panel, as if the flesh were spreading like a pool of treacle, he has produced a startling and disturbing pictorial effect; but the likeness is determined by his faithfulness to the objective revelations of the photograph, and the original satirical intention was only the point of departure. This is much less of a caricature than say Sidney Nolan's portrait of C. P. Snow on the cover of *Corridors of Power*, and I'm surprised that *Time* hasn't commissioned Hamilton to start a new portrait convention for its covers. It's a peculiarly apt convention for portraits of public faces.

'Towards a definitive statement on the coming trends in men's wear and accessories (a) Together let us explore the stars,' 2, is a more characteristic example of his work. It is a pleasantly composed assemblage of fragments and at the same time a travesty of the art of eliminating inessentials as exemplified, for instance, by Cézanne's late watercolours; a kind of essay in applied



2

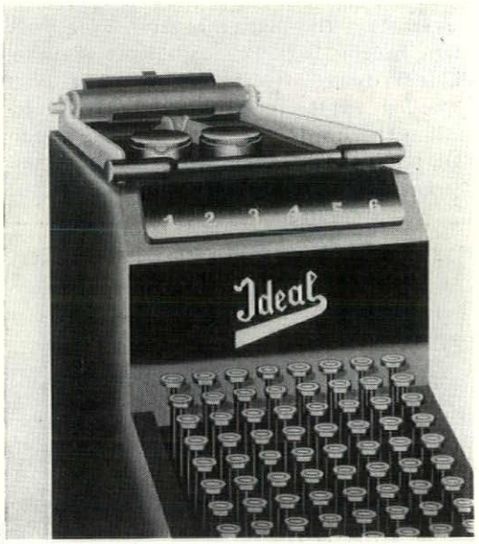
aesthetics. There is a long catalogue note about it. It is, it seems, a statement about men's wear in a technological environment, and was painted in the ambience of J. F. Kennedy's 'incredibly moving speech inviting all peoples to join together in the great tasks awaiting mankind—the exploration of the stars among them.' But nothing is going anywhere in the painting; there is no vertigo, no ascent, and Hamilton's emotional response has dried out in the process of producing a sophisticated composition.



3

R. B. Kitaj's screen print called 'A Disciple of Bernstein and Kautsky,' 3, exhibited in a mixed group of contemporary prints at Marlborough Fine Art, provides a more distinct account of men's wear in a technological environment, and if it is taken from a newspaper photograph of a figure in free fall, it is an admirable feat of draughtsmanship to have elicited this linear paraphrase from the obscurities of a half-tone. Kitaj's treatment of the figure plays with the idea of a negative image, and brings out the forbidding aspect of an apparel that completely hides the man. It is the image of a man sealed-in by his gear, of a man with no outlet for his humanity, of a man governed by apparatus. Without its title, it seems clearly enough to be an emblem of alienation, conceived in terms of a threatening descent upon mankind. The title is another matter. It appears to be deliberately obscure and calculated to confuse. It's only because I happen to be interested in side-tracked revolutions that I know something about Bernstein and Kautsky. They were the leaders of a supposedly revolutionary breakaway group of the German Democratic Party, and on January 6, 1919, they deflected the revolutionary fervour of a hundred thousand workers on the streets of Berlin into aimless demonstrations. It would be surprising if many gallery-goers had this information at their finger-tips. If Kitaj has perceived a relationship between his 'para' and two failed revolutionaries, the least he could have done would have been to inscribe on the print, under his signature, in his beautiful neat handwriting, a note on Bernstein and Kautsky. Between the artist who made the image and the nihilist who gave it its title falls the shadow of the disinterested observer.

Konrad Klapheck's paintings, recently shown in London for the first time, at the Robert Fraser Gallery, are in sense a look at the significance of the Kitaj image from the opposite direction. If Kitaj's figure is the image of man corrupted by his inventions, Klapheck's paintings are images of mechanical objects that have been corrupted by their association with people. They are



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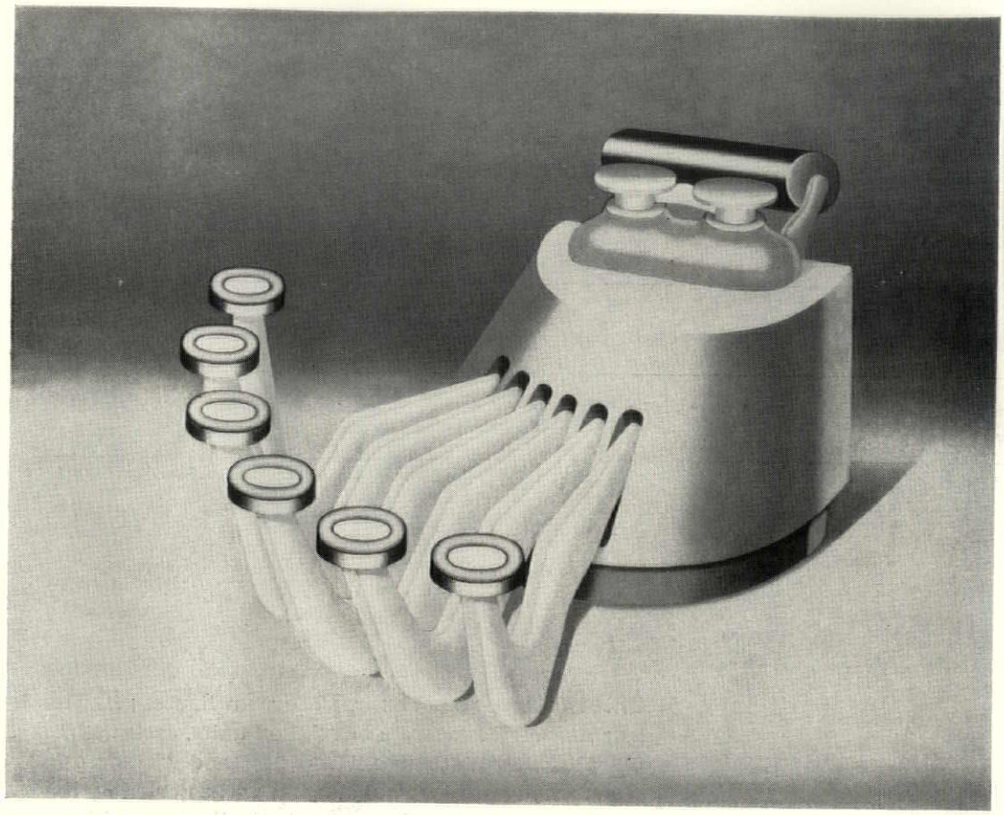
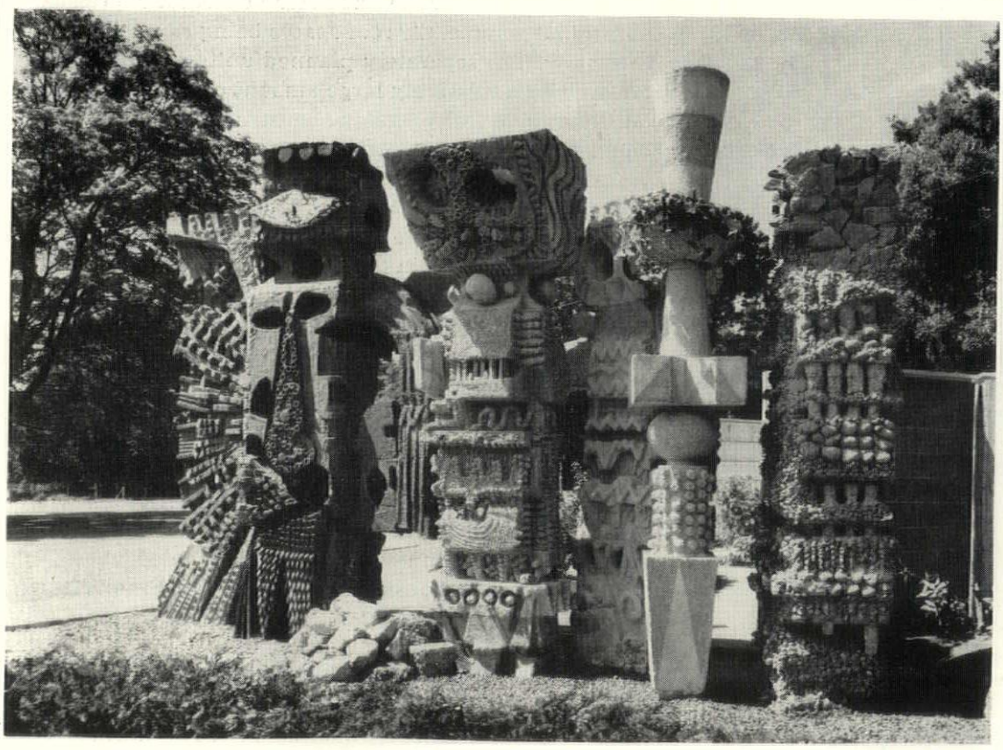


6

painted with the kind of precision that always gives me a curious feeling of well-being, as if I were at heart a mechanical draughtsman or tidy-minded book-keeper. But peculiar things have happened to Klapheck's machines, and fortunately I am equally delighted by the sly disruptive force that has strangled their restricted and regular functions: this force is an abstract, aimless, senseless sexuality. He has made good use of Magritte and Lèger to create effective images of his own, and they have a kind of light, agreeable melancholy more to contemporary taste than the optimistic approach to the machine of some of the Cubists and Futurists.

He has carefully refrained from anthropomorphizing his machines, and again it seems as if a different person has given them their titles; a man, in this case, with a less refined attitude to the images than the one who conceived them. The titles provide amusing analogies with human types, and by operating at the level of a superficial wittiness disregard the deeper implications. 'Ideal Husband,' 4, is not a bad title for the tall, magisterial typewriter, but to my mind its drawing up of itself is exhibitionistic, a desperate attempt to stage an indecent exposure with nothing indecent to expose. 'Intellectual Woman,' 5, with a decoration, half cobra and half lily, painted on her flank, poised against a midnight blue background, is as beautiful as the meeting between a sewing-machine and an umbrella on an operating table, and two-thirds of Lautreamont's simile seems to be present, but she is more of a *femme fatale* than an intellectual, and the title-writer has perhaps been misled by her steeliness. To the best of her ability, she is displaying herself. The more ambiguous title *Triumph of Memory*, 6, suggests that this machine might somewhere have seen a troupe of chorus girls resting on their stomachs and their elbows, with their hands cupped under their chins: it has extended its keys far beyond their functional limits in wanton imitation of a tableau of feminine allurement. All Klapheck's machines are showing off, indulging in sexual display, pining to be flesh, and in painting them as if they envied us our disturbances he is perhaps being a twisted sort of humanist.



7

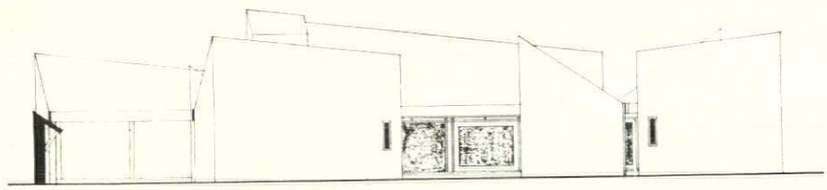
CORN KING & SPRING QUEEN

'The Corn King and the Spring Queen' is a concrete sculpture by William Mitchell in the grounds of the Cement and Concrete Association's Research Station and Training Centre at Wexham Springs, Bucks, 7. It is cast in concrete against sculpted foamed polystyrene, using natural cements and aggregates which are exposed by sandblasting, and small areas of mosaic are added.

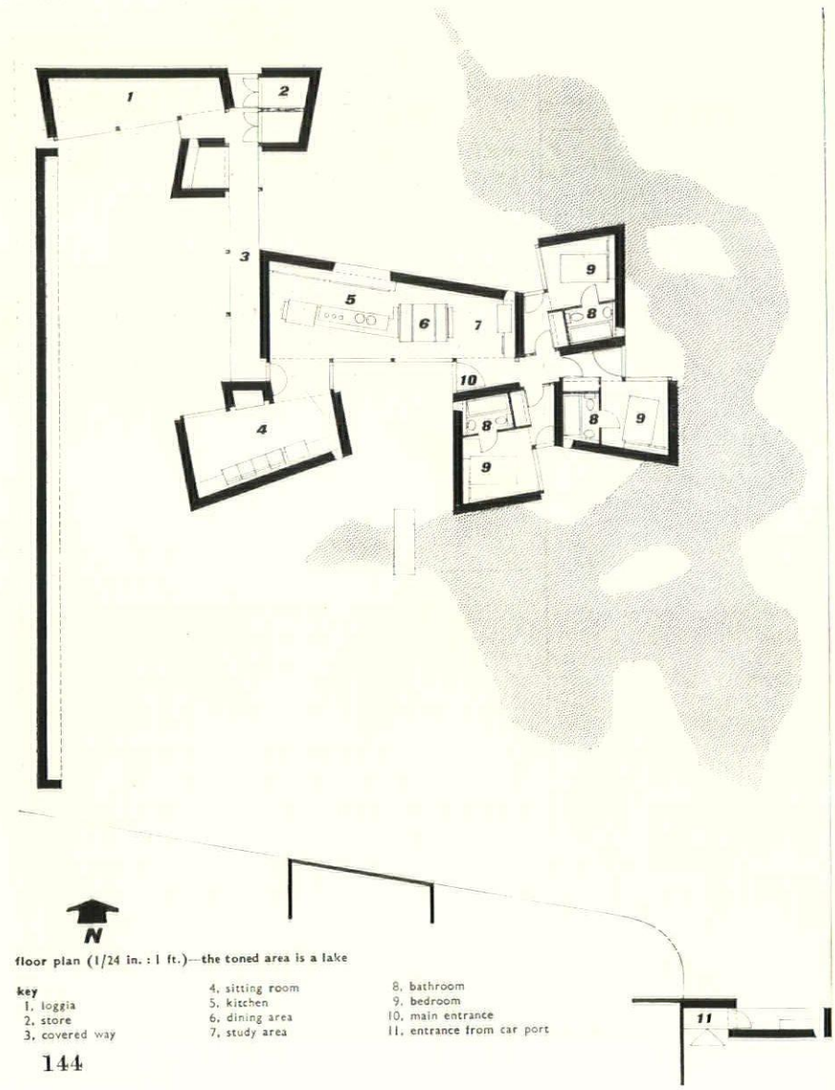
GEOMETRY OF THE COTSWOLDS

HOUSE AT SHIPTON-UNDER-WYCHWOOD

architects **STOUT AND LITCHFIELD** | *photographs by Brecht-Einzig*



south elevation



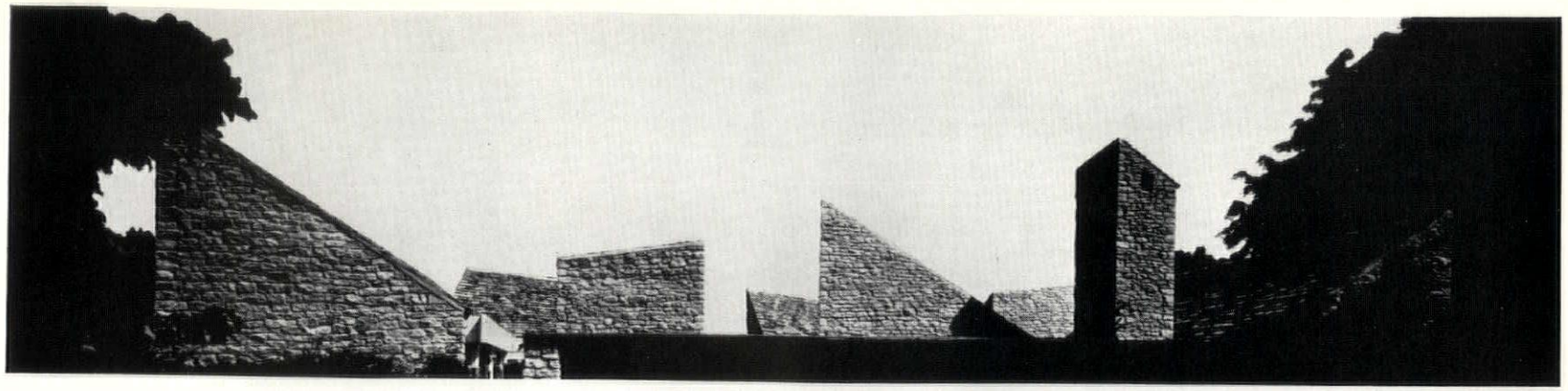
floor plan (1/24 in. : 1 ft.)—the toned area is a lake

key
1. loggia
2. store
3. covered way
4. sitting room
5. kitchen
6. dining area
7. study area
8. bathroom
9. bedroom
10. main entrance
11. entrance from car port

This is a single-storey three-bedroom house, planned as a number of separate but linked units, each with a one-pitch roof. Although it was designed with external walls wholly of Cotswold stone, it was rejected by the local planning authority as aesthetically unsuitable (presumably because it looked different from the conventional Cotswold house) and it was only given planning consent after a public inquiry.

The use of separate one-pitch roofs was decided on to give a vernacular feeling and some external expression of internal volume, the roof-spaces being exposed internally. The separately planned units also produced a plan with a relatively large amount of external wall, enabling the solidity of stone construction to be emphasized and at the same time for large window walls to be provided. In each unit the window wall is that from which the pitch springs, which made it possible to combine the line of the eaves gutter with that of the beam (as in traditional farm buildings) and leave the other walls free of all but a few very small openings. Since the back wall of each unit is not at right-angles to the other three, the roof, which has a constant pitch, has a sloping ridge. The Cotswold stone tile coverings are again designed to emphasize the sculptural solidity of the forms. The linking circulation spaces have lower flat roofs.

The random stone walls are backed with brickwork, which is plastered over a layer of polystyrene insulation. The open timber roofs are boarded, battened and counter-battened, covered with felt below the stone tiles and insulated with glass wool. The kitchen-dining area, facing south, has sliding windows. All windows, and the glazed linking units, are timber, painted white. The interiors have brown quarry-tile floors with electric under-floor heating. The furniture, is built into quarry-tiled blocks or cantilevered slabs.



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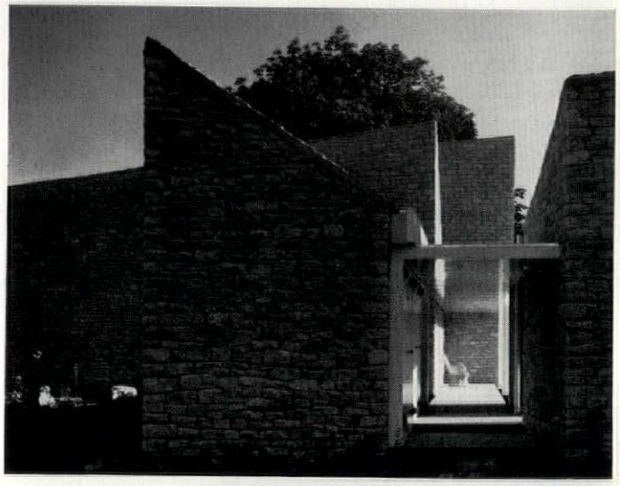
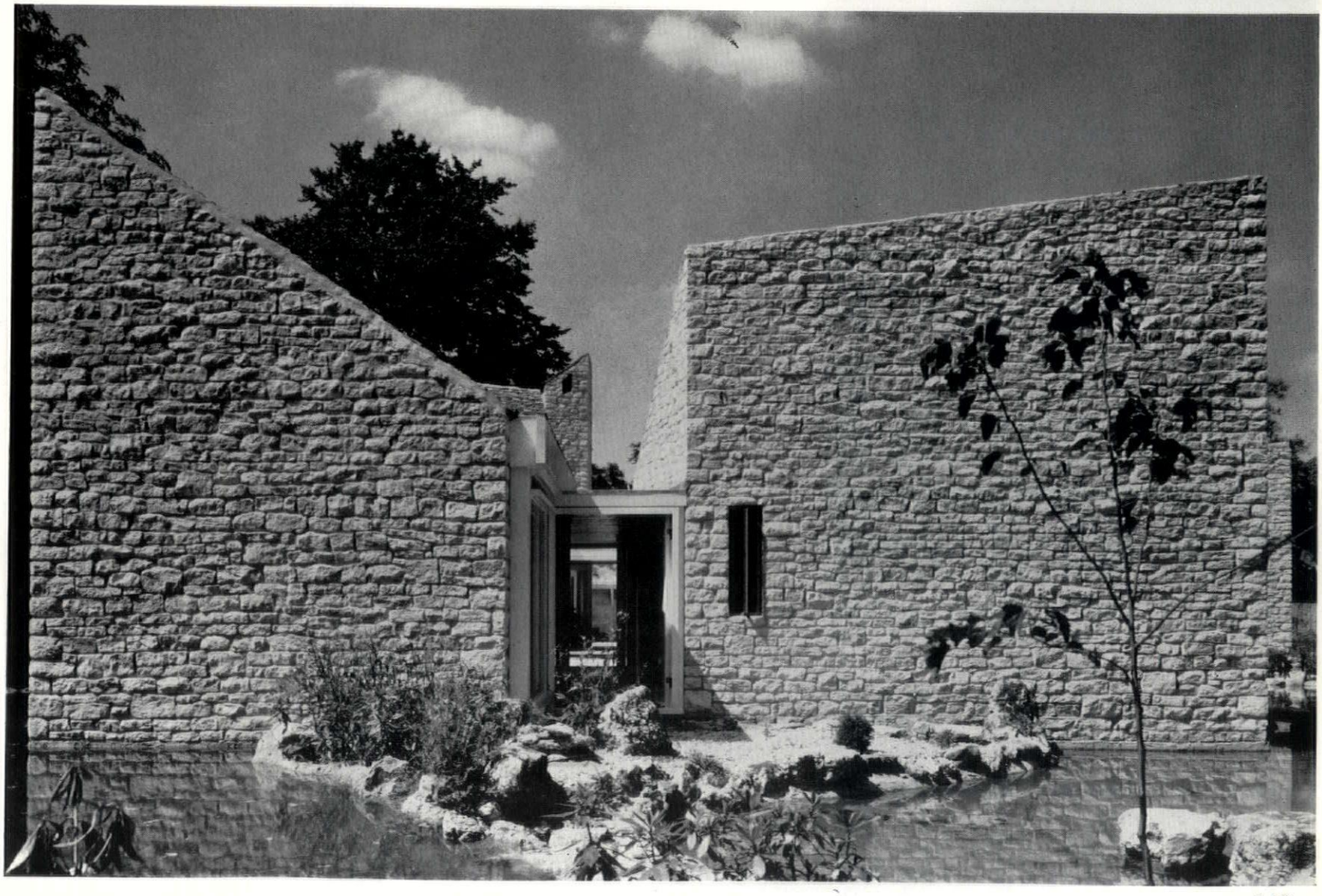
1, distant view from the west.
2, looking into the covered way, with stores building on the left.



2

3, two of the bedroom buildings seen across the lake from the east.



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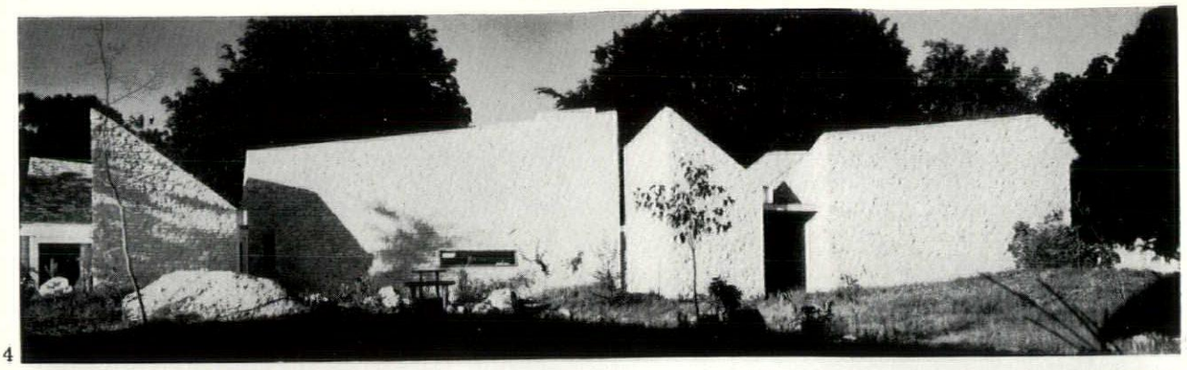

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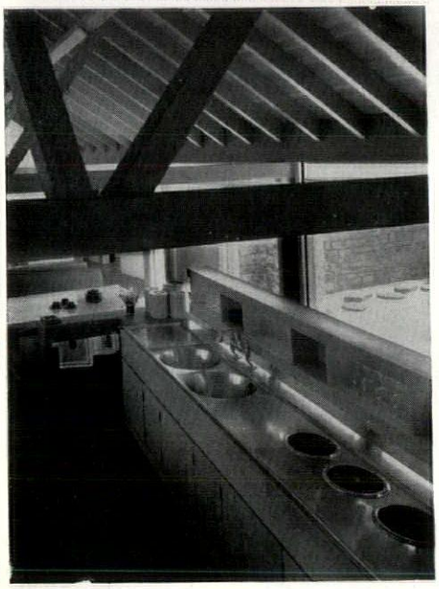

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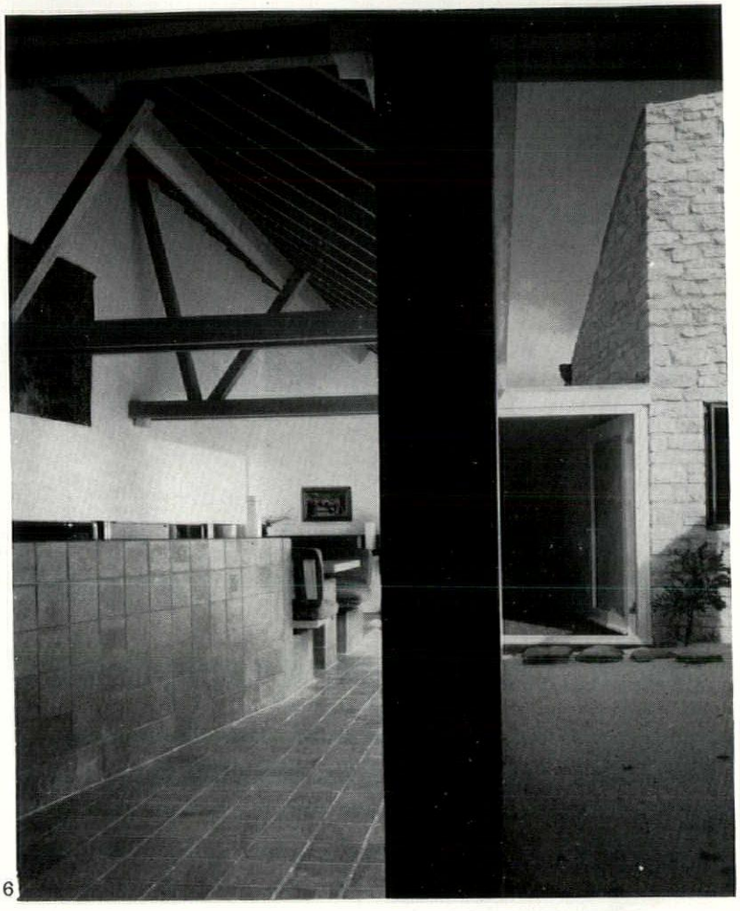
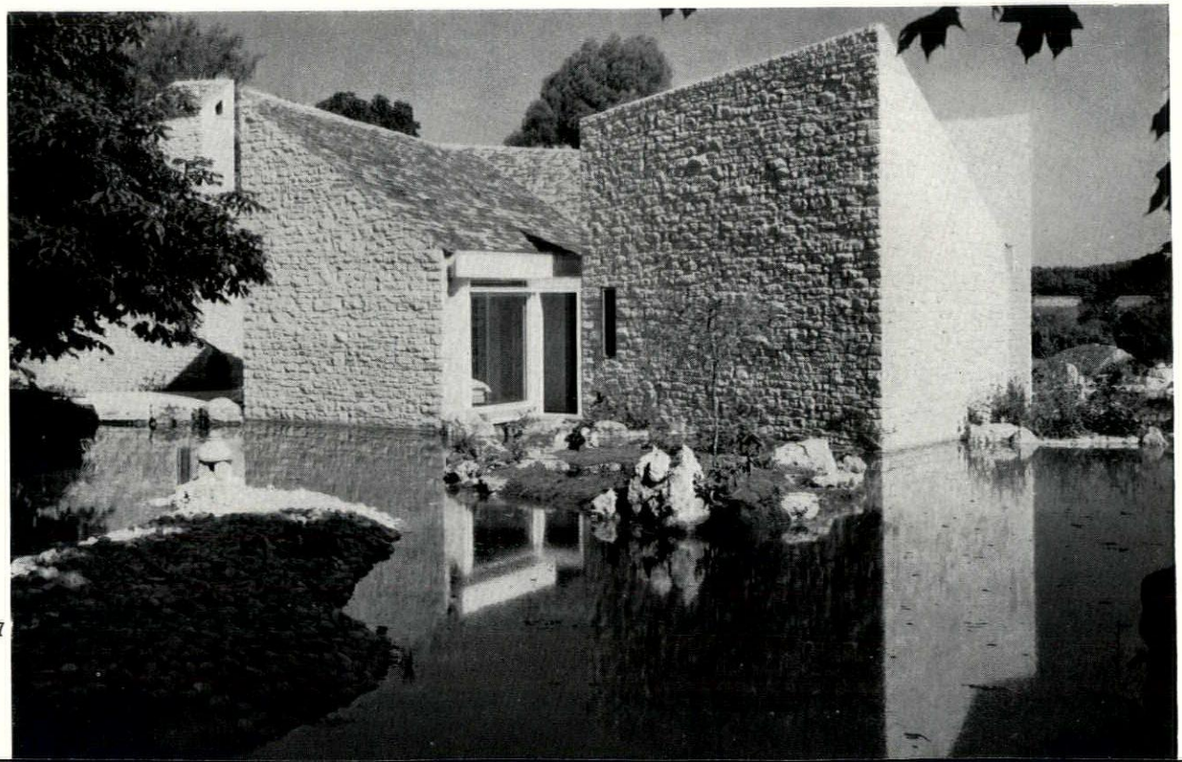


6

HOUSE AT SHIPTON-UNDER-WYCHWOOD

4, from the north.
5 and 6, the dining area and courtyard seen from the kitchen; the built-in furniture is of polished beech.
7, view across the lake from the south-east.

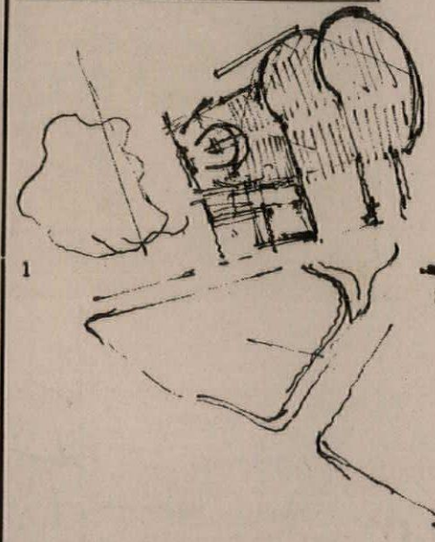


7

DEVELOPMENT DRAWINGS

Architects' early sketches, made while their designs are taking shape in their minds, are always fascinating. They reveal the imagination at work, they bring out strongly the architect's personal style—his handwriting in an almost literal sense—and they illustrate the germ of the idea on which the design is based, which can be seen developed, elaborated or modified as the final drawings, and then the building itself, evolve. The school of design of the University of North Carolina, at Raleigh, USA, noted for its enterprising student publications, has had the interesting idea of bringing out a group of small paper-covered booklets each containing a famous architect's sketches for one of his own buildings together with plans and photographs of the buildings as finally designed or as completed. Four such booklets have so far appeared, edited and designed by a group of students elected for the task by the student body. The architects and buildings dealt with are Alvar Aalto and his Vouksenniska church (completed 1959) at Imatra, Finland; Le Corbusier and his church at Firminy, France (designed 1929–30, postponed, partly re-designed and now under construction); Louis Kahn and his layout and major buildings for the second capital of Pakistan at Dacca (not yet built); and Paolo Soleri and his Cosanti Foundation buildings in Arizona, USA (also not yet built). On this and the next page some sketches from each of the four booklets are reproduced, mostly to a reduced scale, by courtesy of Student Publications, School of Design, North Carolina State of the University of North Carolina. The booklets are available in Britain from Alec Tiranti.

AALTO



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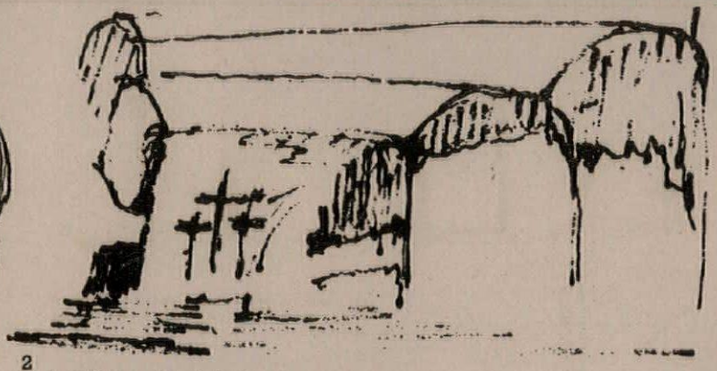

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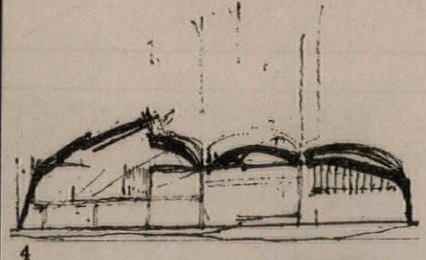
1, preliminary plan of church at Imatra, 2, interior perspective, 3, completed church from the north, 4, longitudinal section, study of ceiling form with skylight, 5, east wall, horizontal section at window height



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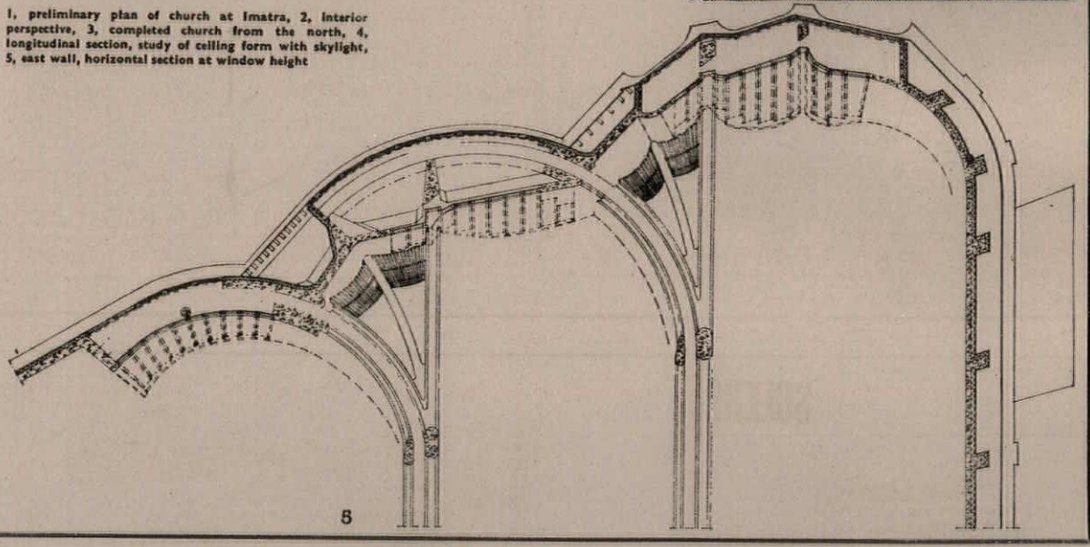

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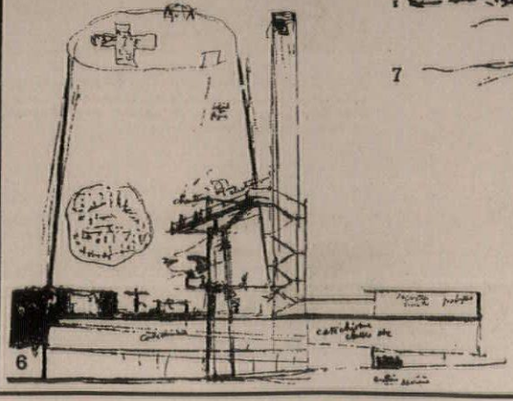
LE CORBUSIER



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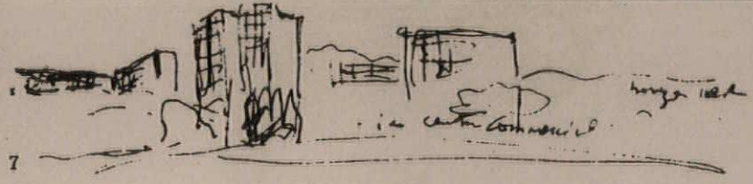

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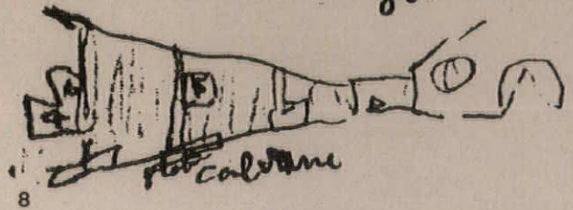

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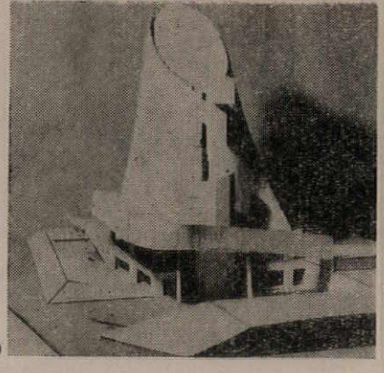

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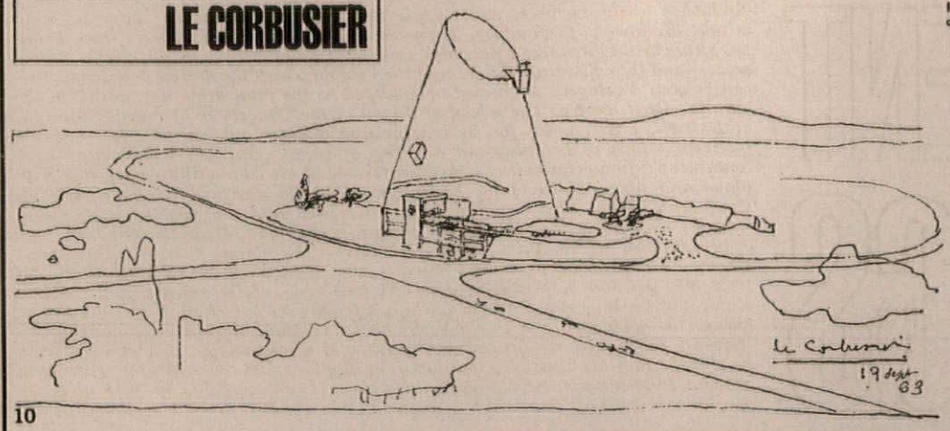
6, general section through church at Firminy, 7, view of the site, 8, the church gallery, 9, study model, view from the south

LE CORBUSIER

10, general view of the church at Firminy, 11, study model of the church and shell



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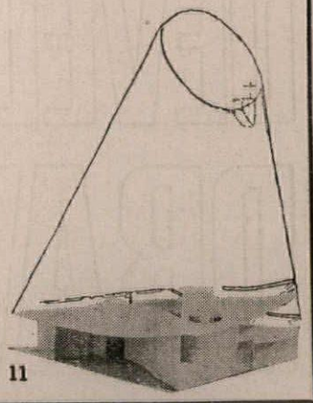

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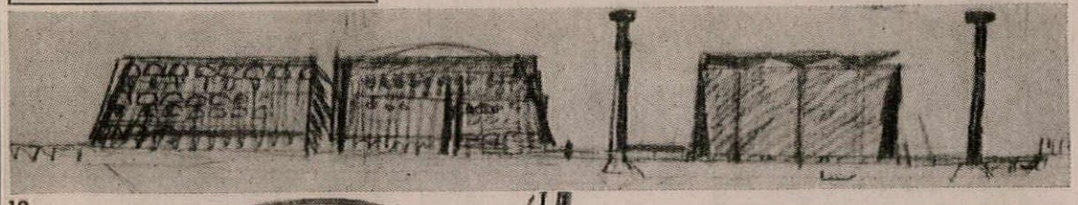

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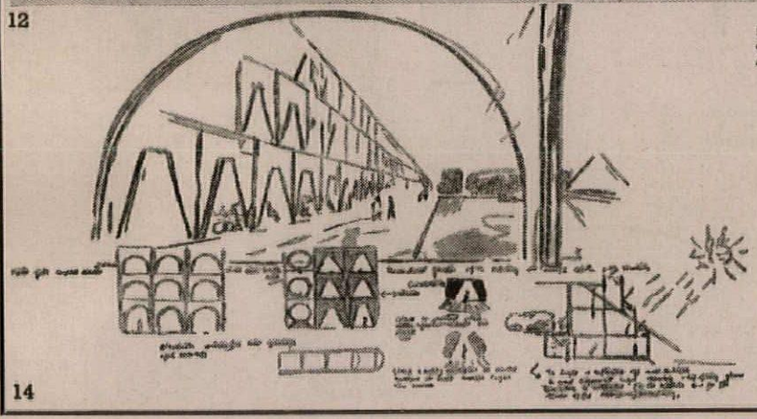
12, Impression of the Mosque at Dacca, 13, model of the Assembly, 14, study for hostels, 15, the Assembly



13



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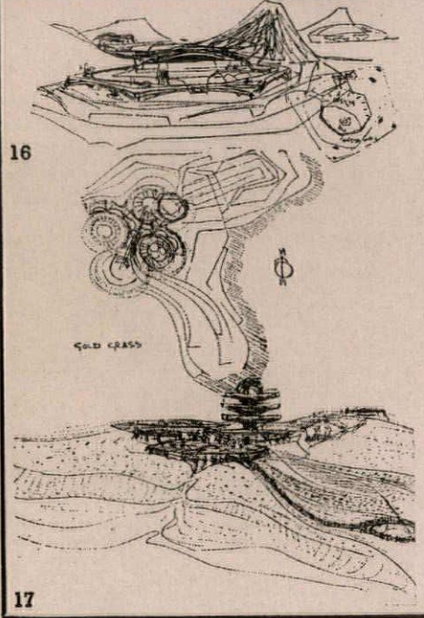

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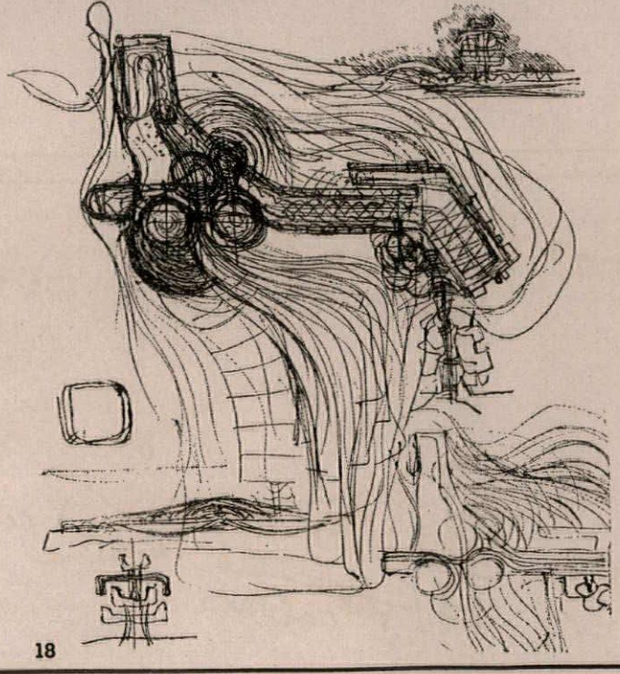

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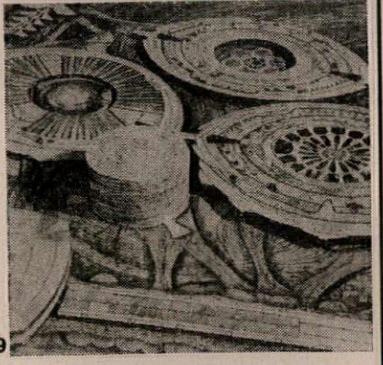

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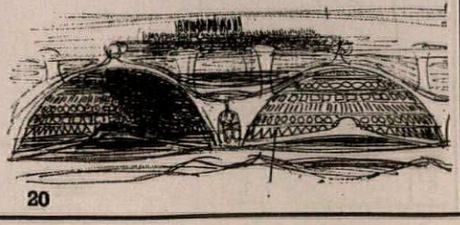
16, 17, 18, general study sketches of the Cosanti Foundation buildings in Arizona, relating to temperature changes, wind direction and siting, 19, oblique view of model, 20, sketch showing carved walls



20



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S.49

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NORRIS

Design Review
a new series

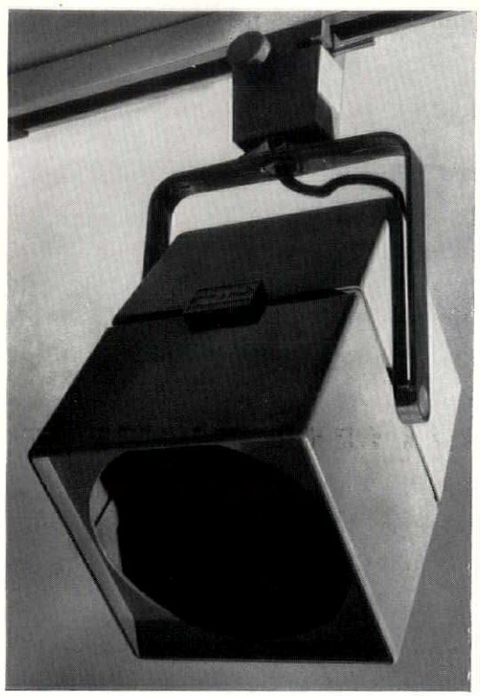
New products chosen and annotated by Ronald Cuddon.

DR

Light fittings

The location of lighting and power points has always been a problem to the architect and designer. Most clients, not unreasonably, have great difficulty in making early decisions on the positions of electrical outlets, being often unable to predict the idiosyncrasies of their family or staff. The cost and confusion of variations to electrical services once the building is in use are enormous, and the alternative is adaptors and trailing wires which are both dangerous and visually destructive. The Lytespan system, developed by Rotaflex, has gone some way towards overcoming this problem. Once this new form of track has been installed, it is possible to pick up current anywhere along its length, and lighting fittings, of which there is a wide range made by Rotaflex to go with the track, can therefore be added or subtracted according to need. 1 shows one of the Rotaflex Quartet fittings suspended from the track. The pendant adaptor, 2, which links the fitting to the track, is a little clumsy and in use there is a good deal of play in the connection; a more positive junction would be desirable. 3 shows the adaptor's internal mechanism. Rotaflex are said to be working on improvements to Lytespan, and the faults in the design of the adaptor may well be receiving attention. It is, perhaps, not unreasonable to expect this useful development to be followed by a skirting power system similar in conception to Lytespan.

Product: Lytespan.
Manufacturer: Rotaflex.



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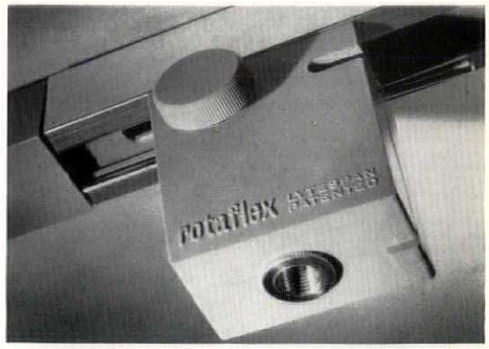

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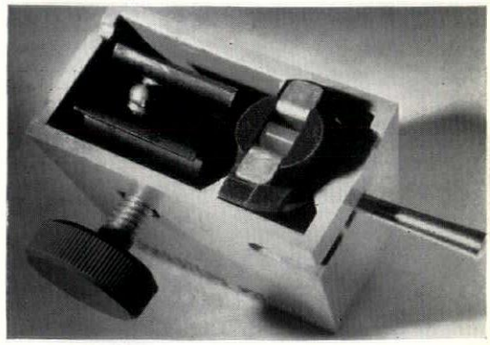

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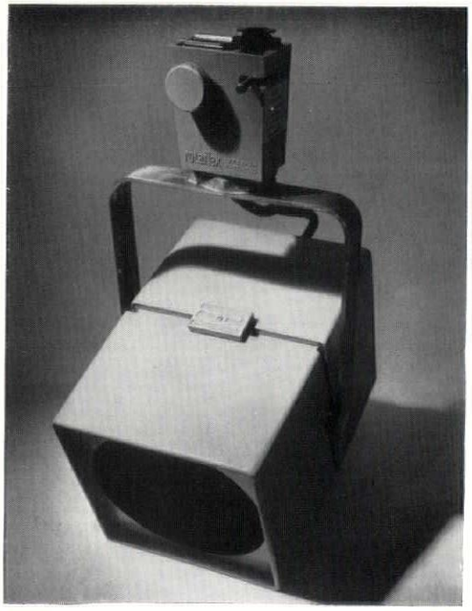
The Quartet range of light fittings, developed by Rotaflex, fulfils a number of different functions including use with Lytespan tracking as described above. The designer, Robert Heritage, has achieved a high degree of flexibility in a unit which is small and compact, with many applications for indoor and outdoor use. As the name implies, there are four basic versions (two are shown in 4 and 5), but the die-cast body shape remains throughout. Thus, with a single shape it is



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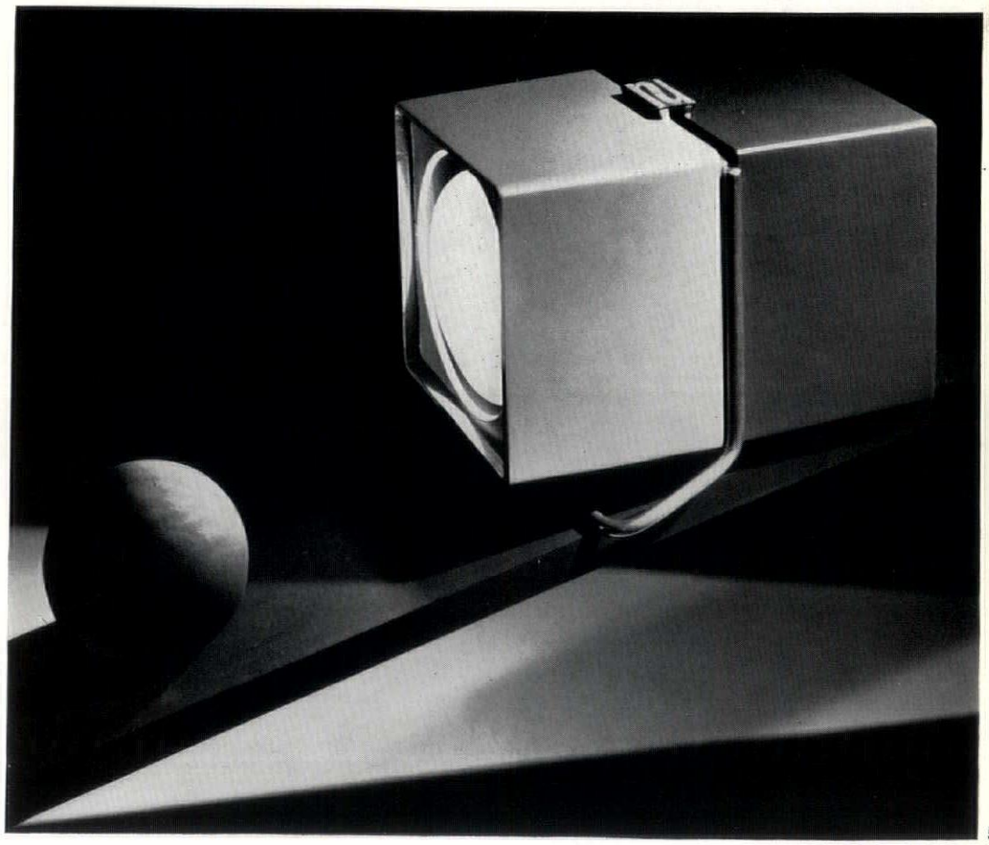

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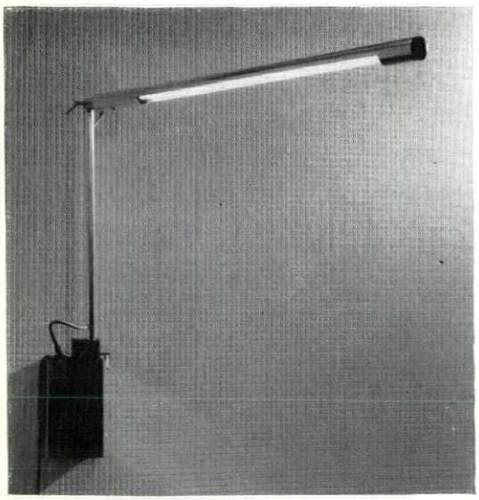
DR

possible to obtain considerable variations, the mains and low voltage application being a significant factor in producing this visual continuity. A built-in transformer operates with either of these two light sources and, where Lytespan is specified, can be used simultaneously on the same track. The Quartet Mini fitting, has been introduced more recently. It is very small and can be used indoors and outdoors in any situation where an inconspicuous flood or spot unit is required. However, for low voltage application a separate transformer must be used and a visual criticism is that the relationship of square section body to round lamp is incongruous, underlined by the junction collar between these two elements.

Product: Quartet Minor.
Manufacturer: Rotaflex.

Another manufacturer seemingly emerging from the shadows with a new and interesting fitting is Best & Lloyd. Their cantilevered light, designed by Gerald Abramovitz and associate engineer David Graff, is the first satisfactory British attempt at incorporating a fluorescent tube for local lighting. The fitting has many applications, for working and display, and the three rotating movements, of shaft, reflector and cantilevered lamp, give great flexibility in use and variety in the quality of light: two positions are shown in 6 and 7. This type of design demands considerable precision in manufacture and the fact that the lamp's movements do not respond to the lightest touch is disappointing. The clamps which have been provided to allow for adjustment, although



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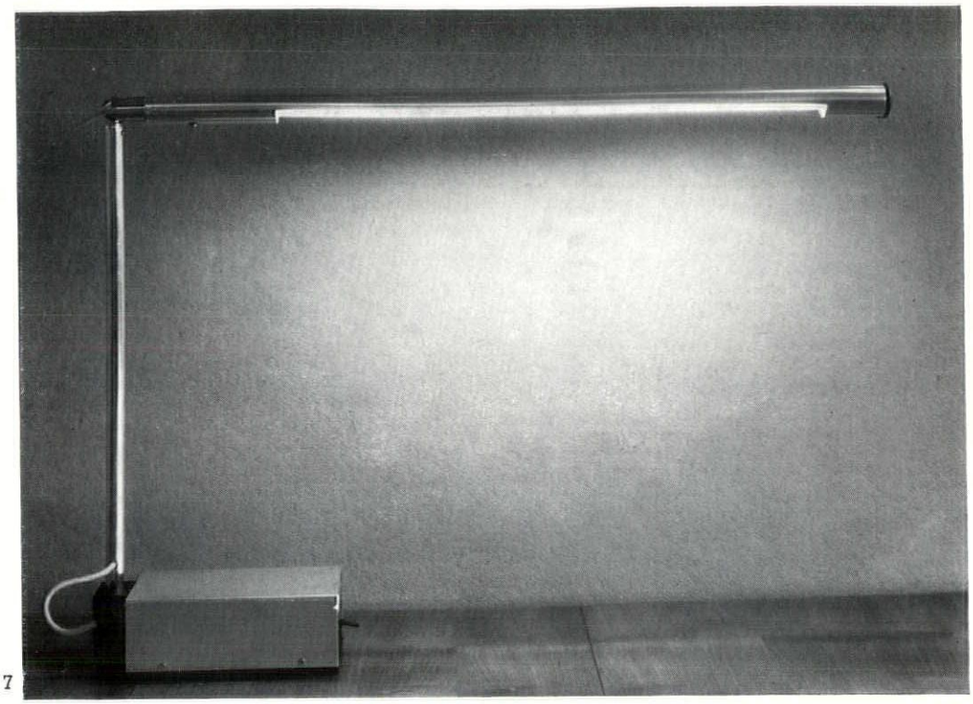


7

simple, are imprecise in operation and fiddly to handle, thus tending to cast the lamp components just off their vertical and horizontal axis, a serious fault in a fitting so demanding in visual exactitude. Another criticism is that the finishes on the metal forming the various components differ slightly. If the manufacturer could overcome these defects by further development, a superb product would be the result. The price should make this possible.

Product: Cantilevered light.
Manufacturer: Best & Lloyd.

The 1001 lamp, 8, has now been on the market for nearly three years. It is assembled in Britain from parts manufactured in Norway and has become a rival to the longer established Terry Anglepoise lamp. In both lamps the engineering principles involved are identical, but the 1001 lamp has the edge in terms of appearance. This in the main is due to the flare shade, which has the added advantage of becoming less overheated during long periods of use. To compare a new product with an old one may seem odious, but I feel it is a great pity when a basically superb product does not keep abreast with its competitors. What is required is not a superficial restyling operation: I have the greatest respect for those manufacturers who, through sound fundamental thinking or research, are able to turn out a product year after year until such time as technical progress rather than fashion dictates the need for change. On the other hand it is essential for all enterprising manufacturers, in whatever field they operate, to be continuously aware of intelligent demand on both technical and aesthetic levels and to modify, if only slightly, those products no longer wholly valid in the terms of their original design.

Product: Adjustable Lamp LS1.
Manufacturer: Thousand & One Lamps, Ltd.



8

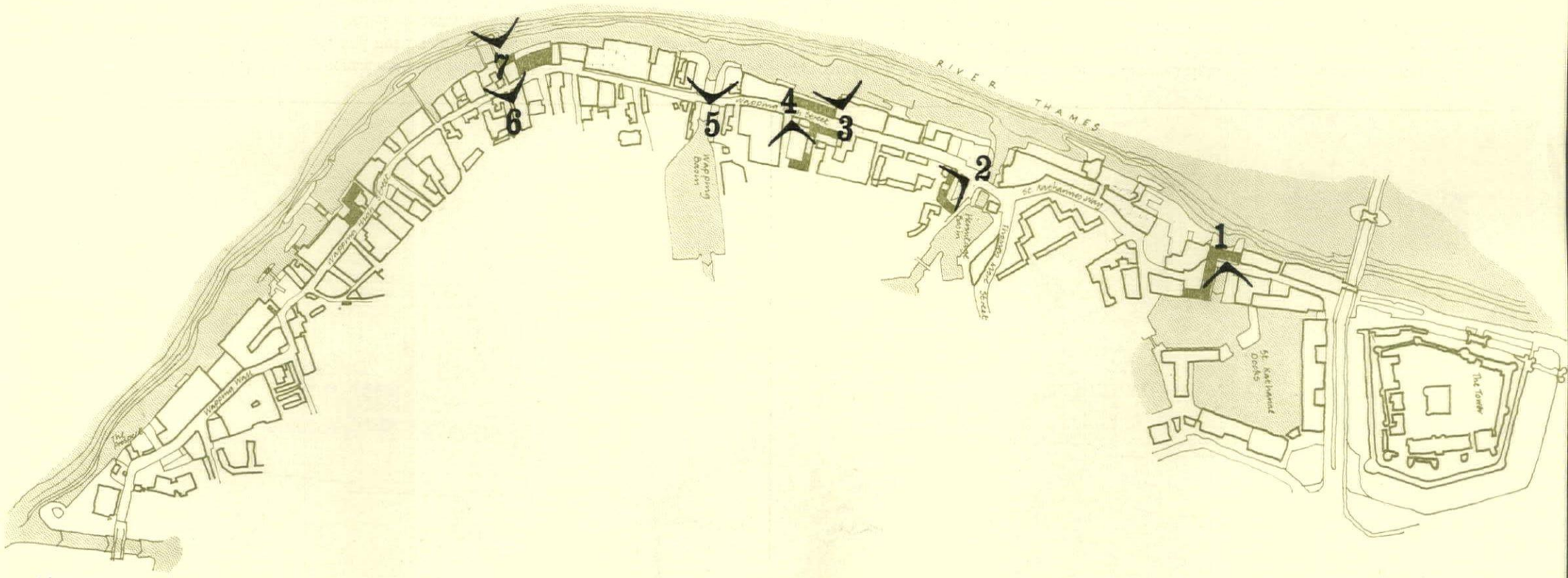
WAPPING WATERFRONT

The need to relate London more closely to the Thames has often been stated. Neglected opportunities for doing this are nowhere more evident than in the area immediately east of Tower Bridge. For the short promenade in front of The Tower, the London waterfront comes into its own with all the movement and drama of the river spread out in front of you; but walk under the bridge and immediately it is a different world; the water shut off by high warehouses and only the occasional shimmer of the river through an archway or across a wired-off bomb site.

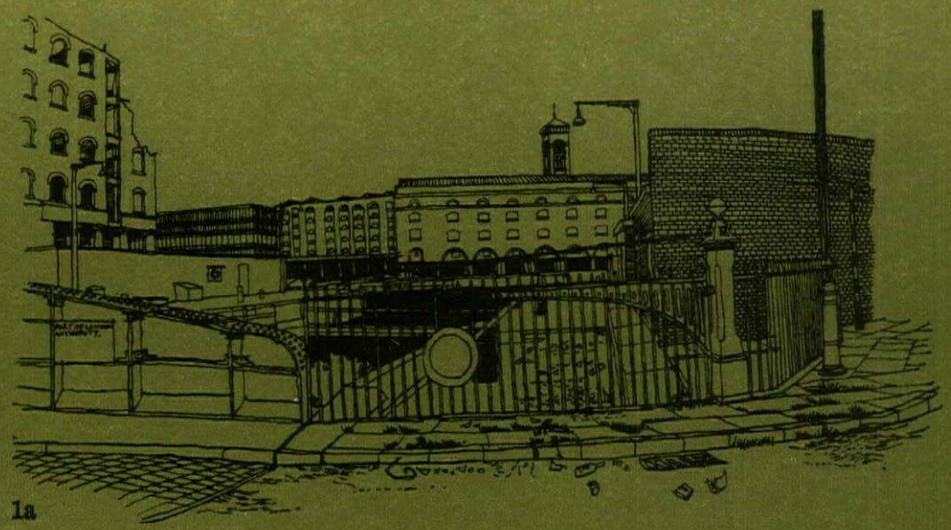
On the planners' maps all this area along Wapping High Street, now so broken down and derelict, is one colour; rigidly zoned for more warehousing. This seems a pity when the yawning gaps in the waterfront could be filled with pubs and people, with cafes, shops, flats and offices, a workable Latin quarter amid the cranes and lighters.

It is a dead waterfront, and it is not until you are in the Prospect for a pint that you realize what is wrong. It lacks leisure-time places; places from which to look at the boats and barges.

The last thing that is wanted is a general opening up, but the drawings which follow illustrate some of the inherent possibilities waiting even in the short stretch from St. Katharine Dock to Shadwell Basin.



Map of the north bank of the Thames from The Tower to Shadwell. Numbered arrows indicate the viewpoints of the illustrations on the following three pages



1a



1b

The Port of London Authority are considering the future of St. Katharine Dock. At present it is used for the occasional yacht, and not much else, 1a. But some of the disused warehouses could become studio flats or hostel accommodation, with some more cafes, perhaps smaller offices, and the dock itself becoming a weekend harbour for boats of all sizes, 1b. 2a, there is a large hole here and the life has dropped right through it, especially after closing time. But these pre-war pubs are fine if they could be given something to cling on to. A small, hard, non-cosy square would do, with more shops and flats bridging the road, 2b. One of the pubs could do with the dignity of a third storey to bring it into scale.

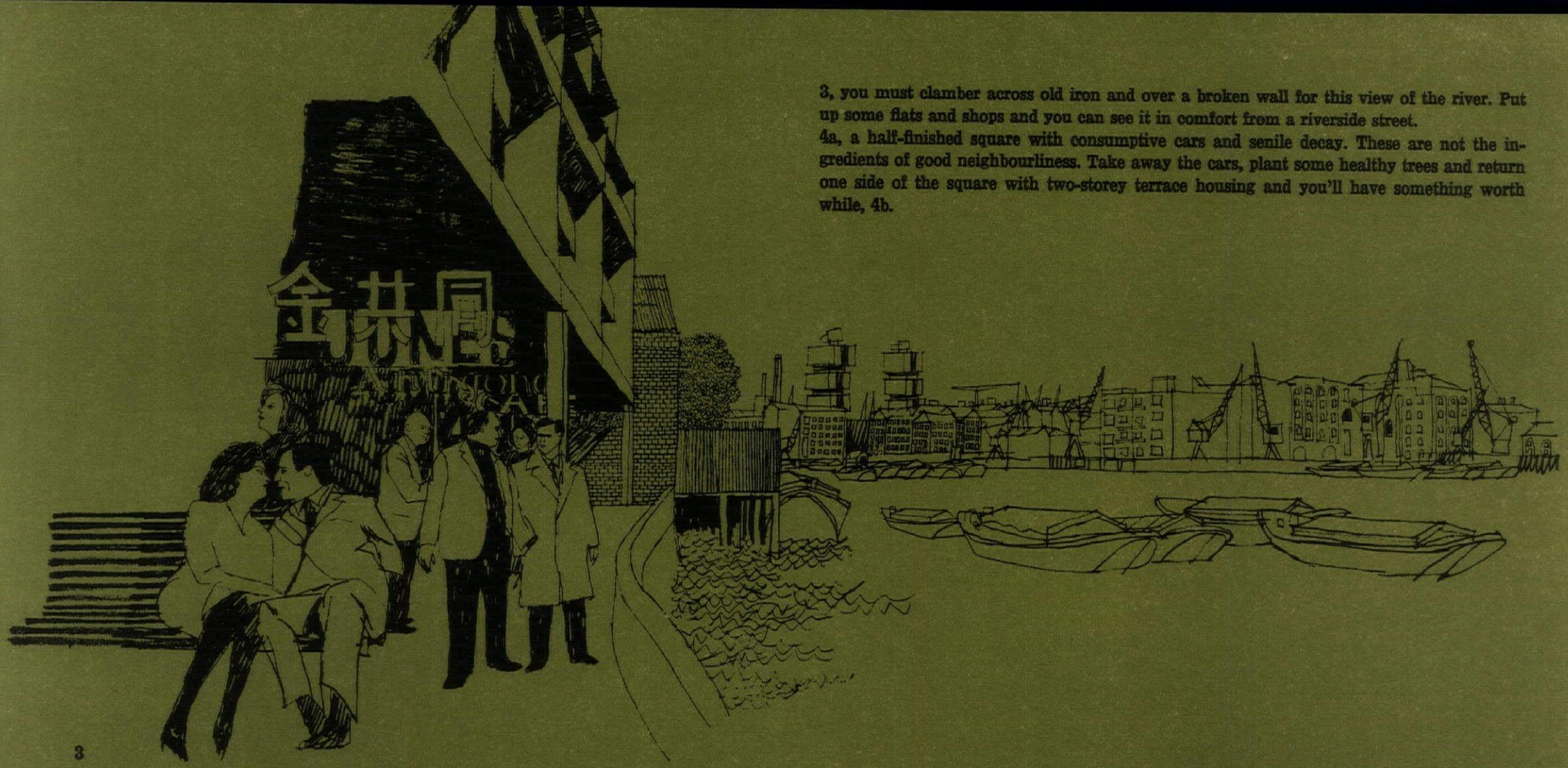


2a



2b

3, you must clamber across old iron and over a broken wall for this view of the river. Put up some flats and shops and you can see it in comfort from a riverside street.
4a, a half-finished square with consumptive cars and senile decay. These are not the ingredients of good neighbourliness. Take away the cars, plant some healthy trees and return one side of the square with two-storey terrace housing and you'll have something worth while, 4b.



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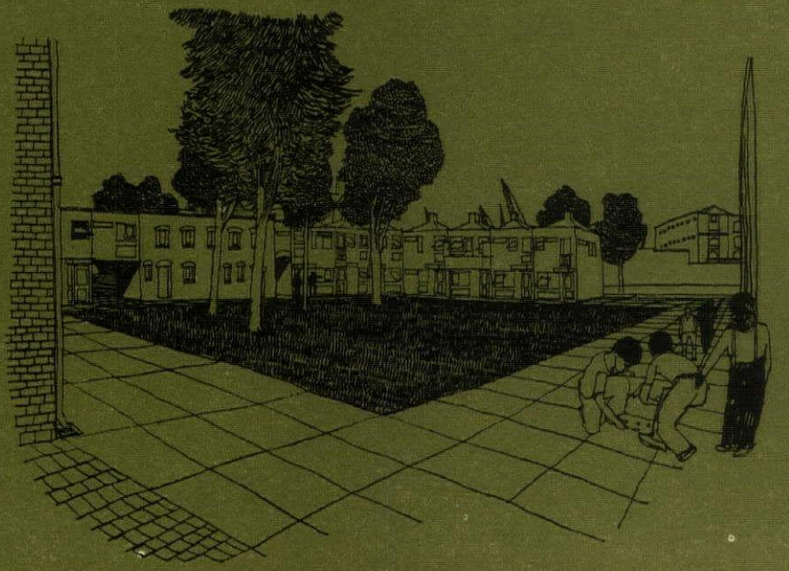
4a



4b

The lock at Wapping Basin has been filled in but the job was never finished. The weeds have grown, the concrete has cracked and a vivid green railing surrounds the lot. This could be changed, as 5, and if there's to be grass, make it a lot, while the untidy end of the lock could be provided with steps to make another landing station.

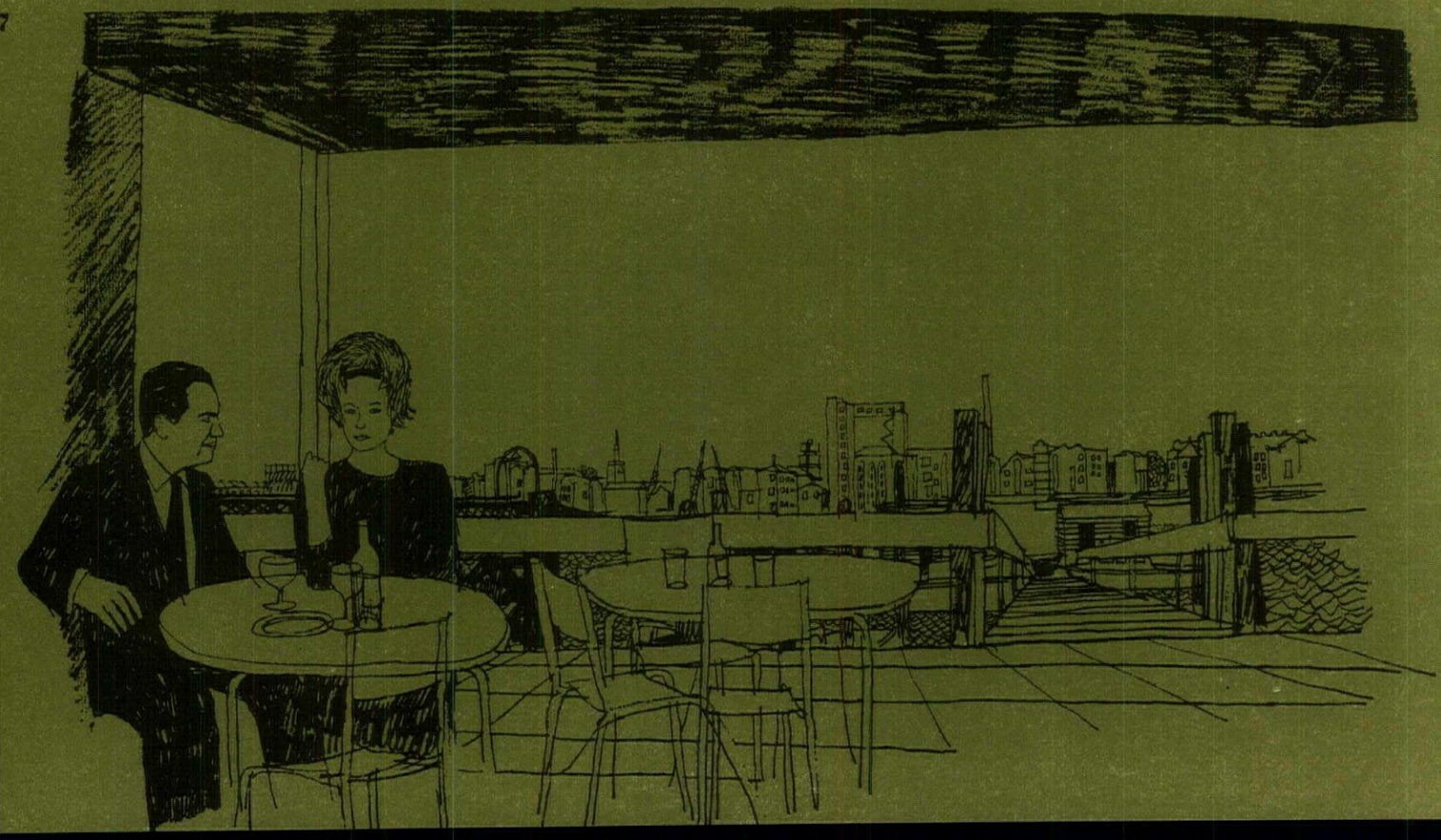
The alley off Wapping High Street leads to nothing, but with a new building to draw you, 6, you might well walk down it to find a small cafe and landing station, where there's a view of the river as good as any at the Prospect, 7.



6



5



7

MISCELLANY

vernacular

HAUSA MUD MOSQUE

The traditional building material of the Hausa people of Northern Nigeria is mud. Using this material to its structural limit, and adapting it for use in an area which has heavy rainfall, the Hausa people have created a visually exciting environment, composed of buildings whose sculptural forms give full expression to the plastic nature of the material.

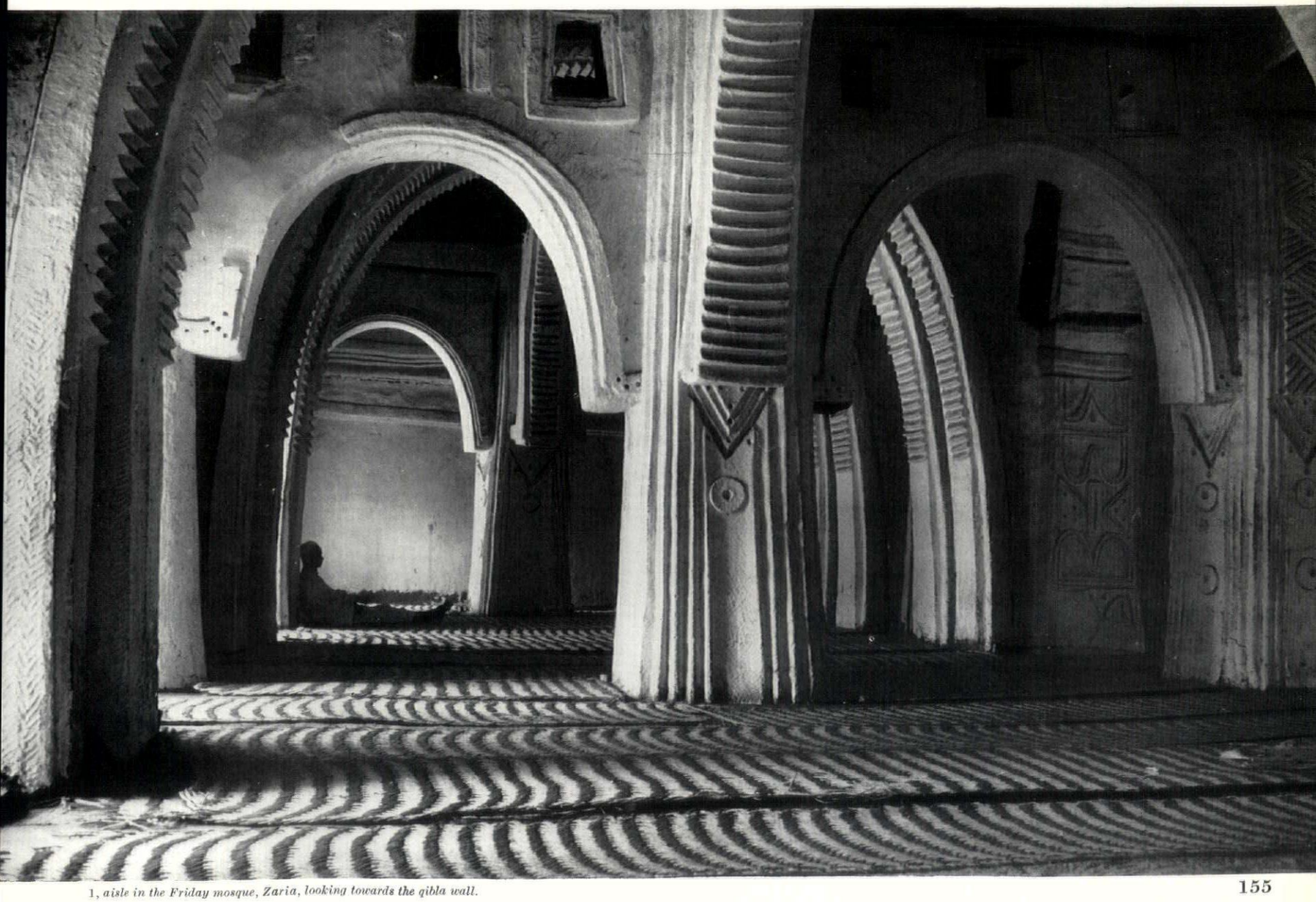
The building method is such that hardened, preformed cone-shaped balls of laterite (tubali) are laid in rough courses on mud mortar and the surfaces rendered with waterproofed mud plaster[1]. The height of a single-storey wall is determined by the distance that tubali can be thrown to the builder sitting astride the top of the unfinished wall. Spaces are spanned by baulks of roughly hewn azara; a fibrous palm which is free from attack by white ants. The economic span for common baulks of azara is six feet. Larger rooms are broken down into six-foot units by the use of corbels, columns, and beams or mud arches[2]. The use of reinforced mud as a structural material has determined the sizes used for the various elements of the building and this system of preferred sizes could almost be described as modular[3].

Decorations of varying degrees of boldness are used on buildings throughout Hausaland. By far the greatest quantity of decorative work is to be found in Zaria. It is there that the art of mud decoration is practised with the greatest degree of

[1] For a full description of the building methods of the Hausa people see A. F. Daldy, *Temporary buildings in Northern Nigeria*, P.W.D. of Northern Nigeria technical paper No. 10, 1945.

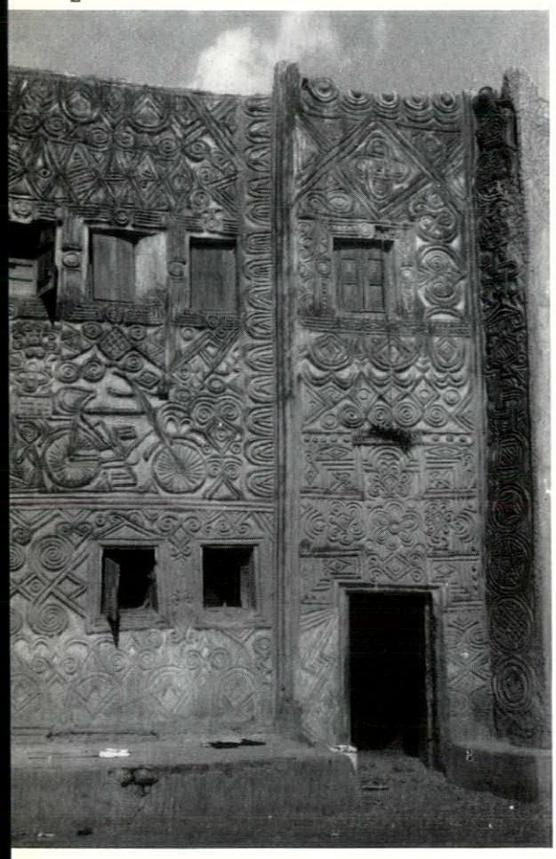
[2] This is not a true arch but a series of reinforced mud corbels.

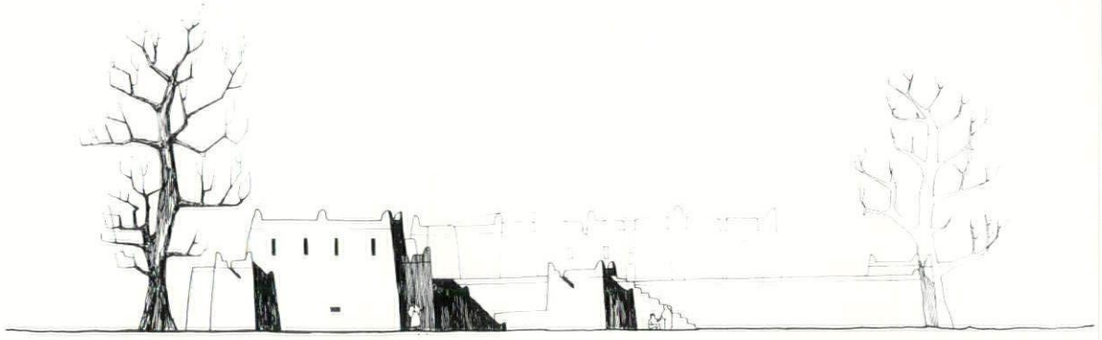
[3] J. C. Moughtin, 'The Traditional settlements of the Hausa People.' *Town Planning Review*, Vol. xxxv, No. 1, Liverpool, April, 1964.



1, *aisle in the Friday mosque, Zaria, looking towards the qibla wall.*

2

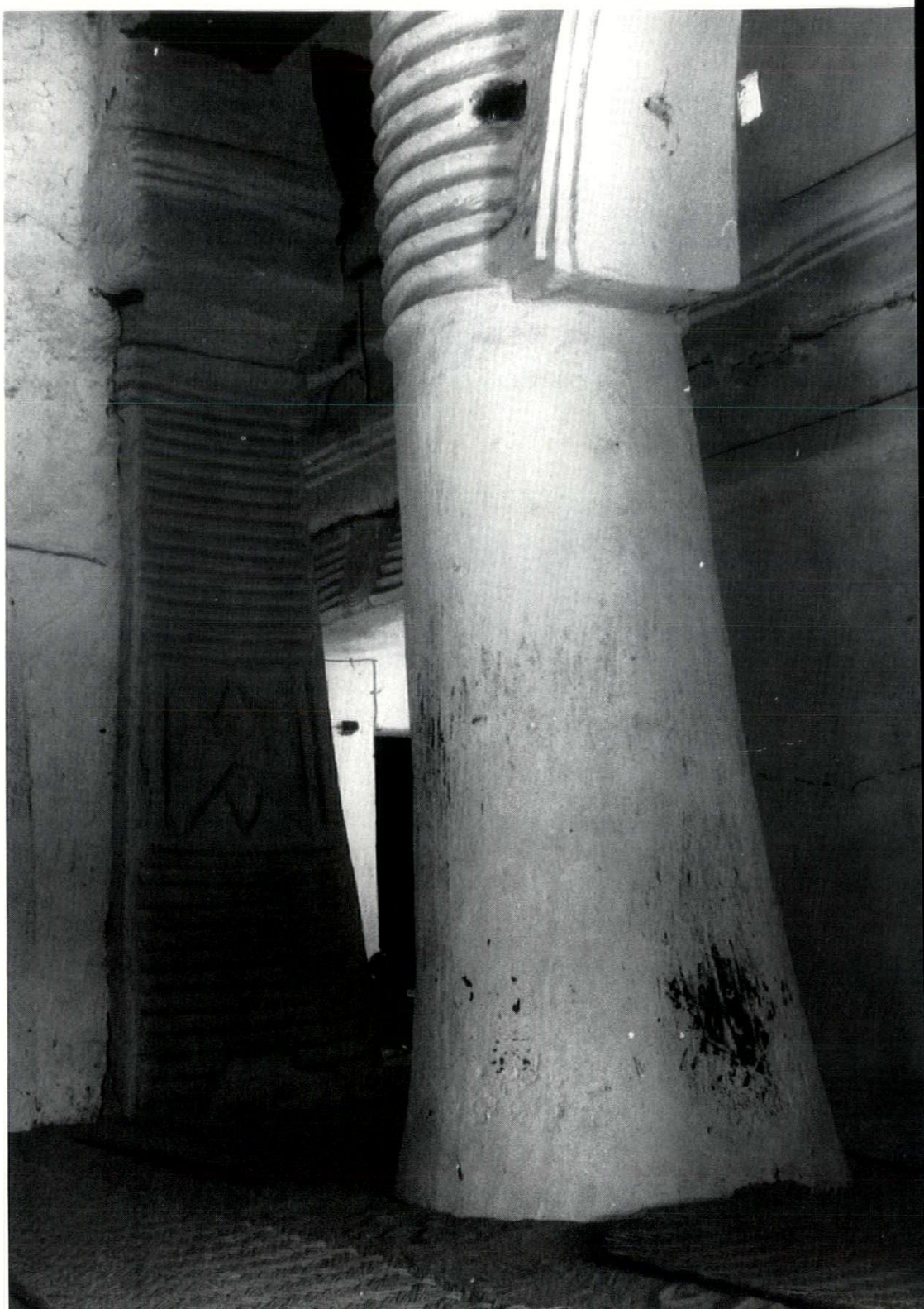




elevation of Friday mosque

2 (left), modern representational decoration on a secular Hausa building. 3, giant column in the Friday mosque.

3

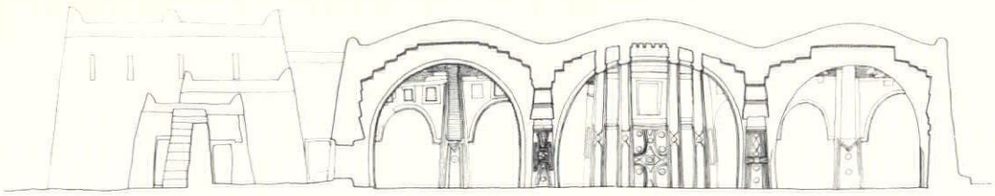


fluency and executed with Baroque exuberance. The Friday Mosque, Zaria, is perhaps the high point of Hausa mud building. It was built by Babban Gwani Mallam Mikaila for Emir Abdulkerim[4] at the end of a period of puritanical fervour that saw, after the Jihad lead by Shehu Usman Dan Fodio, the full conversion to Islam of the Hausa states[5].

The mud relief patterns in the interior of the Friday Mosque are sober and formal; the dignified work of an age of religious reformers and the very antithesis of the arabesque-like spirals, interlacing knots and chevrons now typical of Hausaland. Lively and vigorous though modern Hausa decoration may be, it has none of the monumental qualities possessed by the earlier interiors. The unity of recent buildings depends less on any instinctive appreciation of the need for decoration in a particular context than on the qualities of mud as a sculptural material, a material in which building and decorative techniques merge. Babban Gwani's decoration is more complex than any surviving contemporary examples in the north of Nigeria, and represents the first step towards greater freedom, the cause of the decline that was to come.

The first impression on entering the mosque is of big sculptural forms. Decoration is restrained and in the background. Deeply incised verticals, triangles and circles on the piers and horizontals on the

[4] Abdulkerim was Emir of Zaria 1834–46.
[5] The Jihad, or Holy War, began in 1804.



section through Friday mosque

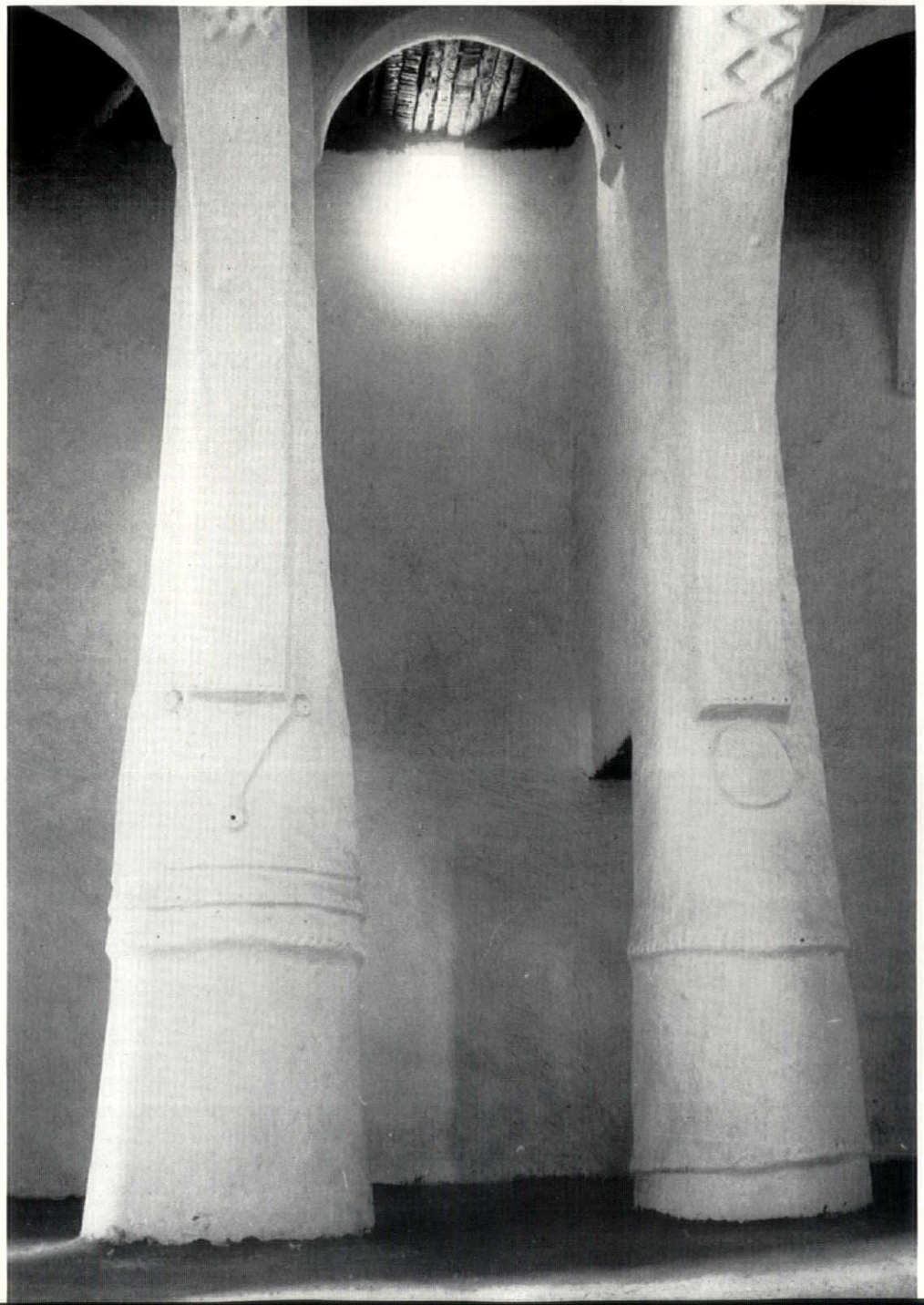
underside of the arches emphasize and complement the main forms. The plan of the building is such that only one or two decorations can be seen at any moment, and because of the contrast of light and shadow these take their place easily in the total scheme. The more complex designs, such as the decorated architrave which surrounds the mihrab niche on an otherwise undecorated qibla wall, together with the bold designs on the adjacent pier faces, are purposely placed to emphasize and enrich the mihrab area[6].

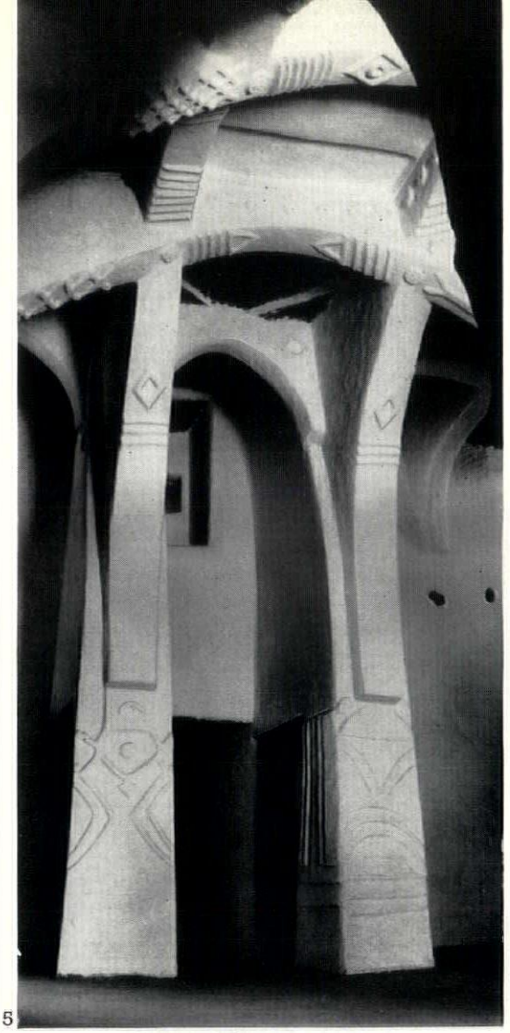
Although symbols of recently acquired western technology—such as the motor car and sewing machine—and Islamic spiritual symbols such as the Koranic slate and the ablution kettle have been

[6] The mihrab is in the qibla wall and indicates the direction of Mecca.

4, 5, *mud-relief patterns on columns and vaulting in the Friday mosque.*

4



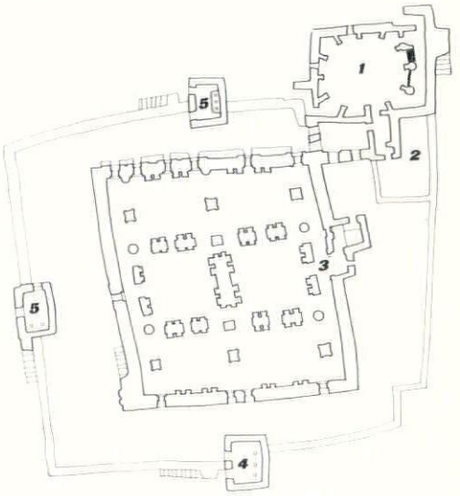


5

introduced into modern Hausa decoration, no representational designs appear in the Zaria Mosque. The only motif in this mosque which may be derived from natural forms is one which may be based on the snake; a creature which plays an important part in Hausa mythology[7]. The resemblance is too tenuous, however, to do more than suggest a connection between traditional patterns and folklore and possibly totemistic origins in earlier times.

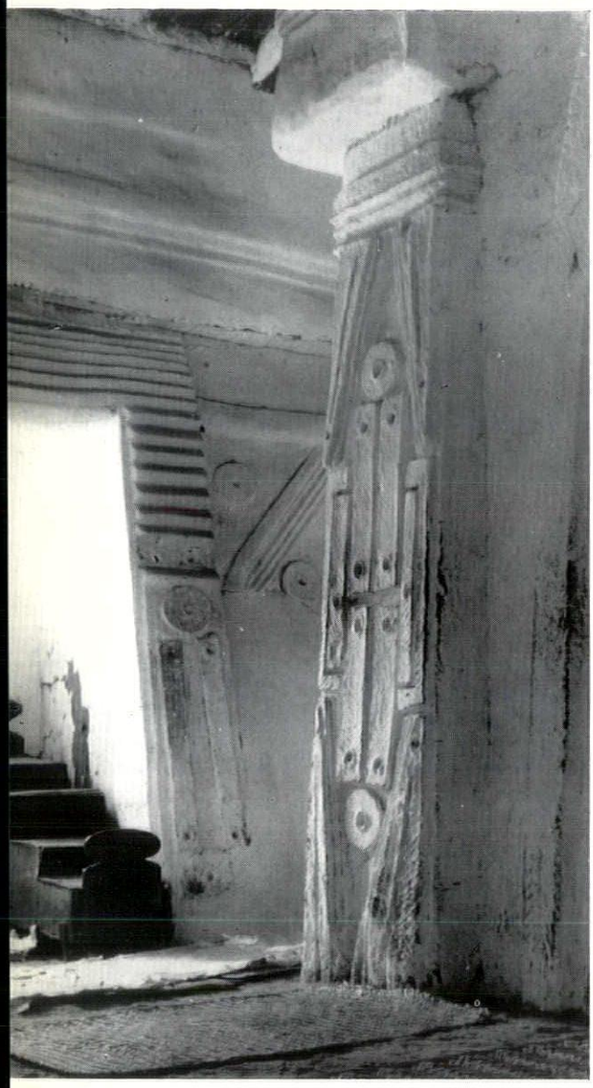
The strongly linear character of modern decoration has led some writers to suggest

[7] Alhaji Hassan and Mallam Shuaibu Na'ibi, *A chronicle of Abuja*, Lagos, 1962, pp. 2 and 3.



plan of Friday mosque

key
1, Shari'a court
2, latrine
3, mihrab
4, ablution chamber
5, AC



6, *decorated pier in the Friday mosque.*

an Arabic derivation[8]. Some Islamic influence is probable, but when the modern interlacing designs are analysed it can be seen that they are derived from the simple combinations of circles, triangles and lozenges found in earlier Hausa buildings and other African work south of the Sahara.

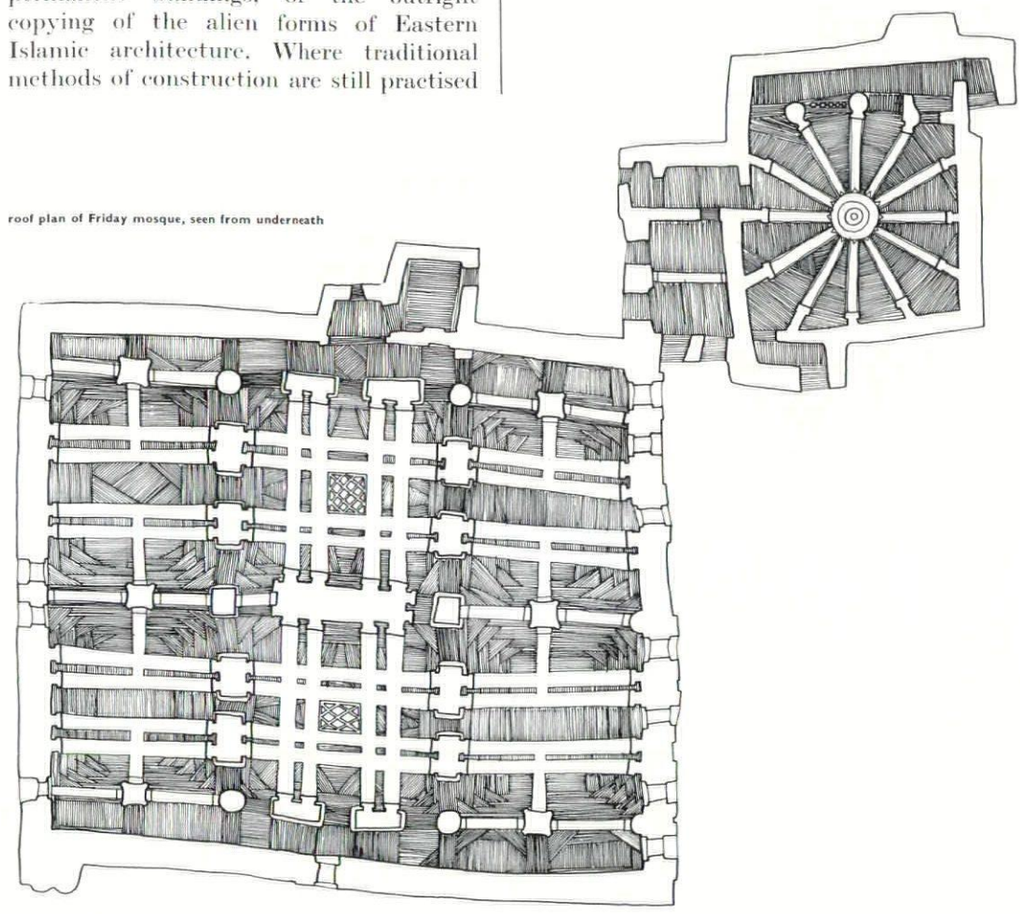
Recent Islamic influences may also be responsible for amending building forms which are otherwise of African origin. Hausa building today is a family concern, knowledge being passed from father to son, and it is more than likely that many building forms as well as the patterning used by present-day builders are derived and developed from those used by their ancestors[9]. Although Hausa building forms and patterning symbols are most likely to have developed naturally from building techniques and traditional folklore, it is possible to see in modern work Islamic and western influences overlaying the basic Negro characteristics.

[8] A. Kirk-Green. *Decorated Houses in Zaria*, Nigeria, No. 68, March, 1961.

[9] Mallam Haruna Maidakin Gini, the leading decorator in Zaria at the present time, is descended in direct line through his father, Ibrahim Sarkin Magina (Head of the builders of Zaria) from the builder of the Friday Mosque, Zaria.

Throughout Hausaland individuals are experimenting with new building techniques, the result of which is the disruption of the unity of the old cities by the introduction of badly designed though more permanent buildings, or the outright copying of the alien forms of Eastern Islamic architecture. Where traditional methods of construction are still practised the results are not on a grand scale and have few of the monumental qualities of a past age of great mud building.

J. C. MOUGHTIN
A. H. LEARY



roof plan of Friday mosque, seen from underneath

town planning

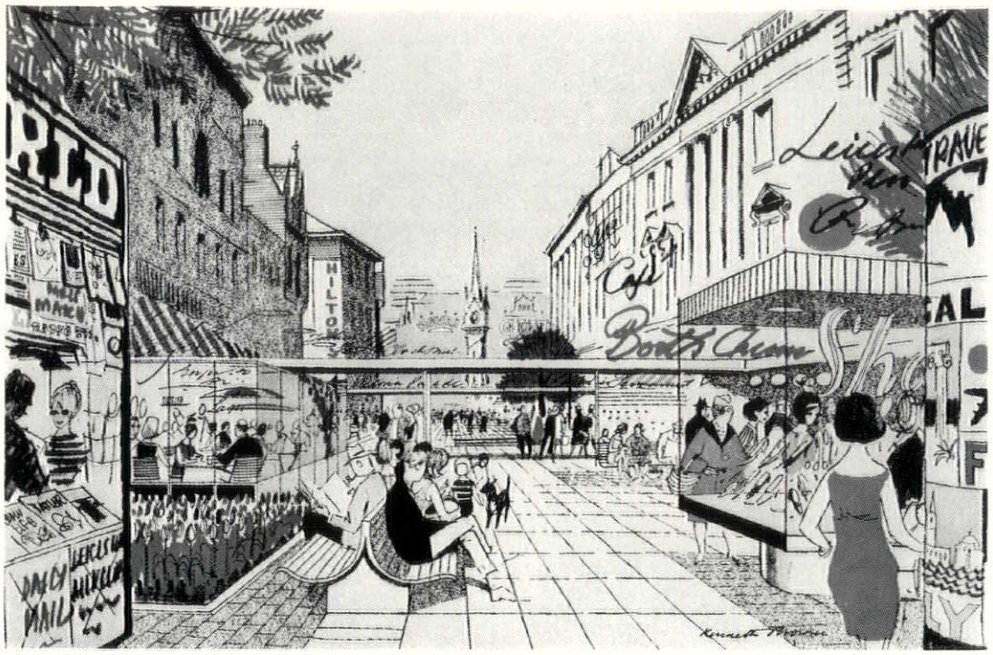
LEICESTER TRAFFIC PLAN

Up to now, planning techniques have been hopelessly crude, almost guaranteeing the destruction of existing environment. Now at last, and moreover in an official plan, the need for preliminary townscape analysis is seen to be vital. Buchanan coined the phrase 'environmental area'; now, in the planning report recently issued by the city of Leicester, there is a first attempt to show how the environment may be evaluated and townscape techniques applied to a practical plan.

The first official plan to appear since the Buchanan report, it is based not on inspired guesswork as its predecessors, but on a very accurate analysis of vehicle movement using the latest computer techniques; techniques developed in the US but too late to help the American city.

It is remarkable, in view of the thoroughness and excellent presentation, that the report was produced in less than a year, by a team under the city planning officer, Konrad Smigielski. H. Blachnicki led the design group and J. M. Harwood was the traffic planner.

Most important, this plan puts environment first and traffic second. To quote the report, 'the object of city planning is not only to solve functional and practical problems but also to create civilized and visually stimulating environment.' As a first step in this direction, the city appointed Kenneth Browne and Ian Nairn as townscape consultants to carry out a survey of the existing environment, at the same time as the traffic analysis was being prepared. This necessitated walking every street in the centre of the city, noting and photographing anything of visual importance and sketching effects worth keeping. All viewpoints, sequences and buildings worth saving were plotted at the time on a large scale map and this record and any



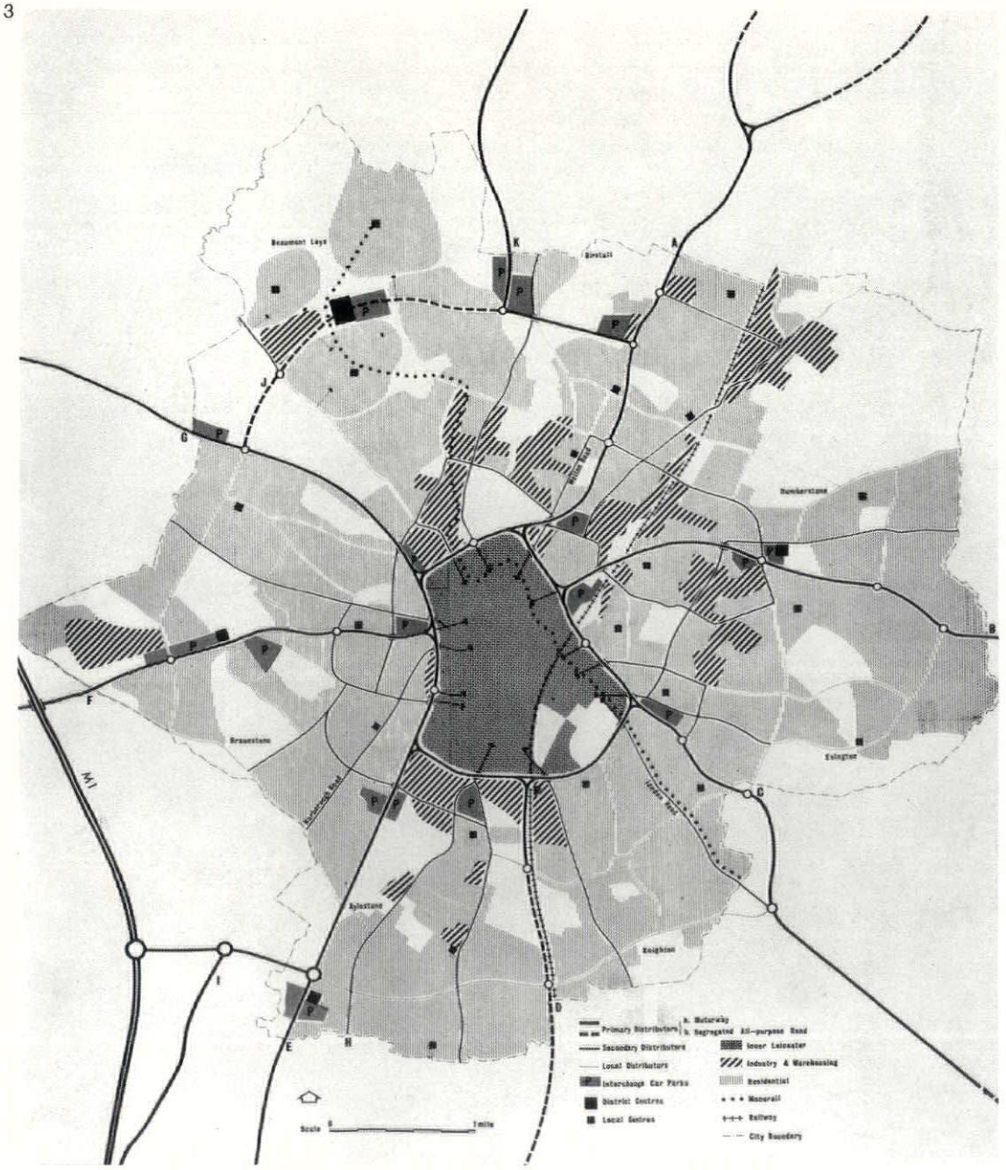
1



2

1. proposal for a pedestrian shopping street in Galloutree Gate, Leicester. 2, how the street is now. 3, master road plan for Leicester, with the inner city shaded dark in the centre, surrounded by interchange car parks and with the proposed monorail (shown dotted) running from north to south.

3



suggestions for future development subsequently influenced the plan.

The survey is described as a 'personal assessment of the buildings, combination of buildings, and townscape effects considered indispensable to the city. The whole survey is thought of in visual terms, of what buildings are now rather than how long they have been there. . . . Many of the items are not buildings at all, but enclosures or sequences of spaces . . . in these cases, the buildings themselves could be replaced as long as the overall effect remains the same.'

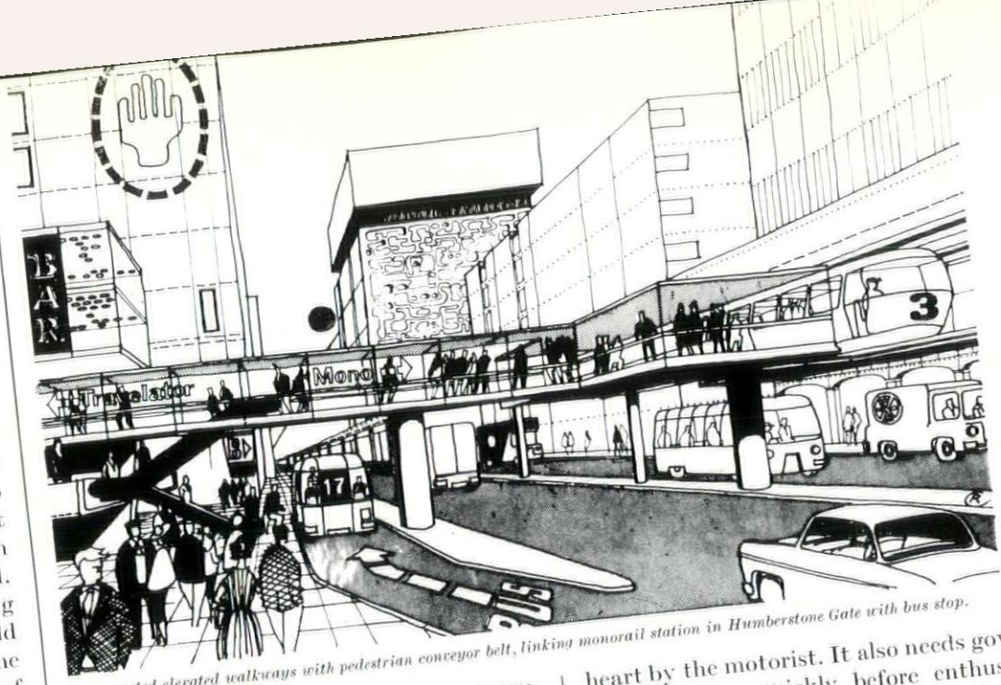
Though little townscape material appears in this report (it is to be published later together with detailed proposals) the townscape consultants' findings influenced the planning right from the start, affecting the position of roads and defining the areas of pedestrian priority. Side by side with the traffic diagrams appear maps showing the areas of special environment (not many in Leicester but still worth defining) and the proposed pedestrian network for the centre which will develop these areas and link them together.

To get accurate information of the city's movement pattern a new kind of traffic survey also was carried out in great detail, including home interview of one family in ten to determine their travel habits. After collecting all the necessary information and relating it to estimated increase over the next 30 years, a first solution was worked out based on unrestricted use of the private car. It was found that this would involve building an elevated motorway of no less than 16 lanes with enormous multi-level intersections. The city centre would consist of a small shopping core surrounded by huge car stacks which, even at 6 storeys high, would occupy more ground than the shopping core itself. The environment would be destroyed and the bill would be about £400 million. This was obviously unacceptable. The solution finally arrived at and recommended in the report is described as an Integrated Transport System. It relies on a ring of interchange

car parks which, attached to radial roads, act as sieves, intercepting incoming cars. Their occupants are then carried to the city centre by continuous and highly efficient public transport. This would consist of three types of bus, the smallest for use in the centre being for standing passengers only; also small electric taxis, a monorail and travelators. The interchange car parks would themselves be linked to suburban shopping and entertainment centres and motor vehicle penetration beyond them would be drastically limited.

The three ring roads of the existing development plan, the inner of which would disastrously cut off the castle area and the proposed council offices from the centre of the city (besides running slap through the Cresent) could then be replaced by a single elevated Inner Motorway skirting the central area and only 4–6 lanes in width. The success or failure of the scheme would depend on the provision of a sufficiently attractive public transport system considered as a public service and not a profit-making enterprise.

It is claimed for the new plan that it would allow for growth without destroying



4, suggested elevated walkways with pedestrian conveyor belt, linking monorail station in Humberstone Gate with bus stop.

identity, permit unlimited car use everywhere except in the centre and provide an environment which comes to terms with the car. Also at £135 million it is considered financially possible.

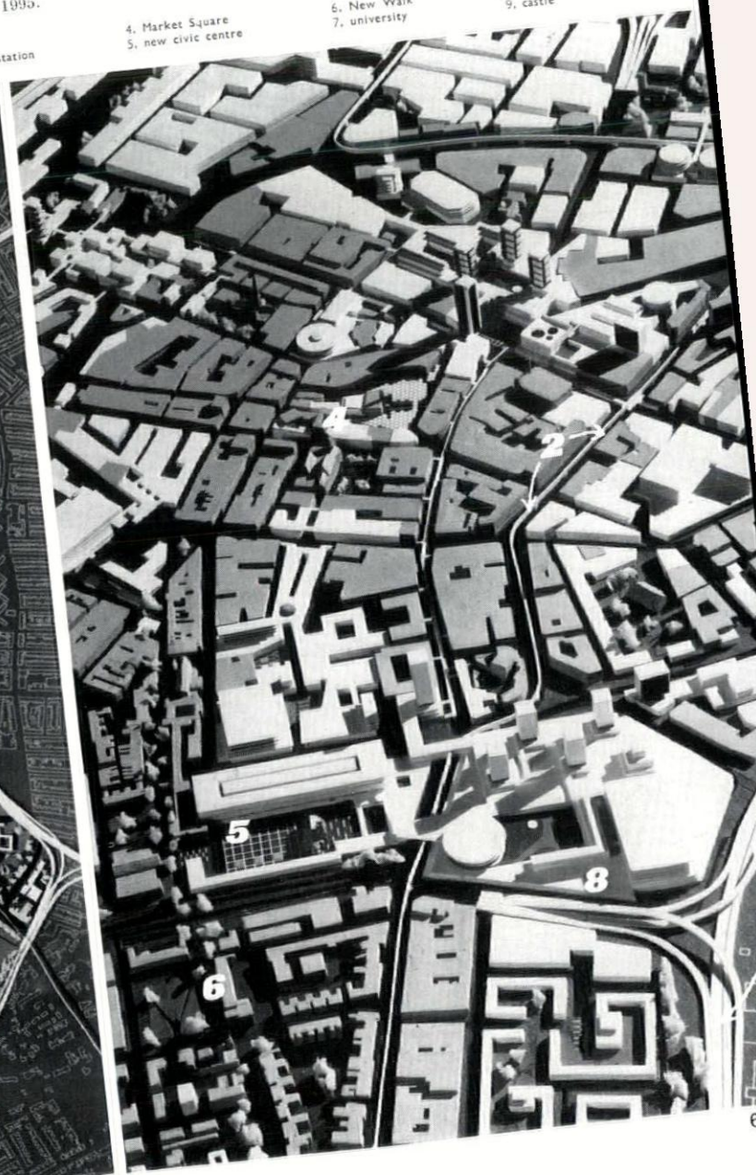
Realization of the scheme will not be easy. For one thing it demands a change of heart by the motorist. It also needs government support quickly before enthusiasm is dissipated. Surely Leicester with its comparative dearth of historic buildings is the ideal place for a pilot scheme to find out how an existing city can be adapted to the motor age.

WILLIAM CARR

5, 6. model of inner Leicester as it could be in 1995.

key
1. inner motorway
2. monorail
3. rail-bus-helicopter station
4. Market Square
5. new civic centre
6. New Walk
7. university
8. London Road station
9. castle







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SKILL

WEATHERING DESIGN APPLIED TO CONCRETE: 2

In his first article Garbis Armen divided the main components of weathering into three: atmospheric pollution, organic growths and climatic factors; and set out to describe the effects of each of these groups in turn, getting as far as the first item under the climatic heading, wind. In this concluding article he completes his analysis and puts forward a number of suggestions on how these climatic factors can be put to architectural effect.

At the close of the first article we began a review of the climatic factors in weathering by considering wind. The second factor is rain.

(ii) *Rain* is the condensation of atmospheric moisture around particles of dust, to form drops of water falling under gravity. It is capable of dissolving most of the constituents of atmospheric pollution and liable to alter the direction of its fall if blown by wind.

Whether or not assisted by wind, however, the force that a raindrop gathers by falling under gravity is sufficient to give it a cleansing action. The effect of the first impact, particularly on the more exposed planes of a surface, is, therefore, one of removing loosely adhered particles—grains of material, dust, soot, etc. Thereon, the loss of force after the impact and the surface tension with the plane, bring about the deposition of any soot or dust that the raindrop gathered from the atmosphere as well as the redeposition of the particles removed from the material, at positions lower down the course of the raindrop. The greatest deposition occurs at points where the raindrop 'dries out' by absorption into the material. Usually, however, the accumulation and blending of many raindrops enables them to run quite a distance on the face of the building before being absorbed. The deposition of particles all along this journey, culminating at the point where the last drop is absorbed, forms a long triangular discoloration known as a 'run-down' line, 1.

Buildings in industrial atmospheres and Northern façades which accumulate more soot from the air are liable to show 'run-down' lines of washing rather than discoloration. Thus, water running down on different façades of a building can form 'run-down' lines of discoloration on some of them and of washing-away on some others.

The formation of 'run-down' lines on smooth planes and shallow textures is irregular and quite unpredictable in location. The designer can only hope to 'discipline' such lines by profiling concrete or providing channels, the spacing of which depends on the following factors:

(*a*) Rainfall of a location—in Britain, averages vary from 1.94 in. for March, to 2.80 in. for November.

(*b*) The position of the particular surface on the higher or lower parts of a building.

(*c*) The texture of the surface—smooth planes show run-down lines more conspicuously than textured surfaces. A very smooth finish requires closely spaced channels, while a rough texture may not require any at all, because it can diffuse the water within its surface, 2.

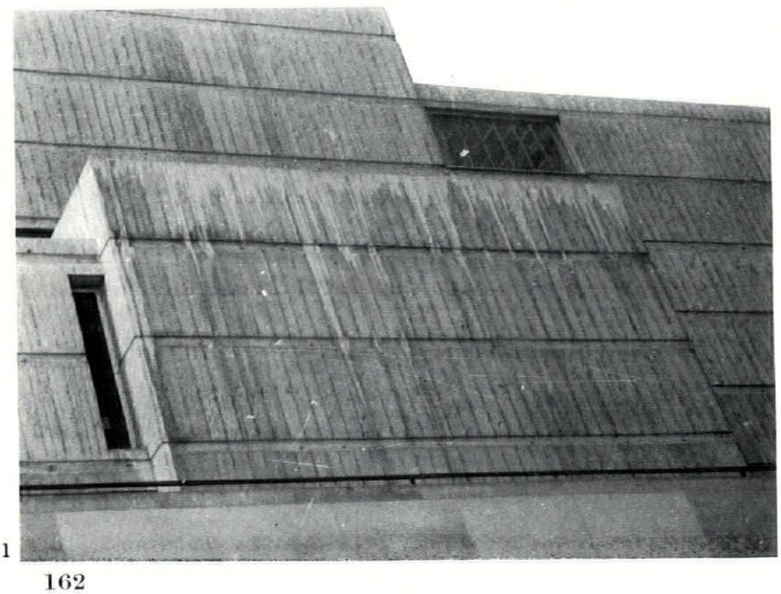
(*d*) The height between 'lift' lines. Together with all the other factors, this height will assist the designer to assess the spacing of vertical channels that will 'drain' an area—i.e. avoid the formation of 'run-down' lines on any part of it, 3.

The action of rain as well as wind tends to produce erosion on the more exposed planes of a surface, while the sheltered cavities or planes receive rain and wind of a reduced force. Thus, while soot may adhere all over a surface, the action of rain and wind will deposit it in more protected cavities of that surface. Furthermore the process of preferential erosion of the more exposed protrusions of a surface by all the climatic agencies of weathering will emphasize the contrast between the darker cavities where soot has been deposited and the lighter protrusions where erosion has taken place. This fact forms the entire basis of weathering design. Whereas the discoloration of a plane surface, far from relieving its monotony, often becomes a liability, this principle aims at deliberately accepting it on surfaces so profiled as to be emphasized by the process of weathering.

Rain dissolves and deposits salts even more readily than inert carbon particles of soot. This explains the fact that soluble sulphates and subsequent efflorescence, appear on ex-

[continued on page 164

1, *run-down lines on the Wolfson Institute (architects, Lyons, Israel and Ellis).* 2, *use of recessed cill in factory-made housing in conjunction with a rough surface to prevent run-down lines.*



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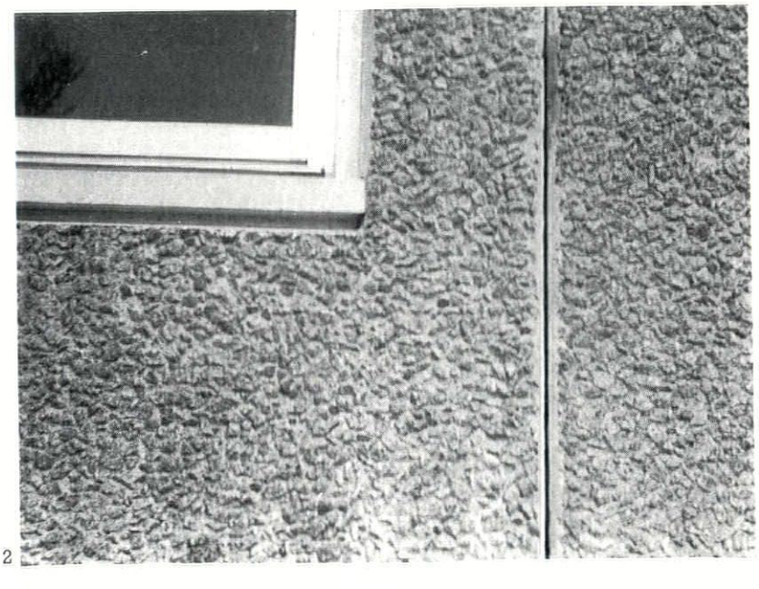


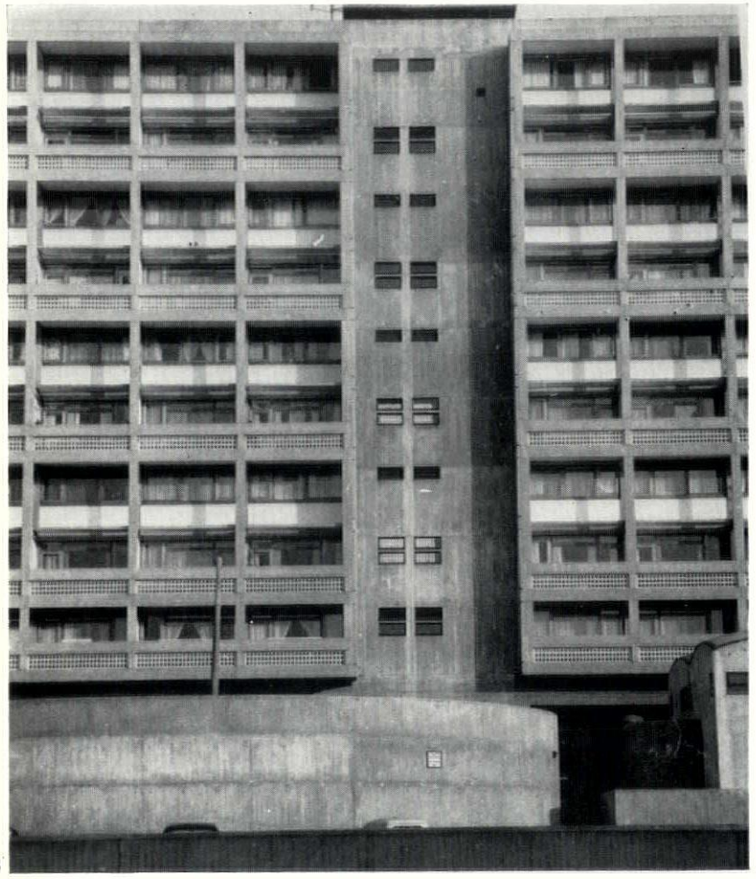
2

continued from page 162]
posed protrusions under the first impact of rain and wherever the water flowed away at some speed. Soot and dark matter, however, are generally deposited in the more sheltered cavities, where water trickled through to be absorbed by surface tension in the material. Thus, the contrast between protrusions and cavities tends to be emphasized by the efflorescence of salts, as well as the deposition of soot and 'preferential erosion.'

Wherever two quantities of flow are different in speed or volume of water, the effect of weathering will also be different. This can evidently be seen in the differential weathering between a surface below a sill and a surface extending a full storey height, from roof to ground level. The first is usually darker because of the slow speed of water while the second is lighter, because the water running down its height picks greater momentum and speed and a cleansing action results. Dark lines can often be seen, running down from the two ends of the sill, on either side of a window. This is the deposit left by the large quantity of water running along the throating of the sill, accumulating at the ends and dropping down at slow speed. Weathering Design should make use of this differential discoloration due to differences in quantity and flow of rainwater, by designing different finishes for surfaces below sills as opposed to full storey height panels. The line of their junction, which coincides with the discoloration below the end of the sill, could be made a feature by a channel.

Further examples of differential weathering due to differential flow of water can be seen at corners of buildings, re-entrant angles, joints,

[continued on page 166



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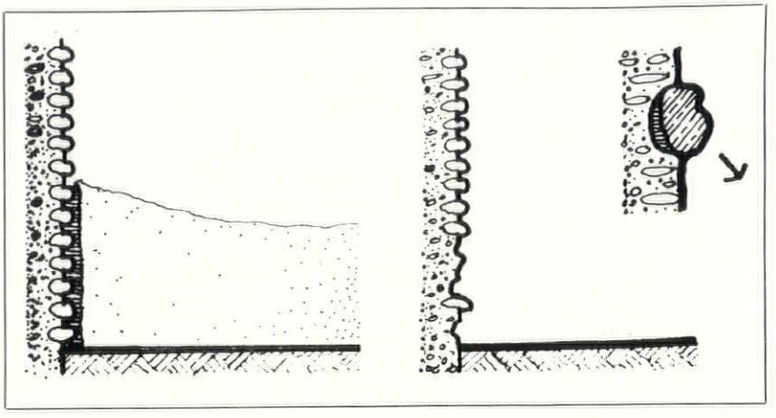
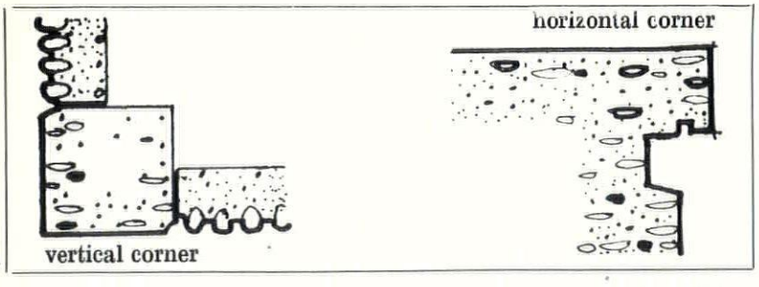


6

3, shuttering lifts, not taken into account in facade design, weather differently and cause a noticeable blemish.
4, diagrams showing possible methods of emphasizing differential weathering due to rain and wind.
5, discoloration at junction with ground. Note that even though there was a recession and change of surface treatment at ground level this was not deep enough to prevent staining.
6, diagrams illustrating erosion and deterioration due to piling snow at horizontal junctions.
7, use of rough porous finish to off-set surface staining.



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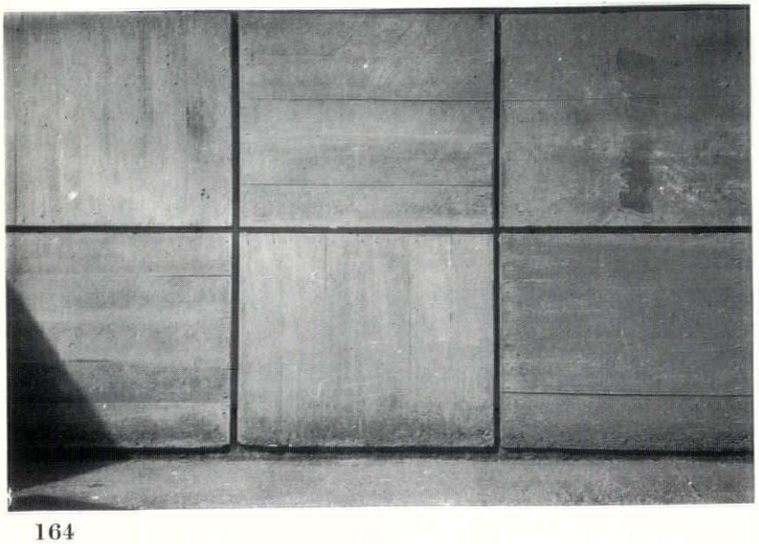

5



7

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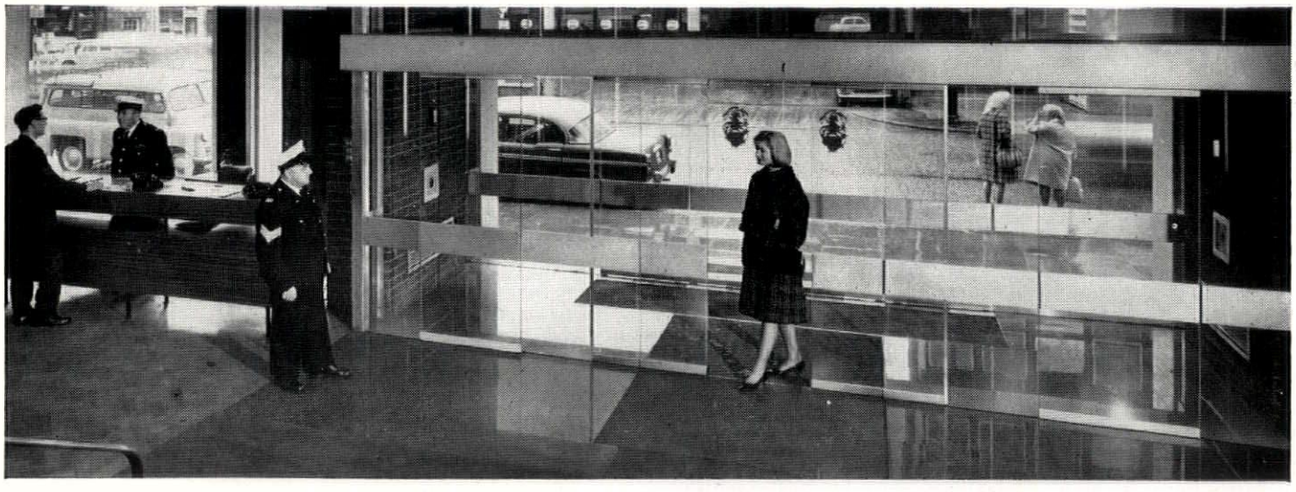

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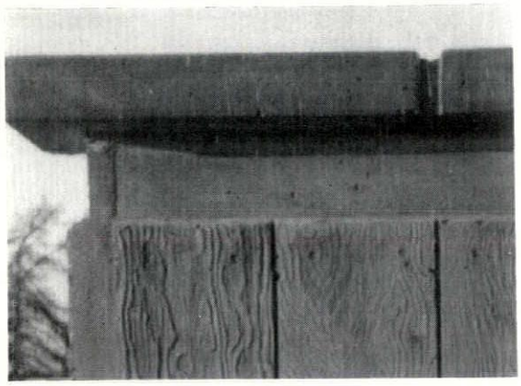
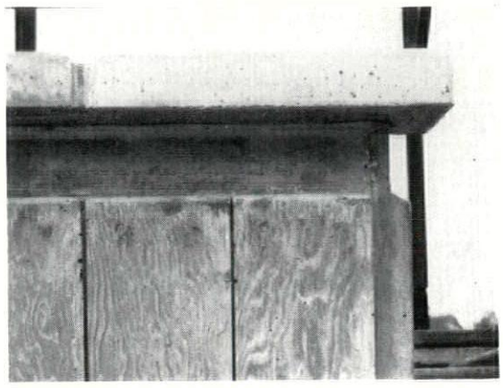
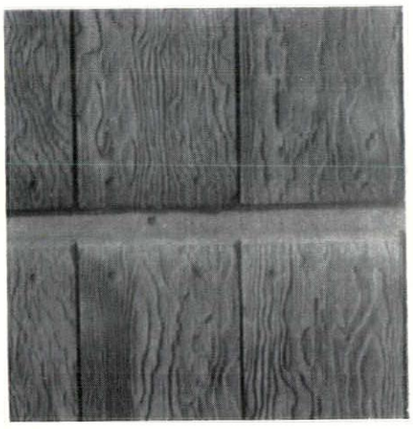
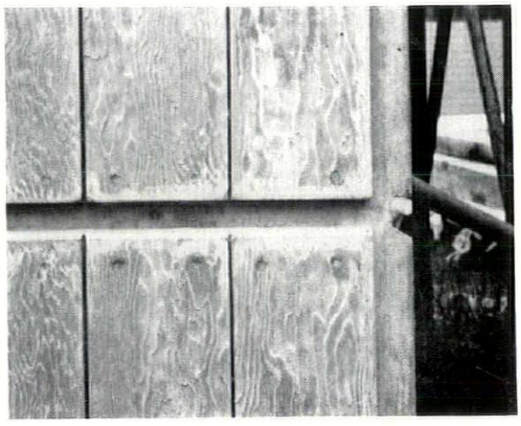
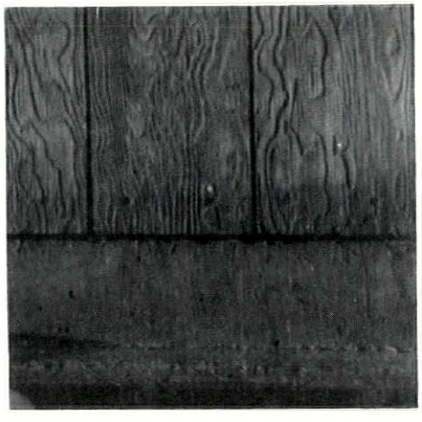
TEST WALL FOR WEATHERING DESIGN

immediately after casting	three months later
	
	
	

8, test wall photographed, left, immediately on casting, right, three months later. Top, recession below coping accepts discoloration by eddies. Note also the growing contrast between the fascia and the other surfaces. Middle, the recessed lift line gains emphasis. So do the joints between the plywood panels of the shuttering, effected by the use of Expandite rubber strips. Bottom, recessed base makes a feature of discoloration due to splashing, etc. But notice also the tendency to efflorescence both at the bottom and top edges of all panels and on the exposed corner.

continued from page 164]

junctions of column and beam which discharge or become 'avenues of flow' of larger quantities of rainwater than their adjacent plain surfaces. Weathering Design provides a solution in each case in accordance with what is perhaps the most important of its principles, 4.

The splashing of water at ground level invariably produces a dark discoloration of an adjacent vertical surface in all materials and concrete in particular. The height of splashing determines the extent of the discoloration. The lower 10–15 cm. (4–6 in.) of a building are, therefore, bound to discolour at the junction with the ground. Design should face the fact and express it in terms of difference of plane or finish or both, 5, 6.

(iii) *Frost* is caused by a drop of atmospheric temperature below 4°C. altering the state of water from liquid to solid. This is accompanied by an increase of 9.6 per cent on the original volume.

The freezing and crystallization of water accelerate the process of erosion of a material by setting up compression forces in the pores. The water absorbed to fill these pores expands when freezing and loosens the particles of the material. Frequent variations above and below freezing point cause the rapid deterioration of the surface of a material.

A very porous surface does not change its texture very noticeably by frost action, but a smooth surface invariably develops a new texture.

(iv) *Fog* is the suspension of evaporated moisture, dust and smoke particles, at low altitudes, because of low temperature. It can also dissolve with Carbon Dioxide and Sulphur Dioxide. The deposition of all these particles or compounds on the surface of buildings, with the assistance of wind and rain, has been explained under (i) and (ii).

(v) *Solar radiation* is an energy transmitted by rays of certain wave lengths—giving mainly light and heat—from the sun. Most colours bear a permanent bleaching effect due to ultra-violet radiation, which destroys colouring matter on surfaces. Solar heat is also responsible for the thermal movement of concrete, necessitating expansion joints. Most organic growths are discouraged or destroyed by solar radiation. Northern or southern façades, depending on latitude, may, therefore, be free from bleaching, but they are liable to accumulate organic growths. Because of the low intensity and short duration of sunshine in this country, the profiling of concrete surfaces should aim at reducing the monochromatic shadowless effect of large areas, by accepting contrast by weathering as well as illumination. These contrasts of light and weathering can be made to coincide on the same features of profile.

(vi) *Hail* is the shower of ice particles, formed by the sudden freezing of raindrops in the higher strata of the atmosphere. It causes some erosion of concrete surfaces, by impact and subsequent removal of loosened particles. Protruding surfaces are more liable to bear this effect than surfaces in sheltered cavities.

(vii) *Snow* is the formation of ice crystals into particles of various patterns, falling under gravity. It is too light to cause any erosion by impact, or by the driving force of wind, but its accumulation in junctions between vertical and horizontal planes retains water for long periods and enables it to penetrate deeper in porous surfaces. Subsequent freezing and thaw-

[continued on page 168

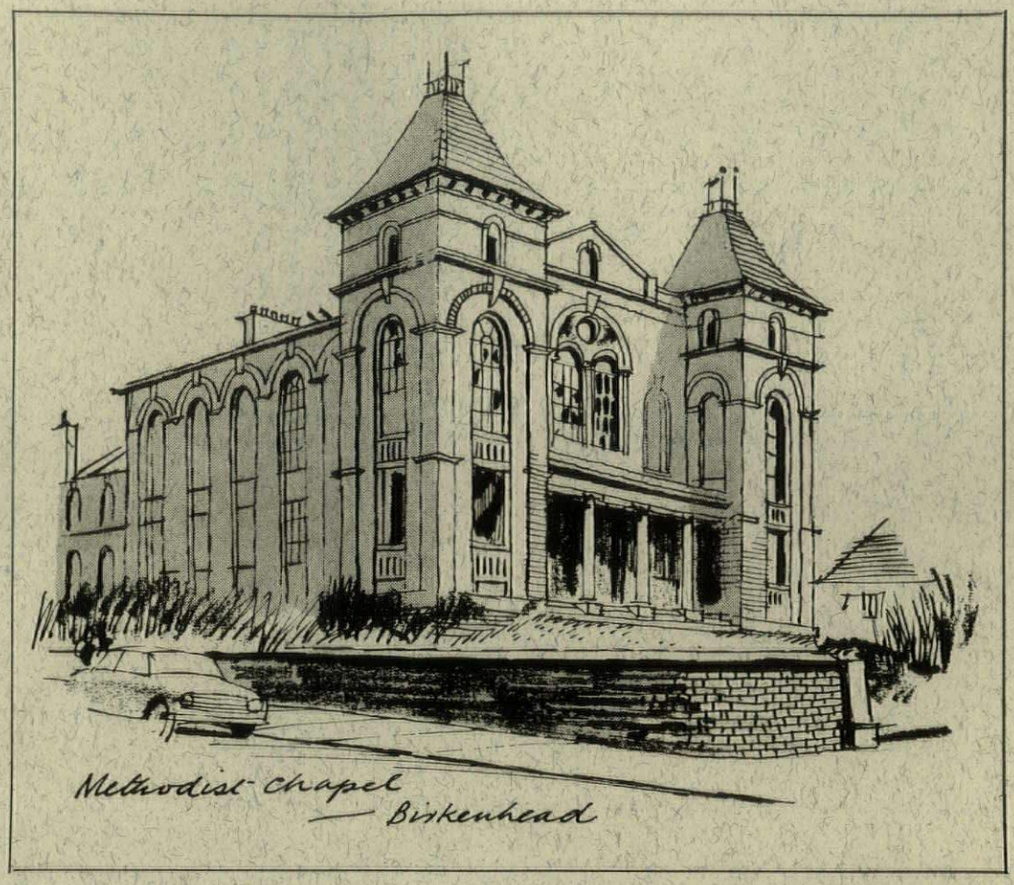
STOP PRESS

A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn and illustrated by Kenneth Browne.

SOS

BIRKENHEAD
A Methodist chapel on the main A41 road to Chester, 1. Too far gone to repair, but still worth keeping as a monumental ruin.

HUNTINGDON
A Georgian shop, 2, opposite the main church and sold for shop and office development in a delicate town which is expanding cruelly fast. The present standard of shop and office development is shown in 3. Call it a precinct, if you like.



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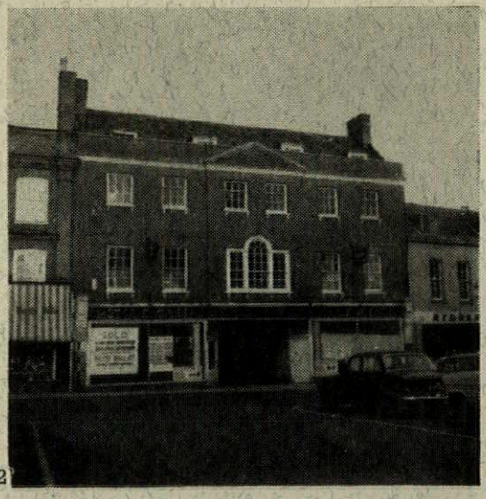
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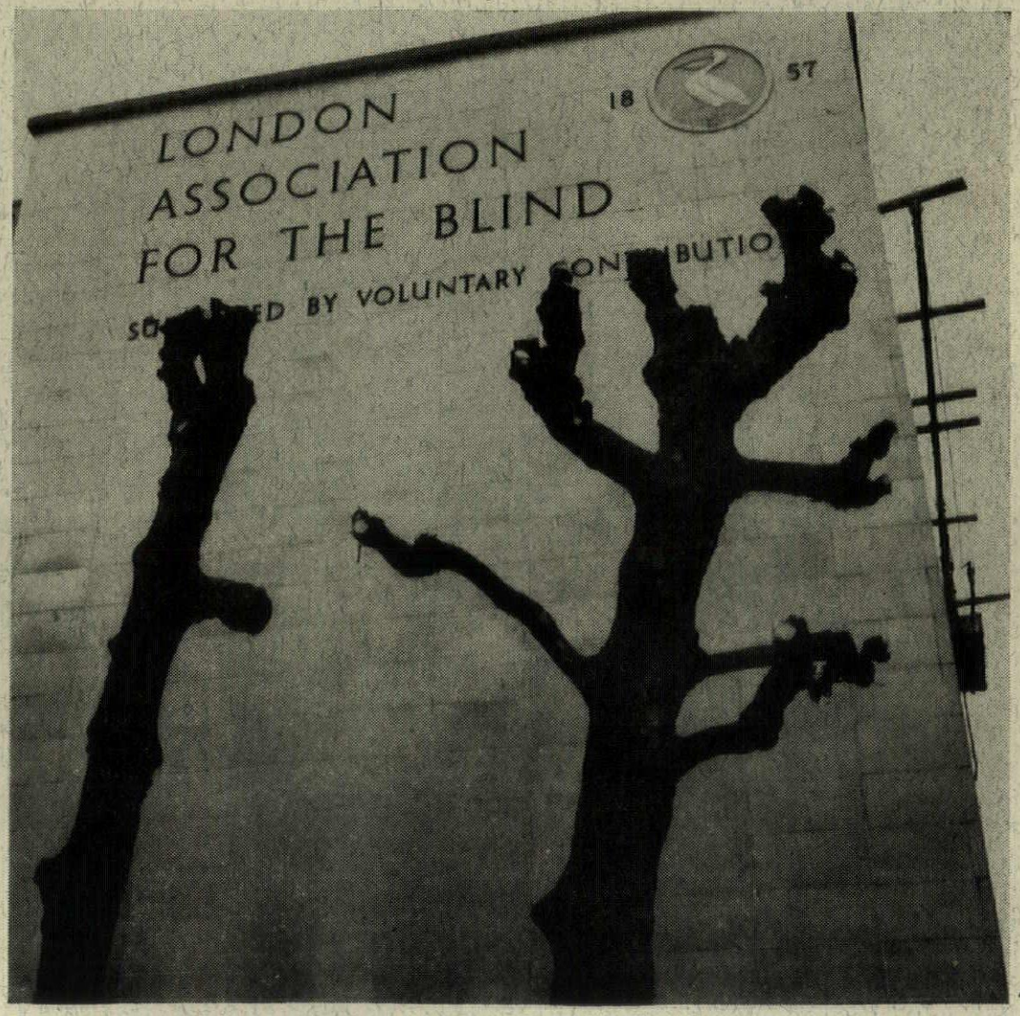
OUTRAGE

CAMBERWELL
A telling conjunction in the Peckham Road, 4, and at a time when a British Standard for tree pruning has recently been set up. What a pity that a borough which goes to such trouble to landscape its new housing estate has so brutal a way with trees in the streets.

KNOLE, KENT
. . . and by the National Trust, of all people. The decayed ragstone windows in the courtwards are being replaced

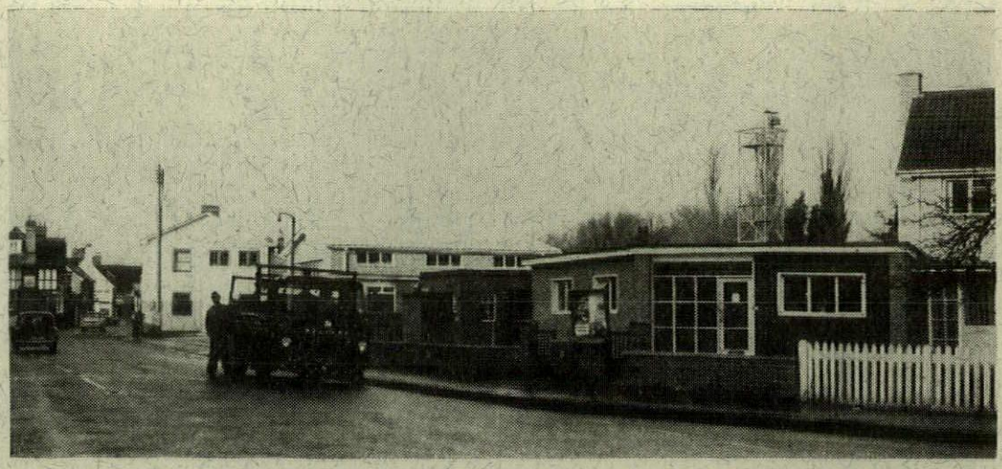


4

by some kind of crudely detailed limestone—a substitution in the worst Victorian tradition. Knole depends for its effect on silvery grey, not cheesy yellow, and the Kentish rag in its present state is a beautiful example of more-than-pleasing decay. It needs to be stabilized, not ripped out.

PEWSEY
The centre of a large village in Wiltshire, 5. All three buildings—fire station, police station and lavatories—could have been combined to form the kind of central space which Pewsey needs. Instead, they have been slapped down anyhow.

CARMARTHEN AND CORNALLY
A new shop in the main street of Carmarthen, 6. Note the old roof pitch,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6


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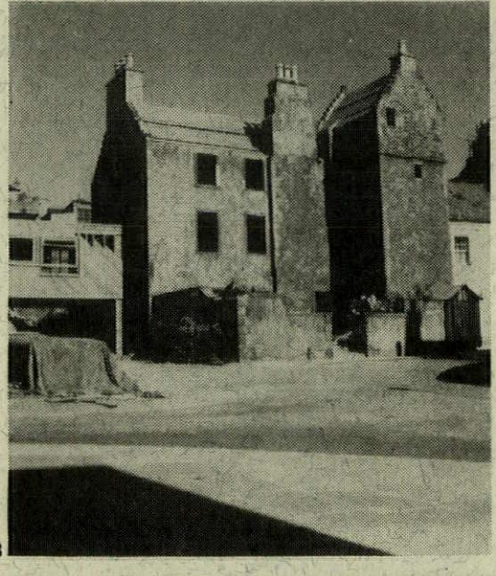
from which it can be guessed just how much street character has been lost. And brand new housing at Cornally, near Margam, 7. There may be imagination in the design of the steel works but there certainly isn't any evident here.

R·I·P

MUSWELL HILL
The Royal Oak, Alexandra Gardens, 9: about to be replaced by something much bigger. The change is inevitable, yet the utterly unpretentious virtues of the old pub are worth recording—simple materials used without fuss and with complete self-confidence. Except in their churches, the Victorians didn't worry about the fashionable trends—they just went ahead and built.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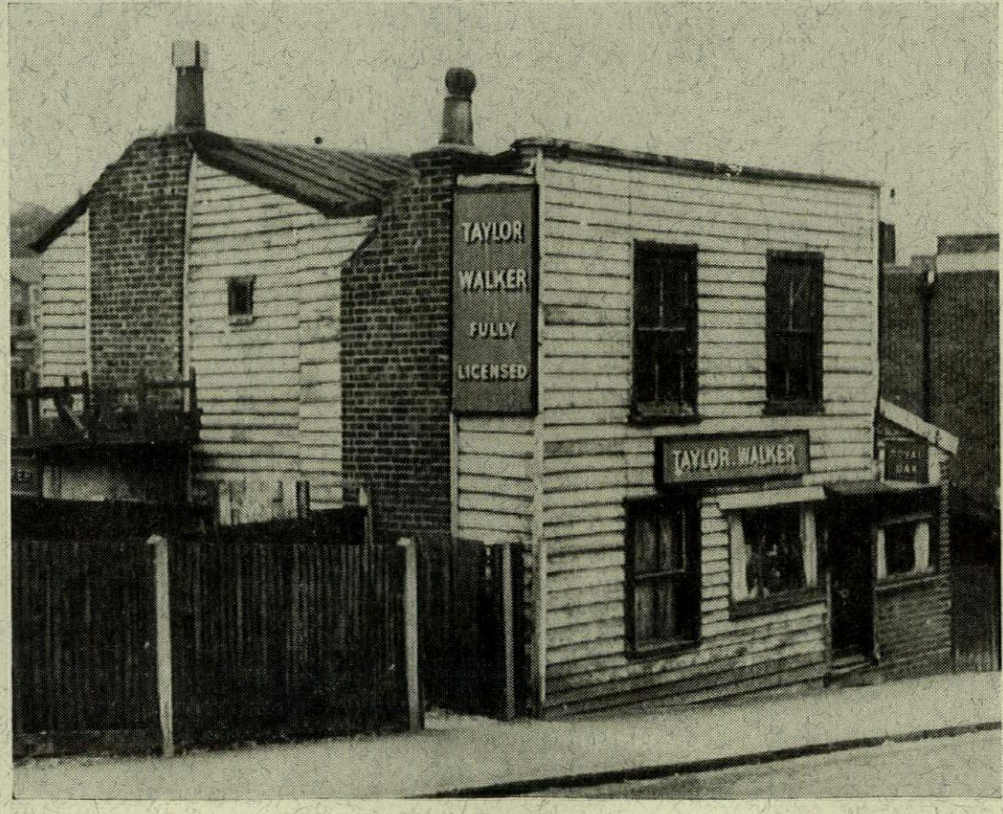
CREDIT

DYSART, FIFE
Urban renewal in the true sense—part of the rehabilitation of this small burgh by Wheeler and Sproson. Old houses are being repaired as well as replaced, like this splendid seventeenth century example, 8, yet even this was only achieved after a stiff tussle with the local council.



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GASKET GLAZING

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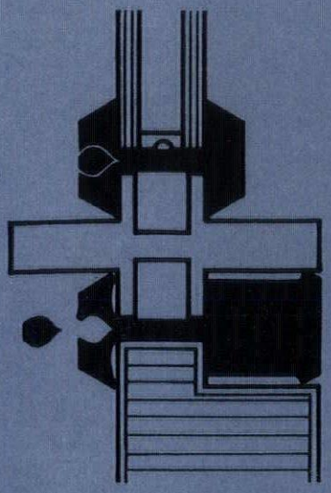


FIG. 1

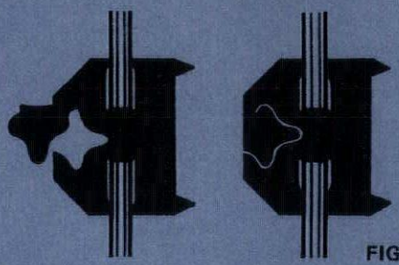


FIG. 2

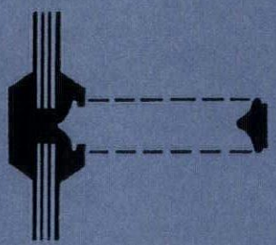


FIG. 3

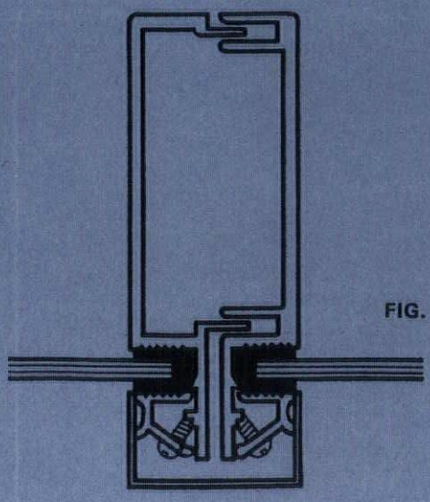


FIG. 4

Among the many changes taking place in the building industry today, gasket glazing is important and because of its bearing on the development of a progressive glass industry, has an obvious place in this series.

Historical

In the transport industries the use of flexible extrusions, usually rubber or rubber-based, has been common for 30 years or more. But in building their use is comparatively recent. In Britain, in fact, gasket glazing is little more than a few years old.

In the United States, the technique was first introduced, in a building, in the toll booths of the Pennsylvania Turnpike in 1949. Its first major application (Fig. 1) was in the "zipper" type used in the curtain walling of Eero Saarinen's Technical Centre for General Motors, Detroit, finished in 1956. In Britain, its first large-scale use was in London's New Zealand House, by Sir Robert Matthew, Johnson-Marshall & Partners, finished in 1963. (Fig. 6.)

Principles

The principle of the gasket is the simple one of an elastic substance resisting pressure from an external force. In glazing, the gasket reacts against the pressure bead with sufficient force to make it conform tightly to its adjacent materials (glass, panel or frame) to both hold the various elements in place and provide a durable weathertight seal.

Advantages

Flexible gaskets have notable advantages. They are easy to install. They should need no cleaning off after installation and no second visit, no maintenance, painting or replacement over a long period—if at all. They can be used regardless of weather conditions. Within reason they have no shelf or pot life. They offer the designer considerable freedom of detailing when compared with other methods of weather-proofing and sealing a building. They simplify replacement of broken panels and glass and very often, depending on frame design, allow this to be done from within the building itself.

Assembly

As in any other industrialised process, the use of gasket glazed units demands very careful attention to detail throughout the various stages. The most important factor to be guarded against during assembly is dirt. It must be cleaned from the surfaces forming the weatherseal to prevent water being drawn into the small gaps it causes, by capillary attraction. Such action usually leads to the accumulation of dust in the seal which can progress until a free path is created that causes seal breakdown.

Experience has shown that the shaping of a straight extrusion to fit around a rectangular glass introduces problems at the corners. Mitres and cemented corners can be used but are not always satisfactory. A solution is to pre-form the gasket and mould the corners before assembly leaving only one joint to be made. This should be in the centre of the top side where it is most protected from the weather.

Materials

A properly designed gasket of sound material must maintain a tight seal despite various movements of the joint from factors such as wind, settlement, vibration etc. It must accept thermal expansion and contraction even when the adjacent materials with which it is used have different coefficients of expansion and contraction. This is usually the case with metal or masonry structural members on one side and glass, metal, or panels, on the other. Also, the gasket must not deform permanently under load and must be durable enough to withstand sun, rain, ozone, pollution, abrasion, heat and cold, oils 'and other destructive factors.

It is important that any relative movement between the glass or panel and the frame is accompanied by distortion of the gasket alone and not by the sliding of the surfaces forming the weatherseal.

Neoprene and Butyl

Such demands as those above limit the choice of materials at present available to neoprene and butyl rubber compounds. The elastomer neoprene is currently favoured because it has a balanced combination of the properties needed for reliable performance and, because it has been in use since 1932, it has a history of durability proven by experience. It is markedly superior to natural rubber used as a building seal. It can support compressive loads of up to 1000 psi without permanent deformation. If it does deform permanently under heavier loads, such deformation is slight — about $\frac{1}{32}''$ to $\frac{1}{16}''$ per inch of gasket thickness. Most of this deformation occurs within the first few days of the load being applied.

The manufacturers of neoprene claim a life of from 25 to 50 years. But against this, however, must be weighed the consideration that such life can only be achieved if the extruded compound contains at least 50% by weight of the basic rubber hydrocarbon and no crude or reclaimed material—also, provided that the gasket is not subjected to tensile stresses. Butyl rubber is a more recent introduction and does not yet have the same popularity as neoprene.

Coloured Neoprene

Neoprene suitable for use in building is made only in black. Extrusions can be made, however, in a wide range of colours by the application of hypalon synthetic rubber. This is done during the manufacture of the seal and produces a vulcanized skin over the extrusion — an additional weathering factor.

GASKET GLAZING

Dense and Sponge Neoprene

In the first instances the gaskets used in building were of the dense variety of neoprene which could perform structural or loadbearing functions as well as acting as a seal. The last 5 years, however, have seen the introduction of closed cell sponge neoprene which is very suitable for use in extrusions whose main function is to seal and which have no structural purposes.

Speaking generally, sponge neoprene has all the attributes of dense neoprene, particularly in resistance properties, but, due to its makeup, its mechanical characteristics differ. Being cellular, sponge neoprene has less compressive strength but, by the same token, is more compressible so that, under compression in a joint, it conforms more closely to adjacent materials it is sealing, but with less pressure needed. Also, it is more likely to compress around irregularities than to bridge them. Another important advantage, is that it will accept greater tolerances than with dense neoprene.

In assembly it requires little surface preparation, can be spliced easily with cold-setting neoprene adhesive and needs no clean-up. Most varieties of neoprene sponge gaskets are available in various shapes and sizes and, again within reason, there is no limit to the shelf life. Some of the systems that use neoprene sponge seals use those with pressure-sensitive or dry-back adhesive on one side to hold the seal in position during the assembly of the window or panel. Others are designed to fit precisely into a predetermined position on the frame.

Applications

Neoprene seals are of three main types — H-section, V-section and I-section. Figure 1, already mentioned, shows the zipper, or self-locking, gasket used at the GM Centre, Detroit, which is structural and where compression is achieved by forcing an oversized strip of harder neoprene into a channel in the gasket. Figure 2 shows a refinement of this gasket to reduce the number of separate components—that of the IBM Building, Rochester, Minnesota, by Eero Saarinen & Associates—where the gasket and filler strip are joined along one edge of the groove and the filler strip is sufficiently oversize to compensate for the extrusion of both parts in the same grade of material. Both the above extrusions were made by the Du Pont Co. Ltd. Figure 3 shows a typical H-section extrusion for single glazing made by Marley Extrusions Ltd., Sevenoaks, Kent.

The other main type of dense neoprene extrusion is that of the U channel, fingers, or bulbs, which require an external source of pressure, usually a movable metal pressure bead, to force the gasket into compression as the screws are tightened. The first major use of this technique was in the Arrival Building of the John F. Kennedy Airport (Idlewild), New York, by Skidmore Owings & Merrill, shown in Figure 4. In Figure 5 is shown a detail of a window incorporating a U-section extrusion of a similar type by Henry Hope & Sons Ltd., Birmingham.

The practical difficulty of getting very large sheets of glass into position without disturbing a U-section gasket is such that the system has been modified into the strip system in which one strip is cemented lightly to the upstand of the frame and the other to the glazing bead to hold them, the strips, in position during assembly. In New Zealand House (*op cit*) this system was used (Figure 6) to fix $\frac{3}{8}$" glass panels 9 ft. high and 18 ft. wide on the ground floor. The drawing is based on one by Howard Clayton-Wright Ltd., Wellesbourne. The gasket itself cannot move out of place during relative movement of the glass and the frame as it is retained by matching saw-tooth ribs and channels on the framework and gasket. The gasket has a taper on the side in contact with the glass which provides the thickest section, and, therefore, most compression, at the sight line where the immediate weatherseal is required. Pressure is derived from the direct thrust of the set screws on the inner bead and the seal is further improved by a pressure-break groove in the gasket face.

Figure 7 shows the first major usage of neoprene sponge seals 5 years ago in the Holy Cross Hospital, Chicago. The seals were tapes with adhesive to hold them in position during assembly. Of particular note are the snap-in pressure stops. Such snap-in designs can be used readily with sponge seals, but are generally impractical with solid seals because of the amount of pressure required to force the bead into place.

Figure 8 shows an interesting variation of the preformed U-section "rubber band" principle. Usually gaskets with this cross section are made slightly smaller than the glass sheet and are snapped around the glass before it is set in the frame—compression being obtained by snap-in or screwed bead. In this diagrammatic detail of the new terminal building at La Guardia Airport, New York, the pressure bead is *rotated* into position, making it easier to position.

Useful supplementary information on gasket glazing is given in the short article on Flexible Extrusions in Glazing, published in our Glass and Windows Bulletin No. 1. Our Technical Sales and Service department at St. Helens should be approached for further information on gasket glazing or, in fact, any aspect of glazing.

FIG. 5

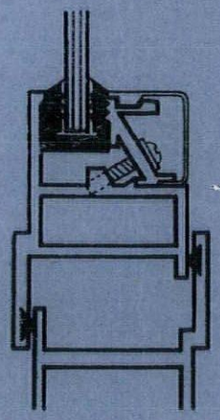


FIG. 6

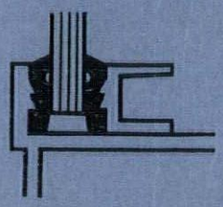


FIG. 7

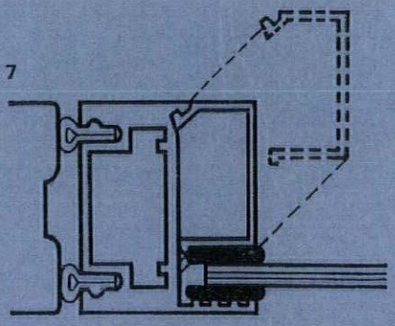
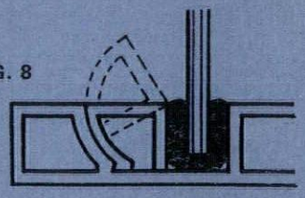


FIG. 8



Glass in modern air conditioning practice

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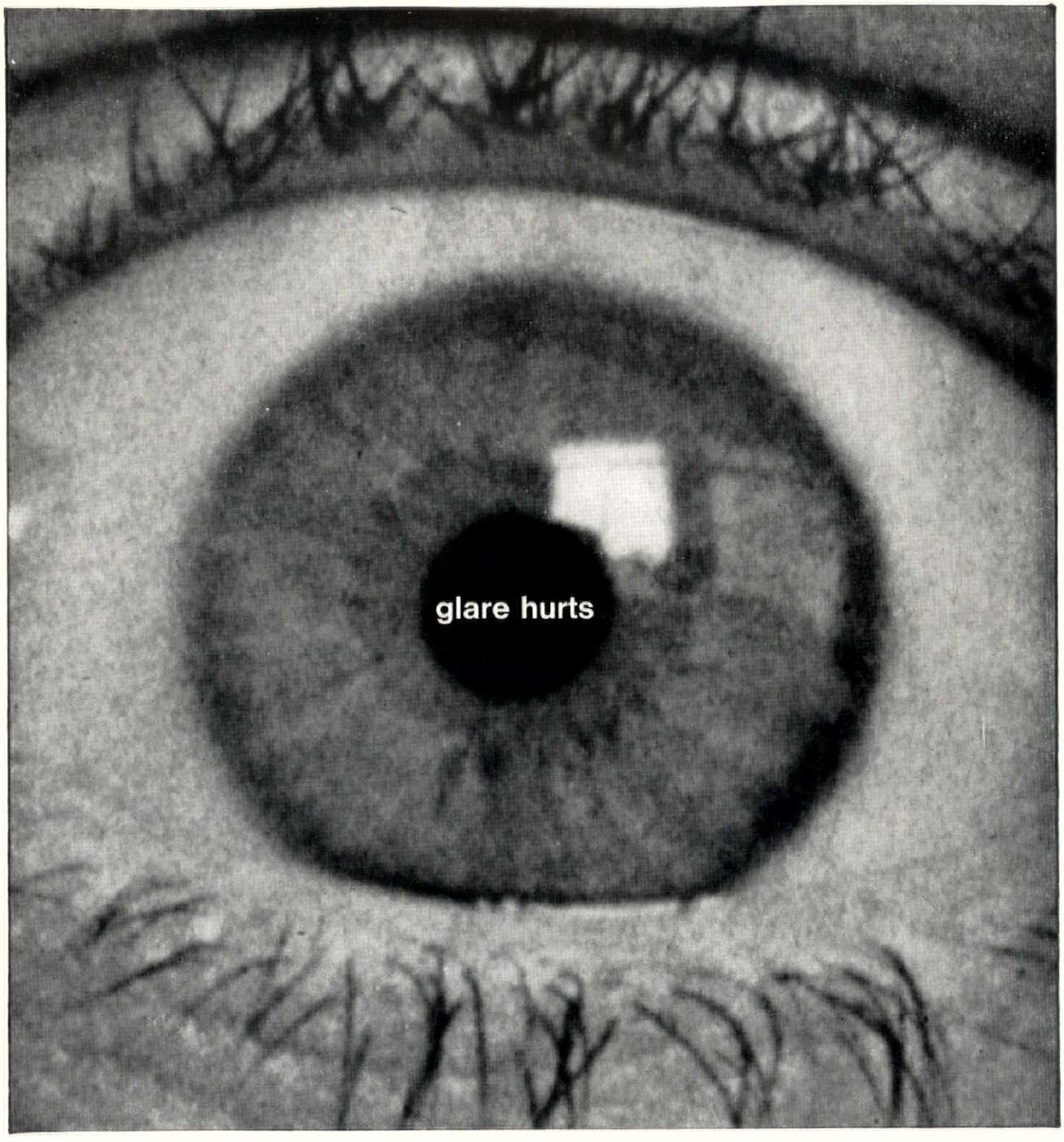

Eyes are sensitive and too much light can be more harmful than not enough. It can cause discomfort and this can hurt in ways other than the tiredness, headaches and irritability that glare brings in its train. It hurts efficiency, which in its turn hurts productivity, and this, unkindest cut of all, hurts profits. Light is needed to enable the optical system of the eye to function efficiently, and for it to function efficiently, light should be controlled so that ideal conditions can be attained. Elco Plastics lighting products are designed with this end in view — their Elcoplas louvres, diffusing panels and extrusions provide this control. These are made in destaticised light stabilized Polystyrene in four cell sizes, preformed into square or diagonal mesh panels. They are designed to fit exact openings for suspension on a ceiling grid or cut to fit non rectangular shapes. Louvres are also produced in a colour which considerably reduces surface brightness when used to control high intensity lighting. Elcoplas plasmatic diffusing panels are interlocking panels of similar material, corrugated for strength, which provide comfortable seeing conditions when used as a diffusing ceiling. Whatever your illumination problems, you will find that these and other well designed Elcoplas units are very easy on the eye.
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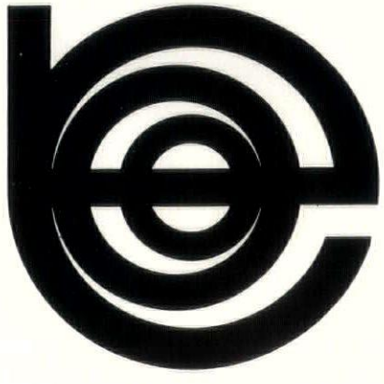

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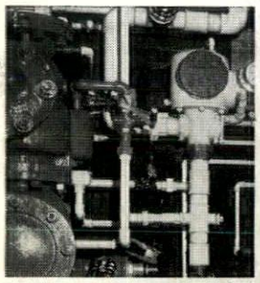

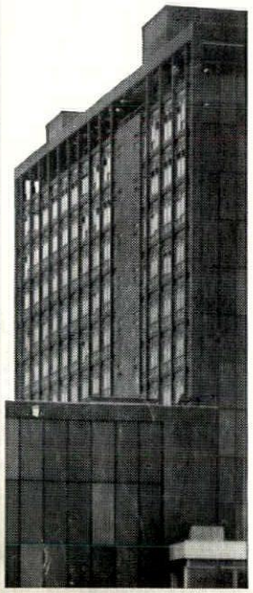

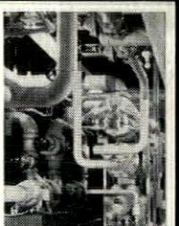



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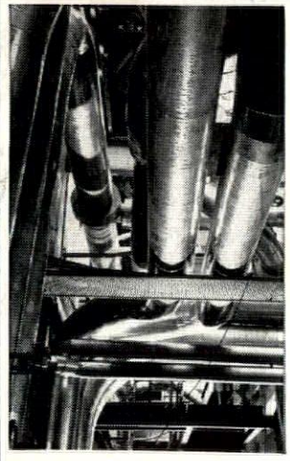

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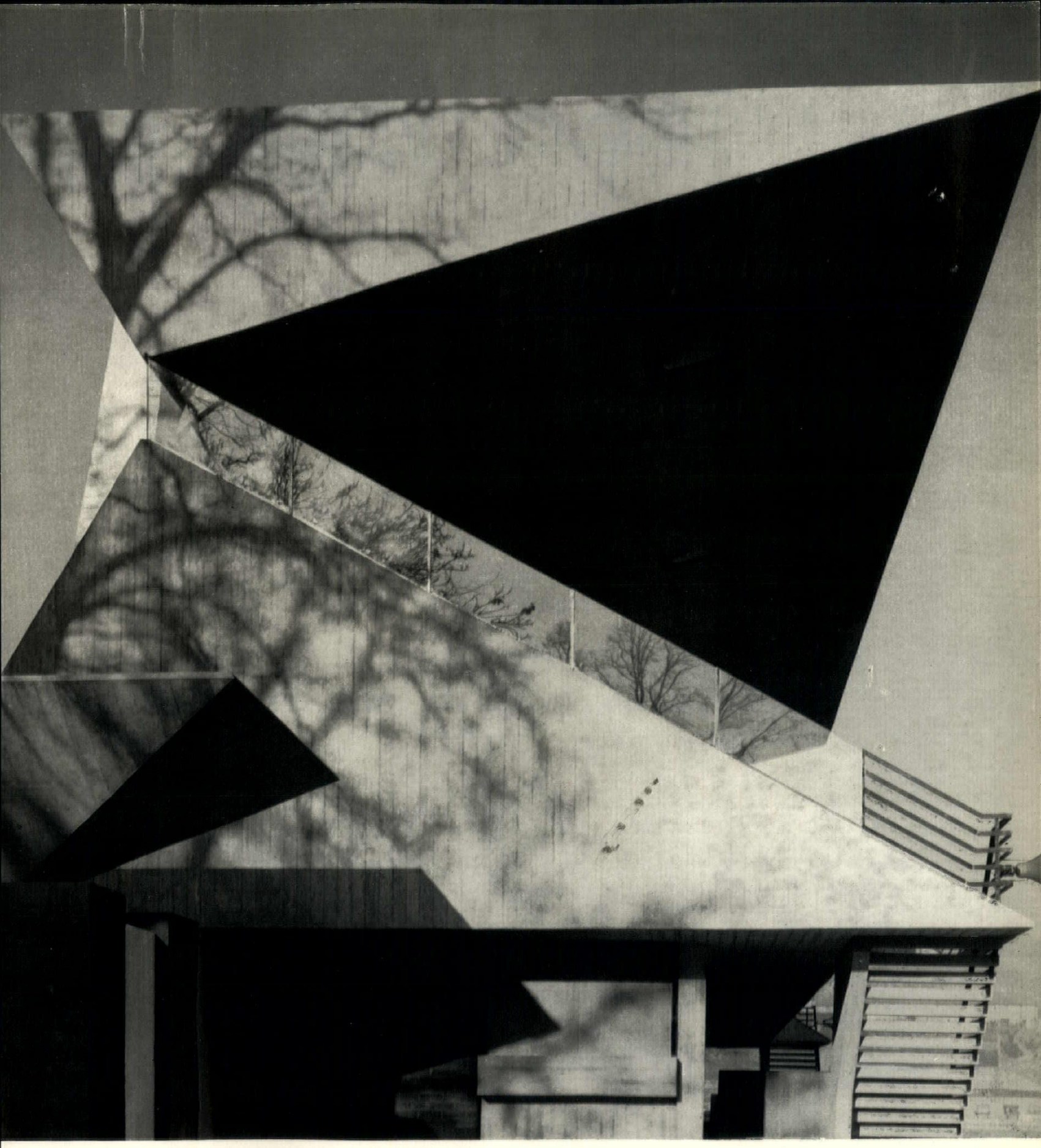

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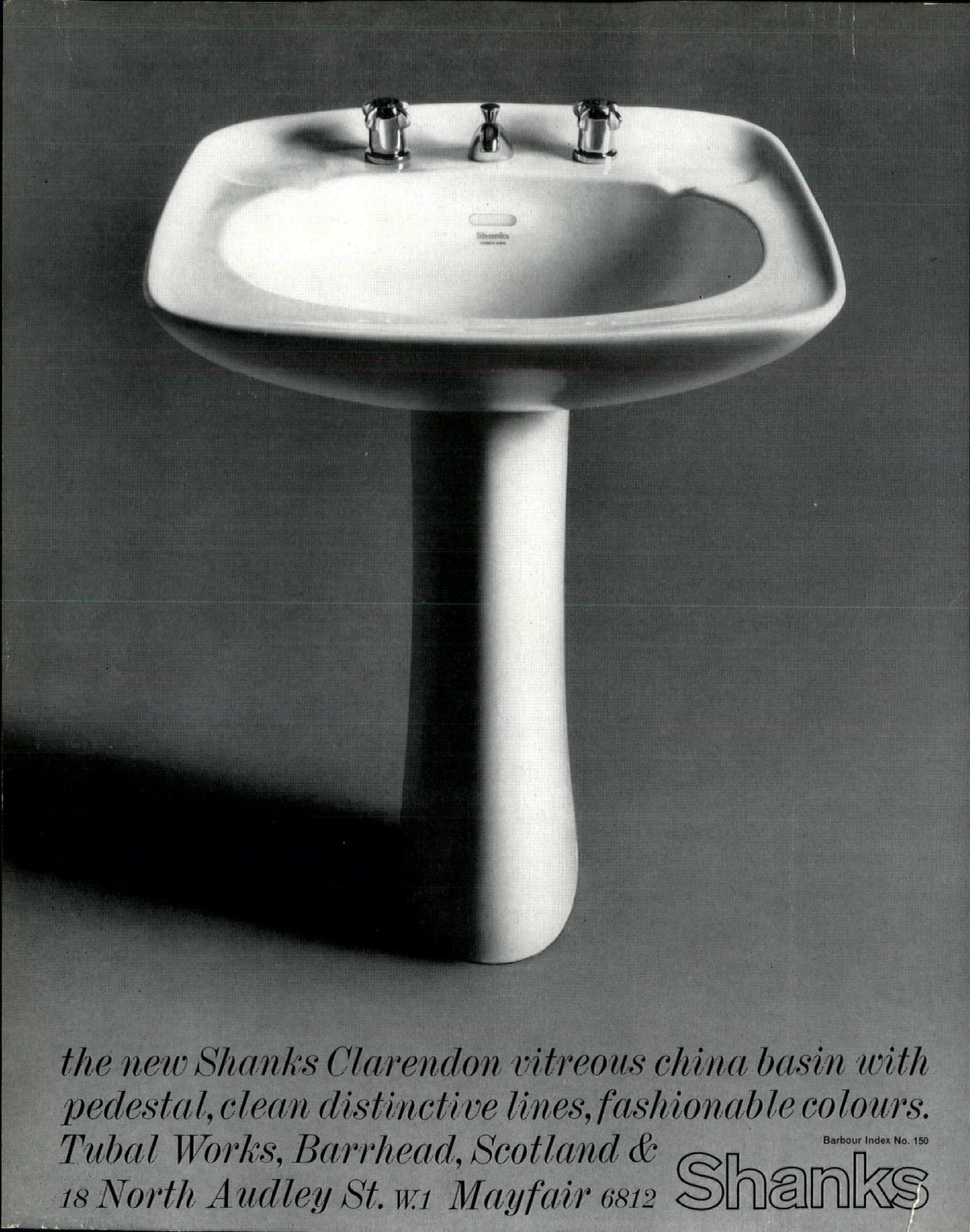

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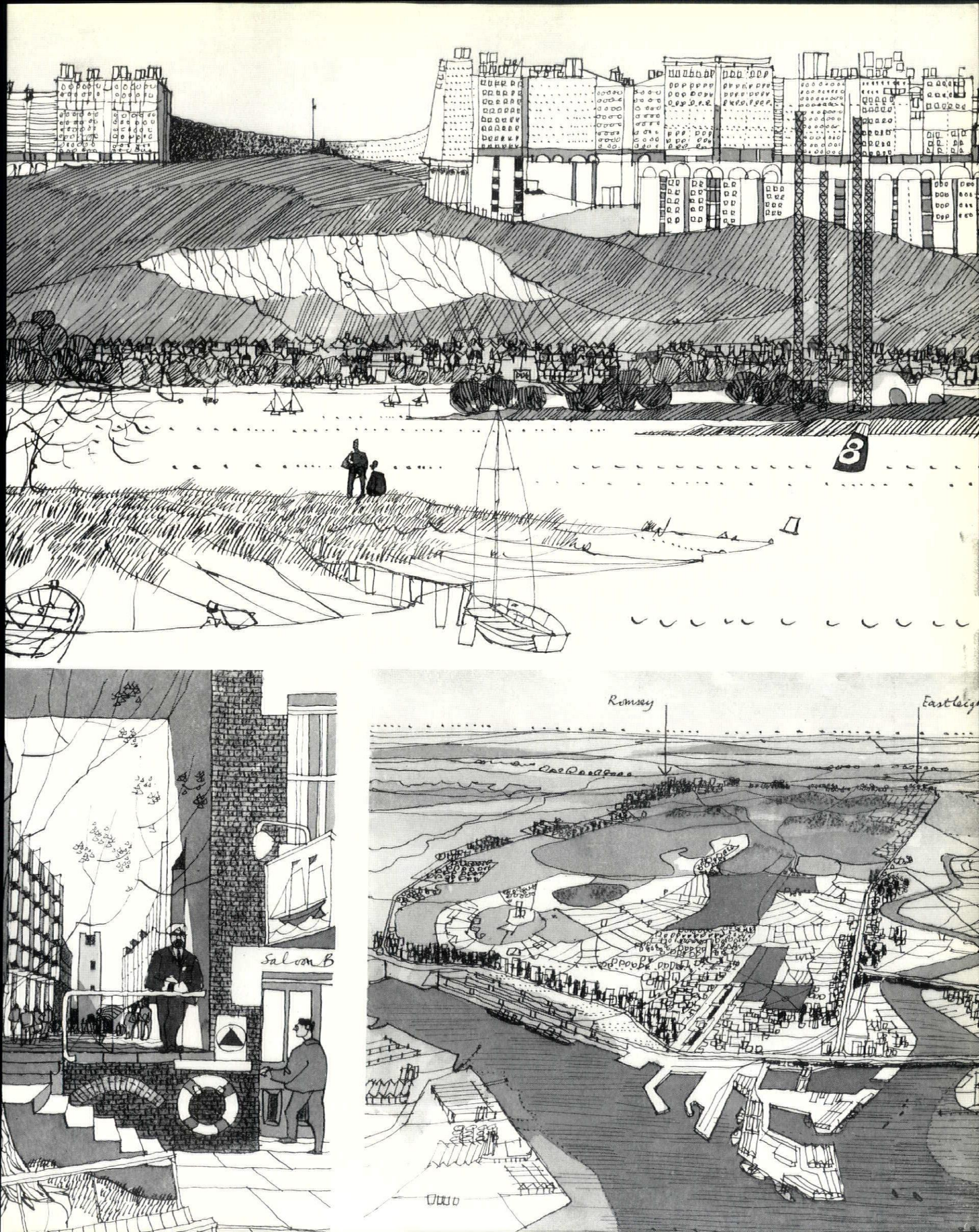
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Alcan Snaprib is a continuous, self-supporting durable aluminium cladding with no holes or fixings exposed to the weather. It is therefore leak-proof, and maintenance is eliminated. Since all fixings are concealed and all flashing accessories have been specially designed, Snaprib is of notably good appearance.

It is easy and quick to erect, the sheets being attached quite simply to the purlins by patent clips, a snap-joint along their full length fixing the sheets together. Appearance and weather-tightness are further improved by the availability of Snaprib in lengths of 35 ft. and over, so eliminating overlaps, and by the 'sealed-end' treatment that can be specified at both ridge and eaves; a roof fall as low as 6 degrees is practicable.

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Alcan GB-3S in hard temper, conforming to BS1470: NS3H, in 22 SWG.

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Alocromed finish is available up to 29 ft. in length.

Weight

Snaprib sheet weighs 1 lb./ft. run, or 0.6 lb. per sq. ft. as laid, including side laps.

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The maximum design loadings for various purlin spacings are as follows:

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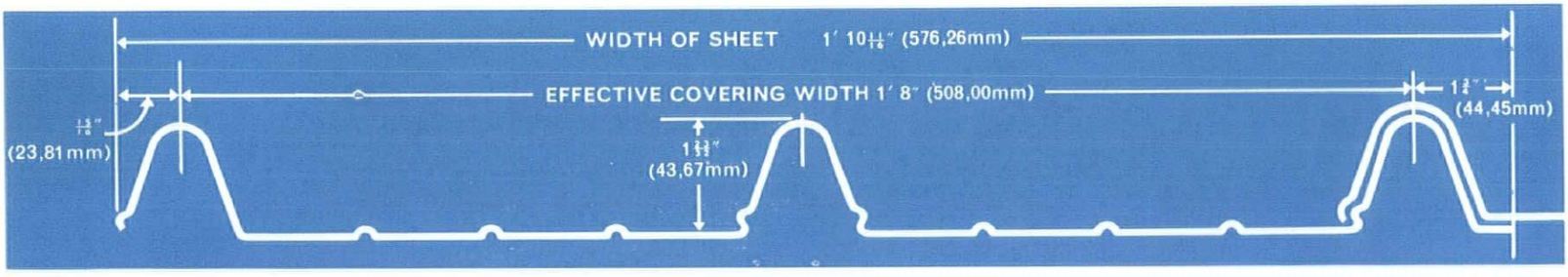
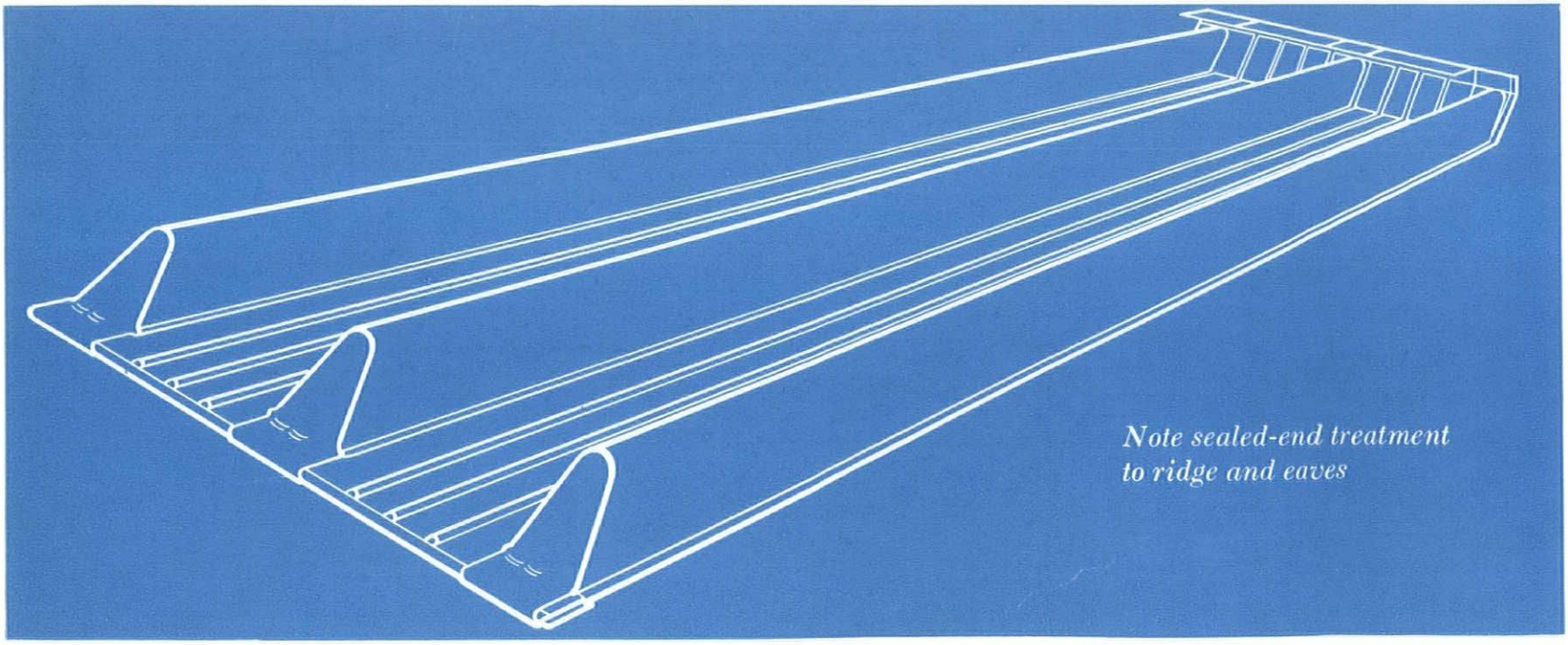
ft. in.	m.	lb./sq.ft.	kg./m.²
3 6	1,07	25	122,00
4 0	1,22	22	107,36
4 6	1,37	19	92,72
5 0	1,52	16	78,08

Full details are given in our publication 'Alcan Snaprib Sheet' (Barbour Index 374) which is available on request. The Snaprib system is fully covered by patents held by Cookson Sheet Metal Developments Limited.





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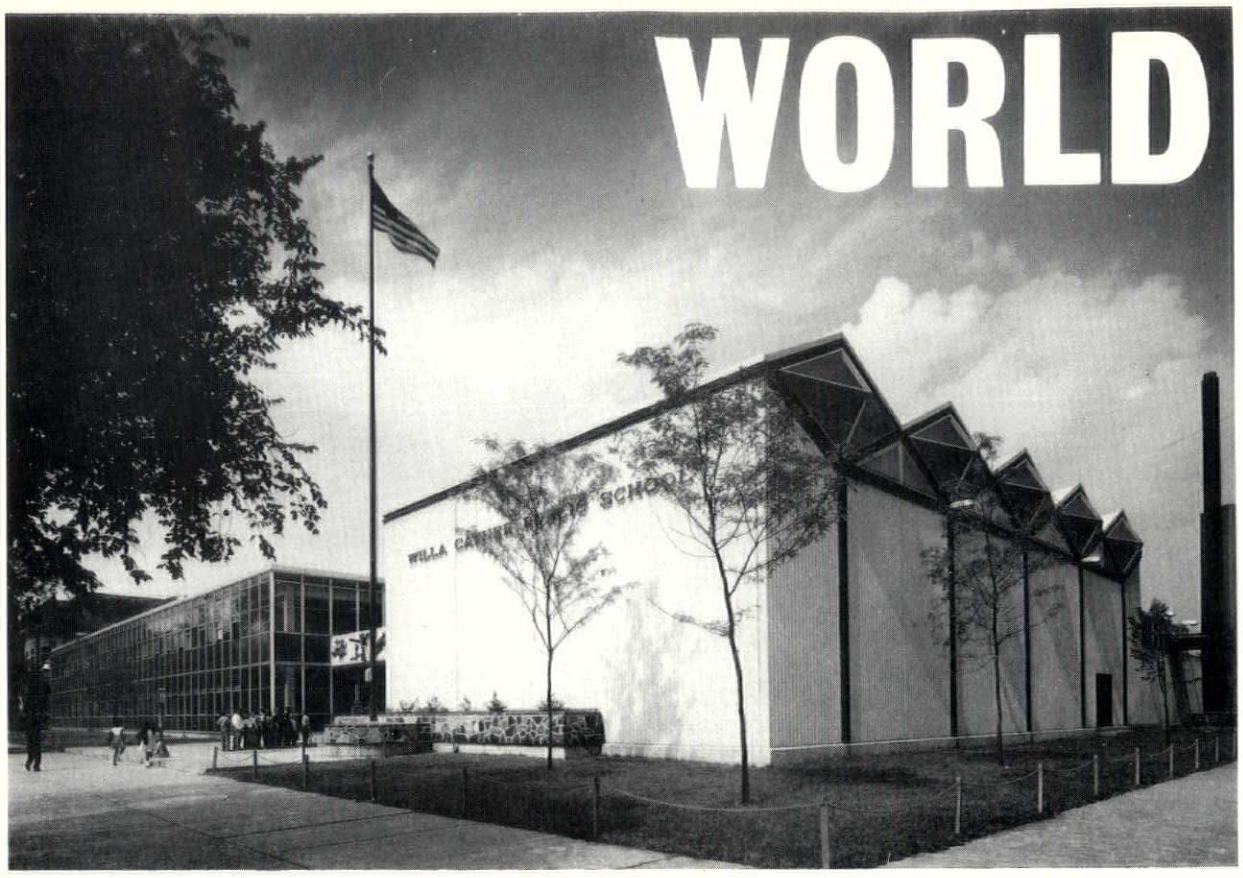

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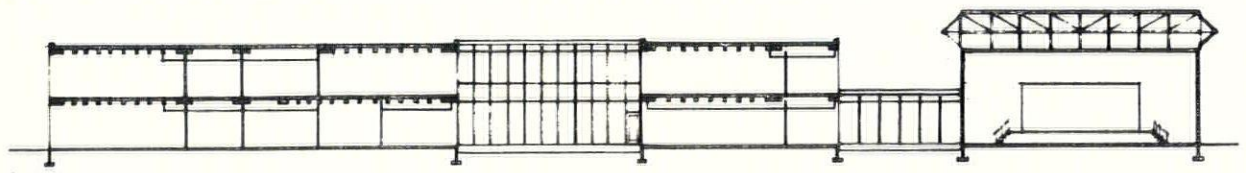
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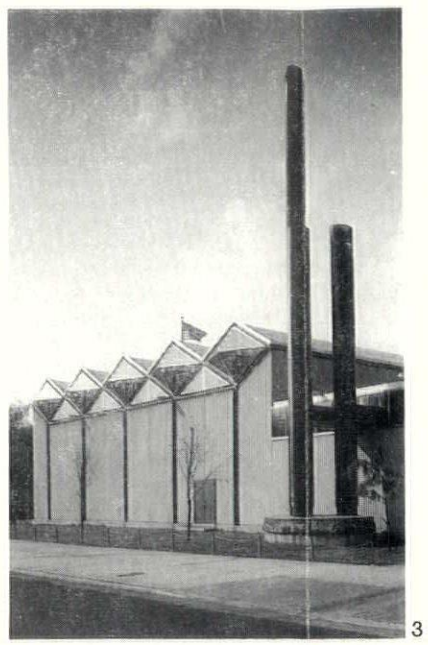
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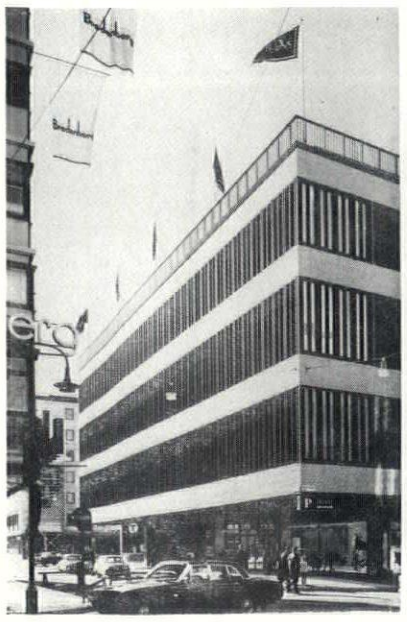
4

An auspicious architectural expression of President Johnson's drive towards the Great Society is provided by the recently completed Willa Cather Elementary School, 1, in a Negro neighbourhood of Chicago. Just as the phrase 'the Great Society,' has been borrowed from the English Fabian, Graham Wallas, and updated with characteristic Johnsonian slickness, so this school bears unmistakable signs of the English postwar schools programme, while having an elegance and polish which the average county council would probably reject on grounds of squandering the rates.

This resemblance is not just guesswork. Richard M. Barancik, the senior partner of the architects, Barancik Conte and Associates, was trained at the Cambridge School of Architecture.

The Willa Cather school is for 1,200 pupils, from kindergarten to sixth-grade. The two-storey curtain walled classroom block surrounds a courtyard, with rooms double-banked on one side, 2. It is connected by low lobbies to the dominated multi-purpose hall and gymnasium. It has a steel frame and delicately ribbed infill panels. At its rear, 3, there are the lunch room, kitchen and boiler house, with three gracefully assorted chimneys. The dominating clerestory windows of the hall seem to show advance knowledge of Leicester, but this may be only a coincidence.

American school architecture is usually redolent of the 'temple of learning' approach, often seeming to be built more for the inspection of parents than for the life of children. Barancik's school is light-hearted with irreverently 'vulgar' details such as the crazy paving of the flowerbed and of the plinths for the flagpole and chimneys, 4. It makes the English equivalents look straitlaced.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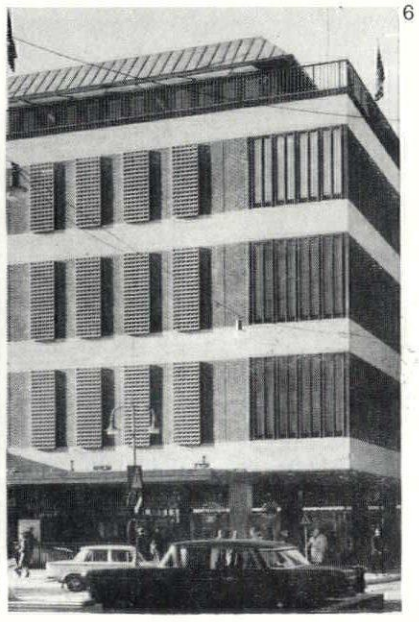
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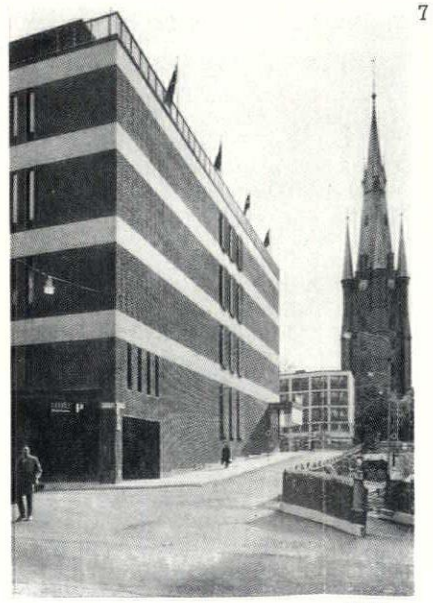
AHLÉNS

Such has been the international prestige and influence since the war of Swedish design in retail goods that it is perhaps surprising that Sweden has not given a similar lead in the design of shops and stores—the environment of retailing. Backström and Reinius, who designed the shops in the centre of Vällingby and Farsta, have recently completed a major new store for Ahléns, in the centre of Stockholm, the classic good looks of which would also be appropriate for less important businesses in ordinary high streets. It is a very large building (400 ft. by 125 ft.), replacing a series of small shop frontages. The east end, 5, built over the Central underground station, is the only part with many windows. These are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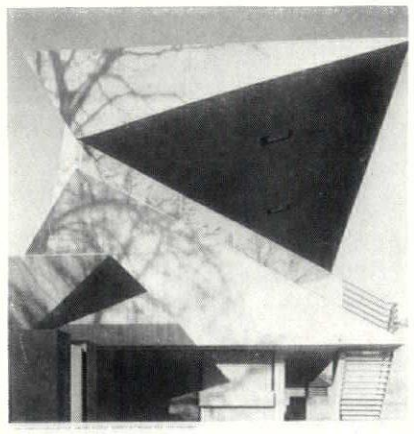
acknowledgments

COVER: Waverley Studios. WORLD, pages 171–174: 1, 3, Harr. Hedrich-Blessing; 5–10, *Arkitektur*; 11–15, *Domus*; 16–26, *The Japan Architect*; 27, 30–33, *NZIA Journal*; 34, 35, *Bauen+Wohnen*. VIEWS AND REVIEWS, pages 175–177: 4, George Outram & Co.; 5, 6, Elliott-Brown; 7, Sado; 9, 10, National Buildings Record. HOUSE IN HAMPSHIRE, pages 182–185: 1–3, Galwey Arphot; 4–7, Christopher Knight. MOVIE EYE, pages 186–193: 1–4, St. Martin's School of Art; 6, 8–14, National Film Archive; 15, Enrico Santelli. OFFICES, ST. KATHARINE DOCK, LONDON, pages 194–200: 1–4, 6–11, Henk Snoek. EXPLORING EYE, pages 201–203: Manfredi Bellati. ON THE HOE, pages 204–208: 1–5, 7, 8, 15, Browne Arphot. INTERIOR DESIGN, pages 209–211: Galwey Arphot. WAGNERIAN HIGH CHURCH, pages 212–217: 1, 4–7, Eric de Maré. HOUSING AT LEITH FORT, EDINBURGH, pages 218–223: S. G. Jackman. DESIGN REVIEW, page 224: 1, John Donat. GALLERY, pages 225–228: 4, 5, Rudolph Burckhardt; 7–10, R. B. Fleming & Co.; 11, Hylton Warner. MISCELLANY, pages 229–237: Taxco, 1–10, Richards Arphot; 11, Fischgrund; Geometry in Concrete, Waverley Studios; Seeking Roots in New York, 1, Alexandre Georges; 5, George Cserna; 6, Leni Iselin. SKILL, pages 238–246: 1, John Maltby; 2, Colliers (Dover Street) Ltd.; 3, 4, 10, Hobbs Offen; 5, 6, 11, 13, 15, Studio Jaanus; 7, Studio Brett; 8, Berger; 9, F. J. Armes; 12, GEC; 14, Nicholas Horne. STOP PRESS, pages 247–248: 2–10, 12, Nairn Arphot; 13, Colliers (Dover Street) Ltd.


AR

This month's cover *is an example of the expressive architectural geometry that arises from the forthright handling of reinforced concrete. It is a close-up of the end of the covered stand designed by Peter Womersley for a football ground at Galashiels—see pages 233 and 234 of this issue.*

THE ARCHITECTURAL REVIEW

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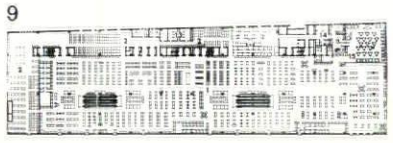
AHLÉNS STORE

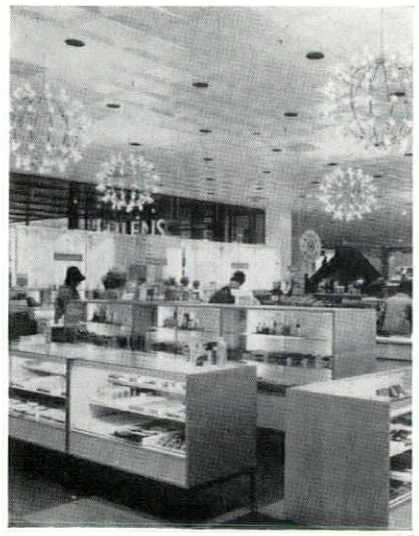


8

wrapped round the corners, 6, and connect well with the long windowless expanses of wall, 8. The western end, 7, grouping with the nearby church, shows well the strong but unexaggerated rhythm of light Dutch glazed bricks and dark bricks from Hälsingborg. The clock and name are floodlit from below without using neon. The plan, 9, shows how the sales area is divided up by regularly spaced columns, with storage areas along the irregular north side. The interior themselves have the same sure sense of display, with brilliant light fittings, 10.

9





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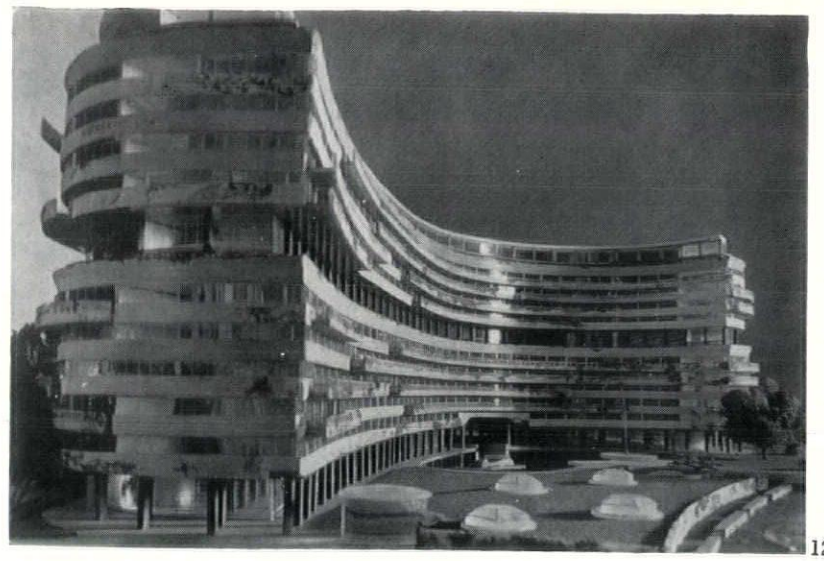
MORETTI'S ROYAL CRESCENT

Luigi Moretti, perhaps the most elegant if most perplexing of post-war Italian architects, has followed up his scheme with Nervi for the Place Victoria at Montreal (World, January, 1962) with a vast development at Washington, D.C. Called the Watergate, this is, like Montreal (which is also now under construction), a joint US-Italian investment. The site lies in a triangle formed by the rigid town plan of L'Enfant, but looking out over the Potomac River and the informal parkland of Theodore Roosevelt Island. There are basically four blocks, 11, of irregular shape, containing 1,300 apartments, a 300-bed hotel, 200,000 sq. ft. office space and 100,000 sq. ft. commercial space, together with restaurants, swimming pools and a health club. The facades, 12, are highly modelled, with long curving balconies intended to be encrusted with flowers and vegetation.

Moretti's rationalization of his scheme in *Domus* is interesting. A sequence of diagrams, 13, includes this conjunction of location plan and site plan with a diagram of the Circus and Royal Crescent at Bath. Apparently, Moretti sees the balance of formal urbanism and informal parkland at the Watergate as approximating to the balance of terrace and landscape in Wood's layout. All this seems at first sight to be a sensitive and intelligent study of townscape. There is however a fatal flaw, characteristic of Italian formalism: Moretti has shown the Circus and Crescent in his diagram as though they were wholly surrounded by greenery (a misconception evidently shared by *Domus's* editors). In fact, the sense of scale and the functional relationships at Bath are as much if not more between terrace and mews as terrace and park. Moretti's extraction of the large buildings to the exclusion of the small is reinforced by the very high density demanded by North American property speculation. *Domus's* editors blithely say that 'each flat seems like a stage, opening towards the park and the river.' Yet a glance at the plan, 14, shows that the flats are in fact double-banked, with service rooms adjoining a central corridor—the *parti* of a conventional hotel. Thus half the flats at least will look away from the park and the river. It is not by any means certain how well the convex rear facades will fit in with the formal geometry of the surrounding streets.

Given all these doubts, it is only fair to applaud Moretti's attention to landscape. The views across the river, both towards and away from the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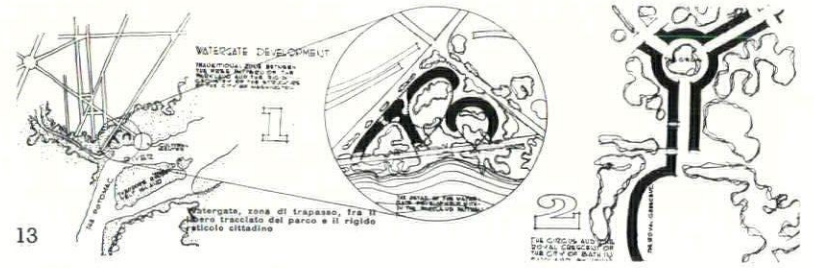

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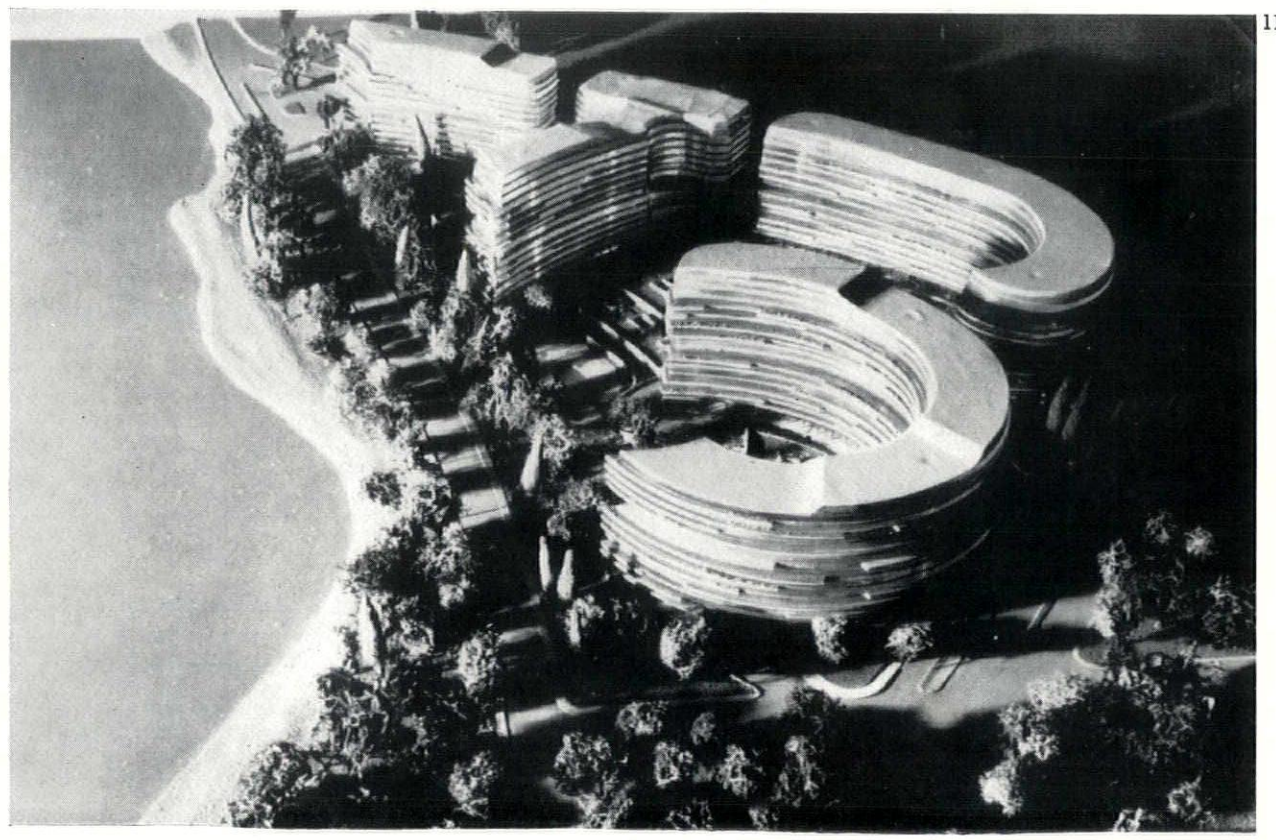
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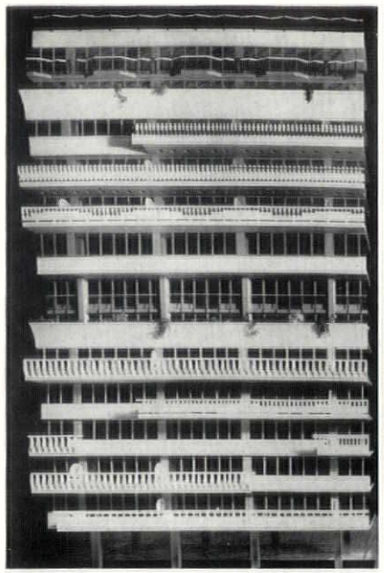
WASHINGTON WATERGATE

Watergate, will be enhanced by the enclosing fangs of the various blocks. The details of the facade, 15, are kept intentionally small in scale so that a human scale is kept at close quarters. A lot will depend on the quality of the details of townscape and on the supervision of the American associates,



14



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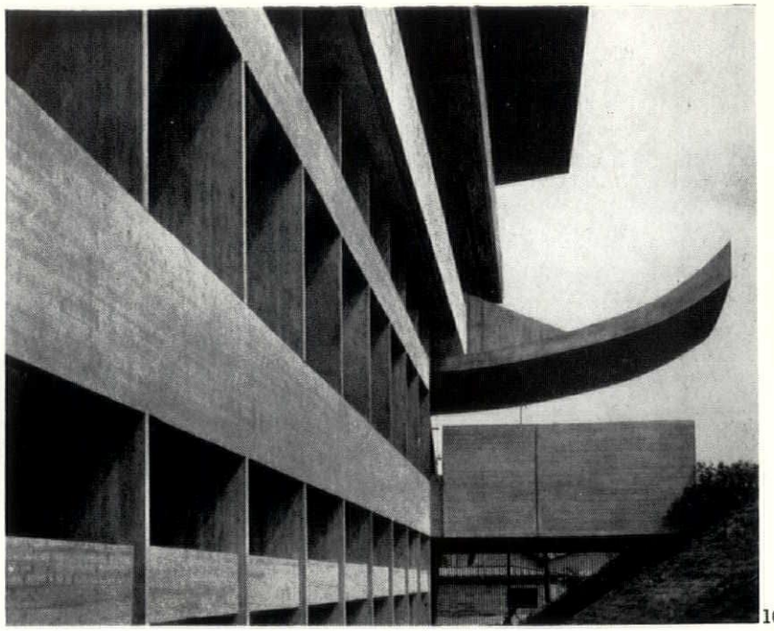
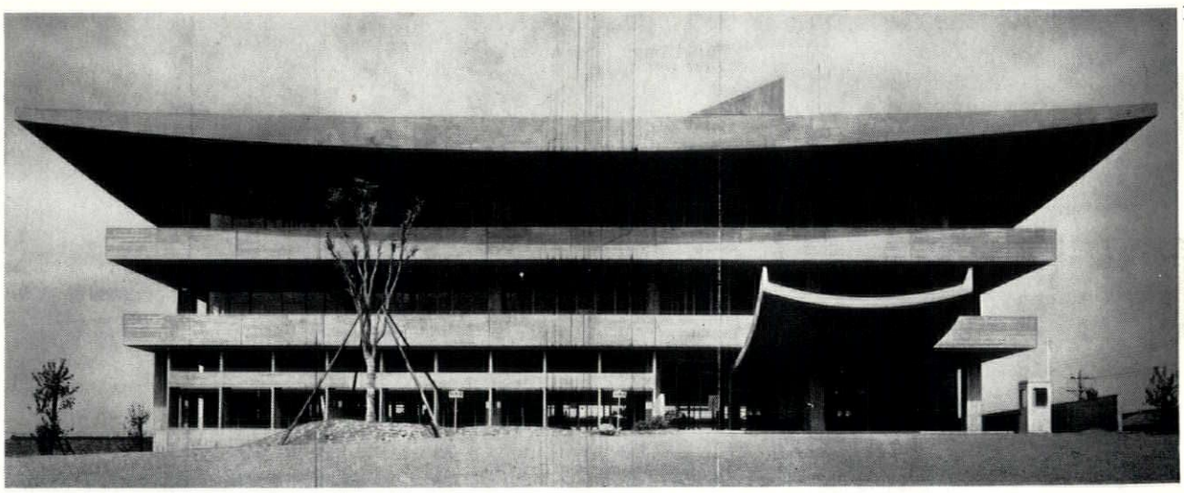


16

Corning, Elmore, Moore and Fischer, of Washington. In an editorial note, Gio Ponti emphasizes that Moretti's design is not a foreign intruder into the Washington scene, but is '*un omaggio ai grandi non-conformisti americani, da Frank Lloyd Wright ad Eero Saarinen.*' There does seem to be more Saarinen in the scheme than Wood.

RECENT WORK BY SAKAKURA

The switch in Japanese architecture from the Miesian aesthetic formerly expected of it to the monumental brutalism of recent years has perhaps been over-exaggerated. Junzo Sakakura, at 60 now one of the senior survivors of prewar days and the earliest of Japanese architects to study with Le Corbusier, has in recent buildings managed to open up a middle path between classical purity and wild sensationalism. A detail, 16, of his city hall at Hiraoka, an expanding



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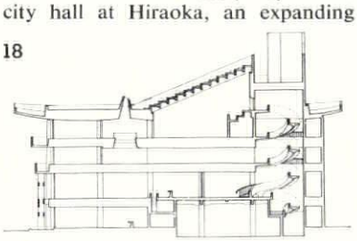
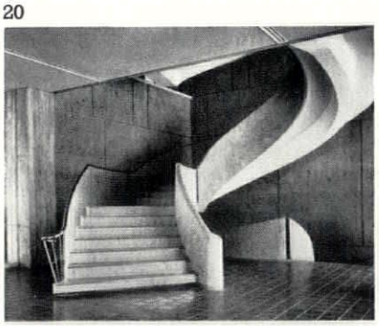


district to the west of Osaka, shows well his combination of massive temple forms, including moat and overhangs, with a crisp precision of detail which keeps the building in scale with its use. Although only four storeys high above moat level, 17, this city hall dominates its surroundings. The upswept eaves of the roof are continuous with the ceiling, 18. The balustraded landings, 19, and the almost Mendelssohnian concrete staircase, 20, show that Sakakura has lost none of the elegance which first impressed the world in his Japanese Pavilion at Paris in 1937.

19



20



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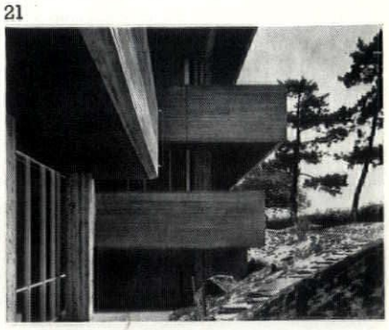
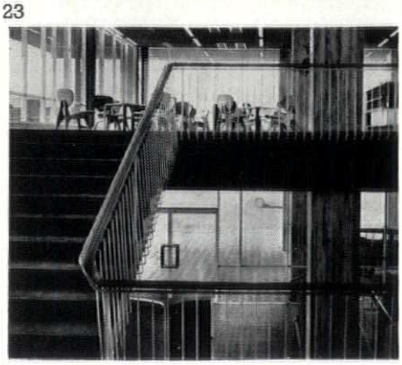


A more heavily boarded use of concrete is shown in Sakakura's city hall at Ashiya, 21. No doubt this was felt to be appropriate as the building clings closely to its sloping site, 22, with the sort of unobtrusive dignity which no doubt impressed Wright in his early days, 24. Again, the landings and balustrades are very light and thin, 23. This contrast between

23



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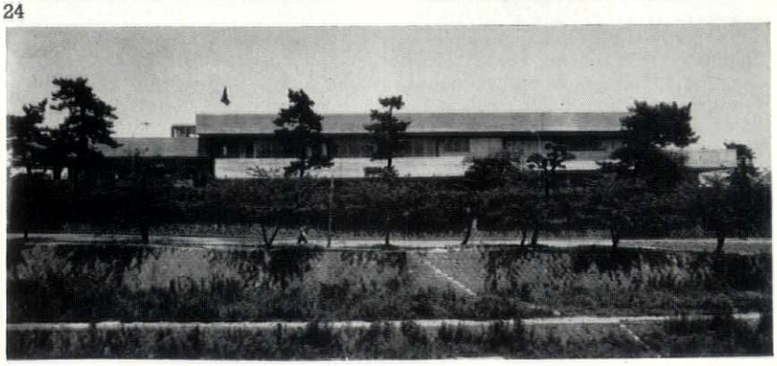

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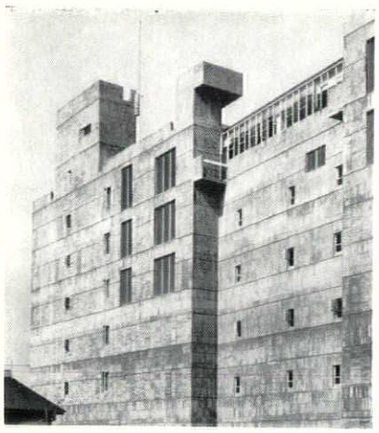
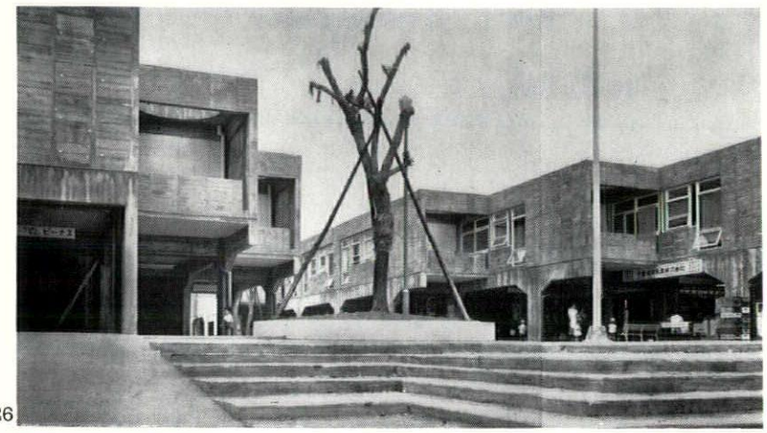


25

SAKAKURA

interior and exterior is something which will probably develop increasingly in Japan if brutalism maintains its sway. Brutalism is, of course, an appropriately vigorous expression of the industrial and commercial boom in Japan at present. Next to the railway south of Osaka is Sakakura's massive warehouse, 25, for the Takashimaya department store, which shows that he can produce the full variety of boarded finishes when appropriate. In a neighbourhood centre for Senri New Town, 26, the same heaviness gives a quiet dignity to a small shopping precinct for part of a new area for 130,000 people.



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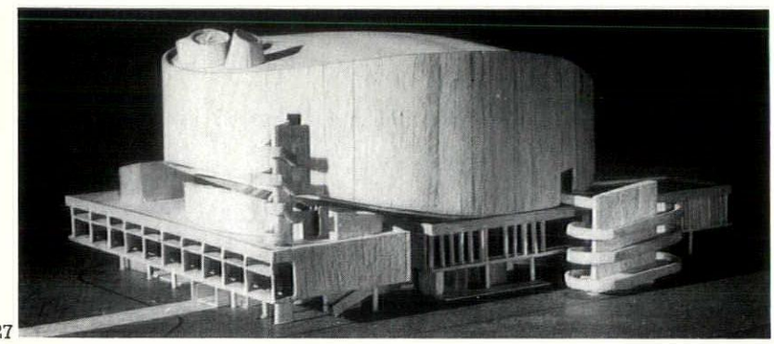
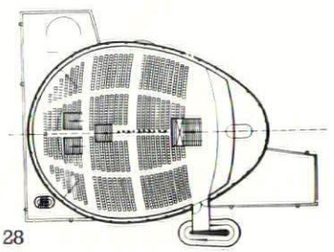


27

INDIAN BIG SCREEN

It is a curious fact that, although an underdeveloped country, India has a large and prosperous film industry which, apart from Satyajit Ray, turns out sub-Hollywood pulp. So a large new cinema for the civic centre of New Delhi, 27, designed by Shivnath Prasad, is not as exotic as it may seem. It is a welcome sign of the constructive influence on the younger Indian architects of Le Corbusier's work at Chandigarh. Prasad was trained at Edinburgh. The cinema, to be started this spring, consists of an egg-shaped auditorium with 1,000 seats, 28, raised up on six major columns above ground parking areas and a well-organized first-floor group of foyer, lounge and canteen, 29. The shell concrete roof of the auditorium spans an area of 143 ft. by 110 ft. and is answered by a similar curve in the overhanging floor. Escape stairs and rooflights are strongly expressed and the Corb influence is particularly strong in the first-floor areas.



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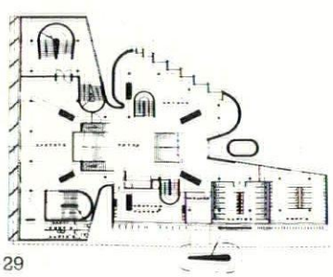

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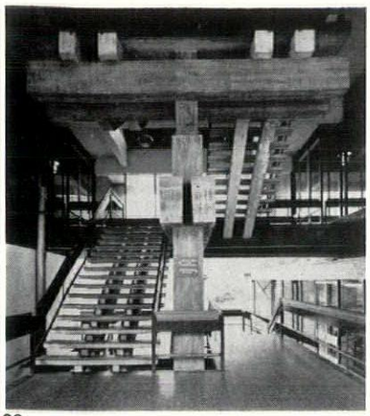
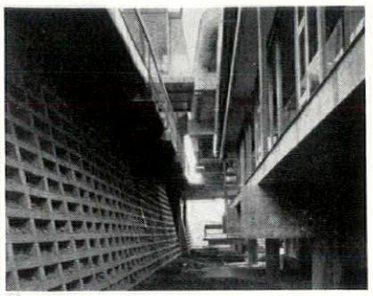


30

TRAFFIC TEMPLE

This massive central staircase, 30, seems at first sight part of yet another Japanese city hall. It is in fact in New Zealand—the administration building for the Christchurch-Lyttelton road tunnel authority designed by Peter Beaven. 'But why such a monument merely to house the servants of a short road?' asks Peter Middleton in the *NZIA Journal*. From the chunky, battered panels and rounded corners of the first floor to the pile-up of motifs in the basement, 31, it is a delicious mixture of detail. Yet the board room, 32, has a quiet dignity free from eclecticism, and the placing of the main structure in relation to hills and road is admirably done, 33.



31



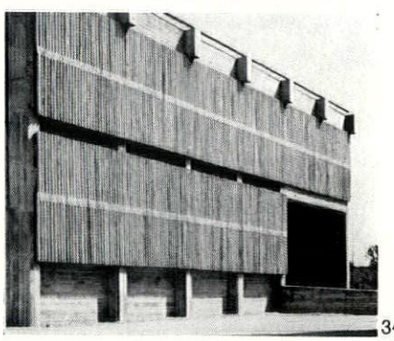
32



33

GUT LICHTENBERG

That most conservative of German building types, the *gut* (large estate-farm) has a firm place in the hagiology of the Modern Movement thanks to Hugo Haering's early masterpiece at Garkau (AR, May, 1960). A rarity now, this tradition of rustic brutalism has recently been given a new impetus by Franz Kiessling's Gut Lichtenberg, illustrated in *Bauen-Wohnen's* November issue. As 35 shows, the long cow-shed is flanked by two storehouses for straw (left) and by the massive hay loft, 34. The hay loft has boarded concrete and vertical slatting of logs.



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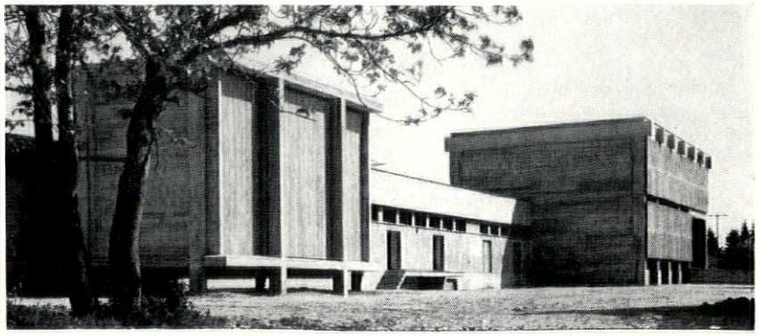

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VIEWS AND REVIEWS

marginalia

CASE OF THE SPANISH TREES

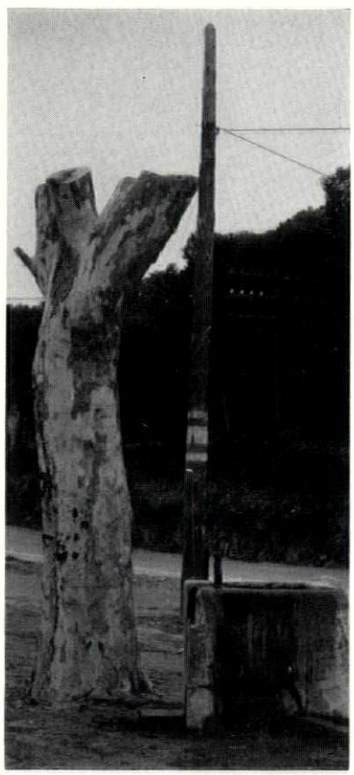
Widespread interest has been taken in the case of Oriol Bohigas, the Spanish architectural writer, who was prosecuted for his criticism of the destruction of roadside trees in the Catalan countryside, and there will be equally widespread relief that the result of his trial, which took place in Barcelona at the end of December, was his acquittal. It is hoped that the attention given to this case will do something both to stop the destruction of trees and to encourage freedom of criticism in Spain.

The prosecution arose from an article written by Senor Bohigas early last year in the Catalan-language magazine, *Serra d'Or*, which he edits. In that article he protested against the ruthless destruction of the roadside trees which have long been a feature of the Catalan landscape. This was causing intense local indignation, and the official excuse for the policy of destruction was that it would reduce motor-accidents. Senor Bohigas pointed out, however, that since the venerable plane-trees in the middle of quiet villages were included, this could hardly be the whole explanation. To some extent the explanation was mere bureaucratic obtuseness but there was also the suspicion that the sale of the wood reached tempting proportions.

The charge on which Senor Bohigas was tried was one of libel against the Government engineers, and at the trial even the public prosecutor remarked that, as an individual, he could not but sympathize with the campaign to save the trees. The campaign and Senor Bohigas's protests were supported, and material for his defence supplied, by several British architects and organizations, including the Civic Trust, the CPRE and the Institute of Landscape Architects. Destruction of trees has already taken place on an alarming scale as the accompanying photographs show.



1, *cut-down trees at Vilasar and*, 2, *at Argentora. See note above.*



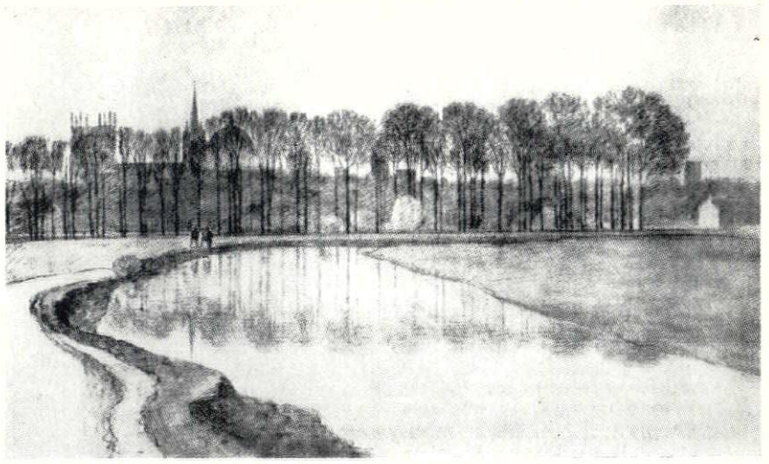
2

CHRIST CHURCH MEADOW

There could be no apter moment than this for bringing out a history of Christ Church Meadow, Oxford, and yet the charming and most illuminating booklet by Mr. E. G. W. Bill that has just been privately issued was not designed as ammunition in the current controversy. Mr. Bill does not even inhabit Oxford—he is Librarian at Lambeth Palace. His essay was not meant for publication, but it found its way into the hands of a 'group of younger members of the University,' who arranged for it to be printed at the University Press.

The controversy about the proposed motor-road across the Meadow is barely touched on, yet the essay is highly relevant as showing the part the Meadow has played in Oxford's life and history and the value that has been put on it. Mr. Bill recounts the variations of use, ownership and treatment to which it has been subject since it was established as a single meadow in 1346, and provides literary references ranging from John Willis (*Book of Evidences*, 1667) to Max Beerbohm and W. H. Auden. He describes the endeavours of Crown and College to preserve the unity of the Meadow in the eighteenth century and the struggle over parish boundaries, the erection of defensive earthworks by the Royalists in the civil war, the most notable floods—those of 1663, 1809, 1852 (this, which allowed small boats to sail over the Meadow, followed the construction of the railway embankments) and 1947—and many other fascinating episodes; also the planting of trees, at times formal, latterly more irregular.

A most agreeable feature of the booklet is the illustrations, which include several views by Malchair, a topographical draughtsman of great sensibility. They were made in 1772, are now in Corpus Christi College library and one of them is reproduced here, 3.



3, *Christ Church Meadow, by Malchair*, 1772.

ST. GEORGE'S CHURCH, EDINBURGH

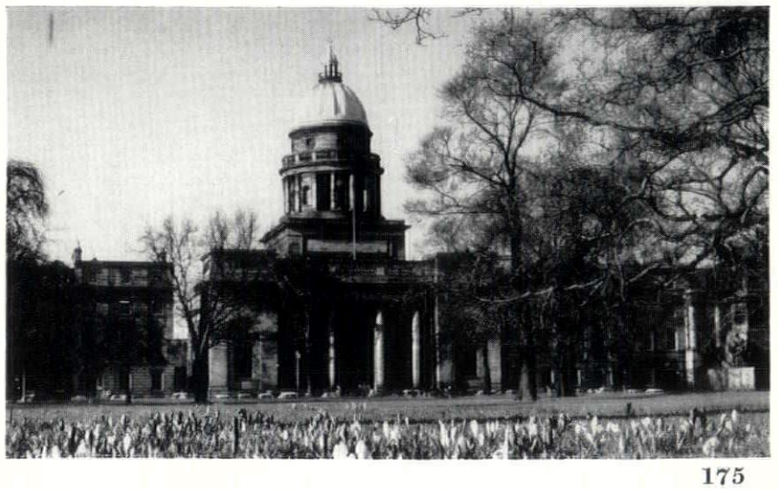
St. George's Church at the west end of Edinburgh New Town is, it has now been announced, to be preserved. The pillared facade and dome, that is to say, will be retained, but a set of offices built at the rear. This is the result of all too rare co-operation between various authorities and a commendable desire to preserve one of the city's chief landmarks, and the fact that this is yet another instance of adapting an old stucture for a fresh use should serve as an example to those local authorities who are too readily discouraged when the question of finding a suitable use for an empty or derelict architectural work of quality crops up.

The building will be sold by the Church of Scotland to the Edinburgh corporation and leased in turn to the Ministry of Public Building and Works. It will then be used to house certain sections of the records of Scotland, since there is a serious shortage of space in the Adam Register House at the other end of the New Town.

This arrangement does much to settle fears for the church's future which seemed, some years ago, to be very much in doubt. St. George's was planned in 1814 by Robert Reid to fill a gap in Adam's Charlotte Square. In recent times, with dry-rot in the dome, a declining congregation (latterly none) and the traffic problem some might have welcomed the physical disappearance of the church to provide parking space or an exit from the New Town.

The church is not in the same class as Adam's square. The detail is coarse and heavy, and the building is out of

4, *St. George's Church, Edinburgh New Town, which is to be preserved.*

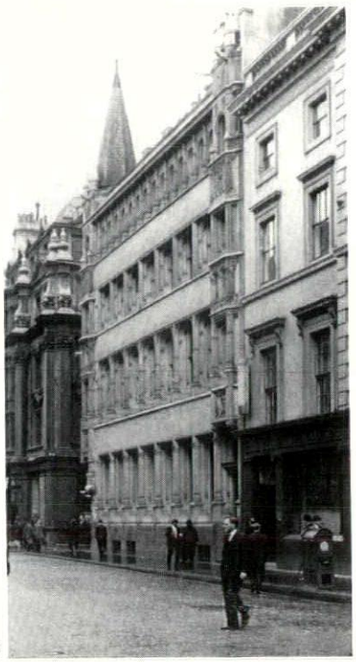


scale with the neighbouring houses. Nevertheless, the decision to keep the church is important since it emphasizes again the principle of retaining a structure which plays a key role in an architectural grouping.

GOTHIC OFFICES SAVED

One of the most surprising and encouraging of recent Ministry of Housing decisions is the preservation order placed on Nos. 13-15 Moorgate, 5, a delightful Franco-Flemish Gothic office block in the City of London by Sir Aston Webb and E. Ingress Bell (1890-93). Those who only know the Buckingham Palace facade and the Brompton Road front of the Victoria and Albert Museum may not rate Aston Webb high, but, like so many knighted architects, his early unsung works are a pleasant discovery. His heart was evidently not in his Edwardian Baroque; he was trained as as Arts and Crafts Gothic designer, and of this period the Moorgate building is probably his best. Its long bands of window and plain zones of stonework with exceptionally crisp detailing seem to foreshadow the work of a later generation, 6.

The inspector's decision to preserve the facade (the interiors are unimportant) was given for the best reasons: its townscape value on a prominent site in the midst of an area of widespread anonymous rebuilding. Calling it a good example of the eclectic fashions of its day, the inspector said that the few thousand square feet of office space gained by demolition would be more than offset by the loss to the public. With threats of demolition hanging over many of the best City buildings, this decision is a timely follow-up to the Minister's decision last summer to preserve John Gibson's National Provincial Bank of 1865 in Bishopsgate.



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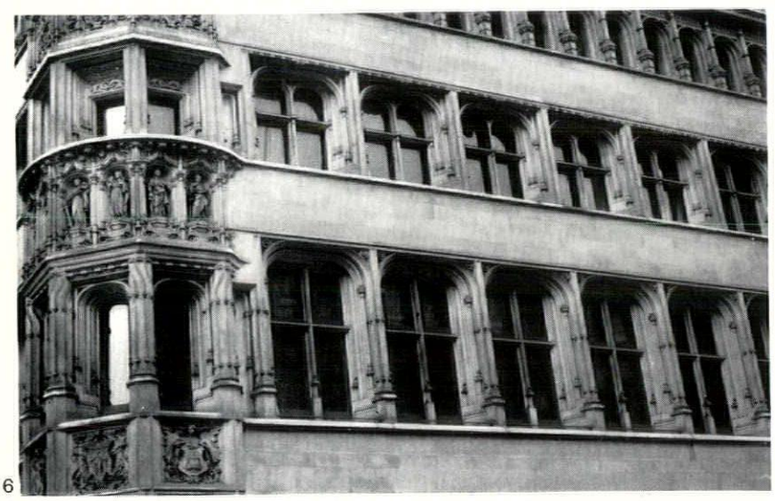


6

5, 6, office block in Moorgate, London. See 'Gothic Offices Saved.'

GLASS AND OVER-HEATING

The Ministry of Public Building and Works has given a grant of £6,100 to Newcastle University school of architecture for a programme of research on 'Heat gains from solar radiation and artificial lighting in rooms with double glazed windows.' The research will be under the direction of Mr. A. C. Hardy, senior lecturer in building science at the university, and arises from complaints of over heating in buildings with large areas of glass.

RESEARCH AWARD

Reference was made in the January AR to Mr. Bruce Archer's receipt of a Kaufmann International Design Award. Five such awards have been made this year by the Institute of International Education in New York, and two of them have gone to English designers. The other English recipient is Kenneth Bayes, a senior partner in Design Research Unit, who is to undertake research into the effects of environment in the treatment of emotionally disturbed and mentally handicapped children.

NEXUS FURNITURE

The Aston Cabinet Co. point out that incorrect prices were given in the note on their Nexus range of office furniture that appeared in the December AR, page 466. The price of the typing desk illustrated is approximately £83, not £147 as stated, and of the linked table and storage units approximately £77. The price of £46 given in the note would have been correct for a table and one storage unit but the illustration showed two such units. The confusion is regretted.

correspondence

BRANCH BANKS

To the Editors.

SIRS: There is one inaccuracy in the article 'Branch Bank' by Terence Bendixson in your November issue. The prototype mobile till illustrated was not introduced from America but was designed by myself for Barclays in 1958.

The American 'Teller Bus' operates independently of the counter as a supplementary till and because of its size is not usually stabled in the strong room. Barclay's mobile till was designed to be used beneath the counter in conjunction with a fixed pedestal unit, the contents of which are transferred to the mobile unit at the end of the day. The third element of the assembly is a kneehole stationery cupboard. Without these units the cashier is obliged to keep his reserve of stationery, lunch, library book, etc., in the deep drawer at the bottom of the mobile unit intended for silver bags, and for this purpose is fitted with heavy duty runners and deep reinforced sides. Unless the till is used as a complete assembly there are bound to be cash cans and bags of silver under the cashier's feet. The clutter of stools which Mr. Bendixson mentioned is quite unnecessary as a pole-mounted cantilevered folding seat and footrest was also developed as part of the assembly and was popular among lady cashiers, although traditionally a male cashier prefers to stand while attending to a customer.

One hesitates to mention omissions in such an authoritative article, but the use of a horizontal conveyor belt behind the counter which automatically discharges the waste into vertical lift conveyors and into machine rooms at first floor level is now quite common. Barclays also have at least two first floor banking halls served by escalators from a narrow shop front entrance at street level. Closed circuit television has also been used in a number of situations, but nowhere more successfully than in a 'drive-in' bank on a one-way street in Brussels (picture enclosed), where the cashiers serve the customers in their cars from the pilotis beneath a completely mechanized banking office. In this instance the banking hall becomes a circulatory area of tarmac beneath the building.

Yours, etc.,
R. J. A. GAZZARD.
Newcastle upon Tyne.

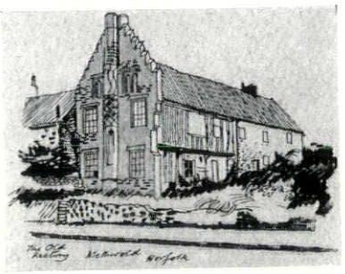
METHWOLD OLD RECTORY

To the Editors.

SIRS: I was interested to see the charming drawing of the above in 'Stop Press' in the December ARCHITECTURAL REVIEW, but am glad to be able to assure you that, in this case, your entirely commendable comments are fortunately inapplicable.

In 1959 this building, consisting of four tenements, was declared unfit for human habitation, but in view of its architectural interest a temporary Building Preservation Order was subsequently made by the Norfolk County Council in the hope that someone would become responsible for it. Hearing of this and knowing the building well, I bought the property to secure its preservation and held it for four years until the last of the tenants had been re-housed. I then handed it over to the present owners who can be relied on to carry out its renovation in the most careful and sympathetic manner.

Yours, etc.,
MARSHALL SISSON.
Godmanchester, Hunts.



8, Kenneth Browne's drawing of the Old Rectory, Methwold, Norfolk, reduced from the December, 1964, AR. Ian Nairn deplored its condition but Marshall Sisson (whose letter is printed on this page) gives the reassuring news that it is to be preserved and renovated.

RANDALL WELLS

To The Editors.

SIRS: I was interested to read the article on Randall Wells in your November 1964 issue. I got to know him for a short time during the first

7, 'drive-in' bank in Brussels. See letter from R. J. A. Gazzard.





9



10

*Another sign of the Ministry of Housing's awakening to the merits of Victorian architecture is the speedy confirmation of the West Suffolk county council's preservation order on the facade of Sudbury Corn Exchange,*9 *(inquiry held on October* 1, *decision given on December* 17). *Although it has outlived its usefulness as an exchange, chemical analysis being the basis of modern corn selling, it has a key position in the triangular market place of an LCC expanding town. The Corn Exchange Company wanted to replace it with neo-Georgian shops and offices. The county council pointed out (and the Minister agreed) that it could form an admirable shopping arcade as a connecting link between future car parks and commercial property at the rear and the market place, which would then be restricted to pedestrians. The fruity Baroque design of* 1841 *by H. E. Kendall is distinguished by sheaves of corn in stucco instead of urns, and a fine cast iron sculptural group,* 10, *showing labourers in the dress of the period with plough, sickle and sheaves.*

year of the 1939-45 war before I joined the forces. Some friends of mine owned Thames barges moored at Hammersmith, where we used to meet and talk and where I sailed a small boat on the river. Sometimes we were joined by Wells's daughter who introduced me to her father at his house on Hammersmith Mall.

He was handsome, elegant and hospitable, a little brusque and restless and, considering that he appeared to have little work and was living under the strain of looking after his wife, who was suffering mentally (this was before his daughter's tragic death), I can see now what an attractive character he must have had.

He had a very beautifully made clavichord, and as I had a passion for making these instruments I used to play it. He gave me the job of making a writing-desk fitment for a superbly fitted bomb-proof shelter he had designed for a wealthy client living in a Georgian house in Petersham.

His own house had an atmosphere of Arts and Crafts about it, and I remember thinking how perfect his wife looked in this setting. She seemed to have walked straight out of a Burne-Jones painting. Yet his oulook appeared to be thoroughly up to date, and his use of large curved plate glass window at Said House showed this and an adventurous outlook. I thought he did some work on Thaxted Church, but perhaps this was considered not worthy of mention.

Yours, etc.,
F. C. KEEL.

Hull, Yorkshire.

HAWKSMOOR CHURCHES

To the Editors.

SIRS: I have only just seen your note in Marginalia, November 1964, which says that the future of the Hawksmoor churches, Christ Church Spitalfields and St. Anne's Limehouse, 'is still in doubt.' I am glad to say that the doubt that now remains is where the last lot of money will come from for their restoration. The first lot of money—£50,000—is already available from the sale by the diocese of the freehold of St. John's, Smith Square, to the 'Friends of St. John's, Smith Square.' The Historic Churches Preservation Trust has also contributed generously.

Work should be starting at Spitalfields and St. Anne's within a few months. Plans have already been drawn up and contracts are being negotiated. If any of your readers have five, ten, fifteen, twenty, or even thirty, thousand pounds to spare it will be very welcome, because between them these two are likely to want what that adds up to, if they are to be restored not merely to a waterproof condition, but appropriate glory.

Yours, etc.,
ELIZABETH YOUNG,
Secretary, the
Hawksmoor Committee.

London, W.2.

book reviews

SCHOLARLY GUIDE

WORCESTERSHIRE (A SHELL GUIDE). *By James Lees-Milne. Faber & Faber.* 15*s.*

We have come to expect a high standard in the Shell guides and Worcestershire does not let us down. Mr. Lees-Milne is well known as an architectural authority and has the additional advantage of having lived in one of the county's fine houses for many years. Yet in a way this is something of a disadvantage too, for it is not easy to avoid nostalgic feelings when one remembers, as I do, how many beautiful things—and how many more simple, good things—have been destroyed in Worcestershire over the past fifty years, and are still being destroyed. It is encouraging, however, to be able to report that Worcestershire has just formed a Buildings Trust in order to buy, repair and preserve fine buildings which are in danger. Unfortunately a delightful group of simple, good things does not rank as a 'beauty spot.' No doubt, not so long ago, the Vale of Evesham had whole villages of timber and thatch, two materials which were then plentiful locally and have now become not only scarce but extremely expensive to maintain. There are a few unpretentious buildings of this kind, such as the Fleece Inn at Bretforton, which is not mentioned in the guide but is notable in that it still contains much original furniture, pewter and other things, giving it a robust and delightful character. In Broadway there is an interesting mixture of these Vale timber cottages with the many fine stone buildings which make it a predominantly Gloucestershire village.

Owing largely to the efforts of Mr. John Betjeman, guide books now take account of Victorian buildings. Indeed, the photographs of nineteenth-century work are among the most interesting in the book. Who, until recently, would have considered the charming cast-iron capitals in Great Malvern railway station worthy of inclusion in a guide book? Or the fine fluted iron pillar-box? Yet far too often such things are destroyed because no-one locally has ever looked at them. It is one of the oddest things about our odd age that most people don't go and look at anything until a photograph has convinced them that they ought to do so. Certainly one would be hard-bitten not to be convinced by these beautiful photographs which, with consummate skill, have managed to ignore the brash surroundings of many of the buildings.

No doubt most guide books are bought by tourists who wish to see old buildings. But there must be a slowly increasing number who take pleasure in looking at *good* buildings, irrespective of age. So many people believe that architecture is a thing of the past. A few pages of modern work—there could not be many as there is so little to show—would add greatly to the value of the book. Shell made a notable contribution to advertising before the war and might be encouraged to stimulate better design in filling stations. There ought to be some in Worcestershire worthy of inclusion. Yet I cannot recall one. There are one or two good schools and the newest railway architecture is lively, but the villainous standards of most of the developers and multiple shops make this a matter which should be of great public concern, especially as old work of real quality is often sacrificed in the process of redevelopment.

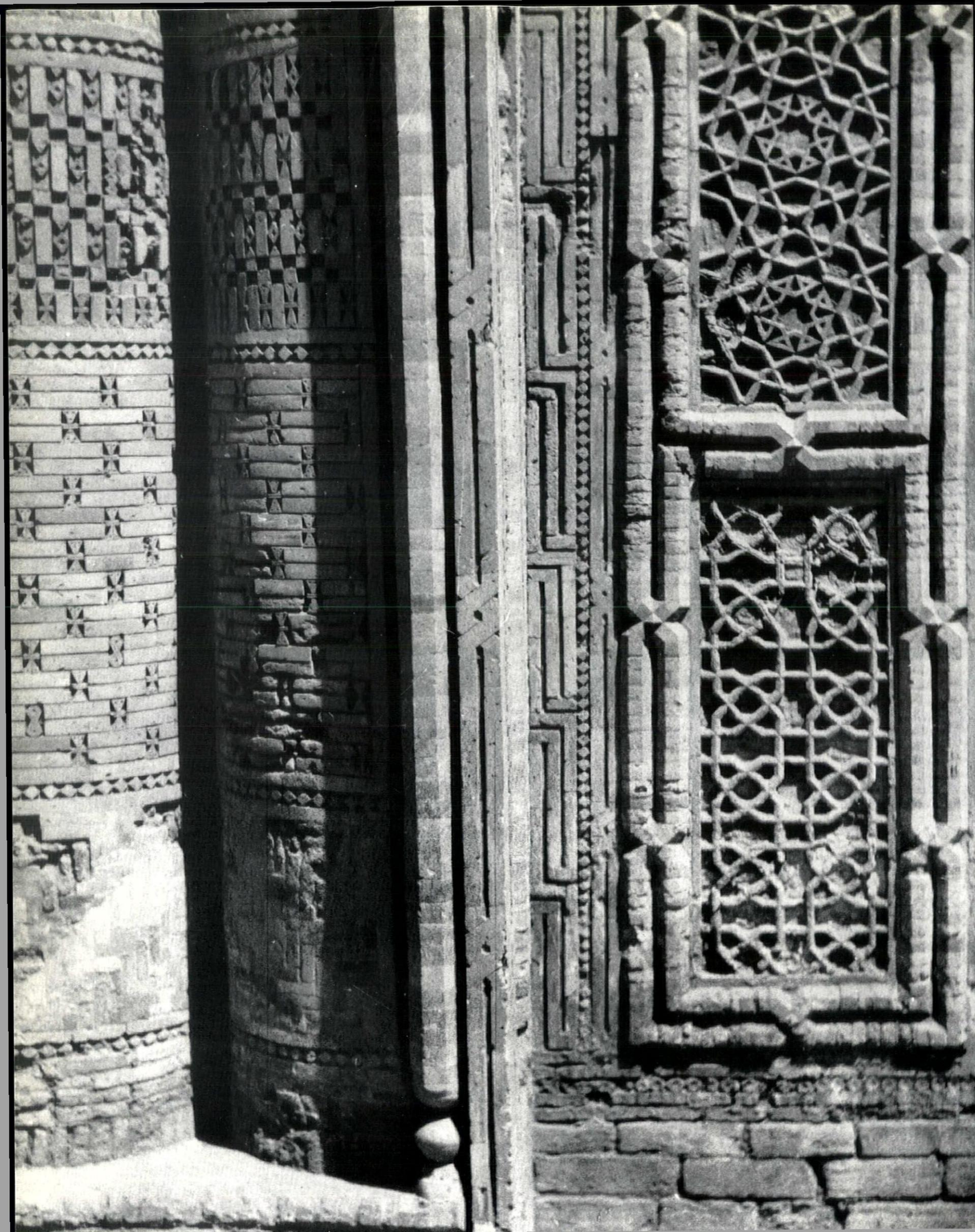
This is an admirable guide book of its kind, with scholarly and wide ranging notes well and clearly arranged and delightful illustrations. Even Kidderminster, which always seems to me one of the dullest towns, is shown to have its points. And, as it was more than a year since I was in Bewdley—a small town for which I have a great affection—I could hardly restrain myself from jumping in the car to see whether the dignified Georgian streets shown had already fallen a prey to greedy speculators, or the tented market stalls at Dudley had been moved on. GORDON RUSSELL

BE SEATED

THE ENGLISHMAN'S CHAIR. *By John Gloag. George Allen & Unwin.* 63*s.*

Though described as a 'short history,' this book conforms to the leisurely anecdotal pattern of Mr. Gloag's other books in the same genre and has 294 pages of text (including four appendices), 64 half-tone plates and not far short of 200 line illustrations in the text. The last are a particularly illuminating collection, the result for the most part of what must have been a long process of leafing through such publications as the *Universal System of Household Furniture* and *The Cabinet Maker and Art Furnisher.*

Only two complaints can be made about this knowledgeable and readable popular history: that no attention to speak of is given to club chairs and sofas—a unique English contribution to the fusion of comfort and dignity in furniture, and that the book—except for a single perfunctory page—stops short of modern times. This is regrettable because Mr. Gloag, unlike many historians, is as well qualified to discuss modern design as ancient, and the correlation between social and industrial changes and the design of furniture, which he establishes so interestingly when dealing with past centuries, would have given him fascinating scope today. J.M.R.



A comprehensive study of the ornamental detail that gives its richness to Islamic architecture was the object of a series of journeys recently undertaken by Mr. Derek Hill. They enabled him to visit and photograph nearly every important early Islamic monument in Turkey, Persia, Afghanistan and Russian Central Asia, and the results are embodied in a book shortly to be published by Faber and Faber. It is entitled Islamic Architecture and its Decoration, AD 800–1500 *and has an introductory text by Professor Oleg Grabar, of Michigan University. Opposite*  *is an enlarged version of one of Mr. Hill's photographs, showing part of the facade of the early twelfth-century Maghak-i Attari mosque at Bukhara.*

Peter Ferriday

EDWARDIAN

The associations of some words are extraordinarily persistent and persistently misleading; one knows how absurd the pictures provoked by the words are but still the pictures come to mind. *Edwardian*—Gaiety girls marrying young aristocrats, Ranjitsinhji elegantly stroking centuries, sophistication, amateurs and gentlemen, soldier-sportsmen, Pomp and Circumstance. Of course, it's nearly all nonsense.

'When we examine the mortality of children under twelve months of age we find the same terrible waste of human life proceeding in the poorer areas. Particulars have been ascertained regarding infant mortality. The results are as follows:

Area No. 1 (poorest),	out of every 1,000 children born 247	die
,, No. 2 (middle),	,, ,, ,, ,, ,, ,, 184	before
,, No. 3 (highest),	,, ,, ,, ,, ,, ,, 173	they are
Servant-keeping class,	,, ,, ,, ,, ,, ,, 94	twelve months
Whole of York,	,, ,, ,, ,, ,, ,, 176	old

'What a rushing, glittering time it was, that of King Edward's reign,' a memoir writer stated—but not if you were in Areas 1, 2 or 3 of York, and the mass of the English were in areas of that sort.

But Ranjitsinghji did make the runs (72 centuries in all) and the amateurs and gentlemen were real figures; C. B. Fry, when a freshman, put his cigar down in the dressing room, went out and set the world's long-jump record, and came back to finish that cigar. And Denise Orme, Sylvia Storey, Olive May (real name Meatyard), Camille Clifford and other trilling lovelies of the musicals did marry aristocrats for better or for worse. The associations round the word 'Edwardian' are not altogether wrong, but are only a small part of the story. It was a time—it had been for twenty years—of society consciousness, the vulgar high society, but the autobiographers, rich in a time when your sovereign went a long way at the expense of Areas 1, 2 and 3, have exaggerated the importance of this small metropolitan world. 'The Duchess of Sutherland (Millicent) gave regularly small evening parties at which one met the cleverest, most amusing, and most distinguished people in London.' Like Keir Hardie? or J. A. Hobson? or Sickert? or H. G. Wells? or W. B. Yeats? Of course not. Only a twittering over-fed set reflecting each other's sense of superiority.

The editor and contributors of a new book about the Edwardian age, *Edwardian England, 1901 to 1914*,* deserve sympathy in having to write about an 'age' which is no real way self-contained; that an unlikeable

*Oxford University Press, 1964. Editor, Simon Nowell-Smith. Price 75s.

glutton was crowned and died in it seems to be the only conclusive thing. One or two of them have been lucky in that at least something eventful happened in their sphere; Professor Asa Briggs has one of the two great governments of our time, Mr. Anthony Quinton has the overthrow of Idealism, Mr. W. Bridges-Adams has the career of Granville Barker. But Mr. Derek Hudson (Reading in 24 pages), Mr. John Russell (Art in 24 pages), and Mr. John Betjeman (Architecture in 16 pages) have an impossible job, not helped by the meanness of illustration—seven photographs for art and four for architecture. Mr. Hudson expertly deals with reading rather than literature, the distribution of books and papers rather than content, but Messrs. Russell and Betjeman, in the nature of their subjects, have no such recourse. Both obviously want to start twenty or thirty years earlier, where the period begins.

From the late 'seventies there had been a growing sophistication and a steadily closer tie with Europe. It was in France that Henry James learned his craft and it was from French novels that Conrad learned his. The Jamesian consciousness of the intricacy of making a novel percolated downwards; the ingenuity of *Rupert of Hentzau* or the banter of *The Dolly Dialogues* (both of the 'nineties) presuppose high endeavour at the top. In architecture Norman Shaw was leading his countrymen back to the European and urbane, to the comity of Classic, even if he was finding his models in this island. But in painting, though the influence was again French, the masters there were not urbane and sophisticated; they sent our young painters to Camden Town, allowing them only an occasional jaunt in the Café Royal. This was the young men, and it might be remembered that three generations of French influence could be found in Edwardian exhibitions; Poynter (Gleyre), Clausen (Barbizon), the Sickert descendants (Degas or worse). The pretentious and sometimes grand Classic architecture was certainly out of line with the painting; the arts will never move together. And if the literature was more sophisticated than thirty years before, still the young Wells descended with real verve from Dickens and the young genius of the age, then preparing his first novel in Nottingham, descended from George Eliot.

In architecture nothing seems very different, Lutyens excepted, from the 'nineties, but one can feel the grandeur and show of Europe, symbolized by the Aston Webb-Brock Queen Victoria monument in front of Buckingham Palace, more strongly. Most of this Classic was ponderous and incompetent, but Mr. Betjeman can produce authentic French in Mewès and Davis, brilliant Viennese decoration from Rickards, and Lutyens's steady progress towards full English Classic. Lutyens described Classic as 'the High Game'—there is little evidence, outside his own work and that of very few others, that it was a game worth playing. This was one stream of Norman Shaw-ism, but another was still flowing and one wishes Mr. Betjeman had paid greater tribute to that group of architects living on their wits, E. S. Prior, Beresford Pite (whose Stockwell church he illustrates), Halsey Ricardo, and the early LCC flat-builders. Pite built that notable piece of neo-Greek waggery in Euston Square, and Prior his Holt house and Roker church in these years; all free-thinking reminiscent of Shaw's younger days. It all comes back to him.

'The full-blown, unhurrying, implicitly proconsular turn of mind which we call Edwardian,' Mr. Russell says, has not much relation to the art of the time, and he could have very well added the literature as largely outside that characterization—Arthur Morrison's *Hole in the Wall*, Shaw, Wells, *A Room with a View*, Arnold Bennett. Literature may have been sophisticated in many ways; it was not proconsular. The plays and novels, the good ones, were explicitly and angrily anti-Milner.

The ambition towards participation in a full European culture worked differently in the arts, and the architecture seems most out of accord. It seems to have been out of accord with the other arts for a hundred years. The Gothic Revival was an extraordinarily insular affair and one that shows that provincialism is by no means necessarily stultification. The criticism of English provincialism was not made with reference just to the arts but on a much wider front by Matthew Arnold; an attack on low English habits of thought, feeling and taste generally, and a recognition that Self Help went too much hand-in-hand with Self Congratulation. *Culture and Anarchy* was a classic the moment it was published (1869), significantly in the early days of the Queen Anne revival. (Invoking the name of Matthew Arnold provides an additional example of the change of taste in late Victorian England; on hearing of his death in 1888, Robert Louis Stevenson is supposed to have said, 'Dreadful, dreadful, he won't like God at all.' Perhaps Stevenson's part in this piece of higher flippancy should not be taken too seriously as the reporter was Wilde, but the joke was thoroughly un-High Victorian and very Late Victorian or Edwardian.)

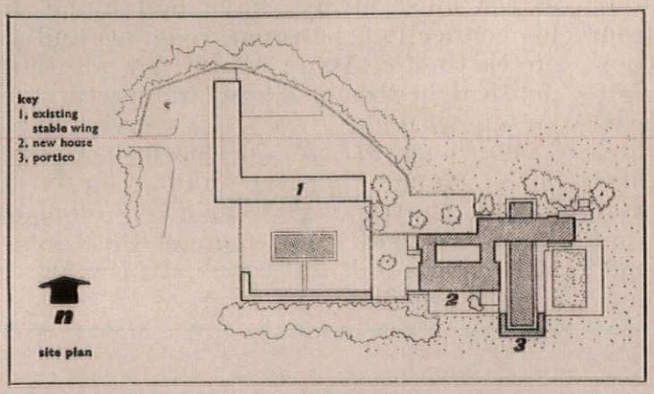
The cultural relationship between England and Europe is inevitably complex, and the fluctuations of attraction and repulsion (French 'lubricity') frequent. The shock of the defeat of France in the Franco-Prussian War was great in this country, and the growing sympathy towards things French could possibly be partly traced from that impact. The incessant and overt moralism (immediate nemesis and retribution for the first moral lapse—baby or DTs) characteristic of the mid-Victorian novel is certainly much less evident in the last twenty years of the century; a more cultivated and worldly audience would not accept the bullying. But if the European, and particularly the French, influence was greater in all the arts, it did not devitalize them in the way it might be said to have devitalized architecture, judging from the run, not just the best, of English civic building. The bombast, pomposity and incompetence of English office buildings, for example, at the turn of the century and up to the war, was not a sign of vigorous native architecture.

Edwardian England (Mr. Kipps at the Ritz) suggests that a political and economic history of English architecture might be more informative than a catalogue of successive styles. Who commissioned Baillie Scott's houses? What social reasons were there from Shaw onwards to insist so strongly on building in the

local style, half-timber and all? Was it the outsider very much wanting to appear at home in his brand new house (built with City money)? Who commissioned Shaw's Classic houses and were they socially different from his earlier patrons? How many of Voysey's patrons were Quakers? And, further back, who built Gothic country houses? And who were Teulon's clients? Lutyens's patrons are known from Mr. Hussey's biography and his Edwardian commissions, Heathcote excepted, came from increasingly grand people; his High Game seems to have followed that other High Game, marrying an Earl's daughter —Doric and stone, not local materials and informality, from then onwards. Good buildings are expensive, great buildings are also large ones; on the other hand books and pictures can be produced and sold comparatively cheaply. The clients or buyers of buildings must have a lot of money singly or collectively; of books and pictures not necessarily much. The effect of the client, his taste, his social position, the attitude and expectations of his class must be immensely more immediate and influential on the architect than similar factors on the author, and the architect's career must always have had much dependence on his connection, personal, religious and political. How on earth *did* Aston Webb get all those jobs? The political historian of our architecture seems to have an opportunity.

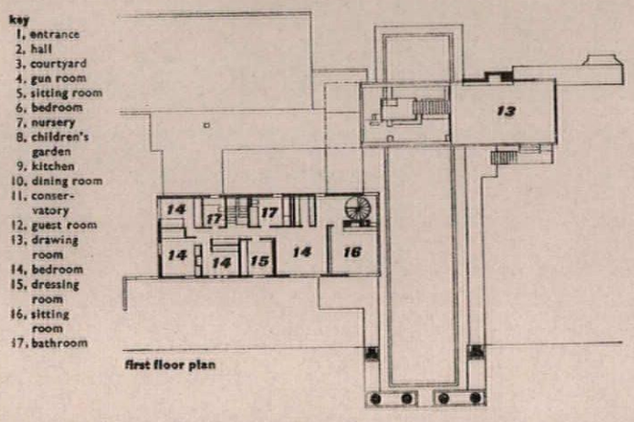
Nostromo, *Mr. Polly*, Deptford Town Hall, Heathcote, young Augustus John, Gordon Craig, G. E. Moore, Bertrand Russell, *The Hound of the Baskervilles*—all works and men of the time, but they do not make a cultural epoch. In the arts at least there is no Edwardianism.

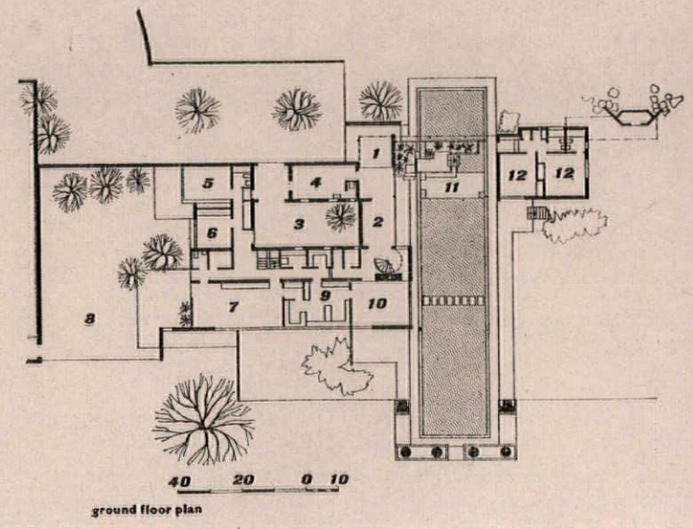
This house, Stratton Park, occupies the site of the former mansion of the Baring family, the present clients, which was built for them by George Dance in 1801. The portico was the only part of that enormous house with any great architectural interest, and it was agreed that it should be kept, and incorporated in the design of the new house. The clients' requirements included both accommodation for ordinary living



and some unusual large-scale elements such as a conservatory, which made it feasible to attempt a close relationship between the modern house and the portico.

The problem was largely one of scale and siting; and a difficulty the architects found, in the early stages before demolition of the old house, was to judge the effect the portico would make when left standing on its own. In the event its scale, which had been dwarfed by the bulk of the house, appeared even larger. It held its own as a grand object and inevitably became the focus of the whole design, and the modern house has been treated as forming part of an historic layout which it enhances by its reticence rather than by its display.





The basic idea was to link the portico to the house by a long reflecting pool running into the conservatory and reappearing on the far side of it, where it is seen on the first approach to the house, before the portico is really visible. Once inside the entrance hall the pool is seen to one side and the eye is attracted first into the conservatory and then along the water to the columns at the end ; gradually the full height of the portico is revealed. Its scale differs from inside to outside, from floor to floor, and varies with the viewer's distance from it. The two wings of the house lie parallel to the portico and form with it a space which extends into three dimensions the link on the ground plane. It also provides a transition between the house and the park—there is a view back through the conservatory to the trees banked up behind the house, which form a solid green setting to it, and out across the lawn or through the columns to the more distant landscape to the south.

The different functions of the house are divided between the two wings, the more domestic part being confined to the west wing, backed by a service court and a staff flat, and the conservatory and drawing room, with guest bedrooms below, being in the other. The conservatory is of double height and a stair rises through the planting and over the pool to a gallery out of which the drawing room, partially screened by curtains, opens directly. Externally the different functions of the two wings are expressed in the large-scale glass walls of the one and the more solid block of the other, in which the varying widths of window in the brick walls echo the varying mullion spacing in the glass walls. Much planting remains to grow up to first floor level on the south side, where the demolition of the old house left large flat areas still to be landscaped. Part of the old stable wings was retained and provides space for garages, service quarters, games room, stabling, etc. Here the roof of one wing was lowered on jacks after the first floor walls had been removed.

The conservatory has a steel frame structure, with glass roof over three space-frames. Windows are of hardwood (utile) and the glass wall extends across the drawing room where the mullions are structural and support the roof. The remainder of the structure is of load-bearing brick with a reinforced concrete first-floor slab and timber roofs. Bricks generally are 2in. Leicestershire golden brown facings (no longer made) and Ibstock facings which nearly match them. Windows and doors are of utile and utile-veneered plywood. Floors are carpeted, except in the hall and conservatory where they are stone paved, and in the drawing room where they are of Danish beech strip. The drawing room ceiling is Agba strip. Central heating is by ceiling panels in the west wing and by floor panels and convectors in the conservatory wing. The boiler is oil-fired. The flow of water to the pools inside and out is by way of a water-fall and a fountain.

Garden consultants, Peter Coats and Ian Mylles. Conservatory planting, W. J. Campbell. Decoration and furnishing consultant, David Hicks. Consulting engineers, Giffard and Partners. Quantity surveyors, E. C. Harris and Partners.

HOUSE WITH PORTICO

HOUSE IN HAMPSHIRE

photographs by Arphot (H. de Burgh Galwey) and Christopher Knight

architects **STEPHEN GARDINER AND CHRISTOPHER KNIGHT**



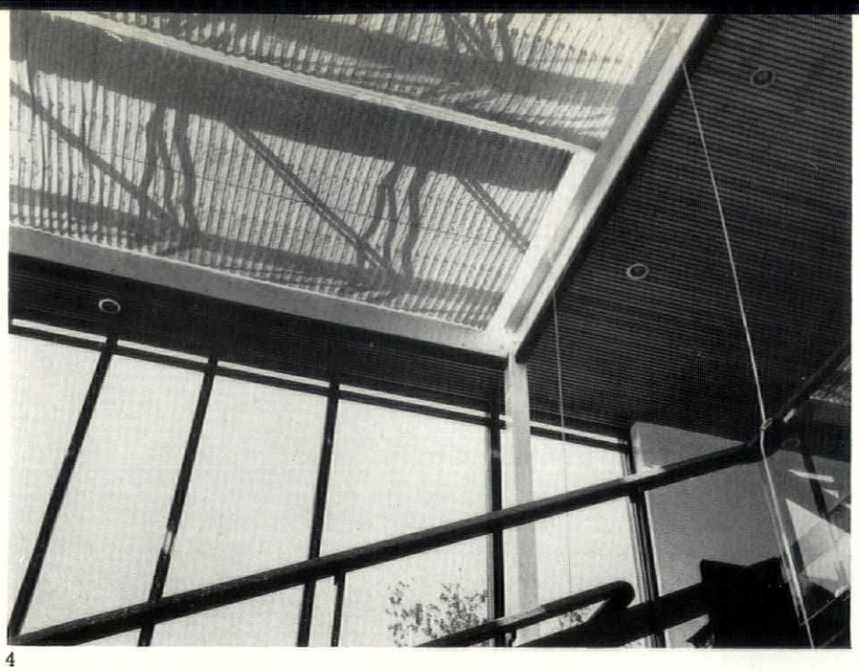
1, the portico seen from the conservatory, with the dining and sitting rooms on the right.





2 (facing page, top), the conservatory and drawing room wing seen from the portico. 3 (facing page, bottom), looking through the conservatory from the north side. 4, the ceiling of the conservatory and the staircase to the drawing room. 5, the portico from the south, with the house beyond. 6, the house from the east. 7, looking down into the conservatory from the drawing room.

HOUSE IN HAMPSHIRE



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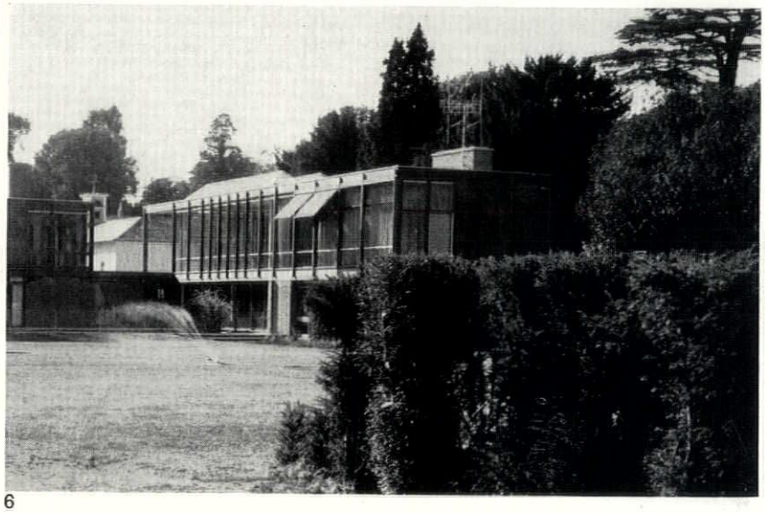

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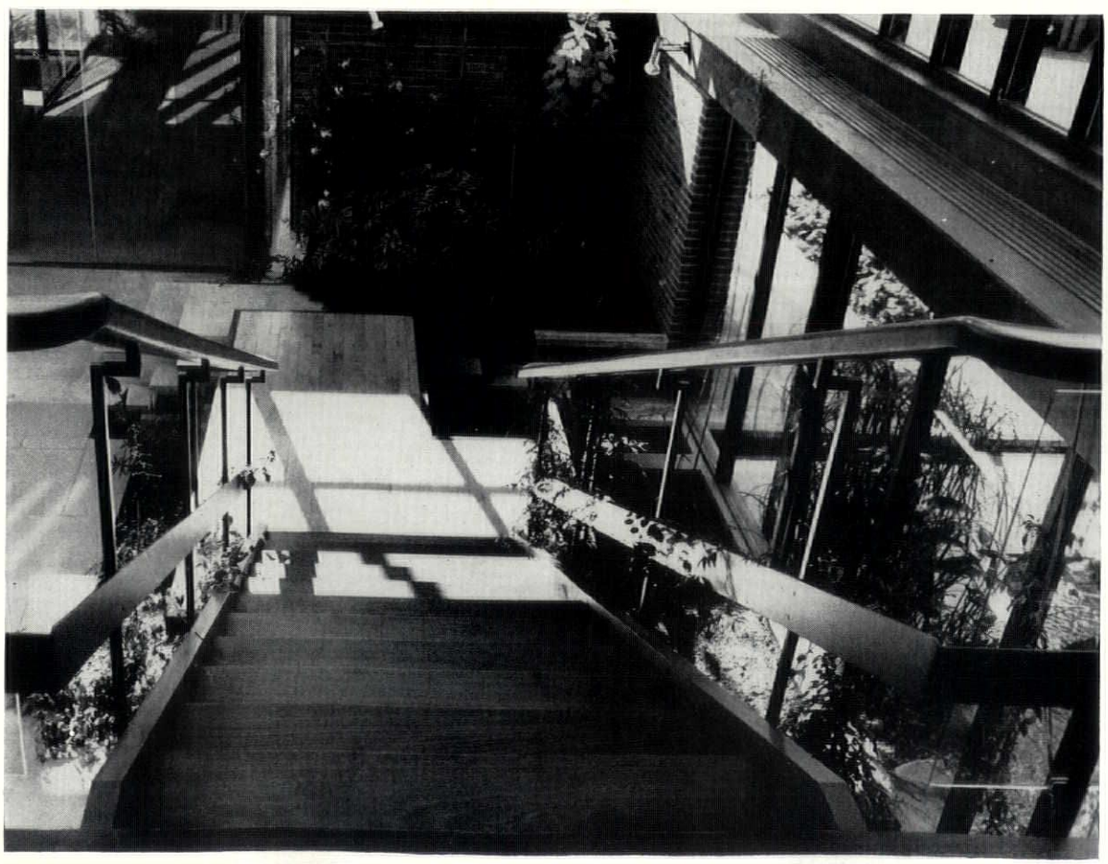

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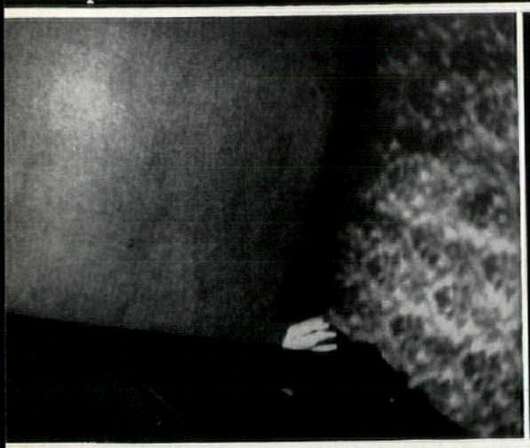

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In Carl Dreyer's film 'Vampyr,' of which four scenes are reproduced above and below, the camera exploits perspectives and planes so as to make architecture a vehicle of the film's expressionist viewpoint. This is one of the examples cited by Raymond Durgnat in his examination, which begins opposite, of the role of architecture and architecture's visual and emotional overtones in the making of films.

4



MOVIE EYE

Raymond Durgnat

Carl Dreyer has argued that the cinema's closest relative is architecture. It may seem paradoxical to compare the most mimetic (photographic) of the arts with the construction of a new reality, and a dramatic art with a 'Utopian' one. Equally unexpected is the rapprochement of the most fluid of all visual media with the most solid and static. Yet the paradoxes hold. For, by its nature, the cinema is a *beau monstre*. Like the theatre, it centres on actors. *But* its tempo-spatial flexibility approaches the novel's. *But* it is predominantly visual—flat, like painting. *But* its visuals exist in *movement* and *time*, so that its plasticity has musical components. *But* its photographic quality precludes music's abstraction, suggesting a very literal realism. *But* seeing a film is notoriously a dreamlike experience.

This blend of realism and onirism provides the clue to Dreyer's meaning. The cinema's mimetic fullness (photography, movement, sound) permits the creation of a *self-sufficient* world. Like the architect, the film director weaves diverse media into a 'new' reality. The traditional division between the 'dramatic' and the other arts is only part of the story. Dramatic ugliness and tensions, even the tragic end, occur within aesthetic 'distance' and form part of an ultimately agreeable existence. The character dies, but author and actors enjoy our enthusiastic applause. Through vicarious experience, katharsis and enhanced understanding, drama, like architecture, improves the world.

And architecture, in its way, implies drama. The interrelationship of mass and space creates pressures and tensions. There is the possibility of displeasure. An effective building, like a circus acrobat, might be graceless, but flies through the air with the greatest of ease. Its 'suspense' is non-representational, but exists as intensely as that of music. As Keats and Freud agreed, there is no beauty without melancholy, no thrill without anxiety, no elegance without the remembrance of pain. Creativity treads a tightrope between complacent 'good taste' (too little 'danger') and bad taste (an emotional 'unhappy end').

Architecture's immobility makes it the natural complement of the movie-camera. The basic architectural experiences—standing in a space, looking around, and walking along a corridor—find their equivalents in the screen frame, in the panning shot (the camera turns its head), and the tracking shot (the camera walks forward or backwards). Though the screen is flat, the camera's reticulation of movements in space confer on the succession of images (the sequence) a quality of space-in-depth, controlled and orchestrated.

Architecture has been described as 'frozen music.' When the camera moves, the roofline flows past us like a river, The camera tilts rapidly up, and banister and staircase cascade down. The cinema is 'unfrozen architecture.'

In the opening shots of Thorold Dickinson's 'Overture' (1956) the swooping camera counterpoints the inner lines of the UN building at Lake Success with the opening theme of Beethoven's Egmont Overture. Space becomes time, balconies and musical phrases leap out together. The cinema *is* an architecture (and is the best medium for recording architecture).

How to make a building omelette

But the film hurls form into a melting-pot of its own. It abducts, reforms, deforms, all it shows. Above all, as we shall see, it perverts its emotional sense. When in David Lean's 'Great Expectations' (1946) Pip as a boy calls on Miss Havisham, her room is huge, cavernous. When Pip as a man (John Mills) calls on her it is stuffy, cramped. The room is the same. The camera lens is different. The camera is a born liar. It commits every conceivable offence against the human scale. It is the anti-Modulor. The cloak of a foreground figure rears up over the palace beyond. Cut—and that monumental figure now becomes a tiny dot stranded in the forecourt, dwarfed in its turn by a foreground vase. The cinema's mobility *explodes* architecture.

The camera glides up the outside of a wall and swoops from window to window. It glides 'through' walls from one room to another, creating a sense of magic ease, of liberation from gravity and mural impregnability. In Jerry Lewis's 'The Ladies' Man' (1962) the camera tracks back from an ordinary two-shot to reveal an entire mansion in cross-section. It doesn't reduce the house to a dolls' house; it makes the spectator feel he has become God's right-hand-man. Or empty rooms may be barricaded with shadows which appear as beams of black light. . . .

Films may transform space into time. Roger Corman's 'The Man With the X-Ray Eyes' (1963) is one of the 'pulp' films that fascinate pop-art addicts. The guilty scientist (Ray Milland) runs down a fire-escape, and superimposed over a 1st-person-shot of his feet hurrying down the steps, endlessly, endlessly, appear newspaper headlines announcing his escape. A mere 'metaphor'? But it shows that, in the spectator's mind, space was 'merging' into time. In 'Hoven Zo' (Steady-1953), Herman Van Der Horst's documentary on the reconstruction of Rotterdam, the camera, identified with a steam-drill, plummets down past tower blocks, which conversely seem to be thrusting up into the sky with a phallic indomitability, or like intention directly translated into fact. Thus camera style becomes metaphysics.

Jean Cocteau's 'Le Sang d'Un Poète' (1930) opens with a factory chimney beginning to fall. Seventy minutes later it concludes with the chimney hitting the ground. This 'time-split' establishes the

onirism of the intervening story (for back in the 'thirties dreams were thought to be all-but-instantaneous). But it harnesses also the thrill and awed chill we feel watching demolitions. We hold our breath, because as the chimney falls, we fall. That crumbling chimney is the spectator's own body 'dissolving,' and through kinaesthetic empathy it triggers emotions of failure and death.

Louis Feuillade's 'Les Vampires' (1915) is a pulp serial celebrated by the Surrealists and latterly revived with great success at the National Film Theatre. Perhaps its most beautiful sequences show criminals clambering about Paris rooftops, clad in black catsuits and Ku-Klux-Klan hoods (so as to be completely inconspicuous). Their presence, akin to Chirico's geometrical figures, transforms the real, shot-on-location roofscapes into a world as hallucinatory as Cheval's Dream Palace at Hauterives. They become moon dunes, the chimneystacks a cubist vegetation and lunar cacti.

Architecture as metaphor

At the other extreme, architecture is a favourite image for social pressures, for society itself. The camera needs visual metaphors; and architecture is a man-made landscape, a man-made environment. Elia Kazan's 'On the Waterfront' (1954) concludes with the dockers returning to work, strengthened by their new-found spirit of 'one for all, all for one.' But a grim steel shutter closes down on them. The docks in which they work are a prison. Their next fight is just beginning.

More subtle and evasive is the meaning of an extreme long shot in a John Ford Western, 'My Darling Clementine' (1946), showing three masses echeloned against the desert. Nearest us, the half-built church; beyond, the saloon; beyond again, a craggy massif. The formal echo summarizes the nascent West: the Protestant ideal; its brawling antithesis; and, over and above these, *their* antithesis, silent, sullen nature. The finest is the most 'fragile' of the three. Civilization seems a raft bobbing on a vast sea, the third 'block' being—a tidal wave . . .

A fundamental equation of the cinema's is: landscape=state of soul. Architecture may constitute an X-ray photograph of the heroes' mind. If in 'Rocco and His Brothers' (1960) Visconti stages a quarrel, between a newly urbanized peasant and a 'dolce vita' call girl, on top of Milan cathedral, and then cuts and cuts jaggedly, hectically, it is because that cathedral, like the moral framework of their lives, is a giant ship keeling over beneath them. Christendom 1960 is a *Titanic*, sinking fast.

In Claude Chabrol's 'A Double Tour' ('Web of Passion,' 1959), Antonella Lualdi lives in a house one of whose glass walls lets a green field with poppies into the room. Between us and the picture window is an aquarium, and tropical fish slowly drift across the scenery, like living gems. The strangeness of all this transforms physical beauty into a spiritual power: the flesh (Lualdi), a *fin-de-siècle* preciosity (fish-gems), and nature-merged-with-structure (or, a new classicism which has room for the romantic urge).

In many such ways, the cinema deprives architecture of its autonomy, makes of it a symbol whose meaning alters with context. The concept of *objet trouvé* isn't inappropriate, for directors currently depend on finding buildings with emotional possibilities. The vast complex of rooms in Orson Welles's 'The Trial' (1962) is not the studio construction it may seem, but the derelict Gare d'Orsay in Paris 'merged' with a Yugoslavian exhibition hall. The supernatural 'zone' of Cocteau's 'Orphée' (1950) is the ruins of L'Ecole Militaire. It is not photography which makes these fantasies so convincing, it is the concrete specificity of their sustained architectural metaphor. Here architecture takes a thoroughly creative role. Eisenstein didn't think of a massacre on some steps and then select the Odessa Steps; the Steps inspired the staging. Carl Dreyer, while searching for a visual style for his 'Vampyr' (1931) came across a flour mill and derived from it the idea of a vampire film in the key of white.

The rise and fall of expressionism

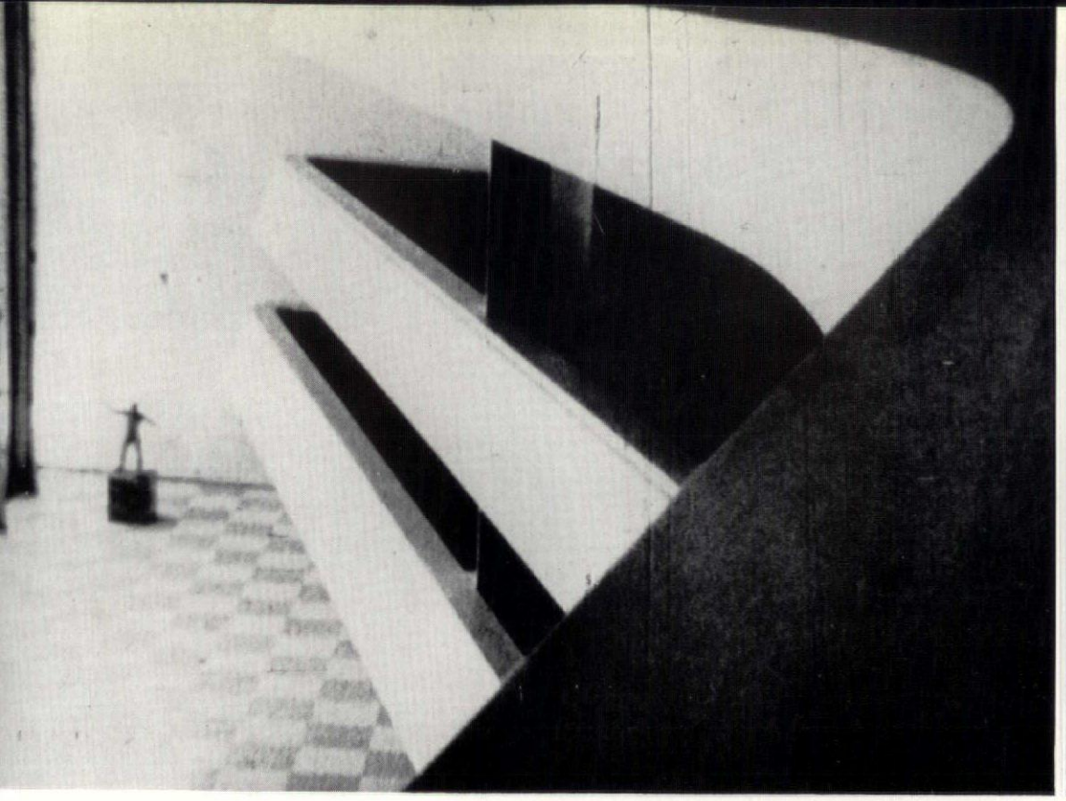
When photography was less sensitive than it is now, the director could control his environment only by building it in a studio. The facility of exaggeration led easily to expressionism. Weine's 'The Cabinet of Dr. Caligari' (1919) was not the first expressionist film, contrary to academic myth. Predecessors included C. A. Bragaglia's 'Perfido Incanto' (Italy, 1916) and Stellan Rye's 'House Without Doors Or Windows' (Denmark, 1914). But Weine's film initiated the screen's first concerted attempt to emotionalize architecture, along principles derived from Max Reinhardt's stage decor and the theories of Edschmid. Seen through the mind of its madman, the streets and façades of 'Caligari,' painted on intersecting backcloths, were shattered into spikes and shards; ceilings warped and drooped, buildings were paper scraps. . . . In Weine's 'Raskolnikov' (1923) the guilty student slept under a clutter of black beams which seemed to be pressing down upon his head like a vice. As he climbed the rickety staircase to the murder room, its tottering banisters were so many needle-like shapes, hysterically pointing the way. But as he backed hysterically out of the room, they seemed to be falling away behind him, letting him fall into the horror. . . .

Expressionism soon revealed two tendencies, the *paroxystic* and the *decorative*. In contrast to the flimsy, staggering structures of the madman's vision, the asylum in 'Caligari' is a cool but very heavy three-dimensional structure. The enigmatic Dr. Caligari himself is awaited. From which of a row of three dark arches will he enter? The suspense turns the arcade into a labyrinth concealing the minotaur of authority. The asylum architecture has a strong, but slightly barbaric, feel, and one's sense that its symmetry is hierarchic to the point of feudalism is confirmed by Fritz Lang's 'Nibelungen' films (1923). There medieval orders of chivalry are associated with halls of chessboard patterns and a brutal solidarity. Thus these apparently 'decorative' designs reveal their emotional tensions, and, as Siegfreid Kracauer suggests in *From Caligari to Hitler*, point to the house style of the Third Reich. The madman's flat confusions oppose a brutal order; their linking term is the *maze* from which issues *tyranny*. Mazes, mirrors, the interplay of spotlights and drifting smoke on architectural forms, the tension and mystery of winding staircases, the squalor of crooked streets, are among the visual motifs which dominate German expressionism, whose inspiration is the reaction to the economic instability of post-Versailles Germany by a profoundly *Junkerized* bourgeoisie.

Abandoning expressionism in the late nineteen-twenties, German directors transposed these visual motifs into realistic settings and subjects. The ominous atmosphere characteristic of all the films of Lang (who trained as an architect) is created by his feeling for small, slow movements isolated in empty, rectangular spaces. The films of Pabst are built on the motif of a sharply angled passage flanked by dark masses. The passage may be a mineshaft down which flames are leaping ('Kameradschaft,' 1931), it may be lorries driving out of a barrack square ('Jackboot Mutiny', 1955), it may be tunnelled out of an enigmatic chiaroscuro by spotlights, but the implied or stated Z, with all its tensions, gives all the films of this celebrated 'realist' an emotional undertow as powerful as expressionism's. Lang's colour 'Tigress of Bengal' (1960) is another of the 'pulp' subjects whose formalism has enraptured the writers of *Cahiers du Cinema*, critical seedbed of the New Wave. In her white, almost *bleached*, clothes, the European girl wanders through the Maharajah's Palace in search of her lost brother. First,

MOVIE EYE

On the facing page: 5, 'Overture'—architectural forms flowing like music; 6 and 7, 'The Cabinet of Dr. Caligari' and 'Genuine'—two examples of German silent expressionism; 8, 'Metropolis'—a decorative version of German expressionism.



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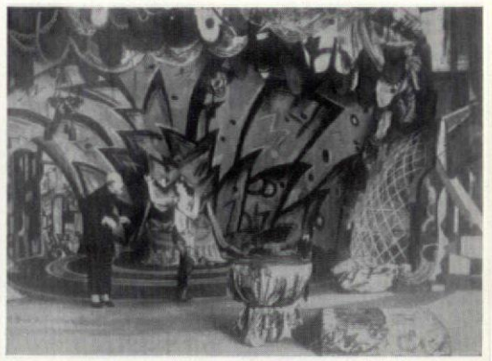

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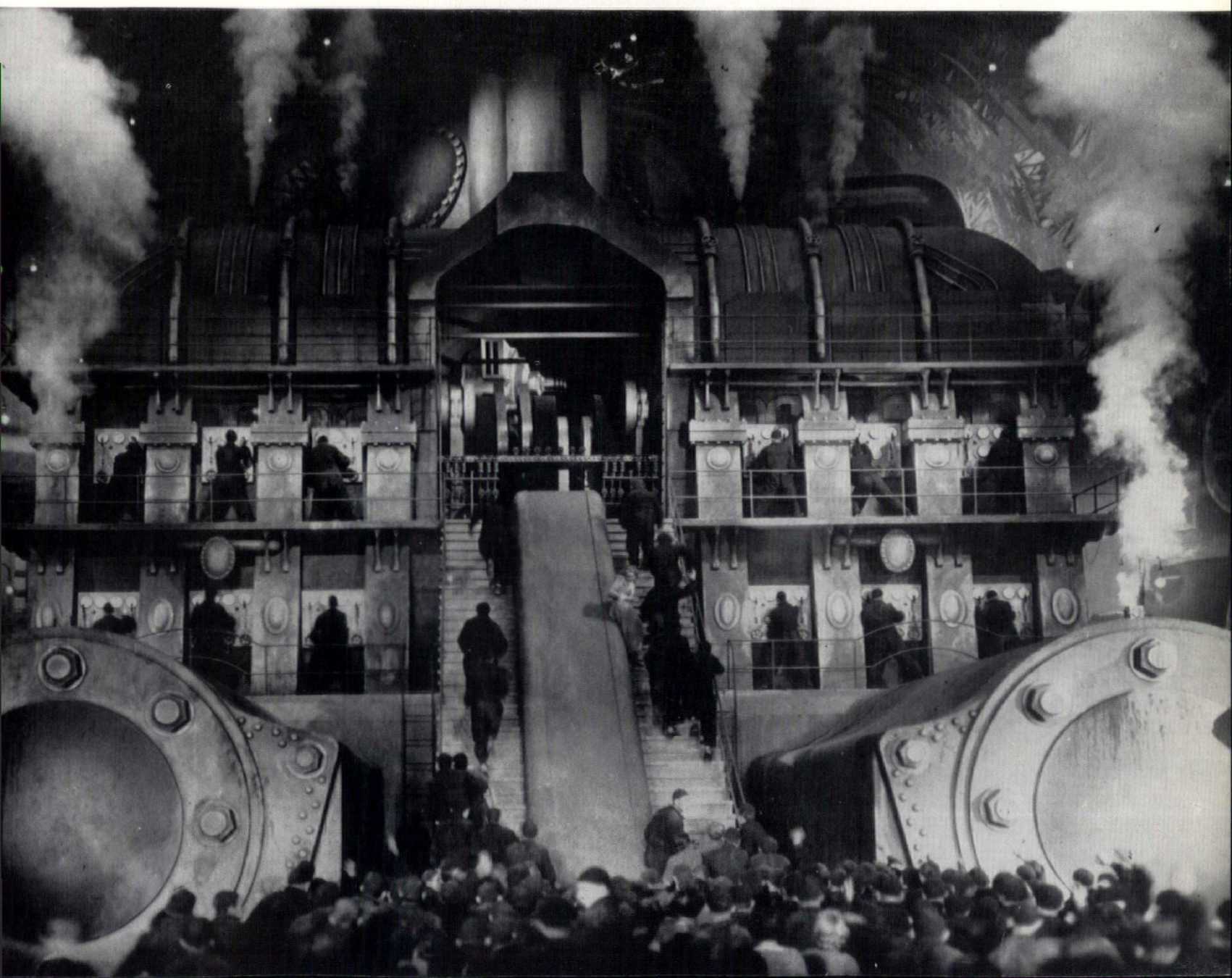

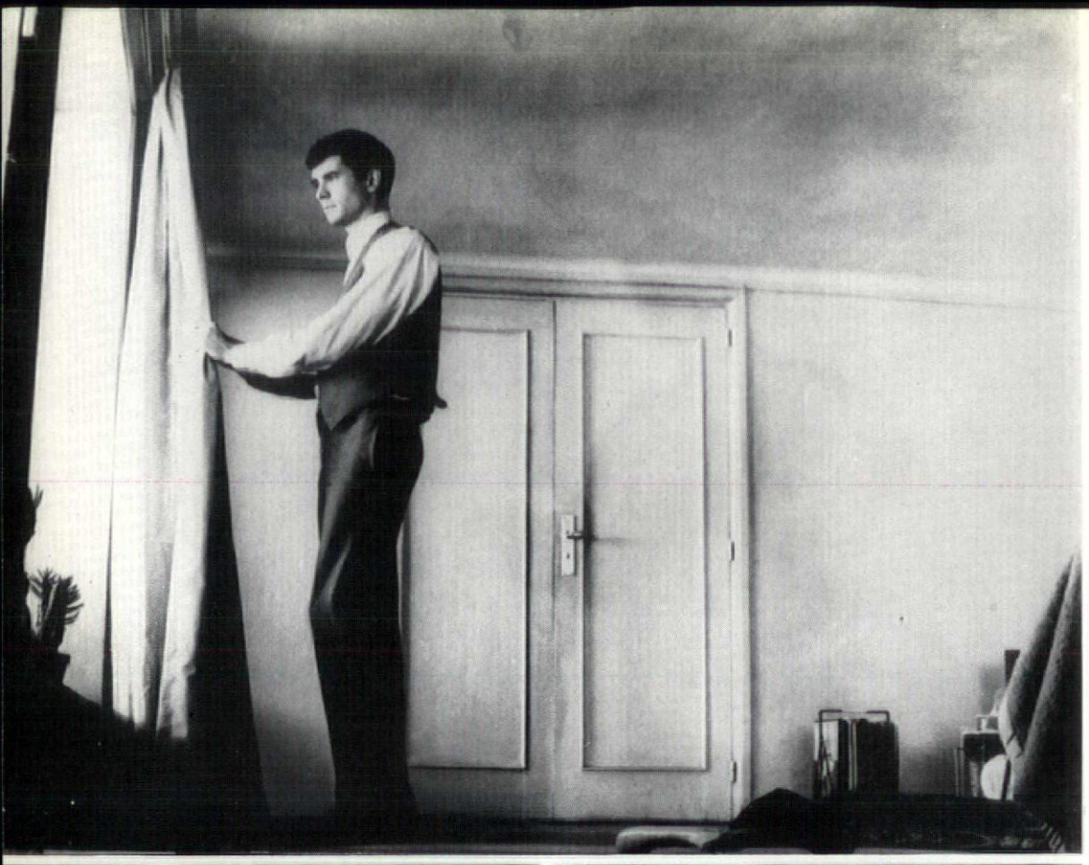

9, 'Ivan the Terrible'—expressionism's lean years in the 'forties. 10, 'The Trial'—expressionism rides again. 11, 'La Terra Trema'—subdivision of the screen in Italian neo-realism. 12 and 13, 'Muriel'—life as a welter of distractions. 14, 'The Apartment'—the horrors of the open plan. 15, 'Hercules Conquers Atlantis'—architecture and fantasy.

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MOVIE EYE

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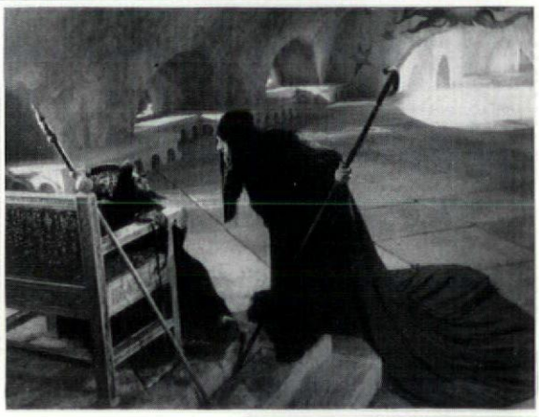



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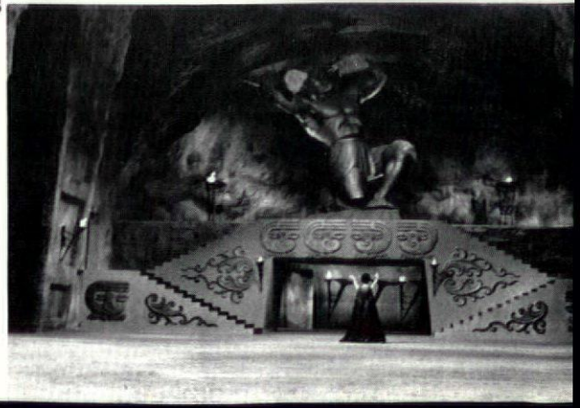


by daylight, she strolls past vivid, coloured mosaics, orderly and rectangular. Then she strolls past dark, purplish murals—the colours are rich, but sullen, brooding, the forms more confused and hectic. At last, leaving daylight behind, she ventures into the catacombs, the palace corridors now yielding to a rocky irregularity of form.

Architectural forms strike off bodily motifs. In the temple, dwarfed by the gigantic statue of a goddess, Debra Paget dances, with lubricious legs-astride movements of her torpedo-shaped thighs. Meanwhile the exploring architect clambers up a catacomb-chimney, his straddled legs 'rhyming' with hers.

In Dreyer's films architecture plays a major role. The hero of 'Vampyr' arrives at an apparently deserted inn. He hears a voice and seeks its source. The camera tilts up one corner of the house, pans across the diagonal slope of the roof, and discovers a woman in an attic window. The camera moves along the edges of the building, which we always thought of as a volume. The house becomes a collection of edges, a set of blades, a slice of the sky stolen by man to live in. Later, the hero dreams that his corpse is being carried past the church in a glass-windowed coffin. As if through his eyes, we see the sky and trees above us—and then the front of the church rears over us, turned on its side, quivering slightly as if with the movements of the coffin. It moves slowly over us, and away off the screen, and we, the not-quite-dead, destined for burial in unconsecrated ground, feel as forlorn as men in a lifeboat when the great ship they have attempted to hail moves steadily away.

By contrast with the human eye, the camera has 'tunnel vision,' and Dreyer uses this visual concentration to render structures *unsteady*. The camera looks down across a room so that the far skirting is an uneasy tilt across the top edge of the screen. The furniture, or such floor-coverings as a heavily-patterned carpet, emphasize the floor's climb 'up' Perspective Hill, and it is as if the room were heaving under strange pressures. Wide-angle lenses permit a whole web of such effects, involving also the angles of furniture and of the human body. Degas' 'Le Tub' (1888) anticipates them, but in Dreyer the effect is specifically of a building under the torque of some disturbing spiritual forces. The house in 'Vampyr' is *also* a matter of flat planes. A door in a near wall opens to reveal a further wall beyond; the house has a Whistlerian flimsiness, even preciosity. 'Safe as houses'? No, a house is only a maze of planes, partitions between which the uncanny emanations freely flow—the fluidity suggested for us by a gliding camera.

'Day of Wrath' (1943) emphasizes bourgeois love of property as a spiritual evil. Heavy shadows, emphasizing solidity of form, an immobile camera, and 'rectangular' placings in space, render buildings and furniture dark and massive. In their stiff puritan clothes, the people themselves seem rigid as oak or teak. But when the flames are lit round the foolish old woman who has become the scapegoat for repressed hatreds, the hot air rising from the pyre makes the stone church beyond *tremble* and *shudder*. . . .

Despite the achievements of such lonely souls as Dreyer, the 'thirties saw expressionism in eclipse. In the popular cinema, almost its last stronghold was the American horror film. James Whale's 'Frankenstein' (1931) and 'Bride of Frankenstein' (1935), for whose lyrical power even the documentarist John Grierson had a grudging respect, are glorious specimens of what one can only describe as 'slap-happy Gothick.' They are among those artistic hybrids found only in the popular arts, the result of sophisticated people working for a hick audience, now subverting the formula with private parody, now hitting on a unique blend of subtlety and popular myth.

There are architectural jokes. In the middle of a deliriously cobwebby sepulchre, Dr. Praetorius warns Baron Frankenstein to 'Mind the step.' As laboratory, the too-audacious Baron uses a dilapidated stone tower on top of a hill. The Freudian symbolism of this topography (a phallic erection on testicle hill) is duly enhanced by the details of the process of carcass-revivification. The corpse, laid out on a stretcher, is hoisted to the top of the tower, preceded by an electrical 'pylon,' which screws itself up into the nocturnal storm, whose energies are further tapped by a flotilla of kites. The thunderstorm, the lifting of the 'unborn' body, the erection of the spire, the floating of the kites, the crackling and sparking, introduce all the classic orgasmic symptoms. The reference is not only Promethean (stealing fire from the heavens), it is also to a gigantic, monstrous, perverse erection—the megalomaniac 'hubris' of the scientist, creating life without the aid of God, or of woman.

Grand finale: the Monster (Boris Karloff) is scorned by his Bride (Elsa Lanchester), who is an improved model, and only loves her maker (Colin Clive). Vengefully the lumbering old Mark I pulls the wrong lever, whereupon Tumescence Tower literally blows its top.

A lyrical realism

The 'forties and 'fifties are under the sign of realism and, predominantly, architecture 'is' society. Many young critics, preoccupied with screen aesthetics for their own sake, find it hard to respond to such films of de Sica's as 'Bicycle Thieves' (1948) and 'Umberto D' (1951), whose style seems so cold and plain. But 'cold and plain' is the key. The streets down which the workman searches for his stolen bicycle have a bland, callous indifference to the desperate individual. In endless succession, skeins of terrace houses, lofty apartment blocks, become symbols of a society built out of privacy, indifference and a human 'absence.' De Sica's sense of Rome reflects his curious blend of Franciscan sentimentality and Marxist hard-headedness. And the 'coldness' of his films prefigures Antonioni's, whose evocation of 'alienation' transposes this critique of capitalism from the proletarian-economic sphere to the bourgeois-spiritual level.

In the films of de Sica and Visconti (and even of their Indian disciple, Satyajit Ray) architecture plays an interesting syntactical role in articulating the image. All three have to deal with poor people living in very crowded conditions. Continual close-up would abolish the sense of *man in his environment* so essential to the films' theme; so individuals are isolated by creating within the frame smaller frames by walls, windows, railings, or other spatial 'vignettes.' Often the character isolated is an unimportant one—a lonely grandfather shaving—while the story proceeds 'round' him, in terms of movement and dialogue. And we become aware of the loneliness in crowds, of lives proceeding beside lives, of individuality everywhere.

Neo-realism died, briefly, around 1953, killed partly by audiences' dislike of its drabness, partly by government dislike for its picture of an Italy where people were poor and it rained all the time. Around 1960 the 'economic miracle' and a governmental 'opening to the left' presented it with a new battery of themes, and it could call on the talents of the 'school of Visconti,' a bunch of very highly cultured young Marxists. One film must stand for many (by Bolognini, Pasolini, Patroni Griffi, Rosi, Olmi, *et al.*). In Lina Wertmuller's 'The Lizards' (1963) long white lines of sun-baked stone houses evoke all the harsh torpor of Southern feudalism. A boy dares outrage tabu and address a girl, unchaperoned, in the street. A God's-eye-view camera looks down on the boy as he overtakes the girl and walks alongside her. The pan continues through its 90 degrees so that street and houses keel slowly over, and 'up' is slewed to some indistinct area to the left of the screen. The lovers walk in a disordered, strange, *weightless* world—the effect is so uncanny that we know they will just let the matter drop.

The architecture of alienation

As Richard Smith remarked in *Ark 19:* 'In "Little Caesar" (1930) Edward G. Robinson's set-up as a minor monster was straight from the Bauhaus stable. . . . Later, modern styling became associated with a new bogey-man in the communist agent who, while obviously living in the same world as we, could not have settings impinging on the audience's dream world. So the as yet unacceptable modern was called into service, along with the use of

modern art galleries and modern music as front organizations.'

An overt anti-egghead bias operated too. But it's less the heroine than the vamp who wears next year's clothes and keys next year's behaviour. So modern styling gradually percolated, from the villain to the hero-villain, and, via the psychiatrist, to the hero; and from the snooty hotel to the cosy home. But a curious thing has happened to what the man-in-the-street thinks of as 'modern' architecture. Just as curtain-walls and tower-blocks are becoming familiar, so the screen portrays them as cold, remote, bland. Tati preferred the unfunctional ramshackle home of 'Mon Oncle' (1958) to sterile bourgeois gadgetry. In Marcel Camus' 'Orfeu Negro' (1959) a steel-and-glass office-building becomes a silent, shining sepulchre, past which winds the joyous snake of a Brazilian native carnival. In Louis Malle's 'Lift to the Scaffold' (1958) a modern office-block evokes the larger trap which is society. Seen through its glass walls, the windows in the block opposite are rows and columns of eyes staring at the hero as he murders his unscrupulous boss. As he escapes in the lift, a power cut traps him between floors—another image for *the system*, and an aesthetically pleasing converse to the sinister of open space. In Resnais' 'Hiroshima Mon Amour' (1959), the new buildings, the glittering neon streets, past which the heroine wanders, are not just the cynical will-to-live of the Japanese people, shaming her 'idealist' clinging to her martyrdom in a cellar. They represent also a schizoid obliteration of the pain of Hiroshima, of the past.

In all these films the equation architecture=society is dominant. A world of rapid moral and spiritual change is a world of 'alienation.' Joan Littlewood's 'Sparrows Can't Sing' (1962) half-domesticates current styles. A block of shiny flats rears over us imposingly; a feckless young Cockney gadabout (Barbara Windsor) leans over her balcony and yells down to her sort-of-husband, 'Don't forget to get us some lemons, love.' Not even modern architecture can awe the Cockney soul.

Occasionally architects' Utopianism can shade over into what feels like totalitarianism. I've talked to people in the LCC Architects' Department who wanted open-plan apartments imposed on people for whom one of the nicest things about quitting their overcrowded old slums was going to be privacy. There's no easy answer to such clashes of taste, involving so many factors. In Antonioni's 'La Notte' (1960), a man is dying in a cancer clinic, whose sleek, lavish lines are, somehow, an outrage—that is, an architectural metaphor for the way in which our optimistic, utilitarian rationalism smooths over human pain, therefore emotion, therefore communication. In this context, its elegance, like the charm with which Plato invests his totalitarian visions, is as sinister as a title like 'The Ministry of Peace.' It's almost as if human nature prefers a slightly messy, random environment, not too ugly, but full of holes and corners and accidents and possibilities of ugliness, to suit its essential ambivalence. In films like 'La Notte' we see the human mind making 'Utopian' architecture 'sinister,' i.e. congenially ugly.

The animus is not against modernity specifically, but against the manner in which society dwarfs the individual, while uprooting (by rapid change) and manipulating him. It is with a seething hatred that King Vidor's 'The Crowd' (1927), Billy Wilder's 'The Apartment' (1960) and Orson Welles's 'The Trial' (1962) show us a vast open-plan office—for its 'sociality' is an imposition of routine and of what David Reisman in *The Lonely Crowd* calls 'false personalization.'

In the films of Antonioni, architecture and landscape are inseparable. Throughout 'L'Avventura' (1959) one broad, flat landscape after another drags itself wearily up the slow haul to the far-off horizon. Limp roads lead the eye to clutters of irrelevant shacks. Buildings, cars, squares are arranged with elaborate casualness, in unsettled snips, fragments of a jolted jigsaw, some of whose pieces are tracks and pans. They are linked raggedly. A slow-motion earthquake is on. The perspectives are a web of emptiness. We first see Claudia (Monica Vitti) waiting for Anna (Lea Massari) outside Sandro's house. She peers in through the doorway at a cold white corridor, hesitating before entering the labyrinth of his cold doubts. There are many such corridors in the film. The search for Anna after her disappearance is a *narrative* 'labyrinth,' whose horror is that it dissolves into a grey mist of guilt. There is the corridor of the train in which Claudia and Sandro first toy with the idea of flirting. There is the long corridor down which Claudia runs in panic as the once-spontaneous Guilia and the sex-obsessed young painter make love. Her final search for Sandro takes her down corridor after corridor, towards one vanishing point after another, until the pursuit becomes a dream-like motionlessness. She is on the nightmare treadmill of their life together.

The strangely-deserted town of Noto, we remember, was completely destroyed by an earthquake in the eighteenth century, and entirely reconstructed—as Sandro, an architect, would have liked to reconstruct Italian society today. . . .

Resnais' 'Muriel' (1963) translates modern deracination into architectural terms. Boulogne, like Hiroshima, is a 'rebuilt,' that is, an amnesiac, town. A stranger asks for the town centre and is told 'You're already there.' So much for civic spirit, for society as an organism. The heroine (Delphine Seyrig) lives among the antiques she sells—her home is a *musée imaginaire* in a shop, exemplifying all our cultural confusions. Her son lives in a rickety adolescent 'den' on a farm—as if all that wasn't complacent suburbia was banished to the periphery of consciousness. Nature—Pan—is only a desperate old tramp among the bunkers, vainly seeking a mate for his goat while the human characters, with Proustian sterility, chase their memories, revealed mainly as illusions and lies except for the shameful secret of torture in Algeria. Neons and plate glass create a maze of reflections amongst which the peripatetic characters intermittently fragment. Only in the rusty iron lacework of an old railway station does there linger any romance, any magic. We are told about a block of new flats which capsized before they were occupied—an absurd accelerando of 'planned obsolescence.' Images of new white concrete blocks suddenly outcrop on to the dialogue, irrelevantly. In a haphazardly decorated flat, the windows become glassy spaces, unfinishednesses in the walls. If 'Hiroshima Mon Amour' was, in essence, one long tracking shot through a maze of distractions to the minotaur of a past trauma, 'Muriel' is *pointilliste*, a mosaic of short, static shots catching a clutter of trivial, nervy, notations, movements, moments.

By the same token, 'L'Année Dernière à Marienbad' (1961) is a lattice of dislocations and contradictions. One thinks of the x-dimensional architecture of M. C. Escher. For Dilys Powell its theme was 'time, memory and love,' for Eric Newton it was 'place,' and the terms are tautologies. This—clinic? hotel? limbo?—is the apotheosis of the 'amnesia' themes of 'Hiroshima' and 'Muriel.' Perhaps the palace dreams the people? . . . or perhaps they, elegant and lovely, and it, are the potential fullness of our lives; remote, frozen and two-dimensional because they are only wish-fulfillment images of ourselves, with no more substance than the nostalgia of 'if only. . . .' Thus they can exist only on the *brink* of freedom. . . .

With its chessboard parquets and chandeliers like dream blossoms, this intellectual structure is an Enchanted Palace whose Sleeping Beauty, instead of lying in a glass coffin, dances the icy minuet of schizoid grace. Similarly, under the ideal turbulence of the Trevi fountain, Marcello in Fellini's 'La Dolce Vita' (1960) is about to embrace his dream princess (Anita Ekberg) when—the fountain dries, dawn descends like a shutter. . . .

The pathos of the baroque

'Baroque' is a conveniently vague and distended word to describe the sumptuousness of these films. Laurence Kitchin points out that in Carol Reed's 'The Third Man' (1949), Viennese baroque seems 'a pompous gesture from the past' by contrast with the frenzied squalor of contemporary

intrigue (which, we might add, climaxes in the architectural negative—a sewer). I can't agree with Mr. Kitchin that its use of formal architecture makes 'The Third Man' a dominant influence on the 'sixties: it derives from the formula of 'incongruous settings' beloved of 'forties melodrama; its director's stock has been plummeting for years; and the exquisite attention paid to the niceties of architecture by Visconti and Antonioni evolves from Italian film traditions. In fact the Italian films reverse the irony of Carol Reed's film. Baroque turbulence seems suddenly energetic, confident, everything the contemporary characters aren't, with their indecisions, their routines.

Fellini's delicate sense of open spaces and masses goes with narratives drifting from encounter to encounter and with a *mise-en-scène* opposing continuous, indecisive movement to homes and palaces. The travelling entertainers of 'La Strada' (1954) carry their motorized shack like a snail's shell. Restlessness is imparted to the 'closed circles' of 'La Dolce Vita' (1960) and '8½' (1962) by the camera's surging, stabbing movements round characters who walk as they think. The peripatetic becomes nomadic. The most imposing architectural mass in '8½' is a scaffolding surrounding a gigantic rocket which is only a film set, for a film which isn't made. Illusion of an illusion. . . .

Orson Welles's 'The Trial' offers a prime specimen of paranoid baroque. Using in some sequences an incessantly roaming camera, in others a flurry of quick cuts, Welles makes all space *fidget*. Taken on the diagonal, the rectangular jut of concrete balconies outside K's flat becomes a double lightning-flash. Apparently separate locales—the bank, the tribunal, the lawyer's suite, the Ministry of Justice archives, the cathedral, the painter's 'cage'—are revealed as one agglomeration: the system in metaphor. K has long been in the whale's belly. Welles simultaneously 'explodes' space (cutting), shuffles (fidgeting) and 'agglomerates' it. Any incongruities are happily exploited. The riveted columns of the Gare d'Orsay appear incongruously in the cathedral, and in the lawyer's suite, among the forest of candelabra.

There exists a curious tension between the efficiency of the system (one thinks of '1984') and its dilapidated architecture (evoking pre-war European bureaucracies), a contrast underlined by K's modern apartment. The dilapidated, peeling architecture gives the system an 'Oedipal' quality of which Welles is presumably aware, for the dialogue abounds in Freudian puns ('oval/ovular,' 'phonograph/pornograph.') Thus the film links the '1984 syndrome' with the bourgeois conscience and love of law and order—an accusation characteristic of Welles's Nietzschean streak. The hollow grandeur thus implied is also a favourite architectural and thematic motif of his, reaching its apogee in 'Confidential Report' (1955). His wide-angle lens and low angles enable tycoon Arkadin to dominate us; but also turn the walls and ceilings of his castle into converging, unstable, tottering affairs, a house-of-tottering-cards. Such shots are Welles's 'signature.'

Expressionism rides again

During the 'forties Xanadu in Welles's 'Citizen Kane' (1941), the palace in Eisenstein's 'Ivan the Terrible' (1944) and the Beast's castle in Cocteau's 'La Belle et la Bête' (1946)—where living arms held candelabra from the walls—seemed the last bastions of screen expressionism. Less individualist directors compromised with realism by setting their stories in' poetic' locales. 'The Third Man' might be subtitled 'Tales from the Vienna Sewers.' Welles's 'The Lady From Shanghai' (1947) featured a love-scene set in a sombre aquarium (so that the silhouettes of shark and octopus would comment on the courtship), and for a final gunfight in a mirror-maze (a superb perversion of architectural space which Welles remembered in 'The Trial,' with the camera racing past alternate mirrors and spaces so that K sees Romy Schneider beyond, and his own reflection, interchange at machine-gun tempo).

Fast emulsions and pistol-size camera have vastly facilitated what we may call a 'flip expressionism'—subjective effects 'imposed on' reality simply by juggling with exposures, movements, and so on. In Truffaut's 'Les 400 Coups' (1959) the camera drifts past empty warehouses, with the Eiffel Tower and a pale sun beyond, and everybody's Paris is suddenly chilled to one boy's feeling of utter desolation and solitude. The boarded-up windows become gouged-out eyes.

Directed by Jacques Doniol-Valcroze (editor of *Cahiers du Cinema*), 'L'Eau à la Bouche' ('The Game of Love,' 1960), commits one of the most creative outrages ever perpetrated on architecture by a film director. Its story is a little piece of bittersweet, about three pairs of young lovers switching round during a week-end in a Perpignan castle. The castle is a real treasure of nineteenth-century bourgeois pretention — blossoming neo-classical statues, tapestries and paintings galore of Greek Gods up to their various amorous adventures. Their fullblown flesh and gestures contrast deliciously with the cool, deadpan ways, the tight trousers and relaxed sambas, of the modern girls. An ever-moving camera banishes all sensation of stuffiness and rises to a crescendo of vivacity in two visual climaxes where the camera weaves itself round staircases. Up the grand staircase the pompous butler, teased beyond endurance, pursues the provocative maid, frantically tearing her clothes off one by one as she flees. And later, when the more sensitive girl, a loser in love, is missing, and her friends fear suicide, the concierge's knowing little daughter (actually the director's) gravely bouncing her yo-yo, leads the anxious adults along the ups and downs and ins and outs of an iron fire-escape that twists and bends across the roof to the little corner where the girl has hidden herself to weep. And there is a quite stupendous sequence where the camera thrice races round the castle, in whose huge bulk, set suddenly spinning, three lighted windows signify that three couples are revelling in the delights of the flesh. That intoxicated castle is the castle of worldly delights. . . .

The renewed popularity of fantasy, at all intellectual levels, has offered screen architects several unusual problems. In Roy Rowland's 'The 5000 Fingers of Dr. T' (1953) the prisons of the malicious Dr. T include a staircase every one of whose steps is of a different, and inconvenient, height. (Dungeon architecture would be an interesting new field; after all, a 'good' dungeon reverses most of the usual function of architecture; e.g. it should drive its occupants mad).

In film studios, more ruins are being built than at any time since the Gothic revival. Perhaps the most sensational example is 'Der schweigende Stern' ('First Spaceship on Venus,' 1960), an otherwise bad East German film redeemed by the brilliant work of its Polish art designer. UN astronauts land on Venus and discover that its erstwhile inhabitants, planning to unleash a new form of power against Earth, had accidentally destroyed themselves. Anatol Radzinowicz has based himself on canvases of Tanguy and Dali to create the convulsive décor of a ravaged planet. An atrocious beauty invests these ruined and incomprehensible installations. Bunches of steel plates are warped into arcs recalling the wind-bellying sails of tea-clippers; huge, half-molten domes evoke white skulls from whose eye-sockets drip dissolute forms like white worms; from a bird's-eye-view, a reactivated 'energy complex' suggests 'Broadway Boogie-Woogie' as rendered into a grotesque construction by Jean Tinguely. And the inconstant winds of Venus are evoked by violet and oxblood washes drifting across the images.

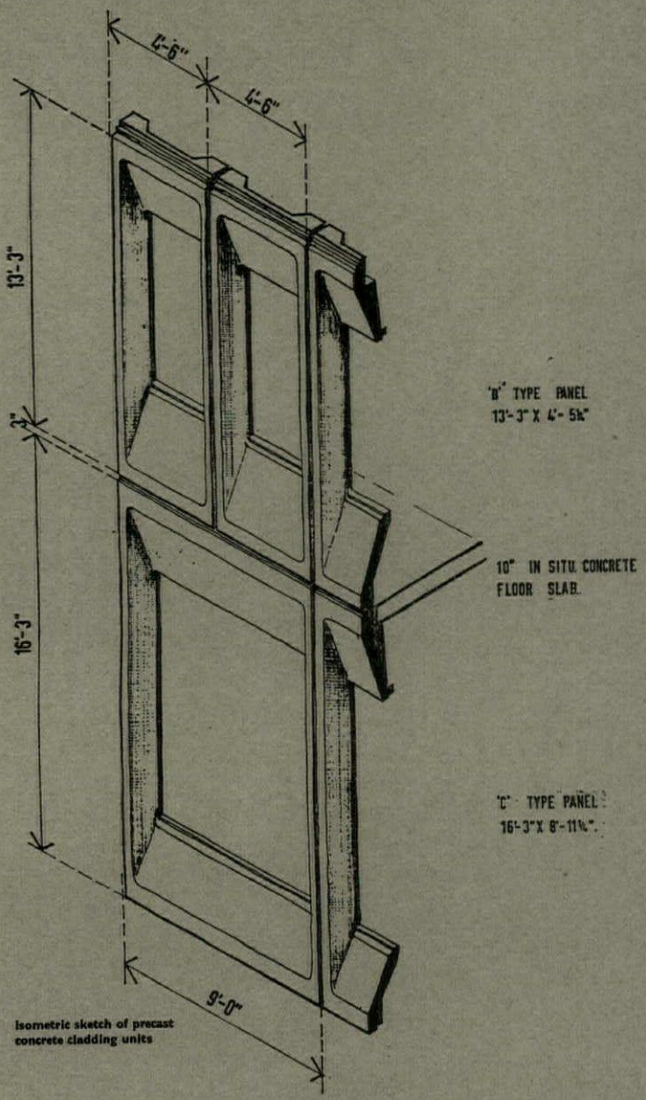
In a necessarily incomplete survey I have limited myself to the *dramatic perversion* of architecture rather than to the screen *presentation* of architecture (which also exists, but reveals less about the cinema). As it is, I can only lament my failure to dwell in appropriate detail on such films as Vittorio Cottafavi's 'Hercules Conquers Atlantis' (with its blood-red classicism), Eisenstein's 'Ivan the Terrible' and Jacques Rivette's 'Paris Nous Appartient' (1960)—two vastly different essays in paranoiad architecture—or the tormented baroque of Wajda's 'Ashes and Diamonds' (1961)—or . . .

PRECASTING FOR QUALITY

OFFICES, ST. KATHARINE DOCK, LONDON

architects **ANDREW RENTON AND ASSOCIATES**

photographs by Henk Snoek



Isometric sketch of precast concrete cladding units

1 (facing page), the offices seen from the west side of the dock.

Occupying the north corner of St. Katharine Dock, this building replaces the block of offices, by Philip Hardwick destroyed during the war. It houses the Port of London Authority's new computer and provides headquarters and a divisional office for the Authority's police force. In addition, club and canteen accommocation are provided for all members of staff. On either side stand Hardwick's austere brick warehouses around the basin of St. Katharine Dock which was built in 1825-8 by Thomas Telford. The site of the original Dock House was of awkward shape and it was decided to enlarge it by demolishing part of the adjacent warehouse already damaged by bombing. This made it possible to avoid rising above the warehouse skyline.

The new building has been designed on an 18ft. structural grid, which maintains the dominant rhythm of the brick arched bays and cast iron columns of the warehouses, while the edge beam to the ground floor slab continues the line of the Portland stone course above the columns. The superstructure is of strongly-modelled precast concrete units with a crushed flint exposed aggregate giving a dark rich texture to blend with the adjacent brickwork. The substructure of existing vaults was filled with a pumped mixture of cement and flyash in advance of the main contract.

A conventional plan with a spine corridor and offices on either side would have been unsuitable for the inclusion of such large spaces as a canteen, clubrooms and a police parade room, but these could be planned on the lower floors. Along with the need to create a bulky building, this made possible a plan arrangement 100ft. wide with normal office space on the top two floors, arranged around internal courts.

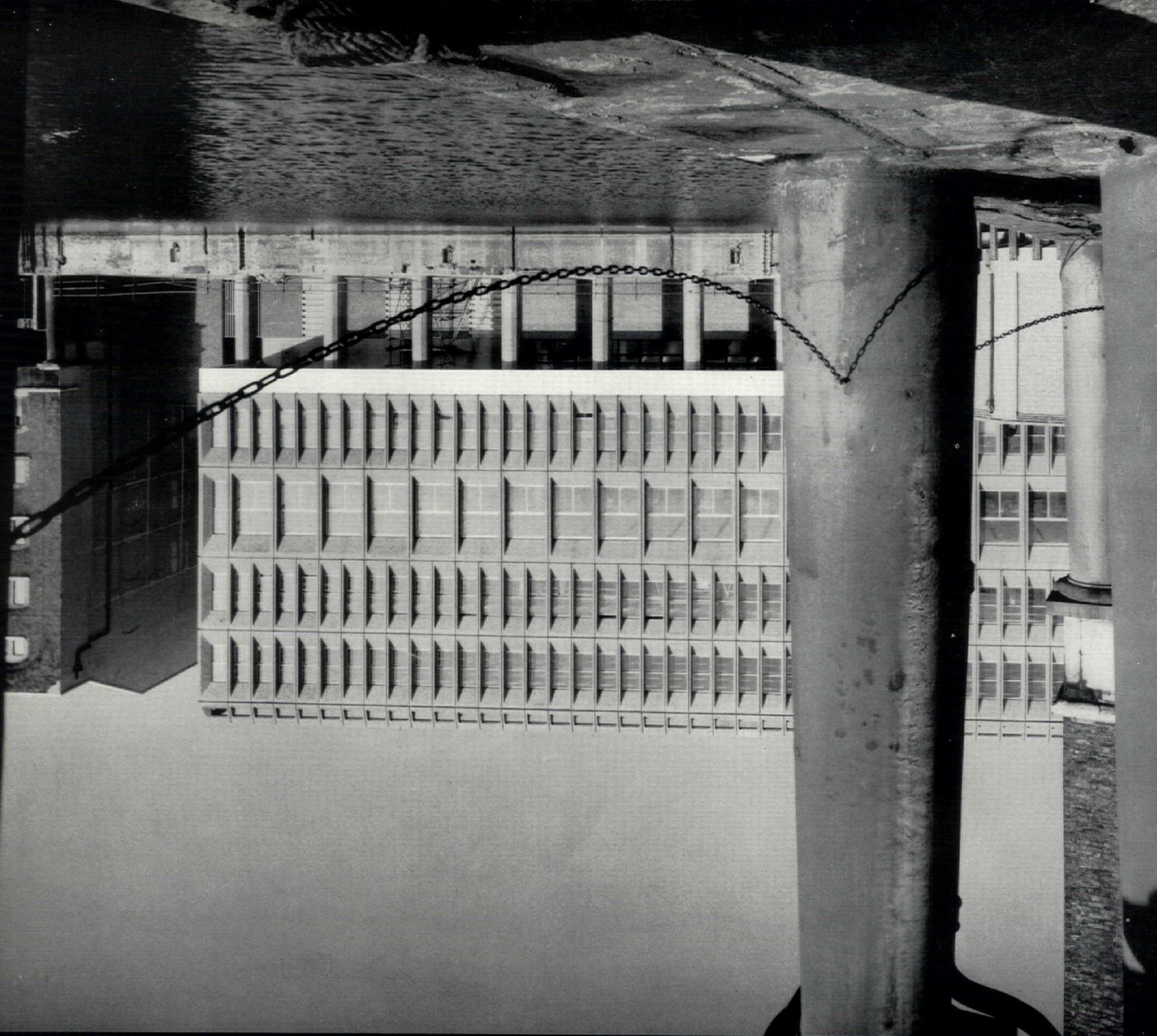
A special feature of the site is the change in level of 15ft. or more between the surrounding streets and the quayside. This was in the past obscured by a high wall providing customs security for the dock. Security still has to be maintained, but the new customs wall is built nearer the edge of the quay with the building outside the customs area, thus revealing the change in level. Two ramps give access for vehicles to quay level for parking and direct access to lifts and service entries. The building rises from quay level, standing free of its surroundings except for two access bridges, one at the west end for the main office and canteen entrance and the other at the east end for the police entrance.

The western entrance leads through an open concourse, with views of the Tower of London, to the main entrance foyer from which lifts give access to all floors. From the foyer with its coffered precast roof a wide staircase leads up to the first floor which forms virtually a piano nobile with views over the dock. The canteen, seating 450, is planned on the first floor, allowing easy access for the large number of staff coming from the head office in Tower Hill, and also avoiding an unnecessary burden on the lift system. A single servery deals with the canteen and the dining rooms for senior staff and police.

The 18ft. column spacing has led to subdivision for office planning on a module of 4ft. 6in. By contrast the first floor is divided into 9ft. bays. Internally on the second and third floors the divisions of the floors and ceiling, the exact positions of walls enclosing such features as escape stairs and the positions of underfloor services are all governed by the fixing of the demountable partitions on the 4ft. 6in. grid.

On the roof, besides lift towers, there is a penthouse flat for the chairman of the PLA, around its own small courtyard.

Partner in charge, Andrew Renton. Associate, Humphrey Wood. Job architect, Ian Noble. Structural engineers, Ove Arup & Partners. Services engineers, J. Roger Preston & Partners. Quantity surveyors, George Corderoy & Company.





2



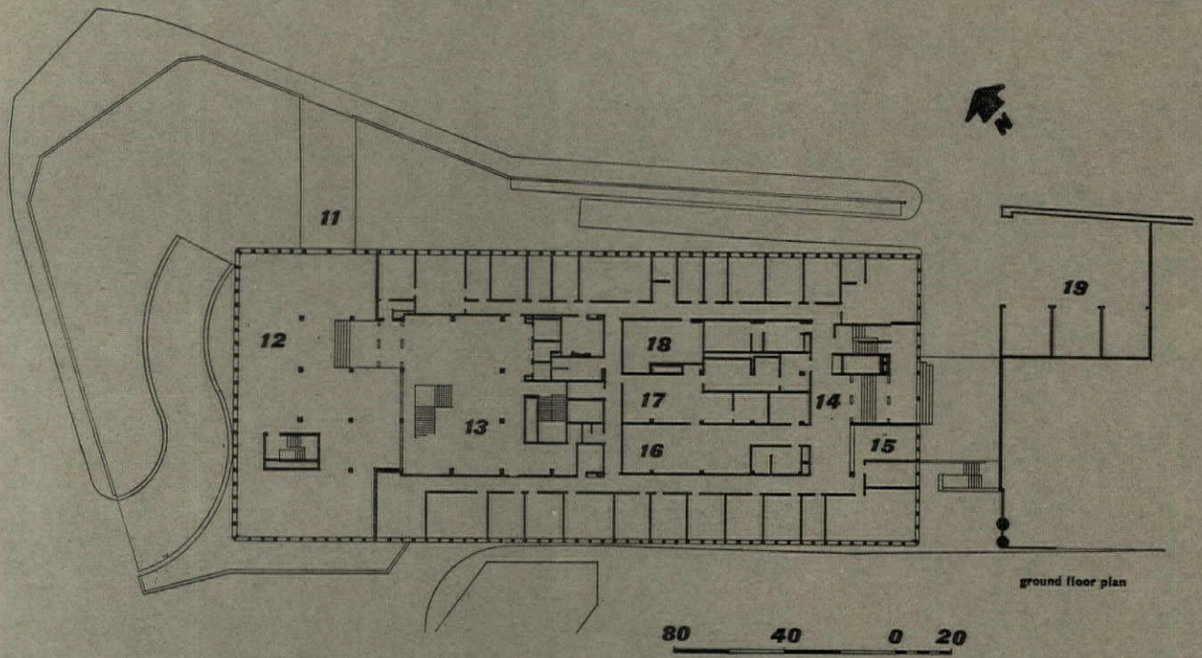
3



4

ng along the quay with the offices on the left rdwick's warehouses in the centre. 3, distant view from the south side of the dock. 4, the ground floor concourse, looking over the Tower of London.

key to plans
1. car park
2. unloading bay
3. kitchen
4. plant room
5. sub-station
6. switch room
7. battery room
8. oil tanks
9. boiler room
10. cooling tower
11. bridge
12. concourse
13. foyer
14. police entrance
15. duty room
16. parade room
17. changing room
18. conference room
19. garages
20. west court
21. east court



ground floor plan

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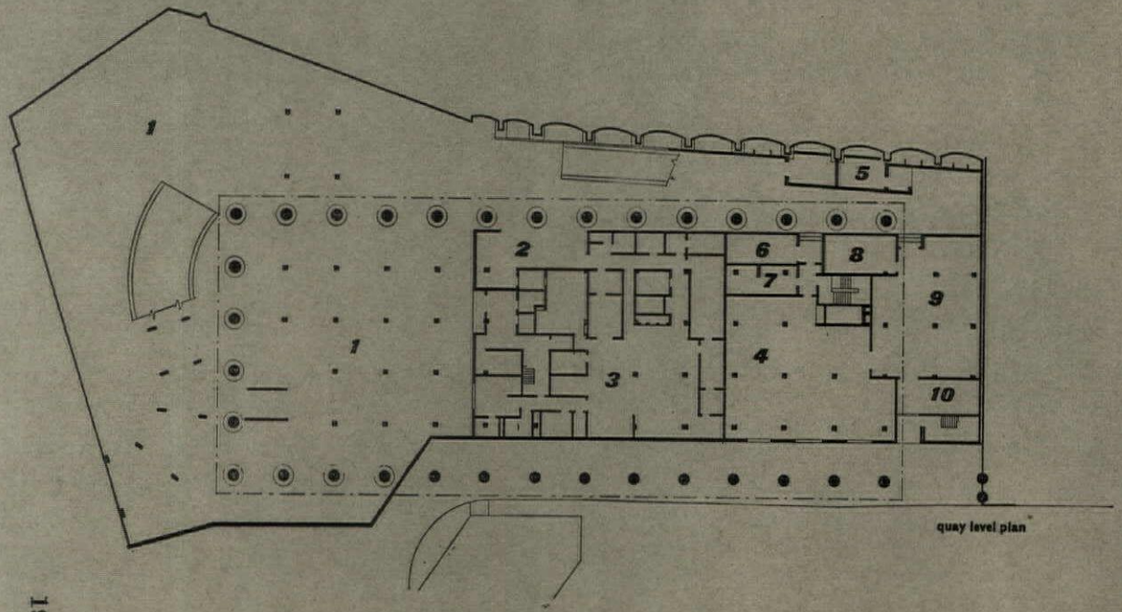
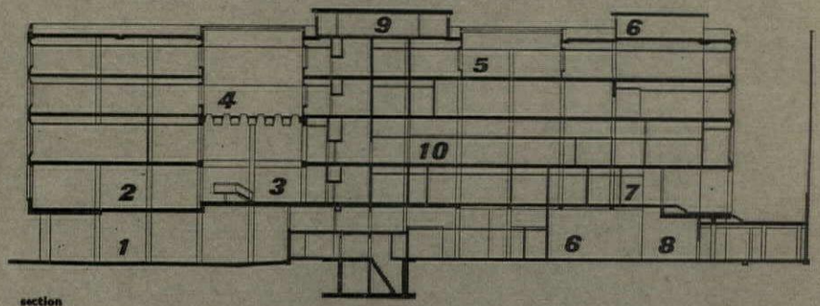


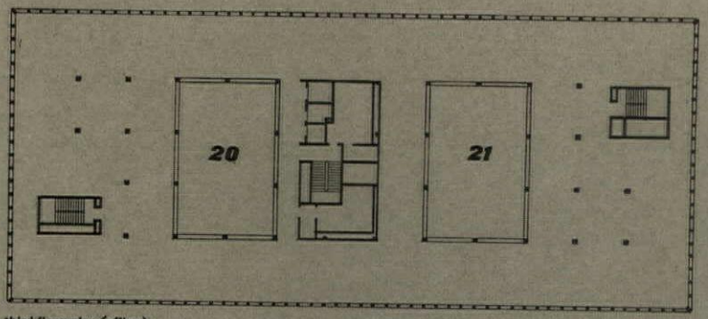
quay level plan



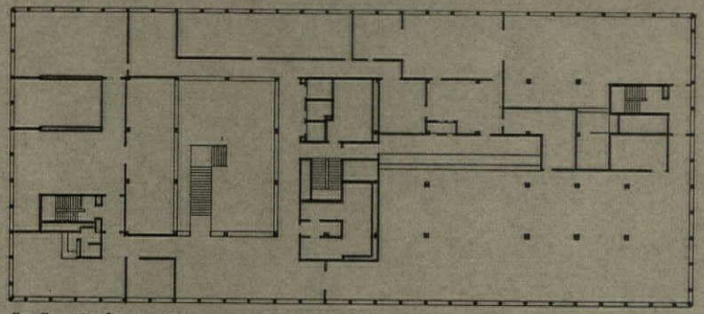
section

key to section
1. car park
2. concourse
3. foyer
4. west court
5. east court
6. plant room
7. police entrance
8. boiler house
9. penthouse
10. canteen servery

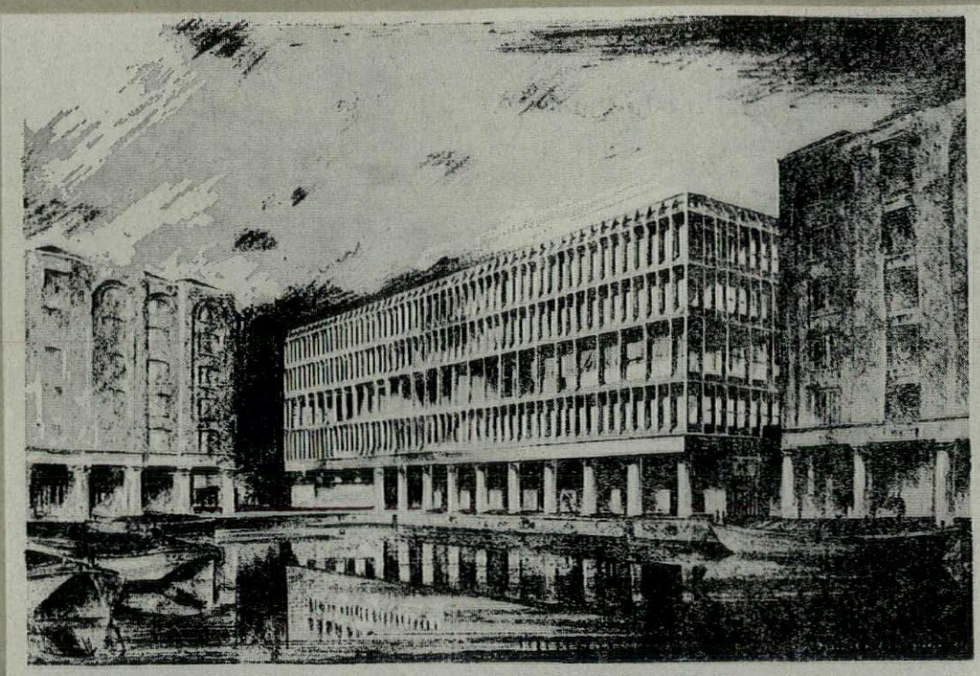
OFFICES, ST. KATHARINE DOCK, LONDON



third floor plan (offices)



first floor plan (canteen, dining rooms and games rooms)



5, the offices from the south-east, from a perspective by Andrew Renton.

criticism

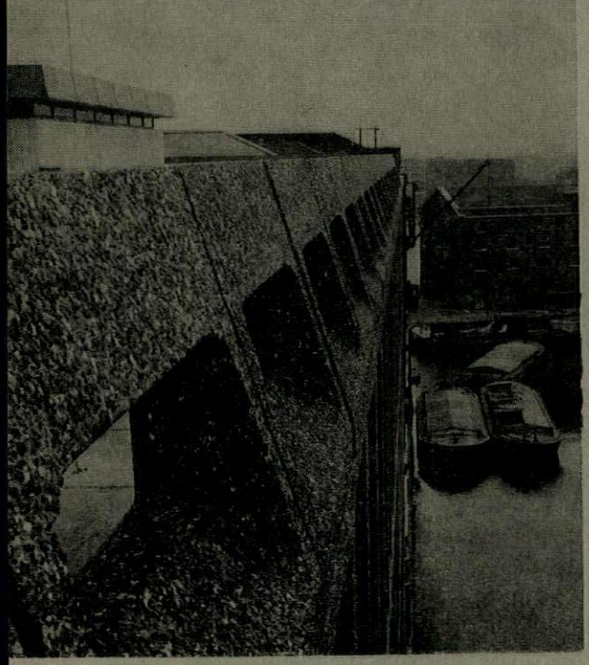
Andrew Renton's St. Katharine Dock offices are the first major building to be completed in central London in which storey height precast concrete units have been used purely for reasons of quality, of prestige and of maintaining a fine existing architectural environment. Renton admits an 'emotional basis' for his design. Not merely the magnificent Telford-Hardwick warehouses, but the Tower of London, Tower Bridge, the Royal Mint and the braggadocio *of Sir Edwin Cooper's Edwardian headquarters for the PLA on the other side of Tower Hill, all contributed to the need for a massive, boldly modelled building which could hold its own both now and within any future redevelopment of the docks. The colour of the Tower and its crenellated outline have been matched in spirit if not in detail, and the nautical atmosphere of the quayside has been cleverly transmitted through the building beneath its massive* pilotis.

Although the clients regard this building as essentially utilitarian, their experience of Cooper's magniloquence has led to a remarkably generous sequence of public spaces, from the western concourse to the foyer, lit through its chunky coffered roof, to the grand staircase with its panoramic view and to the spacious canteen and club-rooms. The semi-external concourse is a particularly fine space, with its floor of red tiles, though it needs the window openings glazed to expel the bleak west wind. Equally successful are the office spaces with their modular partitioning and acoustic ceilings incorporating lighting.

The external concrete work is of superb quality, not only the panels with their ingenious 'open drain' joint, but also the rough boarding of the pilotis *and the vertically ridged pattern of the in situ facing of the internal courtyards. The chairman's penthouse is reminiscent of recent Japanese work. The whole building displays the same unity between architect and engineer which existed in Telford's and Hardwick's time—a unity which matches the natural strength of the water and of the granite-paved surrounding streets.*

In two respects the design seems to show that it is 'early work' of its type. The generosity of the clients did not extend to full air-conditioning, and thus the noble scale of repetitive flint-faced megaliths, which was so impressive when under construction, has been gravely compromised by the busy pattern of glazing bars. Secondly, the building does not in the last resort cohere. There is too great a split between precast exterior and in situ interior, the depth of spans having discouraged precasting throughout (curiously, this combination of 'wet' and 'dry' reverses that of the Telford-Hardwick buildings). The next building of this type by these architects, the new Windsor Borough Council offices (see last January's 'Preview' issue) promises to resolve this. N.T.

6, looking along the roof with the dock below. 7 (facing page), close-up of the return wall at the east end showing shuttered concrete slab and precast cladding units.



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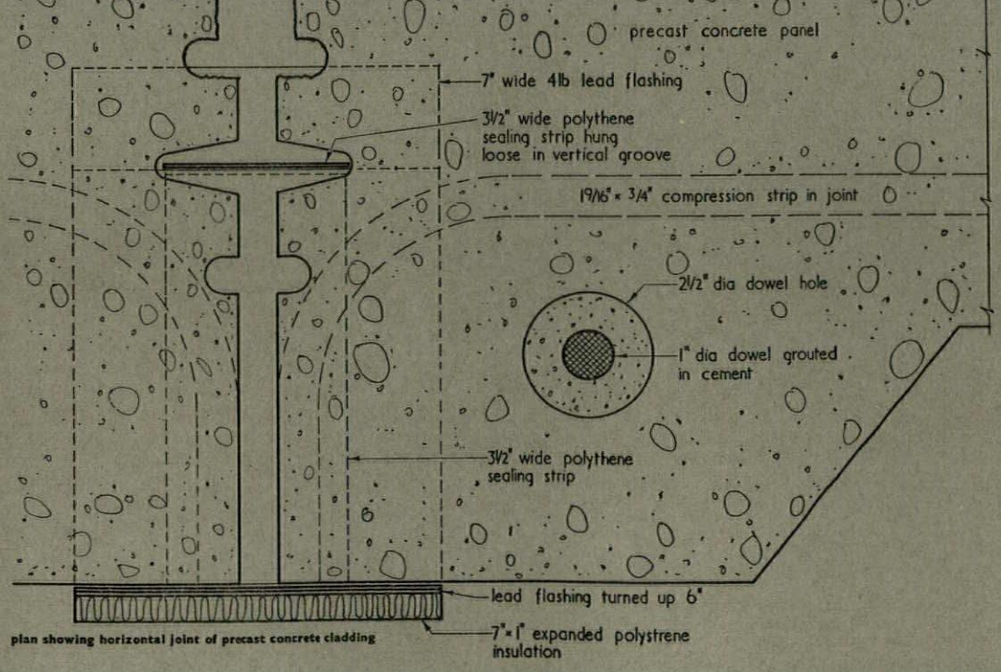
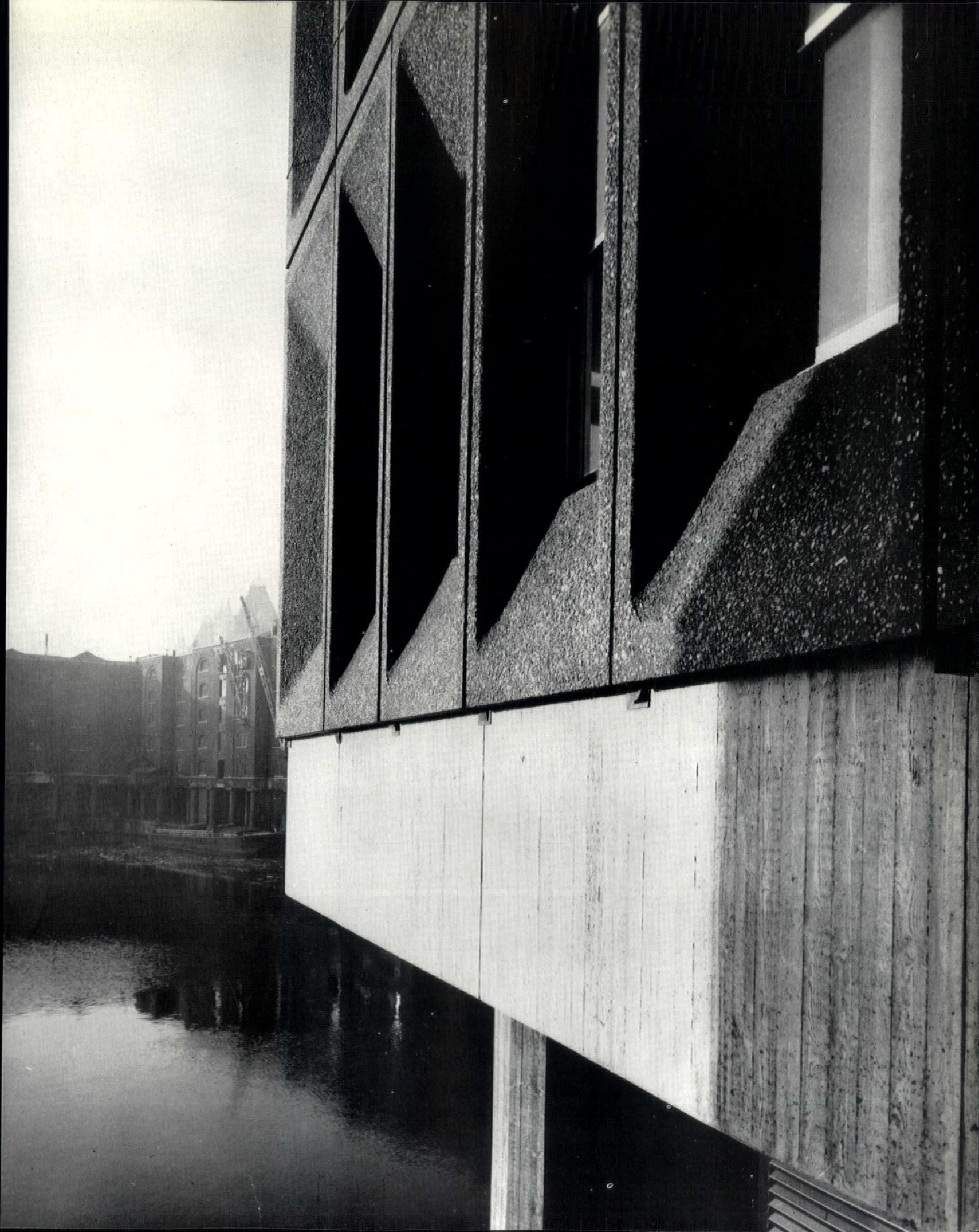
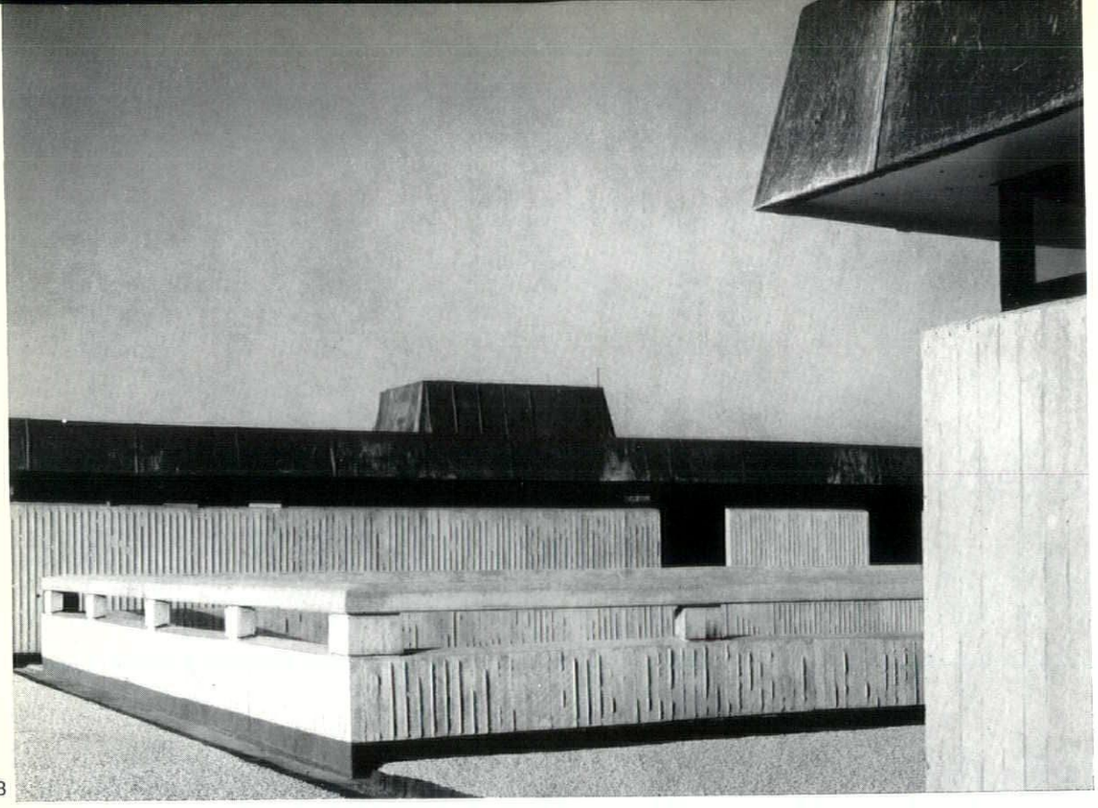


plan showing horizontal joint of precast concrete cladding

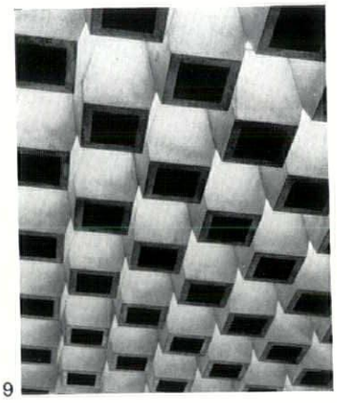




8

OFFICES, ST. KATHARINE DOCK, LONDON

8, the roof, with the penthouse flat on the left and the east court in the centre. 9, coffered precast roof over the entrance foyer, under the west court. 10, 11, typical office interiors showing the acoustic ceilings with integral lighting, and the demountable partitioning on a 4ft. 6in. grid.



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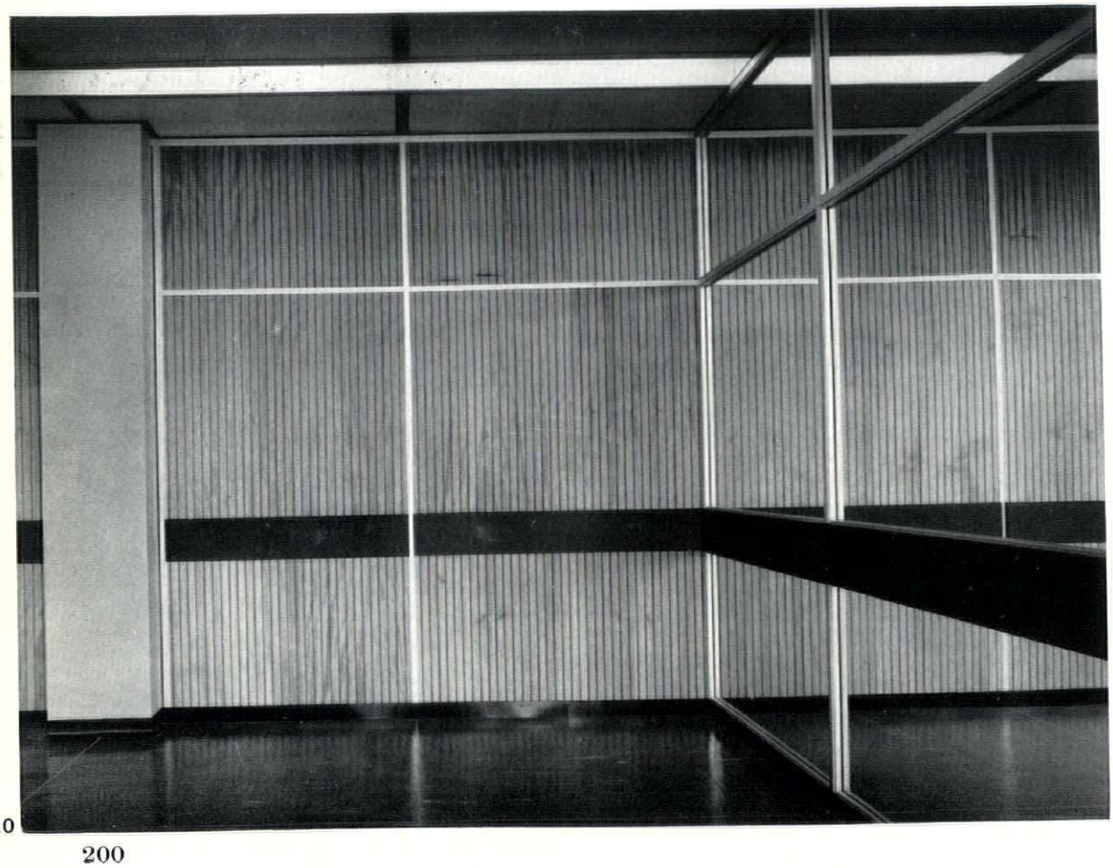

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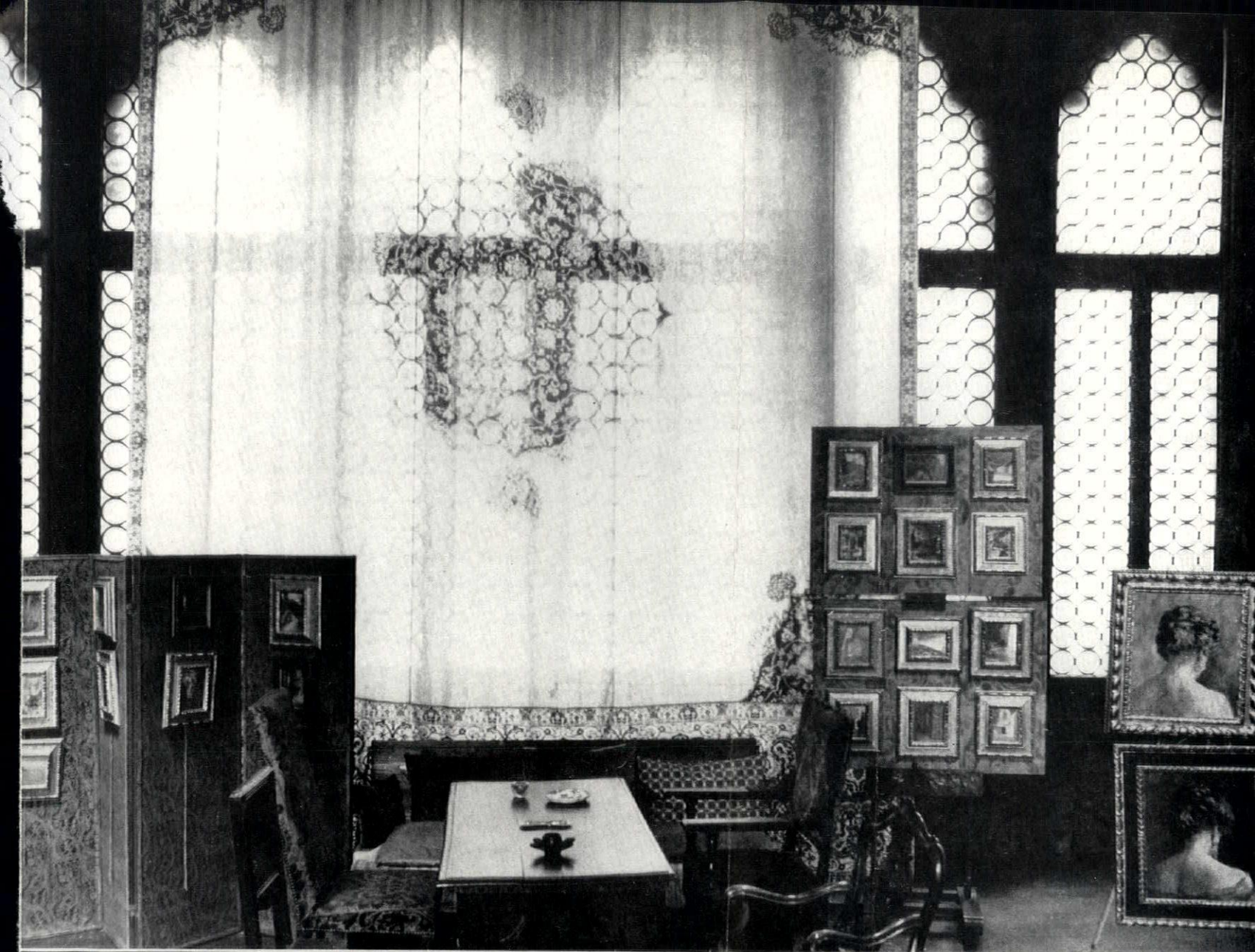
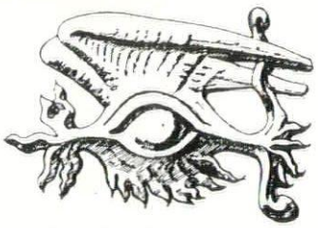






the exploring eye



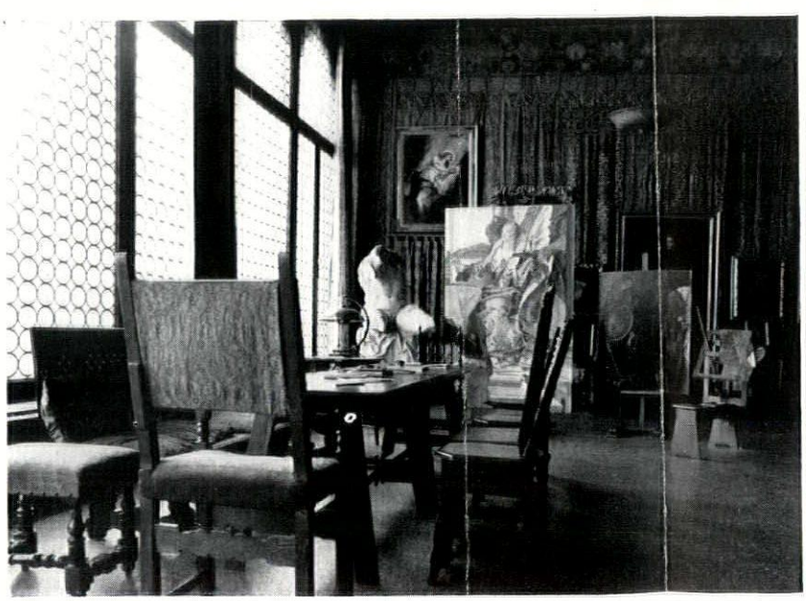
1, paintings in Fortuny's studio in the Palazzo Pesaro-Fortuny, with a self-portrait on the right. 2 (below), the principal room of the palazzo.

photographs by Manfredi Bellati

The Venetian palazzo recently known as the Palazzo Pesaro-Fortuny was occupied until his death in 1949 by the Spanish-born stage-designer Mariano Fortuny y Mandrazo, and when Manfredi Bellati was allowed access to it a year or so ago and took these photographs, its contents were still as Fortuny had left it.

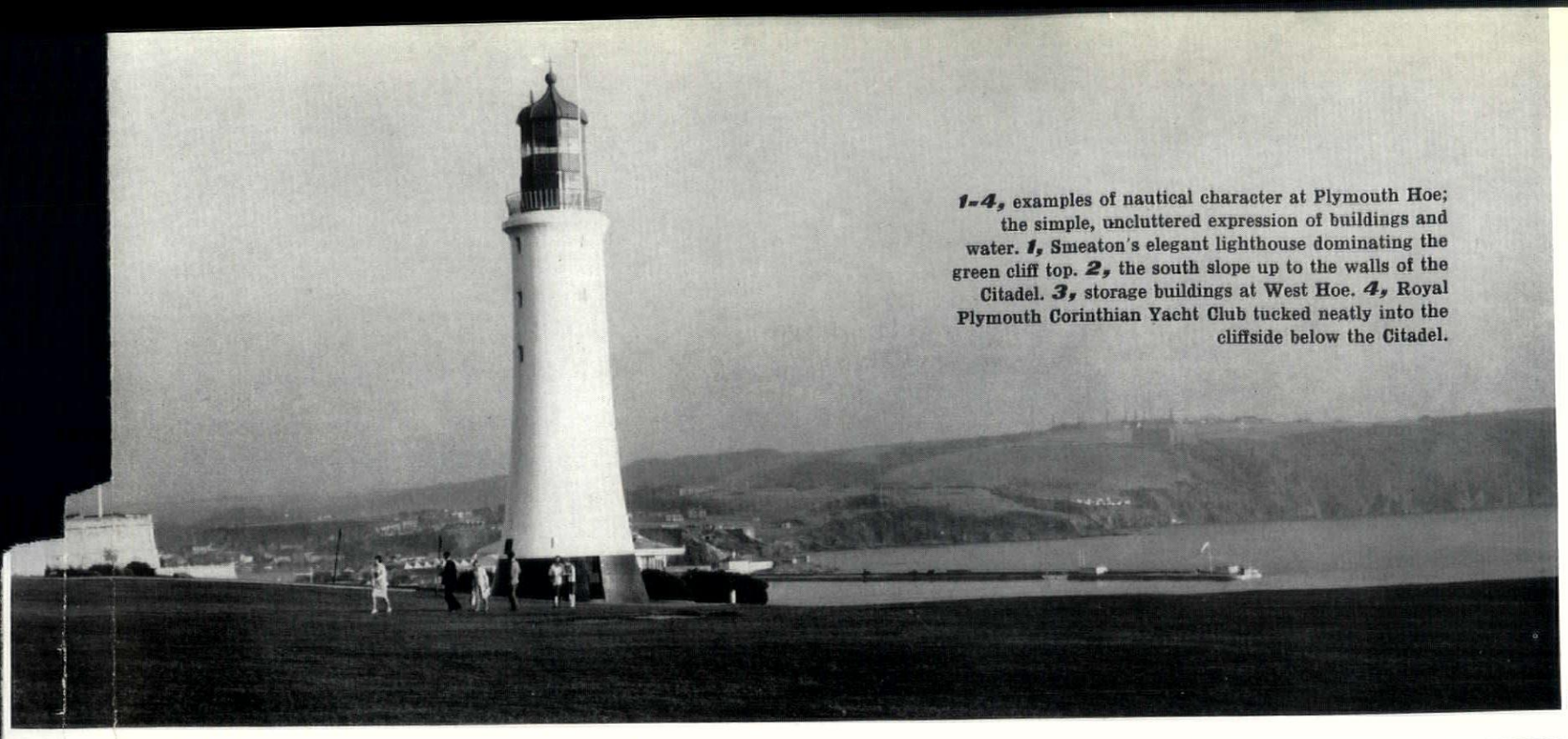
Fortuny was born in 1871, and when he was three years old his father died and his family moved to Paris and then to Venice. His father had been well known in Spain as a painter and his mother's name—Mandrazo—is connected with the foundation of the Prado Museum and she herself was descended from painters. Their son, after studying art in Paris, took a studio in the palazzo—then known as the Palazzo Pesaro-Orfei—in 1902. By stages afterwards he took possession of the entire palazzo, restored it and occupied it as a studio, workshop and residence for his family.

Fortuny began as a painter and etcher but made his reputation as inventor and designer of a diffused lighting system (used to light the Tintoretto in S. Rocco and the Carpaccios in S. Giorgio degli Schiavoni) and of a dome on which light could be projected over a theatre stage, replacing the painted skies previously used. This luminous dome was first experimented with in Paris in 1906 and was installed in several major European theatres including La Scala at Milan (1922). Fortuny designed scenery for La Scala—mostly for Wagner operas—and was also a sculptor, a photographer and, on at least one occasion, an architect: he designed, and made a model of, an open-air theatre—never built—for Montjuich, Barcelona. He was a friend of d'Annunzio, La Duse and Sarah Bernhardt.



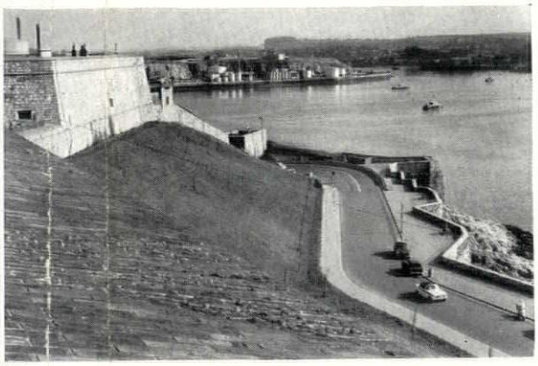
2

The Palazzo Pesaro-Fortuny, which stands between the little campo of S. Beneto and a canal, was built in the first half of the fifteenth century for the Pesaro family. When they left it in 1786 it housed the Orfei music foundation until 1826 after which it became lodgings for 350 impoverished workers. Its principal room, 147 ft. long with diffused light coming through tinted windows at either end and along one of its sides, is the room in which Fortuny worked. Among the equipment still contained there and shown in these photographs, besides Fortuny's own paintings and the copies he made from Tiepolo, Goya, Velasquez, Veronese and others, are items from his collection of paintings and tapestries and an impressive array of moulds, presses, machines for cotton-printing, looms, furnaces, cameras, easels and palettes.



1–4, examples of nautical character at Plymouth Hoe; the simple, uncluttered expression of buildings and water. ***1,*** Smeaton's elegant lighthouse dominating the green cliff top. ***2,*** the south slope up to the walls of the Citadel. ***3,*** storage buildings at West Hoe. ***4,*** Royal Plymouth Corinthian Yacht Club tucked neatly into the cliffside below the Citadel.

1



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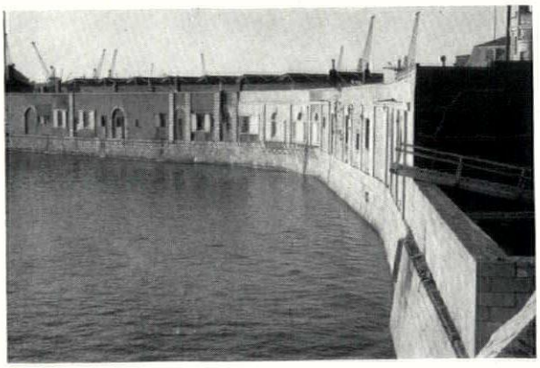

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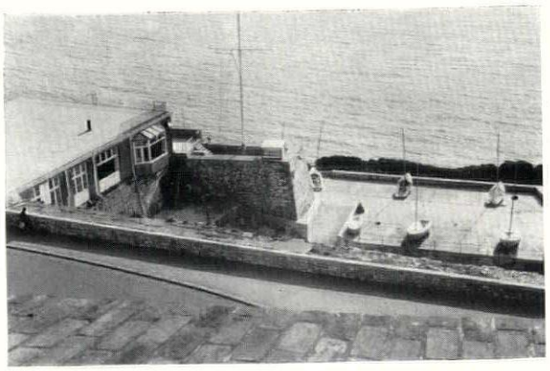

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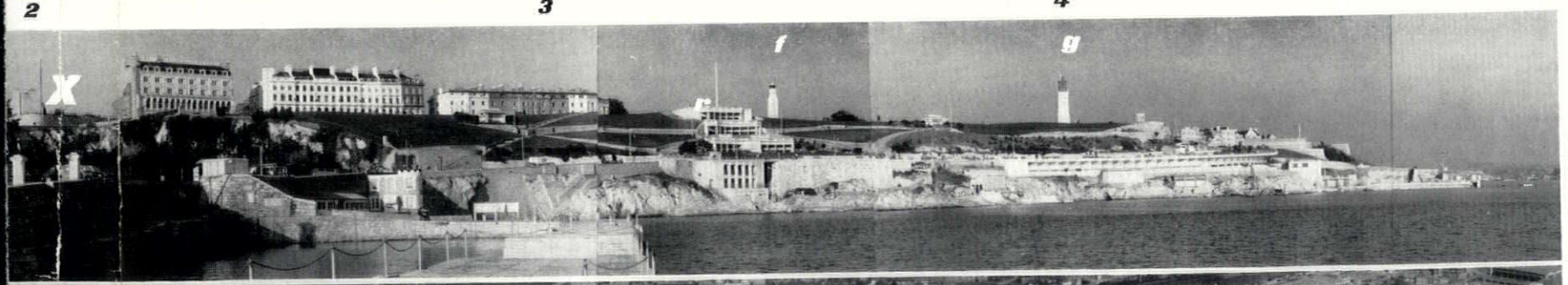

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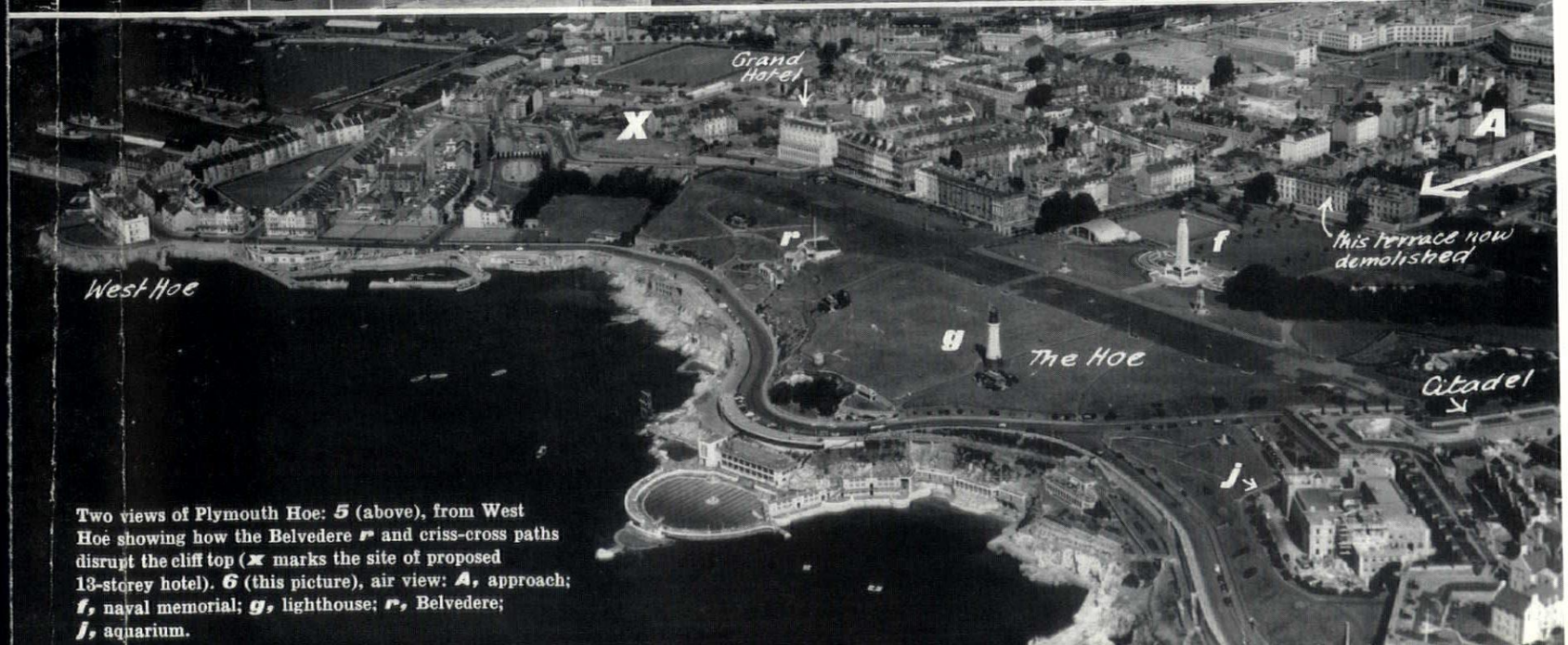

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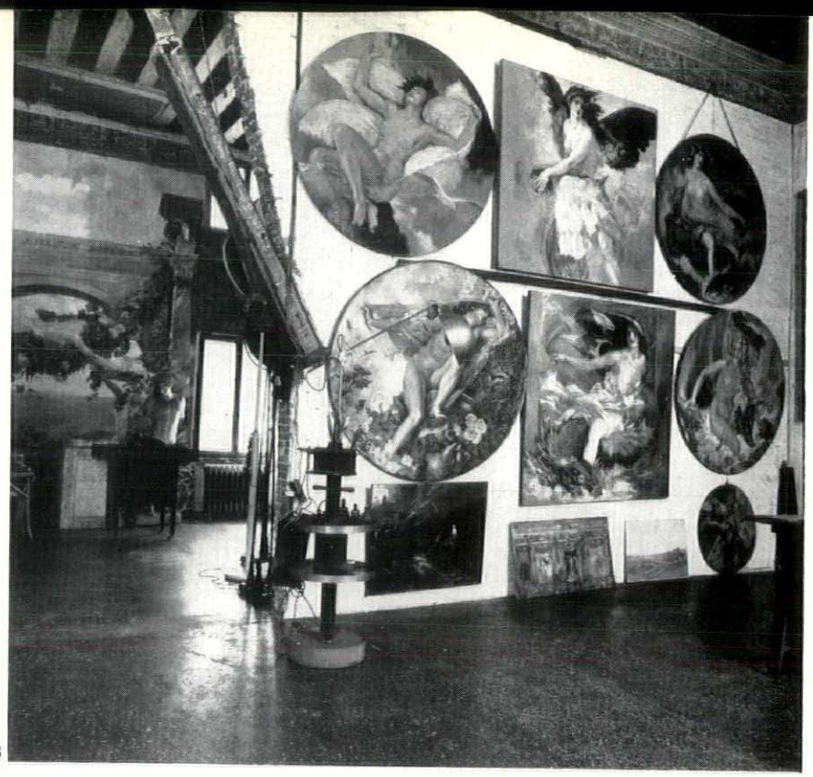
Two views of Plymouth Hoe: ***5*** (above), from West Hoe showing how the Belvedere ***r*** and criss-cross paths disrupt the cliff top (***x*** marks the site of proposed 13-storey hotel). ***6*** (this picture), air view: ***A,*** approach; ***f,*** naval memorial; ***g,*** lighthouse; ***r,*** Belvedere; ***j,*** aquarium.



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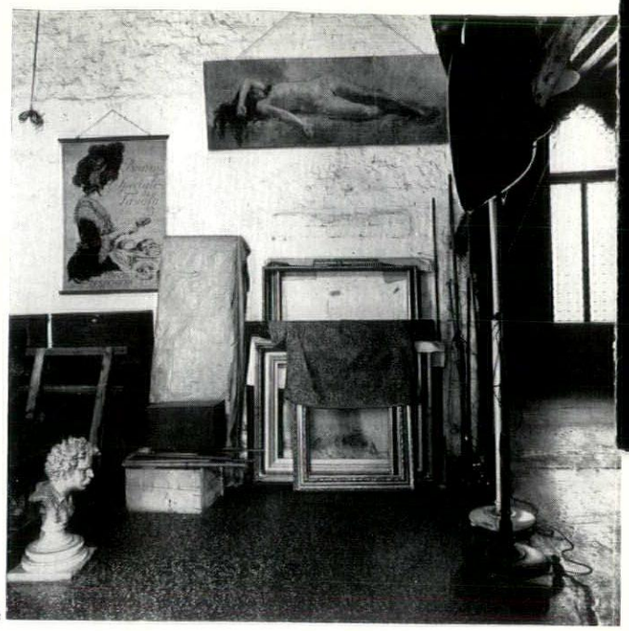

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3, Fortuny's studio in the Palazzo Pesaro-Fortuny. 4, a poster and a nude by Fortuny. 5, a nude by Fortuny seen beyond a sculpture. 6, 7, the principal room of the palazzo with, reflected in 7, a copy of a Tiepolo painting.

5



6
7

NAUTICAL CHARACTER OR MUNICIPAL CONFUSION?

Kenneth Browne

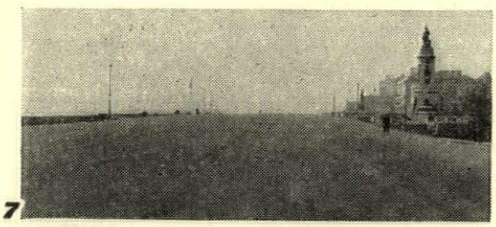
ON THE HOE

The threat to build a thirteen-storey hotel* on Plymouth Hoe stresses the urgent need to safeguard this historic cliff top. Not just to freeze it, but to prepare a really sympathetic plan for the whole promontory area.

Fine views for American tourists cannot possibly justify ruining the Hoe; Plymouth's one great natural asset. Yet the new and massive hotel proposed there, on a site next to the Grand, would effectively destroy the scale of the Hoe once and for all. The design, to judge from the drawing published in the local papers, is garish, bulky, aggressive and just about the last thing wanted there. Hotels, yes, but horizontal and low enough to allow the Hoe still to seem a large space and Smeaton's fine lighthouse still to dominate it. Unfortunately, it appears that the city council not only encouraged the building but actually made it a condition of the contract to redevelop Drake Circus at the other side of the city. This design must not be built.

In fact though, the whole area back to Citadel Road needs to be studied as one problem. There are five main aspects to consider:

A. Approach Now a long drag up Armada Way, much too wide and lacking incident with the Naval Memorial (*f* in *5*) on axis at the end and,



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intriguingly, just the top half of Smeaton's elegant lighthouse peeping up to the left. Windswept approach leading to windswept cliff top; no contrast. Before Armada Way was built a terrace sealed off this approach; now the space leaks out.

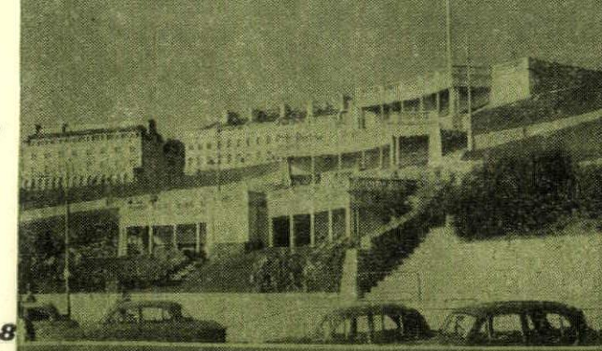
B. The Hoe A large expanse of green cliff top with fine views over Plymouth Sound dominated by the lighthouse, *1*, and backed by a dignified terrace including the Grand Hotel (see *5* and *6*). However, the image is confused by criss-cross stone walled paths and steps on the forward slope, a wedding cake shelter called the Belvedere *r* on a non-existent axis, and itsy bitsy shrubs and seats, *8*. The level cliff top itself is spoilt by a forbidding desert of tarmac, The Promenade, *7*, like a main runway at London Airport.

C. The Foreshore Once just rocks plunging into the sea, now a confused clutter, *9*, of platforms, promenades, kiosks, steps, rails, bathing huts and coffin-like lumps of concrete; as though every councillor for the last thirty years had made his mark here. It is important to simplify this. The road deck with promenade below is a good functional design, *5*, following the cliff shape, but it peters out. The RPC Yacht club in *4* shows how buildings can be made to fit snugly into the cliffside without fuss.

D. The Citadel A large, low, battlemented fort, at one time the only feature of the headland. An army barracks, access is denied to the public. Its silhouette is confused by an assortment of barrack blocks inside and the aquarium outside, *j*. Splendid views from the battlements.

E. West Hoe A flat area of 17 acres west of the Hoe and at a lower level. Closely built up with three-storey terraces and visually a good contrast to the open Hoe above. The even height, simple shape and stark uprightness of the buildings on the sea's edge is dramatic. The character of immediacy continues round to the dockyard, *3*,

* At *X* on *5* and *6* opposite.



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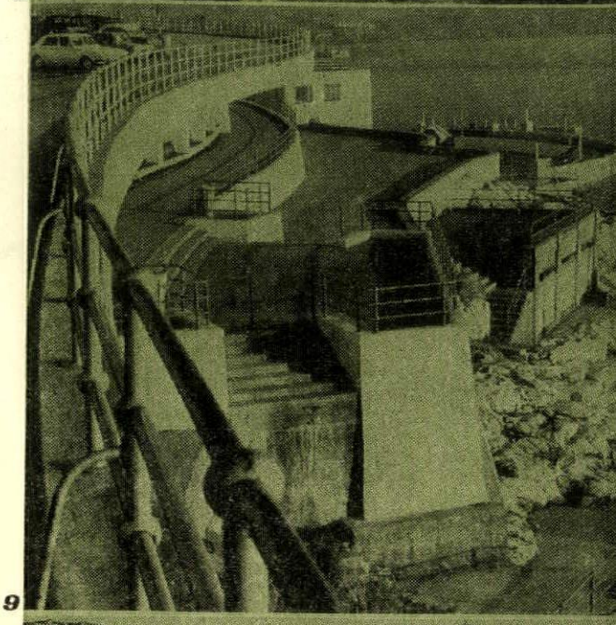
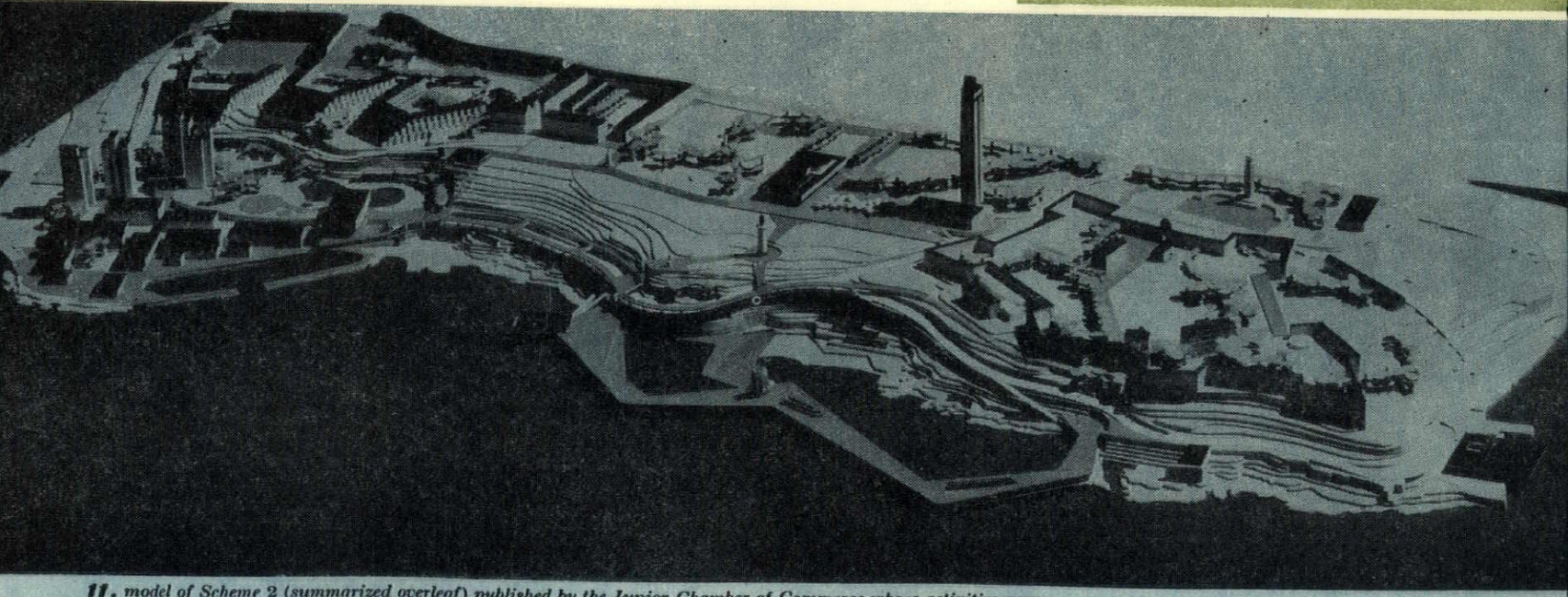


9



10

7, the Promenade, a bleak asphalt 'runway' on the Hoe. 8, the Belvedere and, 9, the Foreshore are examples of municipal clutter which would be multiplied, 10, by the measures suggested in Scheme 1 (overleaf).



11. *model of Scheme 2 (summarized overleaf) published by the Junior Chamber of Commerce whose activities were largely responsible for the building of the Tamar road bridge and contributed to the saving of the Barbican (see AR, April, 1957)*

Three plans for the Hoe



i.

Scheme 1 *by the City Engineer.*

A. Approach *(Armada Way). No change.*
B. The Hoe *Keep as open space but with covered walkway leading to glass lift tower connecting with promenade.*
C. The Foreshore *Build massive promenade out in the sea, enclosing large new swimming pool, cafe for 300 and children's play area.*
D. Citadel *No change.*
E. West Hoe *Clear site and redevelop as entertainments centre, with theatre, skating rink, bowling alley, dance hall; also conference hall, motels and holiday flats. Make traffic-free precinct with new link road to the north.*
Car Parking *Multi-storey parks at* ***k*** *and* ***l.***



ii.

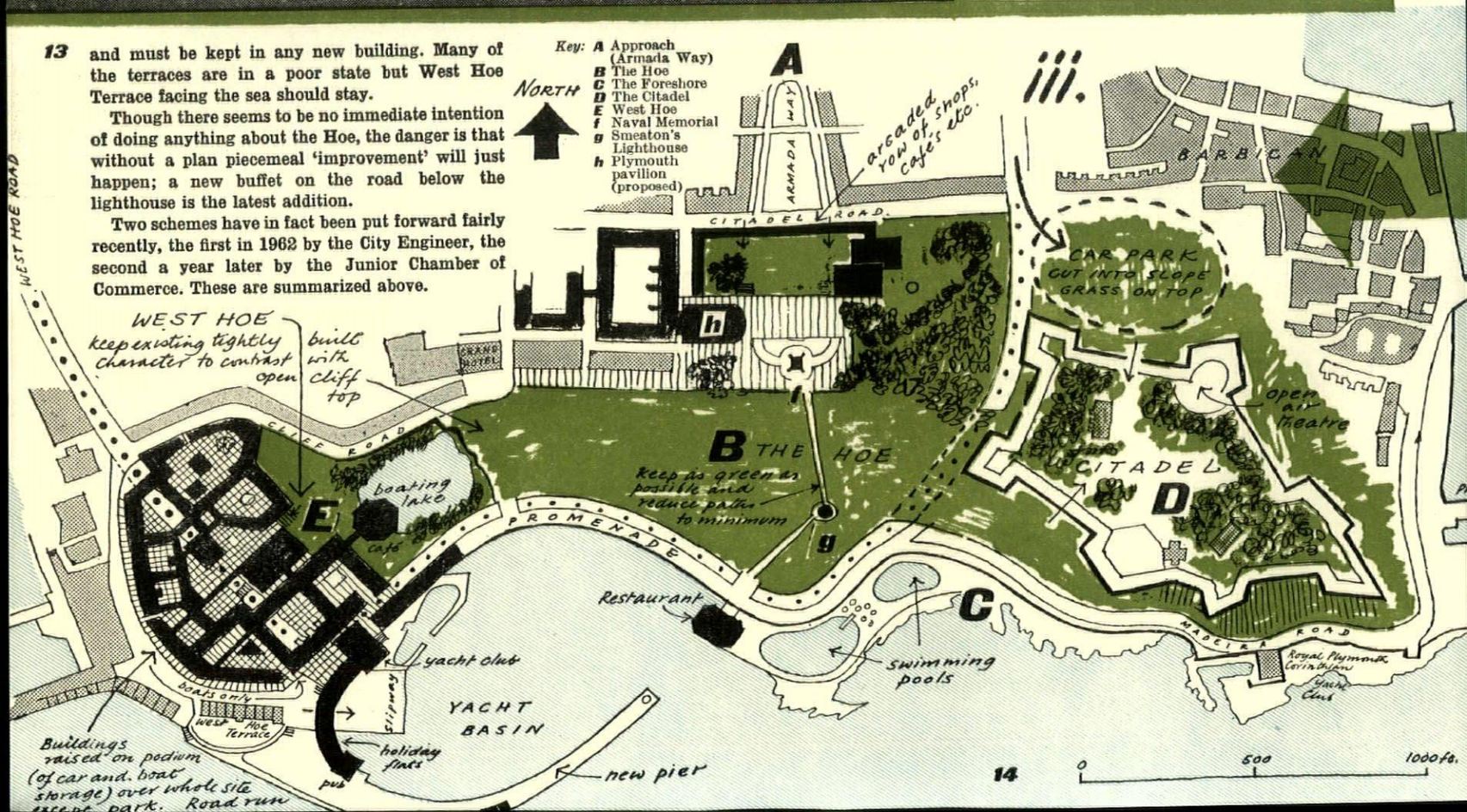
Scheme 2 *by the Port of Plymouth Junior Chamber of Commerce (architects: Gladstone and Boulesteix). See model* ***11*** *on previous page.*

A. Approach *Replace naval memorial at end of vista by a new Plymouth Pavilion* ***h*** *and paved concourse with car park below. Build tower hotel to east of it.*
B. The Hoe *Remove Belvedere. Grass over The Promenade and provide smaller one connecting to Pavilion. Build cafe and hanging gardens on cliff face. Enlarge Hoe Park by demolishing part of the terrace which backs the Hoe* ***q.*** *New housing west of the park.*
C. The Foreshore *Fully vehicular sea front with elevated promenade over and connected by bridges to the Hoe. New two tier sea wall* ***n*** *with car parking at lower level and enclosing two swimming pools.*
D. Citadel *Army to go. Inside to be botanical gardens, open air theatre, etc.*
E. West Hoe *Clear site and build maritime village. Road in underpass. Four 16-storey flat blocks. Children's garden with boating lake. Indoor sports centre and skating rink. Enlarged yacht basin.*

and must be kept in any new building. Many of the terraces are in a poor state but West Hoe Terrace facing the sea should stay.

Though there seems to be no immediate intention of doing anything about the Hoe, the danger is that without a plan piecemeal 'improvement' will just happen; a new buffet on the road below the lighthouse is the latest addition.

Two schemes have in fact been put forward fairly recently, the first in 1962 by the City Engineer, the second a year later by the Junior Chamber of Commerce. These are summarized above.



Comment

Scheme 1 Keeping the Hoe clear of building is right enough but the covered way and lift tower would wreck it. Sketches in the report (***10*** on p.205 is one) show a foreshore of horrifying complexity. Even if the design were simplified and the wiggles removed, a new promenade of this shape out in the sea would conflict with the form of the cliff and destroy once and for all any feeling of coastline.

At West Hoe the strict right angle layout, a sort of a rigor mortis of the drawing board, would be utterly unsympathetic and such odd shapes could not possibly produce a satisfactory massing. Only a sketch scheme, it is true, but such things have a way of getting built. Multi-storey car parks at ***k*** and ***l*** would destroy the dramatic rock face along Cliff Road and the waterside at Phoenix Wharf.

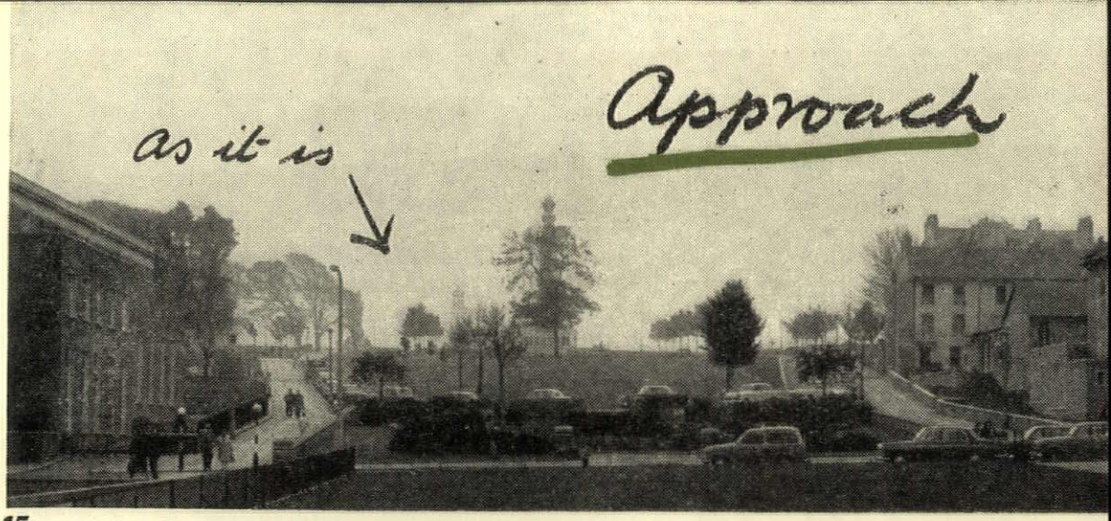
Scheme 2 Right in taking a wider view of the area and demanding a clean up of the Hoe itself. Wrong, I think, in replacing the naval memorial by a Plymouth Pavilion on the axis of Armada Way; also in building a tall hotel east of it which would dwarf the lighthouse. On the Hoe, right to remove the Belvedere but a pity surely to cut short the terrace ***q*** behind the Hoe. An excellent idea to take over the citadel for public use (surely it cannot serve any real military purpose?) On the Foreshore, the idea of a fully vehicular sea front and wall is questionable. Considering the view shown in ***5***, it is doubtful if the cliff face could visually stand another layer on top of the present road. The suggested new sea wall ***n*** with lower deck parking looks far too jagged and unsympathetic. Surely better to provide more hidden car parks close to the front rather than try for full car accessibility. At West Hoe, the maritime village seems a good idea but a pity to have it so rigid in layout, set back so far from the sea and so low. Doubtful about the tower blocks. Underpass a good idea.

Suggestion

Scheme 3

An alternative to these two plans is shown opposite and described on this and the following pages. Not so much a final solution, more a way of looking at the problem.

A. Approach The present termination of Armada Way by the naval memorial and lighthouse is effective (how often can you see a lighthouse from the centre of a city?). But the approach needs incident. It is a weary trudge and at present only relieved by the trees and pools at the civic centre. One way of rescuing it would be by a colonnade of shops at right angles; the arches first supporting then hiding and finally framing the monument and lighthouse as you pass through, ***16–18***. Again, the sky space either side of the memorial needs to be restricted (see ***15***) and this could be done by siting the suggested Plymouth Pavilion ***h*** to the right, other buildings to the left and with a paved space in between and care taken not to compete in height with the monument or



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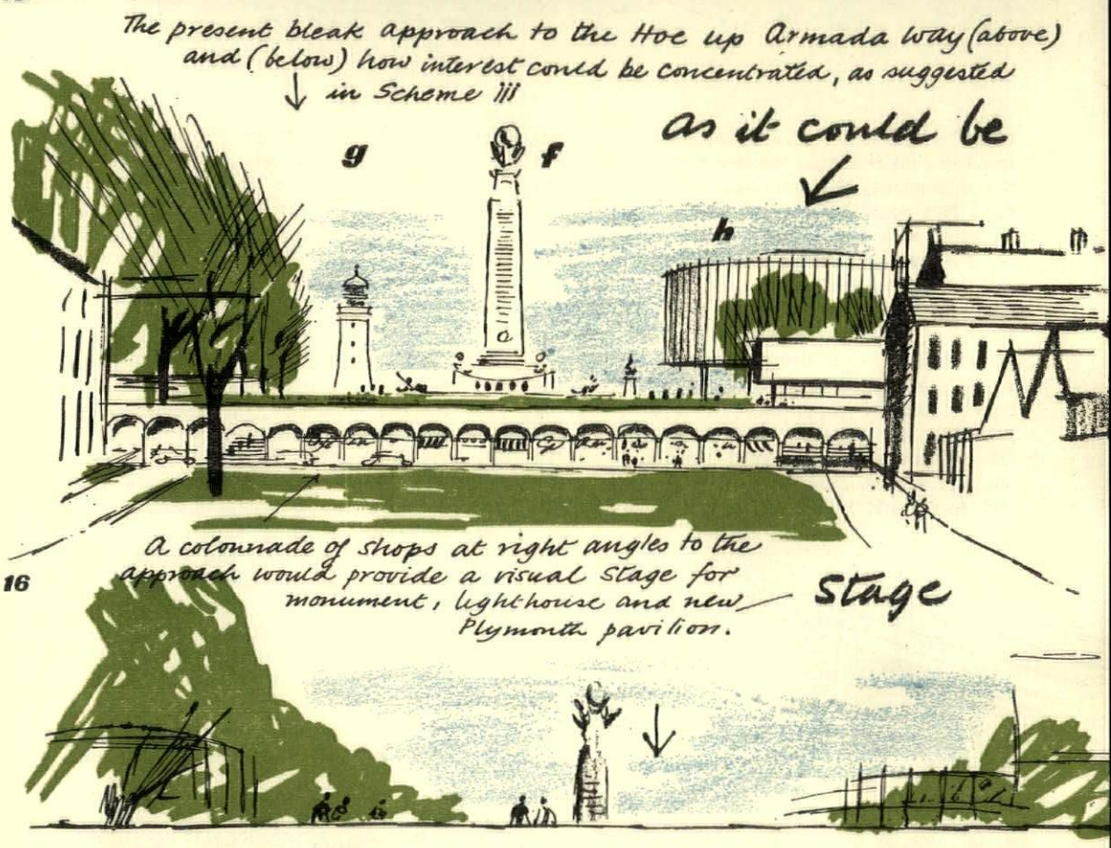

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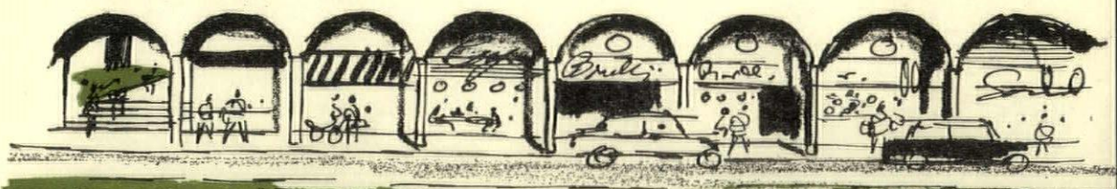

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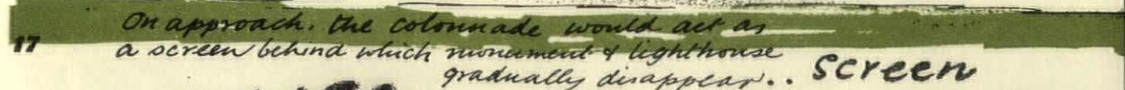

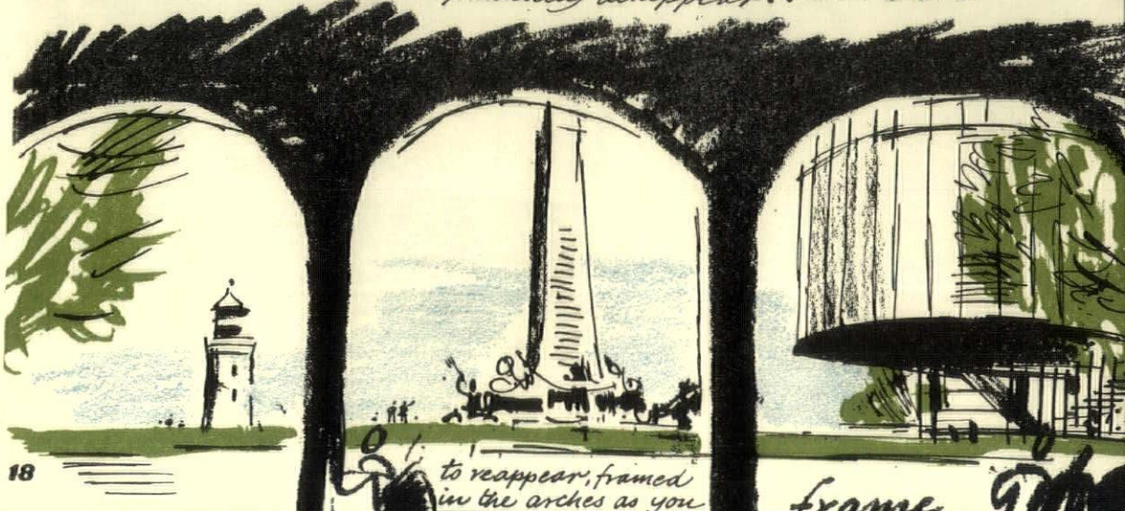

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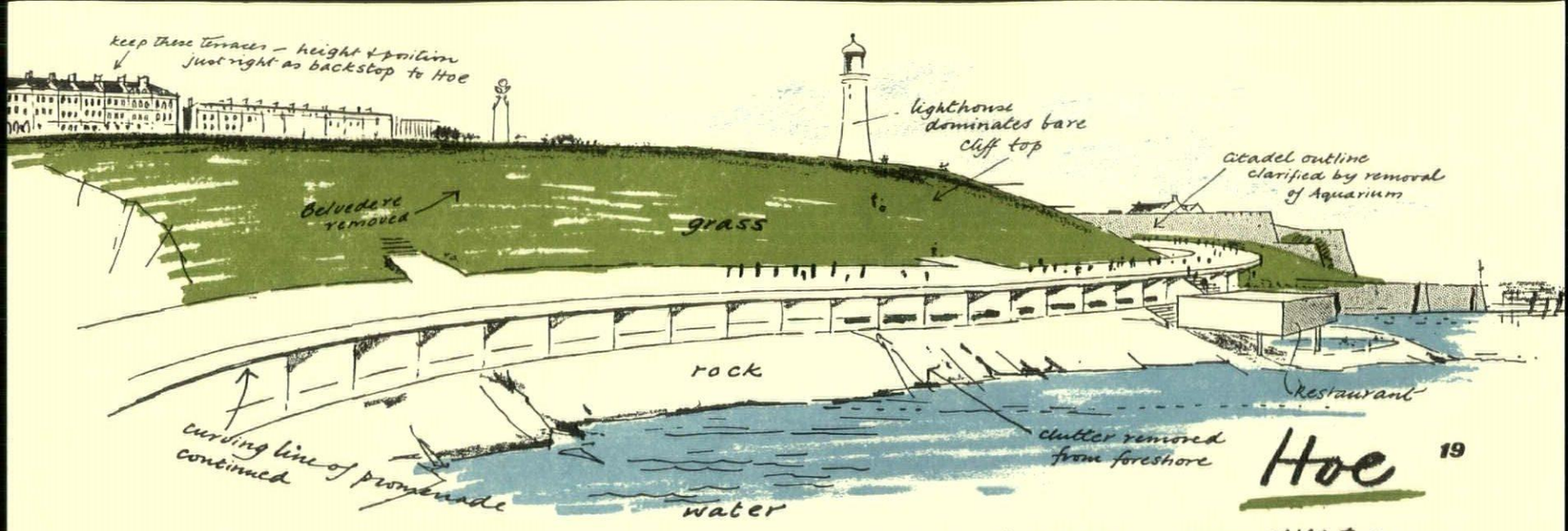


19 Hoe

EXPOSURE — open cliff top dominated by lighthouse.

hide the lighthouse, ***16.*** By increasing the present tree belt (but removing the tree directly in front of the monument) the transition from approach to open Hoe could be emphasized. Now it is just a draughty walk ending in a draughty cliff top.

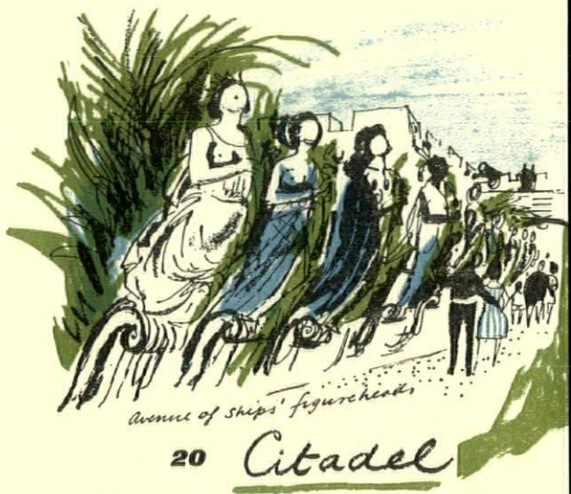
B. The Hoe Restore this to the image of green cliff top dominated by the lighthouse. Scrap the 'runway' and all unnecessary paths. Remove the Belvedere and make any new shelters grow out of the cliff as inconspicuously as possible.

C. Foreshore Remove clutter. Continue curving line of promenade. If it is physically possible to separate cars and people on different levels well and good but aim at a clean contrast of Hoe, road, cliff and sea as in ***19.*** The cliff face could not, I think, take another layer above present road level. Build restaurant out from promenade overlooking new swimming pools.

D. Citadel Follow suggestions in scheme 2 and open to the public. Make this a tropical garden; lush foliage sheltering behind thick walls. Again emphasize contrast to bleak cliff top; this becomes a refuge. Also a splendid place for an open-air theatre and naval museum (Drake relics, etc.) approached by an avenue of ships' figureheads, ***20.*** Move the aquarium inside the walls and demolish all the army buildings save the few of historic value. Link across Hoe Road (partly sunk) to the Hoe itself.

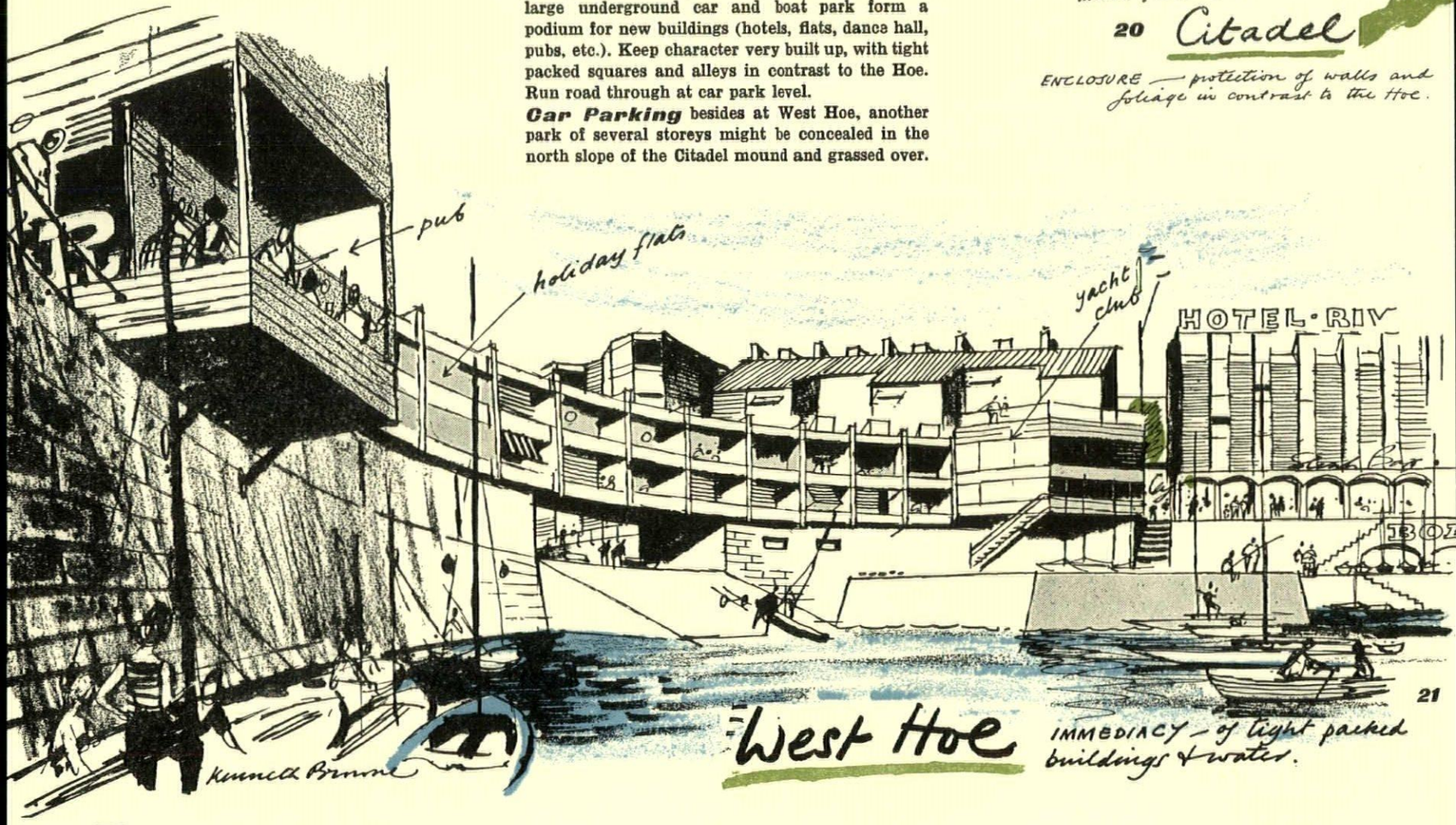
E. West Hoe Build a curving pier enclosing a large new yacht basin and edged by a terrace of holiday flats and a yacht club following the curve, ***21;*** with dinghy ramp underneath leading to storage behind. Keep West Hoe Terrace but make large underground car and boat park form a podium for new buildings (hotels, flats, dance hall, pubs, etc.). Keep character very built up, with tight packed squares and alleys in contrast to the Hoe. Run road through at car park level.

Car Parking besides at West Hoe, another park of several storeys might be concealed in the north slope of the Citadel mound and grassed over.



20 Citadel

ENCLOSURE — protection of walls and foliage in contrast to the Hoe.



21 West Hoe

IMMEDIACY — of tight packed buildings & water.

Flat, Belgravia, London

architect: Lucas Mellinger

photographs by Arphot (H. de Burgh Galwey)

ID

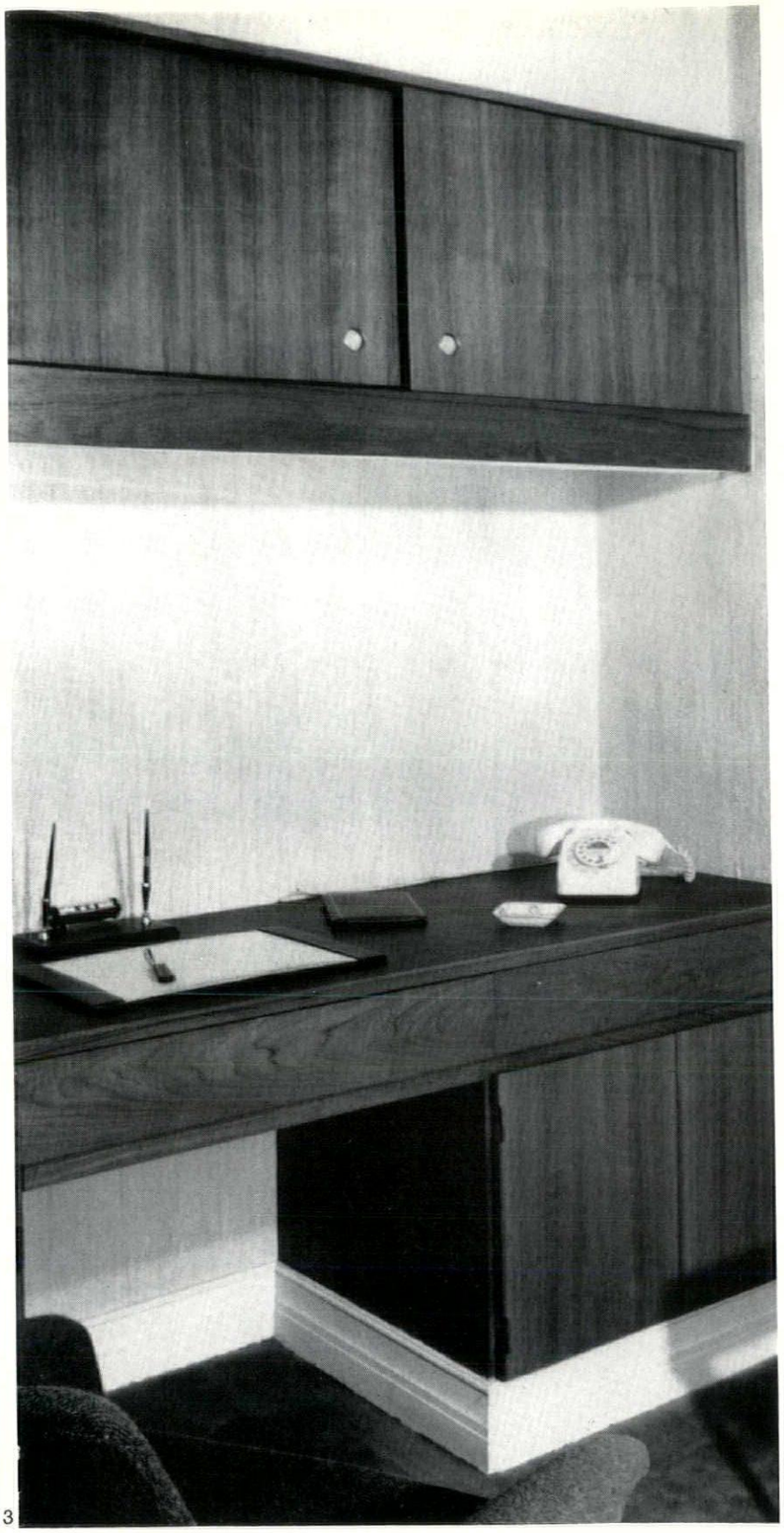
a monthly review of interior design

1, the lounge end of the large combined dining room/lounge area seen from the corridor.





2



3

Flat

Belgravia

London

ID

The original layout of the flat—in Cadogan Place, Belgravia, London—on the first floor in a new luxury block, consisted of three bedrooms, two bathrooms, lounge and dining room, kitchen, and a hall with corridor access to the various rooms.

The two principal bedrooms and the first bathroom have not been basically altered but the third bedroom (intended as a maid's room) has been furnished as a study and the adjoining second bathroom converted into a cloakroom.

The remainder of the flat, excluding the kitchen, has been turned into one living space by the removal of partitions and the use of Venetian red and yellow curtains flanking the windows and separating the sleeping quarters. The feeling of enclosure within this area is accentuated by the use of mirrors where the curtain material abuts against the bottle green silk-covered panels forming the curved end wall. The corridor has been retained but is separated from the dining room area by sliding glass panels above two-way cupboards.

The architect also chose the complete range of materials, colours and furniture. A sandy brown carpet and a natural coloured Japanese wall-paper were used throughout.

2. the kitchen. The walls are white, the sink unit is stainless steel and the small recess above the cooker is orange, illuminated from the inside.

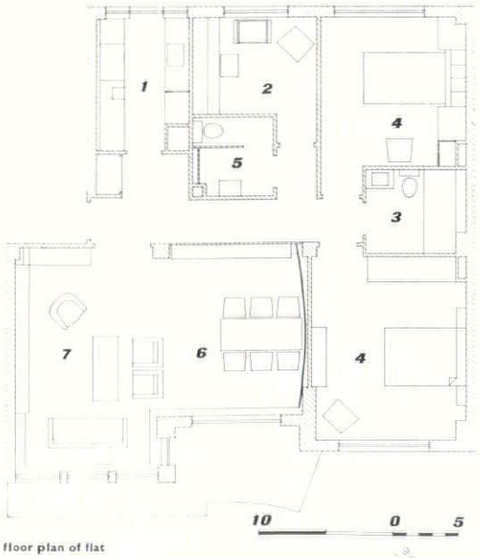
3. fitted desk and cupboard of teak on the shortest wall of the study. The chairs in this room are peacock blue.



4

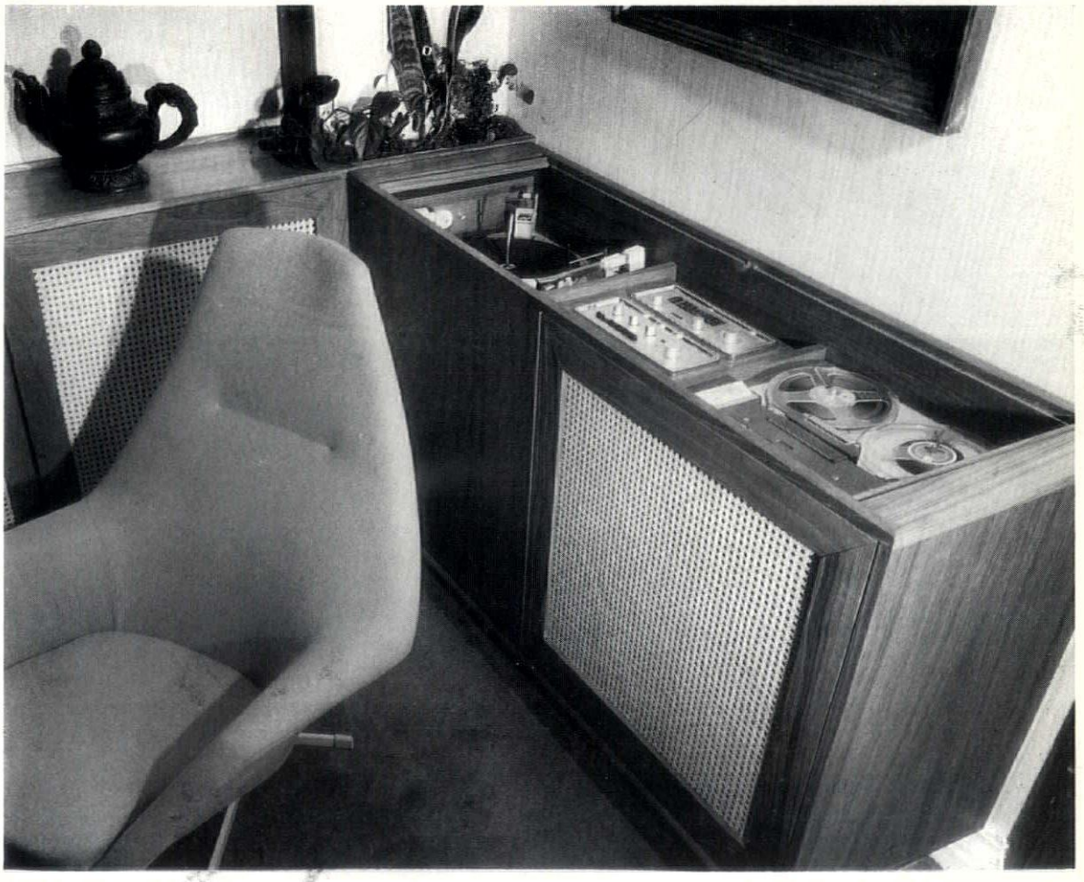
4 and 5, the lounge, showing fitted cupboards around the end walls. The swivel chair is orange, the Danish armchairs dark green.

All fitted cupboards and wooden furniture are teak. The existing convector heaters have been built in behind grilles in walls or new fitments.



floor plan of flat

key
1. kitchen
2. study
3. bathroom
4. bedroom
5. cloakroom
6. dining room
7. lounge



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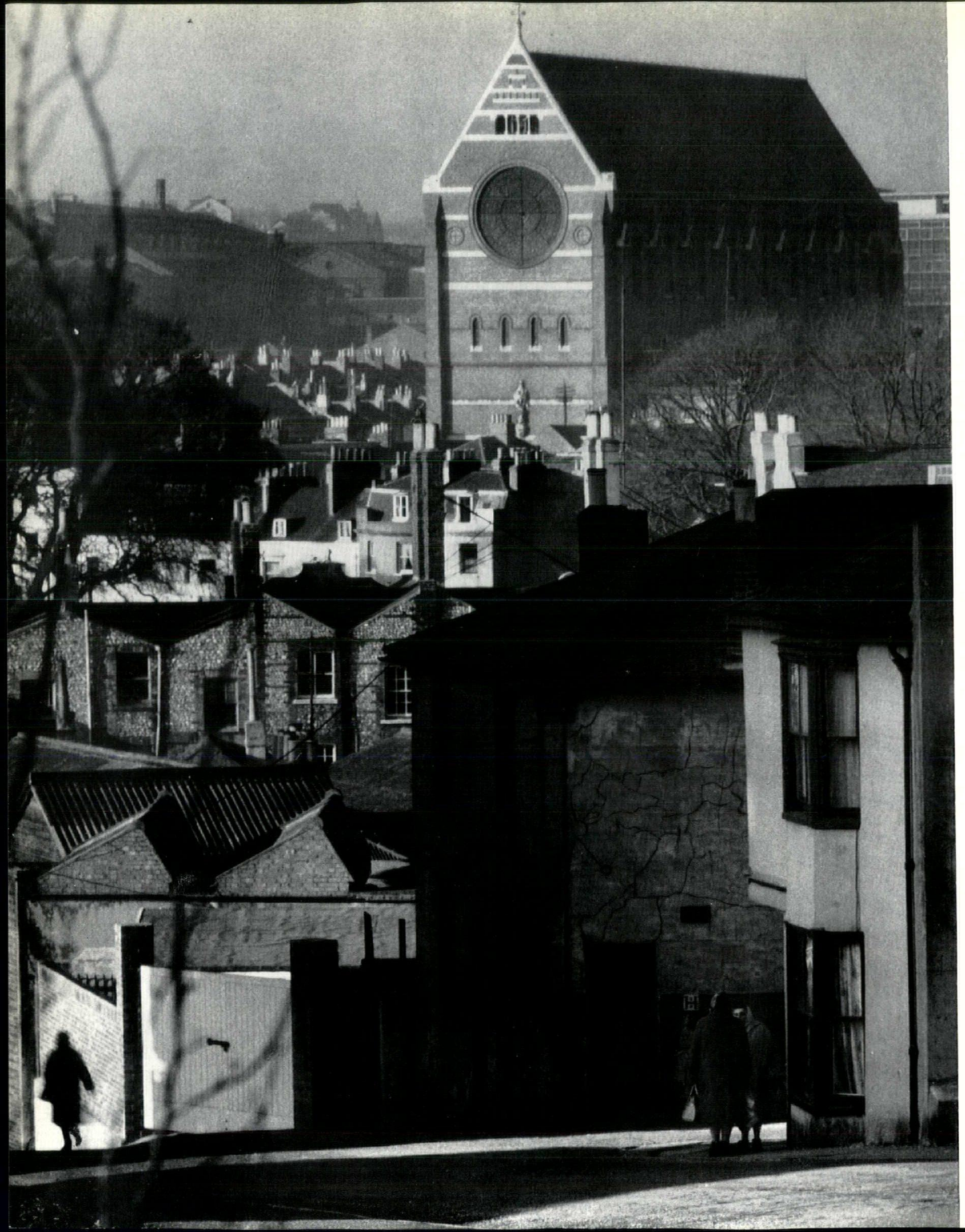


The essence of Brighton, in spite of its beach and Pavilion, lies in the stucco and flint of its hillside cottages. Eric de Maré's photograph, 1, of St. Bartholomew's captures this perfectly. To the teeming holidaymakers at the station (background), Fr. Wagner intended his vast church as a spiritual warning.

WAGNERIAN HIGH CHURCH

St. Bartholomew's Brighton

Nicholas Taylor

In the gentle sublimations of English townscape there are hardly any buildings which soar with confidence into the Babel world of fantasy architecture on the largest scale. In the back streets of Brighton there is a parish church of sheer, loadbearing, stock brickwork which is internally as high as Amiens Cathedral. The scale of the structure is immense and it is carried on magnificently in such of the Art Nouveau furnishings as were heaved into position before the second vicar seceded to Rome. It was, I think, Mr. Betjeman who said that he half expected to see the clergy enter mounted on elephants.

St. Bartholomew, Ann Street, was built in 1872–74 to the design of Edmund E. Scott, of Brighton[1]. The main furnishings were added by Sedding's brilliant pupil Henry Wilson in 1897–1908. Wilson will have to be left for a second article, but who in the world was Edmund E. Scott, and how did he come to conceive so monstrous a building? The answer lies in the word 'Wagner'—not the operatic composer, but the English priest, Arthur Douglas Wagner (pronounced as spelt). He it was who founded the church and paid for it out of his own pocket—an £18,000 gift which alone would be remarkable, without mention of his five-and-a-half other churches, his sisterhood, his fishermen's club, his schools and his many other good works, which made him a commanding figure in Victorian Brighton. More important than the financial scale of his building programme (about £70,000 in all), he conceived the physical scale on which it should be carried into effect. He directed closely those who designed the buildings and those who served in them. As with St. Agatha's Landport[2] or Lancing Chapel, St. Bartholomew's is a case of a minor architect spurred on to prodigious efforts by the vision of his client[3].

Not just the size, but the planning, 2, and structural expression of St. Bartholomew's stand out from the mass of Anglican church building of the 1870's. It has no chancel, though one was intended, and no aisles. The weight of the upper walls and the wooden roof is carried on a series of vast internal arched buttresses, nine on each side. In the recesses thus formed are altars and confessionals. From the outside this system is made clear by the way in which the buttresses between the clerestory windows die into the thickening walls below[4].

The church towers up above the houses, 1, a giant Noah's Ark of stock brick—specially selected 'picked stocks,' purplish-brown outside and yellow-brown inside. The effect today is much more solid and restful than it used to be, for the polychromy has toned down with age. Besides the absence of the chancel, the curious chopped-off appearance of the church, as seen from London Road to the east or from the heights above the railway station to the west (the church is not orientated—its high altar stands to the north[5]), is partly due to Scott's inability to carry through this vast scale with complete consistency. The side elevations, 5, are simply those of a one-room chapel, inflated to five times their normal size. The stock brick is relieved only by a red brick moulded plinth, a couple of string courses and some copings of Portland stone, and a pointed 'Lombard frieze' with a pierced parapet dressed with stone. The roof, with its cresting of red earthenware, was re-slated in 1930 and no longer displays its original white diamond pattern with some black and red tiles.

The (ritual) west facade, however, 4, is a masterly statement of simple proportions, with a rough power which a more sophisticated architect could hardly have achieved. Within the vast gable end, the two main elements are placed so that curve answers curve—the giant wheel window, 25 feet in diameter, which lights the interior from above the organ gallery, and the intentionally diminutive round-headed doorway far below. This has four orders enclosing a recessed double doorway and carved tympanum. Above the doorway is a crude Gothic canopy sheltering a statue of St. Bartholomew, who is shown carrying a model of the church. Otherwise decoration is thin and linear, giving scale to the bulk of the building in its overall coverage, 3. Each layer is marked off by a flat band of Portland stone, ten in all. Above the canopy is an area of red brick diapering; then follow four unchamfered lancet windows (characteristic of Scott's work); then another area of diapering in vertical and horizontal stripes; then some more diagonal diapering; then two layers of little brick crosses on either side of the wheel window together with two large medallions with crosses in encaustic tile which also give scale to the window; then even more diagonal diapering; then the four-light opening to the belfry (there is one bell by Mears and Stanbank); and finally some closer bands of stone to exaggerate the perspective, with the ventilation holes for the roofspace between them. All the patterning is intentionally diminutive. From the ground to the parapet is 90 feet, and to the top of the gilt metal cross, 144 feet (4 feet more than Westminster Abbey). Particularly daring is the omission of the usual stone tracery in the wheel window. It had to be strengthened in *c.* 1895 because of the battering of sea winds.

The interior, 6, entered normally by a narrow north-west porch, is also more sober than it was originally; the blotching of efflorescence and the roughness of decay[6] now contribute more to the overall impression of primeval grandeur than the scribblings of Scott's artificial polychromy. The room is not only immensely tall—the vertical masses soar into the blackness of the simple boarded kingpost roof—it is also immensely wide. From internal face to internal face it spans 46 feet (St. Paul's Cathedral 45 feet) and including the recess between each buttress, 58 feet. The space is just over 170 feet long. The nine giant arches at 19-foot centres are cut into the wall without destroying its continuous plane, 7; the piers are unchamfered and each abacus is sheered off level with the wall. Into the piers are sunk the coloured Stations of the Cross, brought from Bruges in 1881[7]. In several of the recesses are confessionals, also introduced in about 1880, and with their curious domes on square attics suggesting possible 'Indian' influence from the Royal Pavilion. From a moulded stone corbel in each spandrel, a thin moulded brick shaft defines each bay at triforium and clerestory level and supports the arch-braces of the roof. This clerestory has a wall passage; the chequered ventilating holes in the brickwork are prominent. Each triforium bay has three unchamfered lancets, each with a quatrefoil in a sunk tympanum. In the spandrels and triforium there were originally rich bands of red and white diapering in various patterns that have now largely disappeared, but were strikingly prominent in *The Builder's* perspective of January, 1875, 8.

Nothing now disturbs the single-mindedness of the architecture—the vast open room with its rank upon rank of chairs (seating 800 normally, but up to 1,500 if necessary) with a central alleyway leading to the dominating high altar, which, although startlingly close to the congregation, is raised up on no less than twelve steps (five plus one plus six). Admittedly, if the proposed choir had been built, the relationship might have been less close (according to Cyril Farey's perspective of the 1925 scheme by Sir Giles G. Scott, there were to be one and a half bays plus a polygonal apse)[8]. But the choir was always seen as a long-term project and the 'temporary' east wall was built fairly substantially, though it had to be greatly strengthened before the insertion of Wilson's baldacchino and Jackson's mosaics. The wall above has the same scattered diapering in red brick as the other walls. The strong modillion cornice at triforium level is carried across and acts as the plinth for a 20-foot-high Crucifixion, partly painted and partly incised on encaustic tiles on a slightly sunken panel 'from

[1] The basic sources for this article are three invaluable books by the Rev. H. Hamilton Maughan: *The Churches of Brighton* (1922), *Wagner of Brighton* (1947) and *Seven Churches* (1950). Not always accurate and sometimes diverted by his combative Anglo-Catholic viewpoint, Fr. Maughan has nevertheless been almost the only serious historian of Brighton's churches. St. Bartholomew's *Jubilee History* (1924) provides much useful supplementary material. The church is described and illustrated in *The Builder*, October, 1874, pp. 909–11, and January, 1875, pp. 94–95, 99. Sir Anthony Wagner's account of *The Wagners of Brighton* in Sussex Archaeological Collections, Vol. XCVII, pp. 35–57, is meticulous and comprehensive. There is a detailed obituary of Fr. Wagner in the *Sussex Daily News*, January 15, 1902. Finally, there is H. S. Goodhart-Rendel's series of articles on *The Churches of Brighton* in AR, 1918, Vol. 44; pp. 61–63 refer to St. Bartholomew's. Goodhart-Rendel's articles were perhaps the first critical reappraisal of Victorian architecture ever to be published.

[2] See 'Basilica of the Nineties' by Nicholas Taylor, AR, May, 1964.

[3] Goodhart-Rendel (*op. cit.*, p. 62) says that 'Mr. Wagner is said to have taken great part in the design.'

[4] On the north side was a curiously long, funnel-like vestry, now largely demolished. To the east are the mission church and school, erected in 1868 and 1871 (see below). The mission church has also largely gone (destroyed by fire in 1939).

[5] Wagner rarely bothered about orientation. This is a sign of his independence from the ecclesiologists (who were never as effectively dictatorial as they liked to make out).

[6] This decay is now a real problem. Every day a rain of mortar spatters the floor beneath. Mr. John L. Denman is at present superintending repairs.

[7] According to Mr. Anthony Symondson, the first Stations in St. Bartholomew's were removed by the ecclesiastical authorities after protests from a 'dissident parishioner'—hence the structural fixing of the Bruges design to prevent any repetition.

[8] The plinth of the south wall, along Providence Place, was actually built as far as the apse, so its length can be judged. Goodhart-Rendel, however (*op. cit.*, p. 62), says 'three more bays plus an apse.' Plans for the completion of the church in 1897–1914 will be discussed in the author's forthcoming article in the AR on Henry Wilson's work at St. Bartholomew's.

a drawing by Mr. S. Bell'[9]. Largely of white lines and white rosettes, this curious mural still dominates the interior in spite of Wilson's rich furnishings beneath. Bell also painted the sentimental figures of saints on a gold ground that ornament the oak sides of the high altar, which support a marble slab[10]. The altar originally had a simple canopy of crimson velvet and was set against a semicircular retaining wall of brick and stone, inset with encaustic tiles. There is a good drawing of it by Peter F. Anson in his book *Fashions in Church Furnishings*, 1960, p. 212. There were seven sanctuary lamps—one of the first examples of this detail of ritualism. Behind the altar a barrel-vaulted tunnel leads to the 'eastern' vestries.

After the initial shock treatment, the puzzlement remains: how did St. Bartholomew's happen? Such a single-mindedness, sense of scale and ruthless elimination of architectural irrelevancies are unusual in English architecture (as against engineering). They argue a wealth and power and dictatorial control in the client that has rarely survived democracy.

First there was money. The Wagner family fortune was built on hats. Melchior Wagner came from Coburg to England shortly before 1709; in 1717 he was appointed hatter to the new German king, George I; and he was succeeded in this post of royal warrant by his sons Anthony and George and by George's son Melchior Henry. Two of their marriages are of interest. Melchior Wagner married in 1714 Anne Teulon, daughter of a Huguenot hatter; her brother was the great-grandfather of the famous rogue architects, Samuel Sanders Teulon and William Milford Teulon. Melchior Henry Wagner in 1784 married Anne Elizabeth, daughter of Henry Michell, vicar of Brighton in the formative years of the seaside resort (1744–89); their younger son, Henry Michell Wagner (1792–1870), after a period as Fellow of King's and personal tutor to the Duke of Wellington's three sons, was himself appointed vicar of Brighton in 1824 and held the living for 46 years. In the same year his son by his first wife was born, and named Arthur in honour of the Duke.

Arthur Douglas Wagner's career fills hardly a sentence: after Eton and Trinity, he was ordained deacon (1848) and priest (1849), before his appointment in 1850[11] as perpetual curate of the new church of St. Paul, Brighton, where he remained until his death in 1902. He dominated the church life of late nineteenth-century Brighton just as surely as his father had. The difference between the two is instructive. H. M. Wagner was 'a High Churchman of the old school'—that is to say, he was a pre-Oxford Movement hierarch of great private wealth and administrative ability, a masterful and intolerant upholder of the Establishment. Through his second wife, Mary[12], he was the son-in-law of Joshua Watson, the principal pillar of the Church Building Commission and 'the greatest lay churchman of his day'[13]. Church-building can thus be said to have been in the Wagner family's blood. By public subscription H.M. himself initiated five churches, three of which were in the characteristic Commissioners' style and of no great merit[14]. The other two, St. Paul's (1846–48) and All Saints (1848), were quite different: sophisticated essays in pure Middle Pointed by the Cambridge Camden Society's model architect, R. C. Carpenter. I am quite sure that Arthur Douglas Wagner's influence can be seen here[15]. In 1842–46, as a keen young High Church undergraduate at Trinity, he must have known the inner set of the Camden Society. Through them he would have been introduced to Carpenter, whom in turn he would have recommended to his father. So successful was the father in raising the £12,000 for the building of St. Paul's that the church was ready for worship nearly two years before the son was qualified to take charge of it. Not only the old-fashioned nepotism of his appointment, but also the pure medievalism of Carpenter's design, with its obscure vistas and Pugin glass, are indeed different from Fr. Wagner's later work, which culminated in St. Bartholomew's. It was St. Paul's, however, which was the base for his work for over fifty years.

Arthur Wagner believed in an Establishment too—not the Erastian picture of the rich and privileged at prayer but the pre-Reformation ideal of a priestly society, raised to daily union with God through the Mass. This reactionary vision was so much at variance with the facts of mid-nineteenth-century life that it soon led indistinguishably to a social radicalism. The father became vicar when Brighton had one medieval church and two proprietary chapels; when he died there were seventeen churches and five chapels, yet there was still only a single parish. The situation was fantastic; the aged autocrat held a 'bishopric within a bishopric' (as Bishop Gilbert of Chichester put it)[16]. In economic and social terms the position was an extreme example of the exclusiveness of Establishment church-going. All the churches (except those recently founded by Arthur Wagner) charged pew rents, which were the price paid for the social display which was the essence of churchgoing in fashionable Brighton. Although St. Paul's was a dramatic innovation in terms of architectural beauty and High Church ritual, it was in fact maintained in much the same way, with only a few free seats for the poor at the back of the church.

After less than ten years in charge, Arthur Wagner became painfully aware that the church in Brighton with its spires and porticoes by the sea front, had as yet said nothing to the congested community of little flint and stucco cottages which now cloaked the steep slopes of the inland valley. The coming of the railway and locomotive works in 1841, the growth of popular holiday-making marked by Queen Victoria's disdainful sale in 1850 of the Royal Pavilion, the rapid expansion of service industries and proletarian squalor (1861 population, 77,693)—with all these the eclectic medievalism of St. Paul's was making no contact.

Fr. Wagner was in close touch with the younger, socially conscious Tractarians; he knew the pioneering pastoral and welfare work in the East End slums of priests such as Mackonochie and Lowder and he knew the hard 'realistic' brick churches which the progressive young architects Butterfield and Street were designing for these missionary outposts. He himself founded, in 1855, the Sisterhood of St. Mary in Queen Square to care mainly for Brighton's 'fallen women.' He was a personal friend of John Henry Newman (after Newman's departure to Rome in 1845)[17] and he regretted the parochialism and insularity of English liturgy and architecture since the Reformation. He was also different from his father in character: contemporary accounts of him emphasize his humility and gentleness, and photographs show a fresh-faced youth, 9, developing into a chubby old man, 10, so obviously benevolent that it seems hard to believe that he was stoned in the streets and even shot at for his beliefs.

His first architect was G. F. Bodley—not the suave late Gothic designer of 1865 onwards, but the young primitive, reacting violently against the antiquarianism of his master, Scott. Bodley was at this time unknown nationally, but his father, who died in 1855, was a Brighton doctor. For Arthur Wagner's curate, Charles Beanlands, he designed the famous early Gothic brick church of St. Michael (1860–62) with its superb Morris glass. He apparently advised Wagner in 1859 to commission the young artist from Rottingdean, Edward Burne-Jones, to paint the new reredos for St. Paul's. He was the architect of the first of Wagner's churches, St. Mary Magdalene, Bread Street (1861–62), now disused, a little plum-coloured brick church, with wooden piers and roof-beams dividing it into three equal naves with gables. St. Mary Magdalene, which cost £2,500, was obviously only a mission chapel, but it was the first clear statement of Wagner's intention to provide truly congregational churches, with free seats throughout. The same was true of the Annunciation, Washington Street, a little utilitarian chapel of 1863–64, designed by a local surveyor William Dancy, and rebuilt almost completely in 1881 by Edmund Scott[18].

After these preliminary 'prototypes', served by priests from St. Paul's, Wagner turned to his main building programme. It is perhaps a measure of his own personal responsibility for details, as well as his hereditary position in Brighton, that he contradicted the general tendency of Oxford Movement clergy to employ important London architects, such as Street, Butterfield and Pearson (the movement was essentially metropolitan in character in opposition to Low Church parochialism[19]). Instead, besides Bodley, he employed three other young

[9] Bell also painted the fine mural of the Last Judgment over the chancel arch of Wagner's St. Paul's Church. He is easily confused with Alfred Bell, of Clayton and Bell.

[10] Wagner did not hold out for a completely stone altar (these were not banned by Order of the Privy Council until 1877); he remained loyal to the Canons of 1609.

[11] He became assistant curate at St. Paul's in 1849. Mr. Anthony Symondson tells me that Wagner's year as a deacon was spent as a curate at All Souls, Eastern Road, one of the other churches founded by his father.

[12] H. M. Wagner married twice. His first wife was Elizabeth Douglas (1797–1829), Arthur's mother and daughter of a prosperous Canon of Salisbury (an ancestor of the author, Norman Douglas). His second wife, Mary Sikes Watson (1800–40) died only two years after their marriage, having borne two sons, Joshua Watson Wagner (1839–98), a barrister, and Henry Wagner, FSA (1840–1926), a gentleman of leisure, art collector and genealogist.

[13] M. H. Port, *Six Hundred New Churches*, 1961, p. 3 *et seq.* Joshua Watson (1771–1855), a retired City wine-merchant, sat on the Commissioners from 1818 to 1851, and was the moving spirit behind the National Schools Society, besides acting as unofficial liaison officer for Premier (Lord Liverpool) and Primate (Manners-Sutton). He was the leader of the pre-Oxford Movement, High Church pressure group known as the 'Hackney Phalanx.' See A. B. Webster, *Joshua Watson*, 1954, and Edward Churton, *Memoir of Joshua Watson*, 2 vols., 1861. Wagner presumably met Watson through his own church-building work (see below): St. Peter's, Christ Church, St. John's and St. Paul's all received grants from the Commissioners, ranging from £500 to £4,858. The two men would have had much in common. Wagner probably inherited as much money through his marriage to Mary Watson as from his own inheritance (Wagner, *op. cit.*, p. 48).

[14] All Souls, 1833–34, by Mew (Italianate); Christ Church, 1838, by Cheesman (Gothic); St. John, Carlton Hill, 1842, by Cheesman (Grecian). H. M. Wagner was also responsible (his first task as vicar) for carrying out the building of St. Peter's, 1824–28, the large Gothic church by Sir Charles Barry, which in 1873 became the parish church of Brighton. In the stained glass of *c.* 1835 in Barry's eastern apse, removed in 1902, Arthur Wagner was portrayed as a cherub—the glass is now in Sir Anthony Wagner's possession. H. M. Wagner built for himself a large vicarage, designed by Mew and built by Cheesman (they were both local builder-architects) and also an exact replica of it in the Close of Chichester Cathedral, of which he was Treasurer. Other building by the family included the foundation of the church of St. Stephen, Montpelier Place, re-erected in 1850–51 at the expense of Mary Ann Wagner (1791–1868, H.M.'s elder sister) out of the materials of the redundant Royal Pavilion chapel (the Castle Hotel ballroom. 1766, designed by John Crunden and converted by Nash). The first vicar was Arthur Wagner's highly regarded, though short-lived, first cousin, George Wagner (1818–57), who himself founded the Home for Female Penitents at Brighton in 1853–54 (architect unknown). Mary Ann Wagner also built houses adjoining St. Stephen's, including one for herself called Belvedere, which after her death was successively the home of Arthur and Henry Wagner.

[15] H. Hamilton Maughan in *The Churches of Brighton* says on no clear evidence that Arthur Wagner 'had no influence at all in the designing of St. Paul's, which was built by his father'—but I find this hard to believe, bearing in mind the pre-Ecclesiological character both of the father's previous churches and of his personal views. There is an apocryphal story that H. M. Wagner preached at his son's church on the text, 'Lord, have mercy on my son: for he is lunatick and sore vexed.' Carpenter was later the architect for the thorough restoration (largely rebuilding) of the medieval parish church, St. Nicholas, in 1853–54. H. M. Wagner raised the money for this as a memorial to his erstwhile patron, the Duke of Wellington, who had worshipped there as a child. A pseudo-Eleanor Cross by Carpenter (now crumbling away at the west end of the north aisle) is perhaps the oddest monument the Duke was given by anyone.

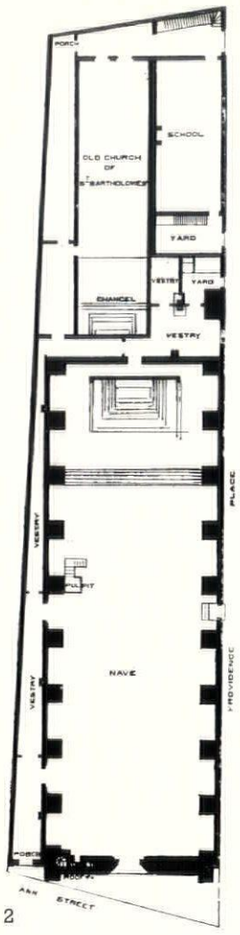
[16] Obituary in *Brighton Guardian*, December 12, 1870.

[17] Wilfred Ward, *The Life of John Henry Newman*, 1912, Vol. II, p. 463. Ward records that Wagner was present in Rome in 1879 when Newman received his cardinalate. Wagner seems also to have visited Rome in the winter of 1869-70 (see R. D. Middleton, *Newman and Bloxam*, 1947 p. 232).

[18] Though it was distinguished almost from the start by a good Burne-Jones and Rossetti east window (*c.* 1865).

[19] Conversely many High Church priests were depressingly out of touch with their environment, while their Low Church counterparts were pillars of local society.

The overwhelming effect of St. Bartholomew's, Brighton stems from the originality of its plan, 2: an undivided liturgical room with giant internal buttresses and recessed altars for saints at right-angles to the main north-south axis. It is this simplicity, cutting across the Gothic cellular complexity of most Victorian church plans, that makes possible the uncompromising power of the main facade, 4. Diminutive door answers giant window—a window of industrial iron rather than hand-carved stone. Originally, as the Builder *perspective shows, 3, the polychromy played an important part in emphasizing the scale by means of appliqué patterning. The side elevations are disappointing in detail but, when seen down the hill from the direction of the railway station, 5, they have a dramatic relationship with the huddle of stucco cottages and flint walls beneath. At the far left is another Edmund Scott church, St. Saviour's, Preston. As can be seen in 4, there is a conscious rebuff to the dissenters in the Providence Chapel opposite.*



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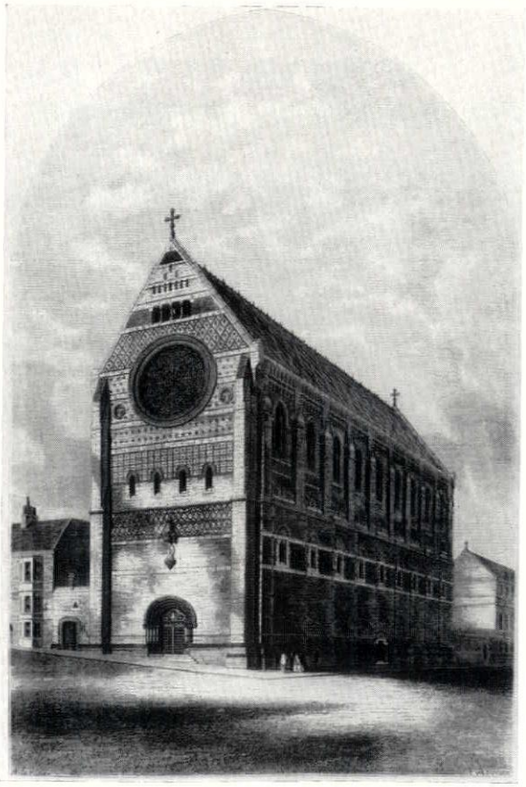
WAGNERIAN HIGH CHURCH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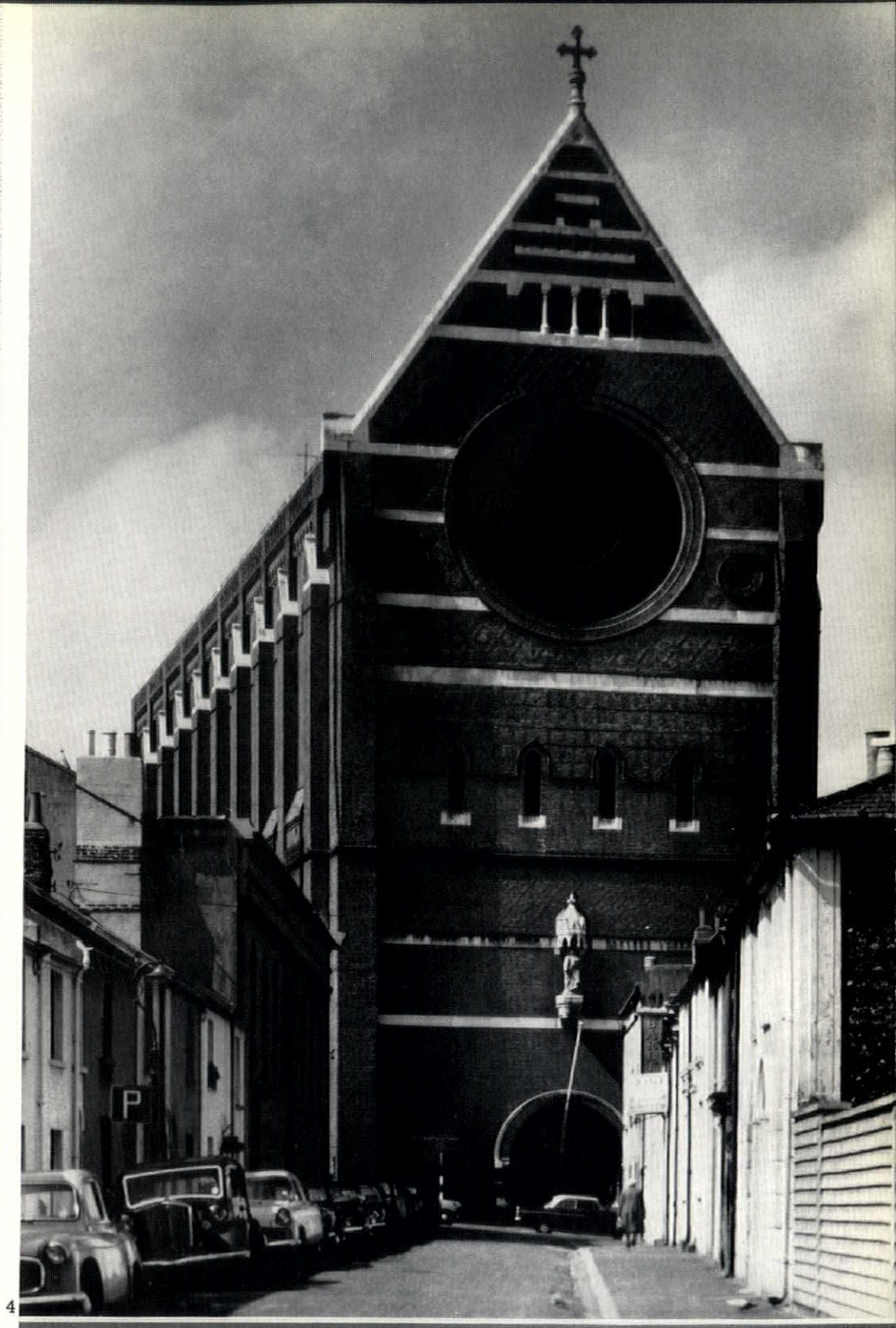

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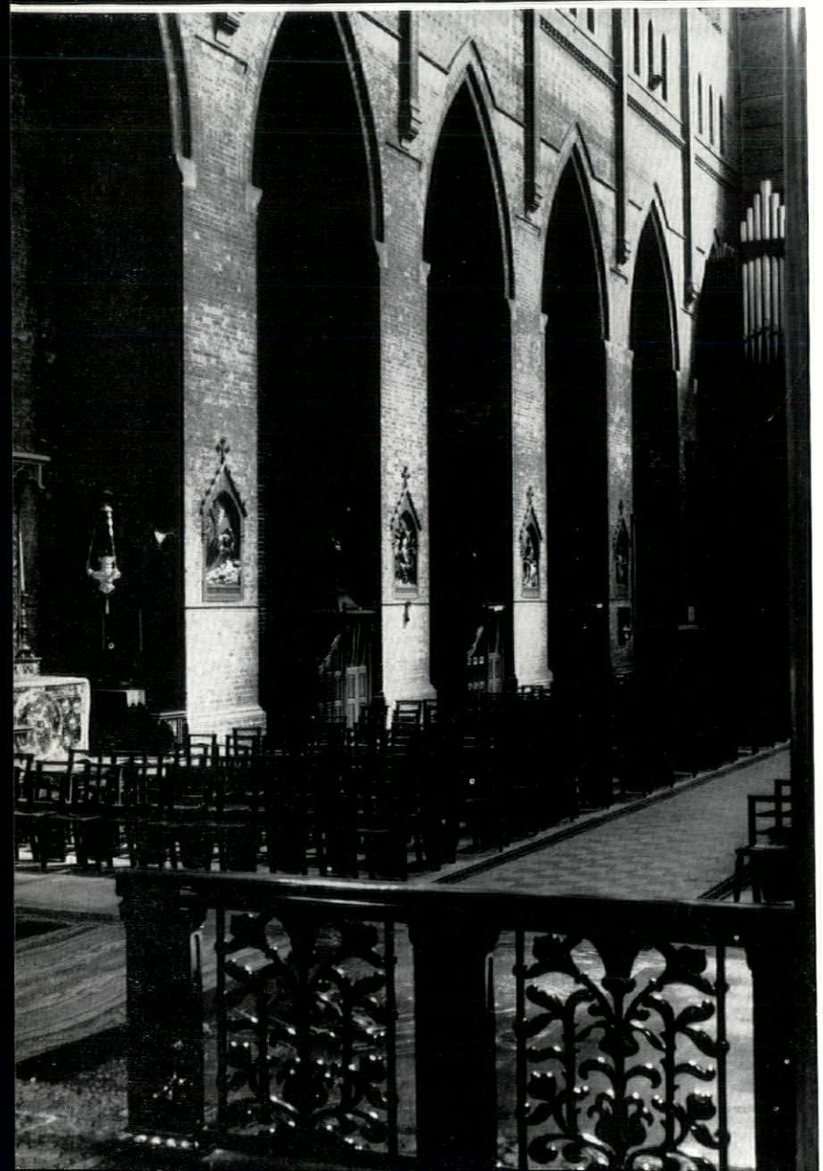

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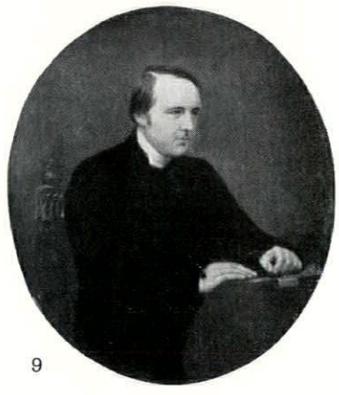
8

WAGNERIAN HIGH CHURCH

It is difficult to convey easily the impact of St. Bartholomew's interior. The conventional view from the west gallery, 6, *shows the details: Wilson's baldacchino of* 1900, *Bell's incised crucifix with its message of redemption, the blotching of efflorescence and decay, the simple king-post roof. The particular blend of inspired naivety is best seen at ground level, in the view down the church from the altar,* 7. *The abaci of the arches are sheered off level with the wall surface to keep the unchamfered integrity of the plan. In the foreground are Wilson's altar rails, with his Lady Altar on the extreme left. As on the exterior, the original polychromy,* 8, *played up the manly proportions by its miniature patterning. The perspective shows in its grossly exaggerated length how little the church's quality of congregational participation was appreciated by contemporaries. Arthur Douglas Wagner, the founder of St. Bartholomew's and several other churches who was vicar of St. Paul's, Brighton,* 1850–1902, *is shown below in his enthusiastic youth,* 9, *and his benevolent old age,* 10.



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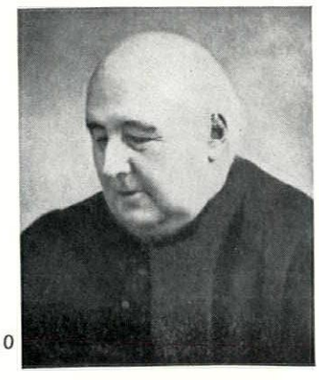

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men with local connections: R. H. Carpenter (1841–93), the architect of Lancing Chapel and son of the architect of St. Paul's; G. Somers Clarke,[20] several of whose family lived locally in Brighton; and Edmund E. Scott, who practised in Brighton. Carpenter designed the belfry of St. Paul's (1873–74) and the beautiful church of the Resurrection, Russell Street (1876–77); Somers Clarke designed the vast church of St. Martin (1871–75), erected by Arthur Wagner and his two half-brothers in memory of their father; and Scott designed St. Bartholomew's (1872–74), the Annunciation (rebuilt 1881) and various buildings of Wagner's country retreat at Buxted, including the sisterhood, the retreat house and the church of St. Mary (1885–86)[21].

He designed various schools and mission buildings for Wagner, besides having his own local practice, which included nearly a dozen churches[22]. The details of Scott's life are obscure as yet[23], although one of his probable assistants is well known. In Sir Anthony Wagner's possession is a fine perspective of the exterior of St. Bartholomew's from the south-west, signed 'J. W. Simpson, 1879'—the future Sir John Simpson (1858–1933), PRIBA in 1919–21, architect of the Wembley Stadium, Glasgow Art Gallery and Roedean School. Simpson was the son of a small Brighton architect and may well have been an assistant to Edmund Scott on St. Bartholomew's. Scott was essentially a man of Sussex, working out High Victorian ideas in terms of flint and timber and the local purplish stock brick, laced with bright red dressings of 'imported' kiln brick. It is not true to say of St. Bartholomew's, as Ian Nairn has recently, that Scott's 'other works . . . leave no clue as to the provenance of this mighty freak'[24]. Two of them give clear indications: St. Botolph, Heene, begun in the same year, in its breadth of scale and cleanly cut, unchamfered brick detail (showing externally the influence of Street's St. Saviour, Eastbourne, of 1867–68); and the rebuilding of the Annunciation, Brighton, in its ingenious structural expression in timber, derived as Scott himself said, from St. Mary's Hospital, Chichester, with five beams radiating from each brick plinth in the arcade.

St. Bartholomew's[25] started in 1868 as a little rubble-and-brick mission church, seating 350, which survived until recently to the north of the present buildings, surrounded on two sides by the tough three-storey Gothic school added to Scott's designs in 1871. The school shows many Scott oddities, which clearly derived from Sussex vernacular: windows with flat tops or straight sided triangular arches; un-Gothic modillion cornices in bright red brick; and a general appliqué character of decoration familiar from the massive barns and cottages of the South Downs.

The recent controversy over the office block next to St. Paul's Cathedral seems small beer compared with the bitterness felt by the citizens of Brighton when they realized the full extent of the structure which arose from 1872 onwards on the site next to the mission church, previously the resting place of traction engines and a marionette show. Wagner was by now a notorious figure. Processions demonstrated on Brighton front against the 'Morning Opera at St. Paul's,' against Popish priests and sinister nuns; this public unrest reached fever pitch after Fr. Wagner's appearance in the case of Constance Kent filled national as well as local headlines with accusations of civil sedition[26]. 'Is the huge building,' asked the local paper, 'designed for a church, a convent, a monastery?' It attempted to answer its question by pointing to a 'dark spiral staircase' and '50 or 60 suspicious little cells'—which in fact were merely parts of the triforium passageway. An article headed 'The Wagner Folly' described the church as 'that frowning mass of bricks . . . Noah's Ark . . . a tall bully lifting its head and frowning upon the chapel opposite.' There is, indeed, what seems a calculated rudeness to the Providence Chapel of 1853 opposite, particularly when seen down St. Peter Street, 4.

But worse was to come. The town council found that the actual height to the roof ridge was 135 feet instead of the 133 feet shown in the plans submitted to them. After acrimonious debates, no action was taken; one member pointed out that a fine of 40s. would look ludicrous compared with Wagner's £18,000 benefaction. Next, however, there were justifiable complaints from adjoining householders that downdraughts caused by the church's bulk were making their chimneys smoke. Wagner's reaction was characteristic: he bought up the cottages concerned and lowered the rents. Finally, on 22 September, 1874, the consecration was performed by Bishop Durnford of Chichester, who nicely complimented Wagner by choosing as his text, 'He loveth our nation and he hath built us a synagogue.' 'Everything of symmetry, order, style, architecture, taste and form seems to have been outraged,' declared the local paper. St. Bartholomew's is certainly a violent jerk to the senses—a sudden gesture, a rude thumb pointed to heaven. There is a particular reason for its height: it was originally seen clearly from the London railway line, before many of the railway sheds were built, and it is still a superb sight from the viaduct on the Lewes line. Wagner intended it as a powerful reminder of heavenly things to holidaymakers, before they rushed to the fleshpots of Brighton beach.

Contemporary accounts differ in their diagnosis of the 'style' employed; whether it was Romanesque or it was Italian Gothic or it was 'a fine example of the brick architecture of Germany'[27]. Professor Hitchcock compares it fairly with James Brooks's Ascension, Lavender Hill, though that church was begun only in 1878. It is certain however that Wagner and Scott must have been influenced by Brooks's earlier churches in the East End, St. Columba's, Haggerston, in particular. It was Brooks who first showed the height and grandeur of simple early Gothic brickwork, and its appropriateness for slum churches. Possibly Fr. Wagner had some interest in the great brick churches of Germany. His half-brother Henry, who was the moving spirit in the building of Somers Clarke's St. Martin's (which is also vast and early Gothic)[28], was acutely aware of his family's immigrant origins, and, in the course of his lifetime's study of genealogy, he had made friends with his distant cousin, William Milford Teulon the architect. The Germanic influence on the two Teulons was very strong; on the other hand they were fairly Low Churchmen, so it is unlikely that they were consulted by the ritualistic Wagners.

More important—and sensationally different from Brooks's work—is the plan of St. Bartholomew's. The single space with a chapel in each recessed bay is characteristically Italian, from the thirteenth-century friars' churches to the Gesu. Arthur Wagner had travelled in Italy and had evidently been struck, as an Anglican would have been, by the packed and popular services, which filled (and still often fill) the great basilicas. Wagner saw St. Bartholomew's as the climax of his campaign to bring not merely Catholic ritual but popular (truly catholic) worship to Brighton in place of the exclusive proprietary chapels. The ecclesiologists had hated 'pues' for their *aesthetic* effect on the Gothic churches they cluttered. Pugin himself clearly hinted that this aesthetic depravity was the expression of *social* depravity; Regency Brighton was the most conspicuous illustration to hand and it is probable that the proprietary chapel illustrated in *Contrasts* is based on contemporary prints of George IV's Chapel Royal, next to Nash's Pavilion[29]. It is the vast open space and undivided phalanx of simple chairs that distinguishes St. Bartholomew's from earlier Tractarian churches such as Wagner's St. Paul's (where the seats were made free as soon as it became a separate parish in 1878). The frenzied attacks, verbal and even physical, made upon Wagner by Protestant extremists were, I think, caused not just by his promotion of ritualistic services, but by his breaking of the 'price ring' of pew rents. He had successfully cut at the economic and social roots of fashionable, Establishment churchgoing in Brighton. He became a hero of the Free and Open Church Association, which was doing the same in London[30].

An even more specifically evangelical emphasis is provided by Bell's giant crucifix on the east wall. All the principal post-Tractarian churches of *c.* 1855–75 used crucifixes in a prominent position to emphasize Christ's promise of redemption—redemption of the poor as much as (if not more than) the rich. This catholic redemptionist teaching antedates the theology of the incarnation propagated by Charles Gore and the Christian Socialists of the later nineteenth century.

Although exotic in form and detail and therefore not specifically imitated by any architects, St. Bartholomew's, as the most spectacular centre of the LB & SCR (London, Brighton and South Coast Religion), had a powerful influence on the next generation of High Church clients. Together with Blomfield's St. Barnabas, Oxford, it gave an Italianate emphasis to Anglo-Catholicism which reached its full flower in such churches of the 'nineties as St. Agatha's, Landport, and Holy Trinity, Sloane Street—where its spatial originality was understood as fully as its emotional decor. Important as Street and Butterfield and Pearson were, it must not be forgotten that the Camden Society was founded by priests[31] and it was the priests who decided what sort of churches the Victorian liturgical movement needed.

[20] Son of the architect of the Merchant Seamen's Asylum at Wanstead.

[21] The sisterhood later moved from its two houses in Buxted and Queen Square, Brighton, to new buildings at Ovingdean of 1912–14, designed by Scott's successor, F. T. Cawthorn, in an oddly old-fashioned High Victorian manner.

[22] St. Andrew, Portslade-by-Sea (1863), with Suter; Keymer rebuilding (1866), St. Botolph, Heene (1872–79), Christ Church, Eastbourne, chancel (1878-9) and St. James, Brighton (1874–75, since demolished), on his own; All Souls, Brighton, chancel (1879), with Hide; St. Saviour, Preston (1885), and Christ Church, Hove, internal refitting (1886), both with F. T. Cawthorn, who succeeded to the practice on Scott's death in 1895. Other works attributable to Scott include a mission hall in Upper Bedford Street, Kemp Town, and a school in Southover Street.

[23] His uncle was probably a landscape-painter, William Scott, of Brighton (Edmund's father, C. J. Scott, had a brother, W. G. S. Scott). Mr. J. L. Denman has recently come into possession of a painting by William Scott, in the style of *c.* 1840, of Shrewsbury Abbey pulpit.

[24] *The Listener*, 6 February, 1964, p. 227, in an article on 'Brighton: model for affluence.'

[25] The dedication was a conscious recall of the thirteenth-century chapel of St. Bartholomew, on the site of the present Town Hall and pulled down in 1514.

[26] Briefly, Constance Kent was a servant-girl from Road, Somerset, who was cleared of the murder of her baby half-brother, but then confessed the crime to Fr. Wagner. He advised her to surrender to the police, but then refused to reveal in courtroom evidence the secrets of the confessional. To many Victorians this seemed no less than sedition. Constance Kent was sentenced to death, reprieved, and released twenty years later. See John Rhode, *The Case of Constance Kent*, Famous Trials Series, 1928.

[27] Prof. Nikolaus Pevsner has suggested to me that there may be some influence from Albi and the South Catalan churches. Street's book, *Gothic Architecture in Spain*, had been published in 1865.

[28] He had previously (1865–66) been assistant secretary to Baroness Burdett-Coutts, who was herself a patron of grandiose architecture. Her Columbia Market was begun in the same year 1866—an interesting coincidence.

[29] Sir Anthony Wagner suggested this to me.

[30] G. E. Street was on its council. Bishop Durnford's sermon at the consecration of St. Bartholomew's was described by the *Illustrated London News* as 'a masterly advocacy of the system of free and open churches.'

[31] More precisely, undergraduates who became priests.

ACKNOWLEDGMENTS
Although Fr. Wagner's papers, if they still exist, have not yet been located, I have received generous help from the present head of the family, Sir Anthony Wagner, Garter King-of-Arms. I am also indebted to the Rev. R. Helby Chambers (the present vicar), Mr. John L. Denman, Mr. Anthony Symondson and Mr. Graham Howes.

FORTH VIEW

HOUSING AT LEITH FORT, EDINBURGH

architects **SHAW STEWART, BAIKIE AND PERRY** | *photographs by S. G. Jackman*

This large housing scheme for Edinburgh Corporation, the outcome of a competition, is being built in three stages. The first stage, which lies within the ancient fort wall, has been completed and is illustrated here. It occupies approximately 8.1 acres. The second and third stages lie to the east and to the west of the fort and occupy 3.4 and 3.3 acres respectively. They have not been begun, the sites having not yet been acquired by the Corporation.

The first stage comprises two 21-storey buildings with a podium building between containing garages and providing a raised terrace with a view across the Firth of Forth, one- and two-storey courtyard houses, and 7-storey buildings. The second stage will consist of courtyard houses and 7-storey buildings; the third stage of 7-storey buildings only. The restricted space between the parallel fort walls is hard surfaced and as tightly knit as by-law requirements allow. The space is occupied by the two 21-storey buildings at the north end and by the one- and two-storey courtyard houses, which form the nucleus of the scheme at all its stages. The open and irregular area at the south end of the site, formerly a parade ground, are occupied by the 7-storey buildings. These, together with the subsequent stages, are designed to provide a link in scale with the surrounding tenements. Their limbs touch the site boundaries, and the subdivided areas resulting have grass, mounds, trees and shrubs, children's playgrounds in the form of volutes, and a tenants' meeting room and an electrical sub-station converted from a porticoed guard house. The hard paving materials used are asphalt for roads and footpaths, setts for roadside parking spaces, precast and insitu concrete slabs and water-worn cobbles.

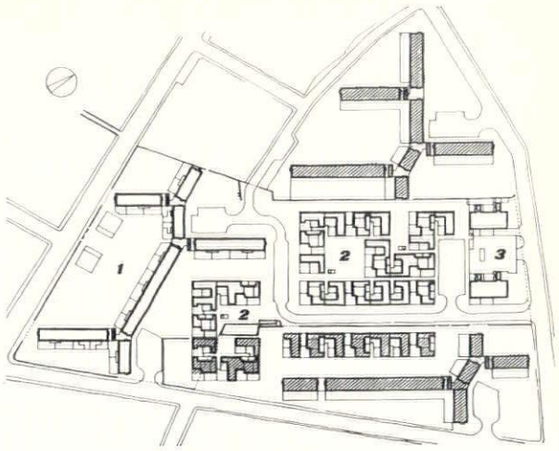
The aim has been to provide a wide variety of houses in each of the three building types. In the completed first stage there are 25 house-types in a total of 357 houses: four types in the 21-storey buildings, eleven types in the 7-storey buildings and ten types in the courtyard houses. The 21-storey buildings are constructed in insitu concrete with precast concrete cladding applied without the use of scaffolding. External walling inner leaves and partitions are lightweight cellular concrete ceiling-height panels. On the ground floor are shops, water-pumping room, switch-rooms, an electrical sub-station and garages. On the first floor, at podium level, are the lift waiting halls and launderettes. The nineteen storeys of houses are made up of interlocking three-storey units with four flats at the middle access level, and access to two maisonettes above and two below. At the roof level there is access down to two houses, water tanks, bathroom ventilation, extract machinery and two blanket-drying spaces.

The 7-storey buildings are constructed in load bearing brick with precast concrete edge beams and insitu concrete floors. Cross walls at ground floor are insitu concrete acting as pile capping beams, and are expressed externally. On the ground floor there are houses with walled gardens. Partitions are of lightweight cellular concrete panels. The upper six floors are made up of three-storey units with a wide access corridor at the middle level. The standard three-room house has an entrance and dining kitchen with balcony at access level, and the remaining rooms either below or above. There are variations on this principle to provide bigger houses. At the intersection of the spine block and the limb blocks there are public ways through, lifts and stairs, launderettes, switch-rooms and tank-rooms.

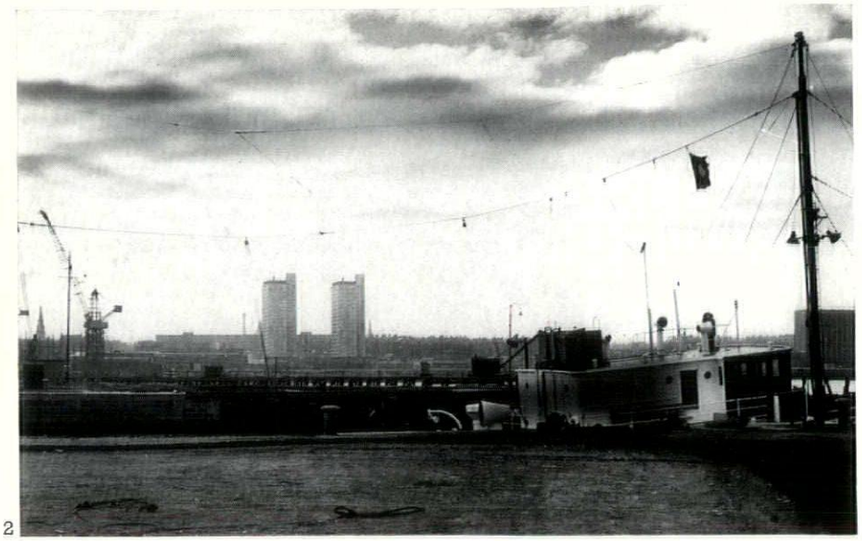
The courtyard houses are constructed in large precast concrete blocks with big pieces of masonry from the demolished fort buildings exposed on the face, clinker block concrete blocks, and timber. Blocks of houses are formed by repeating a basic 4-house unit in a number of different combinations. There are variations within the unit according to its orientation to obtain the best possible winter sunlight conditions, and to include different types of house.

Structural engineers, Blyth and Blyth. Services engineers, Steensen, Varming and Mulcahy. Quantity surveyors, James D. Gibson and Simpson.

site plan (1/32 in : 1 ft.)
the shaded areas show stages two and three, not yet built.
key
1, seven-storey housing
2, two-storey housing
3, twenty-one-storey



1, view from the north-west, showing all three types of housing.



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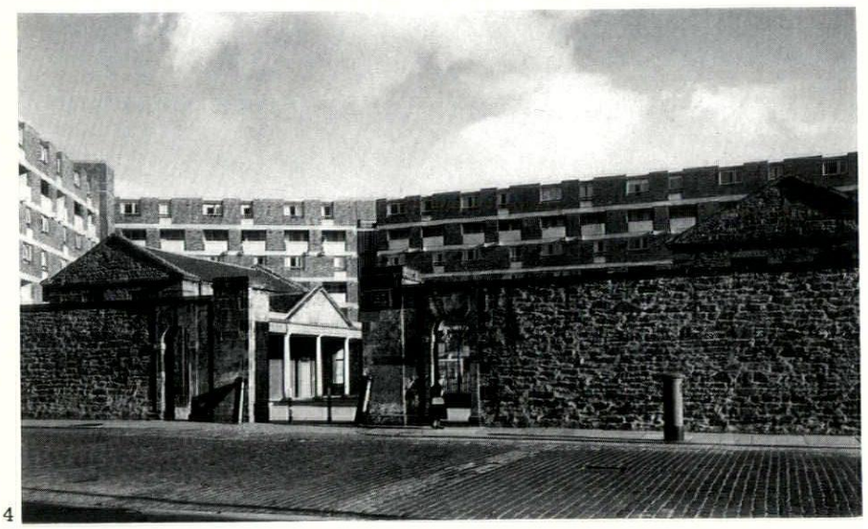
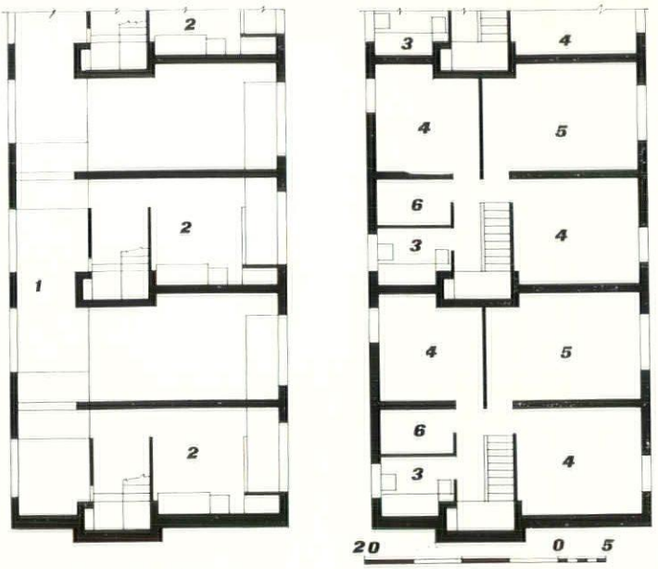
3



4

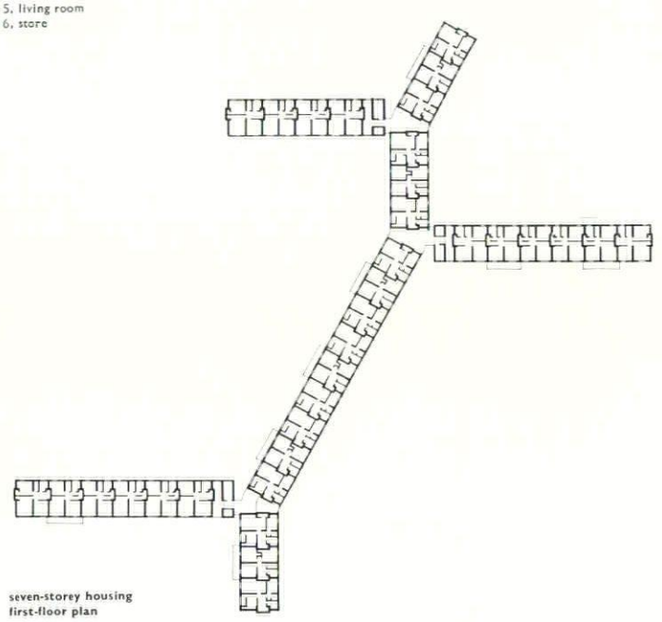
The two twenty-one-storey blocks 2, from across the River Forth, and 3, from Lindsay Road on the north-east of the site. 4, the gate of the old fort with seven-storey housing behind. 5 (facing page), upper part of Grampian House, the western-most tower block.

HOUSING, LEITH FORT, EDINBURGH

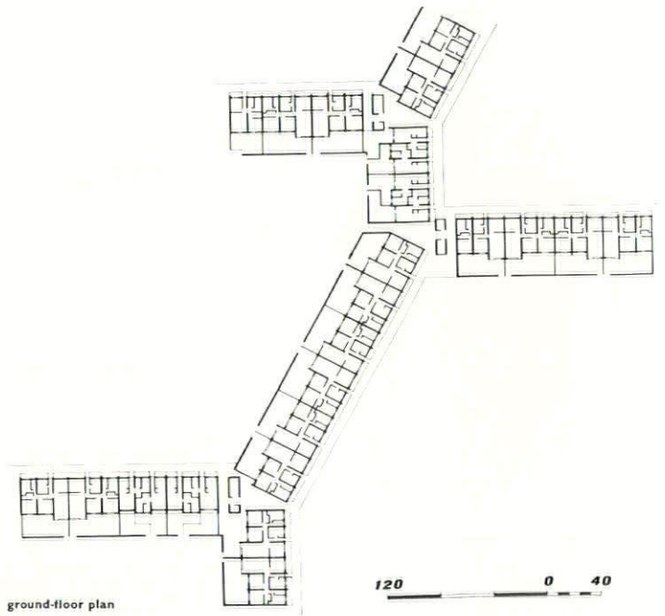


seven-storey housing: lower (left) and upper floors of typical maisonette

key
1, access corridor
2, dining room/kitchen
3, bathroom
4, bedroom
5, living room
6, store

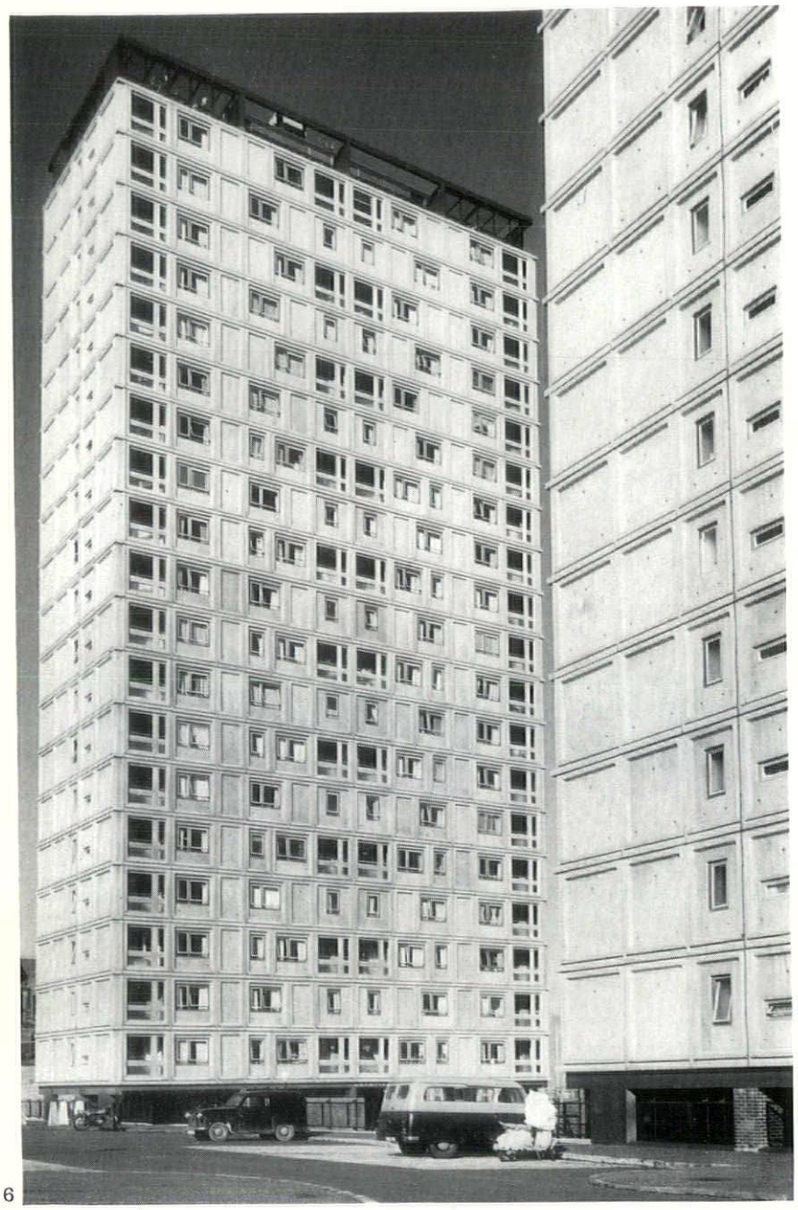


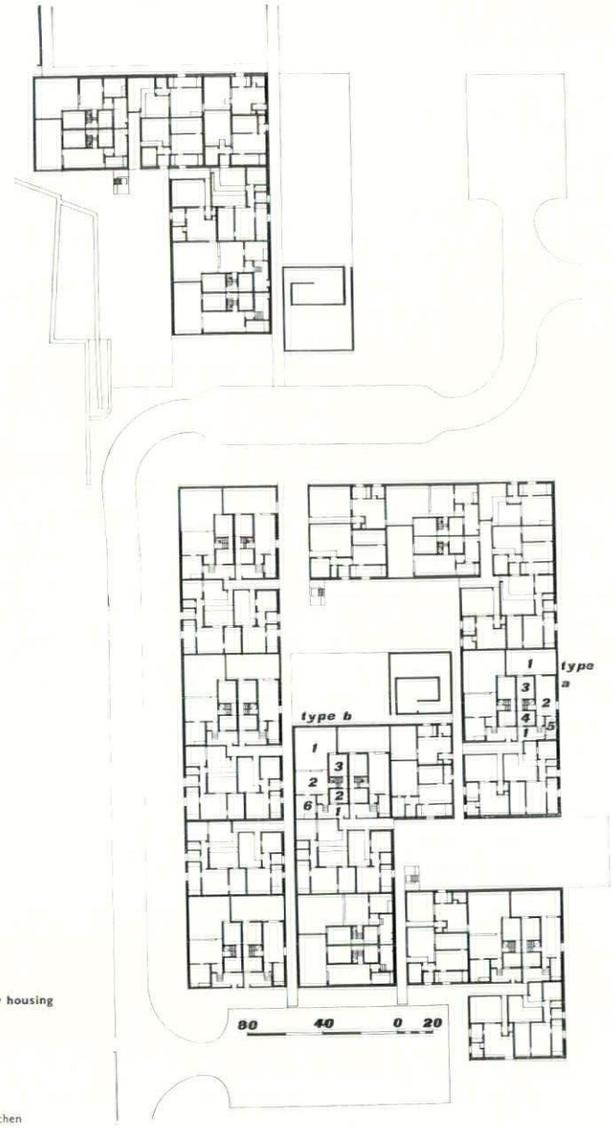
seven-storey housing first-floor plan



ground-floor plan







plan of two-storey housing

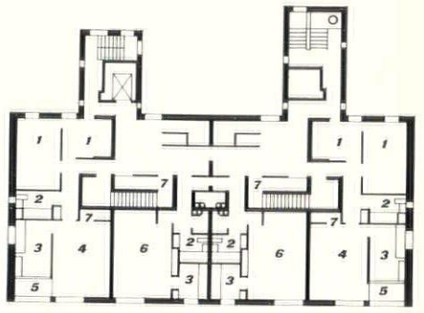
key
1, courtyard
2, living room
3, bedroom
4, bathroom
5, kitchen
6, dining room/kitchen

6, the two tower blocks. 7, view along one of the access roads towards the south, showing the seven-storey block with part of the two-storey housing in the foreground.

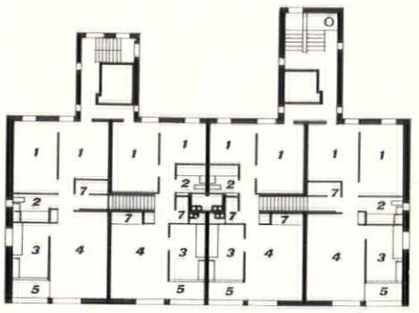




8



plan at levels above and below access level



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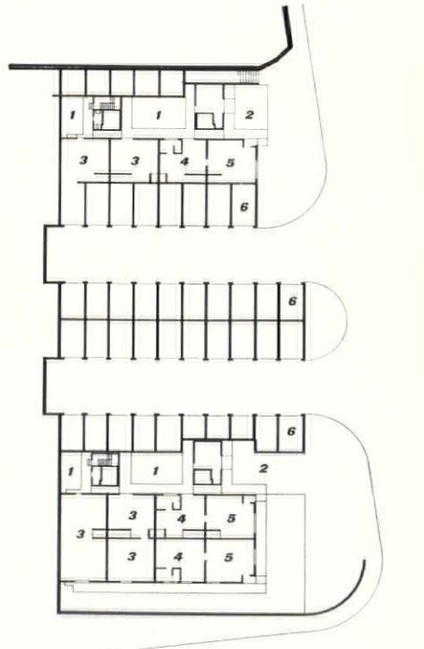
tower block: plan at access level

key
1. bedroom
2. bathroom
3. kitchen
4. living room
5. balcony
6. bed-sitting room
7. store



tower blocks: plan at podium level

80 40 0 20

key
1. yard
2. refuse
3. services
4. store
5. shop
6. lock-up garage



9

HOUSING, LEITH FORT, EDINBURGH

8, a passage through between two blocks of two-storey housing. 9, view towards the river from the centre of the site.

DR

Design Review
a new series

New products chosen and annotated by Ronald Cuddon.

Clocks

From Peter Moro's office comes this wall clock designed for the Nottingham Playhouse, 1. It has been in limited production, but if demand were sufficient to justify tooling costs I can see no reason why it should not be mass-produced. To me it seems the most straightforward and best looking clock, for use in public places, made by a British manufacturer. Victorian and earlier clock faces derived their character and legibility from their large bold figures or clearly defined Roman numerals and shaped hands. It can be argued that over-simplification of a clock face and hands, though visually satisfactory, results in the negation of a clock's meaning; that of being able to give the time surely and clearly, but this defect is largely avoided in this example, since the hour compartments are clearly and boldly defined and the hands are of sufficient weight and difference in thickness not to cause confusion between eleven o'clock and five to twelve.

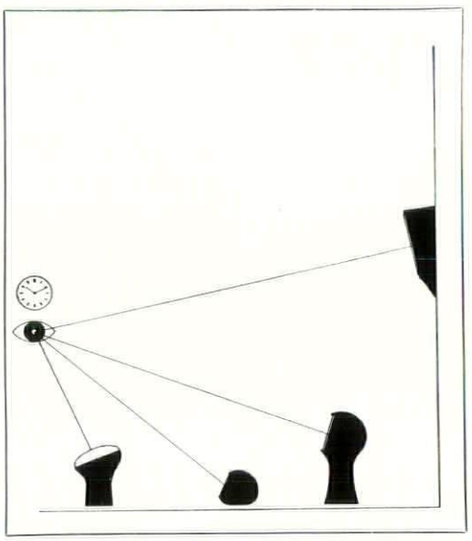
Product: Wall clock by Peter Moro and Partners.
Manufacturer: Cope of Nottingham.



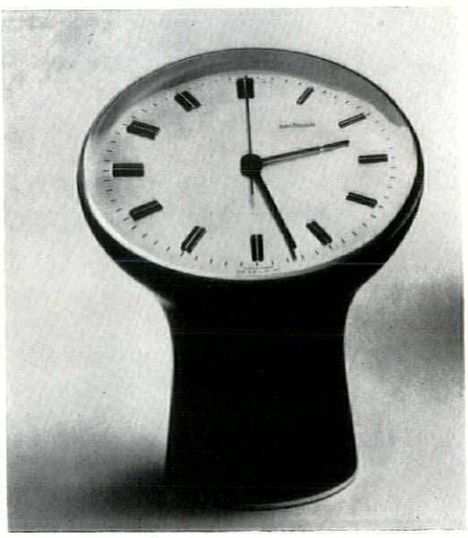
1

The Secticon clocks designed by the Milanese architect Angelo Mangiarotti have already been seen and applauded on these pages, but the more recently introduced table models, 3, are perhaps more controversial. They have the smooth elegance and tactile qualities of other Mangiarotti designs but in this case a perverse inclination of the face means that from most viewing positions the time will be given obliquely. In the brochure put out by the manufacturer it is argued that 'the diameter and inclination of the Secticon dials have been designed with regard to the distance and height in proportion to the human eye.' The diagram, 2, shows this clearly. But the human eye is never in a fixed position, and the need for a clock face to be seen from as many angles as possible is as essential as time itself. There are, of course, exceptions to this rule: a ship's bridge, a pilot's cabin and other specialized locations where equipment is tailored to a man's exact requirements, and it may well be that the manufacturer's brief, the design impulse and development stemmed in the case of these clocks from conditions like these. In spite of these reservations, I regard this as one of the few examples where aesthetic reward far outweighs functional limitation.
In all the Secticon clock faces the clarity is enhanced by a progressive thickening of the symbols with the increase in the number of hours—see the wall model in 3 and the close-up of one of the table models, 4—which is a logical and highly satisfactory practice in clock-faces where the numerals have been dispensed with. It is to be noticed that the legal obligation for changing the trade name Secticon to Selticon in the United Kingdom is no longer in force.

Product: Secticon clocks.
Manufacturer: Universal Escapement Ltd., La Chaux-de-Fonds, Switzerland.


2


3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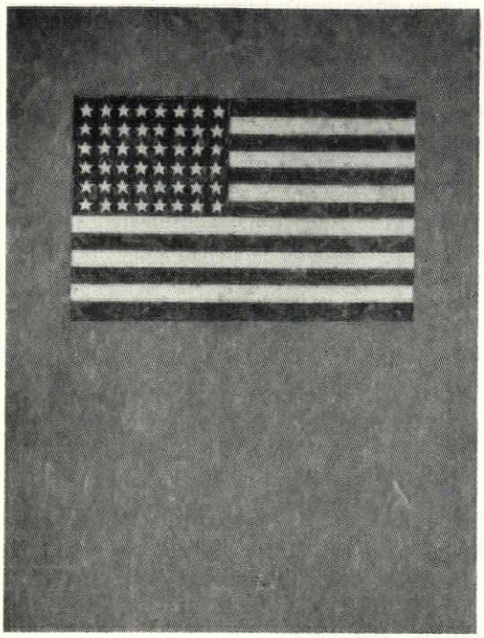
MASTER OF THE STARS-AND-STRIPES

Robert Melville



1

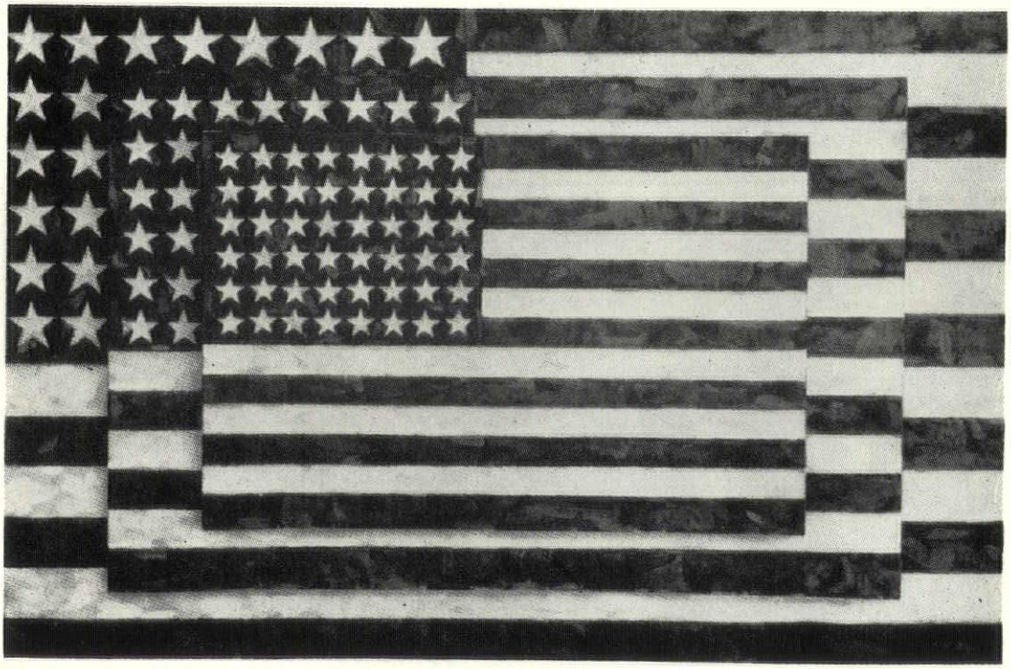
According to one of his supporters, Jasper Johns doesn't remember being born, and on the face of it the only curious thing about this statement is the fact that it's been made. Rumour has it that Johns is now in his early thirties, but it's significant that the catalogue of the recent retrospective exhibition of his work at Whitechapel Art Gallery contains no biographical details, and his supporters are so anxious to be confused and dumbfounded by his genius that they may well be hoping that he wasn't born at all but 'occurred' in the year in which he painted his first flag. The idea of painting the stars-and-stripes came to him in a dream, so at the very least they must be feeling that the Spirit of America spoke to him while he slept one night in 1955.

He would seem to be the man America needed to complete the job of rendering twentieth-century European painting obsolete. By painting the American flag without interfering with its design he is considered to have brought all preconceptions about painting into question, exposed the experimental painters of Europe to the charge of inventing unethical and arbitrary solutions and founded the school of Absolute Uncertainty.

In front of these paintings, American critics have experienced 'unfathomable psychological tensions' and have even had the sensation of going out of their minds. This apparently delicious and gratifying state of desperation is due to the curous fact that they have convinced themselves that they do not know what they are looking at. The question that convulses them is this: Is it a flag or is it a painting? They maintain that there is no answer, that Johns has set for us a problem of identity that can never be resolved. But, to begin with, they have no valid reason for asking the second half of the question. There were several paintings of the flag at Whitechapel and there can be no doubt whatsoever that they are not only paintings but paintings by Jasper Johns. In all of them he is faithful to the design of the stars-and-stripes, but he retains the red-white-and-blue colouring in only two of them (the others are white or grey) and in both cases there are obvious mutations of tone. It is even more to the point that they both display Johns's masterly 'touch.' As Alan R. Solomon says in the catalogue, the paint in these pictures is 'worked with an enormously authoritative facility and with a great deal of surface variety and interest.' In other words, they are anything but anonymous, and it would be an exceptionally good forgery that could fool anyone familiar with Johns's highly personal handling of paint.

This for me would be enough to settle the matter, but it is not enough for Mr. Solomon. In spite of his praise of the artist's manipulative skill with the brush or with whatever other instruments he uses for applying the paint, he is one of the critics who maintain that no one can tell what these pictures are. His argument seems to me to be based on a false presentation of the situation. He says that in choosing to paint the stars-and-stripes, Johns turned to an object 'which offers none of the possibilities of formal manipulation, of the making of decisions about the disposition of shapes on the surface, a predisposition upon which all modern painting has depended since Cubism.' But in one of the two paintings to which I have already referred, the stars-and-stripes is placed on a background of orange paint, 1, so he has not only made a decision to add another colour to his canvas, he has made a further decision about the disposition of the flag on the picture surface. The orange ground is in any case manipulated in his typically delicate and sensitive manner, and, to my way of thinking, he could have pasted a coloured print of the flag on the area occupied by his painting of the flag, and since we have now come to expect only a little something of the artist's own, it would still have ranked as a work of art.

The other painting, 2, involves even more complex decisions. It is a very shallow relief, composed of three paintings of the flag on canvases of different sizes placed one upon another. The arrangement of these three canvases has been calculated with an admirably dead-pan simplicity to retain for the total image the familiar proportions of a single



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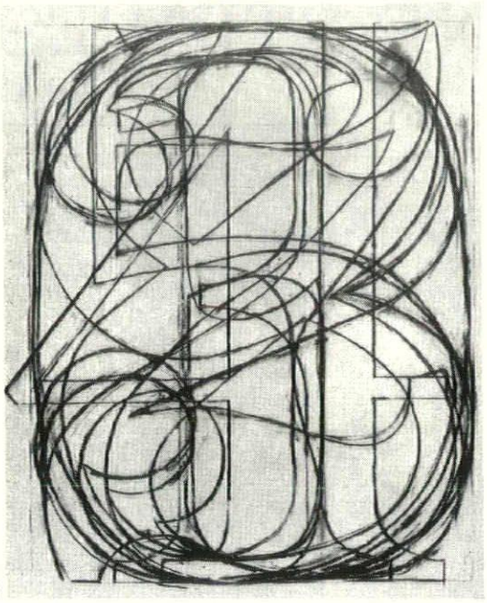

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flag, whilst the play between the different sizes of the stars and the different widths of the stripes creates an unusually eventful abstract.

To come finally to the point—there is no either/or; the questions are made-up. As everyone knew all along, Johns paints representations of the American flag.

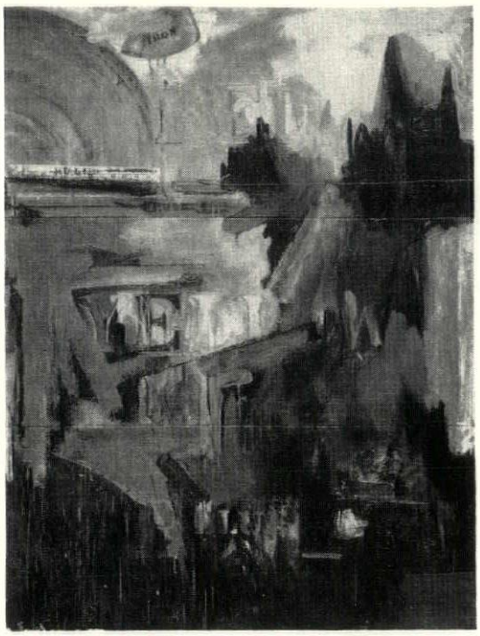
In another time, the prevailing rules and regulations would not have confined him to the representation of objects that were already flat, but as things are, the flag is a superbly witty choice, and I am duly grateful; after all, some of the Abstract Expressionists give us very much less. All the same, I think it was somewhat irresponsible of him to have tampered, however brilliantly or discreetly, with a great nation's flag. Whether he likes it or not, his treatment of it can be construed as a barometer of his feelings about the State of the Nation, especially the white and the grey treatment, and even the orange ground of our first illustration can be interpreted as the orange glare at Hiroshima. In fact, there's no end to the subjective responses that can be aroused by an emblem as saturated in associations as this one.

The content of modern painting has run thin, and I find it understandable that critics should try to make something portentous out of a little bit of magic, but I would not be spending so much time on the mystery-mongering surrounding Johns's work if it were a purely American phenomenon. I have noticed with interest and surprise that several English critics have taken their cue from his American friends, and that one of them has discovered for himself two other images in Johns's work that pose 'unanswerable problems.' Can numerals be drawn sensitively? Is a painted spoon more real than the painted shadow of the spoon?

Obviously we are not as good at this sort of thing as the Americans. The first question is ridiculous: I reproduce without comment, 3, a large charcoal drawing by Jasper Johns of all the numerals, nought to nine. (But more mystery-mongering: John Cage, well-known member of the American avant-garde, says of this drawing, 'it was analysis of a painting in progress. . . . *It was not the work he was working on.*' My italics.) One of the best pictures in the exhibition was composed of several rows of numbers which repeated nought to nine over and over again without any change of sequence. The numbers were,



4



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I think, machine-printed on paper glued to the canvas, but by the time the paint had finished with them, flicking them here and there, getting between them and running over edges, they were so 'sensitively drawn' that the picture is the last word in seductiveness.

Something seems to have gone wrong with the English critic's second unanswerable question. I didn't see a painting of a spoon in the exhibition, and would have been very surprised if I had. The rules and regulations of avant-garde painting do not countenance the representation of three-dimensional objects on a flat surface, and that sort of illusionism would certainly look queer on Johns's evenly activated paint surfaces—there's no place on such ground for a piece of paint pretending to be a spoon. The addition of real three-dimensional objects is allowable precisely because they stick out and are not part of the paint surface. Real spoons are attached to two of the pictures in the exhibition, and may be attached to others. There is of course no attempt to integrate them with the picture surface; they are essentially irritants.

I wonder why spoons? Perhaps the first occasion on which a spoon was pushed into his mouth instead of a teat left a lasting impression on him. Anyway, as far as I could tell, the real spoons didn't have painted shadows, and I think our critic may have confused the spoon pictures with another which had two metal letters, NO, dangling in front of the surface on a wire attached to the top of the canvas. These letters have two shadows, a real one and a painted one. In the ordinary way it would be reactionary to paint a cast shadow, but as this painted shadow is not cast by an illusionistic painting of an object it's what is called 'an ironic affirmation of complexity and relativity.' It might also be intended to persuade philistine owners to refrain from removing the dangling letters.

In the collage-painting based on a map of the United States, 4, the outlines of some of the States define some of his areas of colour, and the names of the States are correctly placed, but the effect is very different from the flag paintings. Solomon is right to claim for the pictures of flags, targets and numerals, and some of the pictures in which the painted names of colours contradict the areas of colour they occupy, that the opposition of 'other possibilities' to his painterly touch give them the impact of a 'radical departure from the expressionist projections of the "action" painters.' But the paint strokes in this recent map picture (it was painted in 1963) have become much more demonstrative, and on the left-hand side eliminate some of the States, as if the painter might be indulging in a smear campaign against the Southwest. It suggests emotional involvement, and there is no doubt at all that Abstract Expressionism is taking over, disrupting the image and coming in, ironically enough, from the Pacific side.

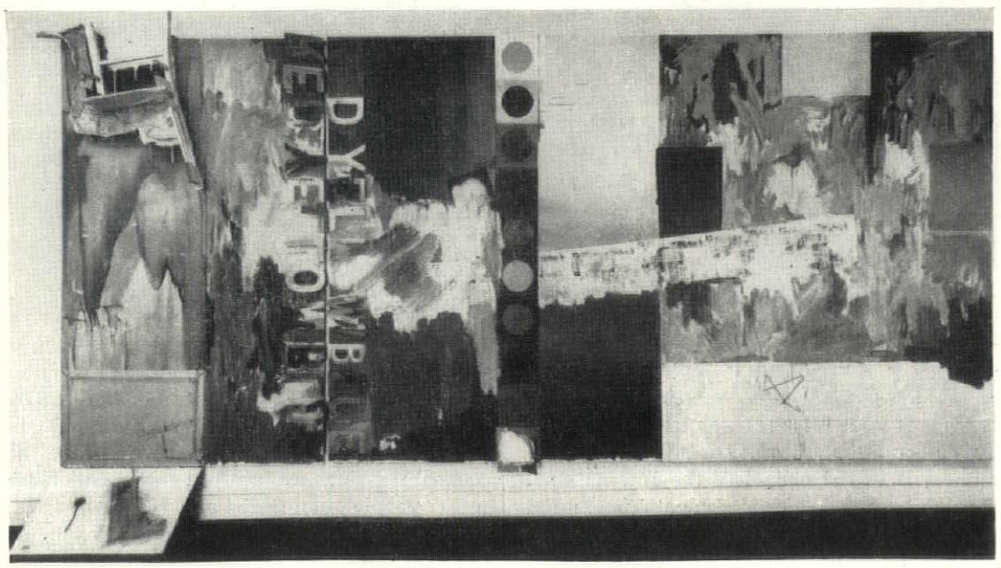


7

The picture called 'Passage,' 5, painted a year earlier, contains mementoes of ideas used in other pictures, but it is already a full-blown example of Abstract Expressionism, and curiously in touch with English nineteenth-century Romanticism, almost as if it were a free, painterly version of John Martin's 'The Bard,' in the Paul Mellon collection. It is a reminder that some aspects of Abstract Expressionism have been called the Abstract Sublime.

In the latest works of all, such as the huge 'According to What,' 6, Johns seems to be out to prove that he is one of the bigger, tougher sort of geniuses, capable of pushing the paint around as aggressively as Pollock and no less inclined to fasten chairs and other oddments to his canvases and produce no less brutally dishevelled effects than Rauschenberg. The result is a visual and emotional mess.

Peggy Guggenheim, whose outstanding collection of modern paintings and sculpture has been on view at the Tate Gallery, confesses that she loathes Pop Art. If she includes Jasper Johns it's rather a pity, because the group of American paintings in her collection is rather



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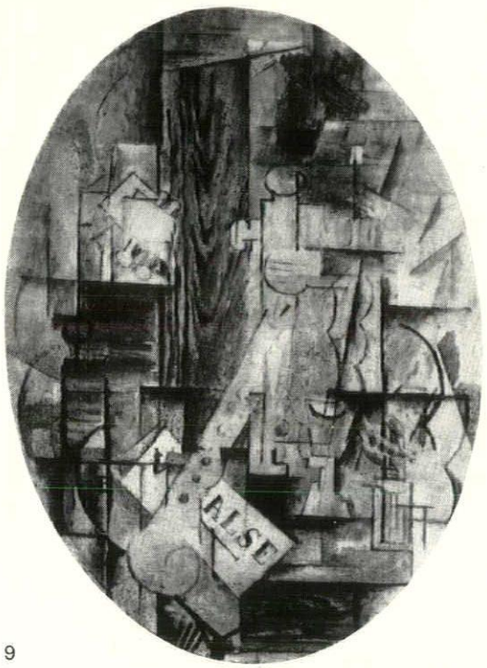
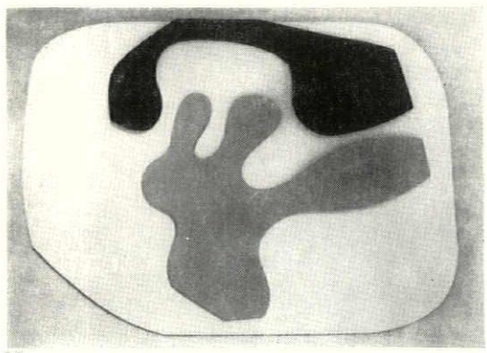


9

seedy and one of his paintings of flags would put a little zip into it and at the same time establish closer links with her superb examples of Cubism, Dadaism and Surrealism. The collection is as strong in sculpture as painting. It includes two fine early works by Brancusi, Giacometti's extraordinary organic abstract of a woman with her throat cut, 7, and a version of Duchamp-Villon's famous Cubo-Futurist 'Horse,' 8. The Cubism of Picasso, Braque and Gris is represented by extremely beautiful works, and her oval Braque, 9, painted in 1912, with its fragmentations, imitation wood-graining, flat signs for objects and painted lettering, is one of the pictures that two or three generations of artists have been feeding on, sometimes like pigs.

To finish on a lighter note, I reproduce her delightful example of Arp's painted reliefs, 10. The catalogue note says that its 'grotesque title reflects the Dada spirit as well as his own interests as a poet,' but in its way, the title—'Overturned Blue Shoe with Two Heels under a Black Vault'—is descriptive. But a problem of identity arises here. Another title, equally descriptive, suggests itself: 'Blue Woman with one Arm longer than the other reaching for the Telephone,' and I am sure that Arp himself could have thought of several alternative titles that would have provided his two forms with other identities. Considered as an illustration of the concept of Absolute Uncertainty it is rather more effective than anything in the art of Jasper Johns.



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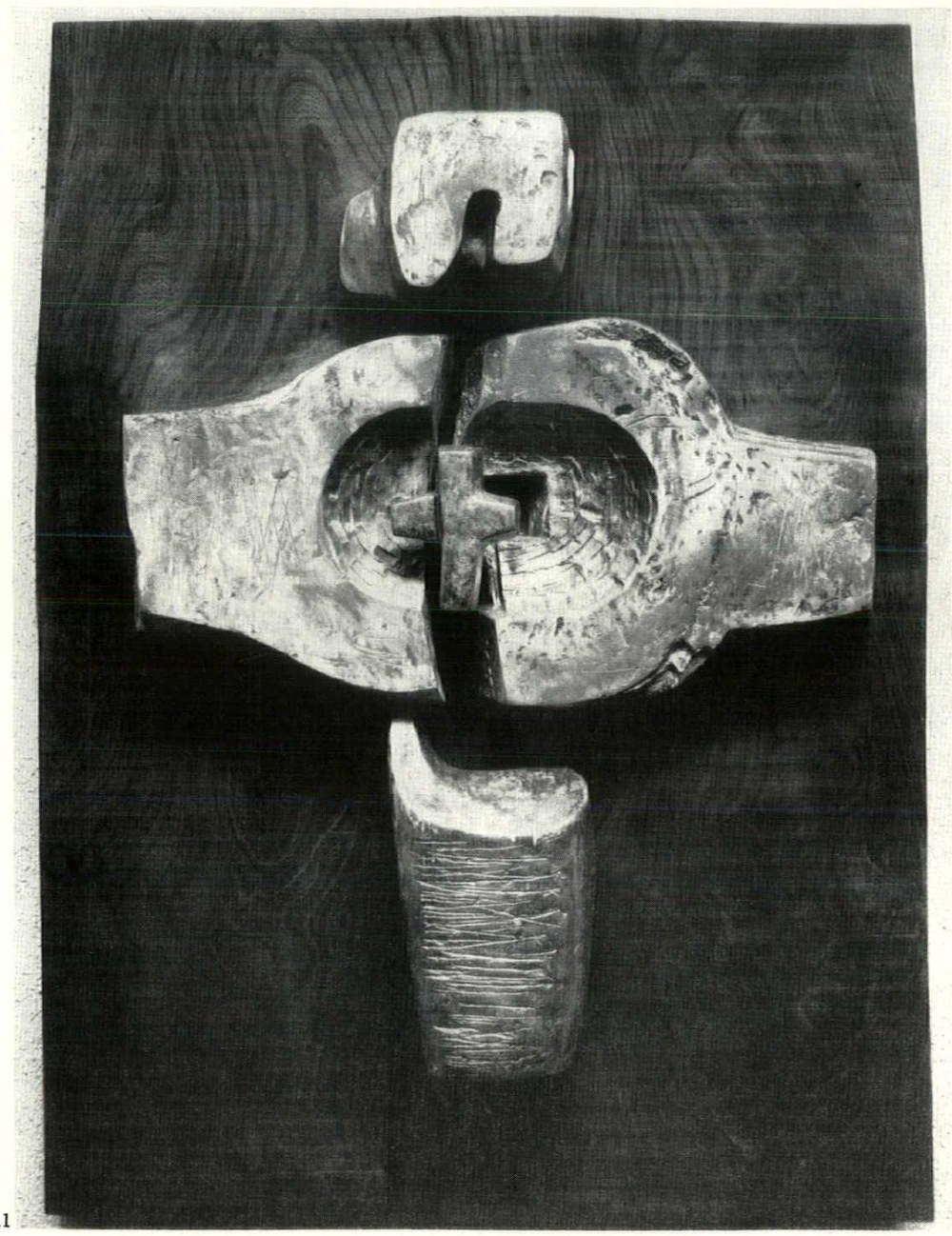


11

PENARTH CROSS

This piece of sculpture, 11, by Michael Edmunds, is in the chapel of the International House of South Wales, a students' residential hostel at Penarth near Cardiff, designed by Edward D. Mills. The cruciform shape is of four pieces of cast aluminium mounted on an elm plaque with a gilded cross in the centre. This cross and the aluminium behind it are inlaid with small polyester inserts. Since the chapel serves as a place of contemplation for other people than Christians, the sculpture is designed with a suggestion of the mandala also present.

MISCELLANY

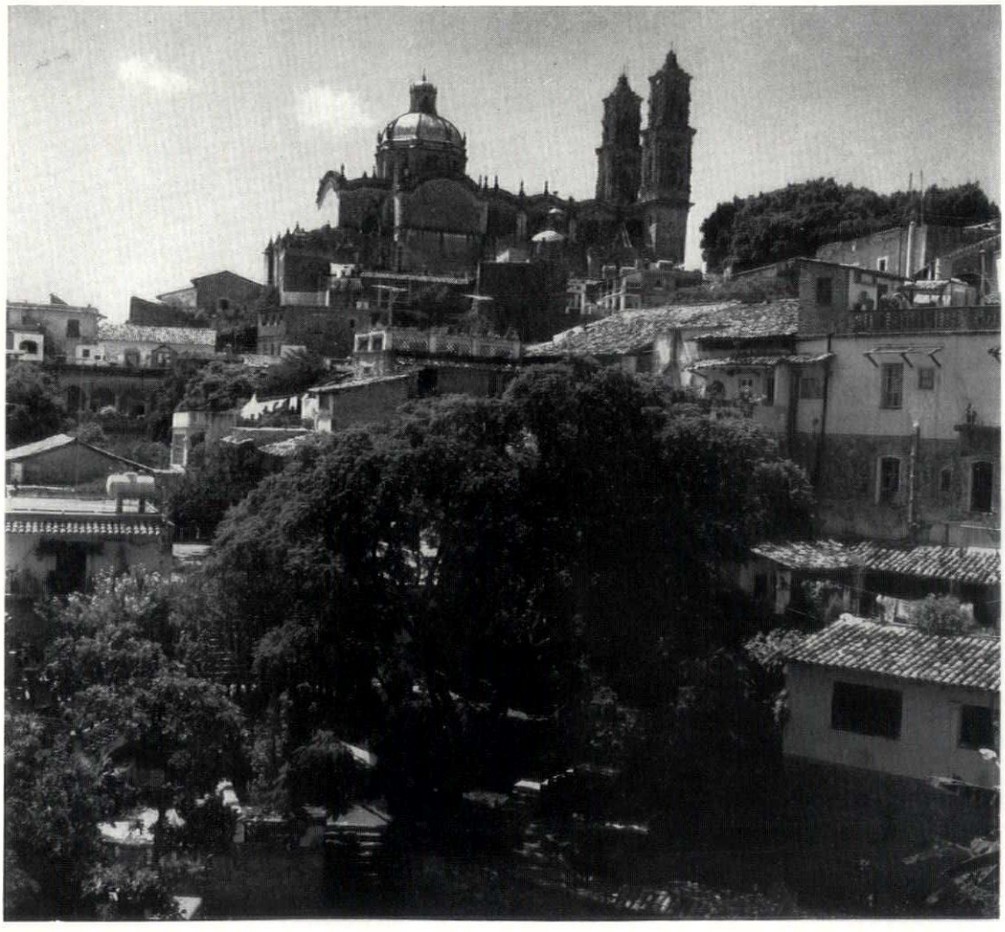
travel

TAXCO

The market town of Taxco in the Mexican State of Guerrero was probably the earliest mining centre in the whole of Spanish America—the first of the many settlements from whose precious metals the Spanish Empire drew its fabulous riches; and it is still wholly Colonial Spanish in its character and its architecture. It is built among the hollows and ravines of a craggy, tree-clad mountain range, about 70 miles south-west of Mexico City. Though well below the rim of mountains that surrounds the high plateau on which the city stands, Taxco is still nearly 6,000 feet up, and the air is fresh and dry and in spite of being within the tropics its blazing summer sunshine is no more than Mediterranean in its intensity. It is protected from the north wind by the highest point of the range—Huisteco—and its jumble of square, white-walled, tile-roofed houses, forming a labyrinth of streets that follow the steep contours of its rugged site, are seen against a dense green background which contrasts with the dusty aridity of the higher plateau.

As early as October 15, 1524,* Hernando Cortés, in a letter to the Emperor Charles V telling of his urgent search for tin for his artillery after his capture of the Mexican capital, writes of 'the natives of a province which is known as *Tachco*' who used tin for money, and of finding it was mined there and that there was also a great vein of iron, and of sending tools and Spaniards to extract it. The basis of Taxco's wealth was, however, the silver that was soon discovered nearby; by 1542 the Spaniard appointed mayor of Taxco, Don Luis de Castilla, had already made a fortune from it, and in 1581 the 'Relation of the Mines of Taxco,' a kind of inventory taken by royal command of the resources, population, etc., of the area, written by Don Pedro de Ledesma, 'Mayor of the said mines and their jurisdiction and Corregidor of Taxco and Tenango,' gives an impressive account of their extent and their apparently limitless riches as well as describing the establishment of Spaniards set up there, composed of miners, merchants, soldiers, officials and one or two monks from the Franciscan monastery at Cuernavaca. Writing of Tetelcingo—the administrative centre of the mining area, where the town of Taxco now stands—he says 'its site is on very high, craggy uneven land,' so rough that there was not one 'flat thing except a little square where the church stands.' This was the primitive parish church, which was several times reconstructed. The site is the same as that of the present magnificent church whose twin carved towers mark the site of the town from the far distance.

*I am indebted to a handbook on Taxco written by Esteban A. de Varona and published in 1953 by Maupome and Martinez in Mexico City for much of the historical information given in this article.



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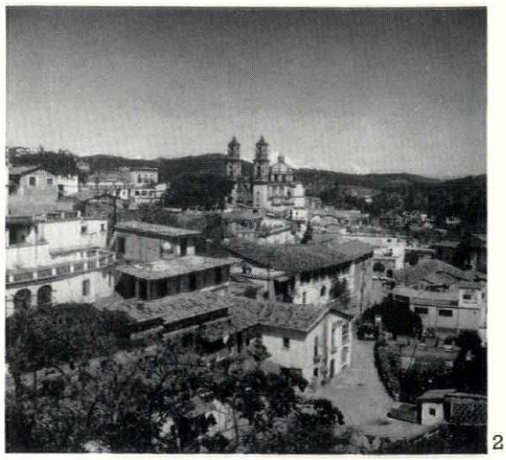

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And so Taxco prospered; most of all in the early eighteenth century after Don José de la Borda, a young gentleman from Aragon, aged 17, arrived in 1716 to join his elder brother who had established himself there as a miner a few years before. De la Borda gained enormous wealth from the silver mines—in fifty years he is said to have extracted from them no less than 40 million pesos—and he devoted much of it to improving and building up the town, constructing churches, endowing charities and furnishing the town with water-conduits, fountains and bridges. One single rich vein of silver—the San Ignacio vein—produced between 1748 and 1757 sufficient profits to pay for the construction and decoration of the new parish church of Santa Prisca that he built at a cost of nearly 2 million pesos.

The town on whose one level spot this church still stands, 1 and 2, must differ

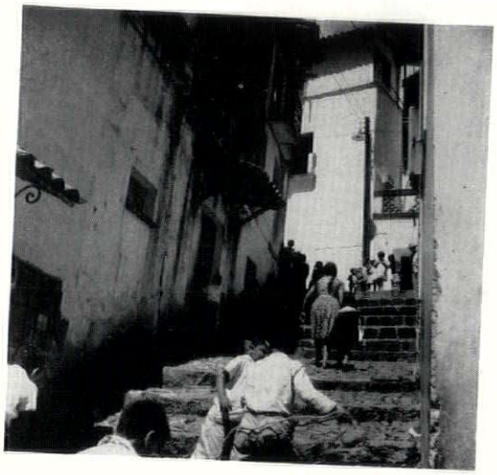


3

very little from the town de la Borda left when he died in 1778. Silver mining thereafter declined, and for the greater part of the nineteenth century Taxco was virtually isolated from the rest of the country and its glories were gradually forgotten; change and development likewise passed it by. Now it is prosperous again, partly because of an increase of silver mining in recent years and partly because a new highway has made the town more accessible, but chiefly because of a flourishing trade in locally produced silverware which brings tourists in great numbers to buy it. This trade dates from 1926, when an American, William Spratling, went to live there and established a workshop in the town with the object of reviving the old standards of craftsmanship in silver for which Taxco was celebrated in de la Borda's day. His workshop and the shop he opened for the sale of its products flourished and similar businesses followed, many of them owned by master silversmiths who began as Spratling's apprentices. Now there are something like a hundred workshops, employing fifteen hundred craftsmen.

The tourists who come to buy silverware also come to admire the eighteenth-century Spanish Colonial architecture, and the town is sedulously preserved. But although it inevitably has something of the air of a

museum piece—in the tourist season the tree-planted square in front of the church, the Plaza Borda, is crowded with parked cars and the Real de Mercaderes, the street containing many of the silversmiths' shops that leads out of its south-western corner, 3, is thronged with camera-hung Americans—Taxco also has a less self-conscious life of its own. It is a shopping and administrative centre for a large agricultural area, and particularly in the outdoor market, which occupies a sequence of narrow streets



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in the lower part of the town—to which one descends by narrow alleys and steep flights of steps, 4—a busy local Mexican life goes forward, self-sufficient and independent of the tourist-orientated activities pursued on the levels above. The market stalls along these streets are protected from the bright summer sun by white canvas tarpaulins, 5 and 6, strung from wall to wall. In the other, residential, quarters of the town also, where white-walled houses are almost submerged in the rich vegetation that somehow flourishes on the rocky hillsides, 7, small town life is no different from the life in other, less consciously picturesque, Mexican communities.

Nevertheless, the distinction of Taxco lies without doubt in the compact consisteney of its Spanish Colonial townscape and in its eighteenth-century public buildings, supreme among which is the parish church of Santa Prisca, a splendid specimen of Mexican baroque. It was built in only seven years, from 1751–58. Who designed it is not known for certain, though it is believed that an architect from Mexico City, Diego Durán Berruecos, had some responsibility for the construction. Whatever architects and artists were involved, the inspiration and ideas were in any case Don José de la Borda's. When he requested permission from the Archbishop of Mexico to pull down the old parish church and build a new one, the only condition he attached to his promise to spare no labour or expense was that no one but he should be allowed to intervene 'in the beginning, progress and conclusion of the work



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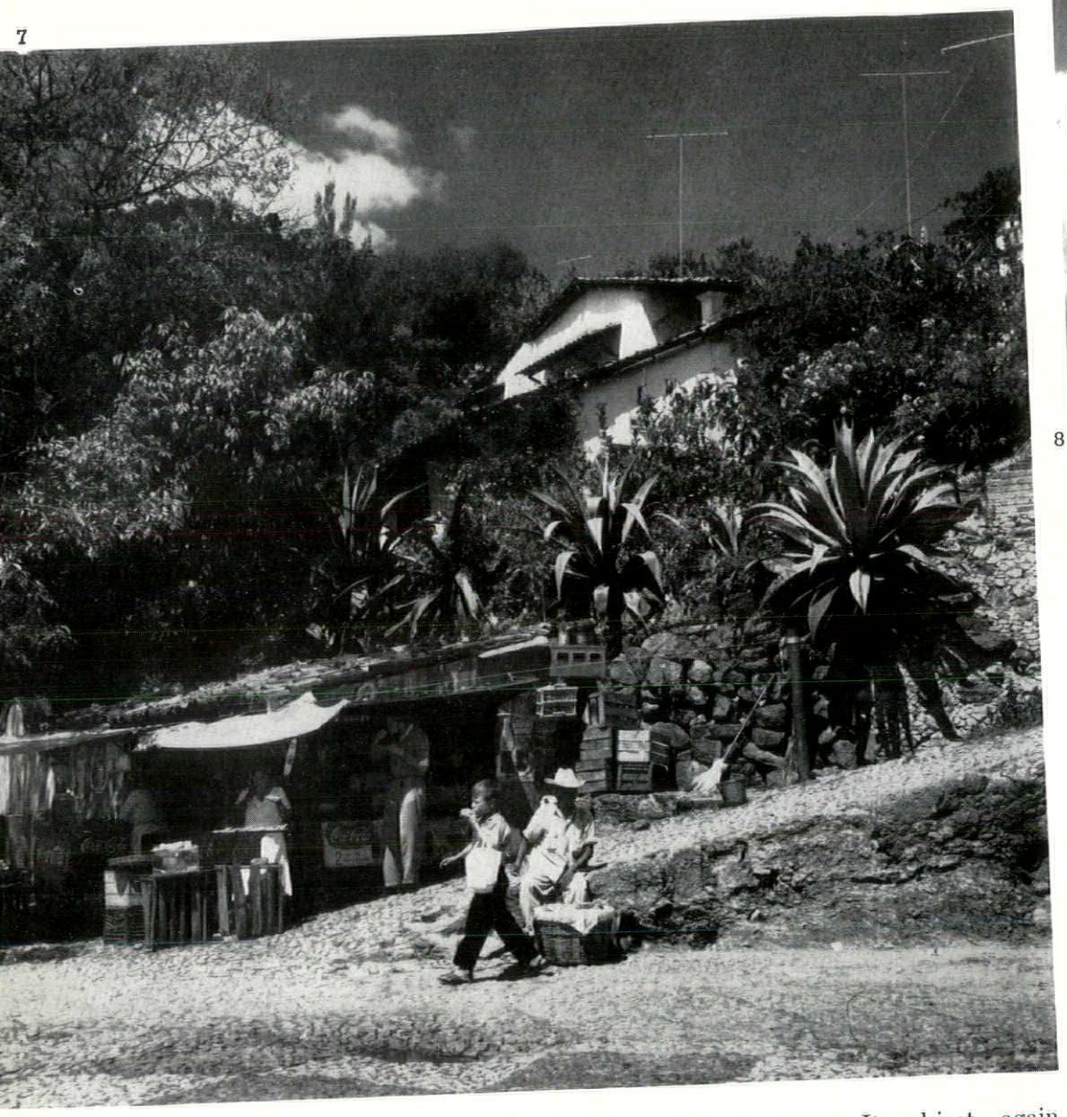



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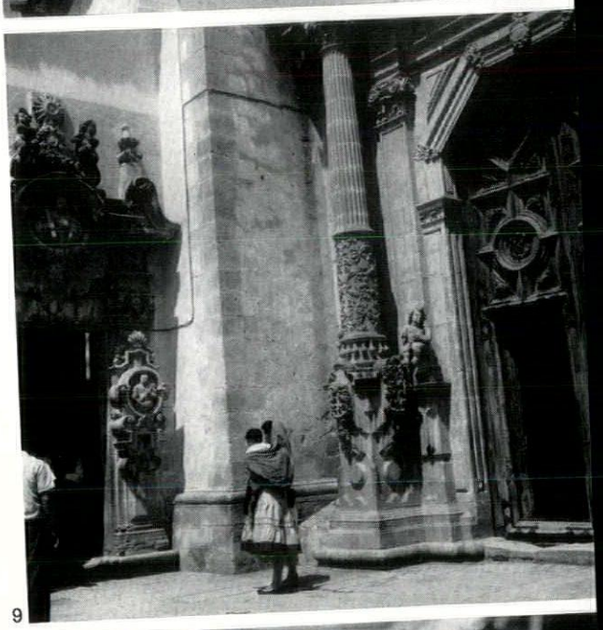

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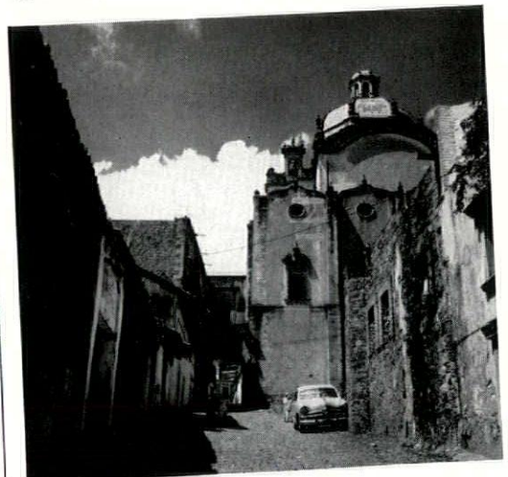
referred to until it was complete, furnished and dedicated.'

The church, which is a Latin cross in plan with a centrally placed green-tiled dome, is built of the rose-coloured stone of the Huisteco mountain, and has all the exuberance—as well as some of the provincial unsophistication—of Spanish Colonial baroque. Carving is inventive, riotous and deeply bitten, especially on the upper part of the twin western towers, 8, where it so continuously covers and corrugates the surface as altogether to submerge its basic architectural form. Otherwise carving is chiefly concentrated on the west front—on the gabled façade set back between the towers, seen in 3 and partially in 8—and round windows and doorways; 9 shows the doorways on the southern side, leading into the transept and choir. The remaining wall surfaces are relatively plain, as can be seen in 10, a view from the east, looking up one of the steep cobbled lanes that follow the contours of the hill on which Santa Prisca stands.

Inside the decoration is even more profuse, culminating in the gilded altarpiece, 11, which is one of the most splendid in Mexico, in spite of the space it occupies being relatively narrow. Its subject—again only just discernible among the blaze of light and the exuberance of the carving—is as usual an assembly of saints and martyrs, evangelists and popes, angels and cherubs. Either side of the principal image of the Immaculate Conception are those of the two patrons of the church, St. Sebastian and Santa Prisca, who was a martyr of the time of the Emperor Claudius and gives protection against being struck by lightning.

J. M. RICHARDS



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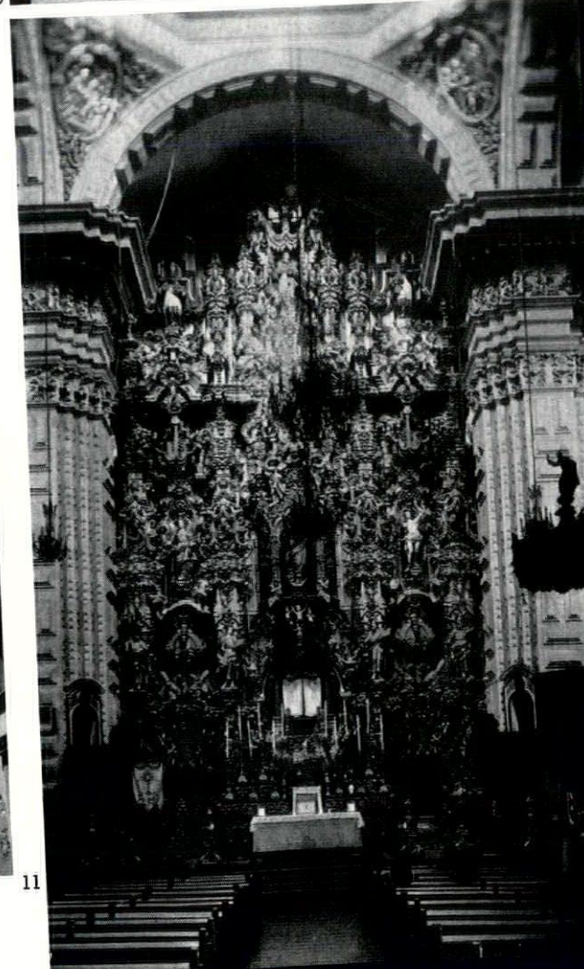
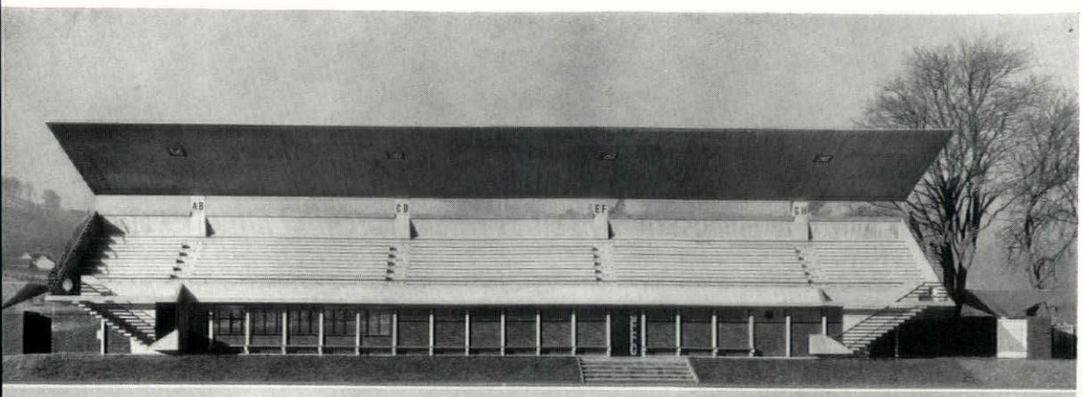


11

functional tradition

GEOMETRY IN CONCRETE



1
2

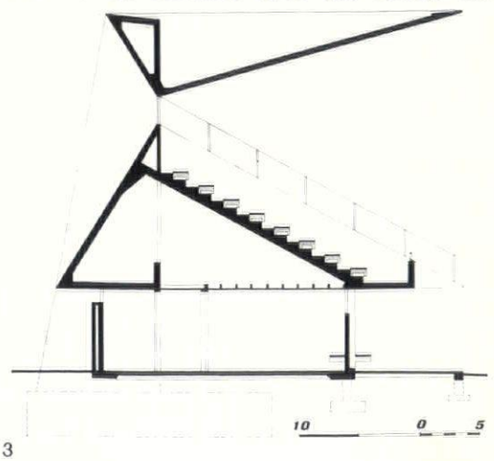


Covered stands for football and athletic grounds have already produced some outstanding architecture, even if a large proportion of existing stands are ugly or nondescript. The best derive their architectural quality from the expressive use of the kind of bold structure their nature demands, and there exist several quite outstanding examples of this: Nervi's stands at the Rome and Florence stadia, for instance, or the late Eduardo Torroja's grandstand at Zarzuela race-track, Madrid, or Jaenecke and Samuelson's stand at the New Ullevi stadium at Gothenburg, Sweden, with its strange, undulating suspended roof.

There are no British examples as spectacular as these, but there are now a number (including the stadium stand at the LCC's Crystal Palace recreation centre, illustrated in the October, 1964, AR) that are structurally interesting, workmanlike and expressive. A modest but admirably designed addition to these is Peter Womersley's football club stand at Galashiels—for the Fairydean Club—which uses reinforced concrete to create a geometrical composition of unusual interest and subtlety—a modern example of the functional tradition. This quality is brought out in the photograph of it that provides the cover of this issue.

The stand, 1, seats 620 and has changing-rooms and clubrooms beneath the seating. It was designed by Mr. Womersley (assisted by Joe Blackburn) to be capable of extension in bays should a running-track be added to the football ground. It is based on a module of 5 in.—the width of the Douglas fir boarding used for the shuttering—and on angles of 60 and 30 degrees, producing, by means of an interplay of triangulated forms, the geometrical interest referred to above and shown in 2 and 4 and in the section, 3.

The basic construction consists of four tapering triangular reinforced concrete piers, shown in 5, which support the roof of the stand and the wall behind the seats. The reinforced concrete roof is cantilevered 15 ft. either side of the piers and 25 ft. forward over the seats. Its



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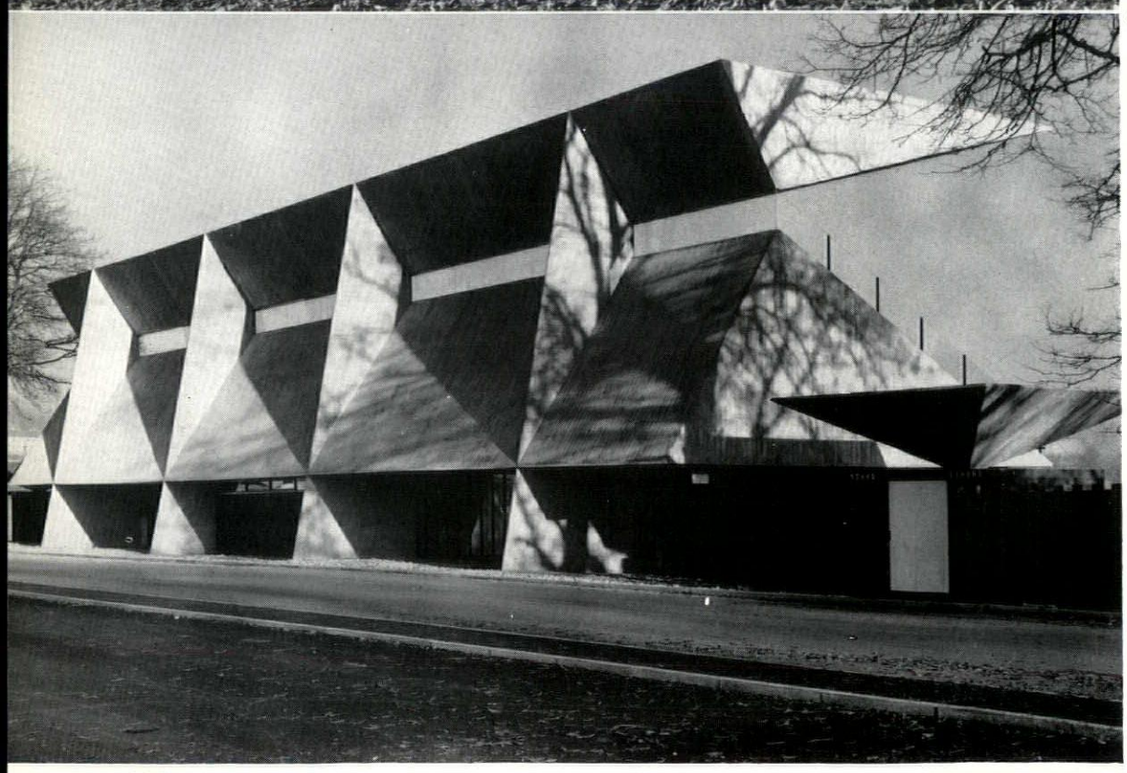
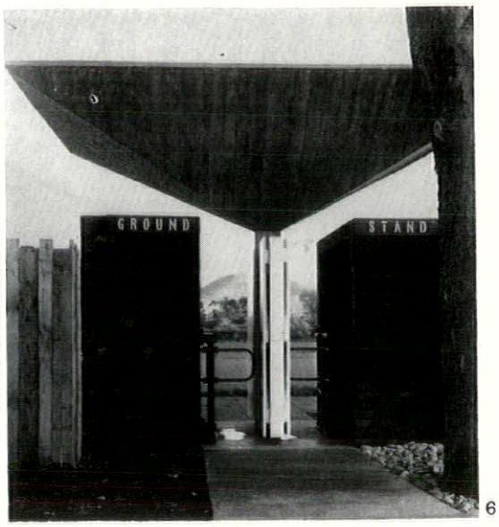




6

diagonal upstand beams leave the soffit free to house floodlighting which is thereby automatically angled to illuminate the whole area of the playing pitch in front of the stand. The back wall of the stand is again cantilevered 15 ft. laterally, is again triangular in section and forms one side of the support system of the precast seating units, the other point of support being the access gallery with its upstand beam in the form of a solid parapet. The gallery is supported on reinforced concrete columns and is reached by two staircases, again cantilevered from a spine wall, which also help to support it. The consulting engineers were Ove Arup and Partners.

Another merit of the design is the way the turnstile entrances which—like the screen walls below the stand—are of black brick, are integrated with the stand itself, and the way their triangular concrete canopies, 3 and 6, echo the dominant forms of the larger structure. The total cost of the stand, including changing-rooms and kitchen equipment and hot water systems, was the very small amount of £25,000 which the football club raised by means of a public lottery. J.M.R.

history

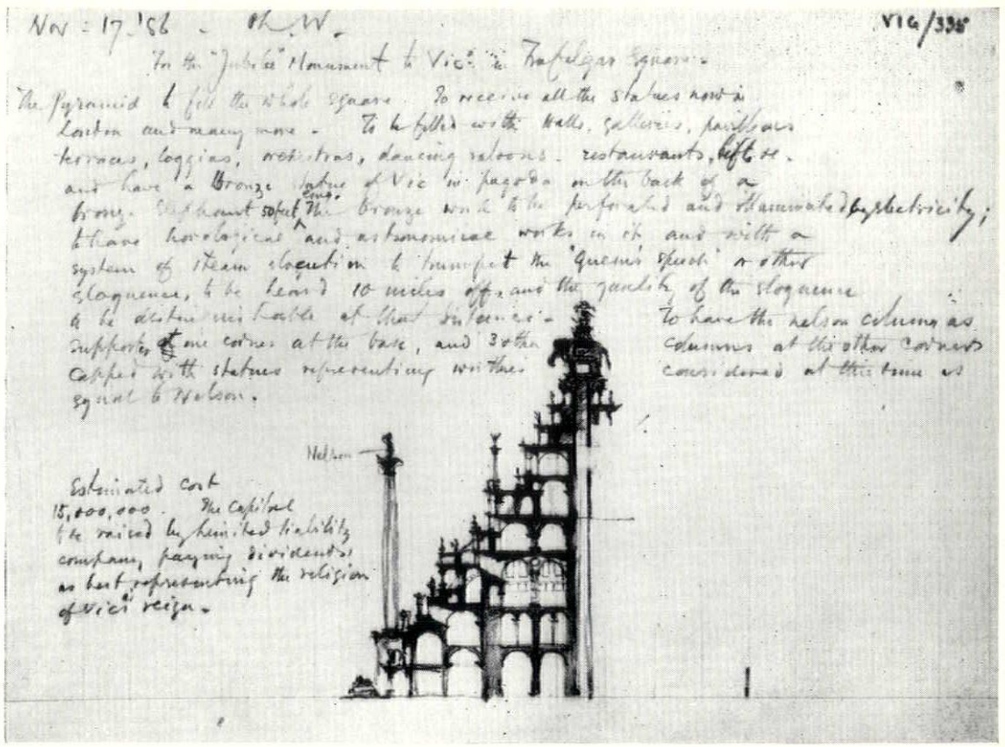
JUBILEE PYRAMID

Very rarely in the interval between Pugin's *Contrasts* and Mr. Osbert Lancaster's *Pillar to Post* has architecture been the target of caricature or satire, but the drawing by Philip Webb which this note introduces is more than an historical freak and more, certainly, than an exalted doodle. If

Nov. 17, '86. Ph. W.
'For the "Jubilee" Monument to Vic[a] in Trafalgar Square.'
'The Pyramid to fill the whole square. To receive all the statues now in London and many more. To be filled with Halls, Galleries, pavillions, terraces, loggias, orchestras, dancing saloons, restaurants, lifts, and etc. and have a Bronze statue of Vic in pagoda on the back of a bronze elephant 50 feet long. The bronze work to be perforated and illuminated by electricity; to have horological and astronomical works in it, and with a system of steam elocution, to be heard 10 miles off, and the quality of the eloquence to be distinguishable at that distance. To have the nelson column as supporter at one corner of the base, and 3 other columns at the other corners capped with statues representing worthies considered at this time as equal to Nelson.'
'Estimated cost 15,000,000. The capital to be raised by Limited liability company paying dividends, as best representing the religion of Vic[a's] reign.'

JUBILEE PYRAMID

Right, Philip Webb's proposal for a Jubilee monument to Queen Victoria in Trafalgar Square. The annotation is reprinted above.



Lethaby's book and Mr. John Brandon-Jones's essays interpret Webb's buildings and moral standpoint as in many ways *anti*-Victorian in spirit, then the drawing provides a footnote to one of the major themes of Webb's life. It embodies a Victorian reformer's distrust of a large slice of Victorian achievement.

Webb personified a kind of litmus-reaction to the morality of architecture. He tried to probe back to architectural first principles. To be conscious of Webb's ideals when looking at a building is nearly always to have doubts about the building. The litmus can never have changed colour more violently than when it came within range of architectural grandiloquence—anything which in architecture struck Webb as empty or meaningless. So much is plain to see even from this single drawing with its characteristic annotation*—a drawing illustrating Webb's proposal for a Jubilee monument to Queen Victoria in Trafalgar Square.

Dated 1886, it was made in horrified anticipation of the crop of buildings and monuments that would arise to honour the Queen in 1887, the year of her first Jubilee. She had been made Empress of India in 1876, and Webb cannot have liked that either. But so far from letting himself go in a caricature of the cruder sort, Webb makes a drawing which is the more deadly for its refinement.

See how he works over those elegant arcades, what care he takes to provide light even for the vaults which help to support 50 feet of perforated elephant. Who can fail to relish the picture of Philip Webb fussing a little over Italianate proportions? It is a case of the executioner polishing an axe he normally disdains to use. And in this send-up of the Jubilee and everything associated with it, he contrives not only to sound the hollow note in patriotic esteem for national heroes, but to tell us plainly what he thinks of monumental sculpture and—by implication—of representational architecture as well.

The annotation is more deadly still. Victorian stock-jobbery was of course an easy target, but in matching his hatred of rhetoric with the idea of steam elocution Webb surpassed himself. We can almost see the pyramid in action—popping with lights like the advertisements in Piccadilly, hissing and throbbing in the effort to boost the Queen's Speech all over London: steam radio, in fact. But in spite of the fun Webb is, I believe, entirely serious in his condemnations. And suddenly, stung perhaps by a hint of complacency, the suggestion that his attitude is unassailable, it is possible to feel angry with him. I will try to explain why (but in fairness we must remember that the drawing was never published).

No doubt Webb would have applauded Lethaby's aphorism which suggests that an 'imposing building is in itself an imposition.' And so far as I know, Webb himself never designed a Government office, a railway terminus, a large hotel, a theatre, a cathedral, or a museum. Buildings of this kind were needed by the Victorians, but Webb left the solution of the problems they raised to men such as Scott and Giles, Shaw and Waterhouse. And of course he had every right to do so: we do not criticize an architect for recognizing the limitations of his own talent—Ernest Newton, for instance, who stuck chiefly to designing middle-class houses. But what is disturbing about Webb is that his potential range was probably far wider than Newton's, yet he disdained to meet some of the real architectural needs of his day. Moreover, it is difficult to avoid the suspicion that, if only in private, he despised those who did.

Be that as it may, there is surely something very high-handed about his attitude to sculpture: did he not write, on the drawing reproduced here, 'To receive *all* the statutes now in London and many more'? (my italics). Even as a private joke, this is disturbingly arrogant. Would he have uprooted the Le Sueur equestrian statue, the Duke of York's column, the Albert Memorial, the Wellington Memorial? Would he have gone on to strip the Houses of Parliament, the V and A quadrangle, Scott's Foreign Office? Muttering about the 'rottenness of the arts' in his own day, Webb himself found it difficult to get even a single stone relief executed to his satisfaction (there is the evidence of the Letter Books). Who was he, then, to deprive London of its sculpture? And would it have looked any better had he done so?

Webb, moreover, did not discriminate. It is true that assessments of the Albert Memorial are still equivocal, but most

*RIBA VI6, 335.



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critics set a high value say on Le Sueur's monuments, or on Alfred Stevens's Wellington Memorial bronzes: even Lethaby remarked of the latter that they were 'Far away the finest of all English sculpture.' The fact is that Webb probably disliked all monumental sculpture, regardless of quality.

None of this, it goes without saying, is to deny the rock-like integrity of Webb's moral standpoint, or the value of his buildings. It is simply because his Jubilee Pyramid is likely to be met with nothing but cheers of delight that I advance these doubts about one aspect of his outlook. A few years ago, between beginning an article and trying to get a photograph, I found that Tinworth's Fawcett Memorial in Vauxhall Park had been destroyed—no questions asked. The group was not of first-rate importance, though it was worthy of preservation, and the episode still strikes me as symptomatic of the familiar attitude 'Only Victorian, so no one will notice.' Webb's attitude is the more insidious for being based on a positive moral outlook—his annotation is in itself a 'test for taste' if ever there was one. But it would be disastrous if a private joke were to make it easier for planners to liquidate our sculpture, or to destroy buildings which, like the Foreign Office, or some of Gibson's banks, or the Wedgwood Institute at Burslem, are positively improved by the sculpture which adorns them.

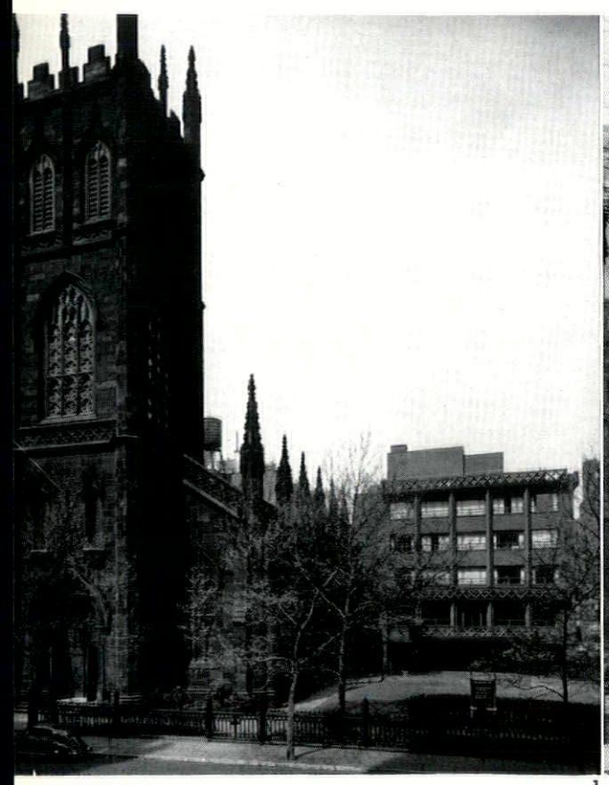
CHARLES HANDLEY-READ

architecture

SEEKING ROOTS IN NEW YORK

Current English suspicions about the aggressive, personal architecture of leading American architects—as much the expression of the best and worst of the capitalist ethic as our own High Victorian style of a century ago—is unlikely to be allayed much by the first gropings towards our own self-effacing ideals of harmonious townscape. It is perhaps not surprising that one of the attempts to express a common American vernacular tradition comes from a former pupil of Frank Lloyd Wright. Edgar A. Tafel, now the head of a prosperous New York practice specializing particularly in ecclesiastical work, was job architect both for 'Falling Water' in 1936–37 and for the Johnson Wax administration building in 1937–39. Yet although these two buildings put Wright back in the forefront of international modern architecture, Tafel has since turned to things more homespun, notably in the parish house for the First Presbyterian Church of New York at the junction of Fifth Avenue and Twelfth Street, 1.

A copy of John Pinch's church of St. Saviour, Walcot, at Bath, of 1829–32, the First Presbyterian Church is a finely towered Perp design (1844–46, Joseph C. Wells), which cost originally as much as $55,000. Tafel's parish house, costing $1,000,000 of present money and containing a school and meeting rooms as well as flats, is placed compactly in a cube, 2, which preserves the old churchyard. It is built of dark brown brick which continues the stone colour of the church. The most obvious harmony, however—one that may paradoxically jar English eyes—is the unashamed continuation of Wells's pierced quatrefoil parapet, not merely along the roofline

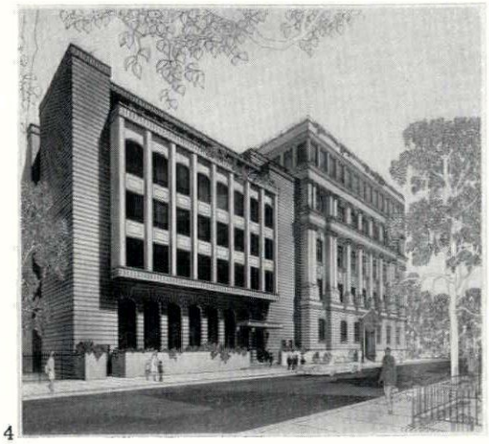


1



2

but emblazoned on the balconies. Those who wish to sneer will note that the architect ordered 132 quatrefoiled units, weighing 250 lb. each, from Precast Building Section Inc., of Long Island. Yet Tafel has a strong argument: the church has twice before been extended, in 1893 by McKim, Mead and White and in 1920 by Grosvenor Atterbury II, so that there is now a large transept on the other side, 3, and also an extended chancel. Both times the quatrefoil parapet was faithfully extended. On purely aesthetic grounds the parapet



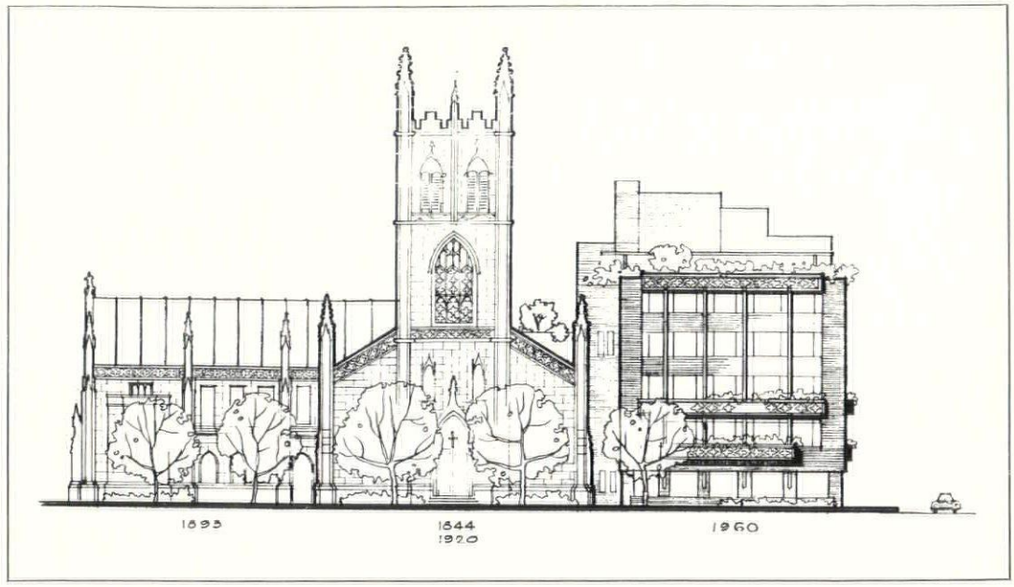
4

can be said to lighten the structure's appearance.

More dubious—less close to the vernacular tradition than to the English academic vice of 'keeping in keeping'—is Tafel's proposed addition to his own old school, 4. Walden School is a full-blown columnar piece; Tafel tactfully continues the rustication, but then builds it up on Wrightian service towers and sandwiches a filling of windows remarkably like the work of the Burnet-Tait office in London in its Adelaide House days of the early 'twenties.

It is a relief to turn from this to Tafel's brave little De Witt Church, 5, cowering in the shadow of the bleak Baruch development on the lower East Side. Here Tafel has tried to provide a secure spiritual home for Protestant worshippers of a variety of nationalities and denominations by re-using the bricks of the previous neo-Romanesque edifice (1881). The mature texture of these bricks is combined with the natural tone of a laminated wood frame. The vestibule, 6, incorporates a bust of the founder and Victorian stained glass and on the stairs pieces of ornament from the old church are inset in panels in the brickwork. This church reflects, in its poignant situation, the aching need for roots in a populous immigrant neighbourhood. With school, offices, fellowship hall and small chapel besides the main church, it is intended, in the architect's words, to be 'to this neighbourhood what a cathedral was in a European village of the past.'

N.T.



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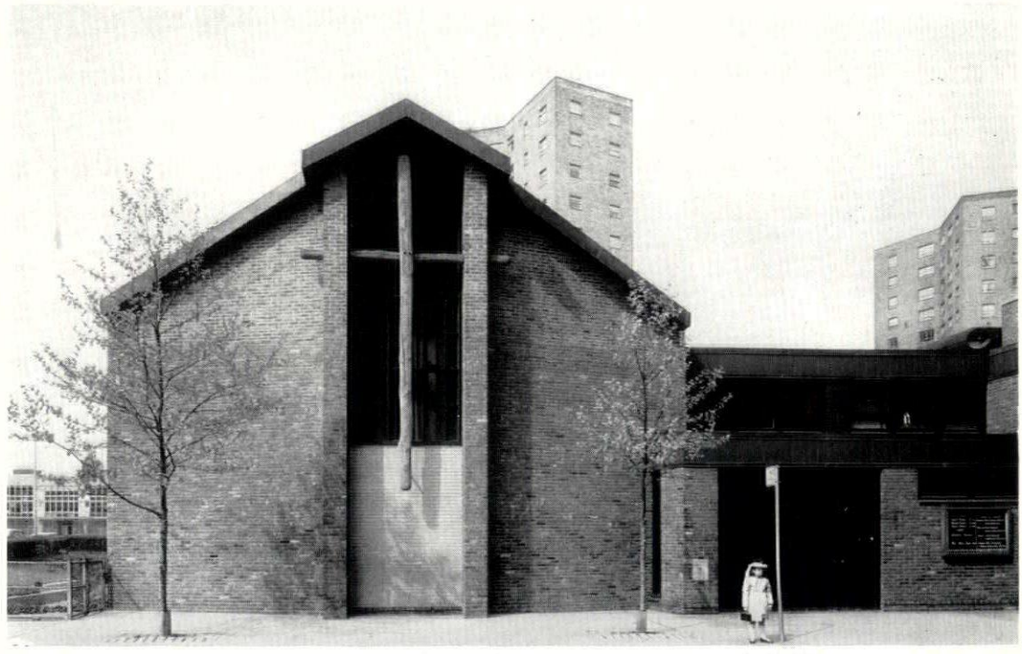

5



6

SKILL

THE LIGHTING OF BUILDINGS FROM THE EXTERIOR

Last year the Illuminating Engineering Society published their Technical Report No. 6 on The Flood Lighting of Buildings. In this article Peter Jay discusses some of the issues raised by this important publication.*

By day buildings in towns are seen in the context of other buildings, and in the country they are seen as part of a landscape. Lighting at night inevitably involves wrenching the building out of its context and making it a dominant object against a darker background. Its significance is then greatly altered as it becomes something to be looked at in isolation.

This raises in a very distinct form the dichotomy between the function of buildings in use and their significance as visual objects. All buildings must to some extent fulfil both criteria but it is only with some buildings, that it is possible successfully to emphasize the visual appearance to the exclusion of all other factors. At a time when the functional aspects of buildings in use are coming to be emphasized at the expense of their visual function this deserves very serious thought. In the detailed discussion later in this article ancient buildings which do not raise these problems in quite such an acute form, will be dealt with separately from modern buildings.

However, lighting buildings by night can do a great deal to add to or emphasize a special occasion. For major ceremonials, such as a Coronation, so many buildings are lighted that more of them are wrenched out of context and it may even be said that distortion is caused by those buildings which are not lighted and are therefore unable to play their proper part in the scene. It is also true that without special lighting at night many of those who work in cities would have little opportunity of studying their major works of architecture since during the hours of daylight they are likely to be indoors. Although such arguments are important they do little to show that floodlighting can be of much architectural value.

Ancient buildings

There are some buildings which, when first designed, occupied open sites and dominated their surroundings but are now surrounded and obscured by later construction in such a way that they have lost much of the significance they used to have. Floodlighting can in such circumstances restore this importance without wrenching the building out of context. Cases of this kind are, however, rather exceptional and even then it is necessary to consider whether the appearance of the building as lighted bears much relation to the effect it was intended to have.

Except in the case of a small building surrounded by tall trees, hills or towers in which lighting equipment can be placed, 'floodlighting' must come from low level. A limited number of sources is generally employed giving a kind of light which is neither really diffuse, as from an overcast sky, nor completely coherent, as from the sun. In consequence the appearance of any substantial building when floodlighted must be distinctly different from its appearance by day. Buildings are generally designed to be seen in daylight and the elevation, if competently detailed, presumably looks its best when illuminated in the way originally envisaged. Daylight is subject to continual variation, and the same conditions in degree of diffusion, intensity and colour never recur but there is a range which can be recognized as falling within the normal band of daylight. Floodlighting, except in very rare cases, is something altogether different.

The appearance of all ancient buildings when floodlighted must to a greater or lesser extent be distorted and from this it might reasonably be expected that floodlighting buildings of merit would be deprecated by those who profess a serious interest in architecture and be valued only as a novelty by everybody else.

This is far from being the case and it remains to enquire why people who would complain most vigorously if any physical alteration were to be made in the elevation of a building will often applaud when it is lighted in such a way as totally to distort the architect's intention.

The most obvious reason for the toleration of floodlighting is, of course, that it is readily reversible; it can always be switched off, or, in extreme cases, taken away. Sometimes the lighting equipment is obtrusive, but given reasonable common sense and diligence on the part of those involved there is rarely anything which amounts to actual defacement although sometimes a wall or string course may be drilled to permit the passage of a cable, and the mountings or baseplates of the equipment may be plugged to the wall. This is doubtless why floodlighting rarely arouses active opposition, even from dedicated preservationists, but not why it is positively approved, since it cannot be too strongly emphasized that it must of its nature involve distortion of the elevation.

This insistence on distortion may seem surprising since few people are aware of its extent. This is partly due to the phenomenon called 'Constancy of Perception,' which, for instance, enables us to perceive a circle viewed obliquely as a circle although the image formed on the retina is usually an ellipse of large eccentricity, or to realize that we are looking at white paper illuminated by red light, although the radiation reaching our eyes would have been almost exactly the same had the paper been red and viewed in white or even red light. This characteristic of the perceptual process is one of the fundamentals of Gestalt psychology, but in recognizing its importance it is not necessary to accept all the ramifications of that school. In other words, we know what buildings look like because they look like buildings and when floodlighting makes them look like different sorts of buildings we do not notice because we know what they look like anyway.

The process is, of course, a good deal more subtle than this and the distortion caused by floodlighting while not perceived as such can often draw our attention to particular elements of a building which might otherwise have seemed of secondary importance. To this extent our knowledge of the building may be en-

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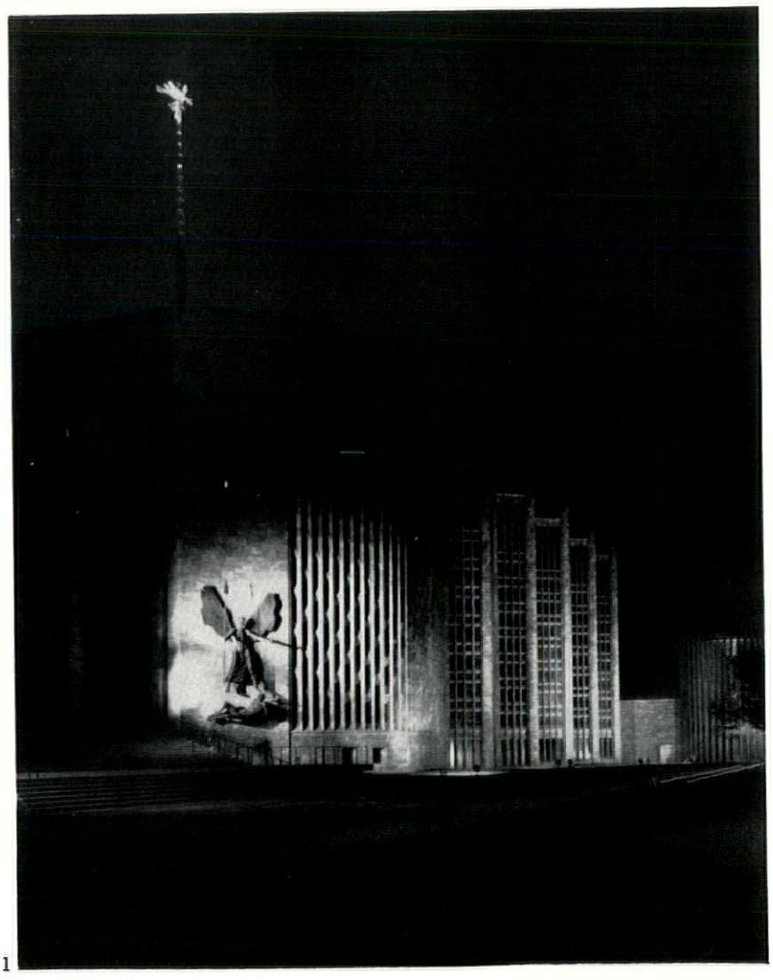

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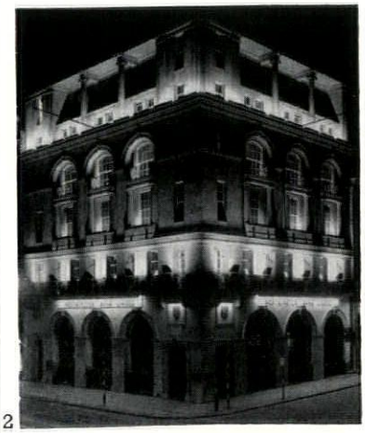

2

1, 2, *examples of attempts to inject dramatic qualities into buildings which result in nothing more than 'a series of disparate elements lighted in a more or less random manner.'*

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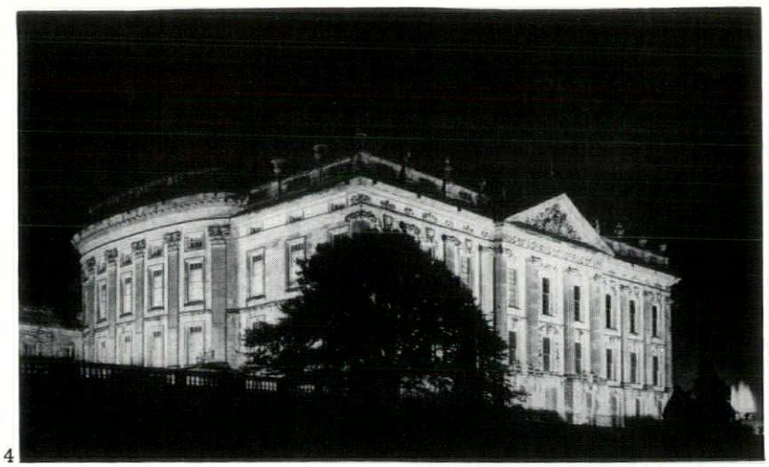
continued from page 238]

riched, or it may not be, but it is not necessarily impoverished.

There is another and perhaps more significant reason for the effectiveness of floodlighting: from a distance buildings are seen by day generally against the background of the sky, which is generally brighter than they are and their significance in the visual field is to some extent diminished. It is only when we approach them that they come to dominate the field of view, but at the same time our perception of the totality of the building is reduced and we concentrate on detail at the expense of the whole. This applies to buildings which are viewed by an observer at about the same level as the base. If the building is on top of a hill and seen from the valley its outline is strongly emphasized but the details of its design are much harder to pick out, and it is only when a light coloured building in a valley is viewed from above against a background of dark trees that we can, by day, perceive both the details and the whole simultaneously.

By night floodlighted buildings appear bright against a dark background from wherever they are viewed (unless the background is itself lighted) which enhances their significance and enables us to see details of the design from a distance at which, by day, we could see only the main features. This can be an enormous gain, in comparison with which the inevitable distortion caused by lighting angles, multiple sources and differences in colour may be trivial.



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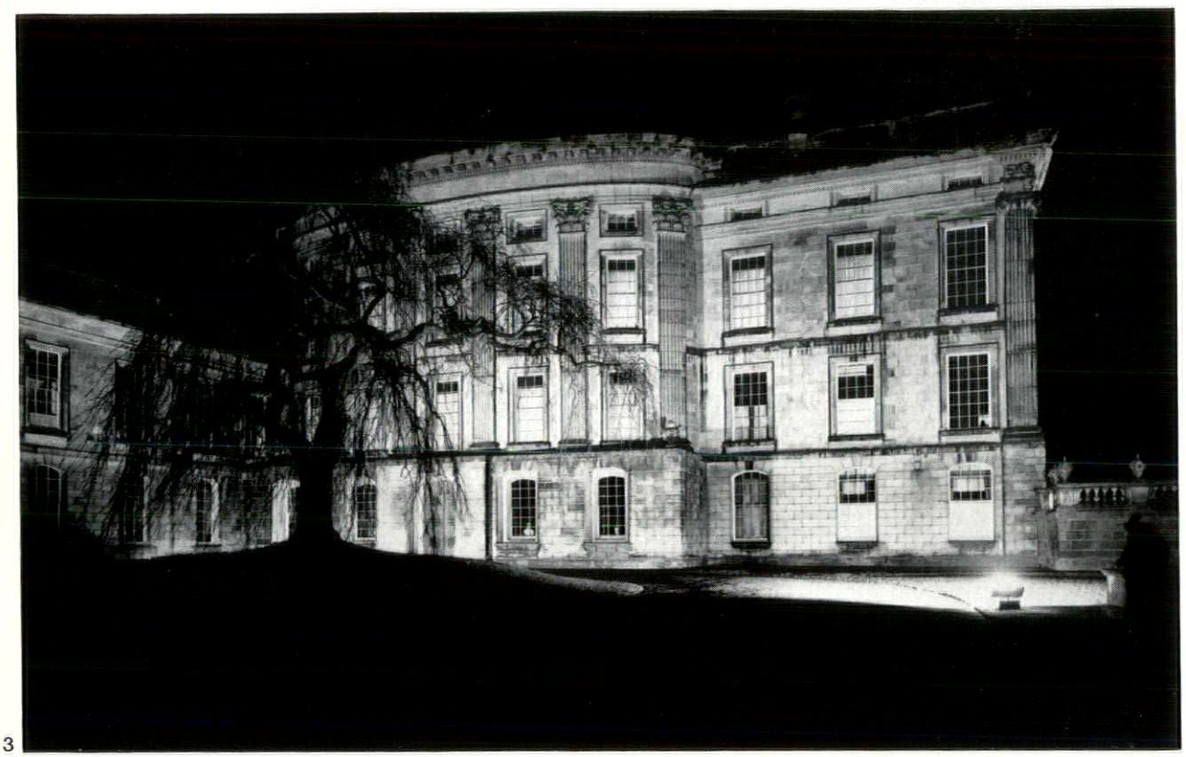

3

3, a successful example of modelling. 4, the same building when lighting of two adjacent elevations loses the three-dimensional quality.

The reasons for this are partly psychological—we can concentrate most easily on the brightest thing in the field of view since its brightness gives it an automatic importance—and partly physiological, through two mechanisms called phototropism and visual adaptation. Phototropism means that the eyes are drawn automatically towards bright objects (a physiological process distinct from the psychological effect whereby a bright object can hold our attention, once we have looked at it, more easily than a dark one). Adaptation means that although the range of lighting conditions under which the eye can see is enormous (of the order of one to ten million from the visual threshold to the brightest sunlight) the range of brightness which can be appreciated at any given time is much smaller.

The general level of brightness to which the eyes have become accustomed is called the *adaptation level* and as a rough rule of thumb, objects which are ten times brighter than this will appear very bright, objects one tenth as bright will appear dark, and objects only one hundredth as bright will appear black or invisible.

When looking at a building against a cloudy sky by day the sky itself raises the adaptation level so that perception of the details involving discrimination among elements all considerably darker than the sky becomes difficult. An exception is a white building seen in strong sunlight against a deep blue sky, but in the British Isles this is very rare, although agreeable when it does occur. The brightness of a grey building when floodlighted, relative to the night sky behind, and the balance of brightness between the elements of which the elevation is composed are probably more similar to those of a light building in sunlight against a deep blue sky than to the same grey building seen against a cloudy sky.

This is a curious and paradoxical result, but does serve to explain why floodlighting can be so effective in some circumstances.

The technique of floodlighting has been very well set out in the Report published recently by the Illuminating Engineering Society. It includes information on types of equipment, method of use, recommended intensities and so forth so that there is no need to repeat it here. The report considers the question from the standpoint of a lighting specialist who has been commissioned to prepare a scheme for floodlighting a building, and the attitude is well expressed in the following paragraph: 'A building which is architecturally attractive will probably have a reasonably pleasant appearance at night, even if its floodlighting is prosaic. It does, however, present the opportunity for a more subtle and discriminating approach and this will be richly rewarded. On the other hand a building with little architectural merit can often be transformed by a floodlighting scheme characterized by the kind of boldness and imagination which would be out of place with better "raw material".'

Where the 'raw material' is above a certain standard it is clear that lighting engineers feel themselves to be rather inhibited, and it remains to enquire in what circumstances

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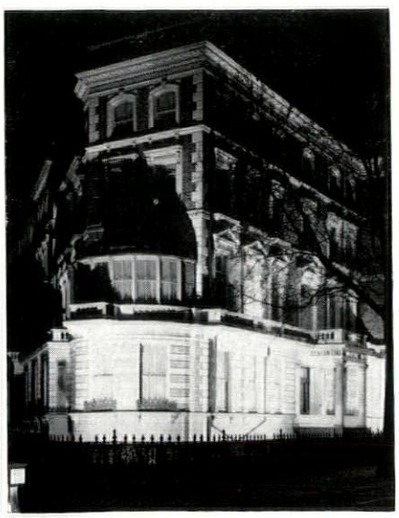
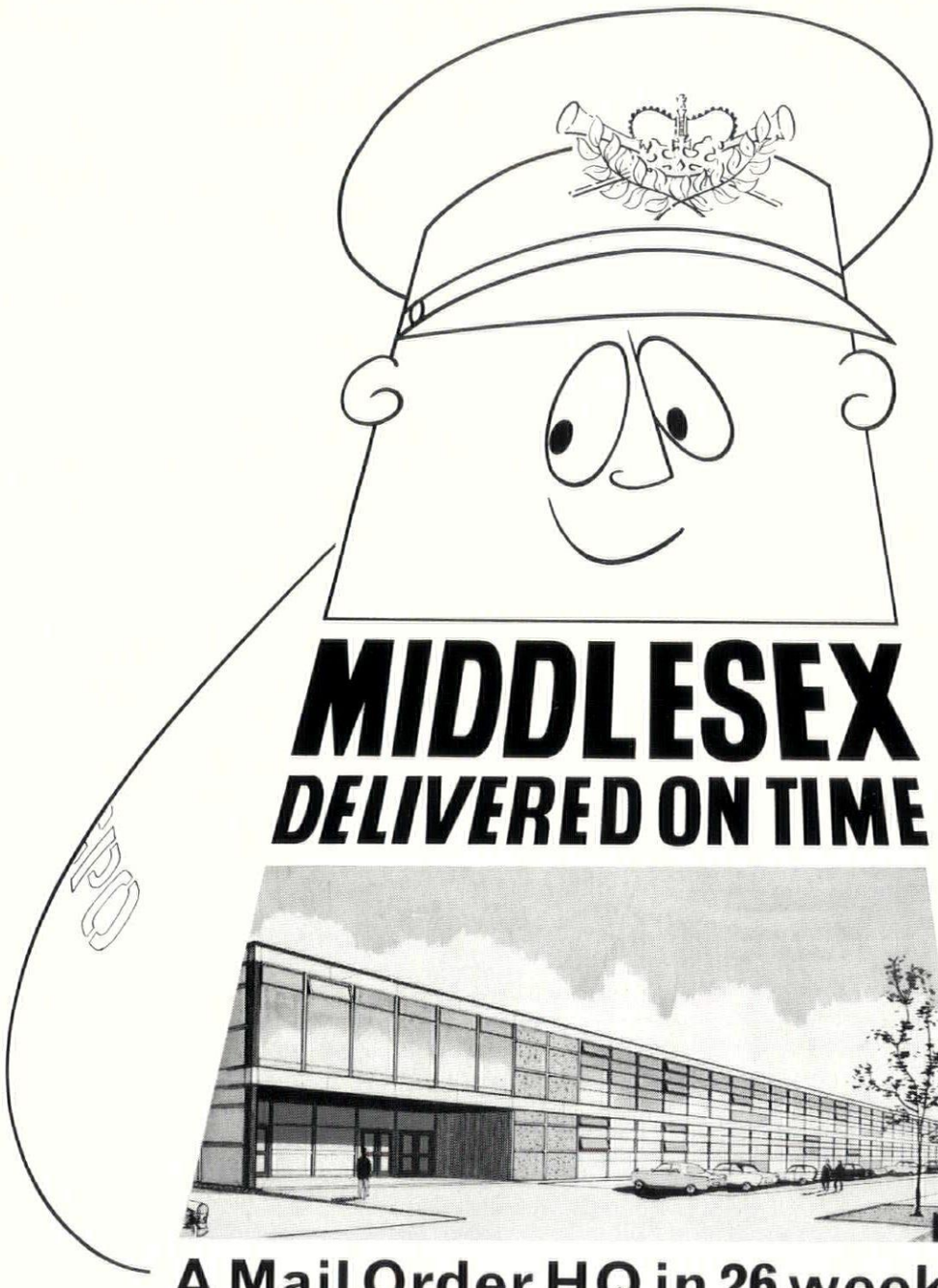


6

5, the upper part of the building has a higher reflection than the base which largely redresses the distortion caused by lighting from below the horizontal. 6, the light-coloured lower portion heightens the distortion produced by close-effect lighting.



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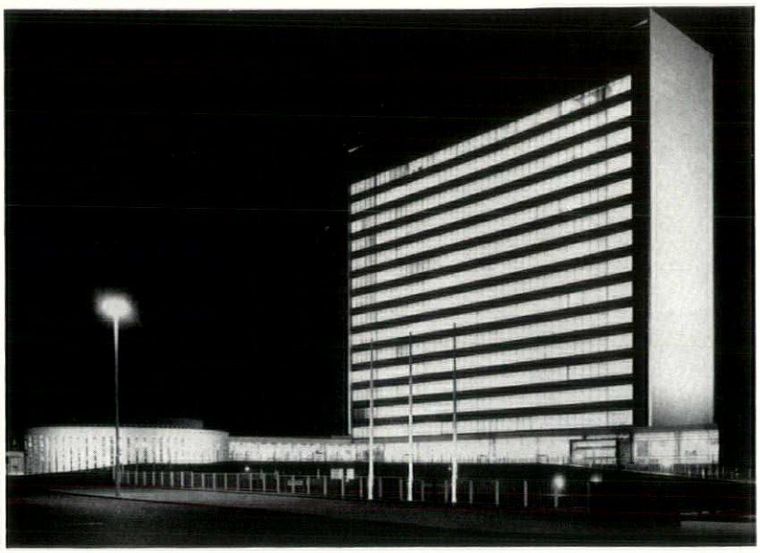

7



8

7, under floodlighting the relation between the brightness of the building and its background is more similar to that observed in strong sunlight against a deep blue sky than 8, seen against an overcast sky.

continued from page 240]

floodlighting can be a positive aid to the appreciation of a work of architecture.

The relevant considerations would appear to be as follows:

1. Is the building of such a nature that it is proper to make it stand out from its surroundings.

2. Is the elevation of such a nature that the distortion produced by lighting from a relatively low level rather than from overhead will be acceptable.

3. Is the colour of the building such that it can be revealed adequately with the range of light sources now available at an economic cost.

Where all three conditions can be satisfied floodlighting may well be worth considering. In fact, of course, it is often impossible to know what the answers to Nos. 2 and 3 are without expert advice, since the extent to which the elevation may be distorted is often hard to tell, while the range of colour of sources is also a complex question, since some types are best used at small offsets for general coverage, while others are suitable only for long range work. It is, however, most important in considering the exterior lighting of any building to ensure that the building is served by the lighting, and not merely used as an opportunity for displaying 'imagination.'

It has many times been remarked how easily the most startling and beautiful effects can be obtained by the use of lighting, and this is the

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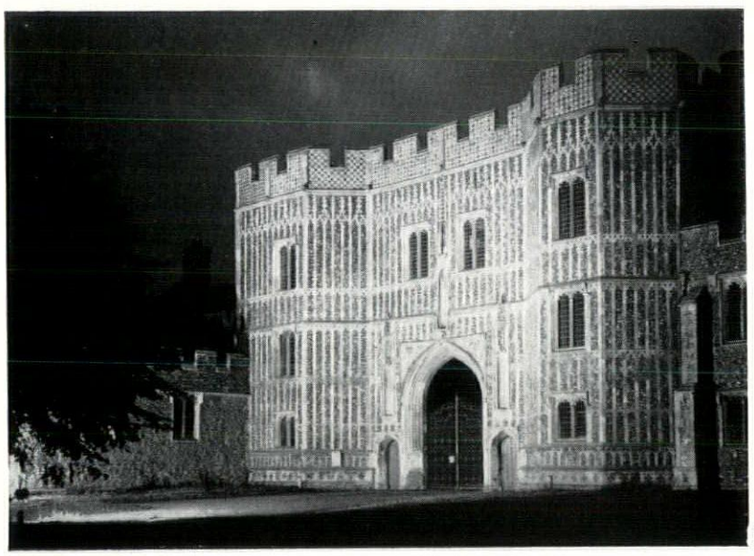
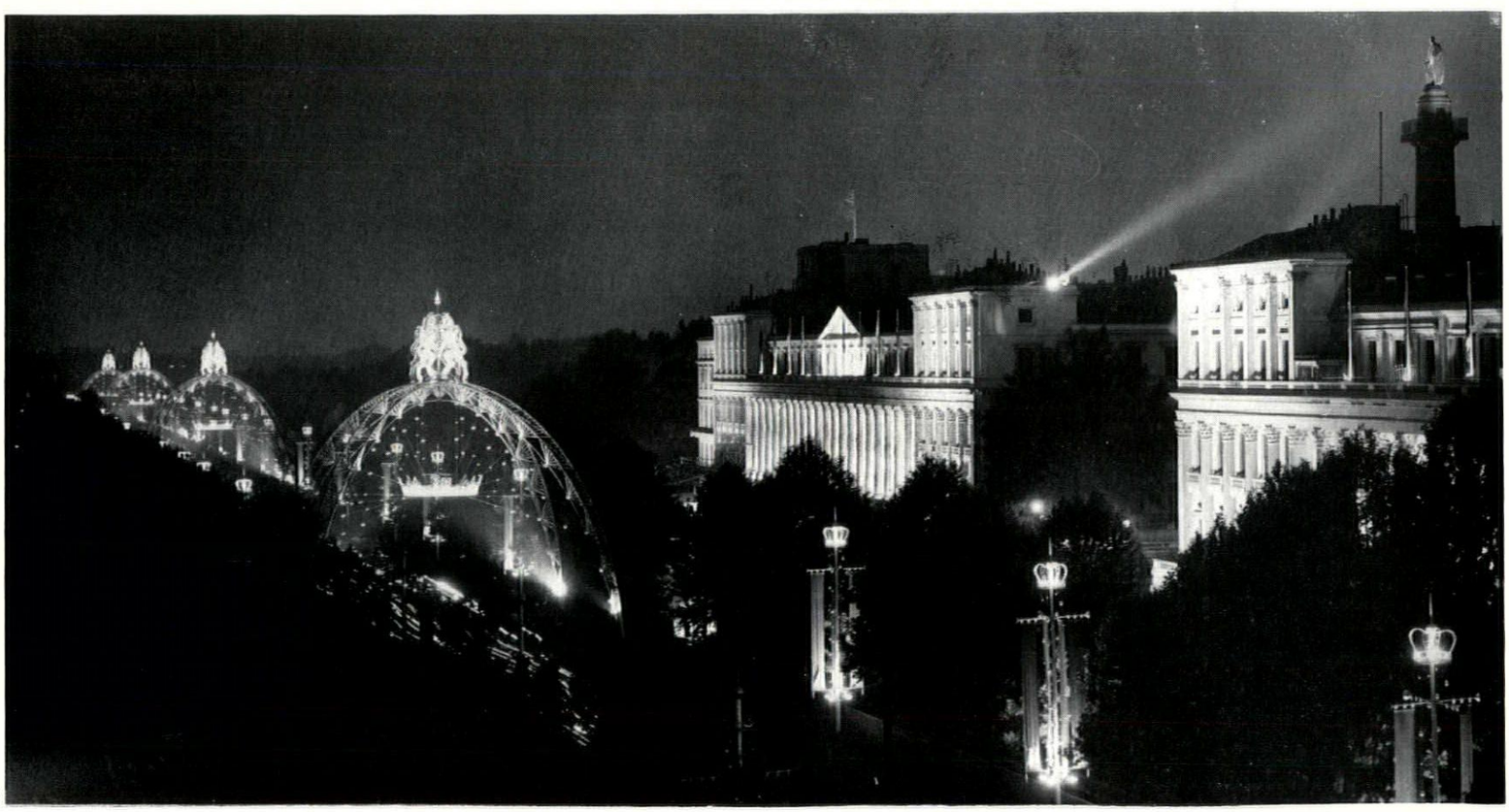


9

9, an example of effective lighting of a gatehouse. The effect might be improved by slightly greater modelling, although the texture is adequately brought out. 10, the extremely effective lighting of the Mall for the Coronation of Queen Elizabeth II. The display arches were designed with the lighting.



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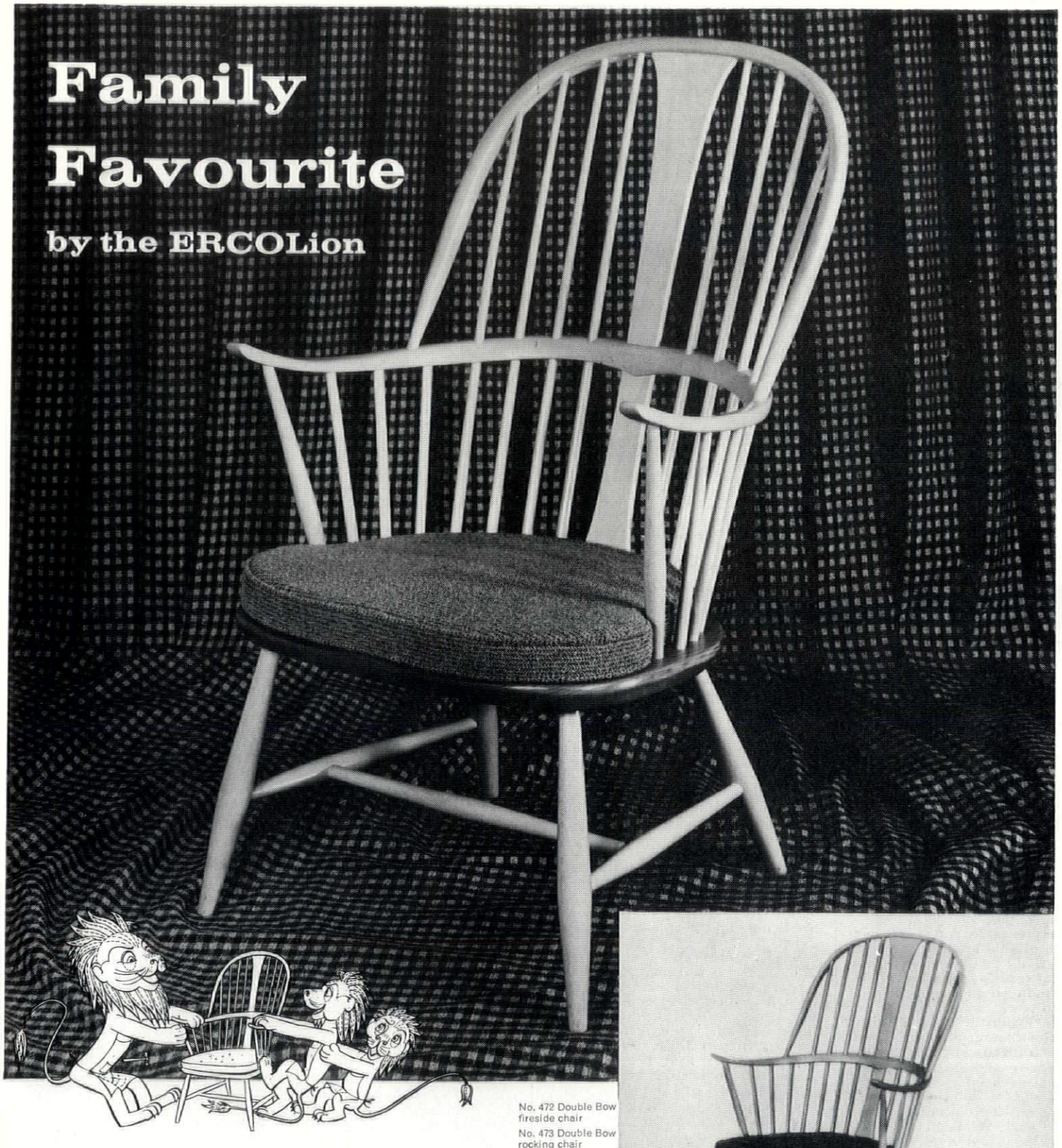

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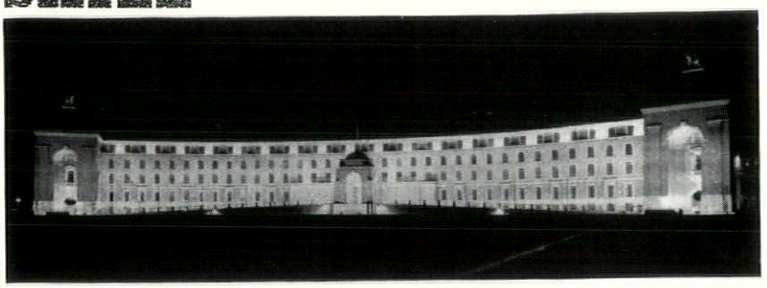
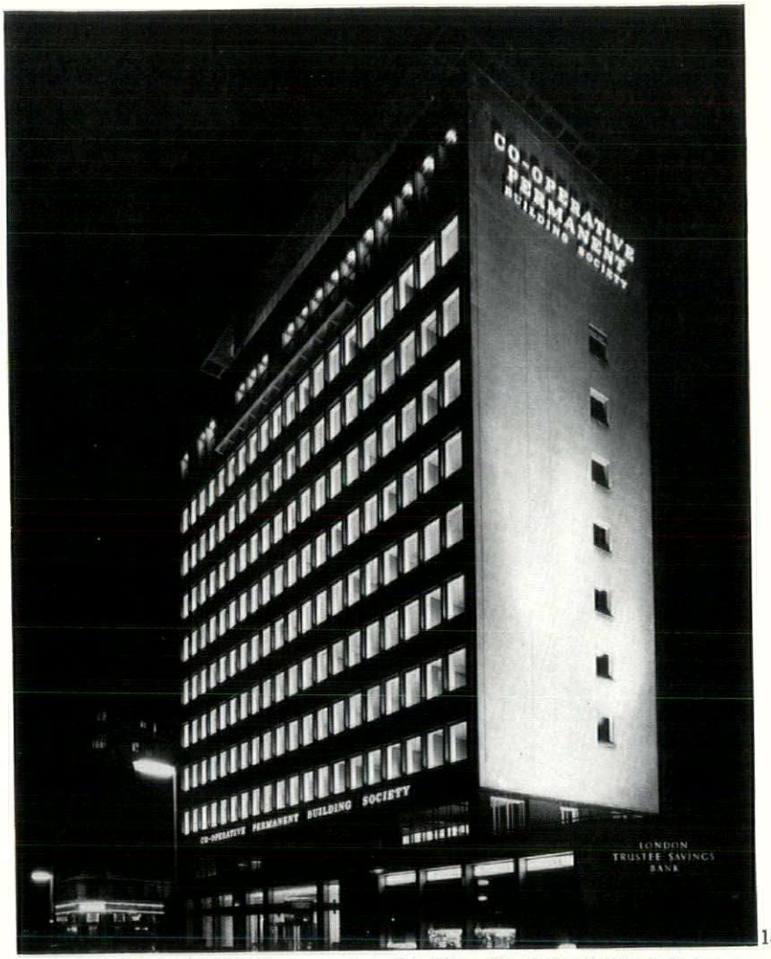


11



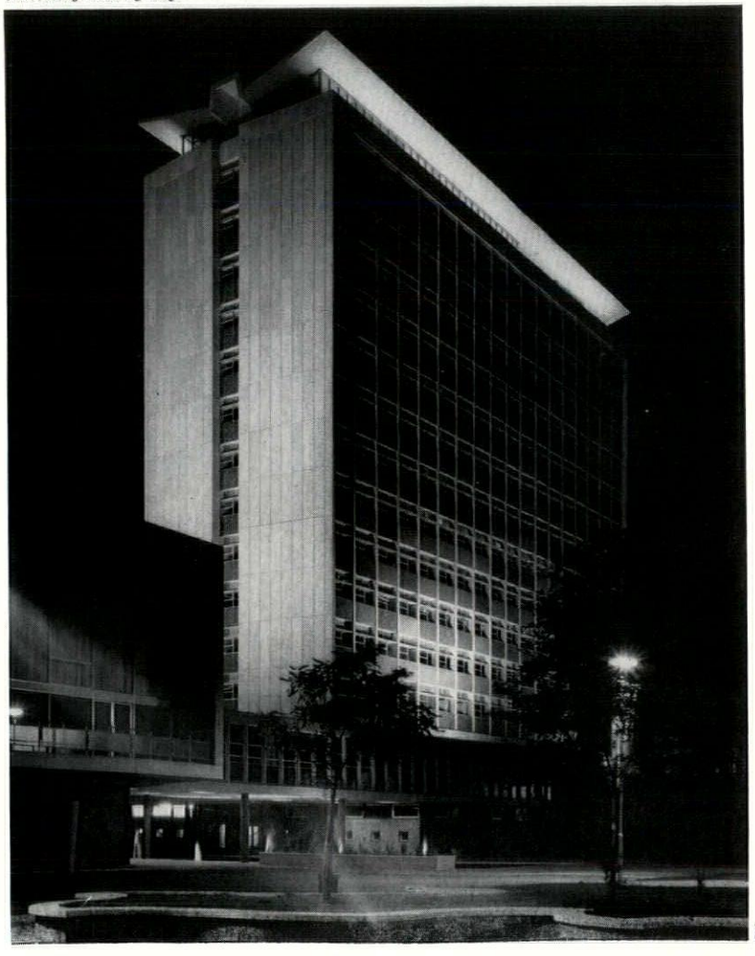
12

11, the result of attempting to employ conventional floodlighting technique on an elevation which offers little of interest to light. 12, *the attempt to combine lighting of hanging display features with floodlighting diminishes the effectiveness of both.*



13

13, a successful example of lighting a curtain wall building. The window lighting is in fact on a colour cycle. 14, *an apparently similar example, also using colour. The effect at night is much more interesting than by day.*



14

continued from page 242]

trap. We are accustomed to the appearance of projecting features when lighted from overhead, and when they are lighted from below or very much to one side it is possible to be so impressed by the bizarre appearance which results as to be altogether oblivious of the fact that the building has disintegrated and all that is left is a collection of disparate elements which have been picked out in a more or less random manner.

The issues raised by Son et Lumière tend to be of this kind. It must be admitted that its popularity has done a great deal to revive interest in ancient buildings, and, especially in France, to raise money for their restoration. From this point of view these spectacles are an undoubted success and it is therefore unfortunate that without exception all those I have seen have been architecturally negligible, and in some cases disastrous. Among English installations, Hampton Court, for instance, gains its success and interest from its domestic scale, and from the manner in which it fits into the landscape. Such a building offers little scope to the lighting engineer for 'boldness and imagination' quite apart from which, it loses by being floodlighted even statically since it was never intended to dominate in this way.

Among French examples, the chateau at Chenonceaux is perhaps lighted as well as one could conceive, and the effects are further aided by the river. In result there are one or two compositions worth looking at in the course of thirty minutes of continually varying lighting, all of which are similar to each other and come within the range of ordinary floodlighting technique. At Chambord the lighting is in a way more successful since the building is fantastical and lends itself rather better to the type of 'dramatic' treatment which seems inappropriate to a building of more solid merit, as noted in the IES report.

There are other examples in which the lighting engineer has displayed such 'boldness' as to reduce an interesting building to the status of a painted stage setting, for instance by cross lighting the colonnade of a cloister in red and blue, innocently described by those responsible as 'freshening up the appearance.'

Modern buildings

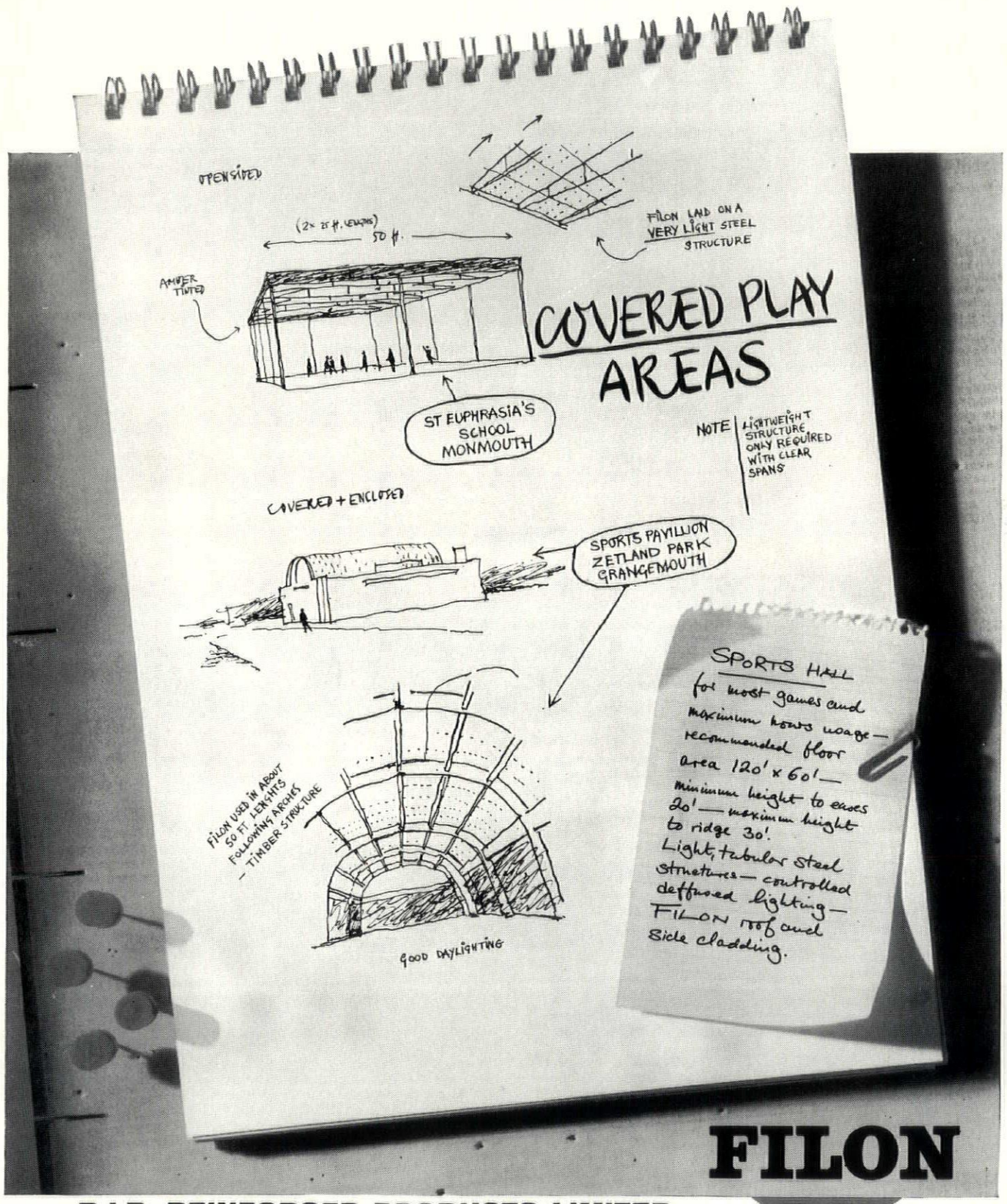
The lighting problems posed by modern buildings differ considerably from those of ancient buildings. The words 'ancient' and 'modern' can be misleading but as used here they are useful terms to distinguish between buildings with load bearing walls faced typically in stone with strongly modelled elevations and those with a very large area of glazing where the elevation consists mainly of a window wall unit repeated many times.

The latter are the buildings referred to as modern in this context and they do not lend themselves easily to conventional floodlighting techniques. This is partly due to the physical nature of the elevation, but in many buildings it is due at least as much to the fact that the elevation is not intended to have a great deal of significance as a surface and by day the external appearance depends very largely on what can be seen of the interior. When the building is unoccupied at night it is therefore virtually impossible to give a meaningful impression by casting light on the elevation.

Nevertheless, some new buildings are provided with built-in lighting

[continued on page 246

PAGES FROM AN ARCHITECT'S NOTEBOOK:



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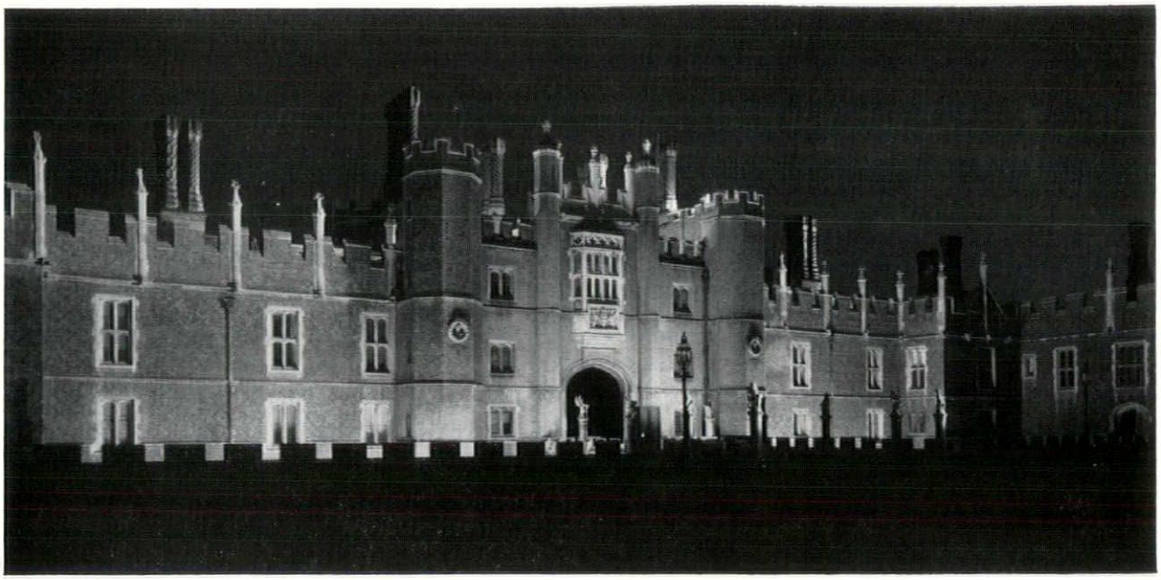

15

15, *Son et Lumiere at Hampton Court. This shows the ingenuity with which this very intractable problem has been treated. In result the effect is less successful than the illustration would indicate, possibly due to the colour of the brick, possibly because the audience is placed right in front.*

continued from page 244]

which is carefully planned to reveal the elevation in a particular way. The appearance of such buildings at night is necessarily very different from that by day, but since the exterior lighting was planned with the building it may be assumed that this appearance does not conflict with the architect's intention, and may simply be another aspect of it. Indeed, we know of cases in which cunningly placed and coloured lighting has to an extent been used as a substitute for careful detailing, and such buildings can appear more interesting at night than by day.

A more logical approach may be to design the lighting of the perimeter of the interior in such a way that it can be left on at night and will give an impressive effect. One or two schemes of this kind have been very notable since it is clear that the lighting of the interior has been organized in such a way as to give as much weight to the appearance from the exterior as to its function for the interior.

This applies particularly to office buildings whose lighting is predominantly fluorescent but where incandescent fittings of considerable brilliance have been added near the windows. We know of one or two cases in which fluorescent lighting was not used at all in the interior, although it was known to be the better source, because the appearance of incandescent lighting from outside was felt to be more effective.

Where this has been done it has clearly been on the assumption that there is a necessary conflict between function and appearance and that the one has to be sacrificed to the other. In most cases it turns out that the conflict is only apparent and a detailed analysis should produce a solution which reconciles these requirements satisfactorily. It is generally only where those involved lack the ability to analyze the problem properly that these difficulties are exposed in the finished building.

There are, however, various techniques of floodlighting from the exterior which can be used successfully for modern buildings, either instead of, or in some cases in addition to, maintaining part of the internal lighting at night.

They apply particularly where there are strong vertical features which can be thrown into relief by lighting from the side. This can be as effective from a low level as from a higher level, for instance from the setting sun. In all such cases the lighting will be successful only in so far as those responsible have taken trouble to understand the building and work out its implications logically.

This article has discussed exterior lighting in relation to architecture. On the other hand there are many occasions for which lavish displays of lighting, possibly involving deep colours or colour cycling, are appropriate quite independently of any architectural merit. In these cases many of the more extravagant effects which have been criticized here may be entirely appropriate, provided that a clear distinction is drawn between a limited entertainment and something which is intended to be a permanent feature of the night time scene.

CONTRACTORS, etc

House in Hampshire. *Architects:* Stephen Gardiner & Christopher Knight. *General contractor:* F. C. Fairhead Ltd. *Sub-contractors: Demolition:* Demolition & Construction Co. *Structural steelwork:* Dawnays. *Brick suppliers:* Turners Ltd. *Roofing:* Vulcanite Ltd. *Joinery:* P. J. Busby Ltd. *Trofdek roofing:* Newsums Ltd. *Patent glazing to conservatory roof:* British Challenge Ltd. *Aluminium windows:* James Gibbons Ltd. *Sliding glass doors and windows:* Leylands Ltd., Alldays Ltd. *Double glazing:* Plyglass Ltd. *Circular steel stair, etc.:* CPC Engineering Co. *Beech flooring:* Junckers' Ltd. *Electrical work:* Dicks (Electrical Installations) Ltd. *Light fittings:* Rotaflex, Merchant Adventurers, Courtney Pope, Troughton & Young. *Adamsez and other sanitary fittings:* Dibbens (Southampton) Ltd. *Couple's kitchen:* Wrighton Units. *Sunblinds:* Artistic Blind Co. *Furnishings:* David Hicks Ltd. *Ironmongery:* James Gibbons Ltd. *Heating and hot water installation:* Rosser & Russell Ltd.

Offices, St. Katharine Dock, London. *Architects:* Andrew Renton and Associates. *General contractor:* John Mowlem & Co. *Sub-contractors: Ceilings (fibrous plaster):* C. E. Pinn & Co.; *(expanded metal Dampa suspended):* Steel Bracketing & Lathing Ltd.; *(modular):* Ionlite Ltd. *Cement glaze:* John Ellis & Sons. *Chalkboards:* Tidmarsh & Sons. *Demountable partitions:* Tenon Contracts Ltd. *Electrical installations:* Electrical Installations Ltd. *Floors (asphalt):* Amalgamated Asphalt Co.; *(foyer, Roman marble mosaic):* Brockwell Mosaic Co.; *(wood block):* Hewetsons Ltd. *Glazing:* James Clark & Eaton Ltd. *Kitchen equipment:* Benham & Sons Ltd., Thomas Collings & Co., Crypto Ltd., Gardiner & Gulland Ltd., Prestcold Ltd. *Lightweight screed:* Isocrete Ltd., Leca Ltd. *Lift installation:* Platt-Schindler Lifts Ltd. *Lights (foyer roof:* T. & W. Ide Ltd. *Mechanical installations:* Mumford Bailey & Preston Ltd. *Metalwork (foyer, main entrance, stair and ring beam):* Culford Art Metal Co.; *(internal stair balustrading):* G. Johnson Brothers Ltd.; *(nosings and thresholds):* Bowes Scott & Weston Ltd.; *(external balustrading):* S. W. Farmer & Son; *(entrance screens and doors):* Culford Art Metal Co.; *(internal screens and doors):* Culford Art Metal Co. *Plastering:* Eaton Contractors Ltd. *Plumbing:* Grosvenor Engineering Services. *Roofing (asphalt):* Amalgamated Asphalte Cos. *Stairs (terrazzo treads and landings):* Brockwell Mosaic Co.; *(staircase 'F'):* Culford Art Metal Co. *Tiling:* Wilson & Wylie Ltd. *Venetian blinds:* J. Avery & Co. *Walls (plastic cloth linings):* Balclutha Ltd.; *(plastic-faced panelling):* Benham & Sons; *(glass mosaic facing):* Brockwell Mosaic Co. *Windows (aluminium):* Allan H. Williams (Chester) Ltd. *Window cleaning gantry:* Cradle Runways Ltd. *P.v.c. floor tiling:* Jos. F. Ebner Ltd. *Bricks (external facing, special handmade coping):* Sussex & Dorking Brick Cos.; *(internal facing):* Burwell Brick Co. *Door mats:* Broad & Co. *Duct covers:* Dover Engineering Works Ltd. *Fibreglass convector casings:* Alan Blunn Ltd. *Ironmongery:* N. F. Ramsay Ltd. *Hose reels:* Merryweather & Sons. *Partitions (w.c., terrazzo):* Brockwell Mosaic Co. *Plastic cloth:* Arlington Plastics Development Ltd., Nairn-Williamson Ltd. *P.v.c. glazing beads:* Plasticable Ltd. *Precast concrete structural units:* W. & C. French Ltd. *Sliding door gear:* E. Hill Aldam & Co. *Soap dispensers:* Horton Manufacturing Co. *Strong-room door:* Chubb & Sons Lock & Safe Co.

Housing at Leith Fort, Edinburgh. *Architects:* Shaw Stewart, Baikie and Perry. *Demolitions:* Samuel B. Allison Ltd. *Excavation and site preparation:* James White Ltd. PHASE I: *Piling:* Whatlings (Foundations) Ltd. *General contractor:* James Miller & Partners Ltd. *Sub-contractors: Glazier:* George Lindsay & Co. *Asphalt work:* Neuchatel Asphalt Co. *Painter:* Neil Nicolson & Co. *Paint supplier:* Leyland Paints Ltd. *Siporex partitions:* Costain Concrete Ltd. *Smithwork:* Fencing & Smitheraft Ltd. *Windows:* Crittall Manufacturing Co. *Plumber:* Robert Rome & Sons. *Electrical work, radio and television:* James Scott (Engineers) Ltd. *Plaster work:* Thomson (Dalkeith) Ltd. *Floor tiles:* Marley Tile Co. *Quarry tiles:* Carter Tiling Co. *Precast cladding panels:* The Scottish Construction Co. *Ironmongery:* Bell-Donaldson Ltd. *Lifts:* Glasgow Engineers Ltd. *Lightning conductor system:* W. J. Furse & Co. PHASE II: *Piling:* Caledonian Drilling & Foundations Ltd. *General contractor:* J. Smart & Co. (Contractors) Ltd. *Sub-contractors: Plumber:* McGowan & Co. (Contractors) Ltd. *Siporex partitions:* Costain Concrete Co. *Roofing work:* Ruberoid Co. *Asphalt work:* H. V. Smith & Co. *Glazier:* Northern Glazing Co. *Painter:* T. C. Watson & Co. *Paint supplier:* Leyland Paints Ltd. *Electrical work:* J. Croal (Electrical Contractors) Ltd. *Ironmongery:* Bell-Donaldson & Co. *Lifts:* Glasgow Engineers Ltd. *Lightning conductor system:* W. J. Furse & Co.

Football Grandstand, Galashiels. *Architect:* Peter Womersley. *Contractor for the reinforced concrete structure:* Holst & Co. *Precast seating units:* Scottish Construction Co. *Builder work (mason, joiner, external works):* Murray & Burrell Ltd. *Sub-contractors: Plumber:* John Tweedie & Son. *Glazier:* R. Mitchell. *Ironwork:* Aimers McLean & Co. *Electrical:* David Hogg. *Painter:* D. W. Bertram. *Windows:* Crittall Manufacturing Co. *Turfing:* Maxwell Hart Ltd.

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STOP PRESS

A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn and illustrated by Kenneth Browne.

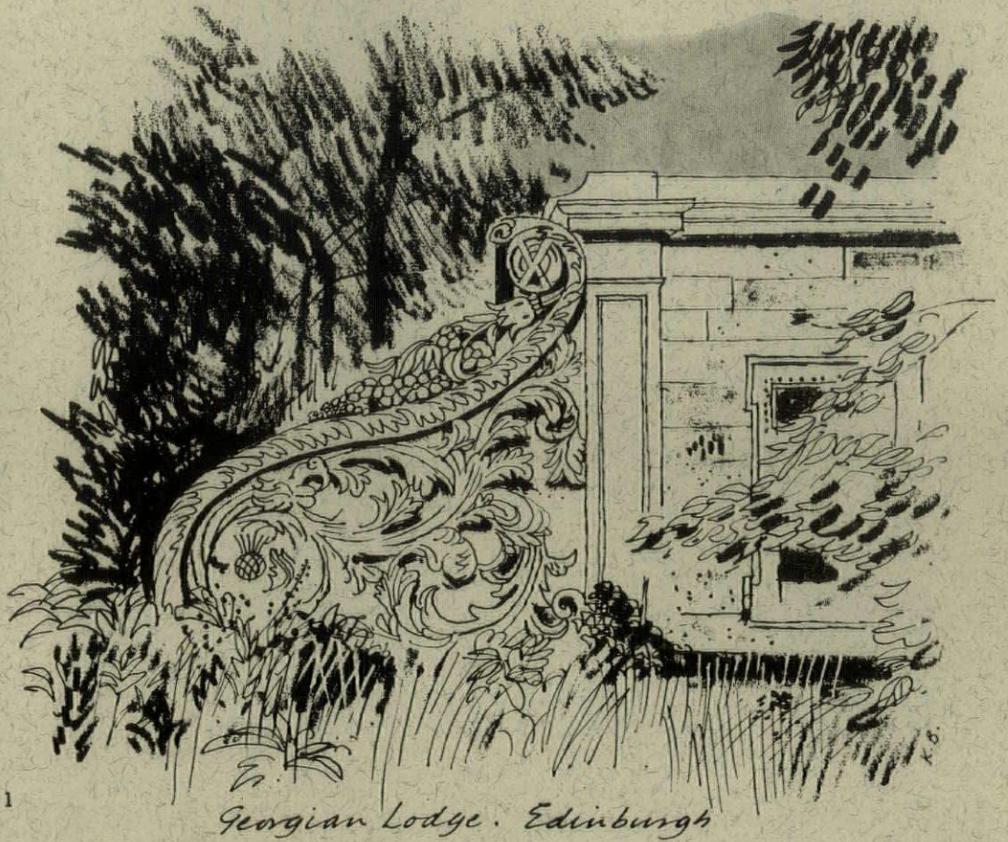
SOS

EDINBURGH
An extraordinary Georgian lodge at Colinton, on the south-western edge of Edinburgh, the carving, 1, has an exuberance that just doesn't exist south of the border. It is in a bad way and needs help urgently.

LEUCHARS, FIFE
A derelict cottage at the end of the street—architecturally insignificant but vital to the townscape, 2. Without it, this part of Leuchars will have lost its identity. It must be repaired—or replaced on the same street unit.

OUTRAGE

DORKING
The folly of setting-back, nicely exemplified in the busy main street of a Home Counties town, 3. By the time the gabled building ends its life, the street will very likely be a pedestrian precinct and setting-back will have become a crazy anachronism. Yet meanwhile, the street line is broken to no purpose. Planning?



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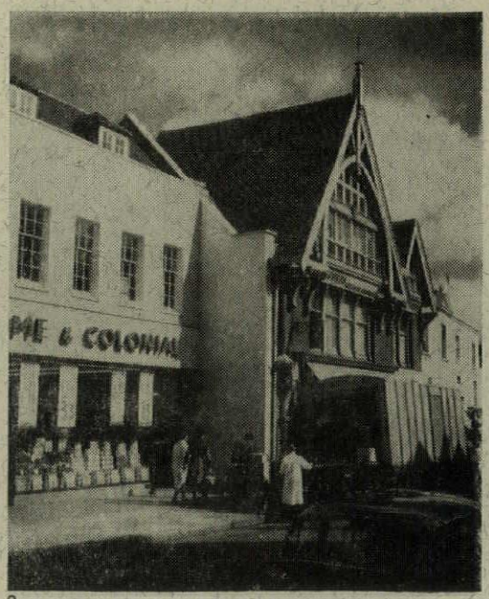
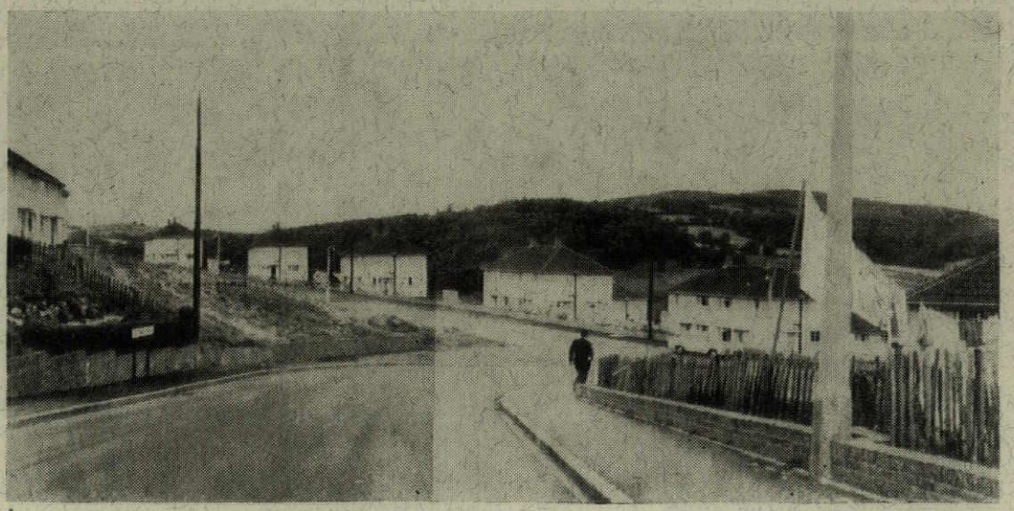


3

PONTYPRIDD, SOUTH WALES
Architecture as she is spoke: a new estate by Wimpeys, 4. The quality of the surrounding landscape is self-evident. So is the quality of the estate.

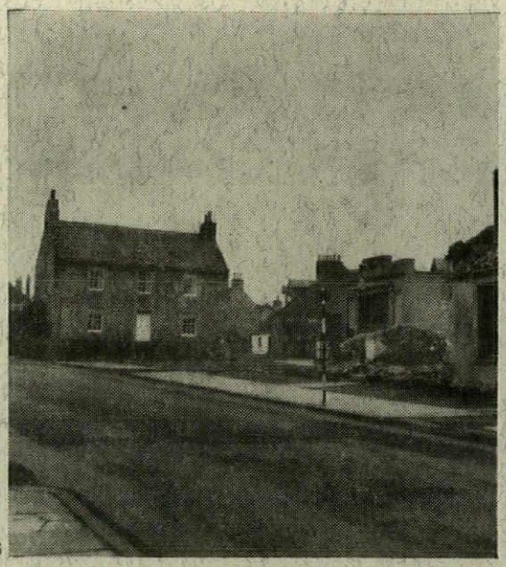


4

TRANENT, NEAR EDINBURGH
Occasionally, one place has the whole of twentieth-century blindness and cruelty thrown at it. This semi-industrial village, originally an attractive place, is a terrible example, 5-9. The pictures need no comment: except possibly that we are a loveless lot of pigmies.



5



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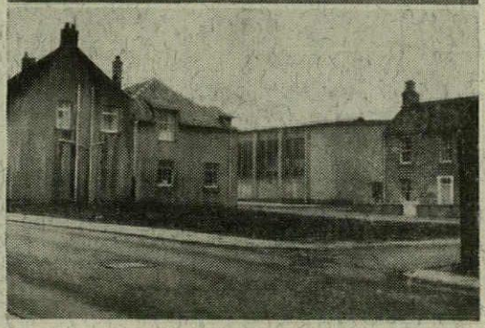
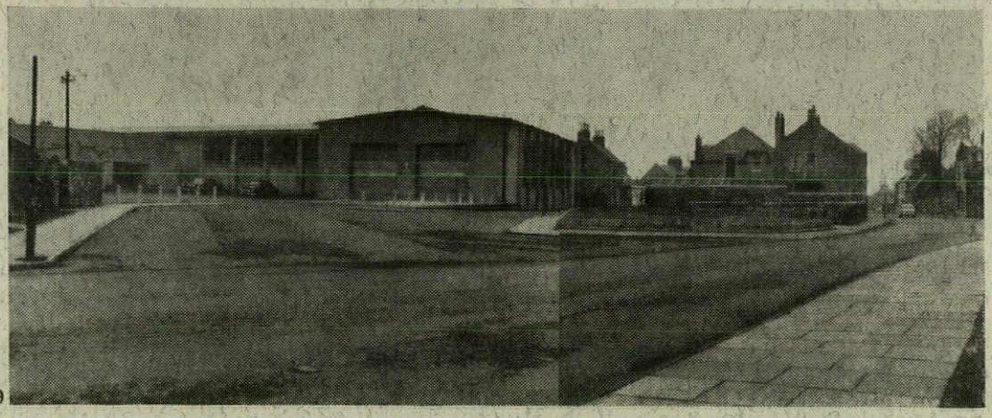


8

CAUTION

GLOUCESTER
A fine Baroque house in Westgate Street which has been in a desperate state for many years, 10. It is to be restored, eventually, and the architects will have a difficult job. For it has now taken on a new character of beauty-in-decay, and there is no going back. Renewing the stonework would only create a hideous fake: what the house needs is a gentle old age, conserved but not face-lifted.



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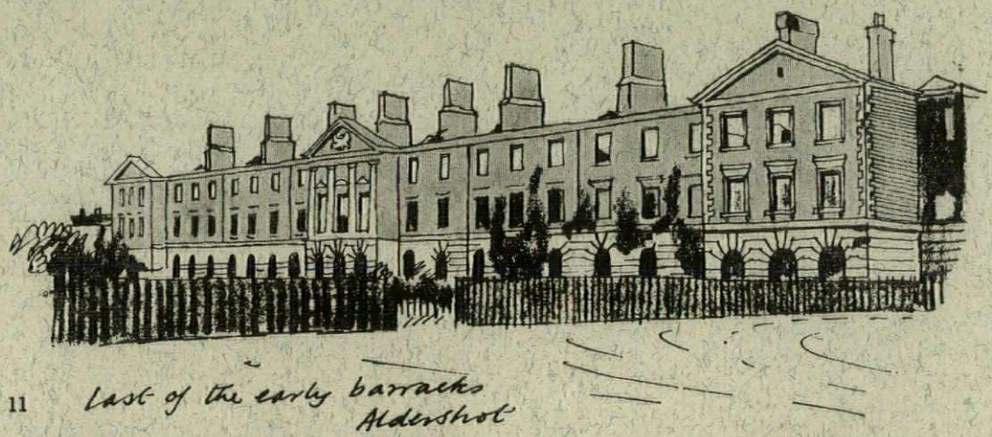
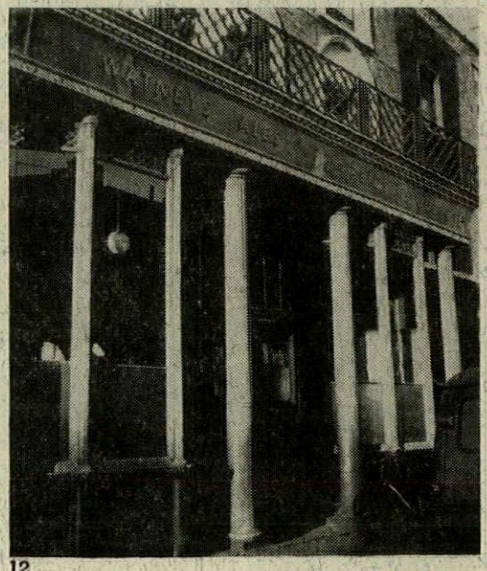


11 Last of the early barracks Aldershot

R·I·P

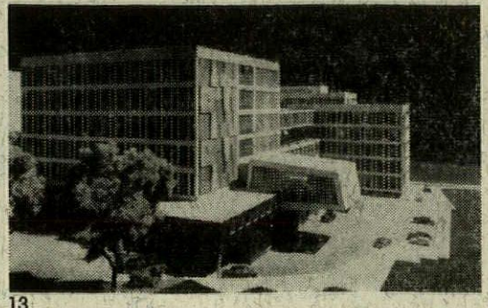
ALDERSHOT
The last of the early barracks (built in the 1850's) with a monumental dignity, in dissolution, 11, which they never quite possessed when whole.

HOXTON, LONDON
Another pub, in the New North Road, now a fire-scarred hulk in a clearance area, 12. The delicate front suggests the Regency but is in fact an unexpected work of Ernest Newton. In Chelsea it might have been the pride of the BTHA. But who cares, in Hoxton.

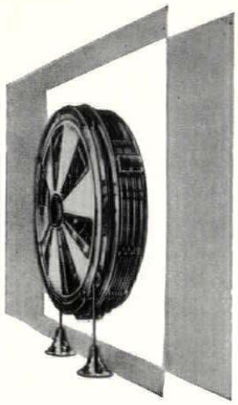


12

BRISTOL UNIVERSITY
The building illustrated in the December 'Stop Press' was not for the chemistry department. Their new building wears a rather different dress, designed by Courtaulds Technical Services Ltd., and shown in the model, 13. Meanwhile, if the relevant academic department cares to own up we would be glad to correct the corrigendum.



13



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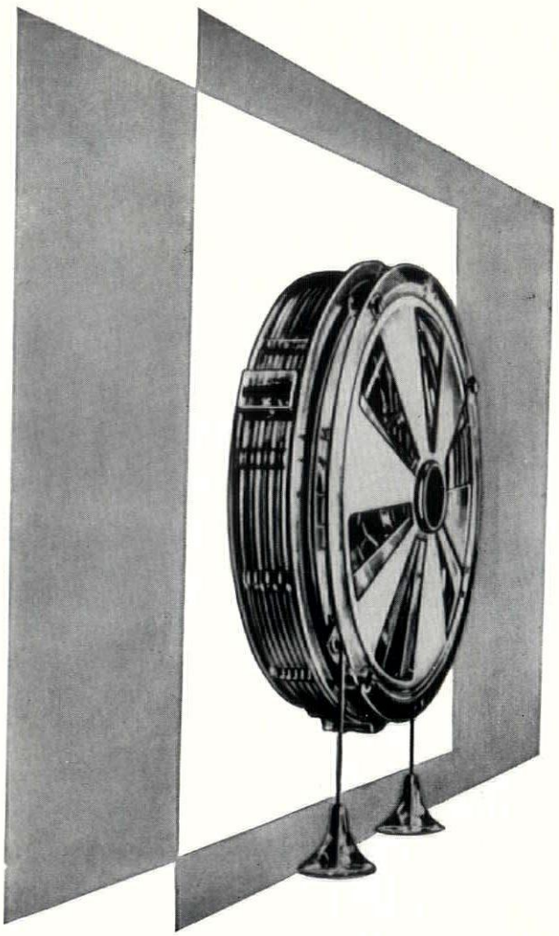

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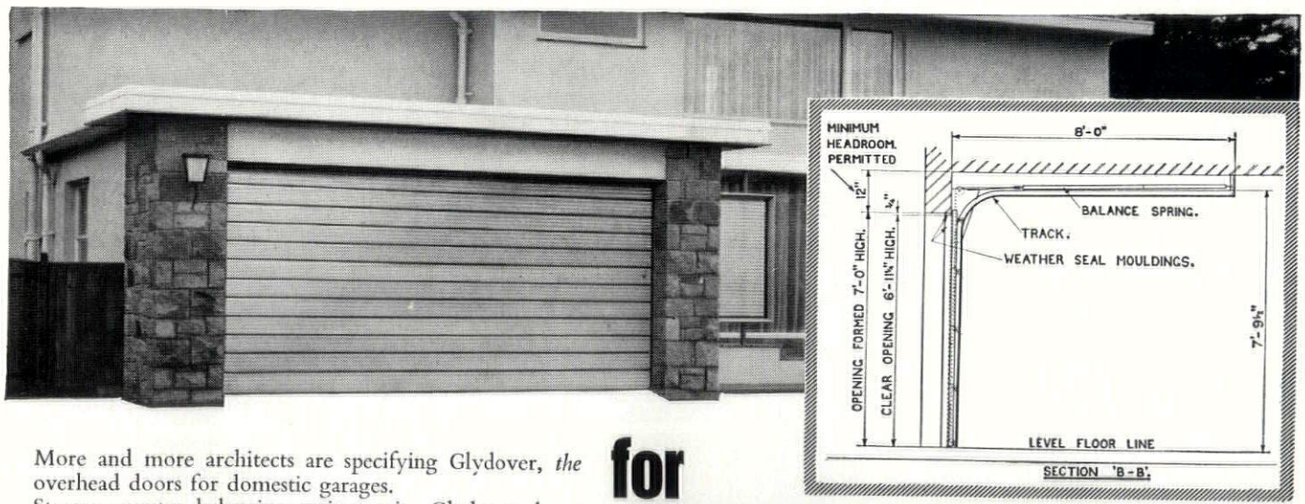

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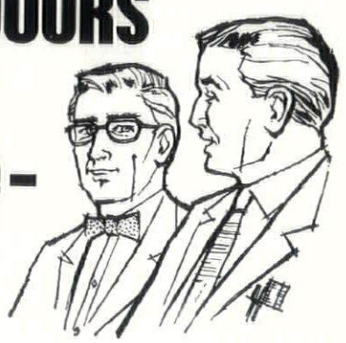

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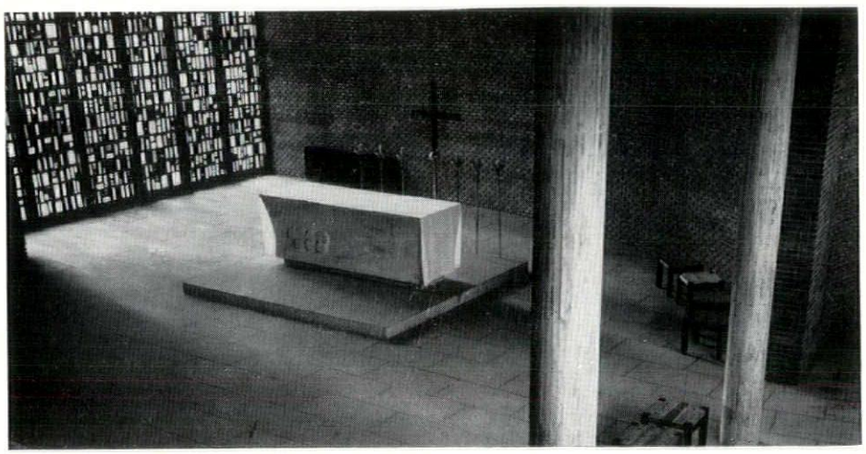

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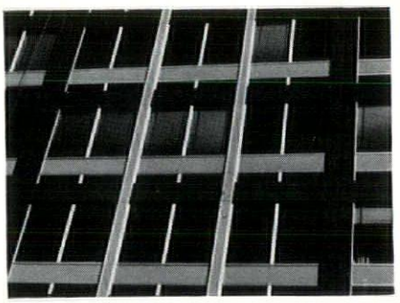

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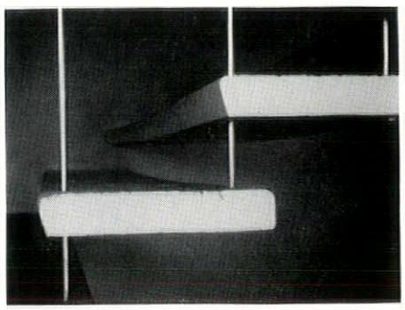

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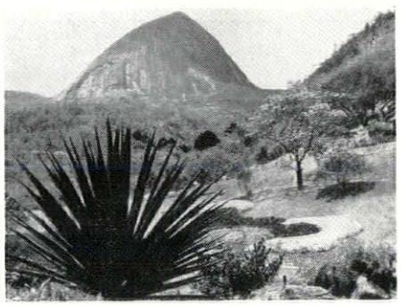

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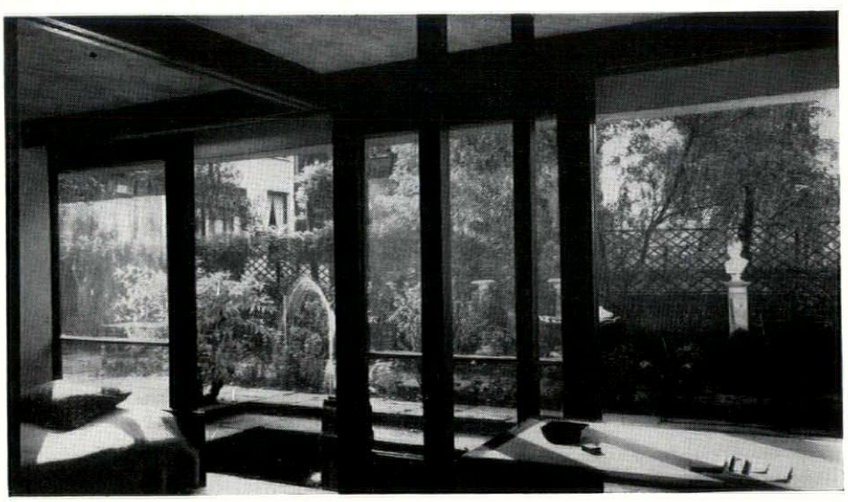

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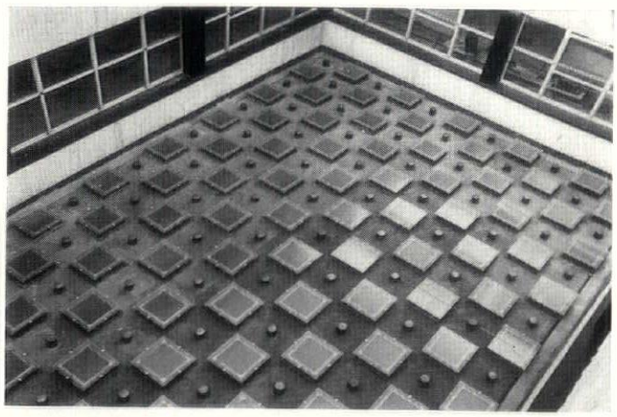
The M/S Box Lining Units being assembled
Architects: Andrew Renton & Associates



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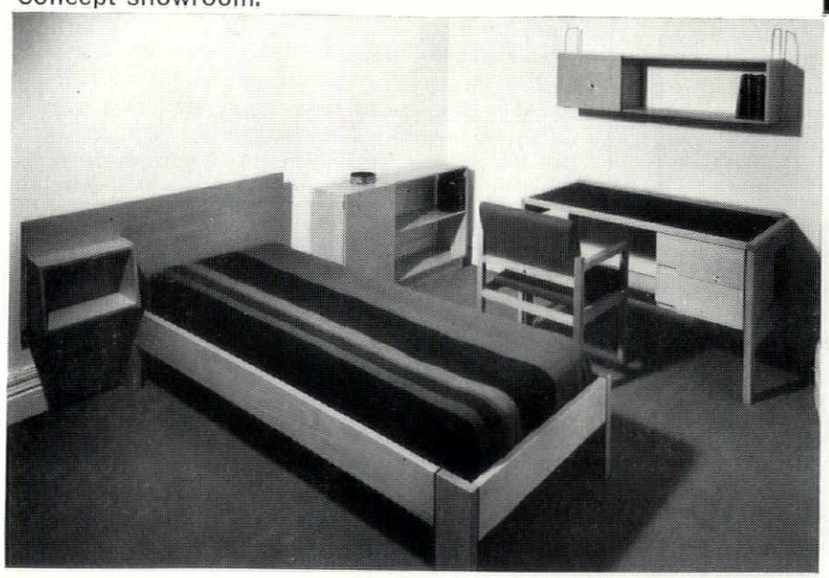

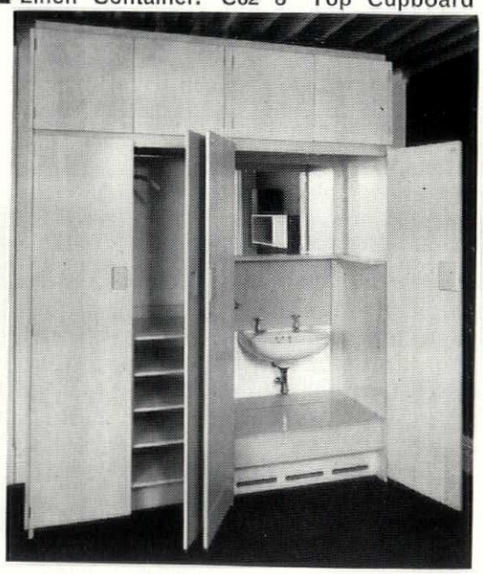

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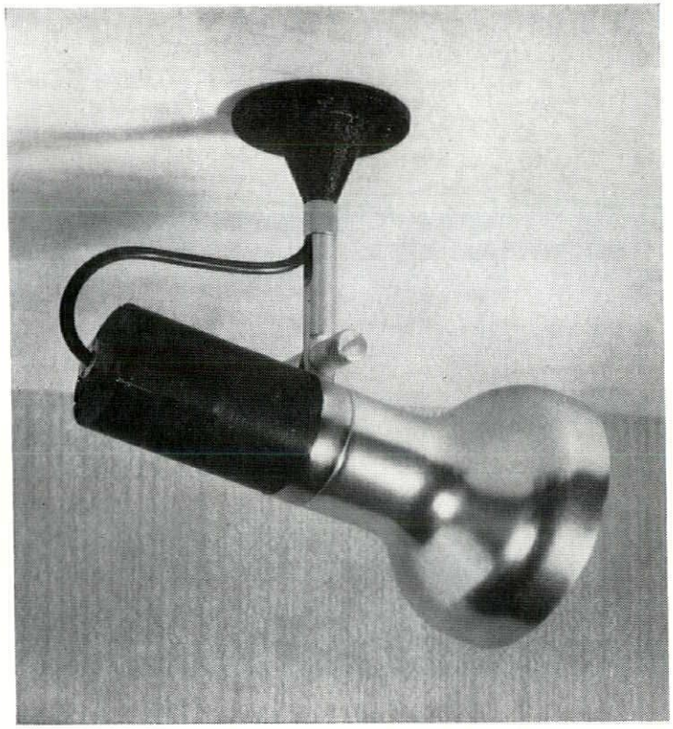



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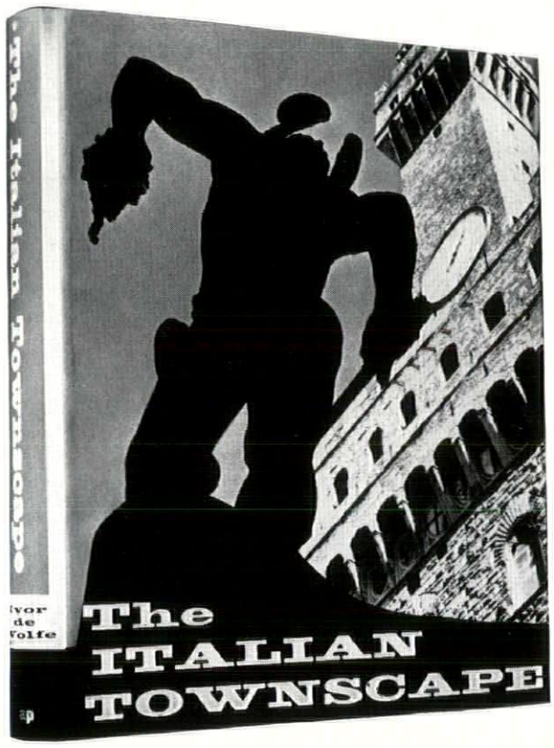

Ivor de Wolfe

The Italian Townscape

'All the world's a stage' may arouse embarrassment in an English breast: in Italy its truth is self-evident. But behind the formal, or not-so-formal, brilliance of scenes like the Piazza San Marco there are countless smaller streets—and towns—whose charms, though less opulent, are just as persuasive and just as expertly stage-managed. For the experienced townscaper Italy is a combined game reserve, toyshop and life class. For the tourist it is an enormously picturesque but healthily seething ambience. That the picturesque element is art not accident, and that life class and picturesque form an interdependent viable whole —often in danger of extinction at the hands of its own admirers—is one theme of this book. Those who love Italy, who have never been there, whose one ambition is to stop Macclesfield losing its profile: all are advised to absorb this book. Among the towns mentioned are Assissi, Verona-Lazise, Spoleto, Tarquinia, Porto Santo Stefano, Iseo, Urbino, Perugia, Loreto, Bologna, Rome and Sabbioneta.
Size $9\frac{3}{4} \times 7\frac{1}{4}$ ins. 280 pages with 481 illustrations. Price 56s. net, postage 2s. 3d.

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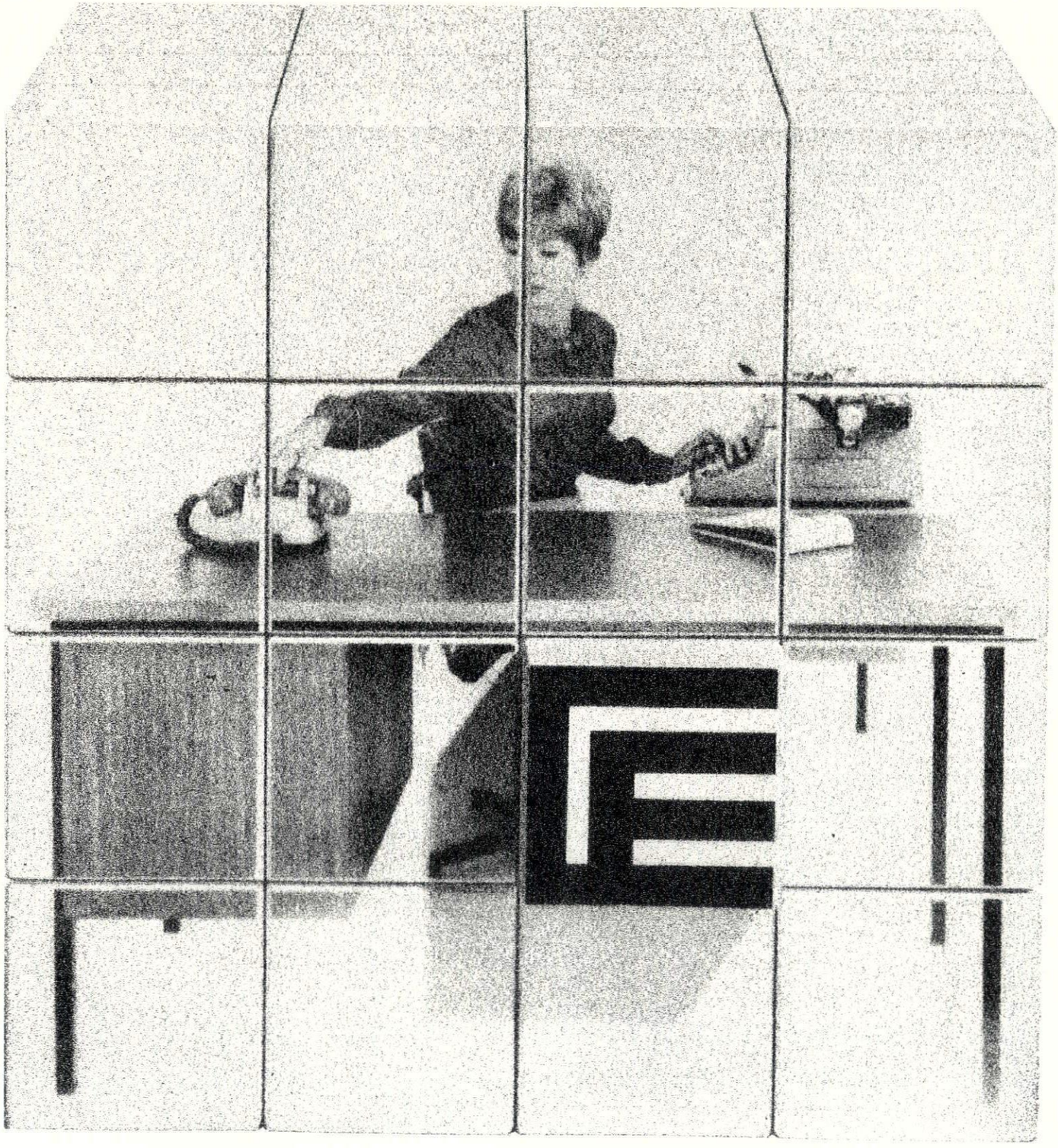

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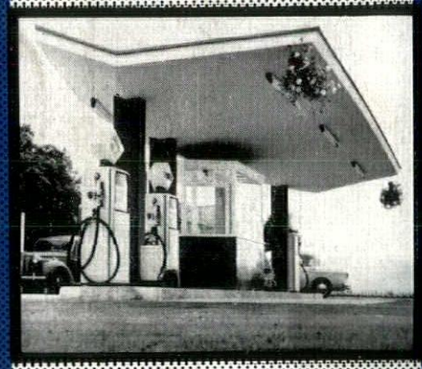

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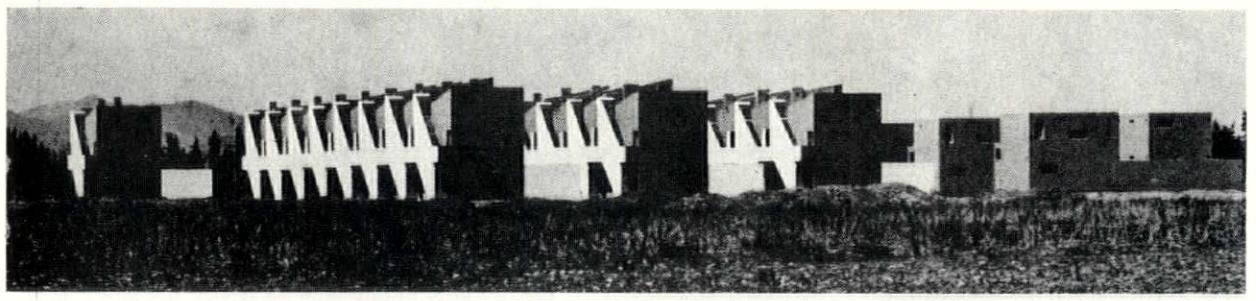

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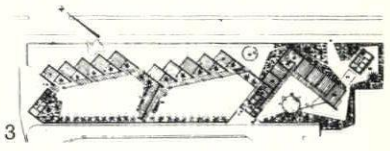
MOROCCO: ZEVACO

After Brazil in the 'forties and Japan in the 'fifties, many hitherto backward countries have produced their first generation of modern architects. Morocco is the latest, and it has the advantage of a lively new magazine, *A + U* (architecture plus urbanism), edited by Mourad Ben Embarek. Editorial policy is a careful balance between Doxiadis-type ekistic studies and the spotlighting of individual genius in a biographical feature in each issue. Jean-Francois Zévaco was a spectacular first choice—according to Ben Embarek, '*l'oeuvre architecturale la plus originale en même temps que la plus authentiquement marocaine de notre époque.*'

The sweeping auditorium of the re-education centre at Tit-Mellil, 1, and the bird-like balconies of the low-cost housing at Marrakesh, 2, display Zévaco in his role as the Moroccan Niemeyer. His violent exploitation of devices for sun protection leads to long covered ways and slit windows (the Mohamedia court house, 6, seems to be in *purdah*); the Maarif school group, 7, shows his remarkable use of perspective. His particular obsession



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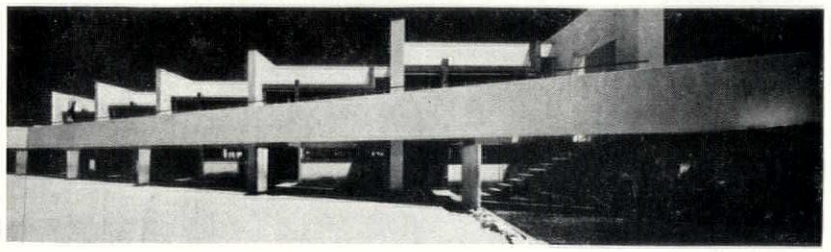

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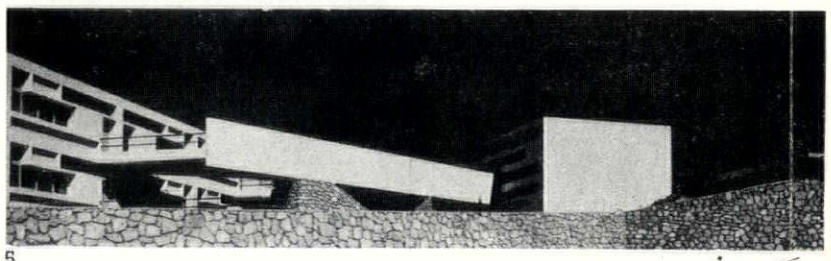

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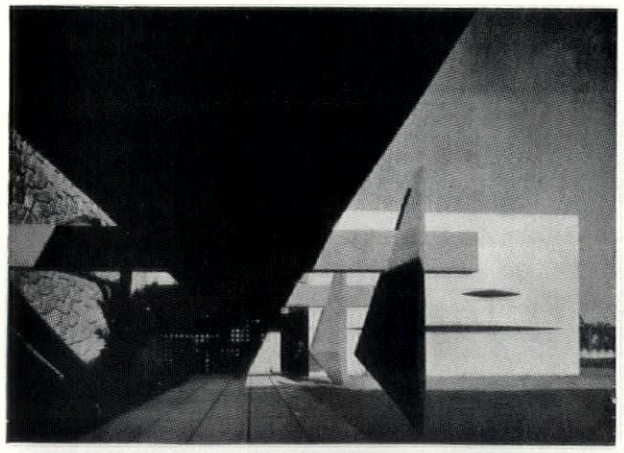

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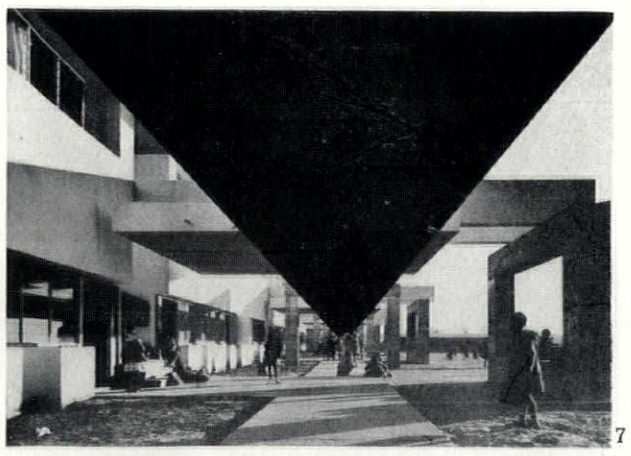

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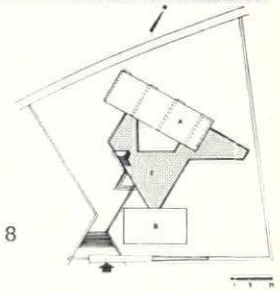

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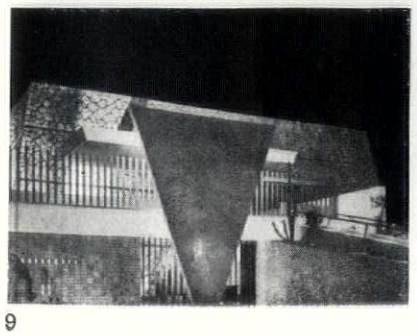
is first-floor circulation: at the Bizet school at Casablanca, the plan, 3, consists of a series of classroom blocks in echelon, connected by a cloistered walk supporting a first-floor terrace, 4. The primary school at Agadir, 8, destroyed in the 1960 earthquake, had two classroom blocks connected by an irregularly shaped terrace, supported on pilotis, 5. The same contrast of stark white concrete with the rough texture of the local stone is conspicuous at the Mohamedia court house, 9, where a long ramp leads to the upper level terraces and court-rooms, with their capricious entrance porch. The Ben Ahmed courts, 10, have a similar terrace (left of picture). In the market at Sidi-Harazem, 11, there is a possible reminiscence of Theo Crosby's IUA pavilion.



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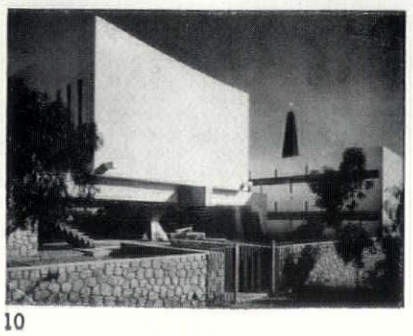

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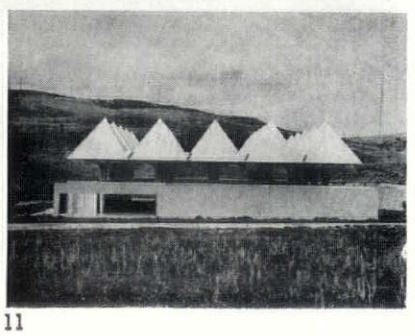

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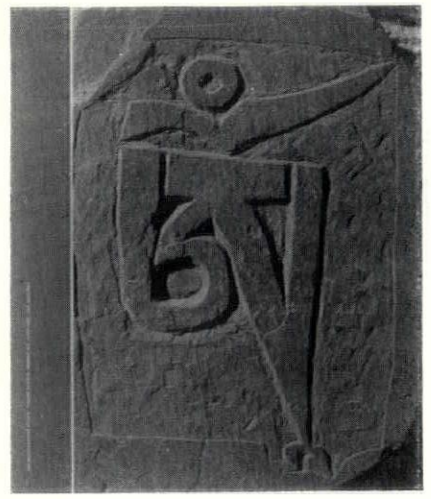
acknowledgments

WORLD, pages 249–252: 1–16, *A + U*; 17, 18, David G. Harris; 19, H. R. Jowett; 20, *Domus*; 21–25, *The Japan Architect*; 26, *Concrete Quarterly*; 27–29, *L'architettura*; 30–33, *Progressive Architecture*; 34, 35, Nicholson. VIEWS AND REVIEWS, pages 253–255: 1, Toomey Arphot; 7, Henk Snoek. FRONTISPIECE, page 256: Galwey Arphot. OFFICERS' MARRIED QUARTERS, MALTA, pages 260–267: Henk Snoek. ROYAL COLLEGE OF PHYSICIANS, pages 272–280: 1, 6, Behr; 2, 4, 5, 9–11, 13–16, 20, 21, John Donat. INTERIOR DESIGN, pages 289–290: Peter Trainer. GALLERY, pages 291–293: 2, Tony Evans; 4, Oscar Savio; 5, Harriet Crowder. PHYSICS BUILDING, HULL UNIVERSITY, pages 294–298: Sam Lambert. DESIGN REVIEW, pages 303–304: Galwey Arphot. MISCELLANY, pages 307–316: Rococo Grill Room, 1–8, Galwey Arphot; Greek Mills in Iran, 2, 6, 7, Elisabeth Beazley; 3–5, 8, Olive Kitson; Newcomer in St. Ives, 1, Penwith Photo Press; 2, 3, Lucien Myers; The Hulks of Holy Island, 1–3, Edwin Johnston. SKILL, pages 318–322: 5, Sam Lambert; 10, 11, Peter Ulbrich. STOP PRESS, pages 323–324: 1–8, 10, Nairn Arphot; 9, Henk Snoek.



This month's cover *is based on a photograph of a Tibetan sign for OM, the sacred syllable of the Buddhists and the Hindus, carved into a rock near the Nepalese town of Tukche. The town—mostly Buddhist in religion and culture but with a minority of Hindus—is the subject of an article by David G. Williams beginning on page* 299.

THE ARCHITECTURAL REVIEW

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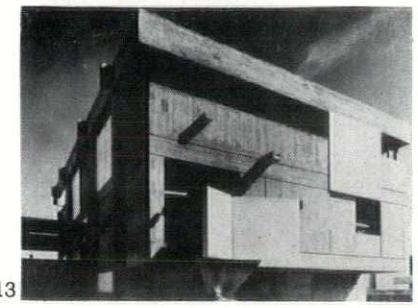
MOROCCO: AZAGURY

The other Moroccans are usually closer to the Corb-ATBAT canon. Elie Azagury is typical. His flats at Dero Jdid, Casablanca, 12, have no pretensions at appearing more than cheap and repetitive, while being excellently detailed. His own house, 13,



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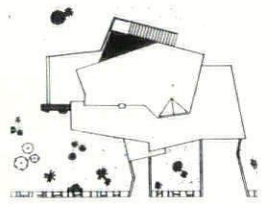

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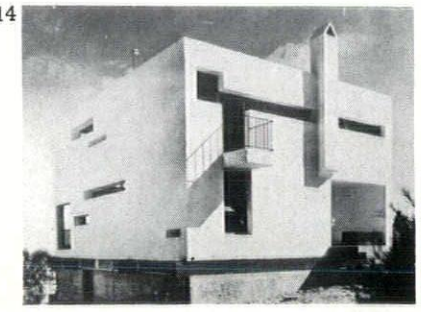
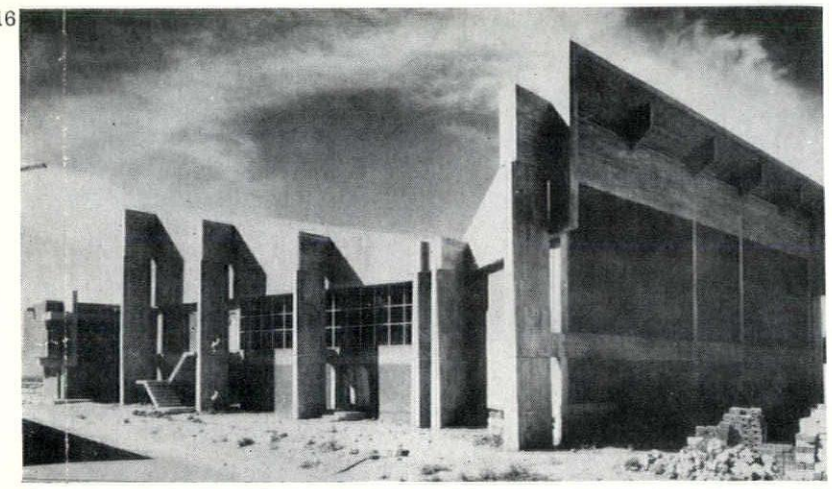


at Anfa, Casablanca, is a strongly Corbusian villa of Ahmedabad derivation—the architect's office next door is similar. Azagury has done two other houses at Anfa of more specifically Moroccan type, one of which is shown here in a photograph, 14, and the other in plan, 15 (similar in its freedom to some of Zévaco's work).

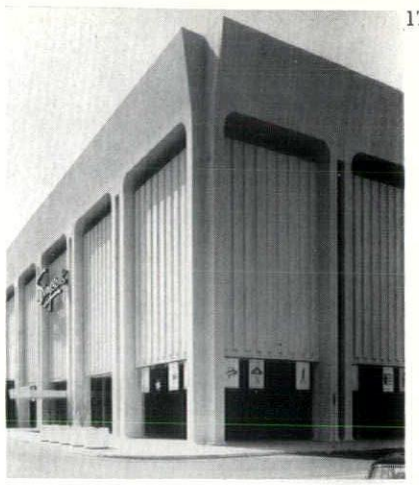
16



TRADE MARKS

Prestige architecture should speak for itself, yet it is often messed about by over-eager clients. Here are three recent examples in Ontario designed by John B. Parkin Associates. Their monumental new store for Simpson's at out-of-town Yorkdale, 17, has had its splendid quartz-aggregate facade defaced by crude lettering. Their factory extension for Heinz at Leamington was tied to existing flag-waving, 18, but there can be no excuse for the excrescence on the roof of their new mill and warehouse for Sifto Salt at Goderich, 19.

17



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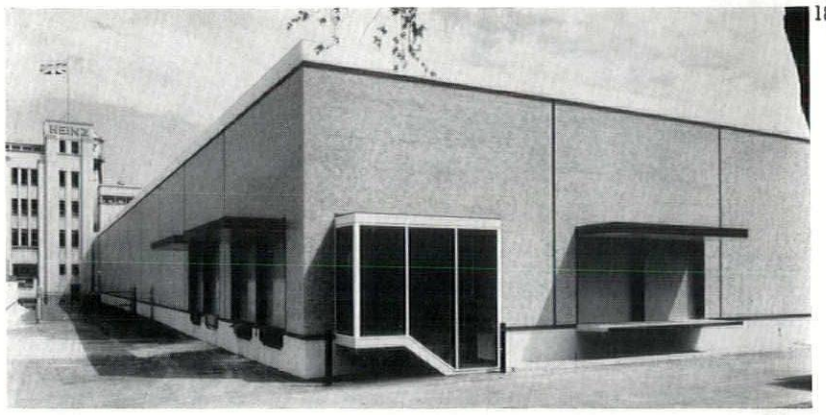

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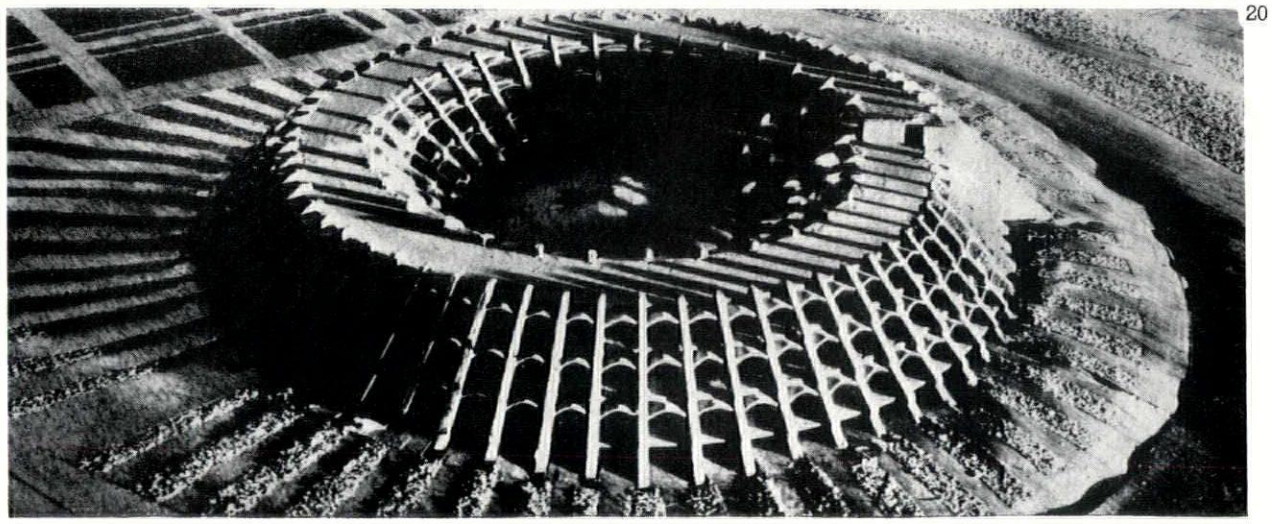
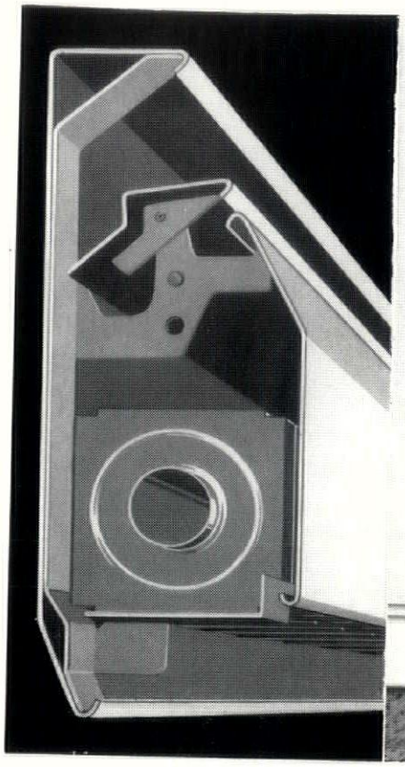
DEAD END

Enrico Castiglioni's structural gymnastics have always had a strong element of fantasy, so it is appropriate that his dream-world should recently have been fulfilled in a project, 20, for a multi-storey (one almost adds 'drive-in') spiral cemetery for the central Italian city of Busto Arsizio. Cemeteries at present are messy, random enclosures, says Castiglioni—and at Busto Arsizio parks are apparently unplantable—so he proposes this 'cathedral in mid-air' as a clearly defined growing organism, similar in its grandeur to an ancient necropolis. Castiglioni does not try to foretell the height to which it will grow.

20







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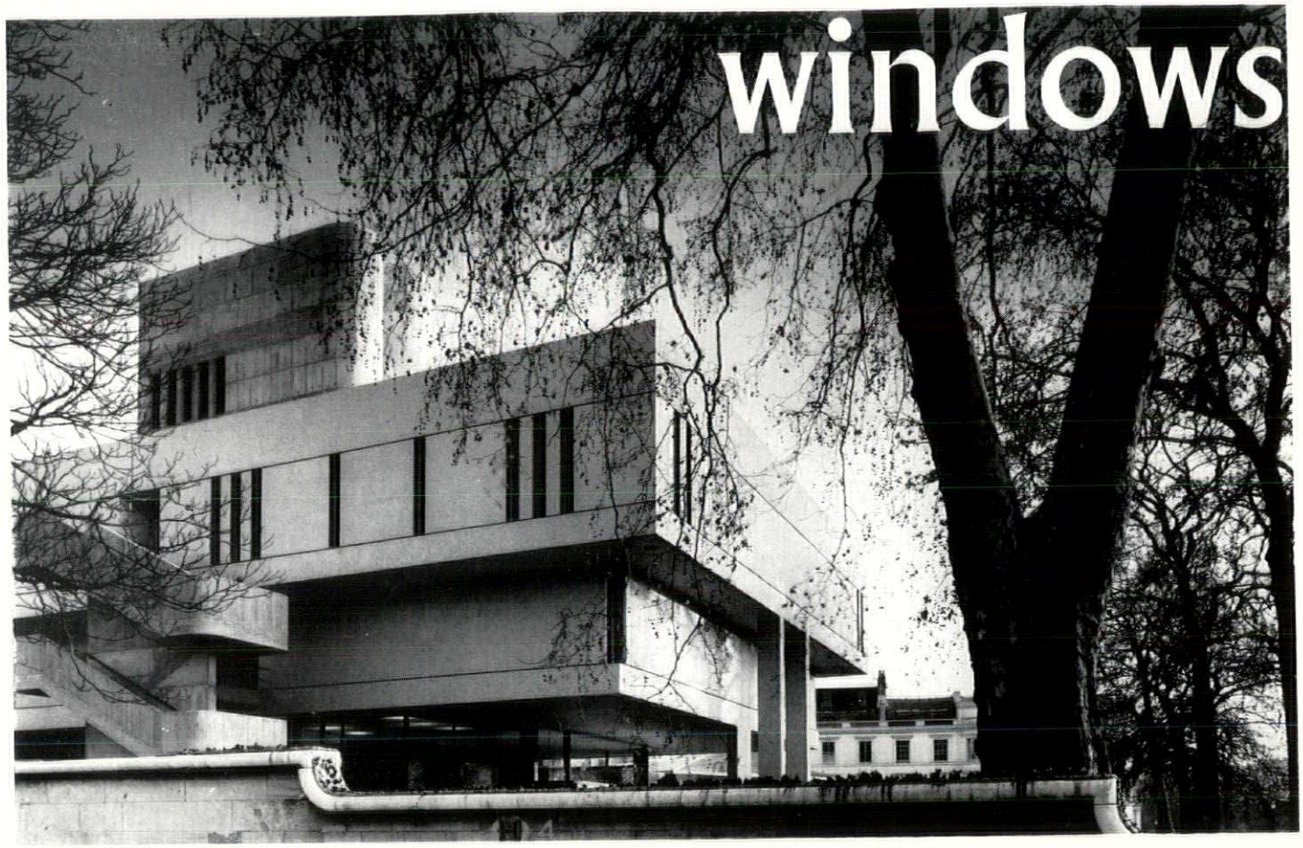

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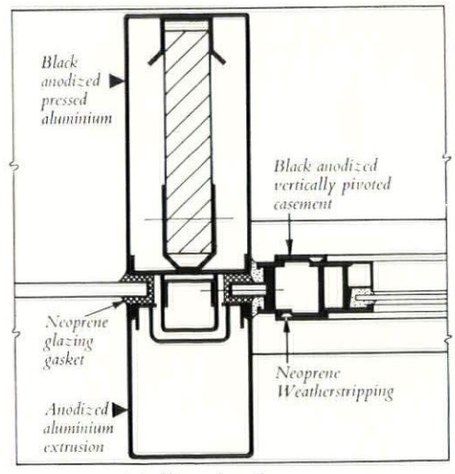

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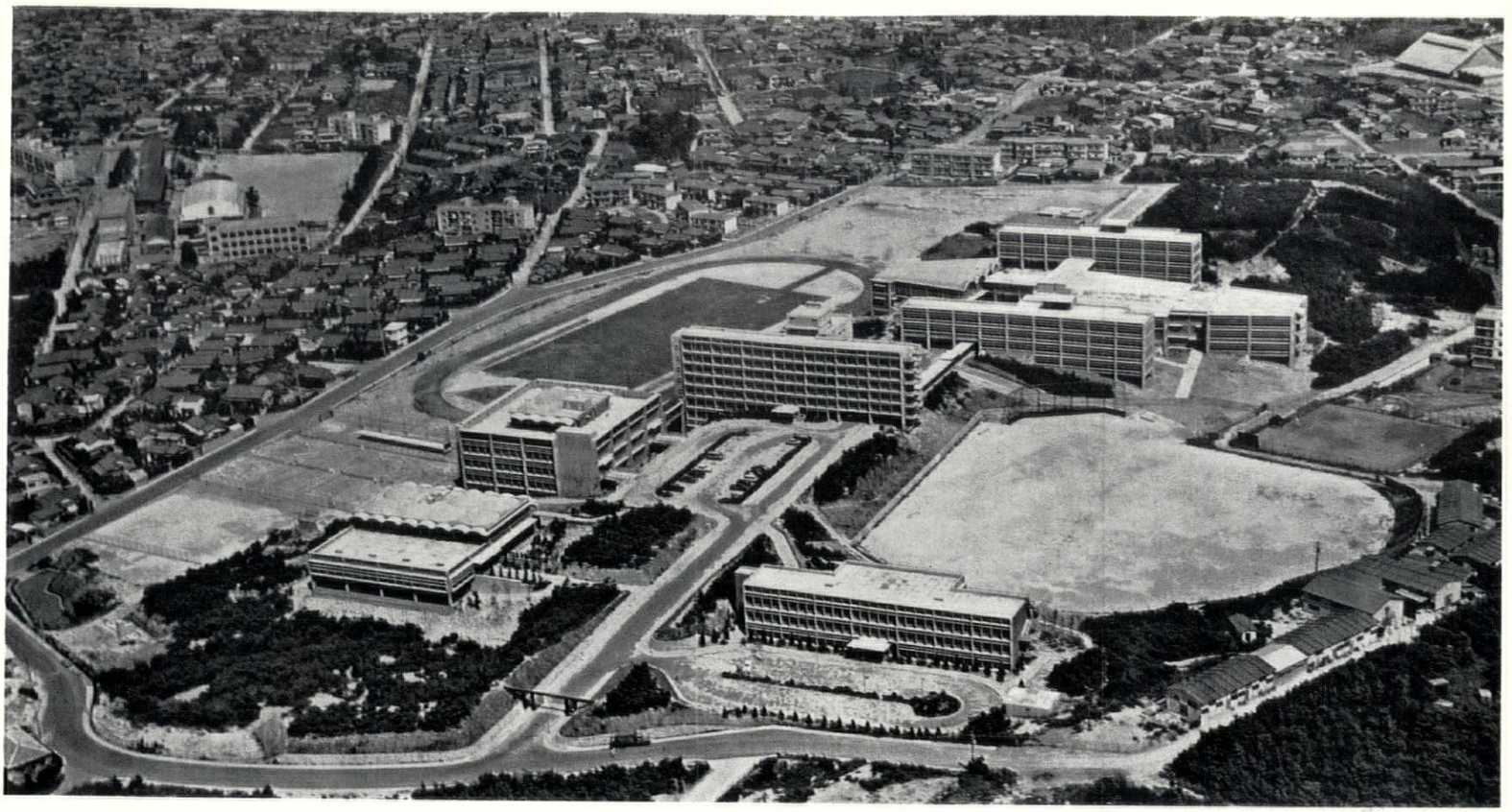

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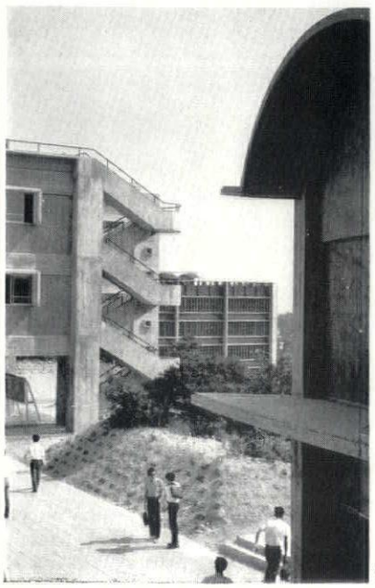
ANTONIN RAYMOND'S UNIVERSITY



22



23



24

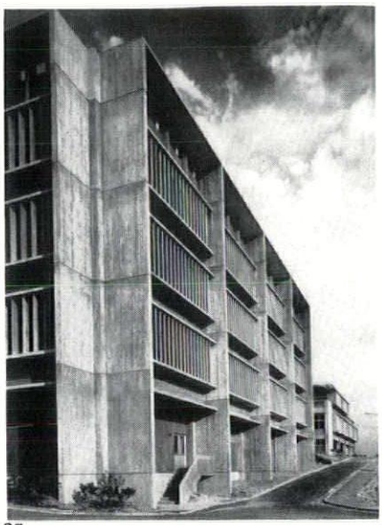
The completion of Nanzan University for 3,500 students only three years after Antonin Raymond's appointment as architect is a notable achievement even in the present hectic rush of Japanese architecture, particularly as the result, 21, is so relaxed and responsive to the *genius loci*. Situated amongst the fast expanding shacks of Nagoya, Japan's third largest city, this is the largest work Raymond has carried out, and, at the age of 75, it is no doubt the climax of his rethinking of the Japanese tradition. As such, it is an important reaction against the monumentality of much recent Japanese work. True to his Wrightian training, Raymond has let the site dictate the basic structure of the plan: the long north-south ridge has been taken as the vertebra. As Raymond has stated in *The Japan Architect*, 'Asymmetry and dynamism are characteristics of all the ancient Japanese arts . . . and I believe that I was faithful to this tradition especially in the site planning, but that I nevertheless achieved a certain impression of greatness by unified scale and integral treatment of all buildings, as if they are one structure, on both sides of the vertebra. At the same time, each building has been given the freedom to expand outwards according to its own functional requirements, without interference'.

On entering the spine road, 22, the administration block is on the right and the dining hall and library on the left. Then the road is straddled by the faculty offices, beyond which there are three blocks of lecture rooms and laboratories to the right and a 600-seat auditorium to the left. From the play-

ing fields to the north-west, where a gymnasium is yet to be built, the slope of the ground, 24, makes the auditorium, faculty offices and library tower above their surroundings as an extension of the hillside. The wide pavements alongside the central road, 23, as well as extensive first floor circulation between the teaching buildings, unite the natural, informal environment. The cost of the buildings was only about £5 per sq. ft. and much care was taken to rationalize methods of construction.

There is no doubt that economy has something to do with the arid appearance of the individual buildings. Raymond has used a great deal of board-marked concrete, as can be seen, 25, in a view of the library with the dining hall beyond. Particularly in the faculty offices, a praiseworthy modesty has tended to degenerate into an industrialized non-style. This does not of course affect the overall (and much more important) excellence of siting and planning.

RAYMOND



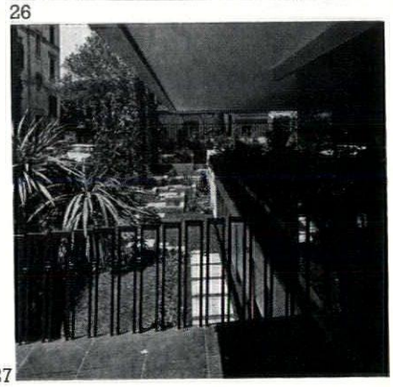
25

SLEEK SIFIR

In the Via Pio, a quiet Roman residential quarter near the Villa Borghese, there has recently appeared an exceedingly well-groomed, curtain-walled office block for SIFIR, 26. The architects are Leo Calini and Eugenio Montuori, two leading members of the Rome Station team. Two points are interesting: the effortless harmony with its surroundings of the white-panelled aluminium walling and the split-level garden, 27; secondly, the structure, which has only four columns, connected, 29, by hollow 15 in. floor slabs, which are turned on their sides as they brace the central staircase, 28. The colours of the staircase are rich: blue, crimson, brown, silver.



26



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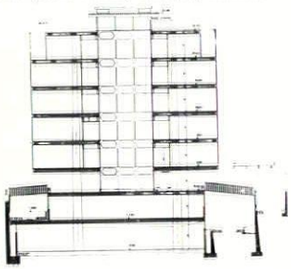


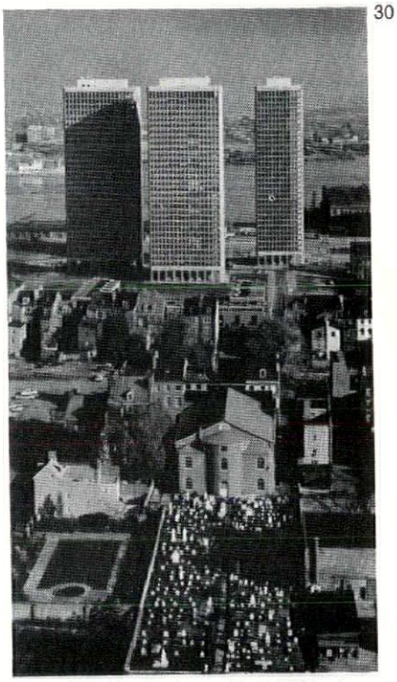
28



29

I. M. PEI'S SOCIETY HILL

The soaring towers by I. M. Pei, 30, at Society Hill, Philadelphia, have now been completed. The chorus of praise has not been unanimous: *P/A* in a recent issue criticized low ceilings, 31, excessive circulation space and, more important, inadequate townscaping at ground level. All the same, the views from the historic centre, 32, and over Pei's town houses (see AR September, 1963), 33, are undeniably effective. The question is whether the townscape can be extended beyond these one or two vistas. At present the towers stand in elegant isolation against a chaotic industrial background, soon to be cleared. Between the towers and the projected Penn's Landing development on the waterfront will run the Delaware Expressway, which may well increase the tendency to bittiness.



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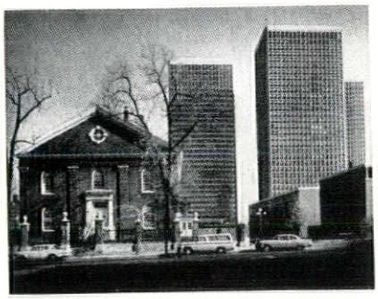
31





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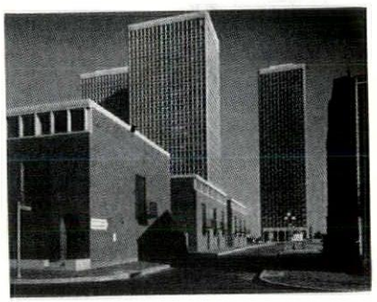
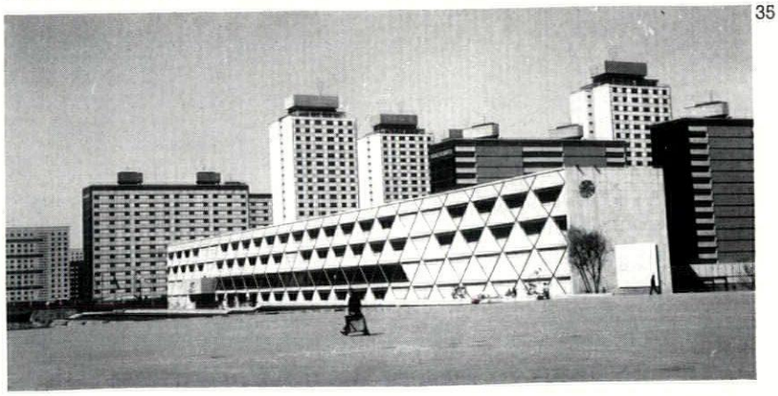


33

MEXICAN TRIANGLE

Even after years of inoculation against the shapes of Niemeyer, Northern Europeans can still be taken aback by Latin American bravura, such as the Edificio Simbolo office block, 34, recently completed to the design of Mario Pani in Mexico City's Nonoalco-Tlaltelolco estate. This slum clearance scheme for 70,000 people continues the triangular theme in a smaller office block, 35, overlooking the main square. These offices are introduced intelligently so that their rents help to subsidize those of the poorer families' flats.





35

a new look at calculated brickwork

SfB Ab3 (21)
Barbour Index 356

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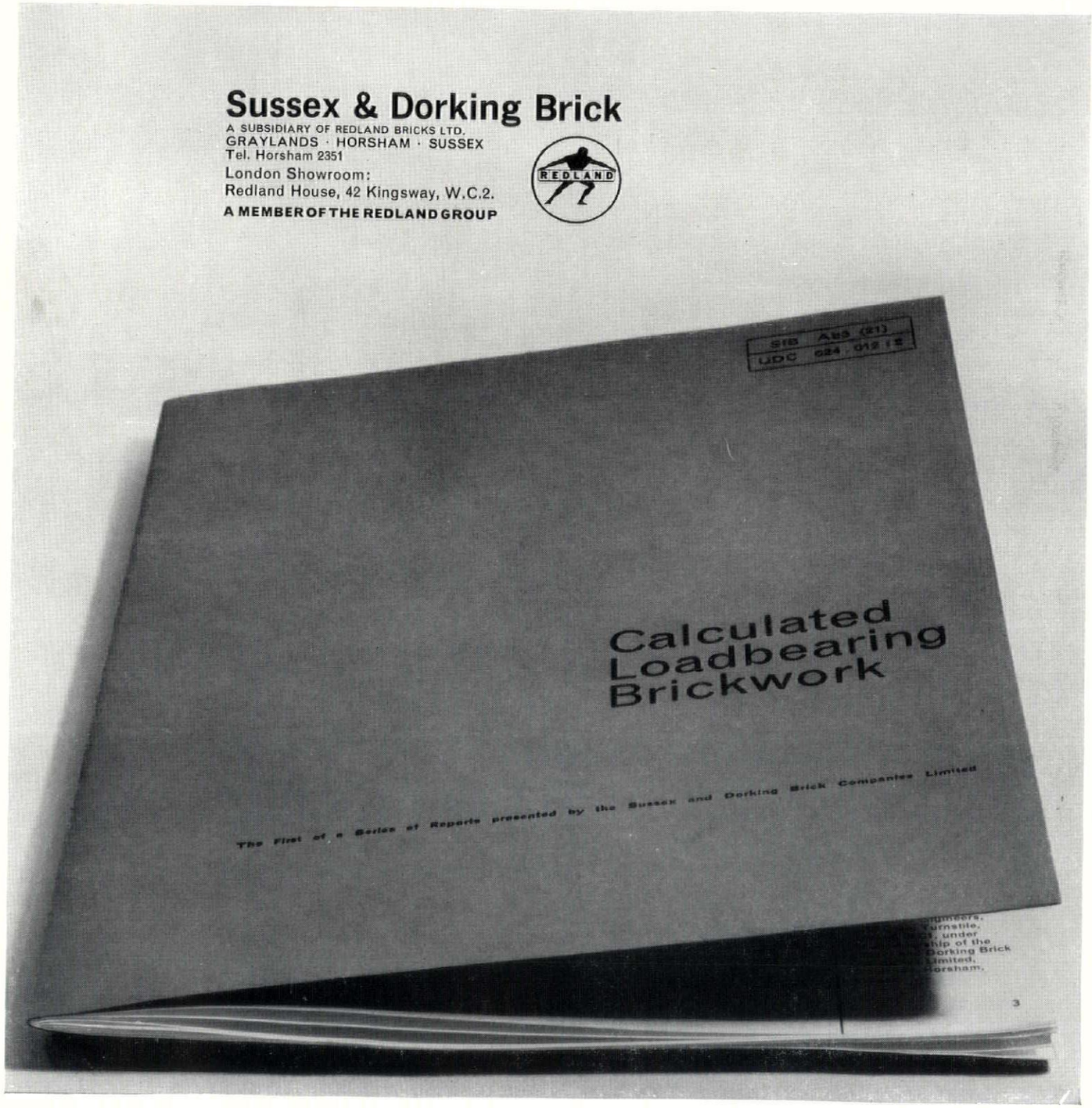

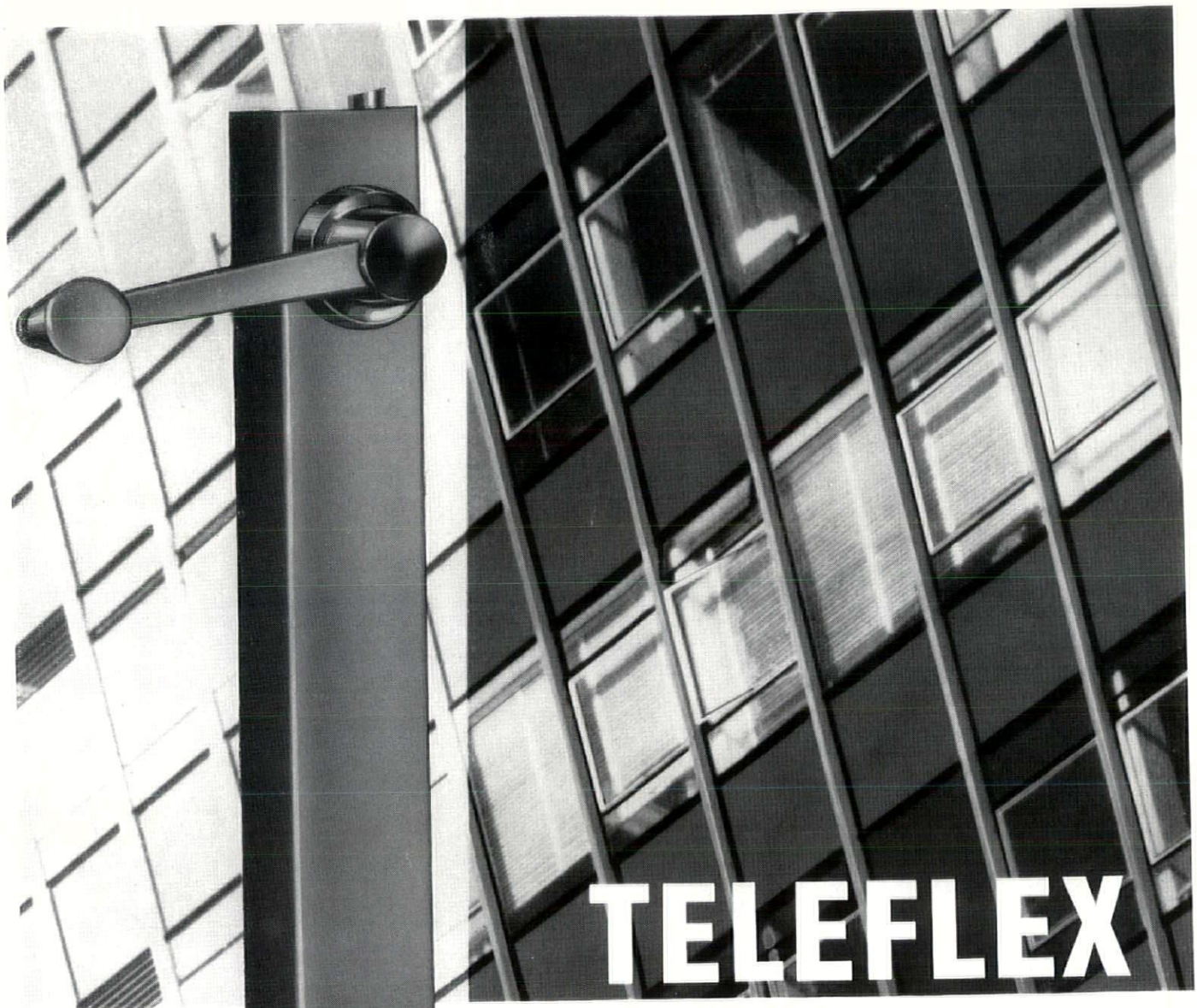

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VIEWS AND REVIEWS

marginalia

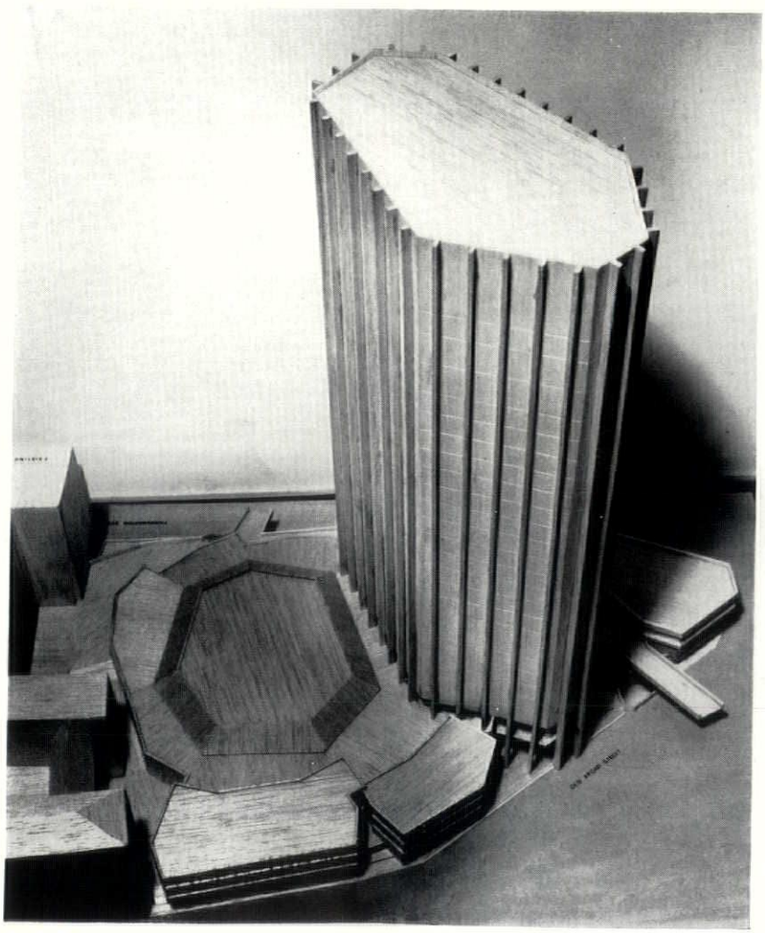
KEY LONDON PROJECT

The rebuilt Stock Exchange (model shown in 1) will perform a key role in the redevelopment of the City of London. Besides adding one more to the cluster of towers going up just east of the Bank of England, it provides the significant point at which the system of pedestrian walkways with which the City is being equipped first gets off the ground. Around the Bank and the Royal Exchange, since these are historic buildings, the pedestrian system is to be at ground level; elsewhere it will be above the traffic, on upper-level decks. The decks incorporated in the Stock Exchange scheme, where the upper-level system will start, will be linked by bridges with other sections of the system as they are constructed, including those that form part of the Drapers' Gardens and Commercial Union/P. and O. schemes now being built—also of course, eventually, with the rather more distant scheme in Barbican, which already exists.

Another contribution the new Stock Exchange will make to the walkway system is to suggest a remedy for the defect—much complained of when such systems have been tried out elsewhere — that these upper-level decks are too exposed and windswept for comfortable use. In this scheme they are largely sheltered by the low buildings round the perimeter of the site and at one point pass through and under the columns supporting the highest building.

The Stock Exchange scheme, of which the architects are Llewelyn-Davies, Weeks and Partners together with Fitzroy Robinson and Partners, contrasts a twenty-six storey tower with a low development containing the Stock Exchange itself. The upper storeys of the tower contain the administrative offices of the Stock Exchange and council and committee rooms, the middle storeys contain offices to be let to members and the lower floors reading and reference rooms and the Settling Room. The perimeter buildings are a bank and a post office (rebuilt for existing occupants of the site, though the post office is changing its position) and the Public Relations Department of the Stock Exchange with a visitors' entrance leading to the visitors' gallery overlooking the floor of the Market. The project has received planning permission and a start on building is only being held up by the Government's temporary ban on new office building in London.

1, *model of the new Stock Exchange* (*see note above*).





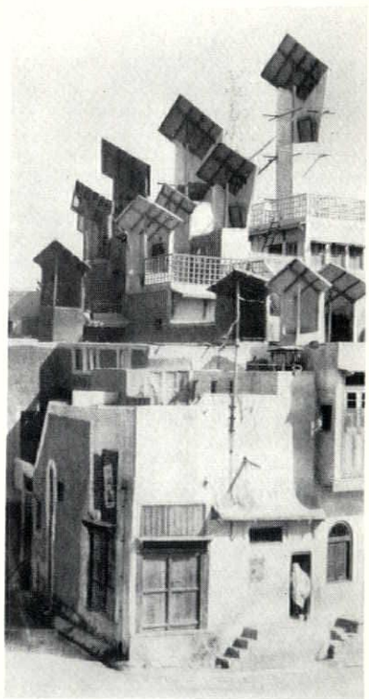
2

LOOK NO ARCHITECT

The exhibition entitled 'Architecture without Architects,' held at the Museum of Modern Art in New York from November of last year till February of this, contained some splendid material (judging by the illustrated catalogue which has just reached England), though material fairly familiar—in spirit and idea, if not in each example chosen—to readers of the AR.

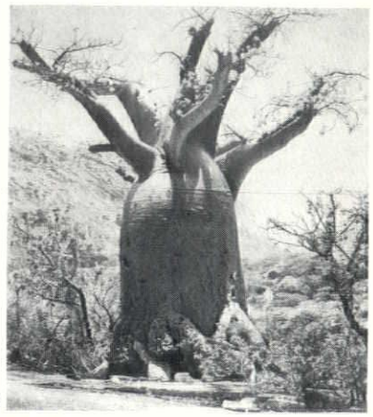
To quote from Bernard Rudofsky's preface, the purpose of the exhibition was 'to break down our narrow concepts of the art of building by introducing the unfamiliar world of non-pedigreed architecture. . . . For want of a generic label, we shall call it vernacular, anonymous, spontaneous, indigenous, rural.' The photographs range from troglodyte towns in China and Tunisia to the simple geometry of Spanish castles such as Montealegre (a dubious selection this, because highly sophisticated—there is a significant difference between the truly vernacular and the anonymous in the sense of the designer's name being lost), and from the giant eighteenth-century astronomical instruments at Jaipur, India, to the baked clay grain silos that stand in the villages of the Ivory Coast, 2. Other striking examples are the windscoops on the rooftops of houses in the lower Sind district of Pakistan, 3, and the African baobab tree, 4, which is of soft wood so that live trees are often hollowed out and used as dwellings.

The effect of an exhibition of this kind, aiming as it does at bringing out the perhaps accidental geometrical patterns and the inherent aesthetic qualities of the subjects chosen, depends a great deal on the photographs. These are an impressive collection, and we can look eagerly forward to the book on the subject—also by Bernard Rudofsky—of which the exhibition is a preview.



3

2, 3, 4, *illustrations from* Architecture Without Architects (*see note on left*).



4

DESIGN FOR CAMDEN

The formation of a number of new London boroughs—mostly by grouping together several of the smaller existing boroughs — provides the opportunity of a fresh start in the field of design, a field in which the Metropolitan boroughs have hitherto —unlike the London County Council —shown little sense of leadership. Most of them are now showing commendable enterprise in setting up well staffed architectural departments, one notable laggard being the combined boroughs of Kensington and Chelsea who have announced their intention of continuing with their architectural staff as part of the borough engineer's department.

In addition one borough—the new borough of Camden (formed out of Holborn, Hampstead and St. Pancras) is celebrating its inauguration, which takes place officially in May, by appointing a firms of designers (Main Wolff and Partners) to design for the borough a new symbol or coat of arms, the lettering and colours scheme for its vehicles and all its notice-boards, forms and letter heads—in effect to furnish the borough with a house style. This is an enlightened move in principle and it will be interesting to see what designs emerge from it in practice.

UN AID FOR IRELAND

The Republic of Ireland is now officially classified by the United Nations as an under-developed country. Anyone who has visited or seen pictures of conditions in the rural west of the country will know that this is not just an example of the Irish use of language. It could in fact be one of the most important events in the history of planning in the British Isles. The United Nations have granted $750,000 from the Special Fund, which was recently established for the purpose of carrying out national surveys as a basis for economic development. The bulk of this grant is to finance a team of eight experts led by a 34-year-old Bostonian, Patrick E. McCarthy, who will himself take charge of regional planning. Under him are a city planner (urban renewal), Alan Kreditor, also from America; a city planner (urban design), Geoffrey Copcutt, the 35-year-old designer of Cumbernauld's centre, who has recently stormed out of the planning team for the Lurgan-Portadown city in Ulster; a 'landscape and amenities planner,' Michael Dower, a member of the Civic Trust staff and well-known to AR readers; a modular co-ordination and housing design specialist, Robert L. Barclay, an English-educated Australian; a transportation specialist, an industrial location specialist, and an industrialized building specialist, all not yet appointed at the time of writing.

It is this team's task to advise the Republic on the physical implications of the 7 per cent annual growth rate advocated in the national ten year plan (1960–70). It will work closely with the newly created National Institute of Physical Planning and Construction Research—a clutch of planning clichés which translates into the delicious Erse of *An Foras Forbartha Teoranta*. The Institute's chairman is G. Meagher, and its 36-year-old managing director rejoices in the name of Padraig O hUiginn. Although its directors are civil servants, the Institute has been set up under the Companies Act to give it greater independence and flexibility. Its functions will be astonishingly wide-ranging compared with our own circumscribed National Building Agency: it will define planning principles, produce plans, advise and guide local authorities, buy up land and build its own projects—including new towns—open up tourist centres, and train and examine its own profession. An important part of the UN team's task is to train its opposite numbers in the Institute, who will carry on the work. It is quite possible that Ireland may become the focus of training for other underdeveloped countries; Dublin may seem a more realistic background for study than affluent London.

Ireland's glory, the corollary of underdevelopment, is that she is possibly 'the last unspoilt country in Western Europe.' The spectacular advertisements recently promoted by Aer Lingus in the Sunday papers are designed to emphasize this. At the same time, the country needs a rapid increase of income—and tourism again seems the answer. The danger will be the old one of 'Each man kills the thing he loves'; the Irish scenery can ill afford a rash of petrol pumps, advertisements and caravan parks. Michael Dower's work thus becomes particularly important; his field includes conservation, tourism and recreation. He has to allow for a 7 per cent increase in tourism, yet the increase last year alone was 18 per cent. Ireland now has the Local Government (Planning and Development) Act of 1963, similar to the British 1947 Act without the compensation and betterment clauses. The real problem is that the total national population of only 3 million is divided among four county boroughs (Dublin, Cork, Waterford, Wexford) and no less than 26 counties, some of them with a tiny population and nugatory rateable value. As many as 900,000 people live in Greater Dublin alone.

The UN team will not be able to work wonders overnight. Nevertheless, the Ulster Government, still tied to Westminster, is likely to envy the forward planning which the special fund grant is making possible for Dublin. One of the least noticed features of the recent meeting of the two Irish Prime Ministers (the first since 1925) was their discussion of the possible co-ordination of Irish tourism. It will be up to the British Government to make available similarly generous grants to Ulster, so that the whole of Ireland may benefit simultaneously.

BOOK AWARD

The Alice Davis Hitchcock medallion, which is awarded annually by the Society of Architectural Historians of Great Britain for an outstanding contribution to the literature of architectural history, has been given for 1964 to Dr. F. H. W. Sheppard, of the London County Council, for his work as General Editor of Volumes 31 and 32 of the Survey of London, The Parish of St. James, Westminster: Part Two: North of Piccadilly. The Survey is published by the Athlone Press of the University of London.

AMERICAN DRAWINGS

The Samuel H. Kress Foundation, one of America's largest artistic benefactors, has given a grant of $70,000 over three years to the Philadelphia Chapter of the American Institute of Architects for the compilation of a catalogue of architectural drawings of historic American buildings. The University of Pennsylvania has agreed to publish it. Its scope will be from the seventeenth century to 1917, so long as the building has architectural merit and the architect is no longer living. The Philadelphia Chapter, who have full backing from the AIA and other official bodies, has no illusions as to the immensity of its committee's task; it points out that American drawings are widely scattered, there being no central repository like the RIBA. The Kress Foundation's generous grant could not have come at a more opportune moment, when so much of nineteenth and early twentieth century America is being demolished. The editor of the catalogue is George S. Koyl, Emeritus Professor of Architecture at the University of Pennsylvania. The assistant editor is Moira Mathieson, formerly production editor of the REVIEW.

HAUSA MUD MOSQUE

In the article under the above title in the February 1965 AR, contributed by Messrs. J. C. Moughtin and A. H. Leary, two of the pictures were wrongly described. Nos. 4 and 5 showed not the Zaria mosque but the *Zaure* (entrance hall) of the Emir's palace at Daura, which was built and decorated before the Fulani *jihad*. They therefore illustrate the Hausaland architecture of the period just before Babban Gwani built his mosque.

correspondence

THE BLACK FRIAR

To the Editors.

SIRS: That the Black Friar, Queen Victoria Street (AR, October, 1964) is not quite a unique example of brewers commissioning work in the Arts and Crafts manner can be seen from the accompanying illustrations of premises belonging to Fuller, Smith & Turners, of Chiswick. It will not, however, be possible to see all of these for much longer, as the Red Lion will probably be gone in a matter of months and the Beehive Hotel is scheduled for rebuilding under road widening in the future.

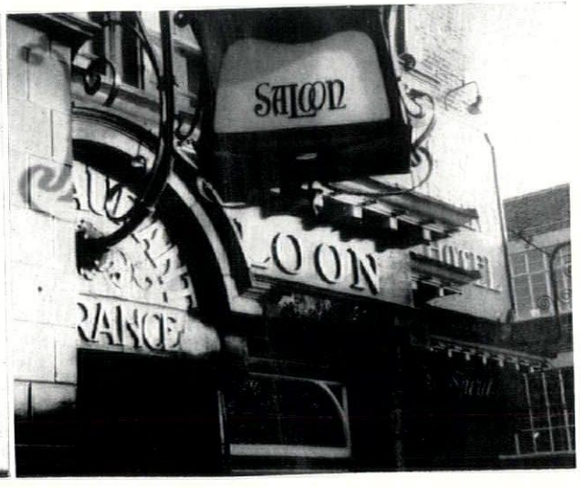
The architects were Harrison & Ward and there are other examples with fainter echoes of the same manner, and more where the same hand has been turned to other fashions of the period. The Red Lion, on the corner of South Ealing Road and Brentford High Street, is dated 1906. The 'toadstools' on the gables, the stonework at ground-floor level and the columns with very flattened caps to the ground-floor windows are very much of the Arts and Crafts. The Beehive Hotel, in Brentford High Street, begins to be Art Nouveau and has a green and blue glazed terra cotta ground floor and a terra cotta beehive on the roof.

In another public house in Brentford High Street, the Six Bells (identifiable by the bells in the ironwork of the sign and in the etched glazing—there is no name on the front) the character is less obvious. In yet another, the Three Kings, next to West Kensington Underground station, a curved glass arch with coloured glass fruit in the frieze reminiscent of Guimard shows that the Art Nouveau touch was quite intentional. This building has also traces of a sort of Edwardian Baroque which seems to

5, the Red Lion, and 6, the Beehive—two pubs in Brentford which are to be demolished (see letter from Colman Higgins).



5



6



7

In converting old buildings, simplest is often best. At Queen Mary College of London University, where space is being cleared off Mile End Road for large-scale extensions, Playne and Lacey and Partners (architect-in-charge, Gordon Robbins) have turned a Victorian gymnasium, more recently a laboratory, into a building for the Departments of Geography and Geology. A new steel-frame structure has been inserted independently of the old load-bearing walls. The Victorian-classical bay structure has been preserved and enhanced by these simple and attractively detailed bay windows, 7. The contrast of modern aluminium and weathered stock brick has been left to make its point without elaboration.

have been the intended style of the Salutation Inn, opposite Hammersmith Town Hall in King Street, a work in mauve terra cotta and orange bricks which a photograph cannot convey.

But these are only in the *manner* of the Arts and Crafts, not in its spirit, as the Black Friar is. Their stained glass and lettering have the look of the trade catalogue rather than of intentional design. The interiors are of no value. Apart from these examples there is the Norman Shaw public house in Bedford Park dating from about 1880 whose interiors are largely altered but which has in the entrance lobbies glazed wall tiling by Walter Crane in the pattern of a Morris paper.

Yours, etc.,

COLMAN HIGGINS

Brentford, Middlesex.

NO SECOND SYDNEY

To the Editors.

SIRS: In 'World,' February, 1965, you sound a little dubious about the roof of Jörn Utzon's Schauspielhaus at Zurich, and perhaps do not give it the attention it merits.

The lineage is obvious. The large-span beams spanning the car park in front of the Sydney Opera House have a similar form, the breadth and bulk of concrete flowing from top to bottom as the moment changes sign. This probably derived from Ove Arup rather than Utzon, but that is unimportant. If it is the case obviously the union has transferred a few ideas.

In the Schauspielhaus the ceiling is no doubt separate for acoustic reasons, and this leaves the roof with nothing to do except span the gap. By using this form, Utzon has not only produced interest in an otherwise ordinary roof, but at the same time produced a very efficient structure, the importance of which should not be overlooked.

Yours, etc.,

M. J. PLATTS

Cambridge.

book reviews

CHOSEN CHURCHES

THE NEW CHURCHES OF EUROPE. *By G. E. Kidder Smith. The Architectural Press. 73s. 6d.*

This book is authoritative. It covers some sixty religious buildings ranging from St. Michael's Cathedral, Coventry, through the monastery of Ste. Marie de la Tourette to numerous mostly quite small churches. Mr. Kidder Smith is an excellent and imaginative architectural photographer. Sufficient drawings are included, usually plan and section, to support the photographs in giving a general picture of the building. The drawings make up for the inevitable difficulty of photographing buildings from a sufficient distance to show the whole: the difficulty that we impute 'realism' to photographs far beyond that which can be conveyed by this particular medium. No photograph can ever be as 'real' as say a Rembrandt landscape drawing. Detailed photographs must reflect the architectural feelings of the photographer and it seems a good guess that Mr. Kidder Smith may have set aside many of the shots which he would prefer in favour of those more informative to readers. For instance the general Ronchamp interior (page 95) is uncomplimentary. A more lavish production would no doubt have included many others of a more expressive nature.

The introductory remarks do not come up to the comments in Mr. Kidder Smith's *The New Architecture of Europe*. Nor does he put sufficient emphasis on the main principle underlying the Liturgical Movement implicit in most of the churches illustrated: the return to the spirit of early Christianity by the active participation in the sacraments of the lay congregation *as one of the Orders of the Church*.

Nothing of architectural history, not even in the direction of the 'Greek Cross' plan, is intended. Generally the altar, focus of the main sacraments, is moved towards the centre of a space freed of columns and other obstructions to allow the congregation even to encircle the altar. The Liturgical Movement rejects the supposition that churches should provide 'a dim religious light'; on the contrary, while dramatic natural and artificial lighting of the altar area is not excluded, good natural light should emphasize the logical elements which modern churchmen find in the Christian doctrine. Reference to the writings of the great Jesuit Teilhard de Chardin is appropriate.

In the introduction to Mr. Kidder Smith's book and elsewhere there are too many architectural cliches — 'liberating concrete,' 'thick jewel-like coloured glass,' 'chunky' and so on. There is a danger that architects, who need language to define their objectives as they need every aid in this most difficult of arts, use such words without thinking whether the pieces of glass, the lumps of concrete and so on really take their place within the whole or are put in to keep with it. Are your chunks really necessary?

This is of course an extremely tricky field. In his comments on the buildings themselves Mr. Kidder Smith is much more direct, quite severely critical at times. His remark on the Coventry tapestry, which 'seems not so much a tapestry applied to a wall as a mural totally filling a wall,' is wholly justified. As to buildings of an altogether different calibre, what is there left to say about Ronchamp? The impact of this building, the huge number of photographs of it, its plan form and so on, put it in the category of Van Gogh's more familiar paintings, which require the utmost effort of will if the original is to be seen clearly, not through a miasma of plagiarism or obscured by the 'museum without walls.' That this happens with works of our own period far more than with the great 'image making' works of the past is mysterious. However familiar Piero della Francesca's' Flagellation' may be, no effort of will is needed in the presence of the original itself.

Probably the greatest value of Mr. Kidder Smith's interesting, thoughtful and wide-ranging book lies with the less well known churches by architects less renowned. There are only three examples of English, against eighteen German, churches. Other countries for the most part range between these limits, only Austria and Norway being represented by one building. With obvious exceptions the whole building is often uninspired. Yet parts of most are good, sometimes excellent.

JAMES CUBITT

SENSIBLE STATE

ARQUITECTURA ARGENTINA CONTEMPORANEA. *By Francisco Bullrich. Ediciones Nueva Vision, Buenos Aires.* 1964.

Argentina is great at translations of English books on architecture and planning into Spanish; here is an Argentinian book on recent Argentinian architecture which ought to be translated into English. Francisco Bullrich writes well, knows how to formulate precisely and suggestively, has an uncommon knowledge of the antecedents from the Baroque to the golden Edwardian decade and is perceptive and objective about the trends of today. He is also fearless in exposing the effects of the Peron regime on building and planning. Argentina still suffers from industrial under-development and recurrent economic crises. Hence modern schools, hospitals, housing estates for low incomes, and public buildings for cultural purposes are disastrously scarce. The only exception is the work of the Directorate of Architecture of the GPO, and that has recently been dissolved. All this being so, it is remarkable how high the standard of the examples is which Mr. Bullrich has assembled.

Argentina is very different from Brazil, more staid, more stable, more solid and sensible, less fascinating, unexpected, fanciful, and this impression, which forces itself on any open-eyed traveller, is confirmed in Mr. Bullrich's examples. Most of them are certainly good enough to qualify for any journal of international standard. If a few were to be singled out, they might be Bonet's Oks House, Sacriste's Shujman House, the Abbott Laboratories at Florentio Varela by Sánchez Elia, Peralta Ramos and Agostini and the church by Caveri and Ellis. Of these, only the church has what might be called a national idiom such as so many Mexican and Brazilian buildings possess. Most of what is going on in Argentinian building today can be linked to some work and style abroad. There is nothing wrong with that, and the Argentinians have enough self-respect not to imitate gimmicks. Considering the havoc Chandigarh has wrought in most countries, it is gratifying to see that in Mr. Bullrich's book there is only one serious derivative, the Government Building at La Pampa by Sánchez Elia's firm and one reminiscent of the wilder fancies of AA students, the Bank of London by Testa and another firm now going up at Buenos Aires (project illustrated AR, February, 1963). The book is amply and well illustrated and cheap for what it offers.

N.P.



The powerfully built caryatids opposite are the principal ornament of the Grill Room at the Café Royal, Regent Street, which celebrates its centenary this year. Described on pages 307–311 of this issue, the Grill Room is the only surviving part of Archer and Green's lavish and influential Empire-styled décor for the original café.

Claudio Varriani

PAGANINI AND THE PITHECANTHROPUS

Signor Varriani's essay on 'right thinking' in architecture states, neatly and (in the original) elegantly, the case for the grand old rules of classical, academic architecture, purged of stylistic overlays, but still going back frankly to a neo-classical vision of Greece. His is not a fashionable viewpoint and many will find it an unacceptably inhibiting one, but expounded like this by so passionately sincere a thirty-year-old Italian architect and writer, it seemed to the Editors worth translating and printing if only as a challenge to the consciences of those to whom everything novel represents progress and to whom the connection between aesthetics and morality is unfamiliar.

First there is a floor which, by differentiating itself from the casual disorder and roughness of the earth, defines the area of the chosen function. This given element, in response to the physiological necessities of man, must needs be flat where it receives the sole of the foot, since it can only be concave or convex at the expense of its utility. It may be disposed at various stepped levels, within the limits of the flexibility of the lower limbs; it may also lie in an inclined plane within limits of convenient walking, which are imposed by the articulation of the ankle-joint and the strength of the leg-muscles.

Next, there are flanking walls, whose task is to define the location of the function by marking out a particular space, set apart from the indefinite and irrelevant world of nature, besides assuming the task of excluding the hostile atmosphere.

And last there is a roof which serves to protect the space against rain, hail, snow and other atmospheric effects.

Although these elements (floor, wall, roof) could be of various compositions and materials, for the sake of argument we can imagine all three as taking the shape of square slabs of equal form and size, not too thick, and made of a common homogeneous material. If we analyse these elements existentially, that is in their constructional essence, we are immediately struck by their main and substantial differences. Considering them individually, without their mutual interactions under load, we observe that the floor, ignoring the effects of the supporting ground, assumes the character of a slab carrying loads on the plane of its larger dimensions. We must regard the roof plane as an analogue of the floor except that there is a hierarchy of loads bearing on the two elements according to which the roof must always appear less loaded than the floor, and undoubtedly there exist differences between the two elements also in regard to the possibilities of the roof adopting the best possible structural form to fulfil its allotted task; possibilities that the floor slab does not enjoy for the reasons already given.

The lateral walling element thus remains the only one to be loaded, given its independent nature and the gravitational factor, on the surfaces of its least dimensions. At all events, only if upright does it maintain its proper integrity and value. Indeed, within the formal framework outlined above, we may observe that if it forms an angle beyond the vertical it becomes, within the plane of physiological acceptance, a specialized sector of the floor, and if it leans inwards, then by virtue of overhanging the pedestrian surface it automatically transforms itself into a particular type of roof (for all that it rests directly on the ground); similar conclusions could also be reached on purely structural grounds. One may thus deduce that these flanking elements acquire their true essence when—and only when—they stand parallel to the fundamental axis of Man—for Man indisputably has such an axis (its importance becomes noteworthy through the ill effects that follow a stumble that throws him off axis)—but we must also emphasize how these elements also find their most profound significance as an ideal reflection of the upright stance that is the material symbol of the divine state of man—which is also civilization itself.

However, there exist today currents of taste which, wilfully ignoring the import and precise significance of the constituent factors assembled above, prefer, not the due accentuation of the individuality of single elements, but the flux and confusion of parts into a formal monody of cavelike character; all of which may appear academically acceptable, but is emphatically unacceptable on the moral plane, constituting merely a reaction in form, but not in substance. Yet even at the formal level they are mistaken, because they set Man in an environment that is false, irrational and alien to him as a civil being.

With the permission of modern technology, airports can exist in the form of turtle shells, theatres vaguely like Bedouin tents. Now, I can admit that it could be pleasing for a western man to pass an exotic weekend in the cavernous interior of a giant turtle shell discovered abandoned on the beach of some South Sea island, but I venture to hope that he would never dream of identifying such an experience with an expression of his true culture. And thus it can be understood why troglodytes and retarded cultures (nomads) have given us no architecture.

Or one could pose the case where certain uninhibited architects might prefer to confound the assembly-hall of a German girls' school with the tent of a Bedouin harem, and propose that occidentals adapt themselves to the idea of having their daughters live in such a setting, but these architects could hardly delude themselves that, merely on account of this, their architectural extravaganzas could pass for an 'expression of Western culture.'

The gulf fixed between Man and the animals is, in my view, represented most substantially by the faculty by which the former exceeds the latter in conducting thought with abstract entities. For this reason, even when barely conscious of his state of civilization, Man has sought to avoid the crude cave as a dwelling, despising it for the closeness to the animal ethos implicit in its acceptance, and regarding it as more suited to the cave-dweller whose shards and arrow-heads he has abandoned in Eden on his first steps up towards civilization. In the same way Western civilization (in common with other cultures) has always sought to avoid the provisional aspects of the tent, sensing in the acceptance of them the extremity of a life lived in too close an equilibrium with the animal world.

Architecture is the symbol of the state of Man's culture and of his understanding of the great mental achievements of his time, and in all its most outstanding examples Man has sought to transmit these transcendental intellectual qualities over and above the purely functional reality which is too tightly bound to physical—that is, to animal—exigencies. And it is for this reason that our civilization, though seemingly so much better endowed than others with the most exquisite sense of abstraction, has never turned aside from its given premises to subjugate itself to alien forms. It has recognized, for example, that the geometrical (and thus abstract) relationship of the Egyptian pyramid is inadequate to counterbalance the manifest functional significance of a tumulus erected to catch the drifting sands of the desert, a relationship that is anti-human by virtue of its giant scale, well suited to battle with the annihilating power of the landscape. Again, our civilization has discerned in Mayan culture the literally scenographic intention of creating for the dwelling of the god a pedestal which, with the complicity of the morning mists, could make it appear to float between earth and heaven. . . . And it has held the external carved decoration of an Indian temple as too hedonistic in its exuberance to exemplify Man on the road of pure abstraction. Always and in every moment it has preferred the example of Greek architecture.

Our civilization has chosen, however, from Greek architecture not so much the traditional temple—full-blown symbol of the Olympian gods inherited from a barbaric Achaean past—but has staked out its origins for preference on the abstract physiognomy of the side walls of the Erechtheum where (sculptural episodes apart) the balance of values—technical (handling of the elements), structural (loads carried through perfect surfaces of stone in contact) proportional (relation between the dimensions of the whole and those of the individual parts) and abstract (the wall seen for the first time as a perfect plane surface due to the quality of the work)—together form a synthesis of the maturity of Greek thought; emerging victorious from the battle with the physical environment and from collisions with other cultures; consciously applying itself for the first time in history to the new challenges deriving from its own actions; that is, abstract challenges like those of our present western culture. In the ensuing 2,300 years of history the vision of architecture opened up by the Greeks has been sublimated into the more tenuous abstractions of space, and finally sophisticated itself into relationships of time, and only within the body of our own culture.

In the face of this beauteous panorama so bedewed with symbolisms, someone may still object that one ought not to undervalue the influence that the roof, generally speaking, is capable of exercising on the

external walls, even in the limited examples—the cave and tent like forms—set out at the beginning of this discourse, let alone when one considers the irrefutable value, both in employment of logic and enhancement of life, of those portentous present-day developments of similar forms criticized at the outset of this article. But against this, it may be opportune to remind ourselves that at the beginning of every architectural conception there is a choice, which must be made, and which governs the balance of the competing demands on the design (and not only formally, be it remembered). Whoever denies the possibility of such a choice and its benefits, needs to know what he attacks, since it poses a moral question to architects (now becoming *à la mode*) who would prefer that the Seagram building have something like an aerodynamic form instead of that which it happily presents today.

For, while it is impossible to deny the existence of forms which, at the purely structural level, represent real progress, yet, outside the respect they inspire, they are seen only within the narrowed vision of the fulfilment of a predetermined task, and even then only at the cost of sacrificing everything else. Thus they are to be considered by the same standards as enormous one-stringed musical instruments. A rather well-known story relates how a famous violinist, at one unlucky moment of his life, found himself compelled to play upon a single string, yet by his genius and mastery of the instrument he evoked great wonder and admiration among his contemporaries and sympathy among his successors. Nevertheless we may be sure that never in the later course of his career was this musician tempted to deprive his instrument of the other three strings.

AUTHOR'S FOOTNOTE:
The above text is obviously not intended to launch an aesthetic or impose some subjective architectural vision. Given that the examples are cited as an allegory of certain architectural factors, they merely—in face of our present disorientation—set themselves the task of focusing architectural attention on the historical and philosophical choice that must be made in order to ensure that the right—and only the right—considerations enter into the shaping of a work of art.

If it is true that this responsibility belongs exclusively to the free individual, who is responsible for his own actions to society and history, then one must act as vigorously as possible to ensure that erroneous conceptions do not come to overpower and suffocate what may be termed 'right thinking' (*il giusto pensiero*).

OFFICERS' MARRIED QUARTERS, MALTA

photographs by Henk Snoek

architects **THE AUSTIN-SMITH, SALMON, LORD PARTNERSHIP**

These married-officers' quarters, on War Office freehold land adjacent to St. Patrick's Barracks, about four miles north-west of Valetta, provide accommodation for fifty-nine officers and their families. The site itself is rocky, with little or no soil, and a slope on one side down to the sea. Deep rain gullies, old quarries and outcrops of deeply weathered rock made the lower part very dangerous and road cutting and site levelling, being expensive, had to be kept to a minimum. Excavations for foundations and drainage runs were carried out by blasting.

The briefing given to the architects was detailed, but provided them with a broad responsibility for investigating user requirements, building economics and means of climatic control for this particular location, about which little had been published or even investigated. A questionnaire prepared by the architects was distributed to officers living in Malta, the answers to which helped finalize the plan forms and detailed accommodation.

The average serving officer lives with his family in married quarters for a limited period, the usual maximum being three years. Consequently he has little time and interest in home and/or garden making. Also, in contrast to the communal nature of Army work, he normally demands that his quarters possess complete privacy and are seen as a distinct and separate unit within the community. On a flat site in the United Kingdom this generally leads to wide spacing and low densities, but such dispersal on this site was neither economical nor practical. The architects' solution has been to provide dwellings which form a strong group when seen from a distance, but at the same time by their planning and layout give the privacy required.

Cost studies showed that the most economic form of building would be dwellings up to three storeys in masonry cross-wall construction. Walls are of two thicknesses of Maltese limestone built in blockwork 8in. thick by 10½in. high and approximately 2ft. long, left as quarried. The interior finish is of stonework rubbed down and painted. Damp proof courses are tar and sand, ½in. thick as local practice; floors and roofs are constructed of locally manufactured hollow concrete block slabs and ceilings are plaster.

Three-storey flats (Type V, 1,340 sq. ft. in area) are used in areas of extreme and uneven fall, two-storey dwellings (Types V and IV—IV, 1,650 sq. ft.) in areas of steady fall and single-storey dwellings on relatively flat ground. The single-storey houses are based on the patio principle so that a good deal of living can take place out of doors during the summer, while the two-storey houses have small courts to the landward side but no easy link to the seaward side, giving a feeling of enclosure. Flats are provided with large balconies and communal outside areas.

Two disused roads were utilized as main access routes from which ancillary roads lead to building groups. Abrupt changes in level necessitated garages and parking areas being tightly planned to reduce cut and fill. The garages are also used as screening elements to reduce overlooking from roadways. Apart from terraced fields on the upper part of the site, no depth of soil existed in which to grow trees and shrubs, so to remedy this, and also to provide a strong visual link between building groups, terrace and retaining walls forming 'bastions' have been used, built in local style of random rubble containing excavated soil. Ducts containing all services have also been integrated into these bastions, or themselves form retaining walls. Ground cover is provided by the planting of mesembrianthemum, which spreads rapidly, and some cacti, olive, ficus and oleander trees are planted in soil-filled holes cut in the rock.

Paving is of rough concrete or local stone. Drainage has to be particularly effective, as when rain occurs in Malta it is usually heavy and can easily cause flooding unless disposed of quickly. This water is stored in eighteen underground wells 30ft. deep, to be used for irrigation and fire fighting purposes.

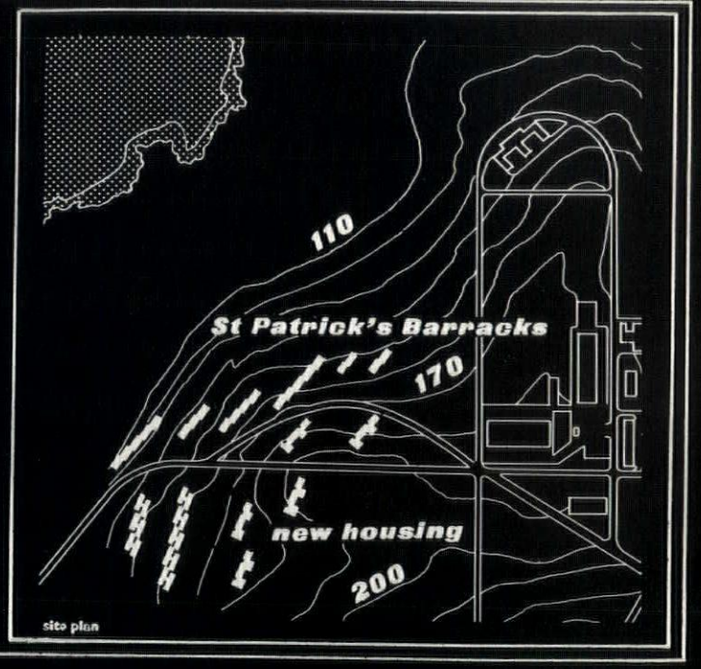
Malta has an overall temperature range of between 97 deg. F in summer and 42 deg. F in winter with a relative humidity on average of 73 per cent. During the period December to April some slight heating is required. A centrally placed oil fired boiler gives hot water service and heating to radiators in living rooms and kitchens through external ducts to each building group. Bedrooms are heated by electric fires. In contrast to the methods of building traditional in Malta, the architects, after studying climatic conditions (see page 265), introduced cavity walls and a double skin roof, and provided full facilities for cross ventilation at body level in plan and section of the dwellings. To control this cross ventilation a proprietary glass louvre system was used. The resulting conditions during summer are extremely good but the system failed to prevent penetration of rain and wind during winter storms and lightweight winter sashes (fixed internally during the winter months) have had to be introduced to all windows on the seaward side.

Windows are hot dipped galvanized steel in hardwood frames; the framed louvre inserts are aluminium.

The scheme was designed in collaboration with members of the War Office Works Directorate under Donald Gibson. Partner-in-charge, Geoffrey Salmon. Assistant architects, W. Jarrett, M. Hirst. Site co-ordinating architects, Mortimer & Degorgio. Quantity surveyor, Nigel Rose of Lemon & Blizard. Civil engineers, Lemon & Blizard. Mechanical engineers, P. G. Pether Associates.

1 (opposite), general view in among three-storey blocks.

BUILDING ON ROCK



OFFICERS' MARRIED QUARTERS, MALTA

2

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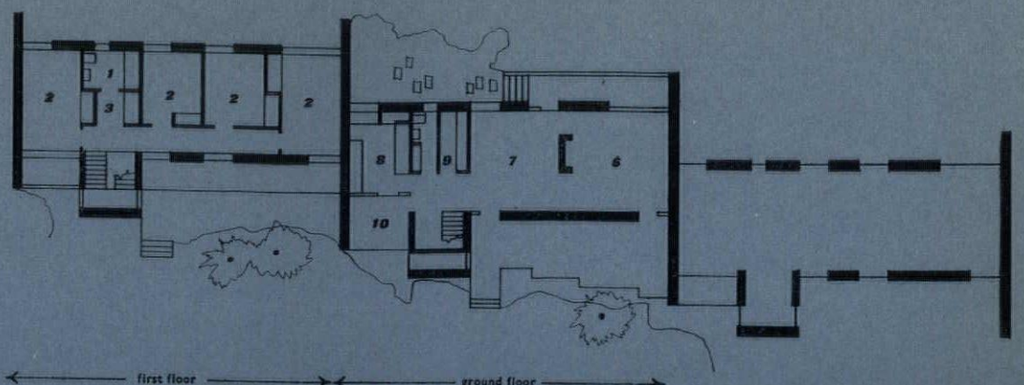
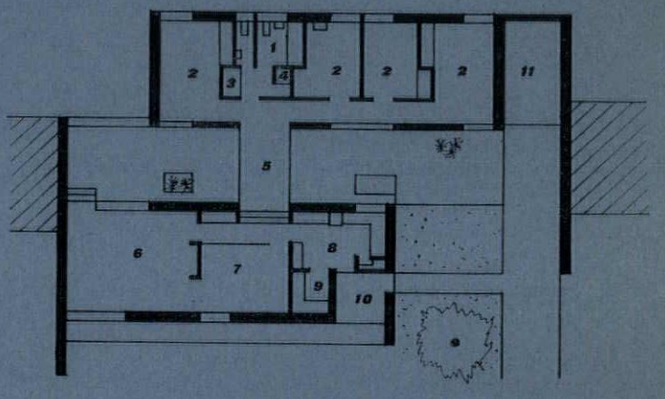
5

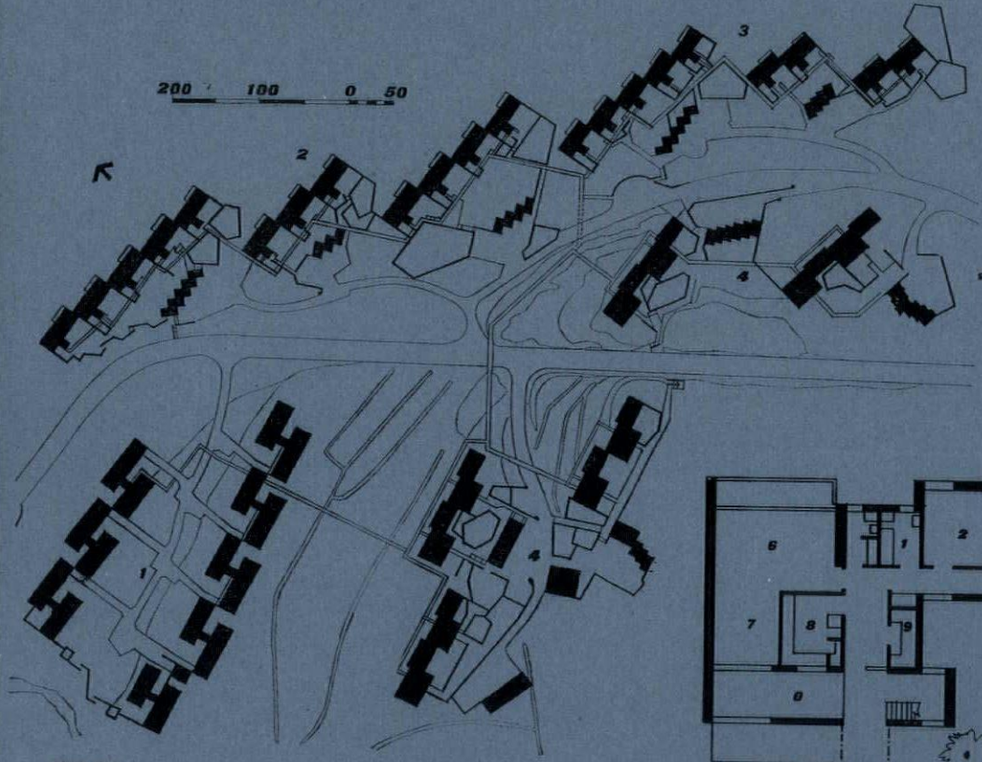
Opposite: 2, the housing seen from across one of the many small bays to the north of the site. 3, ground cover planting around the single storey housing, and 4, bushes planted within the bastion walling between two blocks. 5, the rough terrain on the lower part of the site behind the westernmost of the two-storey houses.



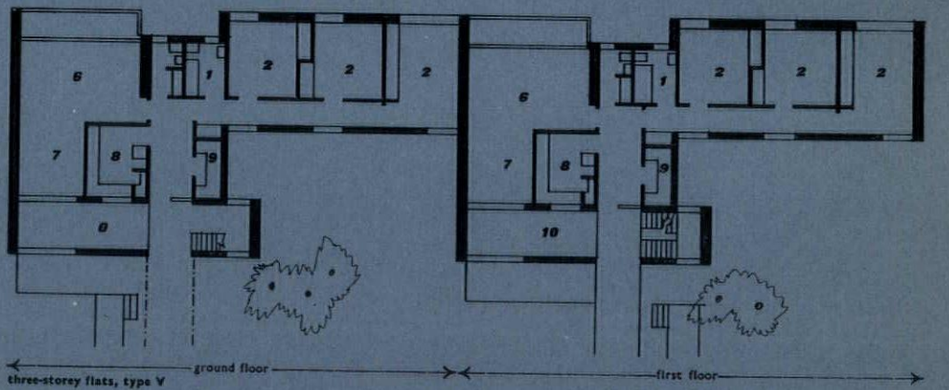
two-storey house, type IV.



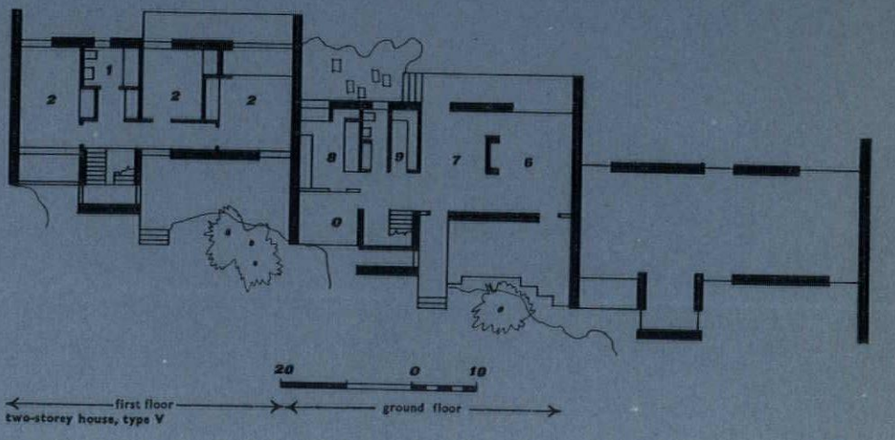
single-storey house, type IV.



block plan
key
1, single-storey house, type IV
2, two-storey house, type IV
3, two-storey house, type V
4, three-storey flats, type V



three-storey flats, type V



two-storey house, type V

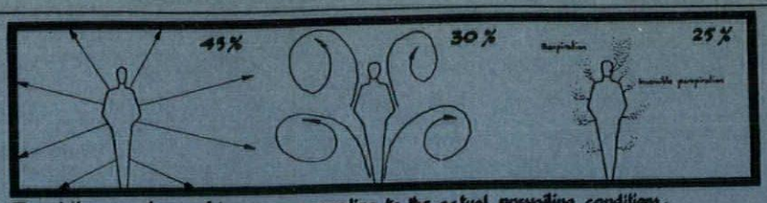
key to floor plans
1, bath room
2, bed room
3, linen space
4, shower
5, entrance hall
6, living room
7, dining room
8, kitchen
9, storage space
10, drying area
11, garage



Relaxed Man produces Heat at the rate of 400 BTU/hour, of which at 65°F, 100 BTU are required to maintain the Body at 98·4°F the remainder must be dissipated to prevent overheating.

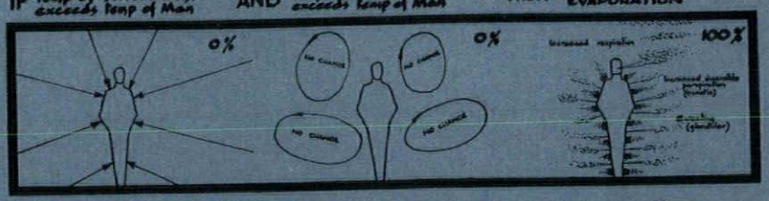
At 65°F in calm air Man dissipates heat as follows:

45% by Radiation, dependent on temp difference of Man & Surroundings.
30% by Convection, dependent on temp difference of Man & Air.
25% by Evaporation, dependent on vapour pressure difference of Air & saturated air at skin temp, and air velocity.



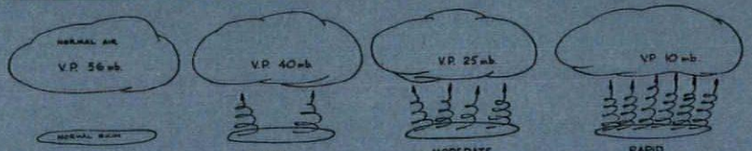
The relative percentages of loss vary according to the actual prevailing conditions.

IF Temp of surroundings exceeds Temp of Man AND Temp of air exceeds Temp of Man THEN all heat must be lost by EVAPORATION

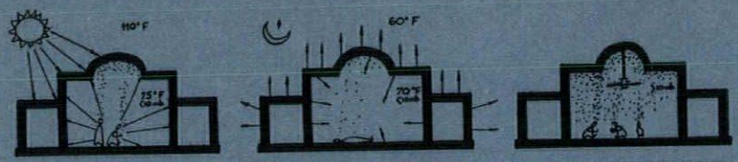


EVAPORATION causes cooling by using heat energy to convert moisture into water vapour. Sweating is the reaction by which more moisture is supplied to be evaporated, when extra cooling is required, and will not begin until evaporation by respiration & insensible perspiration become inadequate.

The rate of cooling is greater if the vapour pressure is low relative to 56 millibars, at which v.p. evaporation cannot take place from normal skin; and when greater volumes of air pass over the skin.

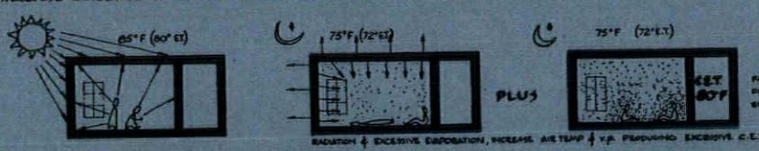


In Hot-dry zones, v.p. is usually under 10 mb, and diurnal temp ranges over 50°F, thus as air temp exceeds man, convection tends to add heat, and is therefore omitted in daytime. Man's heat is lost to his dense buildings by radiation, the heat is then dissipated at night when cooler. He is also producing water vapour, and so that he does not raise the humidity and decrease evaporation, the ceilings are increased in height, to enlarge the volume. When evaporation becomes difficult, fans are introduced to increase air-movement.



DUE TO THE READILY AVAILABLE STONE, & INFLUENCE FROM PHOENECIA & N.AFRICA, TRADITIONAL MALTESE BUILDING IS IN THE DENSE ENCLOSED CATEGORY ASSOCIATED WITH HOT-DRY ZONES.

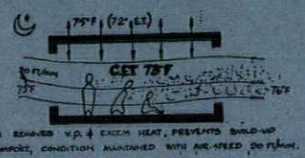
But, in MALTA the summer v.p. is about 25 mb, and the diurnal range of temp only 10°F, thus solar heat is never properly dissipated outside, and radiates inwards more than in a hot-dry zone. Man cannot lose heat by radiation, so must by convection & evaporation; this raises inside air temp & v.p., soon he feels discomfort, and sweating begins, thus the situation deteriorates further. Ceilings are raised and fans introduced to help evaporation.



UNCOMFORTABLE CONDITIONS ARE DUE MORE TO UNSUITABILITY OF BUILDING THAN CLIMATE

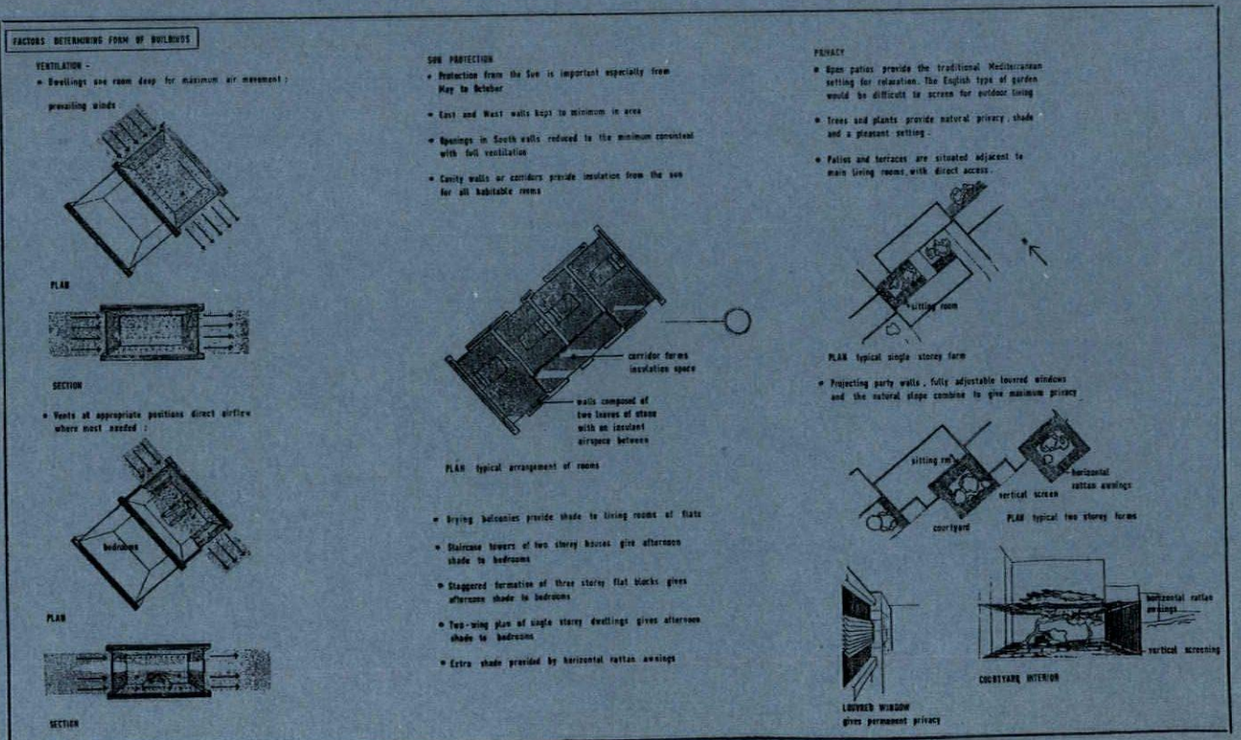
If full cross ventilation is introduced, there can be no build-up of water vapour and evaporation will remain moderate, air temp will be close to outside temp, producing an Effective Temp well below 75°F, sweating will not begin, fans will not be required

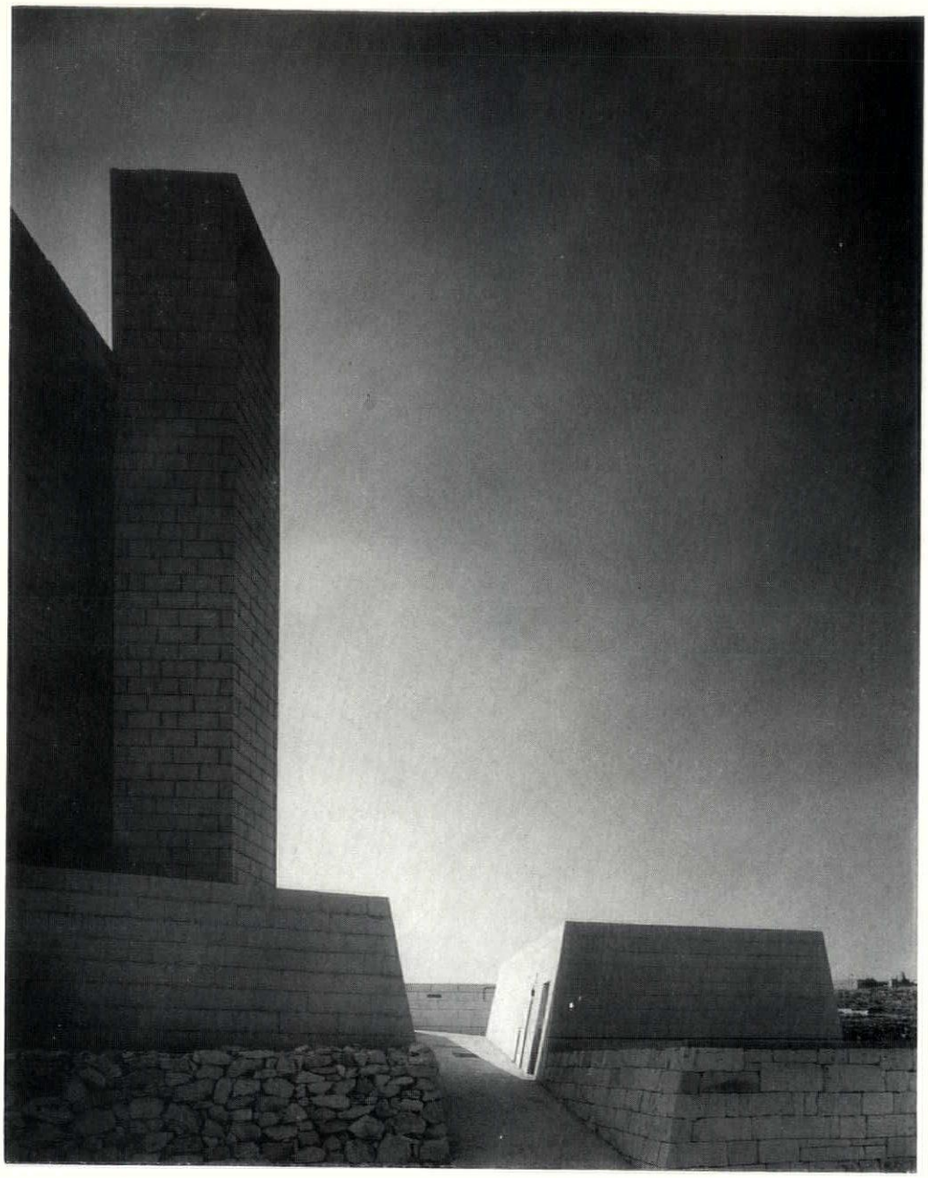
COMFORT CONDITIONS CAN BE MAINTAINED WITHOUT MECHANICAL AIDS



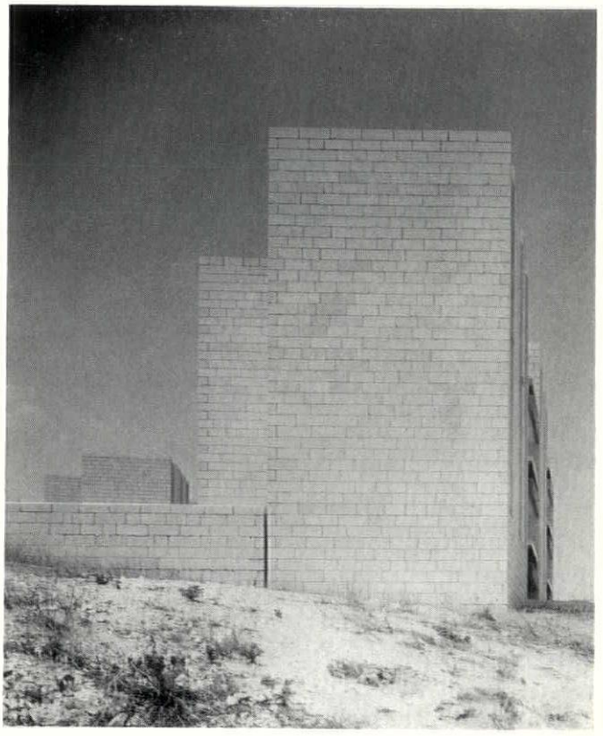
CROSS VENTILATION REMOVES V.P. & EXCESS HEAT, PREVENTS BUILD-UP LEADING TO DISCOMFORT, CONDITION MAINTAINED WITH AIR-SPEED 300 ft/min.

Above and right, diagrams and notes by the architects showing the factors involved in determining the form of the buildings. The rattan awnings—below right—were not in fact finally used.

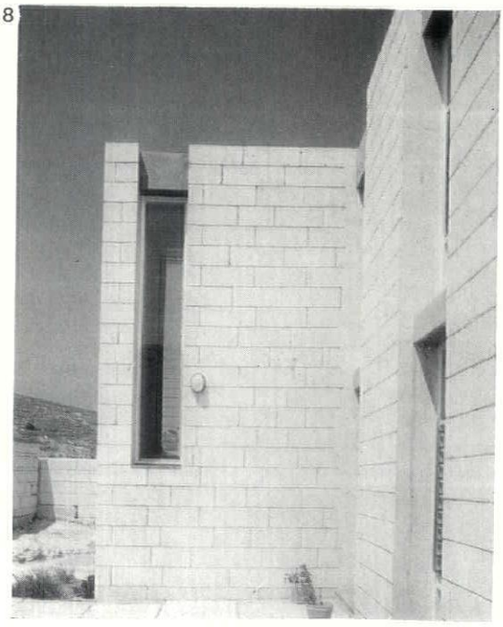


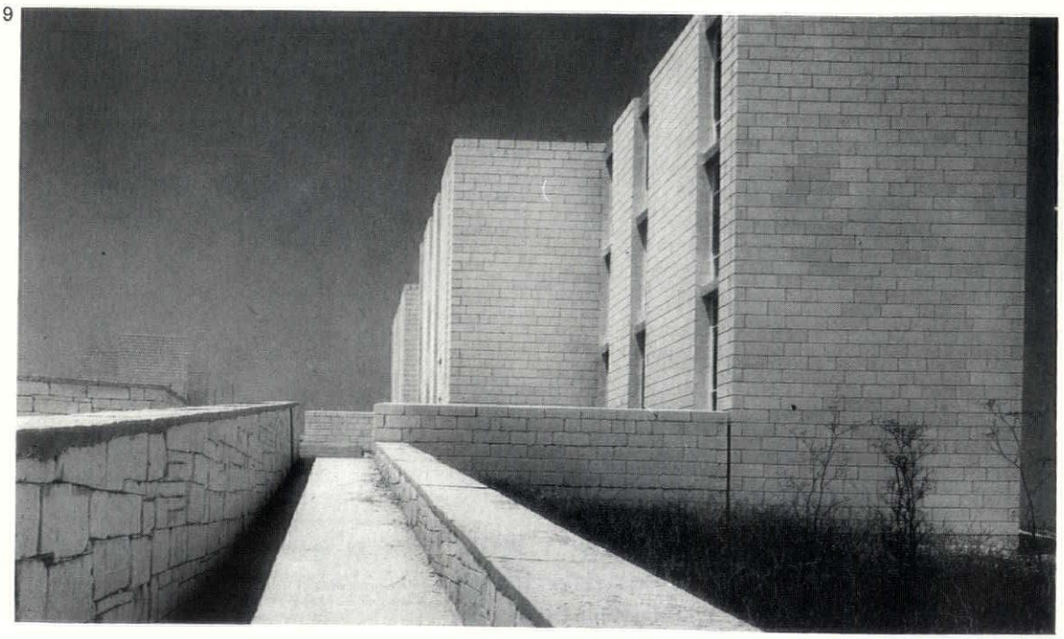


6 and 7, two views of the three-storey blocks, showing the surrounding walls and outbuildings. 8, the enclosed yard in front of a two-storey house. 9, three-storey block with pedestrian ramp running up from an access road.



OFFICERS' MARRIED QUARTERS, MALTA







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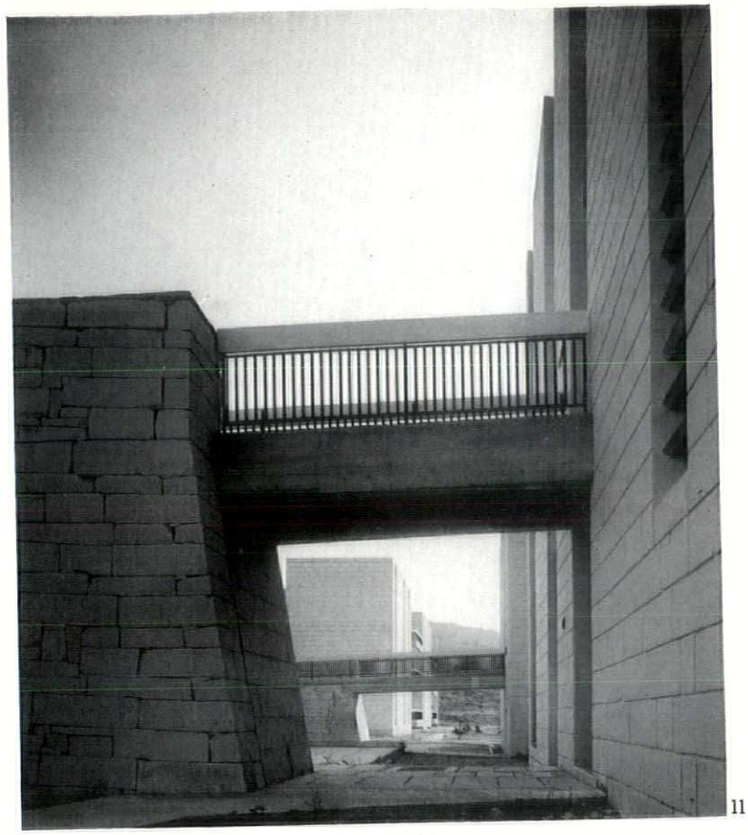
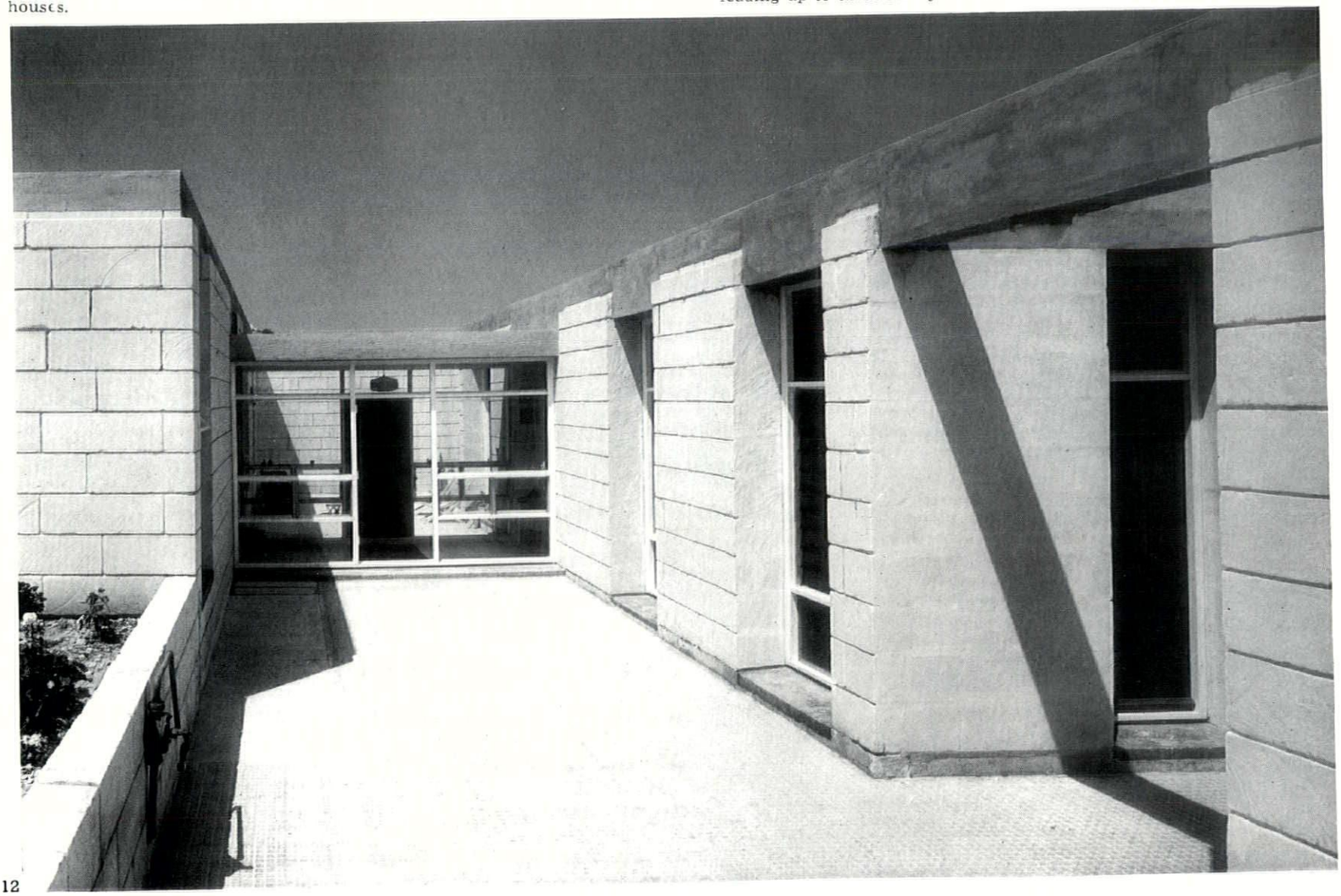


11

10 and 11, two views of the bridge entrances used on a three-storey block. 12, the patio and entrance to one of the single-storey houses.

Opposite: 13, gardens and dry-stone walling on the lower part of the site behind one-storey housing. 14, rough-cut pedestrian path leading up to three-storey blocks.



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14

OFFICERS' MARRIED QUARTERS, MALTA



Facing page: the approach to the new Royal College of Physicians building from St. Andrew's Place, with the lecture theatre on the right and the entrance to the main block beyond. The building is discussed by Robert Maxwell in the article below, and is described and illustrated on pages 272–280.

criticism

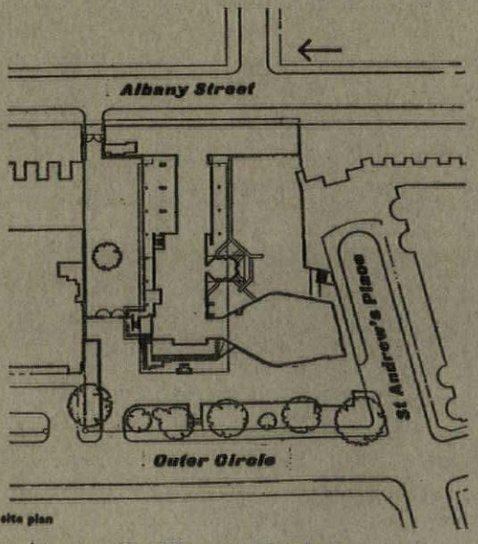
Robert Maxwell

Architects: Denys Lasdun and Partners

Royal College of Physicians, Regent's Park, London

Now Regent's Park, like Green Park, is overlooked at one point by a Lasdun building. It has an opaque, sculptural quality which gives us pause. Intrigued, perhaps baffled, we scan its blank walls, searching for a meaning.

To understand it we have to be instructed in the life and customs of the institution which uses it, and to whose requirements it was tailor-made. The Royal College of Physicians is a learned society, concerned both with the furthering of medical science and with the preservation and maintenance of professional standards. Many of its requirements are usual for a body of this kind—administrative and committee rooms, a working library, common rooms, and so on. But it also needed to house in the right conditions a very large collection of pictures and a



site plan

unique medical library of priceless volumes. More important still, there were certain ceremonial debates and a peculiar ritual of initiation which had to be catered for. In Denys Lasdun, the physicians were fortunate to secure an architect who could appreciate the power and fragility of their traditions, and who could provide the necessary tact and delicacy for the transfer of time-honoured customs into a new, functional environment. The surprising thing for us all, and perhaps no less for the physicians, is that they have got a modern building. The report is that, after some initial shock, they are now delighted with their new headquarters. It is convenient, to the rather demanding standards of medical men. It is unique, and that is an achievement for any professional body. From the architect's side, it is also gratifying to allow that here, at least, the one-off building was justified.

Lasdun is quite clear about this. Industrialized building is coming, and it will undoubtedly soon form the background material of our built environment. But there will continue to be a demand, possibly an increasing demand, for one-off buildings, buildings which are special in housing specific institutions with specific requirements of a formal or ceremonial nature. Many buildings of this kind are historical relics, but society is not going to abandon its human institutions as readily as all that: it will merely want to exchange draughts for air-conditioned comfort. The ceremonies will remain.

The important spaces, for the ceremonial life of this college, are the Library, the Hall and the Dining Room. These have been arranged in line, the Hall lying between the other two. The main floor space in both Library and Dining Room is at a high first floor level, but in both spaces higher galleries are important as overflows. The Hall, containing the main staircase, is also a picture gallery, and here the upper galleries are also connected across one side, while the other top level gives access to the reading room. The galleries are staggered outwards in section, and this gives the internal spaces their particular quality of release upwards, while on the outside it provides a hovering and uniform mass tying the building together.

The staircase leads down to the bottom level of the Hall, which is still, however, a full storey height above the ground. Facing us at the foot of the stairs is the Censor's Room, and it is to this that the staircase primarily connects. The staircase is indeed a processional way from the Censor's Room up to the main suite of reception rooms, and in particular, from the Censor's Room to the Library. The staircase is the core of the building. It turns squarely in four short equal flights, and this is not only kind to breathless Presidents but gives them, at each pulpit-like landing, the opportunity to survey the gathering, or even to address it; it rises no further than the main floor, where it points straight at the Library entrance. The President proceeds to the centre of a long table opposite the door, the mace is placed in front of him, the doors are closed and the formal proceedings begin. Late arrivals may participate only from the gallery, and this is why the staircase connecting to the upper level is tucked in to one side of the entrances.

The Censor's Room itself is the most idiosyncratic element in the scheme of things. It is inserted under the overhang of the Hall's south gallery, and projects on the outside sufficiently to dominate the south elevation to the Fellows' garden. Its scale has been carefully amplified so that it is felt as important, however small. Inside it is lined with the same classical columns and panelling which it has always had, the whole transferred complete to the new shell, almost a period piece. However, to ventilate the period and reveal it as a quotation, the architect has cunningly glazed the four spaces between corner columns: the effect is witty, and not disruptive. The doors connecting the Censor's Room to the staircase hall are not axial, for it is a peculiarity of the initiation ceremony that a successful candidate must leave the room by a different door from the one by which he enters. In between he has

been grilled *viva voce* by a most eminent body, and he must be in some sense a changed man. Clearly, for both aspiring and successful Fellows, the Censor's Room is a momentous incident in the life of the building, and its key position overhanging the Fellows' garden is understandable.

In a similar way, when we understand the use of the Library, we can appreciate why it has been brought forward to dominate the entrance front of the building. It offers a blank, impending mass, mysteriously projecting in two tiers, apparently unsupported except for three rather slender props at the centre, which form a group like mourning guardsmen round the foundation stone, laid flush with the ground. If the building is imposing, it is because the impervious mass of the Library imposes a sense of its function over the point of entrance; it is this monumental blankness which dominates also in the more distant views of the building from the park: white and immaculate in its mosaic linen, it asserts the power of its priesthood—the first priesthood to adopt the methods of science rather than magic.

If the priestly role of the physicians be doubted, enter the Library. Simple souls, hearing that it occupied the prime frontage overlooking the sweep of Crown lawns, have asked why it has no windows. The answer, within, is quite clear. The proceedings of the College are a more important matter than the view, and the Library is a sanctum, not a place of work. The walls are lined with sober wire-grilled bookcases, containing a unique collection of rare medical volumes in leather binding. In panels mounted on the upper west wall are a remarkable series of human fragments, complete nervous systems or blood-vessels, dissected, arranged and varnished. In this chamber of wonders, the technology of learned debate is discreetly hidden away. There is a sound reinforcement system with column speakers in the walls. There is a closed-circuit television relaying dissections or demonstrations from the lecture room on the ground floor. The proceedings of the College are privileged, but a visit to this library is sufficient to make clear their peculiar character and uniqueness.

The Library forms the apex of the building. Inwards lies the staircase hall leading down to the Censor's Room. Beyond is the suite of Dining Rooms, divided by a power-operated screen and occupying the whole width of the building. At the upper level is an overflow gallery, with separate service connection to the kitchen, and on the other side the reading room, which is the working library. All these spaces are enclosed in walls dressed in the smooth white mosaic. The wall space is preponderant, but there are windows—narrow whole-height slits cunningly arranged in a rhythm which allows small symmetries to individual rooms while appearing random and continuous on the outside. The relatively small window area is supplemented by a regular series of square toplights. The effect is hermetic, yet individuals working in these rooms can undoubtedly see out, feel sun and register the modulation of light from passing clouds. Artificial light in the same recesses insures regular working conditions. But on the whole all these rooms are protected from the outside, are not felt as ordinary spaces. They have the duties of privilege, for they belong to the upper realm of the white mosaic.

Below are other rooms: rooms for the treasurer and the rest of the administrative hierarchy. These rooms have large windows to the south. The two council rooms, less frequently used, have similar windows to the north. Below again are the common rooms, a lecture room equipped for teaching and demonstrations, and the Fellows' quiet room appropriately tucked in under the Censor's Room—relaxation after achievement. Behind is the five-storey block on Albany Street, containing kitchen and services, studies and offices and one or two special flats, and the bookstack.

There remains to consider the lecture theatre. This is used for lectures, the discussion of research and learned papers, and conferences. It frequently has to accommodate a public audience, and it may also be let for suitable public use. These more open requirements have suggested its position off to one side of the entrance. The bulk of this large space is depressed into the ground. Externally the volume is further reduced by the use of canted walls leaning inwards like earth banks, and incidentally adapting the shape of the building to the irregular site boundary to the south. The squat bulk of the lecture theatre, hunched into the earth as if to resist blast, contributes further to the expressive blankness of the main masses. Between Library and lecture theatre, the entrance hall with its heated stone floor has an irresistible appeal, especially at night, when the soft lighting throws up even more clearly the sculptural relationship of the blind masses. But even at night the sensuous contrast between the gleaming white mosaic and the opaque black brick is evident. It is not the simple solid-and-void of a single concrete material, such as we see at La Tourette, which makes a similar use of expressive blankness and oversailing cellular masses. Here the differences of material reflect a more sophisticated social situation, containing different degrees of privilege and importance. To understand the meaning of this we have to consider further the symbolic use of materials in relation to the organization of the building volumes.

It is at this point that we need to consult the architect, if we are not to risk projecting meanings where none exist. And we find, in fact, that his intention was indeed to use materials in a symbolic way. He was led to this through consideration of the problem of growth and change in buildings, and particularly in institutional buildings which are by definition required to preserve certain things against change, while allowing other things to change and grow in response to outside conditions. In this case, the physicians were very clear that there were certain fundamental needs which they intended to preserve, and other less fundamental needs which could be expected to change. The architect has responded by grouping the fundamental things into a mosaic heaven, and relegating the remainder into a sort of earthly purgatory of blue bricks. The primary volumes, clad in mosaic and lined with marble or golden carpet, have been given the finality and the dignity of completed and unchanging essences, while the secondary areas, in brick, perform the role of a background chorus, a ground against which the essential elements can be defined.

One can see the reasons for Lasdun's decision, and even sympathize with it, but it is hard to be convinced. To begin with, it is not too easy to agree that the differences between the two kinds of accommodation are really so significant. Is the reading room, in mosaic, really in a different realm from the council rooms, in brick? We may be forgiven for doubting the meaningful separation of the realms of tradition and transition since we see them generally overlapping and confused, and not least in the subjective experience of every individual human animal. If they are at least symbolically separable, where in practice do we draw the line? For instance, the half-flight staircase in the entrance hall, like the grand staircase, is clad in marble on both the up and the down side, although it connects the neutral entrance hall with both the symbolic realms. And we are disconcerted to find that the public lecture theatre, uncompromisingly contained by earthy bricks, has a superhuman throne for the President and an outsize table for his mace. This difficulty of establishing a consistent line of division between areas of different finishes is a familiar problem for architects who cannot simply afford to put marble everywhere.

However, if the realms of traditional and transitory can be located and consistently separated, we still have to ask, are we being provided with the right clues? Are the materials right for conveying the difference in meaning? This Baggeridge blue rustic facing, for instance, is a pretty solid material to use as an expression of the transient realm. Although it generally consists of a single brick skin, it is in many places given greater weight by the use of chamfered splays and special plinth bricks, which accentuate the modelling. The telephonist looks out to the entrance hall through a Baggeridge slit which is threateningly medieval. The very trouble which has been taken to build the raking and leaning slopes of the outer shell to the

lecture theatre in these bricks contributes to our sense of doom and committal. We find it hard to believe, with Lasdun, that one day the lecture theatre may well be replaced by a tower of offices. Factually this is clearly so, but we are dealing here with delicate psychological prompting, and the mass of the lecture theatre seems as permanent as a tomb.

And not only are the bricks altogether too permanent, the mosaic is not permanent enough. It is meant perhaps to identify with the gravity of stone temple-fronts. In fact it imparts to the main masses a lightness and a slickness which are painterly rather than sculptural in effect. This is possibly because there is a third realm, identified by a third material which intervenes to make its own peculiar demands: this is the concrete, the basic material from which the building is formed and by which it stands up. Concrete as an exposed finish is reserved for structural columns and soffits, or as enclosure to service elements like plant rooms or escape stairs. The sense of the reinforced concrete behind the mosaic walls, and the knowledge that it is the concrete which is doing the actual work of floating the mass, draws our respect away from the mosaic, which we begin to register as a flimsy covering, an outer garment of druidic linen.

It might be objected that a dressing of white is a sensible way of relating the building visually to the cream plaster finish of the adjoining Nash terraces. Indeed, I find no difficulty in accepting the external relationship between the College and its immediate environment. In particular, the placing of the main mass end-on to the park has created a most successful townscape space along with the parallel terrace to the south, a domestic backwater without any loss of power. But the implications of a delicate mosaic applied to resilient concrete in chosen areas is quite different from the situation where thick and moulded plaster is applied to flimsy brickwork all over. The differentiation of material gives the building the distracting quality of a two-tone article, and though all the solid parts modulate the external spaces, the change in materials suggests something of an attention to costume.

There is, indeed, a theatrical quality in this architecture, and this is most clearly visible during the main approach from Park Square East. The view of the building as one draws near is diagonal, with the hunched mass of the lecture theatre gradually filling the foreground. Behind it sails the suave, two-tiered mass of the main Library block, while a menacing military outcrop of plant rooms punctuates the skyline. All these elements are idiosyncratic, individual and self-contained. They do not rush to explain each other, and their combined effect is enigmatic.

A quite different effect is experienced from the Fellows' garden, looking into the south side of the main block. Here we are comfortably protected by the walls of the lecture theatre, which are equated with garden walls in the same brick. The building now clearly shows itself as based against the eastern block to Albany Street. From the corner junction the structural columns march out with a grave and powerful rhythm, until the projection of the Censor's Room interrupts the flow. The proportion of these few regular bays is masterly, and the clarity of the structure a consolation. How the oversailing mass is supported out over the Censor's Room and lecture theatre is obscure. On inspecting the plan, we find that the two columns enclosing the bay occupied by the Censor's Room have been simply moved indoors, where they frame and underline the connection between it and the staircase. However, the absence of other edge columns to complete the structural rhythm outside is felt rather as a lack of candour. We know that there must be a great deal of structural strength which is not exposed. The difficulty of cantilevering both the side and front overhangs in a comparatively narrow building has required some massive concentrations of both tensile and compressive steel. Some of this strength has been built into the narrow service bay which separates the Library from the rest of the building. Some is carried in the blank side walls of the Library itself. With all this effort, the main cantilever still requires to be propped at the centre of the entrance front. Possibly it was to avoid a too massive support at this point that the props have been separated into a group of three. Somehow the structural engineer has answered the architect's problems, and the architect has exploited whatever measures, after all, had to be. The result is impressive, but mannered. We can appreciate the result of a more regular structure on the north elevation, where the forward march of the large bays is not interrupted by the cesura of the Censor's Room: the effect seems to this critic immediately clearer and grander. But the architect has evidently thought of this side as a utility area—it faces on to the staff car park and service yard.

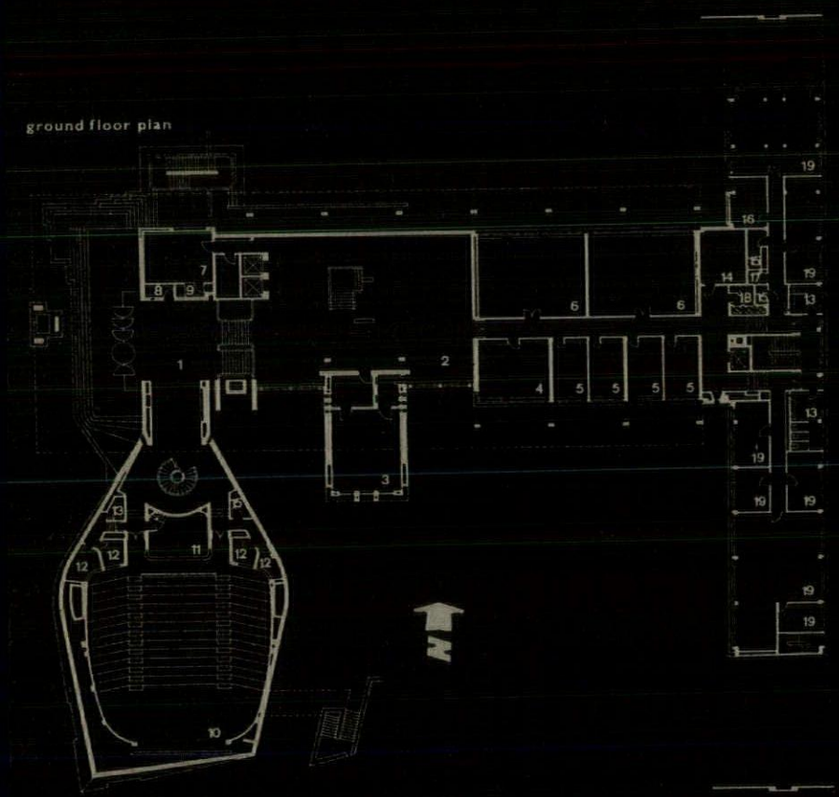
In a lecture to students last year, Lasdun was disarmingly candid about his attitude to structure and services. They are to be servants to the architecture, and in particular, services engineers are to be servants to the architect. The requirements for air-conditioning in the Library were not agreed until late in the design process, and resulted in additional plant room space being enclosed on the skyline. In this building the service elements are forthrightly exposed, as is usual in our utility age; but whereas such elements may slip into place as essential parts of a utility building, here they appear as an intrusion, or extrusion, of the hidden technology. Yet they are obviously used for emotive quality, as incidents. The forward plant room, for instance, has been modelled towards the west into two semi-cylindrical rolls (one encases a spiral staircase; the other, enclosing a duct, is the same shape for company). The real purport of these shapes is to remind one gently of the Regency curves in the Nash terraces. In the same way the low pyramidal roof of the lecture theatre may suggest the triangular lift of a classical pediment; and the smooth whiteness of the mosaic echoes not so much renaissance stone as Regency plaster.

Lasdun's skill in manipulating allusion and in exploiting *situations trouvées* is enviable, but he does perhaps cheat in allowing himself so many reasons for doing things. For one who disclaims formal ties and who claims, as I have heard him do, that the architect's problem is solved in the belly, he has an unusually elaborate superstructure of rationalization. We have to accept his statement that in this building he set out to reconcile universal and particular, to combine the long-term institutional needs in tradition and ceremony with the short-term requirements of every day. He has clearly fought with courage and discernment to extract the important things from his brief and give them a worthy embodiment, but in doing this he has necessarily and instinctively made use of the pre-existing formal vocabulary which he, as a designer, has constructed out of his own sensibility and tradition. In this process, all the parts of his building, whether traditional or transitory, have been determined with the same formal exactitude. It is solid and monumental in its nature, and yet dreamlike and evocative in its imagery.

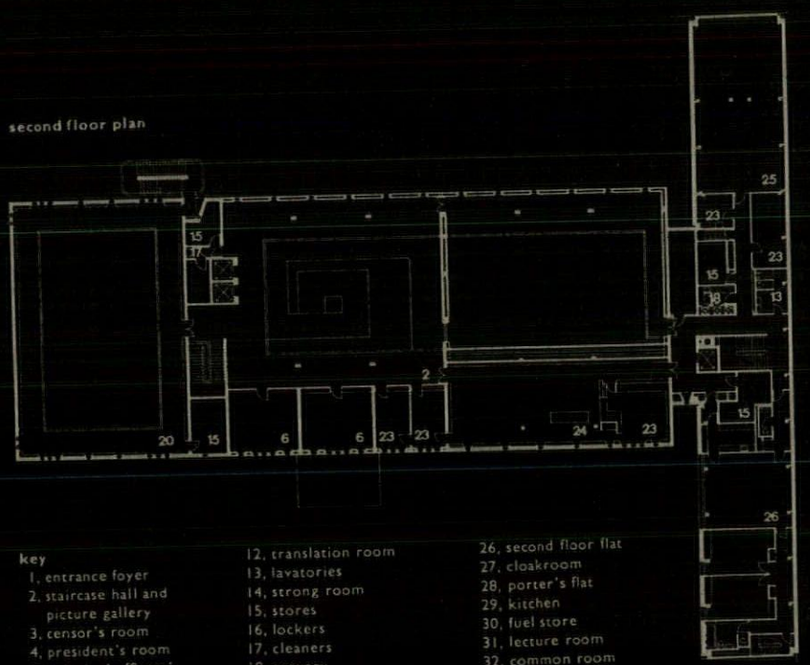
Lasdun is a very individual designer, not one who can be pigeon-holed, and one who would fiercely resent being pigeon-holed. His external vocabulary is clearly derived from Le Corbusier, via Lubetkin. But the personal and romantic element in his work remains imponderable. He is one of the meagre handful of English architects whose work has not only a pedigree, but a potential for the future. Lasdun himself has on television looked beyond Corbusier and the formal tradition towards a more flexible approach to the social problems of clients and users. He is proud of the intricate and dedicated process through which he has analysed his clients' needs and agreed a working plan, using not coloured perspectives, but a skeletal model of the circulation. He has an impassioned urge to seek out the essentials and clothe them in high architecture, and he has the rare skill of being able to create a pattern of meaningful relationships combining the psychology of use with the psychology of form. English architecture needs this contribution. But in architecture, less is more, and the rationale can be betrayed by excess of sensuous charm.

DOCTORS

ground floor plan



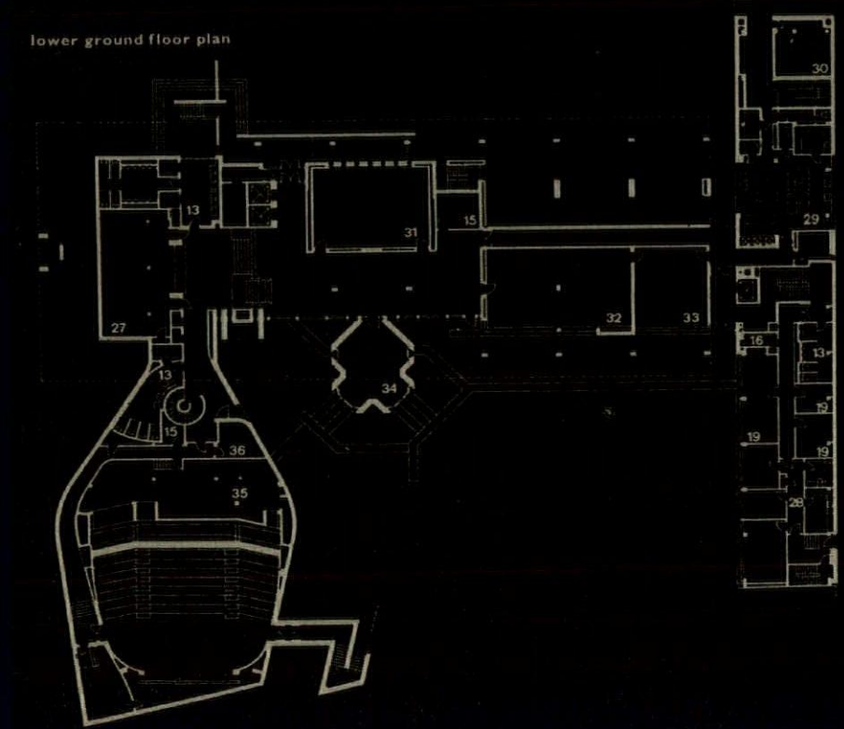
second floor plan



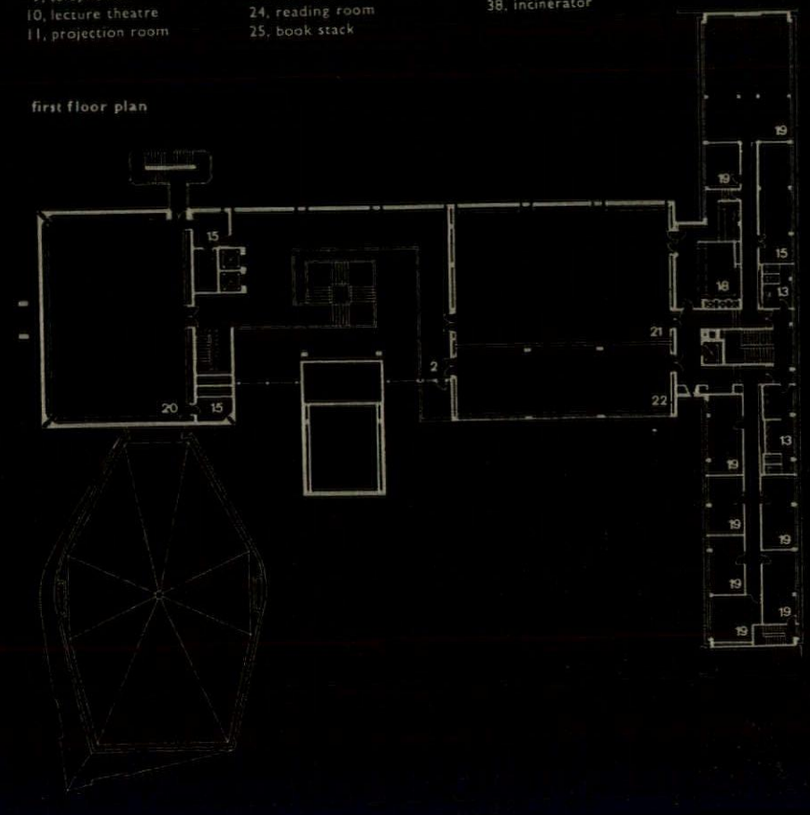
key

1, entrance foyer
2, staircase hall and picture gallery
3, censor's room
4, president's room
5, principal officers' room
6, committee room
7, membership office
8, porter
9, telephonist
10, lecture theatre
11, projection room
12, translation room
13, lavatories
14, strong room
15, stores
16, lockers
17, cleaners
18, servery
19, administrative offices
20, library
21, dining room
22, long room
23, library offices
24, reading room
25, book stack
26, second floor flat
27, cloakroom
28, porter's flat
29, kitchen
30, fuel store
31, lecture room
32, common room
33, staff dining room
34, fellows' sitting room
35, plant rooms
36, pabx
37, wine cellar
38, incinerator

lower ground floor plan



first floor plan

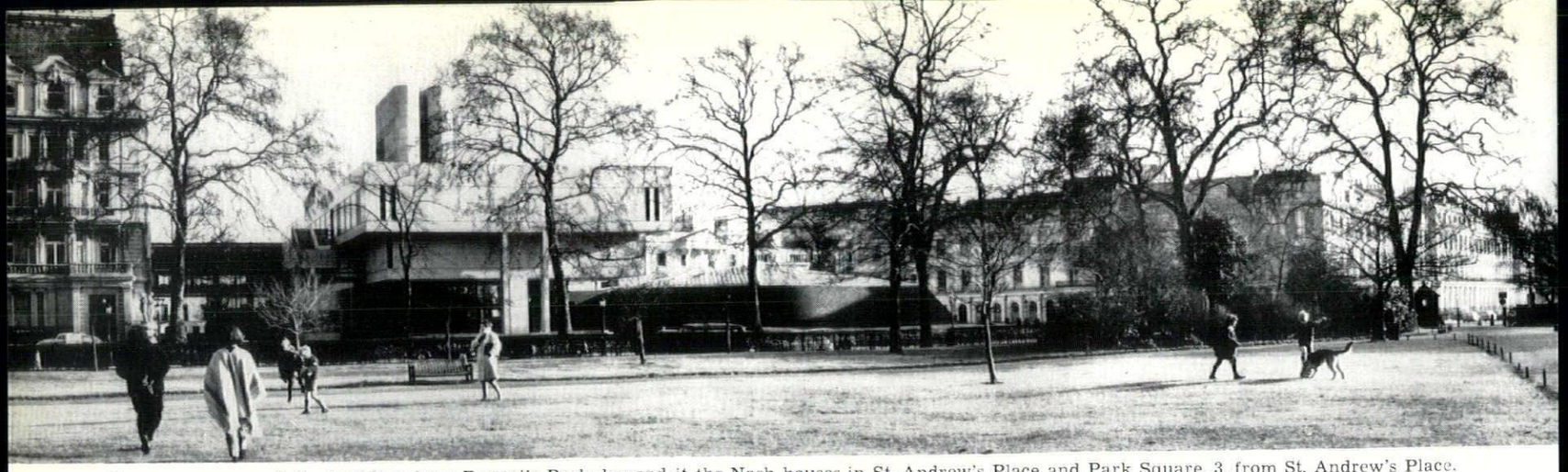


HEADQUARTERS



1, from the north-west; on the right the two-storey library with its oversailing gallery level and the twin piers marking the main entrance, which faces on to Regent's Park; on the left the escape stairs leading down to the service courtyard.

ROYAL COLLEGE OF PHYSICIANS, LONDON | *architects* DENYS LASDUN AND PARTNERS



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2, the building from Regent's Park; beyond it the Nash houses in St. Andrew's Place and Park Square. 3, from St. Andrew's Place.

The building replaces the previous College building in Trafalgar Square. It occupies the site of Someries House, a building by Nash that had been much altered as well as damaged in the war and that the Gorell Report on the Regent's Park Terraces (1947) had listed among those that need not be preserved. Alongside the site is St. Andrew's Place, also by Nash. The entrance to the College faces the park and leads, through a foyer, to a central staircase hall rising the full height of the building. The main rooms are on the first floor. Over the foyer is the two-storey library, also used for meetings by Fellows of the College. It accommodates 400. On the opposite side of the staircase is the dining-room, seating 200, which has a reception room alongside it overlooking St. Andrew's Place. The two rooms are separated by a 60ft. long partition, which can be raised hydraulically to create one room the full width of the building. At the foot of the main staircase—also facing south and projecting over a garden and looking towards

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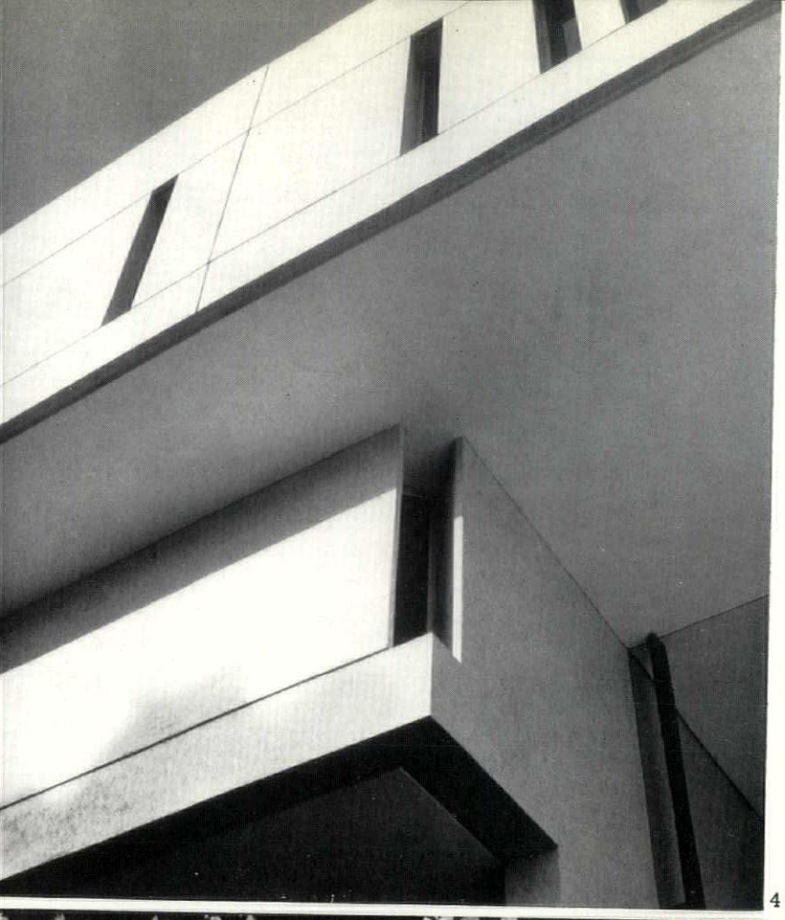

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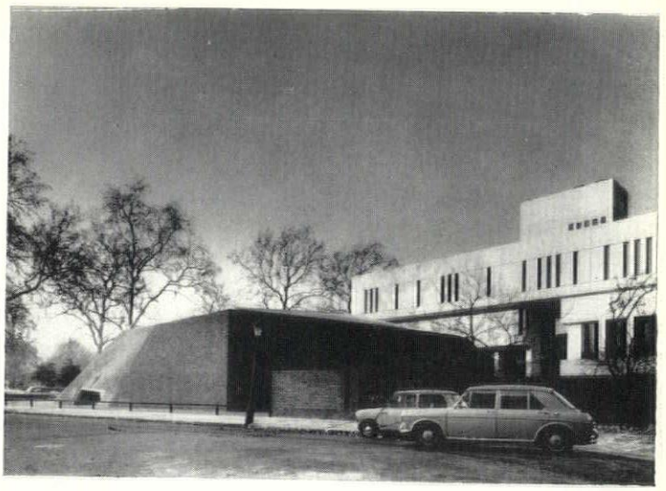

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ROYAL COLLEGE OF PHYSICIANS, LONDON

4, close-up of part of the south facade (gallery of library, library store and stair-hall window) showing handling of wall surfaces and openings. The walls are faced in white mosaic. 5, looking into the main entrance from the west (park) side. 6, looking towards the park from a high level, along the south facade. The projecting bay is the Censor's Room. Beneath is a Fellows' sitting room opening on to a garden. 7, from the south-east, with the brick-walled lecture-theatre on the left.



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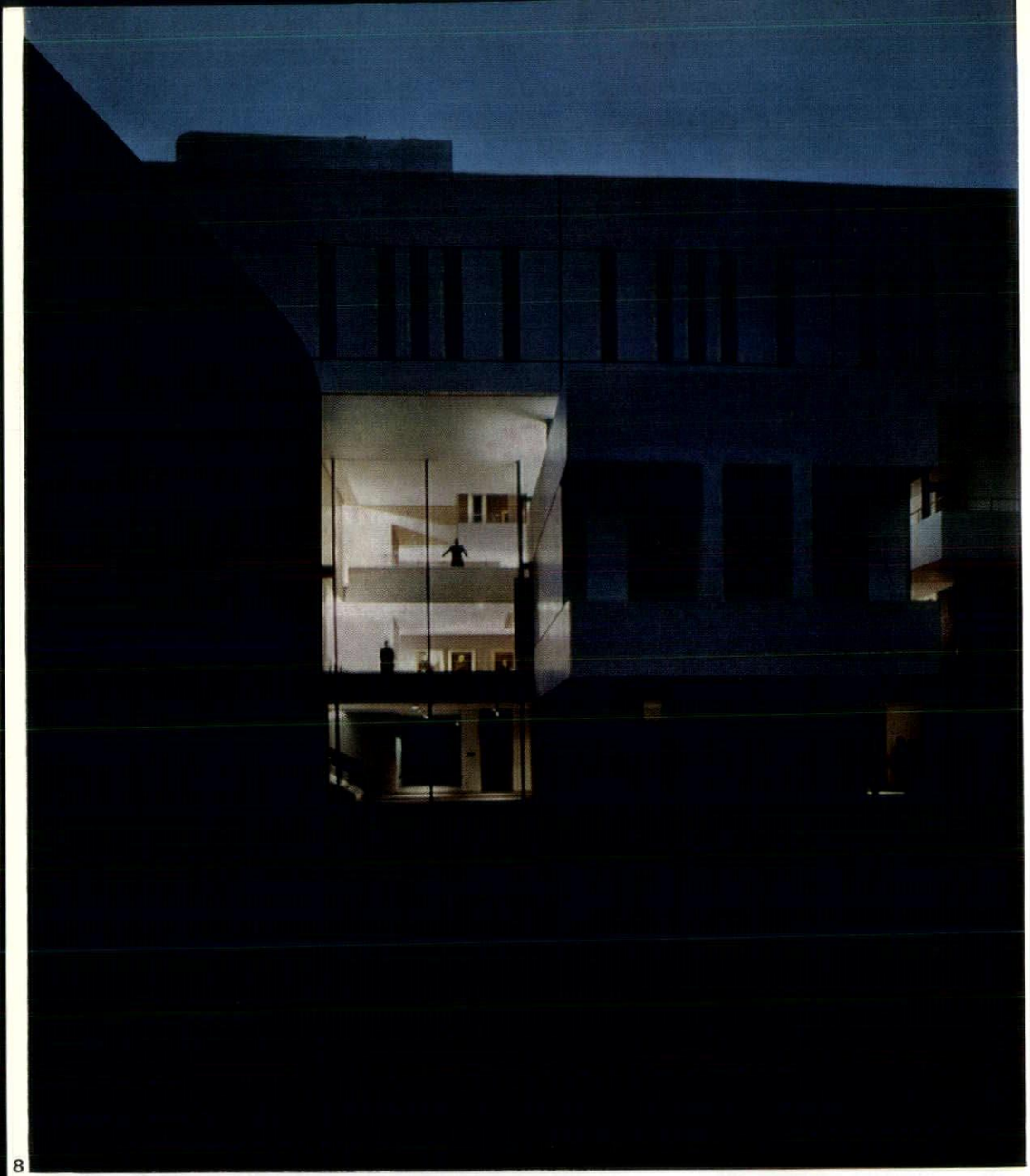

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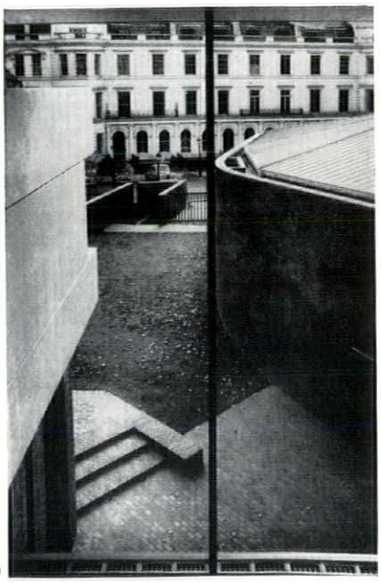
8, a night view of part of the south facade (lecture-theatre on left; window of stair-hall; Censor's Room) which brings out the close integration between the inside and outside of the building. 9, a closer view from the same direction. 10, looking towards St. Andrew's Place from the upper stair-hall window, with the Censor's Room on the left and the lecture-theatre roof on the right.



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ROYAL COLLEGE OF PHYSICIANS, LONDON

11 (facing page), inside the stair-hall, looking out through the south facade. 12, the stair-hall looking west towards the main entrance; on the right, the staircase and surrounding galleries.

St. Andrew's Place—is the Censor's Room, traditionally the heart of the College, which has been furnished (at the desire of the College) with the seventeenth-century panelling from the Censor's Room in the previous building in Trafalgar Square. The panelling was originally part of a still earlier building in Warwick Lane, designed for the College by Robert Hooke after the Great Fire of London.

The lower part of the central block contains rooms for the principal officers, committee rooms, a small lecture room (seating 50 people) and, opening on to the garden, common rooms for Members and Fellows. The kitchens and administrative and library offices are in a wing at right-angles to the main axis of the building with a frontage on Albany Street.

Projecting southwards from the main entrance foyer, and therefore flanking the entrance drive, is a low block containing a lecture hall seating 300. It is equipped with a simultaneous translation system and closed-circuit colour television and forms a self-contained unit together with its cloakroom and lecturer's accommodation. It can therefore be used independently of the main building.

The main areas of the building are air conditioned.



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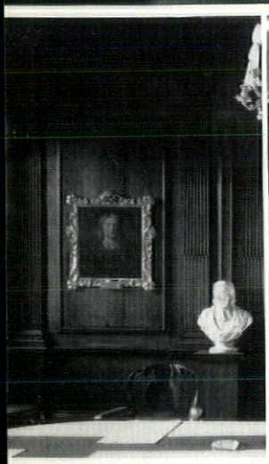

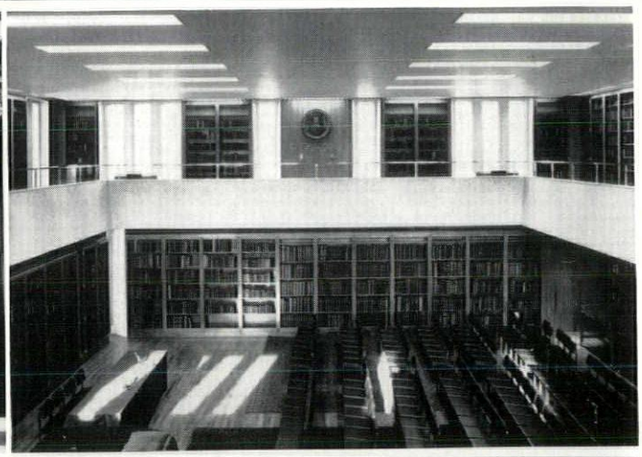

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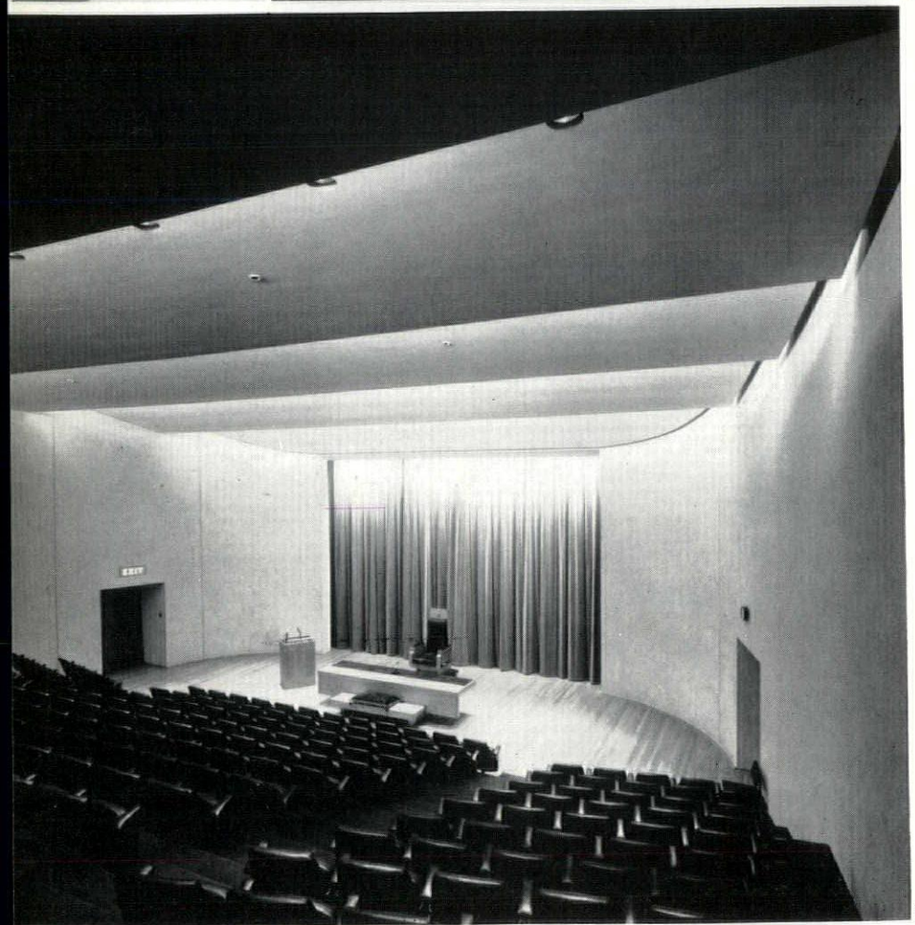

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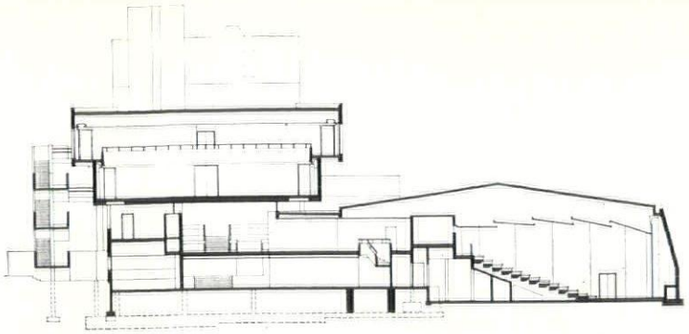


cross section

ROYAL COLLEGE OF PHYSICIANS, LONDON

The plant for the library is run continuously. Other rooms have separate plants to allow for their intermittent use. Other parts of the building have floor and ceiling heating panels. The structure is mainly reinforced concrete. The walls of the library are *in situ* prestressed concrete and its roof precast prestressed concrete units. It is supported only on a central group of free-standing columns and an internal cross wall. The main roof is precast concrete slabs on steel castellated beams spanning across three rows of columns. The second floor external walls are hung from the cantilevered ends of the roof-beams to balance the loading on the beams and relieve the stress in the cantilevered floor-slab below. The lecture-hall roof is a steel pyramidal space frame.

The bricks used are Baggeridge blue rustic facing bricks and blue paving bricks. Mosaic facing is porcelain mosaic from Candiolo, near Turin. The marble used in the central staircase hall and foyer is white Sicilian from Tuscany. Metals used are polished manganese bronze, silver and black anodized aluminium and black cellulose steel. Timbers are muninga from East Africa (in the main block) and Tasmanian oak in the lecture hall.

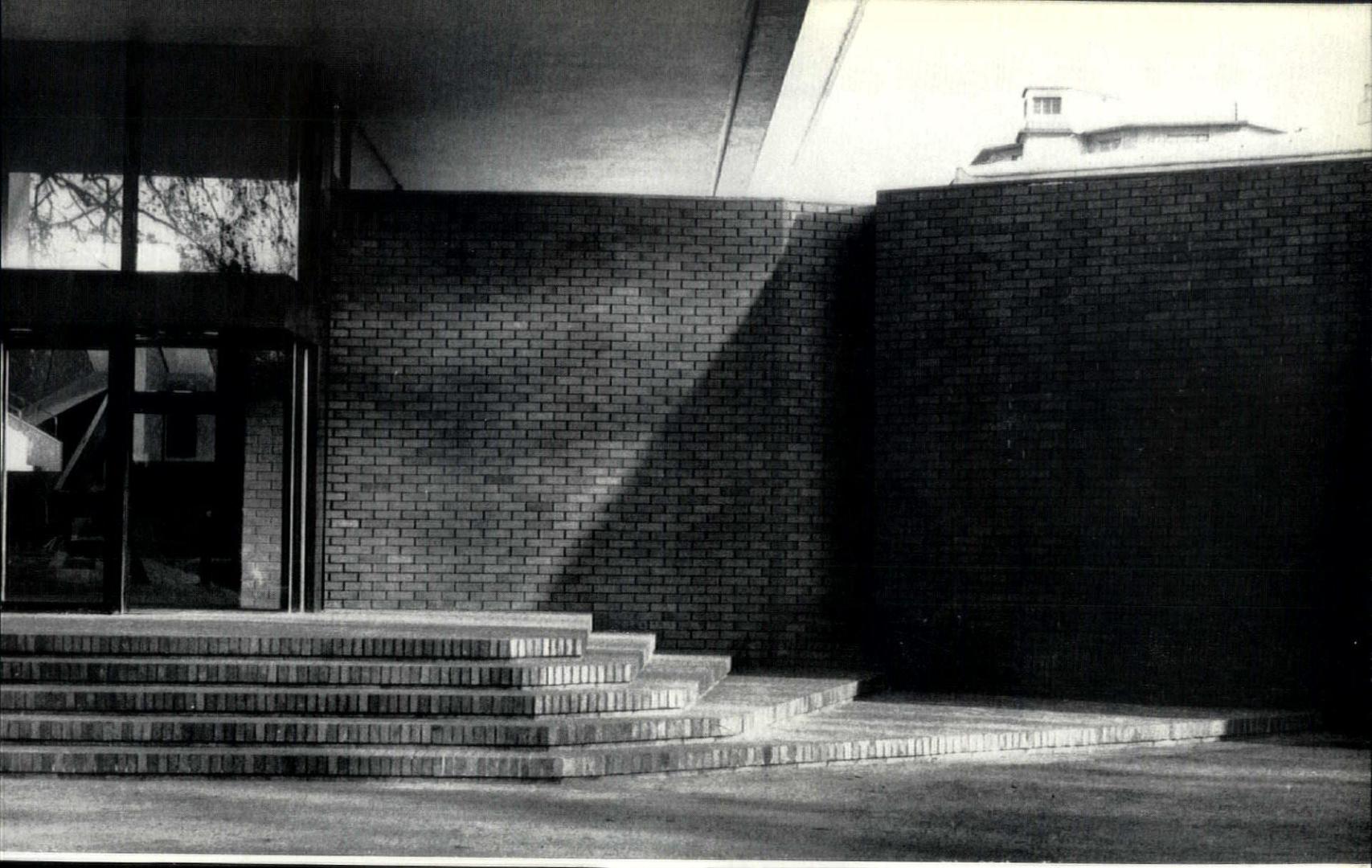
Partner in charge, Peter Softley. Assistant architects, Malcolm Minjoodt, Donald Ball.

Structural engineers, Ove Arup & Partners. Quantity surveyors, Widnell & Trollope.

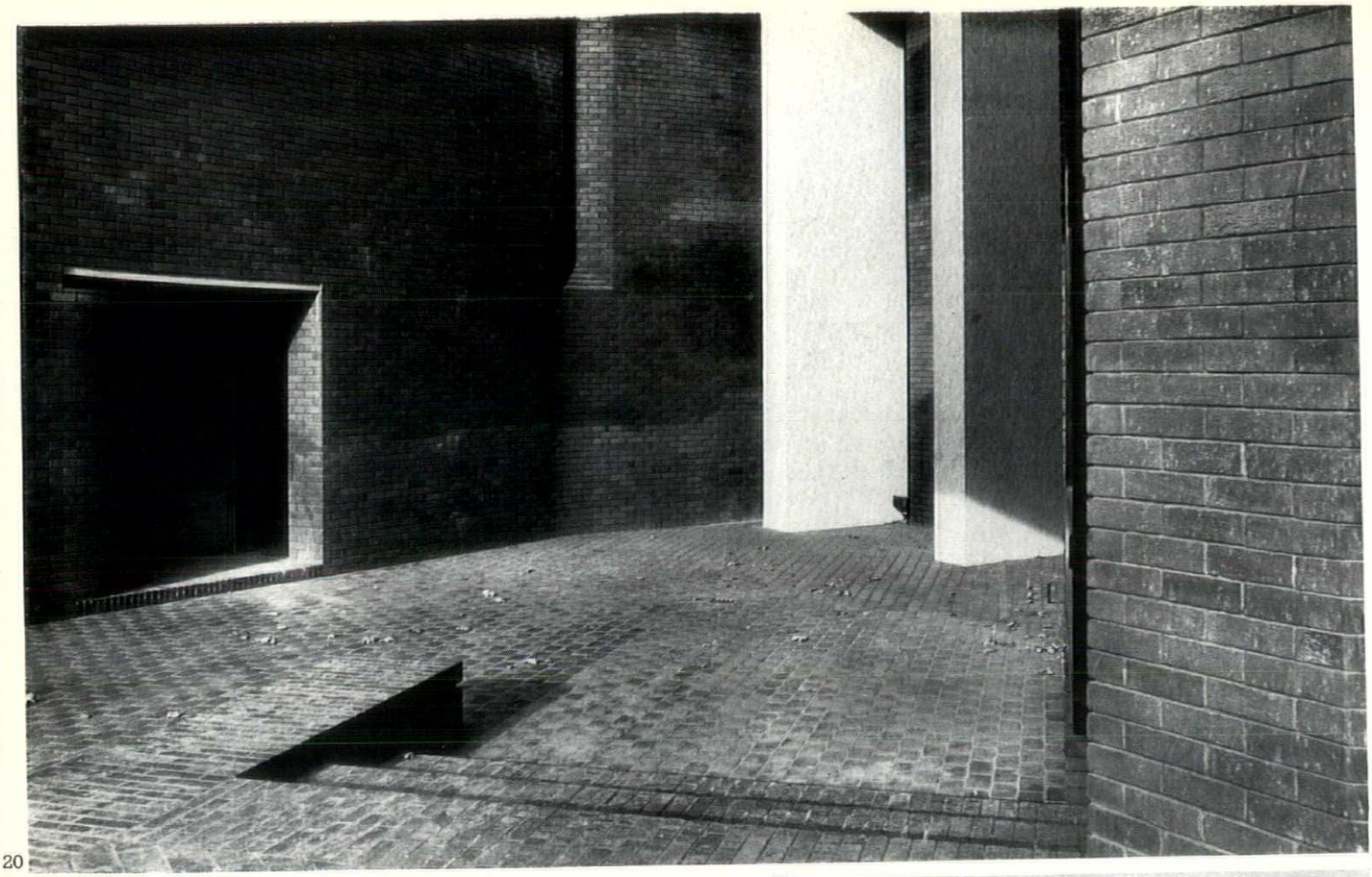


17

13, inside the entrance, taken from the foyer to the lecture-theatre; on the left, the entrance doors; on the right, the steps leading up to the main stair-hall. 14, a corner of the Censor's Room, designed to contain seventeenth-century panelling from an earlier College building. 15, the two-storey library over the entrance hall. 16, the lecture-theatre, looking towards the stage. 17, the Albany Street facade of the administrative wing. 18 (facing page), the steps outside the main entrance; on the right, the lecture-theatre wall. 19, looking from the main entrance towards St. Andrew's Place, with the lecture-theatre on the left and Regent's Park on the right.







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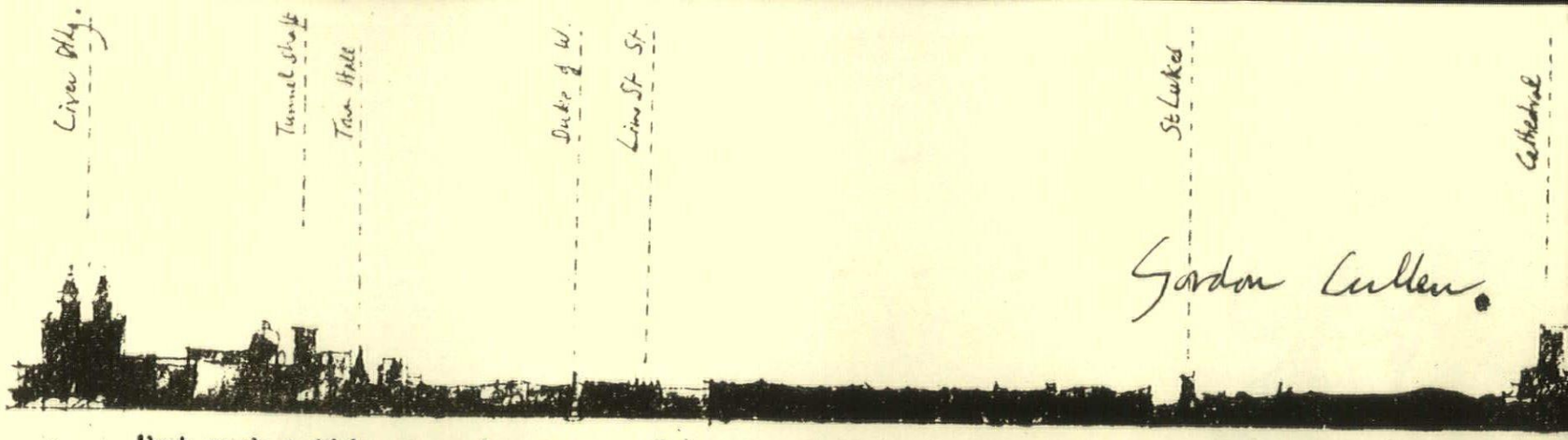
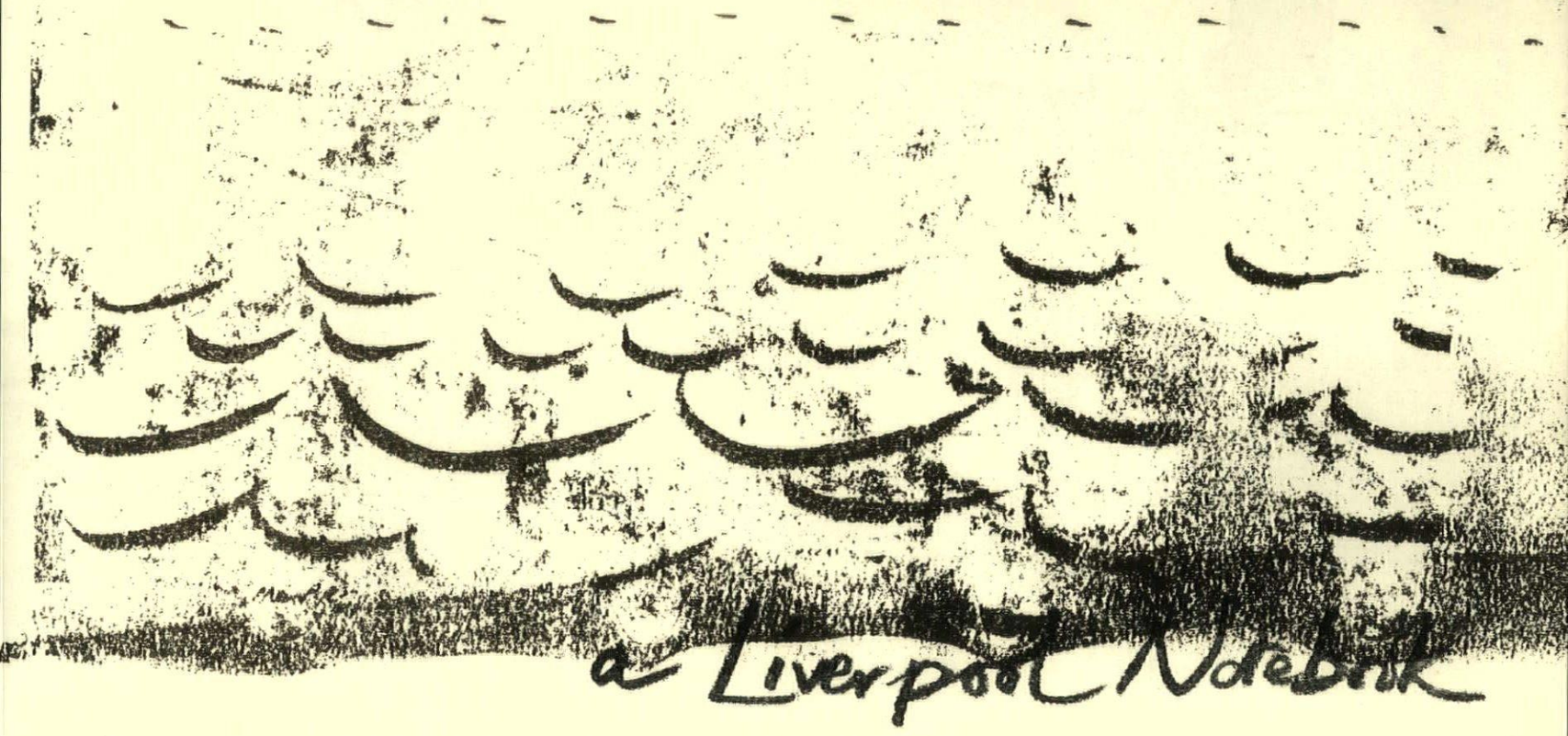
21

20, junction of lecture-theatre (east side) with main building. 21, in the Fellows' garden south of the main building: Censor's Room and Fellows' sitting room on left; Nash houses at end of St. Andrew's Place on right.



'but such a tide as moving seems asleep, too full for sound and foam, when that which drew from out the boundless deep turns again home'. (Tennyson, late nineteenth century)

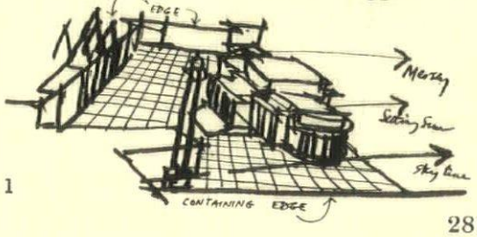


This is a selection of the notes compiled by Gordon Cullen when working recently at Liverpool for the planning consultant. This was probably the first time in England that a townscapist had been incorporated into a planning team. By way of introduction to Cullen's sketches and comments on them, Graeme Shankland, planning consultant for the central area of Liverpool, who invited Gordon Cullen to help him, writes: 'Like any artist and all good urban designers, Cullen has two sides to his nature: the objective descriptive analyst of the power and magic of a place and the personal visionary of its future. The suggestions for parts of central Liverpool reproduced here, together with many others prepared by the full-time members of the team, are valuable not because they are finite, detailed instructions but because they can portray, imaginatively, a context within which a project architect can work. When an urban design and planning brief are being prepared, the townscapist's suggestions have to be translated, along with more precise planning and circulation needs, into a statement of aims as simple and objective as possible. In doing this we found that roughly a third of Cullen's ideas were directly applicable; a third, less directly, set us and our colleagues off tangentially in pursuit of our own thoughts; and a third were interesting but not feasible or relevant to the particular problem at the actual moment. This was a notable achievement; nobody has a right to expect more.'

My terms of reference were experimental rather than precise and it might well be the subject of a special study to examine such terms from the simplest impression (fifty words and a picture) to considered visual analysis including the technical manipulation of the visual structure and from there to the implications of situations in flux. Often the existing situation can only adequately be described by suggesting its development. This is not to pre-empt the planner's role but to explain the intrinsic visual position as one sees it.

THE SEAT OF POWER

St. George's Hall is the visible seat of power and the central area of the city lies between it and the Mersey. The land rises from the river, but below the Hall there is a slight hollow which suggests the



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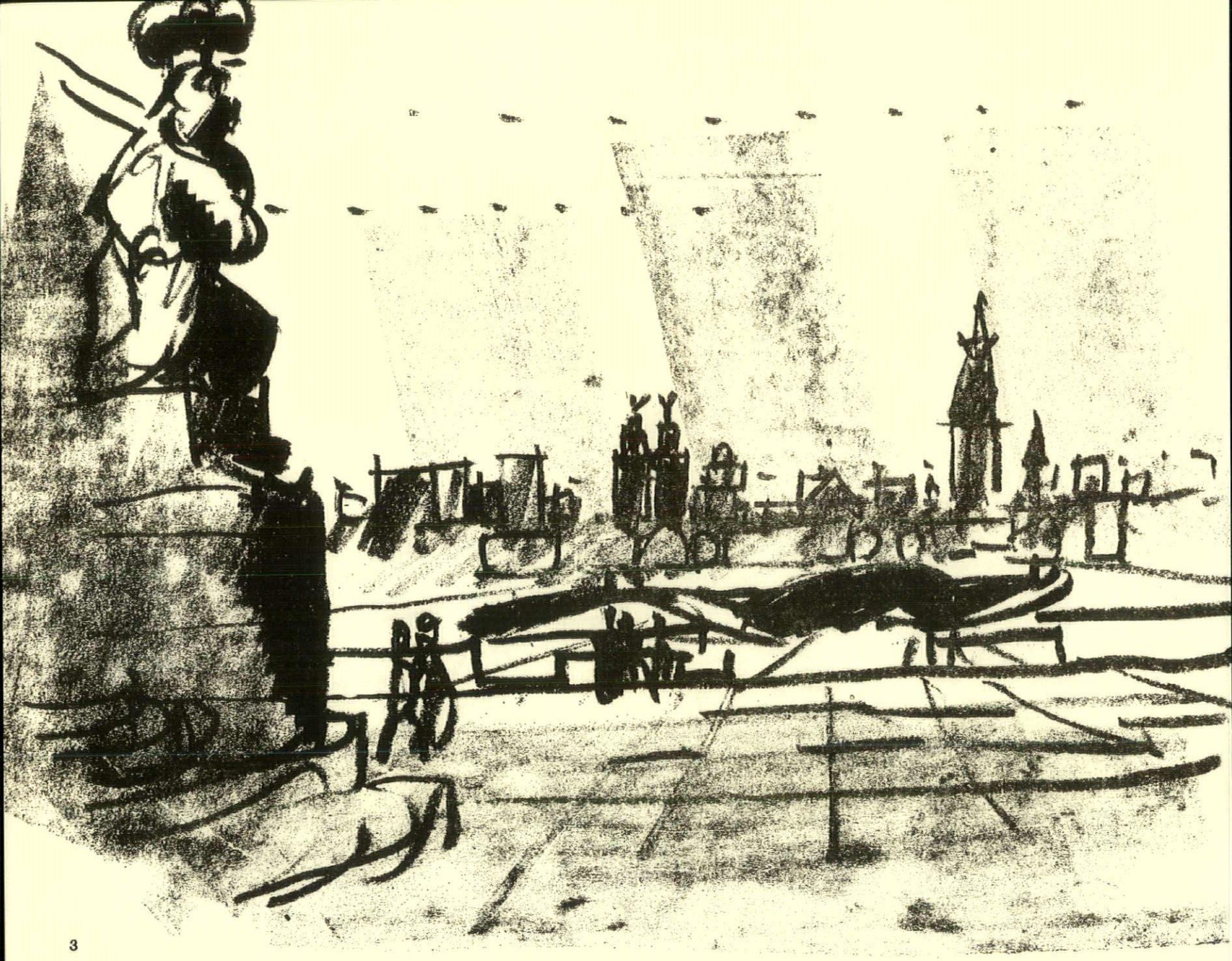

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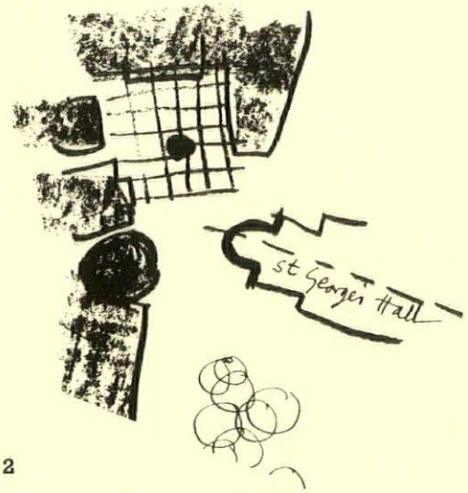
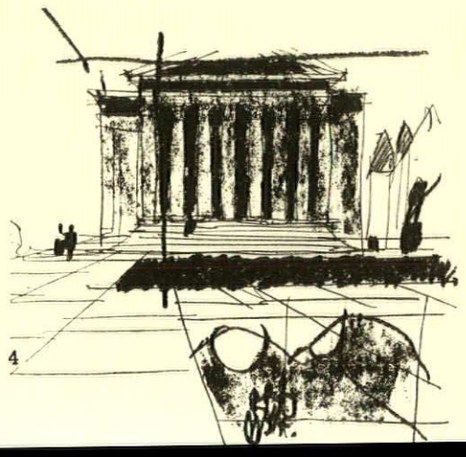


2

natural place for a civic centre. So we have three elements: the far quality of sky and water, the centre (the warm enclosed heart) and St. George's Hall standing above on its plane of authority.

The main endeavour in the plateau area would be to extend the influence of St. George's Hall to the limits of its ambience. The situation calls not for an isolated building in an intersection of streets but a force permeating outward into a containing space which commands the far vistas, **1** and **3**. This has several aspects.

(*a*) The proliferation of spaces. By taking chunks of the building to dominate subdivisions of the main space the Hall becomes part of quite self-contained places.



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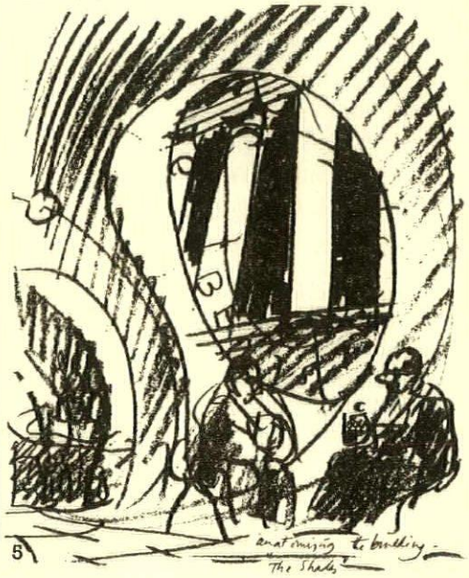
It is possible to have separate parts of a total space complex in the same way that a carburettor is complete in itself but part of a car, **2**.



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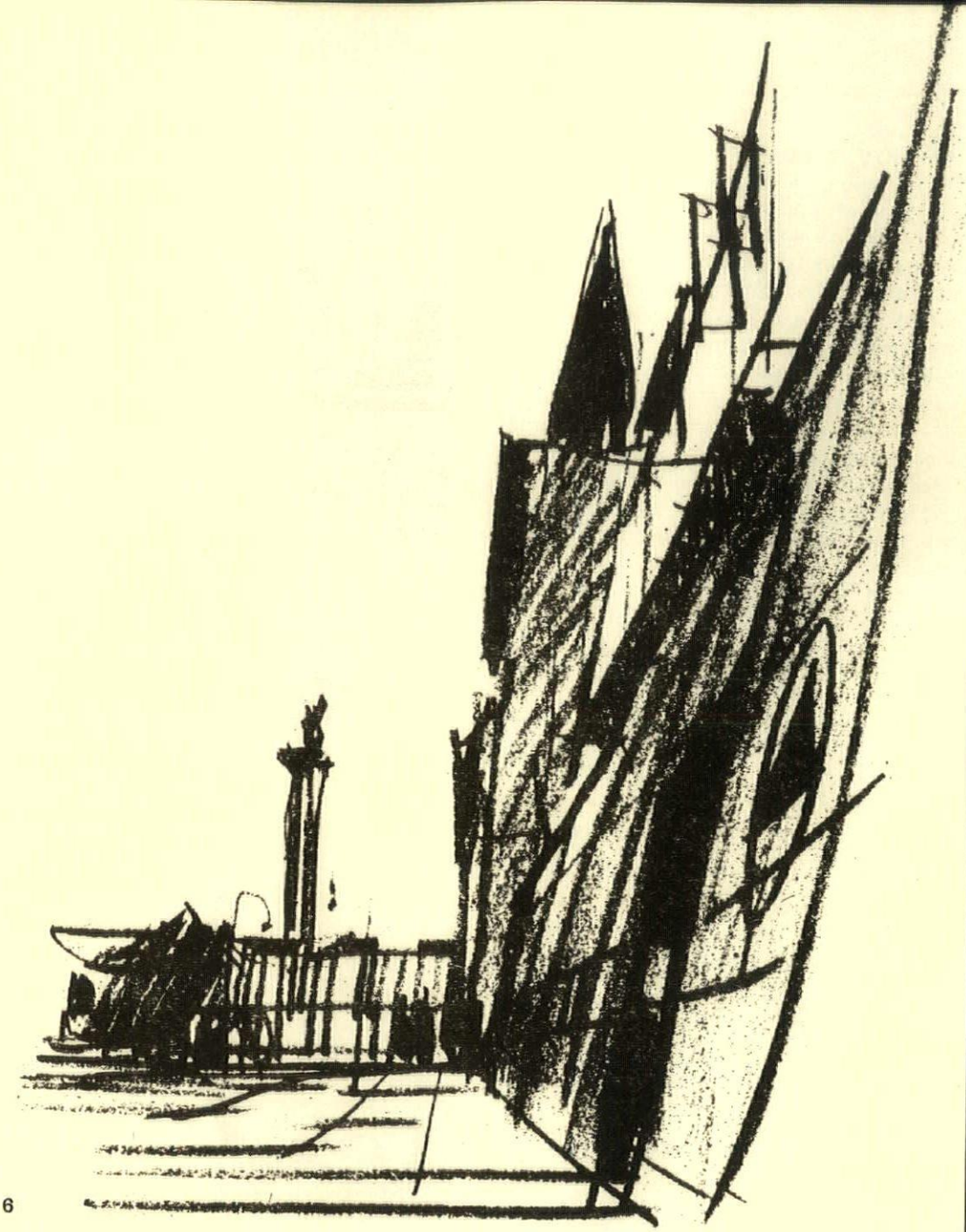

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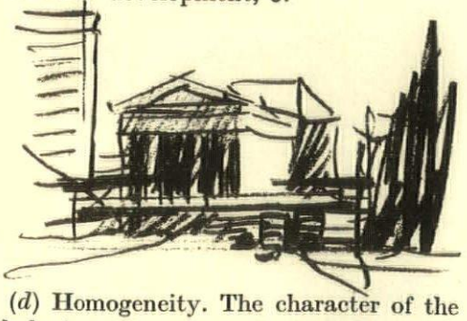
(*b*) It stands on a level podium, a great plane, and if this were to be extended then power would flow along the plane. Steps and ramps would not impede the flow, traffic would, **4**.

(*c*) By netting views of the building into new contexts, its scale, steps, colour, colonnades, etc., can be drawn, by framing, into other development, **5**.



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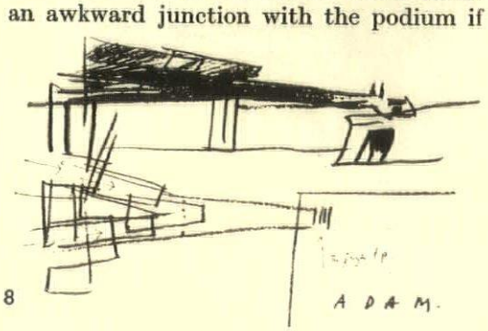
(*d*) Homogeneity. The character of the whole is serious in tone; it is heroic in scale and civic presence is at a maximum. One of the main factors contributing to this is the WALL. The black, blank walls are sombre and containing and where possible this atmosphere should be continued inside the main enclosure, **6**.

(*e*) Detail. The handling of detail is of great importance in order not to offend the *genius loci*. Here are examples of two bridges.

If it is necessary to build a pedestrian bridge across Lime Street the structure will have a certain incongruity as it runs across the east facade of St. George's Hall. By the use of illusion this could be mitigated; it could appear that, by providing two tapering canopies, one from either abutment, the structural curtain had been parted, **7**. (Block out the cantilevers to see what I mean.)

Again, pedestrian access to St. George's Hall over St. John's Lane would entail an awkward junction with the podium if the bridge were at podium level. It would compromise the wall with its powerful top moulding and if higher then a conventional arch would be unthinkable. We must find a different figure of imagination. Michelangelo in the Creation of Adam shows two very powerful things joined together with the utmost delicacy. Such a 'finger-tip' bridge might solve the problem, **8**.



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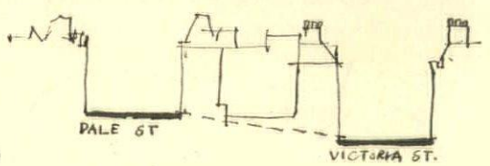
The Grand Gesture having been made, we move down into the working core of the city, into the business and shopping areas. Here the values are much more complex. We enter a world which should weave a quiet web of involvement and impose layers of experience for the people who use the city day by day. (All the more important when the pedestrian precinct is dying of boredom; it is now the subject of public satire.) Three examples are given here at different levels of awareness. First a duologue between two streets, second a Liverpool idiosyncrasy and third, not serial vision but serial mood.

A DUOLOGUE

A note on Dale Street and Victoria Street, their terminations and the cross reference between them. One factor making for clarity in cities is the termination of streets. By and large the buildings which flank a street are pretty much what you expect, but the key to one's position, the summing-up of the street, is contained in its ending. The one thing that immediately says DALE STREET is the projecting portico of the Town Hall. It is unique and helps to unravel the confusion of hugger-mugger building. It is also more than a position marker, it frames or captures the sky; it is light and airy. On the contrary the view to the east is blurred and indistinct; it finishes in a random tangle of brickwork and an advertisement for the Co-op.

Next consider the relationship between Dale Street and Victoria Street. They could be imagined as a huge avenue which has been filled with buildings. The streets are roughly parallel but Victoria Street runs at a lower level for most of its course and



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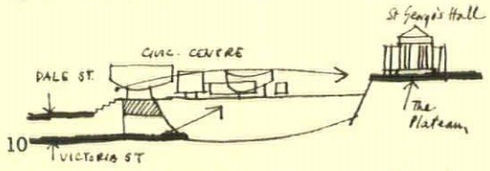
whereas Dale Street, as we have seen, captures the airy distance, Victoria Street is earthbound, being focused at one end on Picton Hall and dissolving into Cook Street at the other, **9**. This is a rudimentary polarization, the germ of an idea which could result in Dale Street being airy and 'above' and Victoria Street being excavated and 'below,' so becoming foils to each other.

The space between the roads could well become a linear precinct, somewhat on the lines of the Temple, running between the projected civic centre and the business area around Castle Street. Presumably no civic centre could exclude St. George's Hall and its garden from its make-up, and this suggests a horseshoe terrace of civic buildings at a lower level than the plateau but higher than the elevation of Dale Street. This difference of level would be absorbed in a broad flight of steps linking Dale Street to the civic centre, and the effect of this would be to place emphasis on the sky by cutting out the middle distance. On climbing the steps the panoramic view is revealed of St. George's Hall, which at this point significantly fills the natural angle of vision of about 30 degrees. Compare this with the equally panoramic view commanding the Mersey from the Town Hall end of Dale Street, **11.** On the other hand Victoria Street would pass under the terrace of civic buildings and emerge into the central agora, looking up to the civic buildings and St. George's



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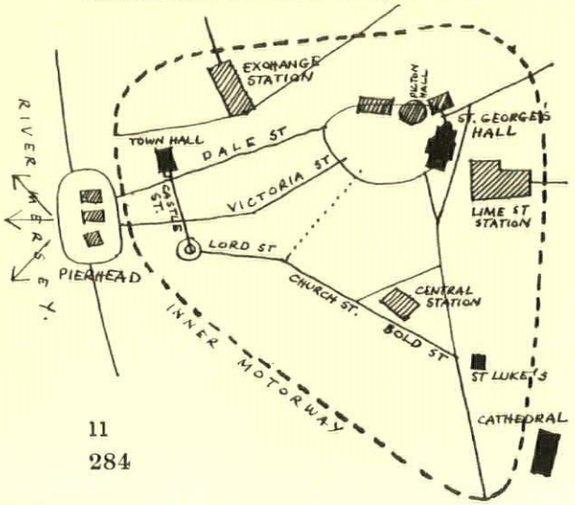
Hall, **10.** The actual sequence of such a move is not without drama in that the vista of Victoria Street is filled with one complete building out of the St. George's Hall complex, the rotunda of Picton Hall. As we move along Victoria Street the terrace will gradually cut out this view and we will go into a tunnel. But when we emerge into the central depression Picton Hall is there again, but now seen in context. Its main work is done and now it is content to introduce us to its friends ranged above us. This may be considered involved thinking and far too fragile for the common man. Yet the grand gesture is for the visitor and the occasion. If one wishes to create a city that will continue to absorb and fascinate year after year then we must think in an involved way and weave the strands into a certain complication.



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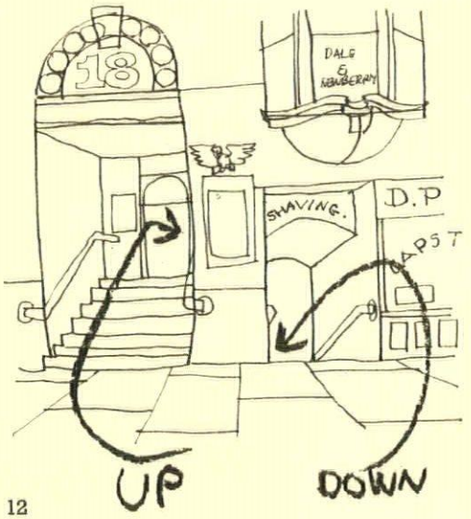
AN IDIOSYNCRASY

In Liverpool it is common to note the following arrangement, *up* from the pavement level to office entrances, *down* from the pavement to local shops, hairdressers, vaults and bars, **12.** It seems to work. The use of levels in this way accentuates the significance of use. The first is official and important, the second is cosy and matey. In considering the site near Exchange station an exciting development could arise from exploiting the interlocking of street sequence and the above idiosyncrasy.

As we move along the street, **13,** the new building would close the vista which



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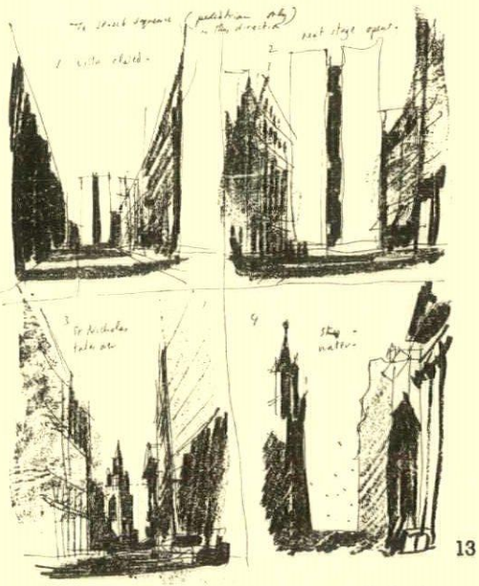
is later unlocked as St. Nicholas Church takes over. The final termination is river and sky. Now go back to the second view, **14.** As we walk up to the building the scene opens at its edges; not only do we get the opening to St. Nicholas but also the lower edge reveals the Shades. As the steps mount to the main entry floor so the steps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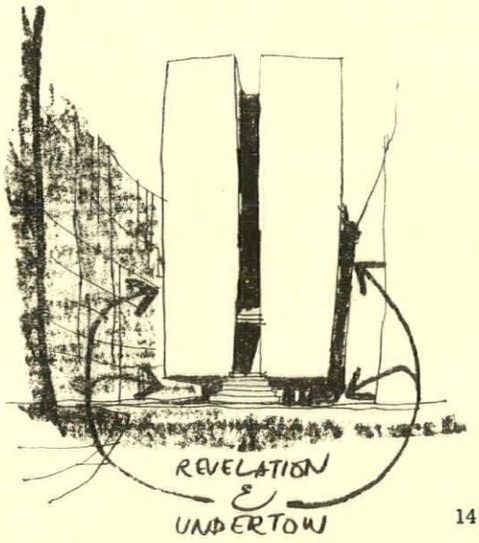
down lead to the half-concealed lower square bursting with the unofficial life of the zone, **15.**



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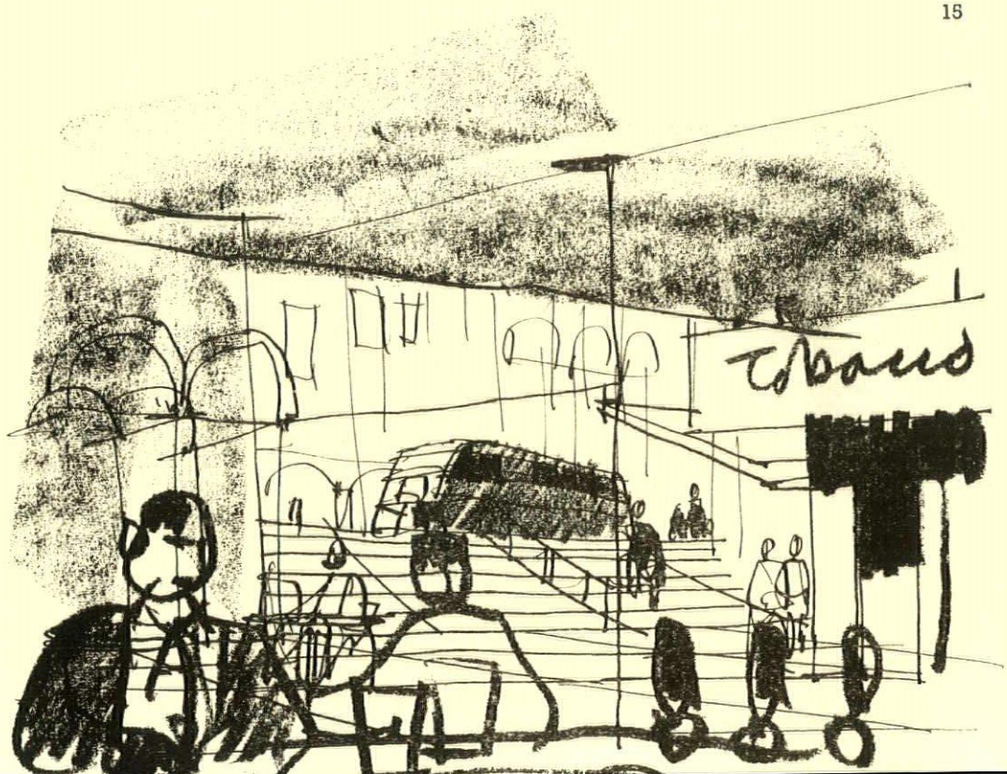

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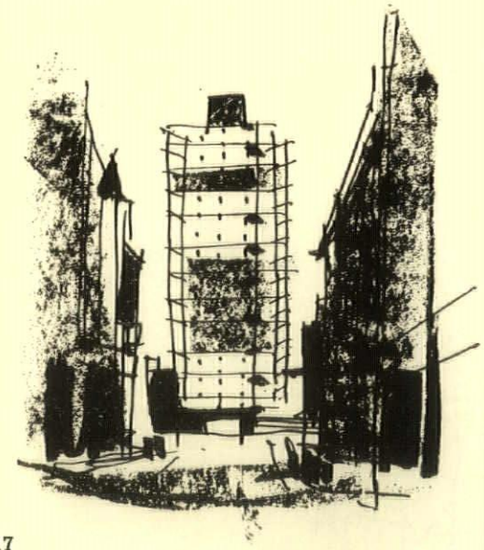
SERIAL MOOD

The opportunity here centred on the development of a shopping precinct off Clayton Square linked to the future of Bold Street. This street terminates on the tower of St. Luke's and the progression to it from Lord Street, whilst being fairly simple visually, is interesting in its sequence of moods.

(*a*) A tower discovered at the end of Church Street, **17**, a marker for the Clayton Square development. (Vision.)

(*b*) The tower, on rounding the bend, proves to be the left hand of a pair of inhabited gateposts indicating the entrance which is accentuated by steps, **18**. (Vision dissolving into mood.)

(*c*) The square revealed, **16**. The explosion of possibility. Perspectives and steps lead the eye out to divergent goals whilst the immediate space is alive with tangible, get-atable things; flower market, hot chestnuts, papers, food and drink, music, open-air cinema or what you will. In other words FRUIT. (Mood, fruity.)



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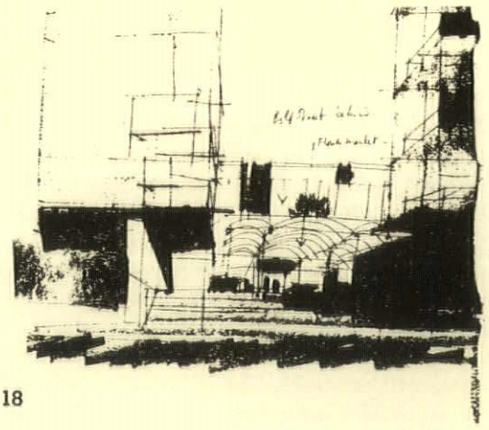

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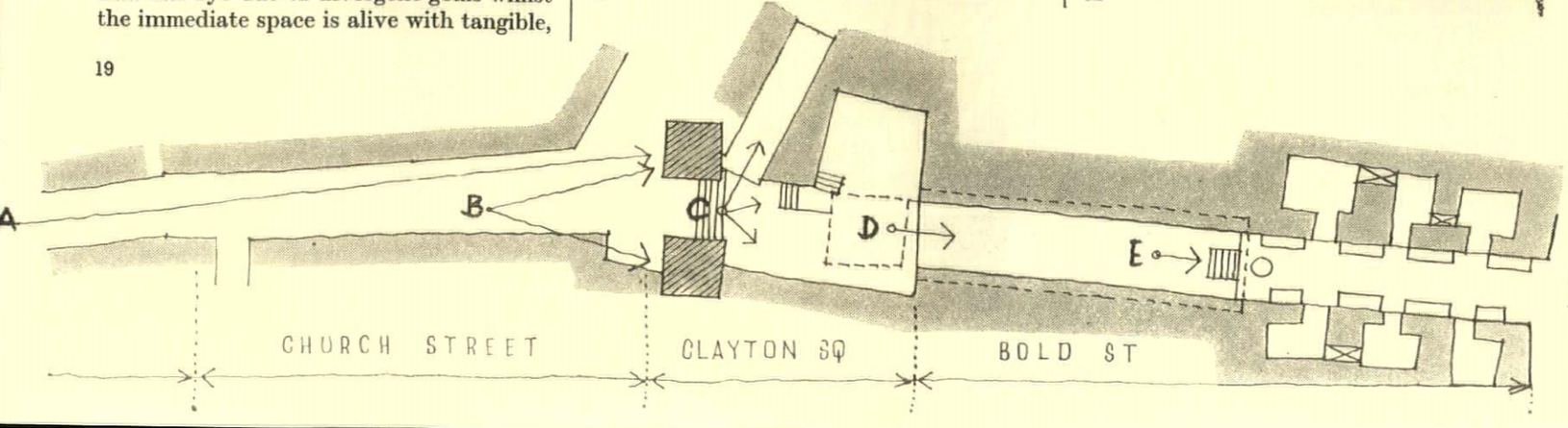

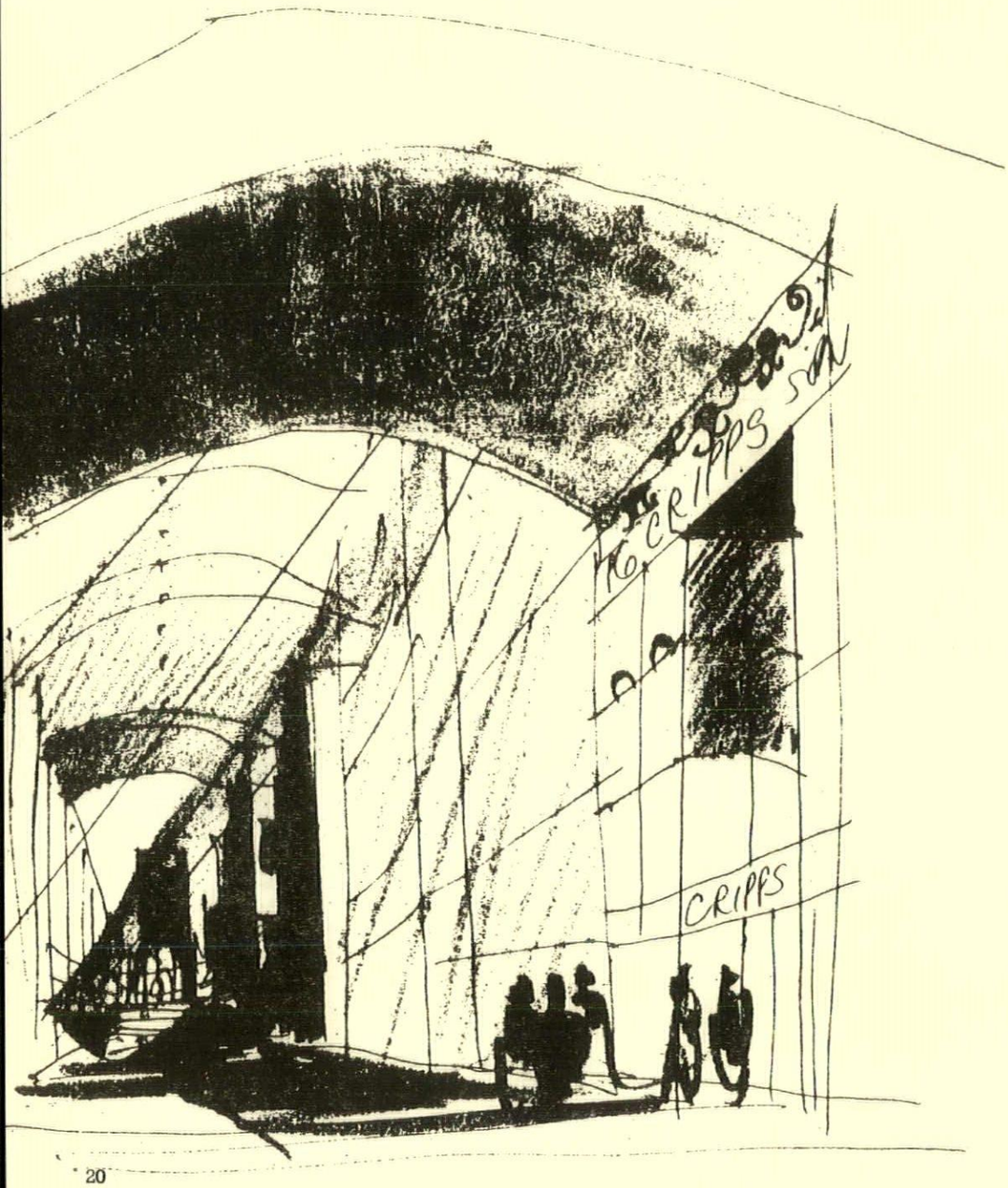

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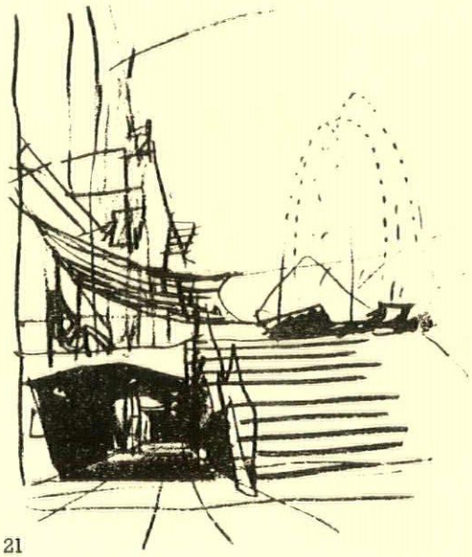
(*d*) From here we enter the quiet, echoing nave of a roofed-over Bold Street, **19**. The scent of flowers extends up into the filtered shafts of sunlight like harvest festival. (Mood, Bach goes to town.) At this point the tower of St. Luke's dominates the perspective, **20**. Simultaneously the prospect, instead of being one tiresome and uphill length, is divided into two digestible pieces which reflects a shift of function between the nearer and farther parts of the street. The division is marked by steps and a fountain. (Change of mood marked by vision.)

(*e*) Here is the point of change, **21**: the end of the overhead arch and emergence into clear light, but now the undertow of the crypt gives access to ground-level shops. From the raised, central promenade there is access to first-floor shops and cafés. This development would penetrate through the thickness of the shops to open up the rear as a system of squares and courtyards containing repertory cinemas, studios, strip clubs or whatever the local fancy may be. The street turns from line into depth at the critical section; i.e. it puts the brakes on before termination. (Mood, outspreading and retentive quarter.)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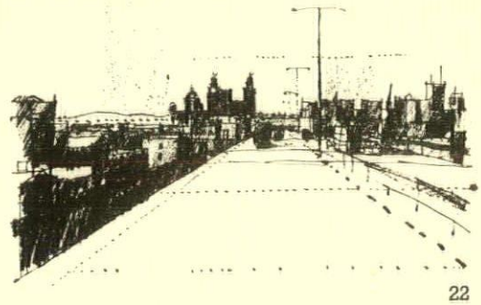
THE INNER MOTORWAY

All the foregoing material lies in the central area precinct and is contained inside the proposed inner motorway. Apart from its raison d'etre as traffic carrier the motorway has three subsidiary functions. As a given line and construction, it is often many feet above ground level; it can be regarded first as a scenic railway, second as architecture or geometry and third as category maker.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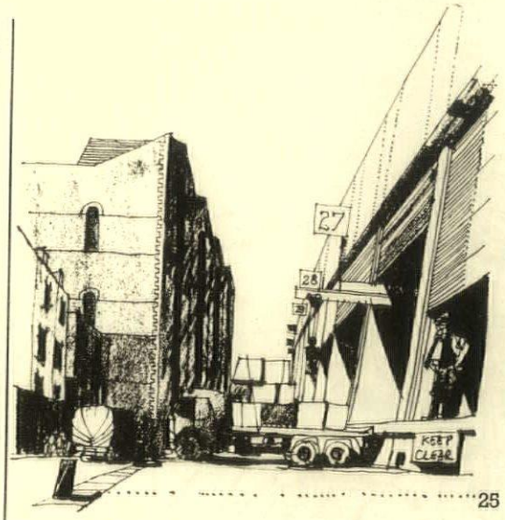
24

Although in principle there is no difference in serial vision as observed by the pedestrian and by the motorist, in fact there is a vast difference of impact caused by the speed of the car. Effects noticed by the pedestrian are lost on the motorist and conversely effects that the pedestrian would never notice become coherent and exciting when seen at forty miles an hour. Thus the almost magical soaring effect of a tower out of the horizon as we drive up an incline. Effects are measured in miles and not in yards. For instance the whole of the leg from the Anglican Cathedral to the Pierhead is dominated by the group of buildings on the Pierhead, and drama can be extracted from this situation as the sequence—**22, 23, 24**—shows. The distant view is withdrawn and then revealed at close quarters with great impact.

Seen as a construction by the pedestrian it must, on the other hand, make sense on

the pedestrian scale. In this sense an elevated roadway could become part of the use of the zone through which it passed, **25**; or a fragment could become the wall of a garden as is suggested at St. Luke's, **26**.

The purpose of the road is to feed the central area and in so doing it defines it. What lies beyond is not central, and the change in category could well be emphasized, **27**. Two examples: the Pierhead area, the Island, looks as though it may soon become isolated and deprived of its functions by the reorganization of transport. Lying outside the motorway a change of category would coincide with the change of character (exposed, wind-swept and almost afloat). We could re-create the Pierhead as an amenity, a yacht basin, hovercraft base and fun-fair, all this to be given a firm base of security by providing a linear heart, a new Goree Piazza having its own amusements, shops, cafés and bars utilizing the Piranesi-like underside of the high level motorway. Again it is clear that the zones immediately



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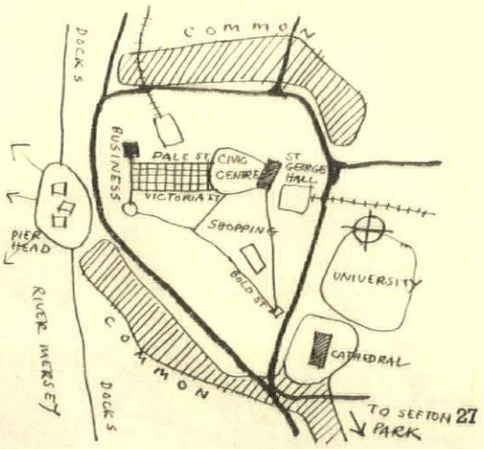
outside the motorway to the north and south are near derelict, giving the opportunity to sweep much away. The most refreshing contrast to the central area would be park or common land which is at a discount in Liverpool—parkland overlooked by good quality housing on the scale of the Nash terraces in London, **28**.



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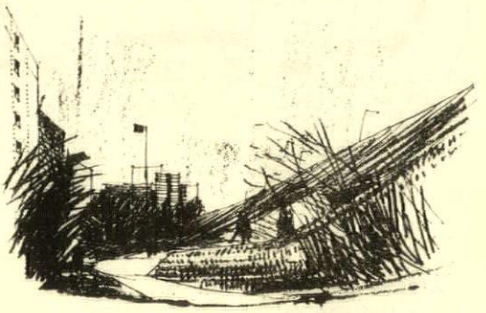

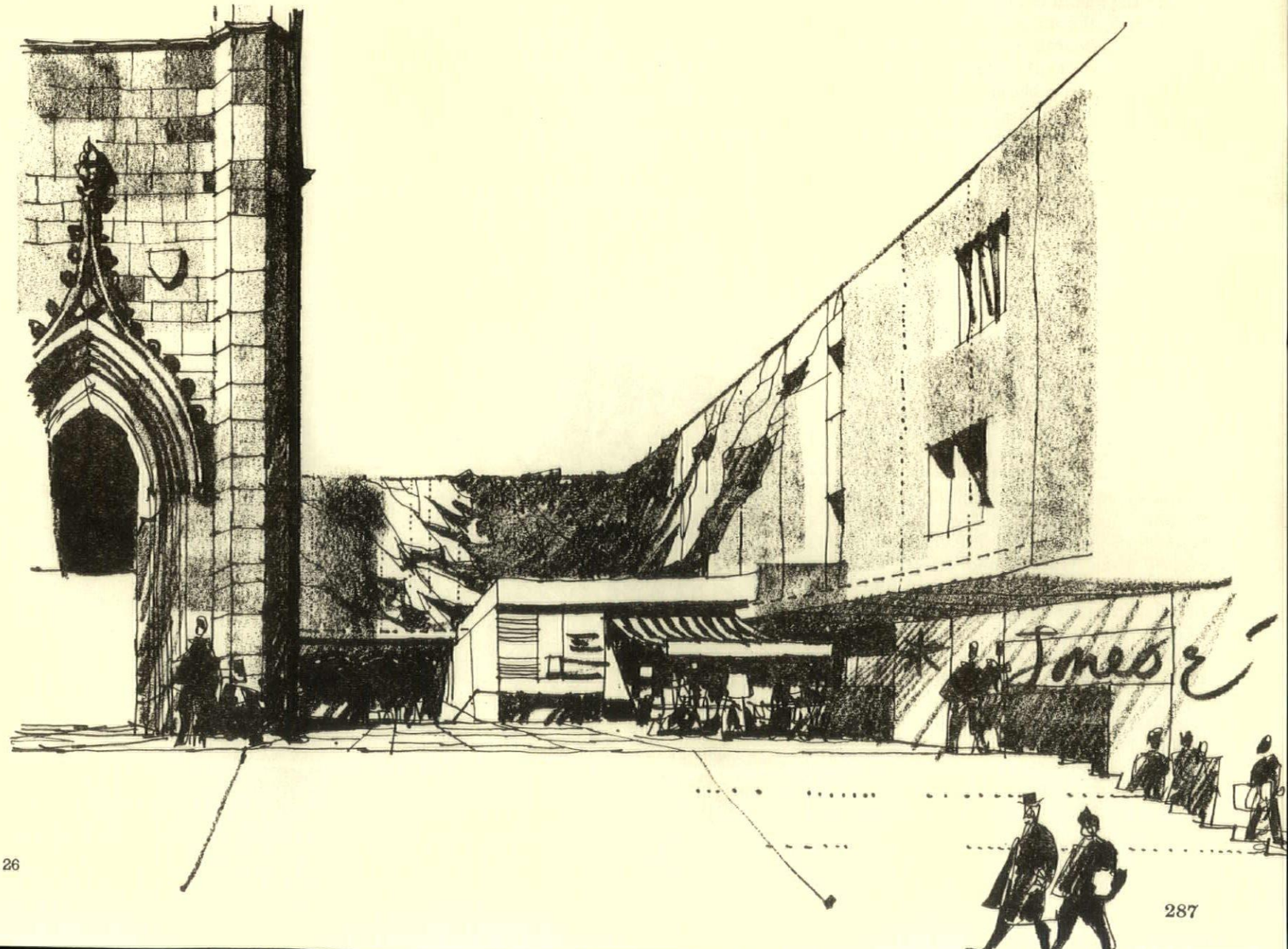

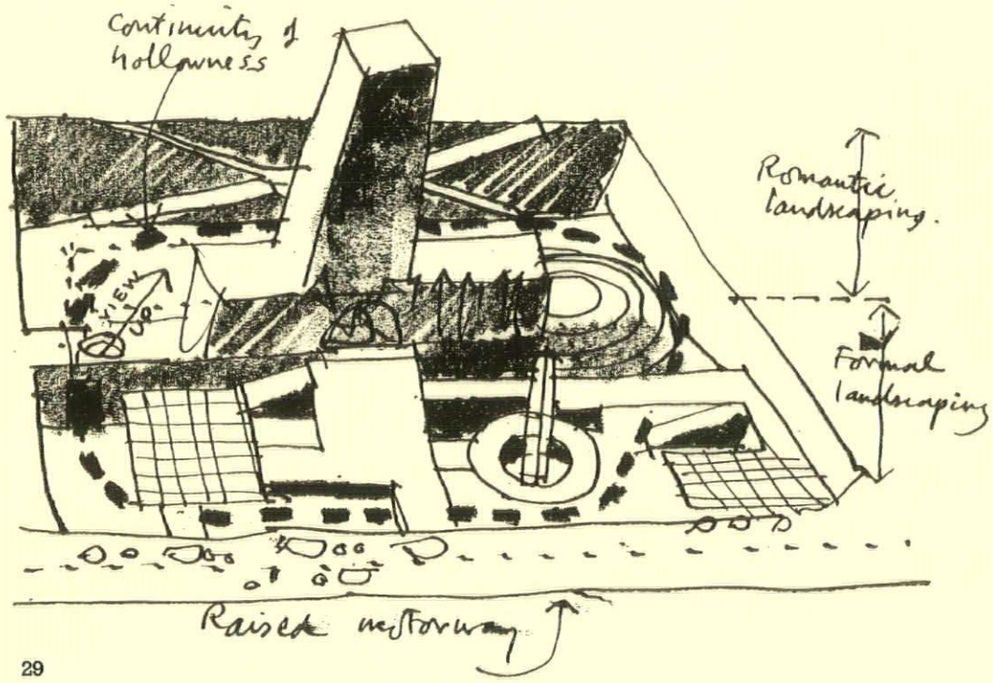

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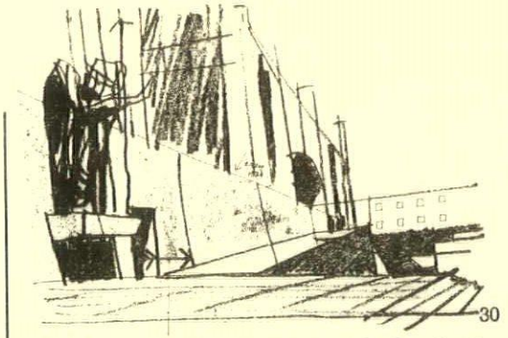

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situation with the purpose of fitting in the necessary accommodation and sharpening the original statement. The ramps, solemn tombs and grassy banks of the northern cemetery flow into the geometry of courtyards and steps to the south, **30**, whilst the vital link to create circuit unity would be under the (still uncompleted) nave and access road to the west. Here there is the possibility of bringing the conception to its fulfilment by creating a crypt chapel open at its roof to the floor of the nave so that one looks up into the far vaults. For an apocalyptic instant the external hollow landscape fuses with the hollow, echoing nave, **31**.

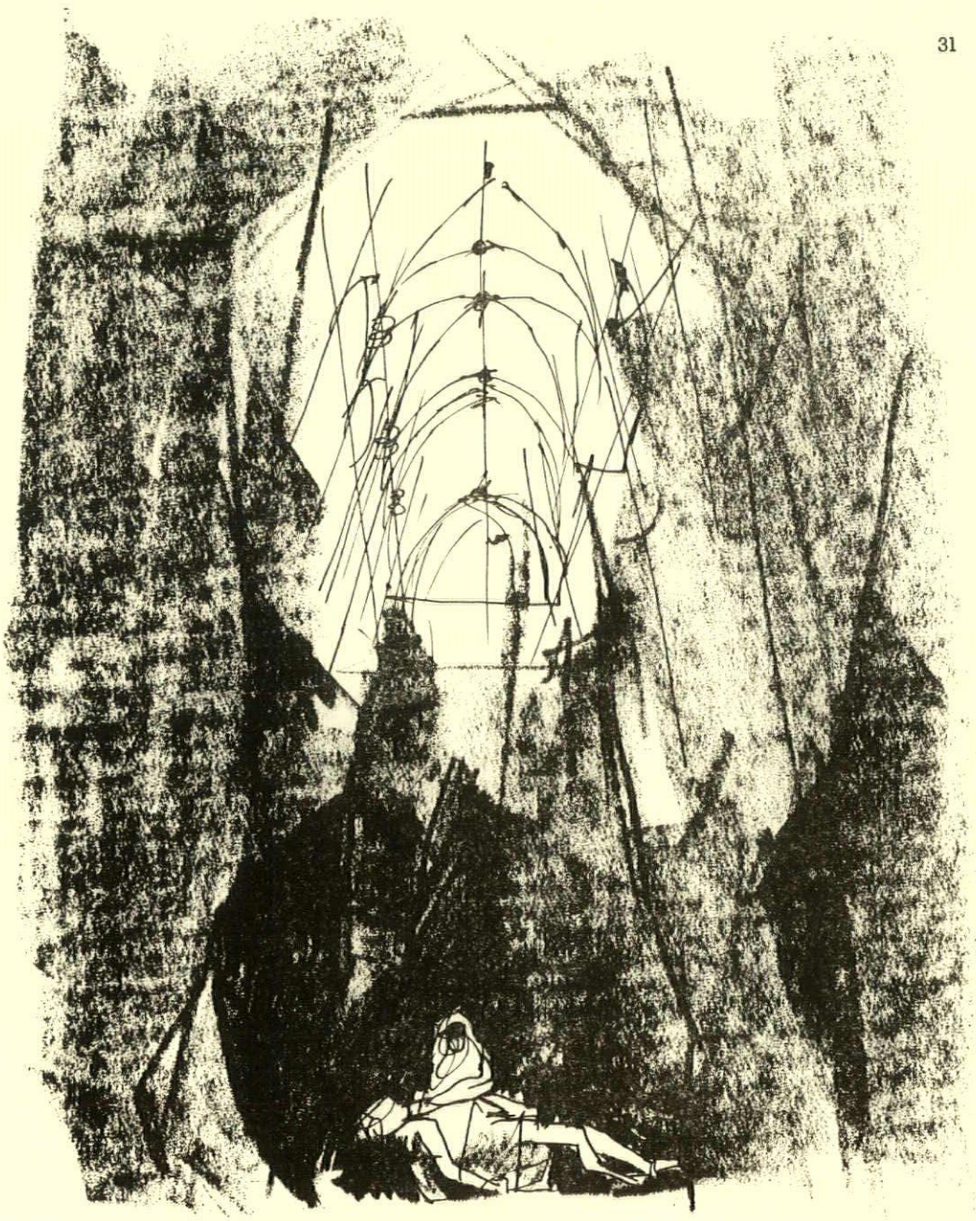
AGAINST CONFORMITY

Outside the central area a few lights burn through the gloom of Merseyside: the docks, Sefton Park, the university quarter and the Anglican Cathedral. What should we do? Let them slide quietly into the background or fan them into a blaze?

The Anglican Cathedral was erected as a monumental tour de force on high ground, its silhouette dominating the city. It is poised dramatically over a sunken graveyard, it is the house of a man who was conceived by the Holy Ghost and who walked on water. It is, however, being trimmed down to the lowest common denominator of provincial respectability, just as established religion has tamed the terror and holiness of God into deferential coughs and the odour of prayer books. These notes try to reverse the process and create a possessed landscape.

To the liturgical north of the cathedral lies the deep cemetery, **29**, and the necessity for an elevated motorway immediately to the south cuts it off effectively from any expansion into the neighbouring landscape. Access to the cathedral is mainly from Upper Duke Street at the west leading to the south porch, and the building terminates on St. James's Mount to the east. This vast ridge of masonry stretched on its hill divides the north from the south, but they are connected to the east of St. James's Mount and this, taken with the enclosure provided by the elevated motorway, suggests not two separate pieces with a cathedral in between but a cathedral dominating a single, hollow landscape; a clear statement out there on the hillside.

Granted this overall conception, one can begin to differentiate and exploit the



31

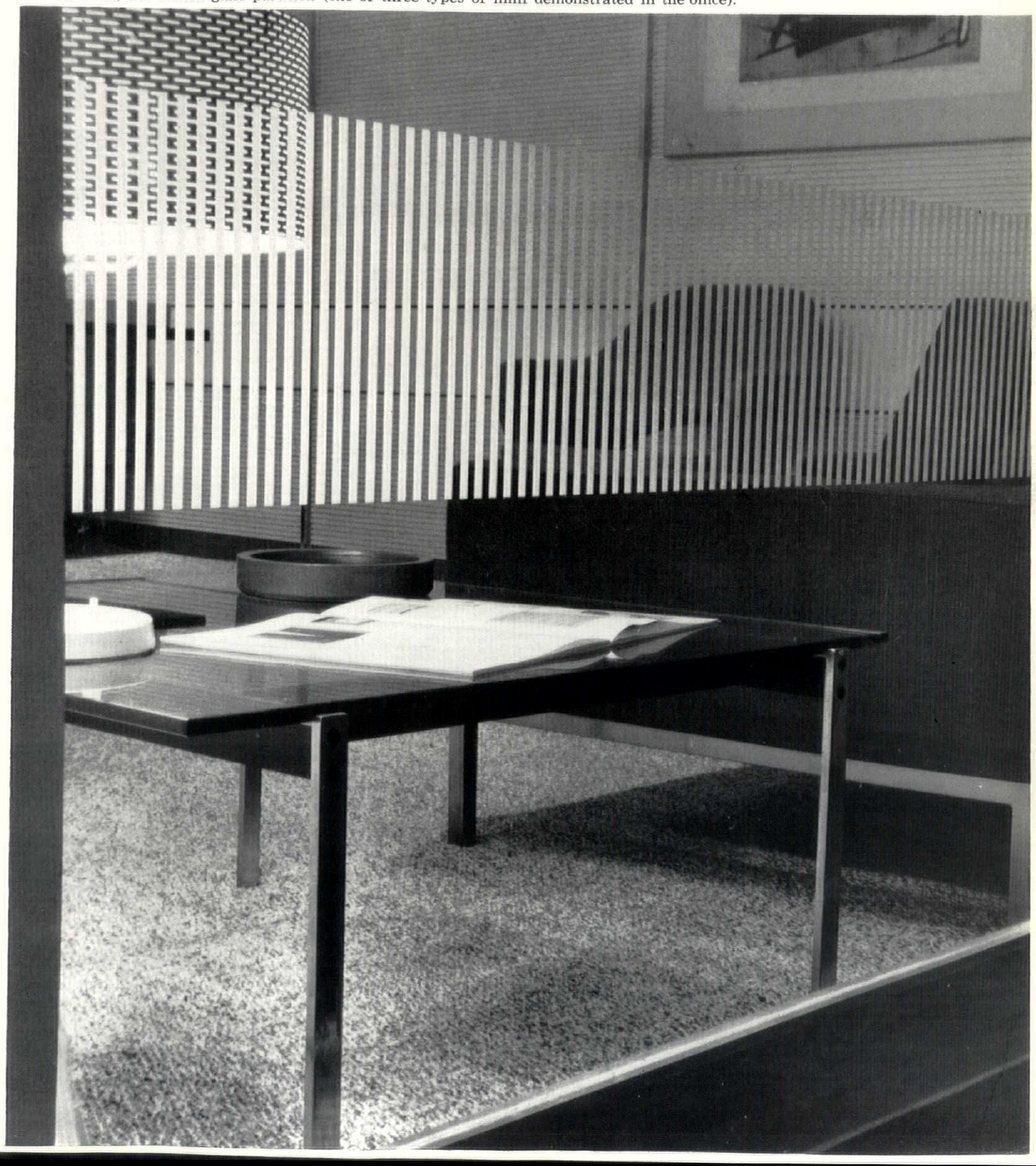
Show Office, Mayfair, London

designer: George Montague

photographs by Peter Trainer

ID
Interior Design

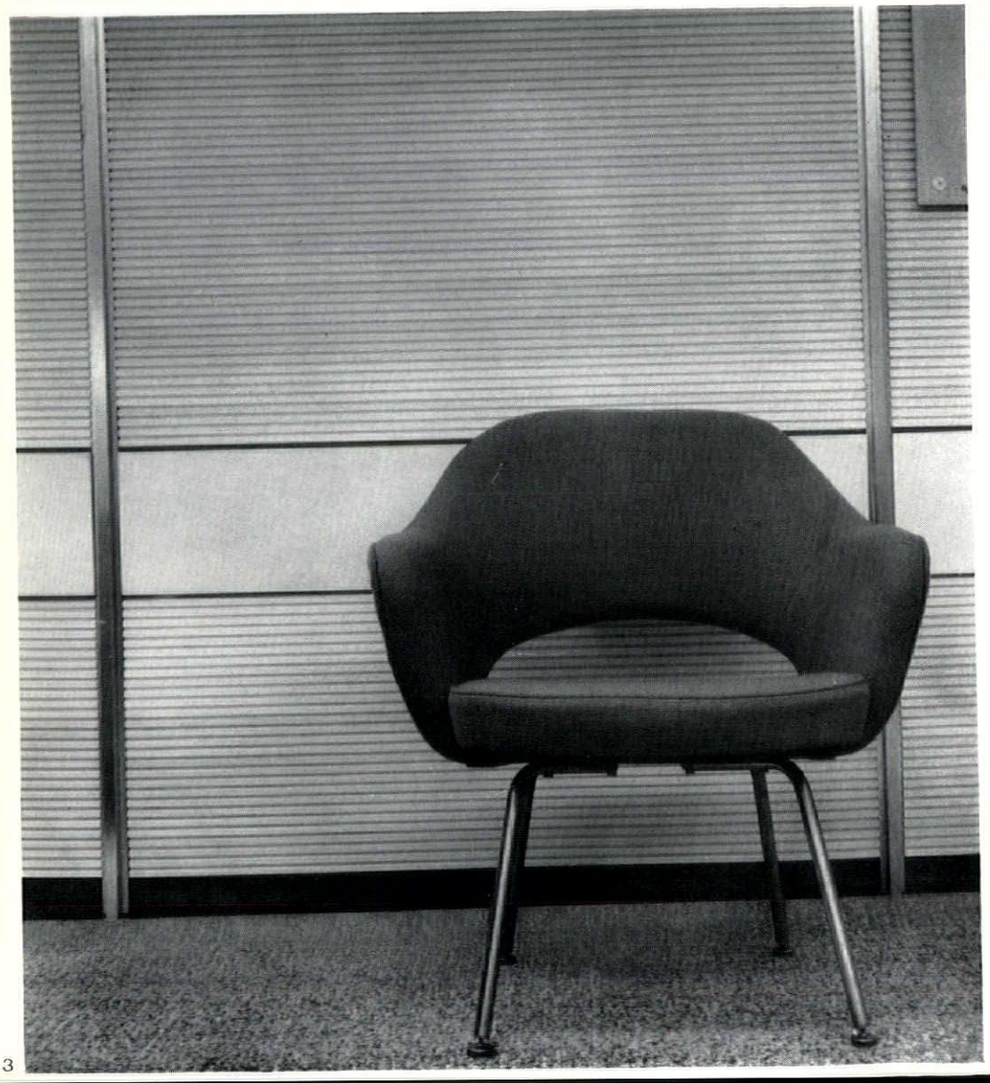
1, foreground, the etched glass partition (one of three types of infill demonstrated in the office).



This executive office, one of four by individual designers, was designed for the London Business Complex and displayed at their showroom in Berkeley Square.
The use of three different types of infill is demonstrated in the partitioning, these being of reeded timber, silk paper and etched glass.
All the partitions have oiled teak skirting and polished aluminium dividing strips.
The ceiling is made up of acoustic tiles with a special directional spline treatment.
The furniture is from manufacturers' standard ranges.



2, general view of the office. The back infill is pale almond green silk paper.



3, the reeded timber wall which has a white eggshell finish.

Show Office, Mayfair

ID



OBJETS D'ART

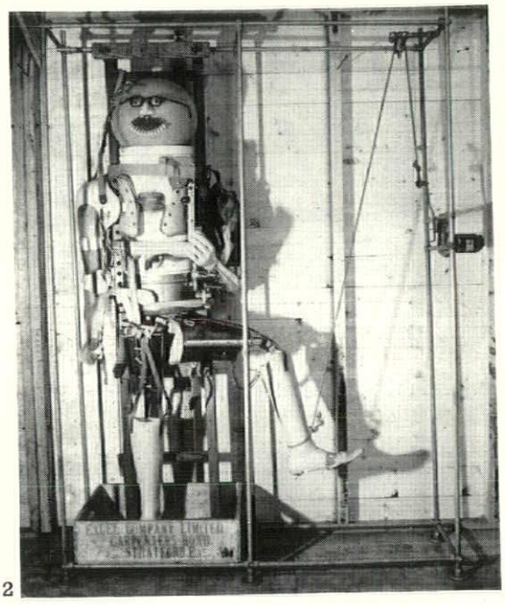
Robert Melville

A month or two ago I was at a public discussion of the contemporary cult of the object in the arts, and it seemed to be generally agreed that artists were not only more preoccupied with things than with people but that they tended to treat people as objects. Duchamp's urinal came up as a matter of course, and after mentioning the white kitchen chair which is attached to one of Rauschenberg's paintings, the chairman looked at me as if he thought I might have something to say. I hadn't: but someone else stood up and said, if I remember rightly, that in depriving the chair of its function the artist intensified its power as a physical presence.

I don't doubt that this is so. An object torn from its customary context has an increase of what Aldous Huxley calls 'isness,' and thereby acquires unfounded pretentions to significance: by means of a kind of confidence trick, it slips past the mental guard that protects the memory from making too many records of what the eye sees. I recall the white chair—a profoundly undistinguished object—much more distinctly than the painting to which it is attached, and after it was mentioned in the discussion it imposed itself on my mind's eye for the rest of the evening. It was just as I saw it at Whitechapel Art Gallery, sticking to a large painting whose lower edge was touching the floor so that the chair could stand on its own four legs. By the time the chairman was declaring the meeting over, I had got around to wondering whether the attendants ever sat in the chair when no one else was about, and then it occurred to me that the chair was probably a trap; but it was too late to say anything. I'm mentioning it here instead, because I always have great difficulty in finding my opening paragraph and the white chair was still on my mind when looking at some recent exhibitions.

The trap is as simple as can be. One has only to yield to the temptation to sit on the white chair to become part of the 'combine' and turn instantly into a thing, an *objet trouve*. If one saw another person sitting there, and that person was sitting perfectly still, one might even have the idea that he or she had

1, *Bruce Lacey: 'The Institution'*.



2

died and been stuffed, like the chicken or the goat attached to other Rauschenbergs.

The nearest thing to a stuffed human being that I've seen is the soft effigy of an old man that was exhibited some time ago at the ICA. It was made by the American wife of the English painter Peter Blake, and it could be described as a veristic extension of the guys children make out of old clothes and a mask. It's macabrely life-like, but like all figurative work that insists upon meticulous particularization, it's anything but 'life-enhancing.'

In Bruce Lacey's recent exhibition of automata at Marlborough New London gallery, there was a not dissimilar life-size puppet of an old man, except that the torso was composed of a postcard-stand on a turntable, 1, filled with old, faded family photographs and Edwardian seaside views, and it succeeds in making the old man's past as wretched as his present. Both effigies may well have been made with a compassionate intention, but I think there is aggressiveness in their presentation. They look like people at the end of their lives, but they are really guys. Observer is estranged from observed, and what is seen is not a being but a peculiar and—in these two cases—rather revolting object.

Bruce Lacey has thoroughly humanistic and humanitarian sentiments, but he is unable to prove it in his work. We have to take his word for it. Many of his curious and ingenious contraptions are intended as warnings. He says of 'Boy, Oh Boy, am I living', 2, that *it shows a man whom the state has provided with limbs, including one which is self-powered. In America they are fitting powered limbs to people, like power steering on cars. But also they have fitted on his brain a radio control attachment, and they are sending him happy thoughts. Soon in mental homes and prisons this will be done, and it is my fear that astute governments in the future will fit these to people to control public opinion. This is a cautionary machine expressing my fears over this matter.*

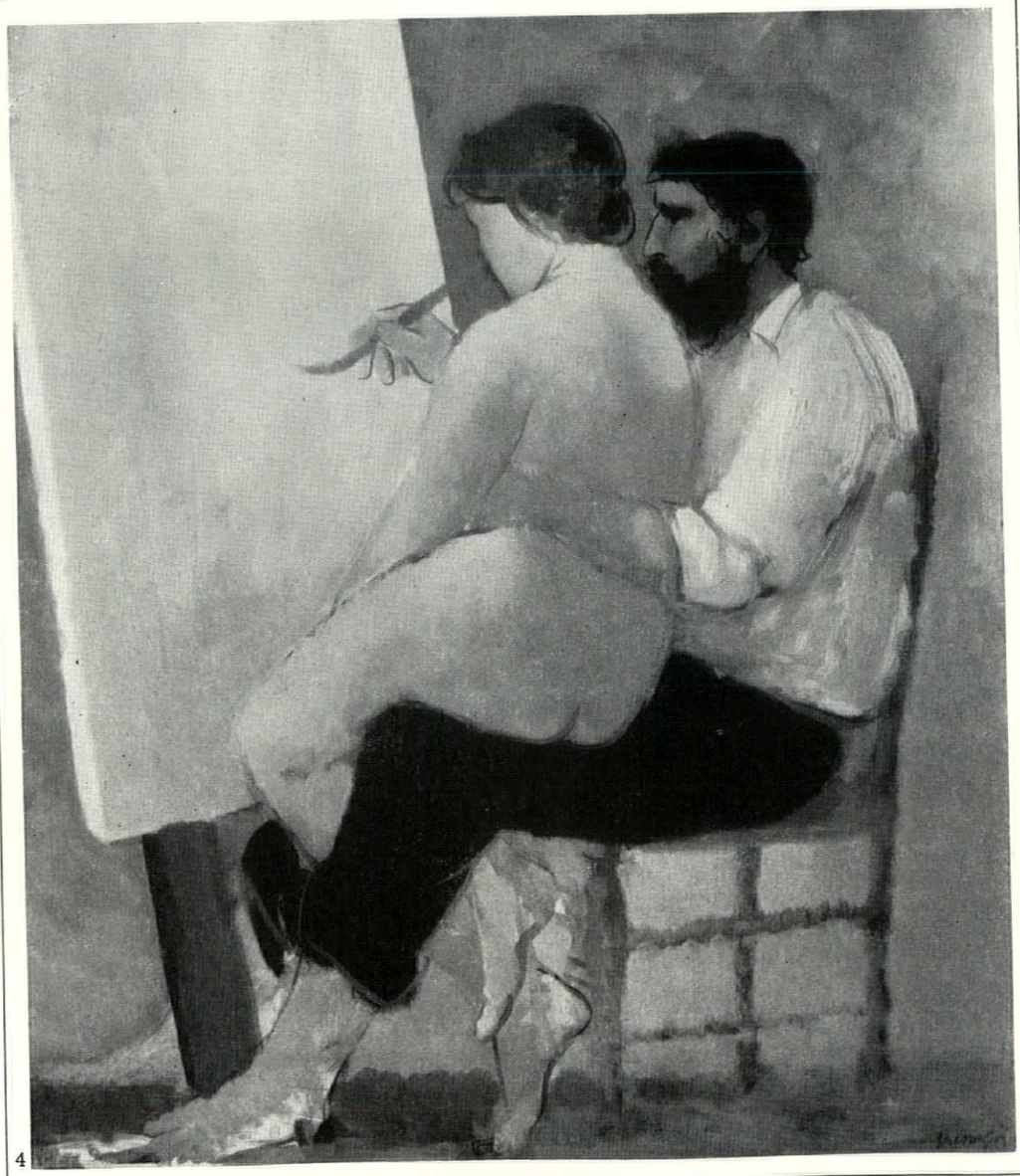
Appropriately, the figure is thoroughly dehumanized. It can do two things: smile all the time, and move one leg up and down. But every figure and construction in the exhibition is dehumanized. He has a positive gift for turning his sentiments about humanity into anti-human objects.

In twentieth-century art, the human figure is simply a target for the artist's aggressive or erotic fantasies, and absurd things happen when an artist thinks he is restoring Humanistic values. Manzu's paintings on the theme of the artist and his model are a case in point.



3

It's an ideal theme, one might think, for demonstrating that the estrangement between observer and observed is merely a figment of critical fancy. But Vermeer is centuries away and Manzu does not know how to create a human relationship between two figures. The artist in the pictures recalls the bearded artist



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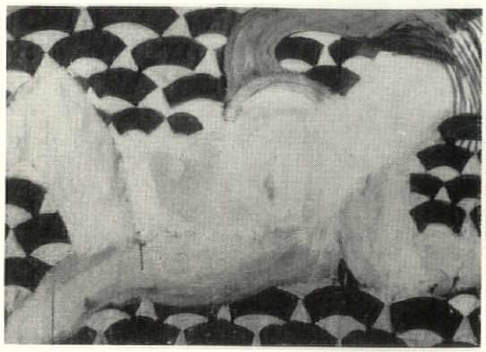

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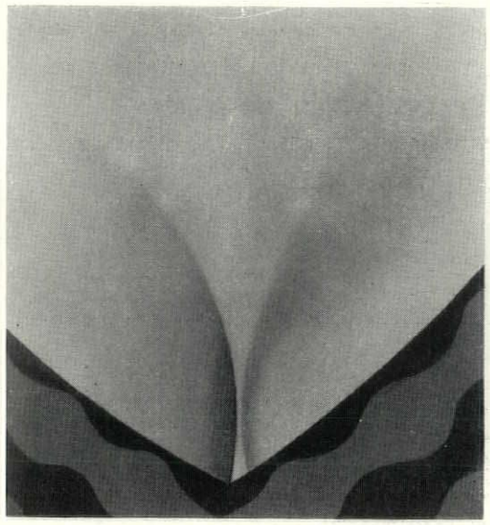
in Picasso's Pygmalion drawings, but a nineteenth-century Bohemian takes over the part played by a Greek hero in the make-up of Picasso's personage, and the general atmosphere of the pictures recalls second-rate nineteenth-century French novels about the artistic life. Manzu handles paint with a kind of shallow adeptness. He mixes colours which are pleasant in themselves and he uses them tonally without much concern about tonal values. He sometimes gives the flesh of the girls a nice soft bloom.

There are three or four changes of model, and one of them has the long rope of hair one associates with some of his famous bronzes of ballet girls. In some of the paintings, the model is nude, in others, semi-draped or fully clothed. The same goes for the artist, but the situation looks pretty ludicrous when he's standing there without a stitch on, before a grim-faced model, dressed for going out, even to the hat: one is left with the impression that it's a last desperate move to arouse the girl's interest. The canvases on the easel are sometimes very large, but there's never more than a stroke or two on them, and one can't help feeling that the artist is more concerned to find a girl friend than paint a picture. He is well aware of the privileges due to the artist, and sometimes gives himself a less discreet view of the model than is presented to the spectator, 3. He does not succeed in painting a picture in any of the variations shown at the Hanover Gallery, but in the other respect there is a very happy ending if appearances are anything to go by. The softest and plumpest of his models would seem finally to be more than a model to him, since she looks very comfortable on his lap, 4. It's not quite clear whose hand is about to mark the virgin canvas, but if it's the artist's, he probably intends to find forms for tactile sensations.



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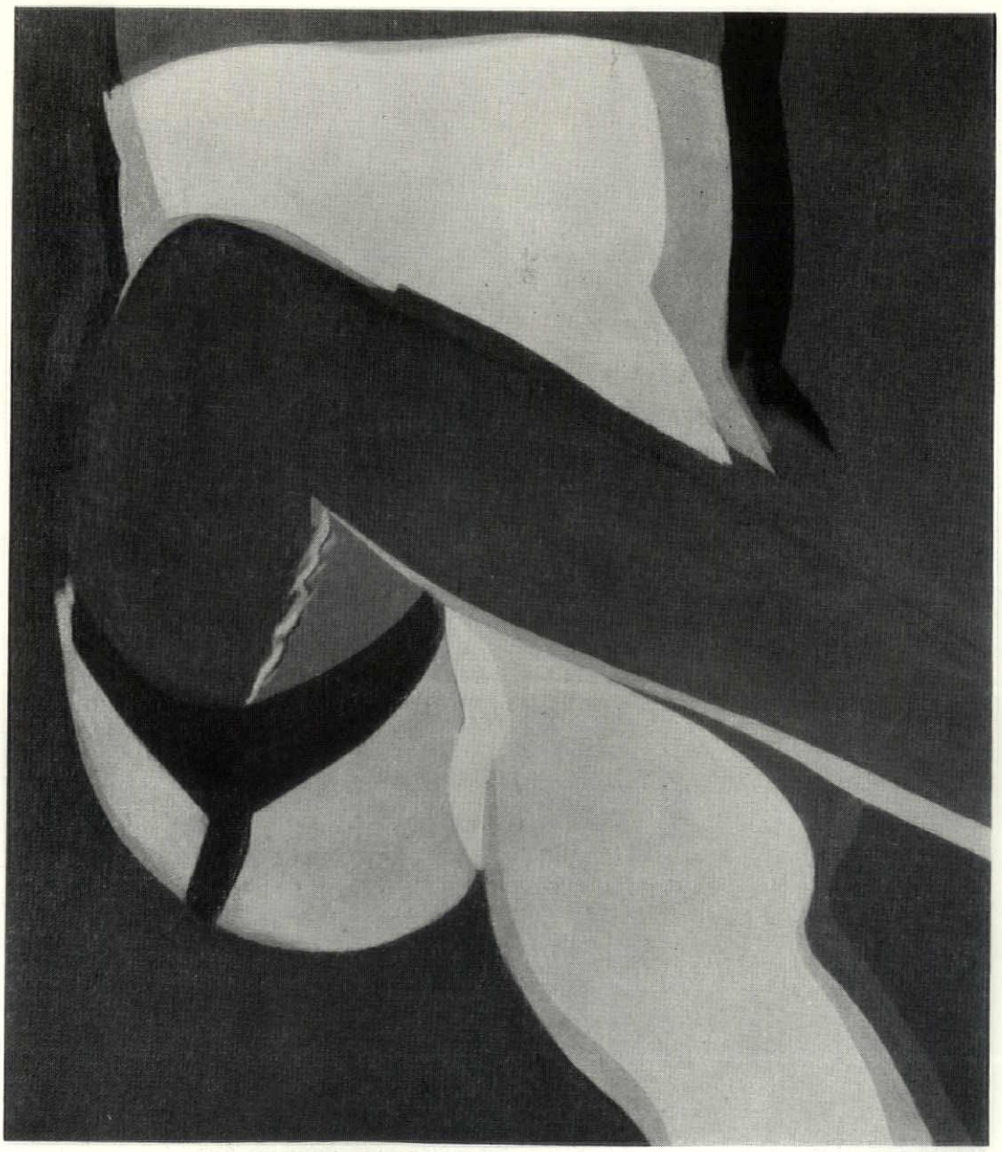


7

At Tooth's recent show of its group of younger English painters, Howard Hodgkin's painting of an even plumper, squashier female object, 5, than the one in the Manzu picture is sharply and beautifully prevented from spreading all over the picture surface, and dispersing like a cloud, by hard red geometrical motifs as keen as little knives. It's the freshest piece of old-fashioned, hedonistic, Paris-type painting I've seen for a long time.

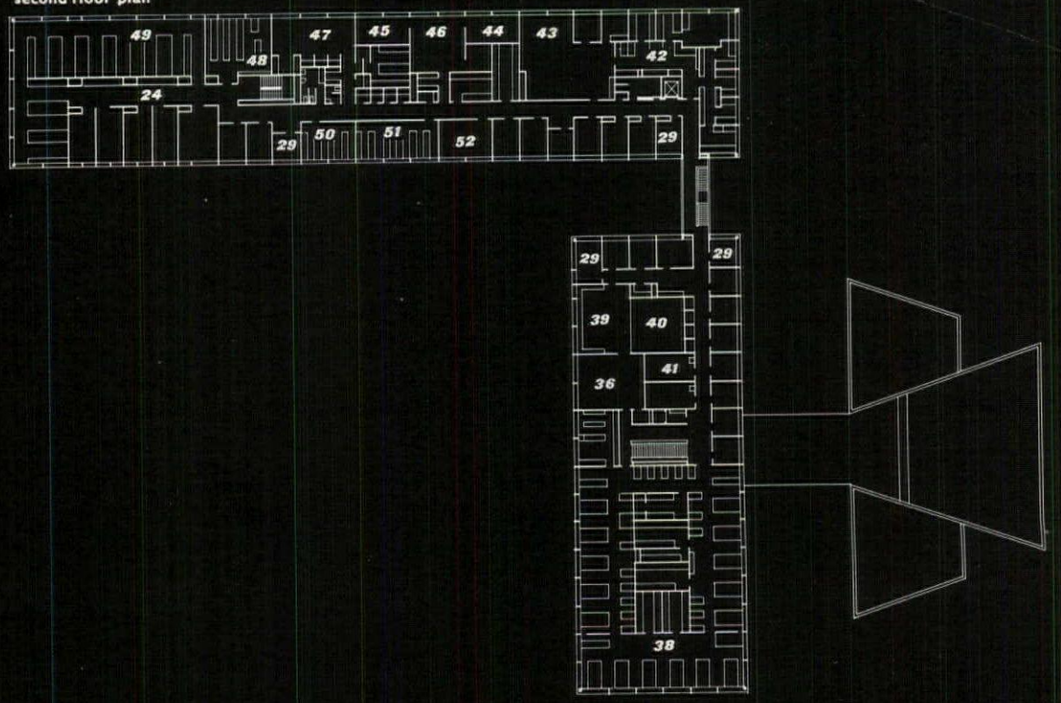
Allen Jones on the other hand, paints up-to-date English-type, madly bright and gay images of the parts of girls he likes best—cleavages, 6, and tops of legs, 7—which are as frank and clear as the eyes of a young girl who brushes her teeth night and morning and shampoos her hair every Friday night. They would make lovely posters for anything wrapped in cellophane and convey an even greater sense of the good life than the puff-ball on a Playboy bunny's behind. Perhaps, without my knowing, this is the New Humanism?

PHYSICS BUILDING, HULL UNIVERSITY

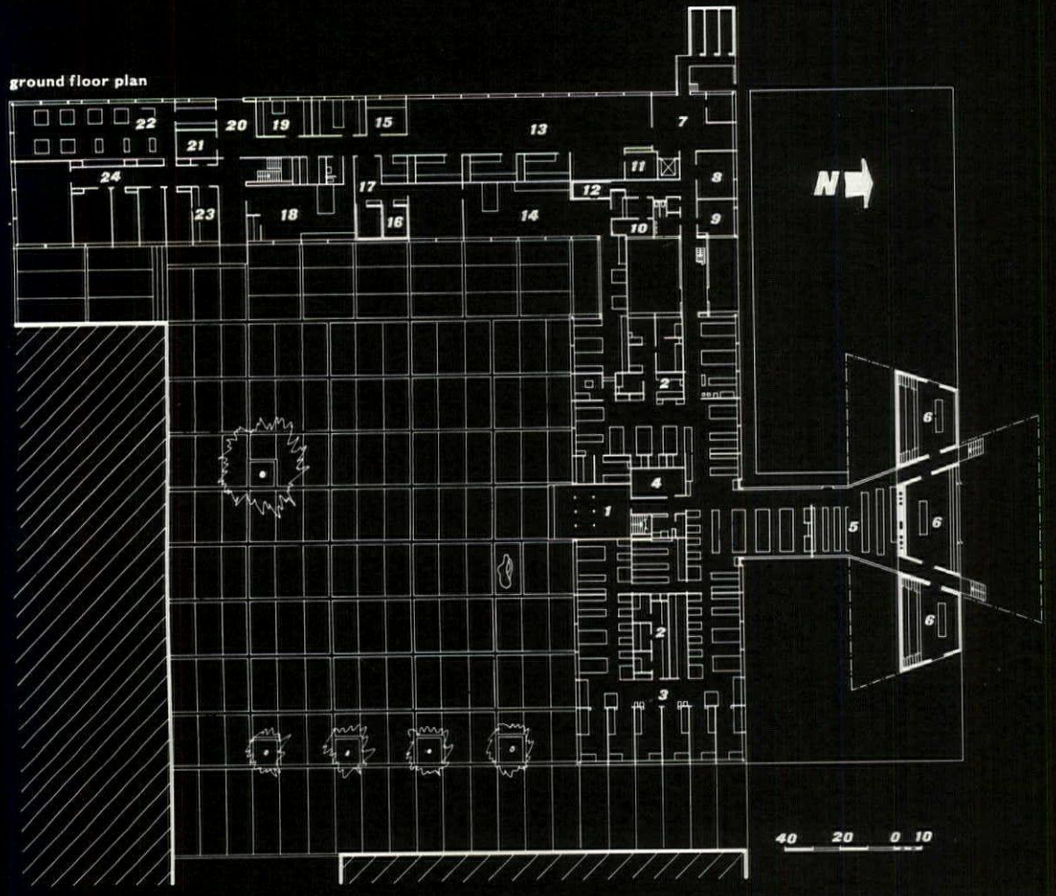
key

1, entrance hall
2, dark room
3, third year laboratory
4, heating
5, preparation
6, lecture theatre
7, unloading
8, transformer
9, switchgear
10, office
11, lift motor
12, isotope store
13, main workshop
14, radiation class
15, drawing office
16, irradiation cell
17, control room
18, instrument workshop
19, woodwork
20, unloading bay
21, compressor
22, magnet room
23, glass blowing
24, general research
25, foyer
26, first year teaching laboratory
27, office
28, professor
29, lecturer
30, library
31, photography
32, laboratory
33, apparatus store
34, technicians' common room
35, electronic workroom
36, seminar
37, paramagnetic laboratory
38, second year laboratory
39, staff conference
40, court
41, research
42, general chemistry
43, crystal growing
44, physics preparation
45, biology preparation
46, workroom
47, photography studio
48, advanced seminar
49, postgraduate laboratory
50, computing
51, research writing room
52, general store

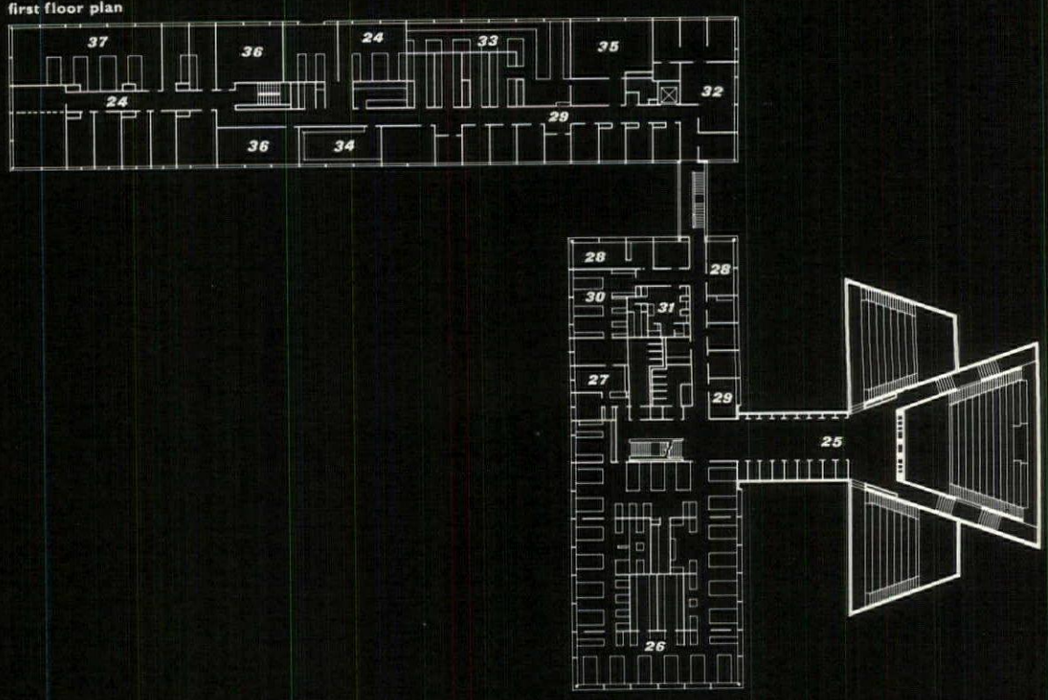
second floor plan



ground floor plan



first floor plan



1 (facing page), the lecture-theatre block from the east.

SCIENCE DEPARTMENT

PHYSICS BUILDING, HULL UNIVERSITY | *architects* **THE ARCHITECTS' CO-PARTNERSHIP** | *photographs by Sam Lambert*



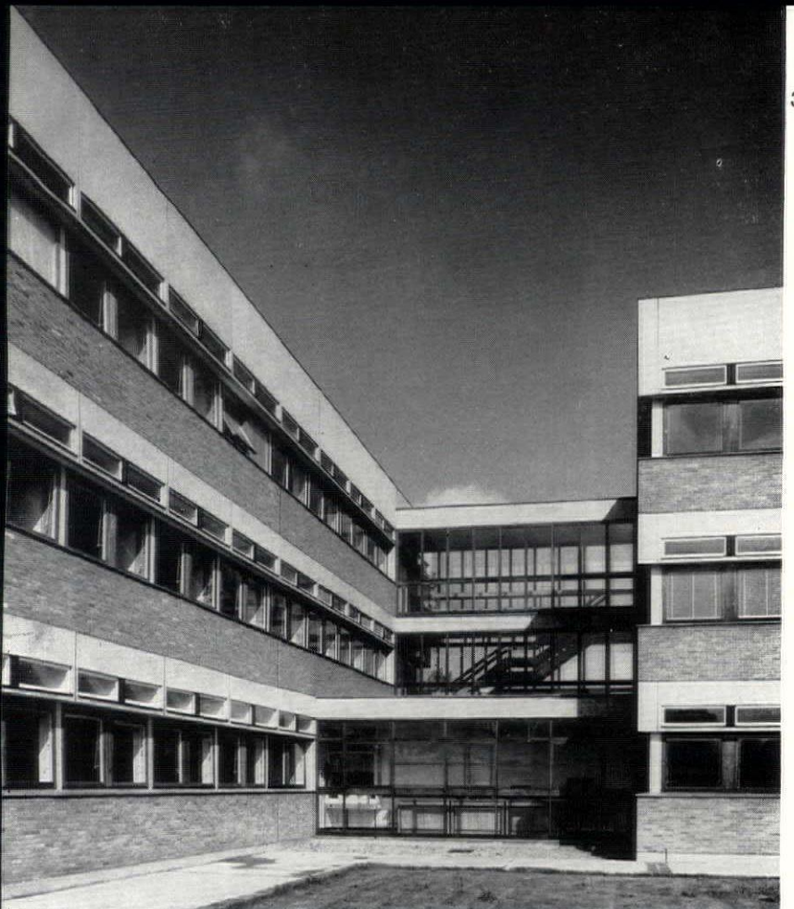


2, the north wing of the laboratory block seen from the south-east.

This building, providing accommodation for students, research students and staff of the Physics Department, forms part of Hull University's general expansion scheme and has been designed to fit into Sir Leslie Martin's master plan. The main building is in the north-west corner of the campus, on the southern edge of the sports field. An

workshops and offices. To the north of it is a lecture-theatre block, connected with it by a two-storey link containing the foyer and preparation rooms. The courtyard enclosed by the laboratory block has been treated as an extension of the main campus and connects with the main pedestrian precinct in the centre of the site. Goods entrances are on the

To facilitate the circulation of the large number of students, the laboratories, lecture-theatres and cloakrooms are all directly accessible from the main staircase, the foyer to the theatres being an extension of the first-floor landing. The north wing of the L-shaped block contains the teaching laboratories, offices and staff-rooms. The west wing contains research laboratories, workshops and



3



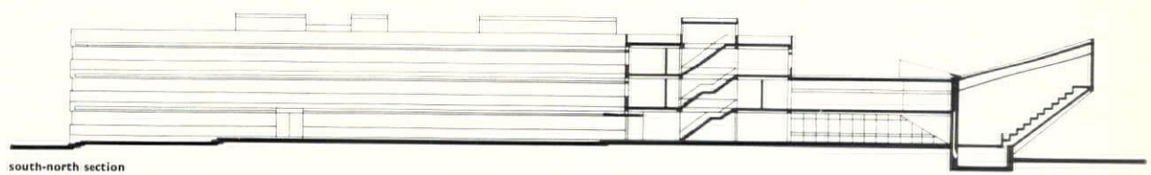
4

the X-ray and electron microscope suites. The radio-active laboratory is at ground floor level and forms a link between the west and the north wings so that student and research radio-active accommodation form one suite. Adjoining this is the radio-active isotype-store for the whole university. The particle accelerator is separately housed to the west of the main building.

The laboratory building was required to be capable of adaptation without major structural alterations. It has been planned on a 5ft. module, allowing a standard 5ft. by 2ft. 6in. table or fitting and a standard area of free floor space of the same dimensions. In the north wing both piped and electrical services are distributed from vertical ducts into a horizontal perimeter duct. In the west wing the piped services are distributed from vertical ducts into a central horizontal duct at ceiling level and terminate in the laboratories at a standard service outlet panel on the vertical duct walls. Electrical services are distributed in a horizontal perimeter duct above bench level. Certain areas of the building (such as the suite housing the electron microscope) are air-conditioned; elsewhere heating is by hot-water ceiling panels fed from the university's district heating scheme.

Staff rooms and laboratories have natural ventilation with extracts in fume cupboards and welding and glass blowing areas. Internal rooms and areas handling toxic or radio-active materials are artificially ventilated.

Floors in the laboratory block are of prestressed

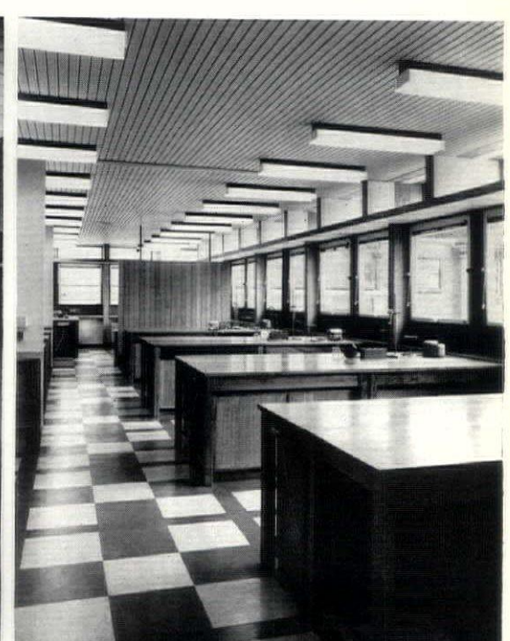


south-north section

PHYSICS BUILDING, HULL UNIVERSITY



5



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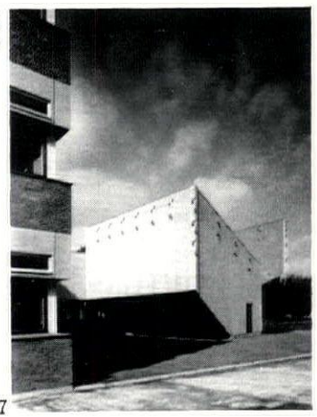
3, the link between the west and north laboratory blocks. 4, detail of a corner of the laboratory block; bands of brick are capped with zinc and the edge beams and parapets are faced with precast concrete. 5, the foyer between the north laboratory wing and the lecture theatre block; the murals are by Edward Bawden. 6, a typical laboratory.



7



8

7. the lecture-theatre block from the south-east. 8. interior of a lecture theatre. 9. the north-projecting lecture theatre; the projecting pipes are anchorages for the post-tensioned cables.

PHYSICS BUILDING, HULL UNIVERSITY

concrete planks and pots spanning between *in situ* concrete edge beams and spine beams. Perimeter columns are precast at 10ft. centres and the external walls are horizontal bands of brick capped with zinc. The edge beams and parapets are faced with precast concrete panels. Internal columns are of *in situ* concrete, of cruciform or T shape, with the legs the same width as internal walls to avoid projections in the corners of rooms. Internal walls are of 4½in. brick, plastered, and can be erected on any modular division. They are not bonded to the structure. Windows are hardwood framed, pivot hung horizontally, with mullions at every modular division of 5ft. Above them are photobolic screens to reduce glare and improve the natural illumination. Ceilings are suspended metal; floors are linoleum tiles, with woodblock in the workshop areas. The lecture-theatres have post tensioned reinforced concrete walls and a post tensioned concrete diagonal roof.



9

David Williams / a Himalayan trading town

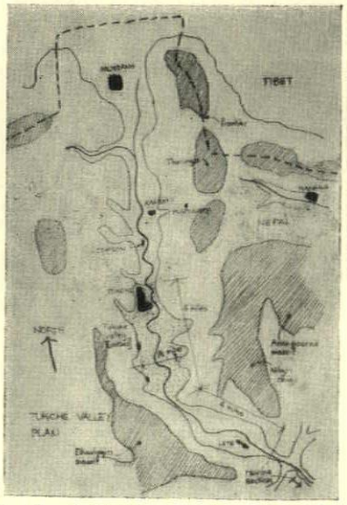
TUKCHE



1

Before 1950, Nepal was closed to foreigners for over a century as a policy of the Rana government, and since then its mountains and lowland jungle have resisted easy penetration. Even the main towns and villages along the trade routes were little known until publicized recently by Herzog and Hagen in their books. The habitable parts of the country occupy four parallel zones running from east to west. Listed from north to south they are (*a*) the Terai—tropical lowland jungle, strong monsoon; (*b*) the cultivated subtropical foothills; (*c*) the ravines—temperate climate, pine forests; (*d*) the flat highland plains (8,000 to 12,000 ft.)—a cold desert climate (no monsoon) and surrounded by snowy peaks. The main valleys generally run north to south, cutting through these zones, and they form the trade routes from Tibet to India.

Tukche* lies at the threshold of the desert upland plain and along the area of contact of Tibetan Buddhist culture with Indian Hinduism. Its peculiarity, which this article sets to point out, lies



2

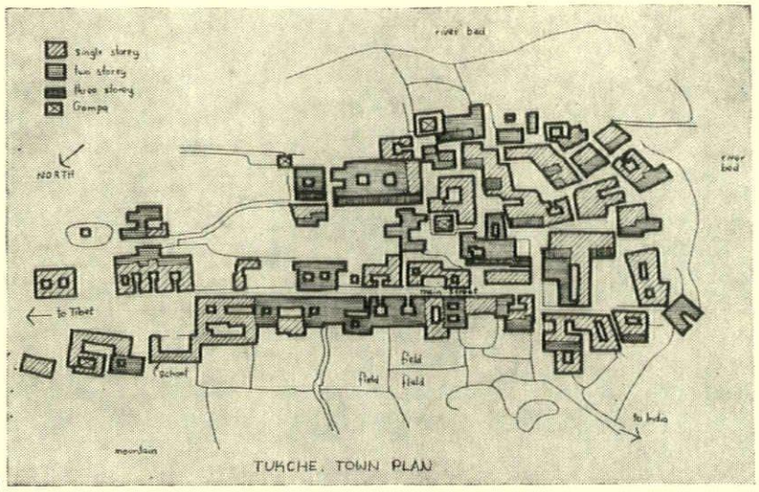
in the faithfulness with which the form of the town reflects its climatic, commercial and cultural influences. It is a town of merchants, living almost entirely on the exchange of salt brought by mule trains from Tibet, with rice and consumer goods carried by coolies from the Terai and India. These merchant families, called Thakkalis, are a racial mixture of Tibetans and Aryans and have largely adopted Buddhist religion and culture, though the town still contains a minority of Hindus, mostly among the farmers and craftsmen. The population is approximately 2,000.

The town stands at about 9,000 ft. on the northern end of one of the large flat steps of the Kali Gandaki river bed, which is covered here with pebbles, grit and sand. On either side the 27,000 ft. peaks of Dhaulagiri and Annapoorna spring directly from the valley floor—see map, 2. A few barley fields surround the town. They provide a scanty living for a few farmers, but are eroded year after year by the changing course of the river. Thick fortress-like stone walls of the peripheral buildings shield the town against the dust and grit whipped up from the river bed by the daily afternoon wind. Within the town the houses are terraced; narrow fronts to the streets, and long communal walls for maximum warmth and protection, since temperatures range from an 80°F. summer heat to 20° of frost in winter. The exposed ends are generally orientated at 90° to the prevailing wind and most of the rooms look in to a courtyard for light and ventilation, 1 and 3.

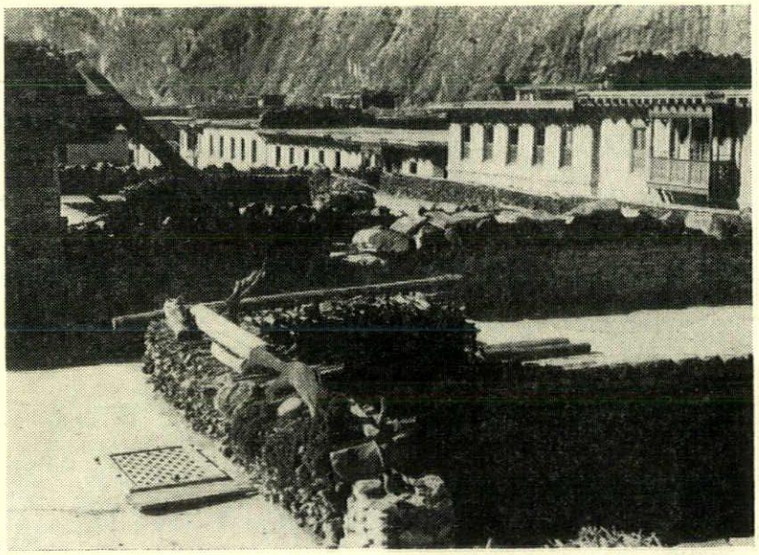
The houses are all flat-roofed, as the monsoon rains are cut off by mountain peaks at the ravine area, ten miles down the valley. The rainfall delineation there is quite distinct, for you suddenly round a corner in the valley and the monopoly of pitched roofs gives way to a monopoly of flat ones. The inhabitants pile the winter's supply of firewood along the eaves of the roof where it baffles the wind and provides a safety parapet, 4. Access to the roof from the courtyard is usually

*Sometimes written Tukucha, but pronounced Tukche.

TUKCHE



3 TUKCHE, TOWN PLAN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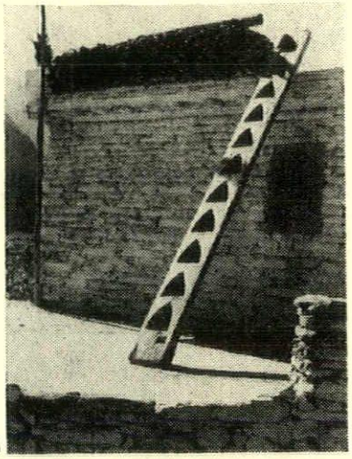
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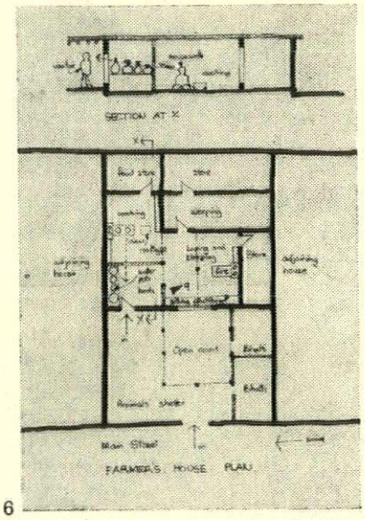

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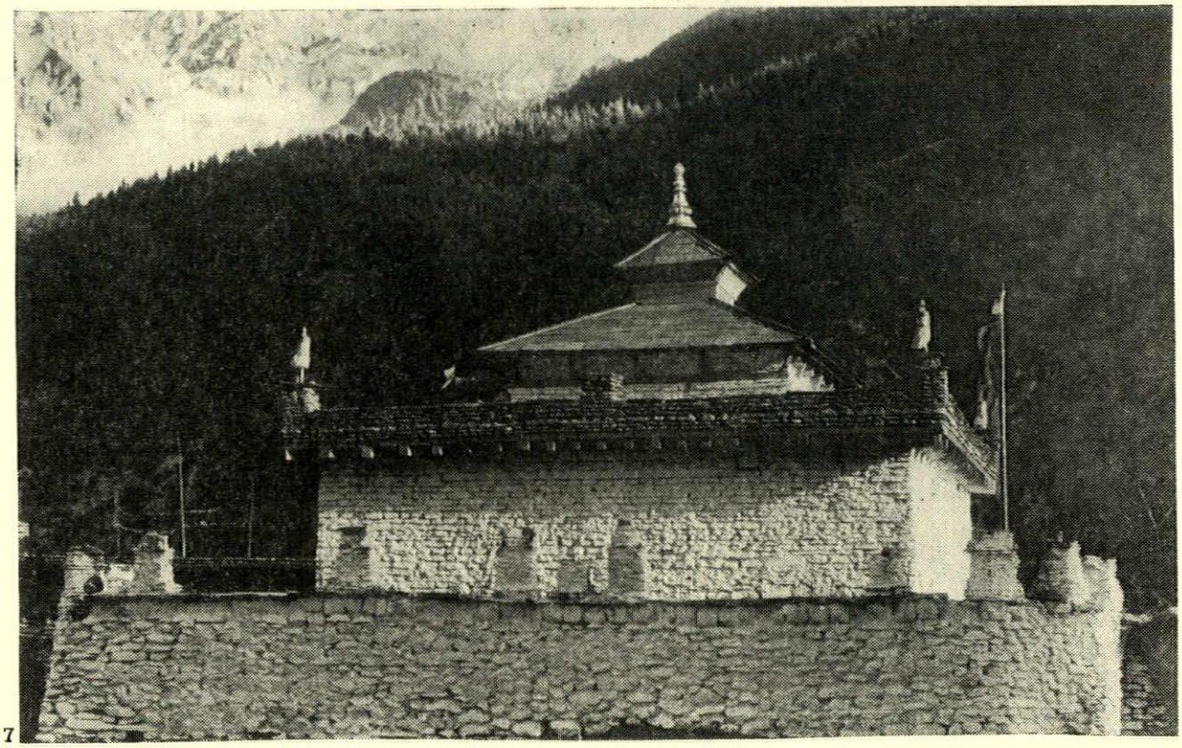
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by means of a monolithic ladder gouged from a tree-trunk, 5.

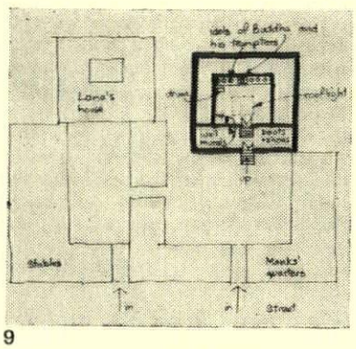
Farmer's house, Gompa and monastery and trader's house comprise the main building types in the town. The farmer's house, though terraced in the street with the other buildings, is generally the simplest structure, 6. The farmer and his family usually live and sleep in one large space subdivided by eye-level timber partitions. He keeps his animals in the enclosed court outside and approaches the living quarters as often through the farmyard as from the 'clean' side. The farmers and poorer traders have taken advantage of the trade traffic through the town, and frequently operate their houses as hotels, called Bhattis, admitting travellers for a night's free lodging, providing they take (and pay for) one or two meals cooked by the housewife. The travellers usually sleep alongside the animals in empty stables. The flexible caste distinctions allow them to eat in the house and be served by the householder in the large all-purpose room, though the family usually eats separately at another time. There are often two fires in the room, the family-cum-kitchen fire, and the other where the guests can warm themselves and eat. A small entrance lobby screens the main living area, blocks the draught and provides a place for the water pots and doffing of boots (though not during cold weather). The kitchen is usually placed immediately behind the lobby with a hole cut in the dividing screen at eye-level squatting height, so that the housewife can see who comes and goes.

This small town is sanctified by no fewer than three Gompas, at least one Tibetan-type monastery and one Hindu temple. The Gompas, 7, sport little pitched roofs which must be for prestige, for no other buildings have them. They are designed for individual worship, or for small groups of monks. One has recently been renovated and the interior gleams with new murals painted in traditional Tibetan style only a year or two ago by a craftsman from the town, 8. Its plan is shown in 9.

The traders' houses, 10, in particular the six largest, most of which are owned by one family group, are the most developed and sophisticated buildings in Tukche. The living areas lie on the first floor, leaving the ground space free for store-rooms and stables where the animals' body heat conveniently warms the living-rooms above. The living quarters are divided up to accommodate different sections of the joint family, for several brothers and their families, together with the aged grandparents, may all live in the same building, and while keeping their sleeping, and some living quarters, separate, usually cook and dine together. The main kitchen is very strategically placed – from their cooking area the ladies of the house can supervise not only their own men folk, but



8



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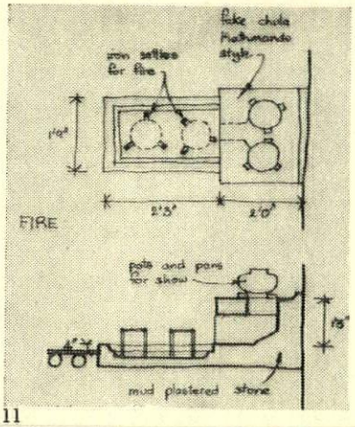

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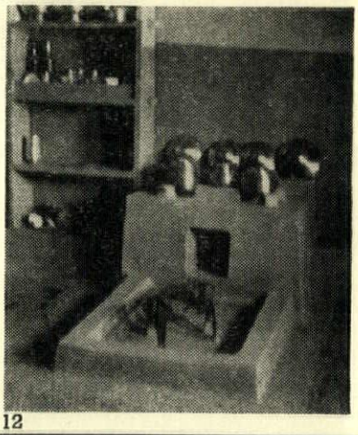

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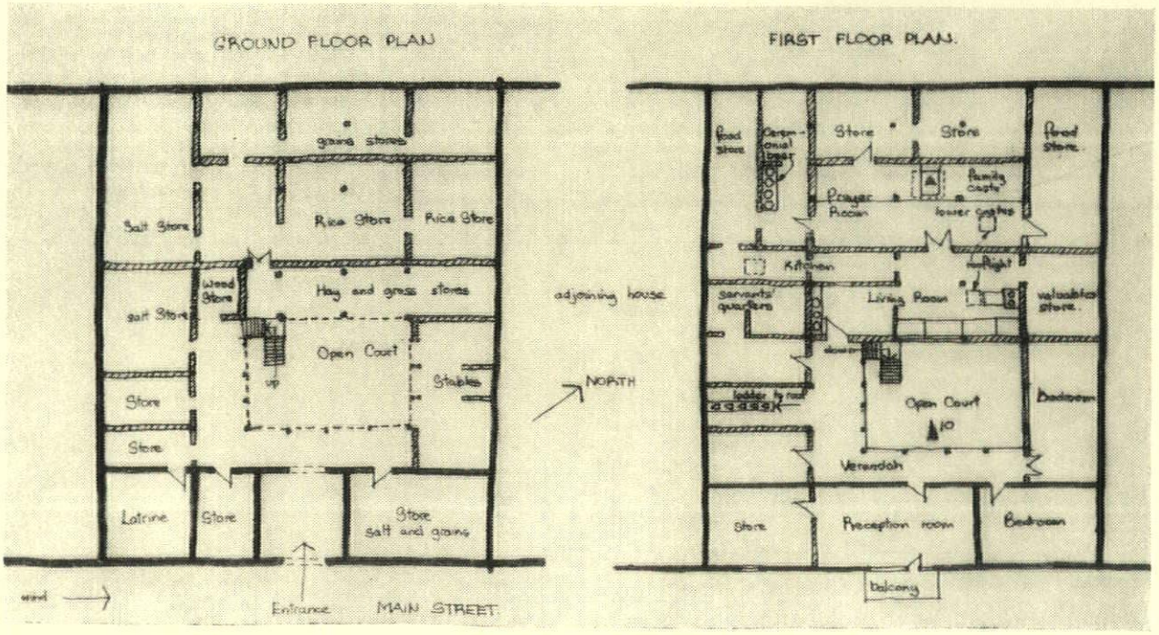
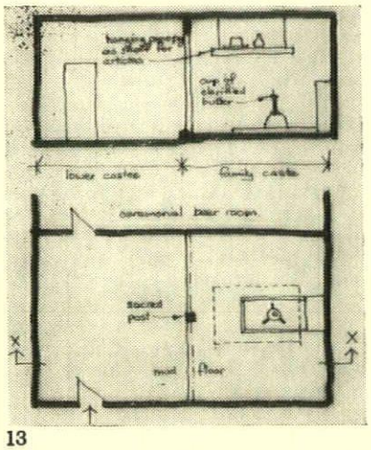


the main entrance, servants' quarters and foodstores also. These foodstores extend far back into the house and hold enough supplies for a whole year.

The living room incorporates the typical open fire protruding well into the room to allow a large circle of people to warm themselves, 11 and 12. The chimney revolution has not yet reached Nepal, and in common with all other classes of house, the smoke pours from the open fire into the room, stinging the eyes and causing bad coughs and trachoma among many of the local people. A tiny hole in the roof releases a fraction of the smoke and lets a dim light filter into the room. The open fire is always used for cooking, although between the fire and the wall is a rudimentary Indian-type cooking range (*chula*) called a Kathmandu *chula* by the locals. This is a fake structure for show, for no coal or stick has ever blackened its red-painted mud plaster. Beside the fire, and alongside the main window, runs a stepped platform 2 in. to 6 in. high off the floor. The master of the house sits at the head of this, nearest the fire, and lesser members of the household and lower castes sit on lower levels according to their rank.

Deep in the back of the larger houses lies the prayer room used mainly for celebrations on feast days and marriages. The rite often includes drinking ceremonial beer, which is stored in a nearby room. The focal point in the room is the holy fire which warms a cup of clarified butter, and the half of the floor on which the fireplace stands is raised a few inches from the other half, 13. Though this is adhered to less rigidly nowadays, the upper half should only be used by members of the caste of the household, or higher castes, while the lower area is for the nether orders. The fire ceremony and caste delineation has a very Hindu flavour about it and, in fact, until these large houses were built in Tukche, many Thakkalis were Hindus, having changed to *mahayana* Buddhism 80 to 100 years ago.

The prayer room is usually designed to include a structural timber column in the centre of the space. The Thakkalis must have a highly developed sense of structural aesthetics, for they revere this post to the point of worshipping it. One of them said to me 'this post is sacred to us, for it bears the whole weight of our home.' This is indeed true, for the massive outer walls are only a shell for protection against the cold, and the interior is formed by a series of cantilever pinewood frames supporting beams, joists and floor planks, 14. This construction allows a flexibility unimagined from a glance at the outside. All the internal walls are merely timber partitions and can be moved according to the accommodation required. This is especially useful in a joint family house where the family periodically swells and diminishes, and



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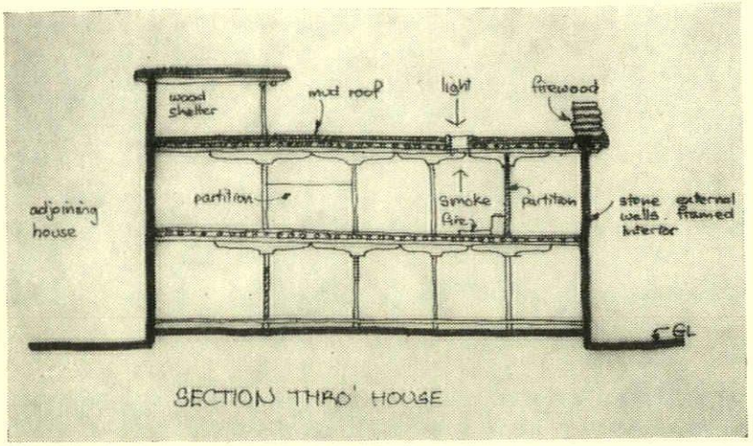

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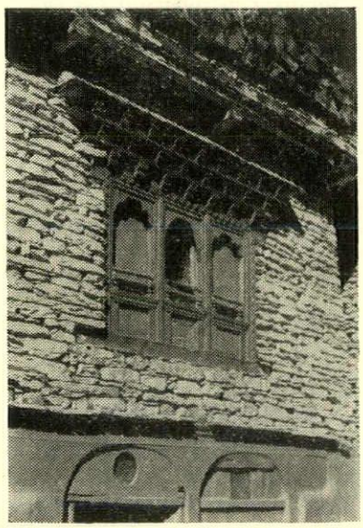
TUKCHE



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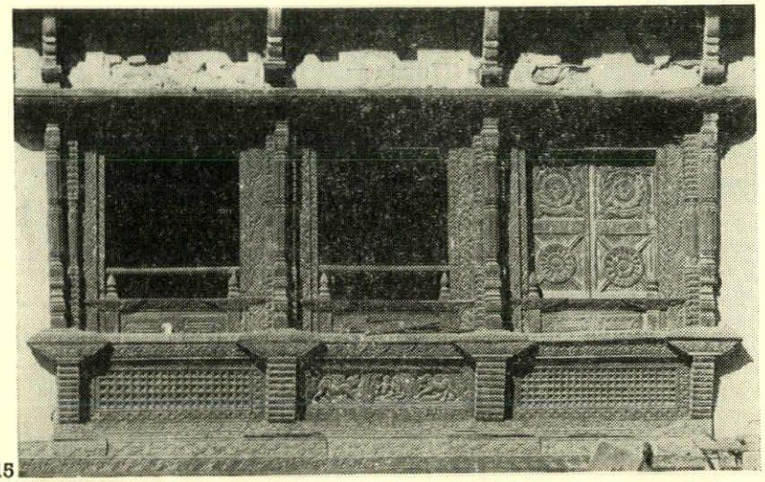

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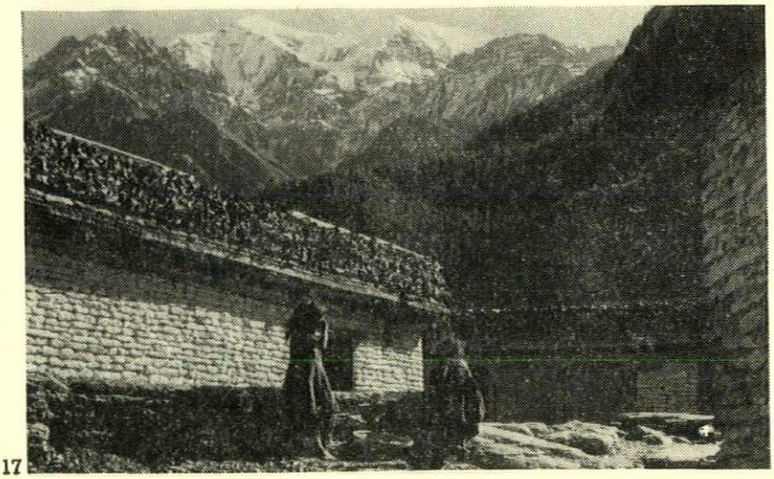


17

for the adjustment of the storage areas. The lighting to the rooms is usually inadequate, often consisting only of the smoke-light hole mentioned earlier, except in the master rooms which are often decorated with an ornate window, either in the courtyard opposite the entrance arch, 15 and 16, or as balcony or oriel windows to the main street.

Rooms with the large windows are often cold; I saw no glass in Tukche and the biting wind knifes through the timber shutters. There is little floor level draught, however, since the door thresholds are at least 1 ft. above floor level and make the floor the warmest place to sit. The popular red earth stain found all over central Nepal for colouring the outside of the houses is used here only inside, on the floor and up to dado height. Other bright spots in the room are confined to a display of brass utensils on the shelves and embroidered rugs on the sitting platforms. The external walls of the buildings, 17, are painted white within the town and the woodwork of the window and door frames picked out in red or black. Outside the town, however, the inhabitants have given up the battle, so from a distance the natural slatey stone walls merge imperceptibly into the hill-side behind.

The future of Tukche is uncertain. Trade is falling off, threatened by the many Tibetan Khampa tribesmen—natural warriors uprooted from their native place in eastern Tibet since the Chinese invasion, who are fighting a guerilla war from Mustang which they have made their base. They have no means of support and raid the Nepali and Tibetan salt traders and the surrounding villages. There is less call for Tibetan salt since India has begun to produce more herself, and these influences, combined with the drift of the youth to more developed areas, make the outlook for the town seem bleak. At present, however, Tukche is still lively, and if it can resist these 'ghost town' tendencies for another ten or twenty years there is a faint chance that the government's policy of transforming Nepal into the Switzerland of Asia will provide the town with an airstrip or at least a proper road.

Design Review
a new series

New products chosen and annotated by Ronald Cuddon.

DR

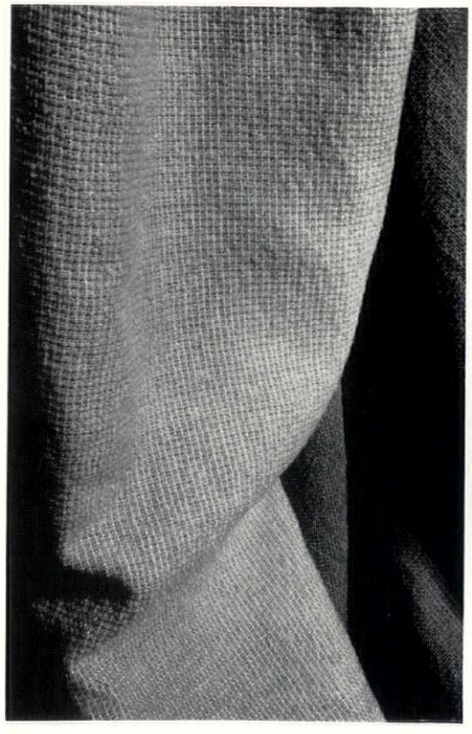
Fabrics

Isabel Tisdall was until recently closely associated with Edinburgh Weavers; now she has launched a new venture, Tamesa Fabrics, an independent company with a London showroom near Sloane Square. Here one can see a collection of very beautiful furnishing fabrics designed and produced under her direction. It includes both printed and woven fabrics but the most significant are those woven fabrics in which interesting textures are created by the use of natural yarns and the mixture of these with man-made fibres. The limited group of colours employed is consistently subtle and satisfying, ranging from white, ochres and sandy tones to bronze, olive and blackish greens.

Many fabrics are designed in a vacuum, unrelated to the job they have to perform or their role as a component of an architectural environment, but Mrs. Tisdall is obviously very much aware of these visual implications. Her woven fabrics moreover have the virtue of timelessness, an element so often neglected in a fashion-crazed field of design activity. Unlike dress fabrics, those intended for furnishing are often in use for many years and highly mannered and fashionable textiles lose their place after a short period and appear dowdy and tiresome.

In a country internationally respected for its weaving traditions it is sad to find that many of the most interesting furnishing fabrics come from Scandinavia. Small companies like Tamesa Fabrics, and there are other notable exceptions, will give, perhaps, new impetus and vitality to an industry which, though technically brilliant, is often unsure of itself in terms of contemporary design.

The print designs in the collection are,



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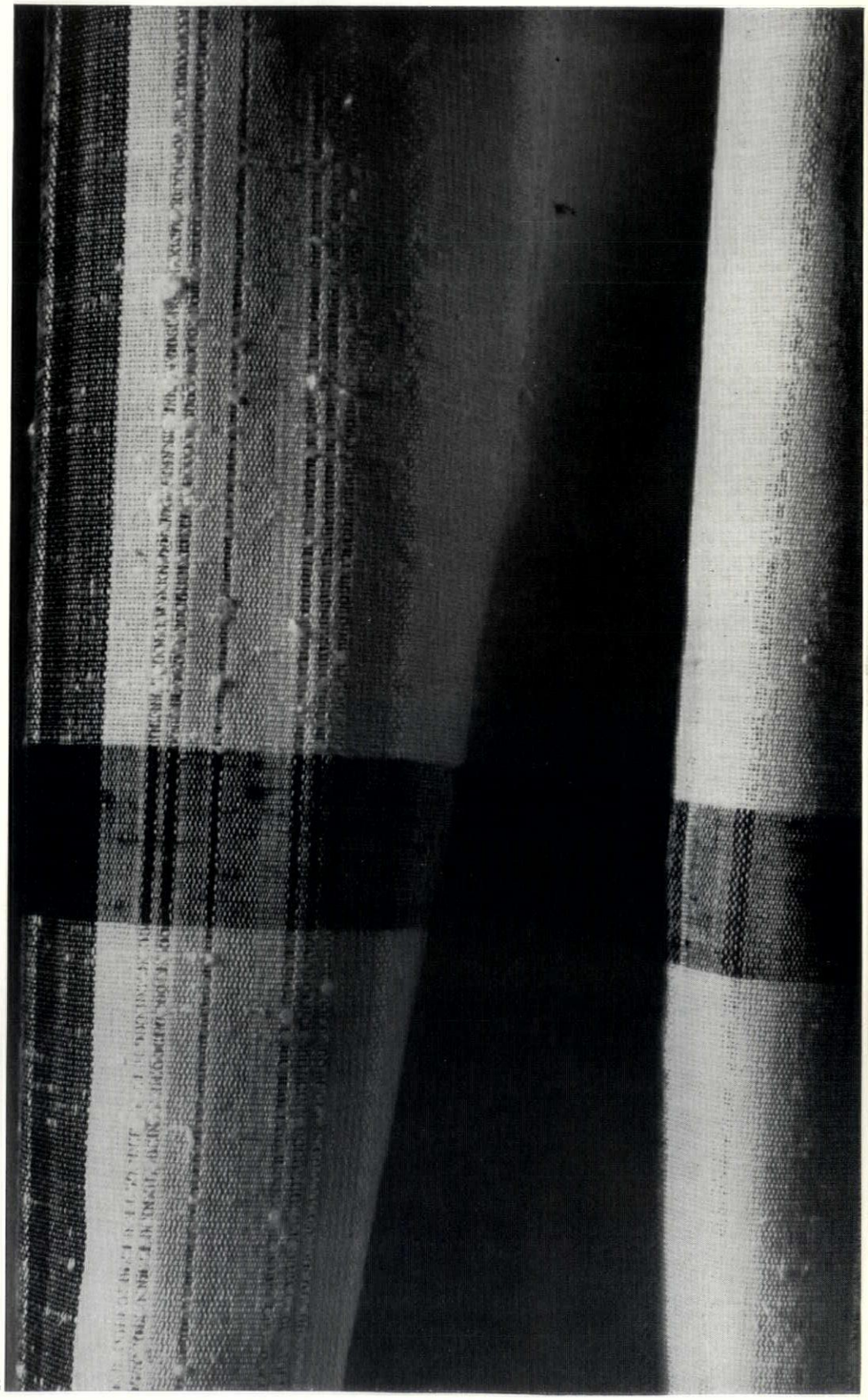


2

Woven fabrics:
1. Umbria, *in four colours: tarnished brass, biscuit, peat and white; wool, linen and cotton yarn.*
2. Echo Check *shown in white and peat; woven in four colours from cotton and rayon yarn.*

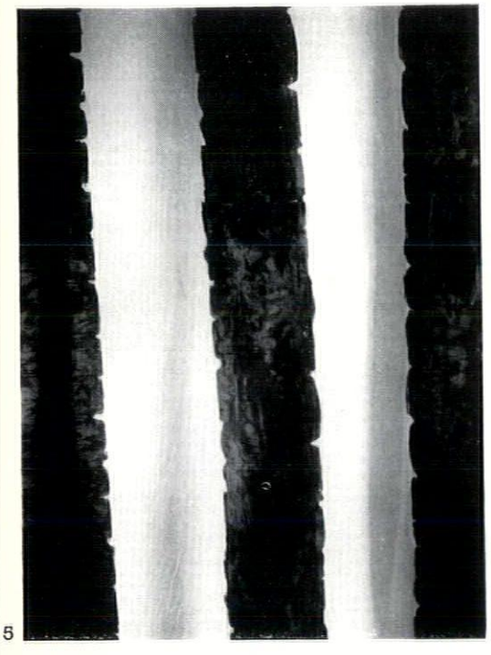
DR

perhaps, the least successful but their monochromatic colours, as elsewhere, are delightful. The use of white backgrounds for these is ideally suited to conditions where colour and pattern are called upon to act as a subtle emphasis to an interior, or where walls are white and a continuity of background and receding surfaces are required to preserve a quality of controlled spaciousness. It is disappointing however not to find some small patterned prints, for the problems of scale in the restricted interior space dictated by modern economics and high density living are formidable; indeed are almost universal in domestic work. It is always difficult to discover prints with neutral backgrounds, of restrained design and in scale with the small interior; prints that enhance space instead of dominating and destroying it.

Product : Woven and printed furnishing fabrics.
Manufacturer: Tamesa Fabrics Ltd.



3



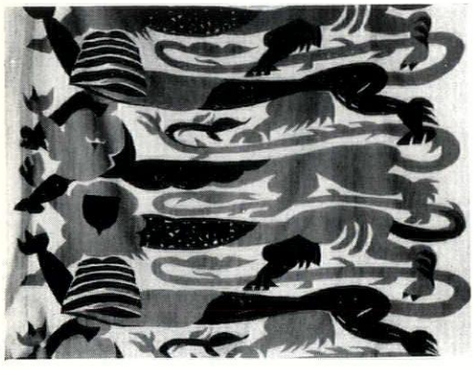
5



4

Woven fabrics :
3, Echo Stripe, *in eight colours from cotton and rayon yarn.*
4, Tamesa Star, *in fifteen colours; spun rayon.*

Printed fabrics :
5, Barbican, *in three colours: tarnished brass, brown and blue on white cotton satin.*
6, Golden Lions, *in golden brown and black on white cotton satin.*



6

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BARBOUR INDEX
386



The new "Lincoln" Suite—designed to fit small spaces

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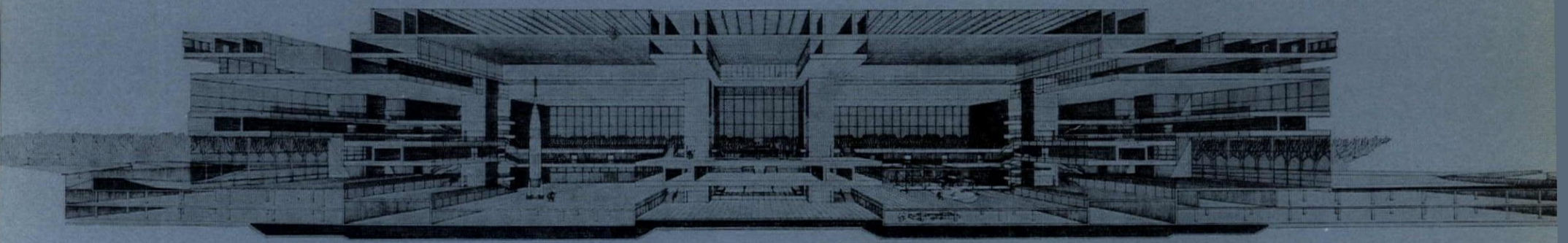
PREVIEW

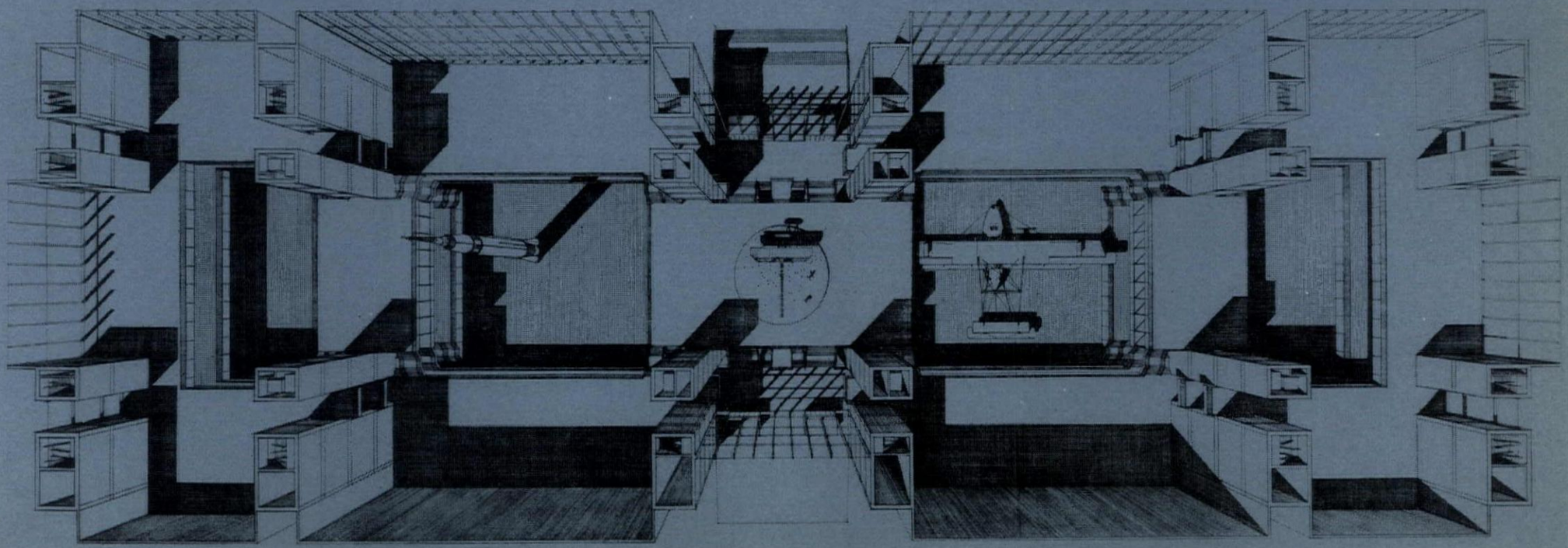
AIR AND SPACE MUSEUM, WASHINGTON, USA

architect: Gyo Obata (of Hellmuth, Obata and Kassabaum), in association with Mills, Petticord & Mills



Above, sectional perspective. Below, bird's-eye perspective with roof removed.

This National Air and Space Museum, on which it is hoped to begin work later this year, is a new addition to the double row of museums and similar buildings lining the Mall, Washington's formal avenue leading to the Capitol. It will stand opposite the National Gallery of Art, and will be the first modern building in the Mall, the others being in the form of classical temples in the Beaux Arts tradition, but its proportions and monumental scale have been designed to accord with them. Administratively it is an extension of the Smithsonian Institution's museum complex on the same (south) side of the Mall, which includes a much smaller building, serving the same purpose, opened in 1960. The new building is designed for 50,000 visitors a day. The exhibition areas had to be

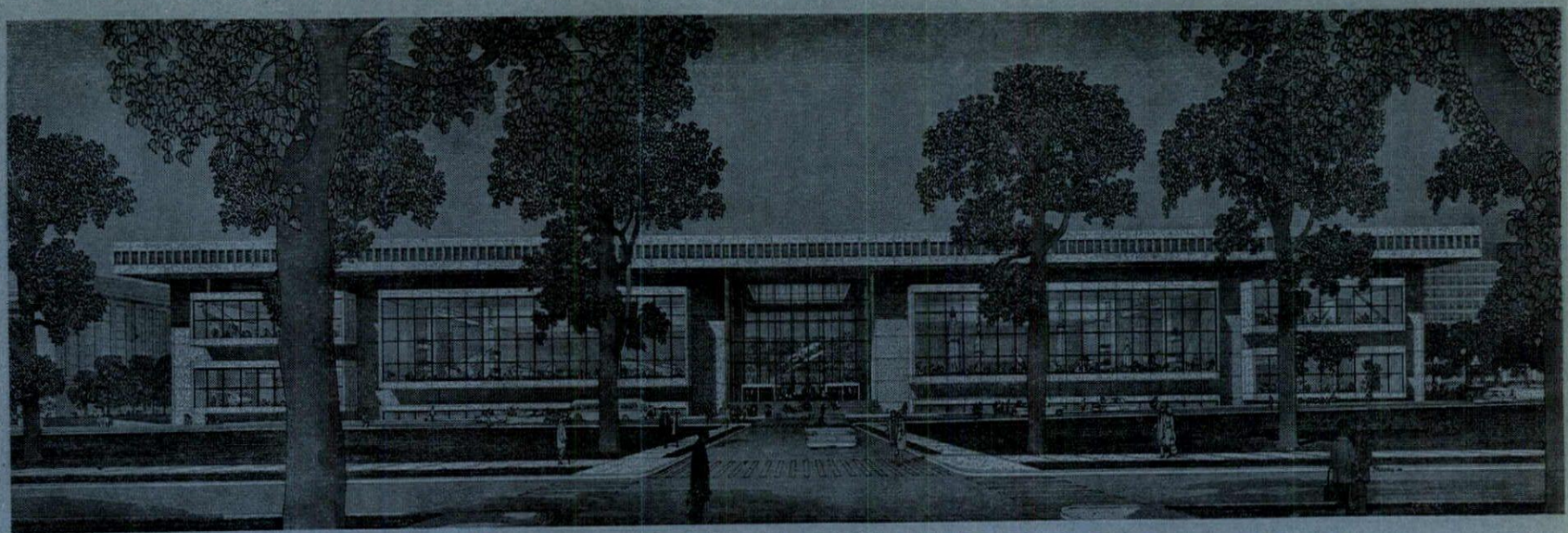


large and flexible, to accommodate exhibits ranging in size from miniaturized instruments to full-size aircraft, space vehicles and rockets. Among the exhibits will be the original Wright Brothers' 'Kitty Hawk Flyer,' Lindbergh's 'Spirit of St. Louis' and John Glenn's space capsule. In addition to the exhibition areas and the museum offices, the building will contain an Historical Flight Research Centre, a library, study and conference rooms, an auditorium seating 350 and a cafeteria seating 700. At a lower level will be a two-storey garage for 1,200 cars.

The exhibition areas are laid out between twelve large hollow steel piers containing stairways, lifts and services. From these piers span steel trusses—in some cases over distances as great as 180 ft. The trusses are at various heights so that visitors can flow from one level to another and see the exhibits from different angles. This structural system provides large exhibition areas (as much as 180 ft. by 65 ft.) free of columns and defined by the structure of the building rather than enclosed by walls. The floor levels of some of the areas are below ground, giving them a ceiling height of 110 ft. Two of the areas, and the space directly inside the main entrance, are top lighted.

There are also smaller exhibition spaces of more intimate proportions, and over the tops of the piers, slightly overhanging the main outer wall surfaces, is a one-storey area forming in effect a deep roof slab, containing the offices and the flight research centre. They are lighted from a row of windows that continues round the whole perimeter of the building. The large glass bays facing the Mall will allow the interior and some of the exhibits to be seen from outside at night. The opposite (south) side of the building, facing on to the busy Independence Avenue has largely blank walls.

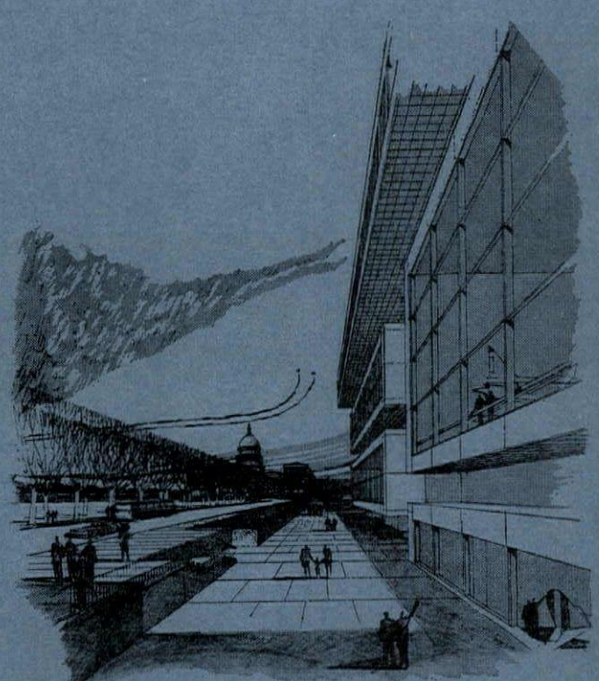
The outer walls are of cast stone, given some texture by the use of a granite aggregate. Other materials are dark anodized aluminium and tinted glass.

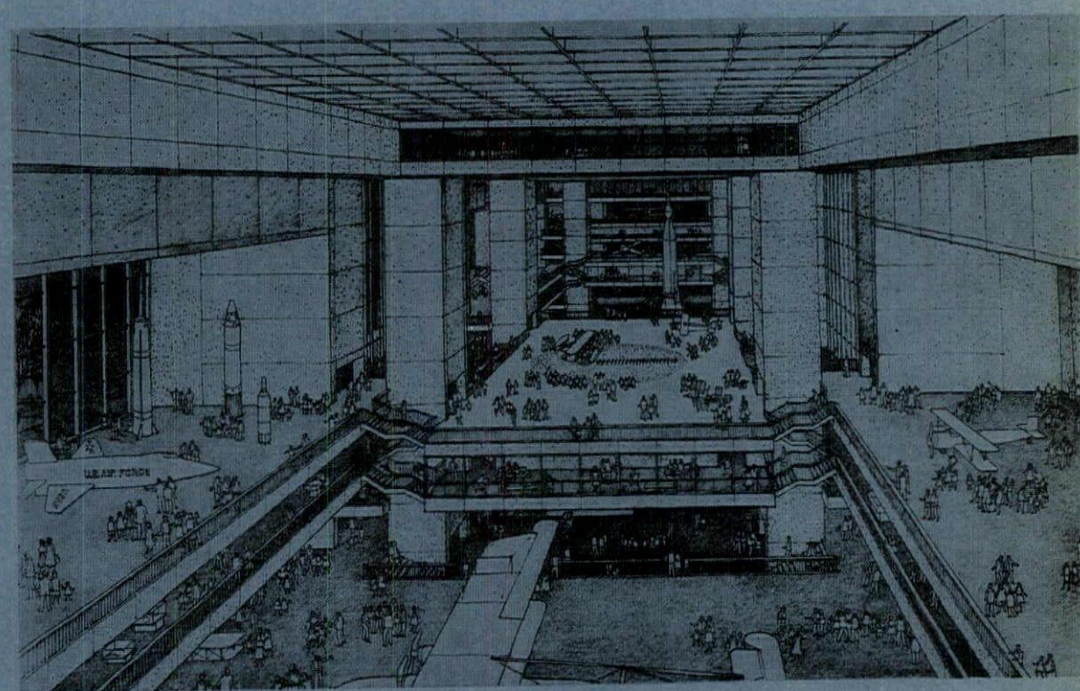


Above, the museum seen from the Mall. Below left, looking along the Mall to the Capitol with the museum on the right. Below right, the main exhibition areas.

PREVIEW

AIR AND SPACE MUSEUM, WASHINGTON, USA





MISCELLANY

decoration

ROCOCO GRILL ROOM

'The gorgeous gilded Palace! Why, you would think that a piece of Versailles famous Palace had been cut off and brought over to England, as the *Elgin marbles* have been brought from Athens to the British Museum. In vain you may search here for the so much abused English style of decoration, whether Queen Anne, or any thing you like. The Café Royal is purely French, regular Louis XIV kind of ornamentation. Every thing is French, even the roast beef of old England has quite a Parisian taste about it . . . as different to St. James's Hall Restaurant, on the other side of the street, as Folkestone is to Boulogne.' This paean comes from *Nocturnal London*, a volume of disgruntled reminiscence by 'A Late Secretary of Legation to the Court of St. James's,' published in 1890. He was a Frenchman, and the Café Royal to him was an oasis in a foggy desert. Sir Herbert Beerbohm Tree, by contrast, once remarked that 'If you want to see English people at their most English, go to the Café Royal, where they are trying their hardest to be French.'

There has in fact always been a certain ambivalence in the Café's Frenchness. It celebrates this year* the centenary of its opening in Glasshouse Street on 11 February, 1865, by Daniel Nicolas Thévenon (1833–97), a bankrupt Paris wine merchant on the run from justice, who changed his name to Daniel Nicols, and later to Daniel de Nicols, when he built at Surbiton a palatial country house (now demolished), with a deer park. He died worth £600,000.

When at the end of 1865 he bought a tailor's shop at 68 Regent Street (still the Café's address), he moved at once from the closed world of exiled poverty to the centre of London's fashionable elegance. His was not the first French *café-restaurant* in London—there were earlier examples such as Gatti's at the Adelaide Gallery and Evans's Supper Rooms at Covent Garden; but he made French cooking a central feature of the new broad-minded gaiety of London society under the leadership of the Prince of Wales (Edward VII). The environment of eating was almost as important for this as the quality of cooking. Nicols chose as his architects the then unknown partnership of Archer and Green, who designed almost everything for the Café Royal in

* For most of the historical facts in this article I am indebted to the book, *Café Royal*, by Guy Deghy and Keith Waterhouse, published in 1955, and also to Mr. Deghy personally. I am also grateful to the Café's banqueting manager, Mr. Mervyn Cherrington, for his help.

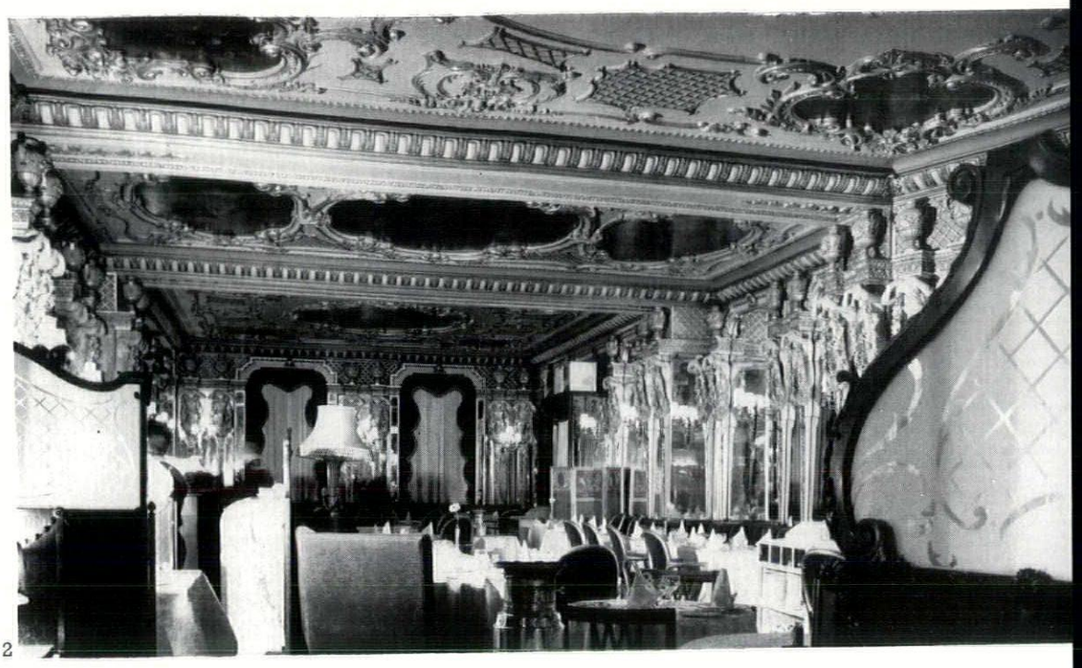


1

the years 1865–85 (with a decorator named R. Lloyd, it seems).

During these twenty years Nicols gradually bought up the surrounding property so that, although his Regent Street entrance was comparatively narrow, there was a long side front in Air Street (Nos. 6–14) and a long back front in Glasshouse Street (Nos. 11–23). Within this irregular but compact block there were many rooms: the Grill Room on the ground floor along Air Street, the Domino Room next to it in the centre of the site with a back exit to Glasshouse Street, the Restaurant on the first floor reached by an imposing horseshoe-shaped staircase of marble, then two further floors of private banqueting rooms, culminating in a richly decorated Masonic Hall in the rooftop. These different rooms carefully reflected the variety of the clientele, from the artists and exiles in the Domino Room (the famous Café of Wilde and Beardsley and Augustus John) to the *salons privés* upstairs where young aristocrats entertained their lady friends, from the superb French *cuisine* in the Restaurant to the temporal splendour of the Masonic Hall (the Prince of Wales was a keen Mason, so this was a shrewd addition to Nicols's amenities).

The Grill Room, after the rebuilding of Regent Street and subsequent refurbishing, is now the only part of the Café Royal substantially in its original form. The rebuilding (1923–28) was carried out by the nondescript Henry Tanner behind the façade of Sir Reginald Blomfield's 'not too French, French' Quadrant. The Grill Room changed places with the Domino Room and was reduced in size. It was originally entered mainly from the Glasshouse Street side, the façade of which was illustrated in the *Building News* for 1873 with evident approval for its precise classical proportions and frilly balconies. The interior décor of the new Grill Room is in fact that of the old Domino Room, reduced in height and with certain features removed, such as the hanging electroliers and the great Corinthian columns of iron with their spiral swags. Thus the old haunt of Wilde, Beardsley, Augustus John, Dowson, Marinetti and the other artists has been transmogrified from an informal drinking place to a formal dining room (the manager in the 1920's, Capt. Daniel Pigache, Nicols's grandson, had little sympathy with the artists). In the well-known paintings of the Domino Room by Orpen, Ginner and Allinson and in the descriptions by Beerbohm and Sitwell, most of the details of the present Grill Room can be seen, including the ceiling. The reduction in height has resulted in the caryatids now being somewhat oversized in proportion to the room; on the other hand, much of the original 'height' was only in the artists' imaginations. The new ensemble, although to purists a 'phoney,' fits together convincingly, and is possibly unique as an example of Victorian preservation in the 1920's.



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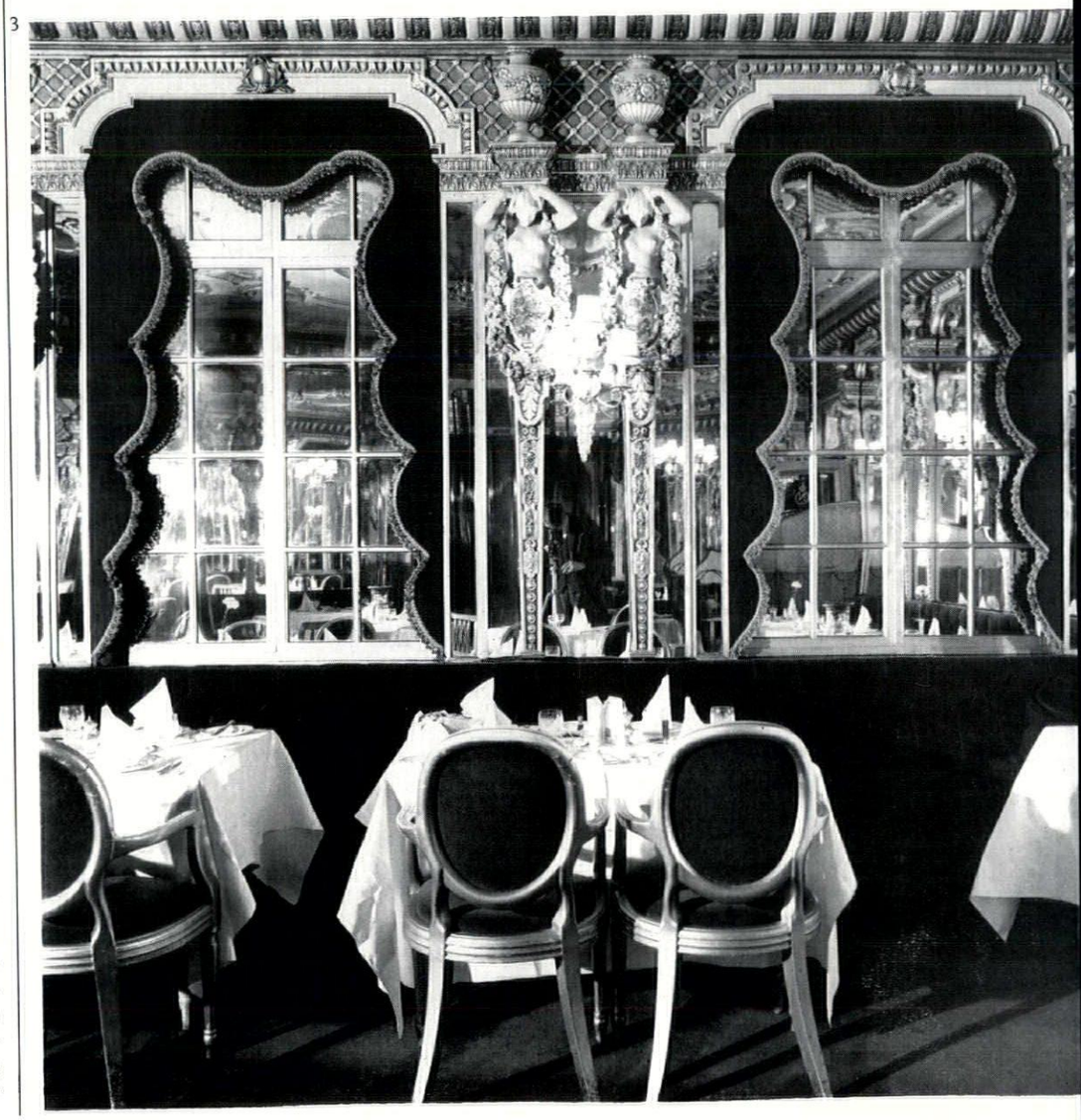
The first impression, 2, is truly French: elaborate, formal and gay. The room is long, but the narrowness is counteracted



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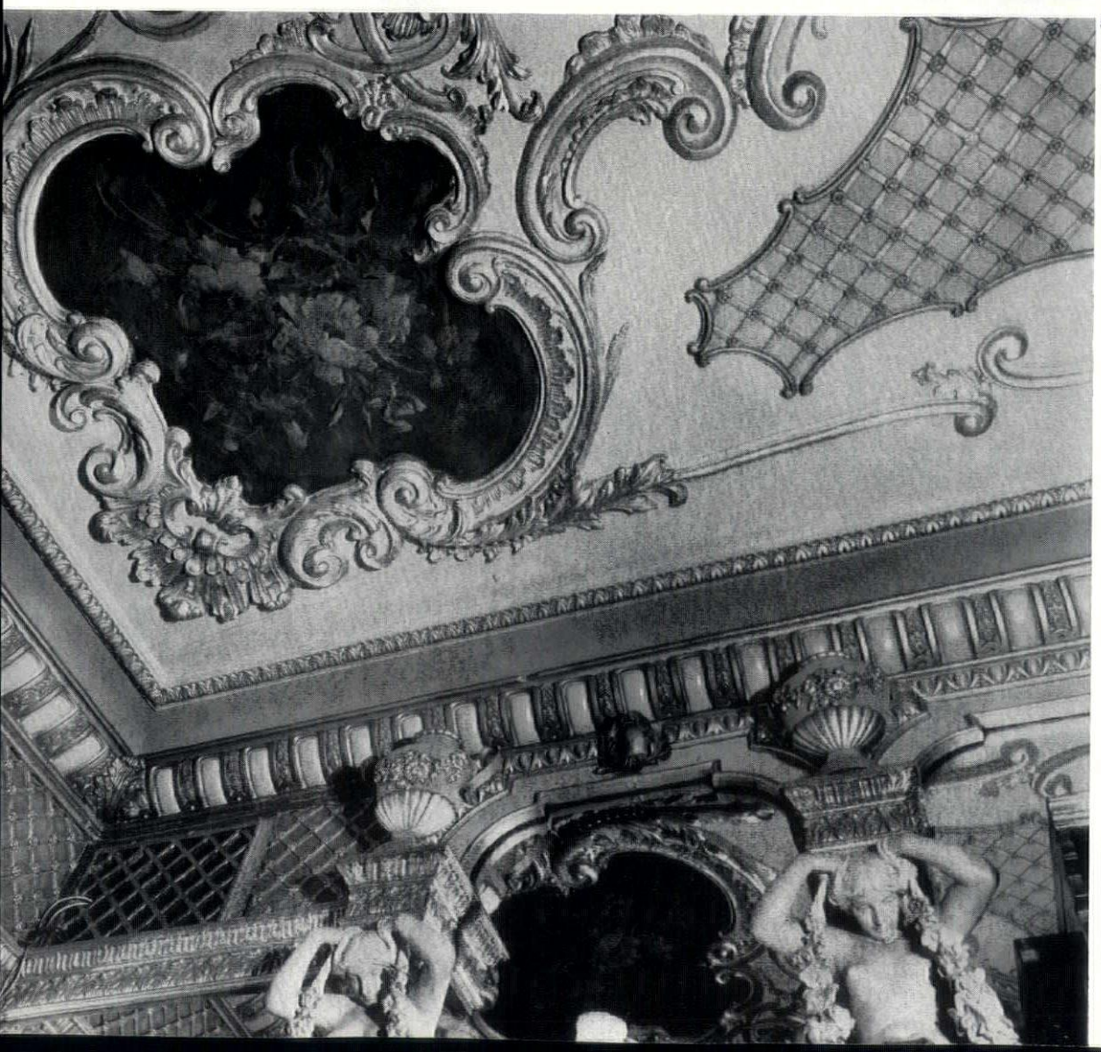

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by a firm division into three, apparently symmetrical, bays. There is a strong rhythm of mirrors and coupled termini caryatids, of blue urns and green cornices, of red plush chairs and benches and engraved glass screens, all picked out in lavish gilding. The Second Empire conventions are sustained in the constant use on plates and cutlery of the letter N and the Bonaparte crown—a trade mark of the Café foisted on the Royalist Nicols by his Bonapartist nephew, Pigache, who is supposed to have told him innocently that the N stood for Nicols. The curtained 'windows' at the Glasshouse Street end form a strong conclusion to the room. Walk to that far end, look back, 1, and the impression is wholly different: not merely the infinite space of mirrors and lights, but —and this is where the Franco-British ambivalence comes in—the totally irregular shape, the informal confusion of diagonally placed walls and unequally spaced ceiling patterns. At once the caryatids cease to be the imperial handmaidens of the third Napoleon and become yet another High Victorian variation on the powerful busted Jacobean mermaids of the great screens at Hatfield and Audley End. Even the mirrors seem to have a touch of Gothic in their rounded, slightly cusped corners. It is this ambiguity—the constant change from formality to informality, from Garnier's Beaux-Arts discipline to the loosest Victorian naturalism—that makes this interior so stimulating and completely representative of the 'mainstream' of Victorian secular architecture.

The individual bays, 3, are formal enough. The mirrors (in this case of the imitation-window type, with wavy gold tasselled red curtains) are separated in bays by the termini caryatids in pairs. They dominate the Grill Room as surely as once also they did the Brasserie. They are fine, strapping young ladies, suggesting appropriately that good looks are not incompatible with good nourishment. Their flesh is a slightly sunburnt off-white, their nipples are as unmarked as the Beaverbrook Press could wish, and cartouches with oval paintings of red and green flowers cover the delicate transition from generous hip to tapered pilaster. The pilaster ornament of golden flowers and acanthus leaves on a green background culminates in the gorgeous garlands of roses (light blue, pink, yellow, green), which the ladies hang by their powerfully flexed arms from their upswept *coiffure*.

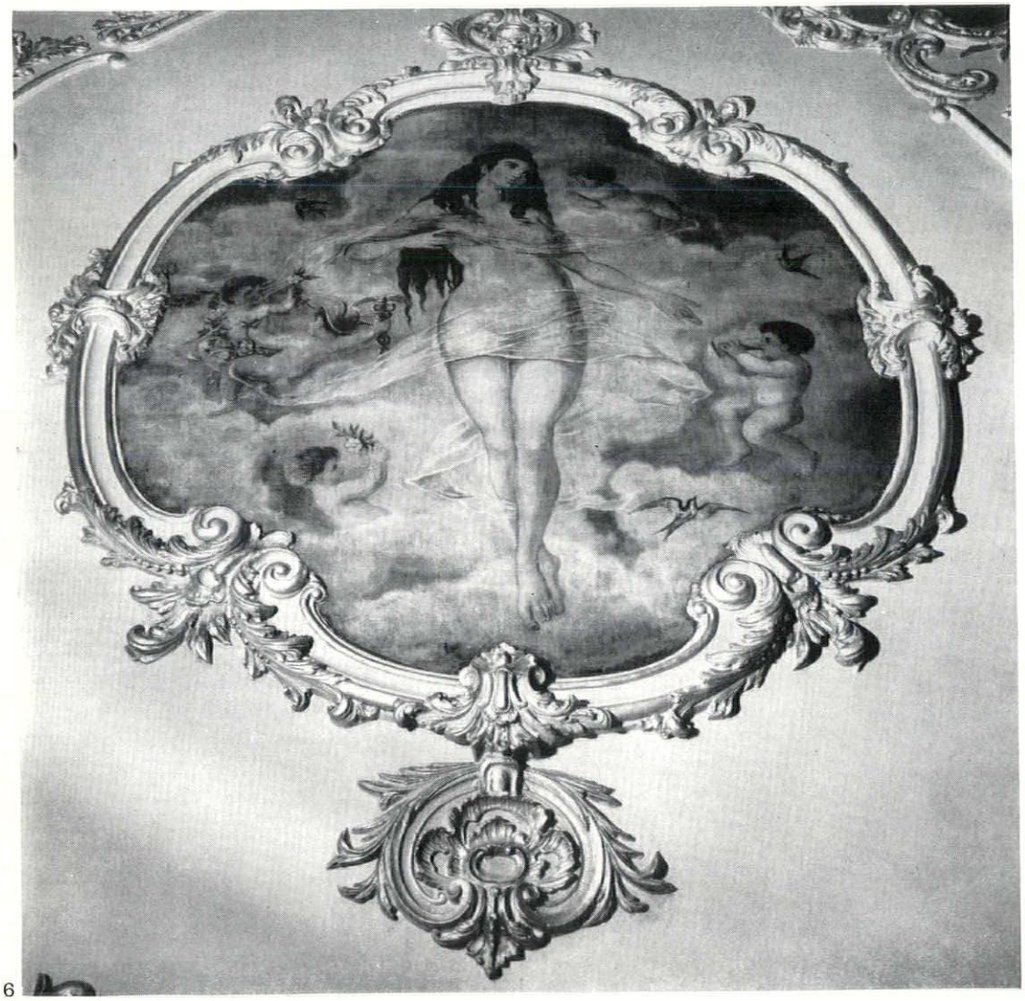
In turn they support a richly modelled entablature . . . or do they? More than a moment's glance, 4, will reveal the architects' Mannerist caprice which has placed the weight of the architrave on a shapeless mass behind the ladies' shoulder-

blades and thus released their heads for the more feminine, more voluptuous task of holding the garlands and inclining their gaze towards the diners beneath. The entablature is brought forward over each caryatid and crowned by a bright blue urn with swags of flowers against a frieze of golden lattice work with a green background. Finally there is a powerful and rather coarse cornice, striped in gold and white panels. All this is incorrect in detail, no doubt, but it is formal. It is the combination of irregular spacing and a lavish provision of mirrors which causes the overall effect of Baroque, and almost Gothic, particularly in the riotous pile-up in each corner, seen in the frontispiece to this issue, page 256.

The ceiling similarly is convincingly French in its Rococo framing of still-life paintings, 5. There is a different, though apparently symmetrical, composition of panels in each bay. However, the irregular shape of the room is only partially masked by the use of gold-on-green lattice work (similar to the frieze below) in irregular, almost amoeboid shapes, right in 5. The lattice work imparts a constant sense of flow away from the real focal points through the mirrors to the 'imaginary' focal points beyond. Forming the centre-piece of the four flower panels in each of the two end bays is a much larger frame containing a voluptuous scene of a goddess with attendant *amorini*, 6, playing instruments and holding flowers, with birds and beasts and clouds. In the centre bay there are three of these panels. Each scene is different. The goddesses have colossal thighs and hips (perhaps a similar fixation on the bottom to that of fashionable clothes of that date). The painter is supposed to have been an Italian, who worked at the Café on Sundays and at Nicols's country seat (Regent House, Surbiton) on weekdays. These paintings are a telling illustration that Victorian 'respectability' cannot be appreciated fully without the exuberant sensuality that went with it.

The overwhelming impression of the Grill Room is its feeling for space. It is in fact quite a small room (58 ft. by 26 ft.), but the sense of infinity, which is so often thought to be peculiar to modern architecture, transforms it into the sort of bourgeois Elysium portrayed in Offenbach's operettas. The endless caryatids and the confusion of interlocking polygons, 7, are enhanced by the survival of the original foliated sconces for the light fittings and the original gilded iron screens, with golden fabric and engraved glass. Three of these screens enclose the servery and cashier's desk, 8.

The architectural influence of the Café Royal was considerable. In 1870 the architectural competition for the Criterion, on the opposite side of Piccadilly Circus, was won by the young Thomas Verity with an exuberantly French Empire design (since sadly mutilated). In 1884 Verity was employed by Daniel Nicols as architect for his other enterprise, the Empire Theatre, Leicester Square, which had an all-gold foyer and a crimson-and-gilt interior (rebuilt by Verity's son and later entirely remodelled for the present cinema). Archer and Green themselves designed the Holborn Restaurant (1883–85) and used their Anglicized Empire style at Cambridge Terrace in Regent's Park (1875), Attenborough's in Fleet Street (1883), next to Lasdun's Royal College of Physicians (it appears on the left at the top of page 274 of this issue), at the Hyde Park Hotel (1888) and—their most famous work—Whitehall Court (1884), with its fabulous skyline.



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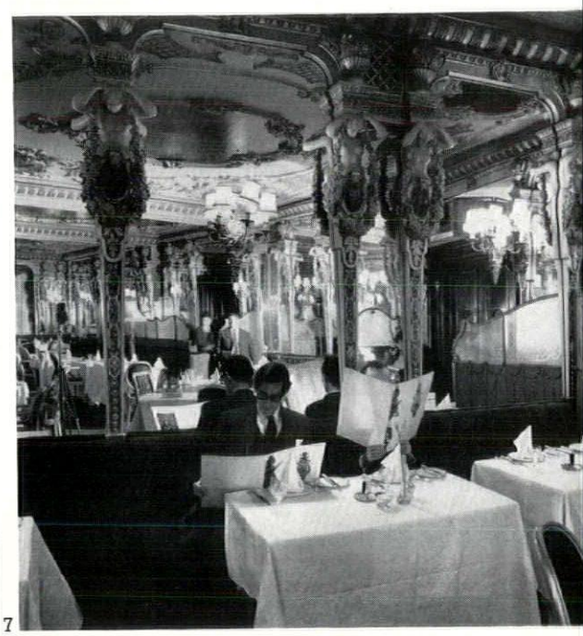

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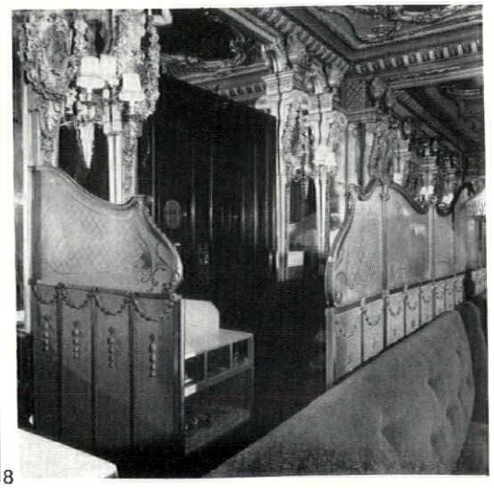
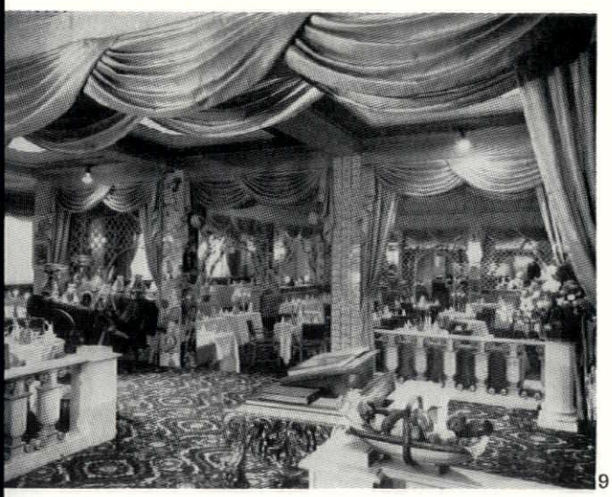


8

Verity and Archer and Green inspired a whole generation of London theatre and restaurant design (and particularly the ephemeral décor of shops and showrooms). In the Holborn Restaurant extension (1894), Frascati's (1893)—both now demolished—the National Opera House (now the Palace Theatre, 1890), the Savoy Hotel (1889) and Simpson's-in-the-Strand (1903–4), T. E. Collcutt tempered this exuberance of foreign detail with his training under 'correct' Gothic architects. The Café Royal style even went back to the Continent—to the Café New York at Budapest and the Café Central at Vienna—and to America (Algonquin's at New York). Besides glamour, the Café Royal also represented comfort. Nicols, on the advice of the Marquess of Blandford, was one of the first proprietors to install electric light (Blandford's father, the Duke of Marlborough, had daringly installed it at Blenheim); and at the Empire, Leicester Square, there were 'hitherto unknown fire prevention devices.'

The Grill Room is now a precious survival. The artists and poets were given the poorly decorated Brasserie as a substitute for the Domino Room; this in turn was abolished in 1951. In its place there is now a restaurant, where the food may be good but the décor is hopelessly trivial and suburban, 9. The banqueting rooms upstairs, one of which, the Pompadour, preserves a Rococo ceiling from



9

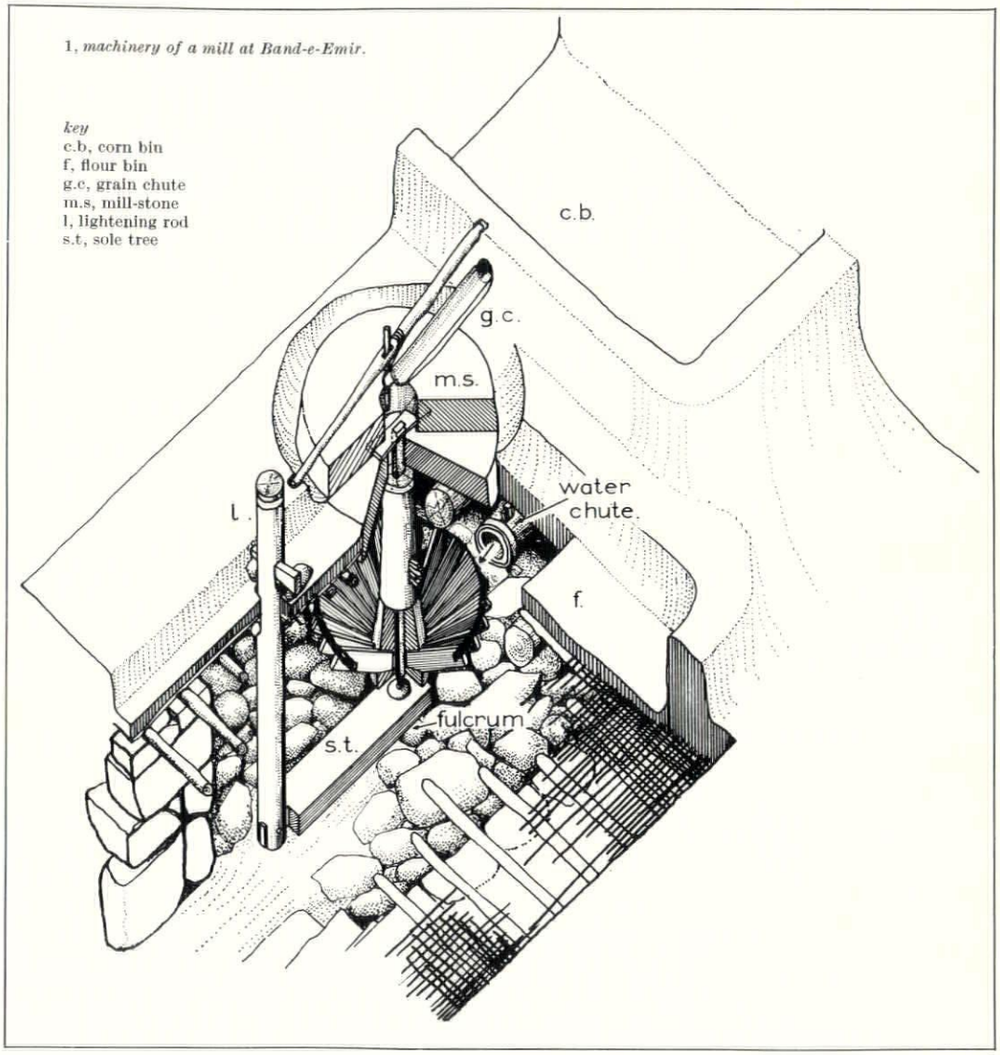
Archer and Green, are mainly in a subfusc neo-Georgian. The seventh floor suites (Sheraton, Chinese Chippendale, etc.) were designed by Terence Verity, great-grandson of the Criterion architect. The present proprietor, Mr. Charles Forte, deserves much credit for his preservation and spotless upkeep of the Grill Room; it must be hoped that elsewhere he will be able to match the exuberance and sophistication of Daniel Nicols and his architects with the equivalent patronage of the younger designers of this generation.

NICHOLAS TAYLOR

history

GREEK MILLS IN IRAN

1, *machinery of a mill at Band-e-Emir.*



1

The survival and distribution of the Greek mill—that is a mill with a horizontal water-wheel working on a vertical axle*—forerunner of the water turbine—seems to be as unexpected as it is scattered. Invented in the first century B.C., it is said to have spread widely by the fourth century A.D. Its use declined rapidly, as the far more efficient, but complicated, Vitruvian mill (i.e. with a vertical water-wheel) replaced it in the richer corn growing parts of the world, and its persistence seems to depend chiefly on a small supply of grain to be milled by a relatively small water supply (it is unknown, for instance, in the valleys of the Nile and Euphrates), there being no real efficiency in constructing the far more complicated machinery of the Vitruvian mill if sufficient grain was not there to be ground. It has also been suggested that the Greek mill was to some extent ousted by the introduction of the feudal system† in which the lord of the manor owned one central mill to which the peasants brought their corn instead of milling it individually. This may partly account for its survival in the Shetlands‡, where mills

* Mills with horizontal water-wheels are often called after the district in which they are found. E.g. Shetland or Norse mills. Since they first appeared in Thessalonica (and the Pontus), Greek mills seems a reasonable and short name. It has also been used in *The Oxford History of Technology* II, Ch. 17: *Power*, by R. J. Forbes.

† Discussions following a paper reported in the Transactions of the Newcomen Society, XIII, 1932–3; *The Shetland Watermill*, H. W. Dickinson and E. Straker.

‡ See THE ARCHITECTURAL REVIEW, July, 1963: 'Greek Mills in Shetland,' Elisabeth Beazley.

of this type were in use within the last 15–20 years, and where under Norse rule the feudal system did not operate.

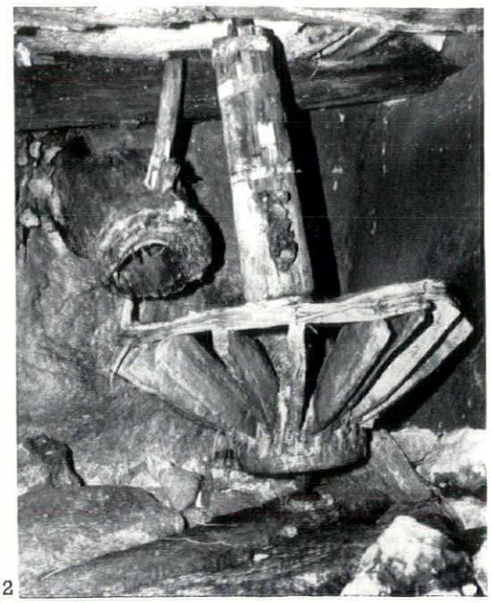
In modern Iran the survival of such mills is likely to be short-lived because in many parts water is almost more precious than oil, and its supply is certainly less predictable. Mills with such wheels are anyway sporadic in distribution, many districts working only Vitruvian mills. The two groups described here are both in the province of Fars in south-east Iran. They are similar in detail but widely different in their siting, the one being in tight knit groups below the great medieval dam of Band-e-Emir, round which an important village of fascinating architectural form has grown; the other, below a remote waterfall on a stream watering the plain of Mhurgab, is loosely planned to suit the terrain.

To work a Greek mill a small quantity of water is directed at high velocity to turn the horizontal water-wheel. Its vertical axle passes up through a fixed mill-stone in the floor of the grinding room above the wheel house to turn the upper mill-stone directly over it. The iron tip of the timber axle rests on a timber sole-tree which acts as a lever whose precise position can be varied by fine adjustment of the length of the lightening rod (lettered *l* in the diagram, 1); the closeness of the mill-stones and thus the fineness of the flour can be governed.

The machinery in the Iranian and Shetland examples only varies in detail. The Iranian water-wheel (illustrated in the diagram) is a shallow cone-shape like an inverted coolee-hat framed up with timber blades set in a massive timber axle (diameter 18 by 28 cm.), and into this a jet of water is directed. In Shetland blades or feathers are set at an angle in a wooden hub and are struck tangentially by the stream of water from the open chute. (Crete combines blades with a jet.)

Mill-stones vary remarkably little in diameter (Iran: 93, 96 and 103 cm. Shetland: 91–68 cm.) but while the Shetland (and Albanian) examples are fed from a wooden hopper, the corn in Iran is fed from a plastered bin, integral with the structure of the building, beside the wheel. In both cases the wheel itself is used to cause vibration to ensure a flow of grain. In Iran a vertical stick, sprung in tension against the hole in the upper stone, vibrates the chute from the corn bin. In Shetland a clapper on the wheel joggles the shoe at the mouth of the hopper).

The most remarkable feature of the Iranian mills, when contrasted with the humble Shetland examples, is the tremendous concentration of water-power. Much greater use is made of the water available presumably because more use



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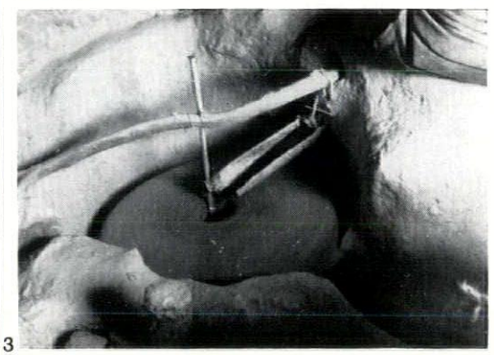

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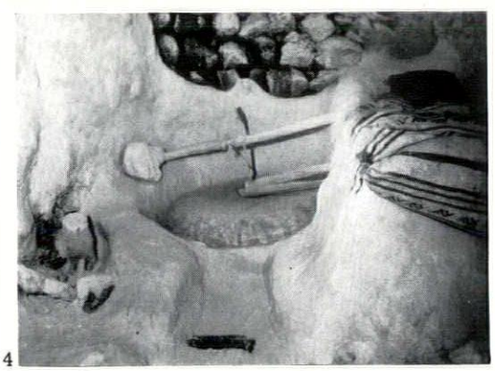

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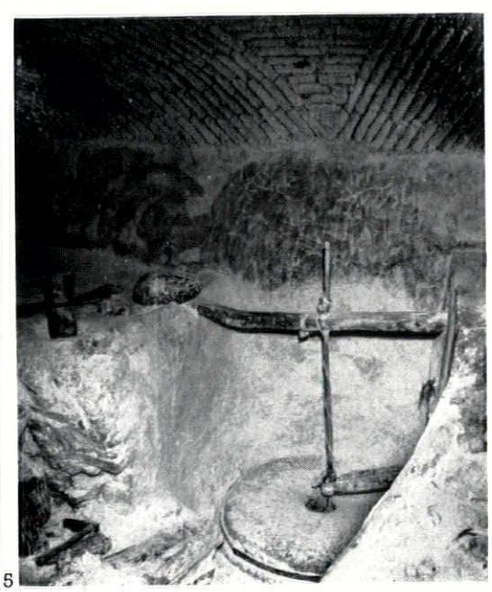

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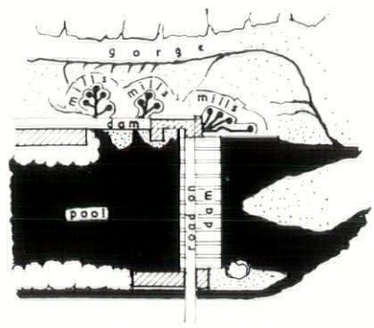
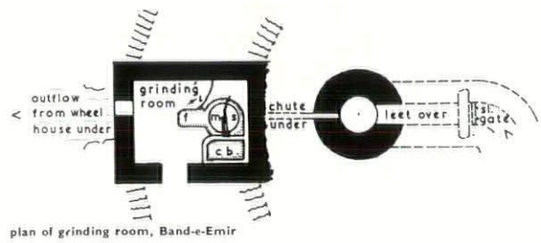
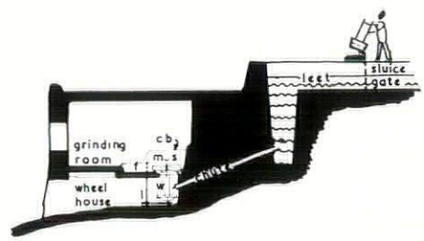


layout of Band-e-Emir



plan of grinding room, Band-e-Emir



0 5 metres

section through a mill at Band-e-Emir

2, the iron-shod axle of this water wheel at Band-e-Emir rests on the sole-tree. The base of the lower mill-stone through which the axle passes can just be seen between the upper floor timbers. The peg driven into the wooden chute prevents the water forcing out the chute lining; the lining restricts the capacity of the chute; the jet of water forced through it shoots into the wheel. 3, the sculptural forms of the flour-coated bins round the mill-wheel. 4, the mill-wheel with corn bin to the right and flour bin centre foreground; the top of the lightening rod shows on the left. 5, a grinding room at Mhurgab; the brick-vaulted roof is typical of the treeless parts of Iran.



key
m.s, mill-stone
w, water wheel
c.b, corn bin
f, flour bin
l, lightening rod

V

plan of grinding room, Mhurgab



6



7

6, mill leet and top of 'well' jutting out from the hillside, Mhurgab. 7, medieval dam at Band-e-Emir. 8, the mill leets from the pool above the great dam at Band-e-Emir lead to 'wells' above each mill. 9, millers' tea-break.

can be made of the power. Instead of taking the water direct from the leet to the chute (an open trough in Shetland), it torrents down a vertical 'chimney' above the mill; near the bottom a wooden chute, tubular in section and ending in a nozzle which further constricts the jet, directs the water into the wheel itself.* When surveying the top of these wells the sensation inspired was a magnified version of that nearly forgotten horror of being sucked down the bath waste-pipe.

At Band-e-Emir, the first of the two sites referred to in Iran, a dozen mills (there were recently thirty) are grouped in three clusters fed by leets from the big pool behind the dam, whose chief *raison d'être* has presumably always been irrigational. On plan they are reminiscent of some botanical organism. The small channels are usually bent between the main leet and sluice gate, apparently to ease the adjustment of the gates. These are very simply constructed and operated: wooden two-handled flat 'shovels' which are positioned by a cross slab on the leet. The leet and 'chimneys' are of rubble masonry as are the wheel houses which are also partly cut out of the rock. At Band-e-Emir the mills are of stone with flat timber and mud roofs, since the dam and river means that trees can flourish. At Mhurgab, the second site, the traditional scarcity of timber has meant that buildings are often vaulted and these mills have good brick vaulted roofs and mud-brick walls.

* The total drop from the top of the 'chimney' to the nozzle is approximately 3.20 m. and 7.40 m. in those measured.



8



9

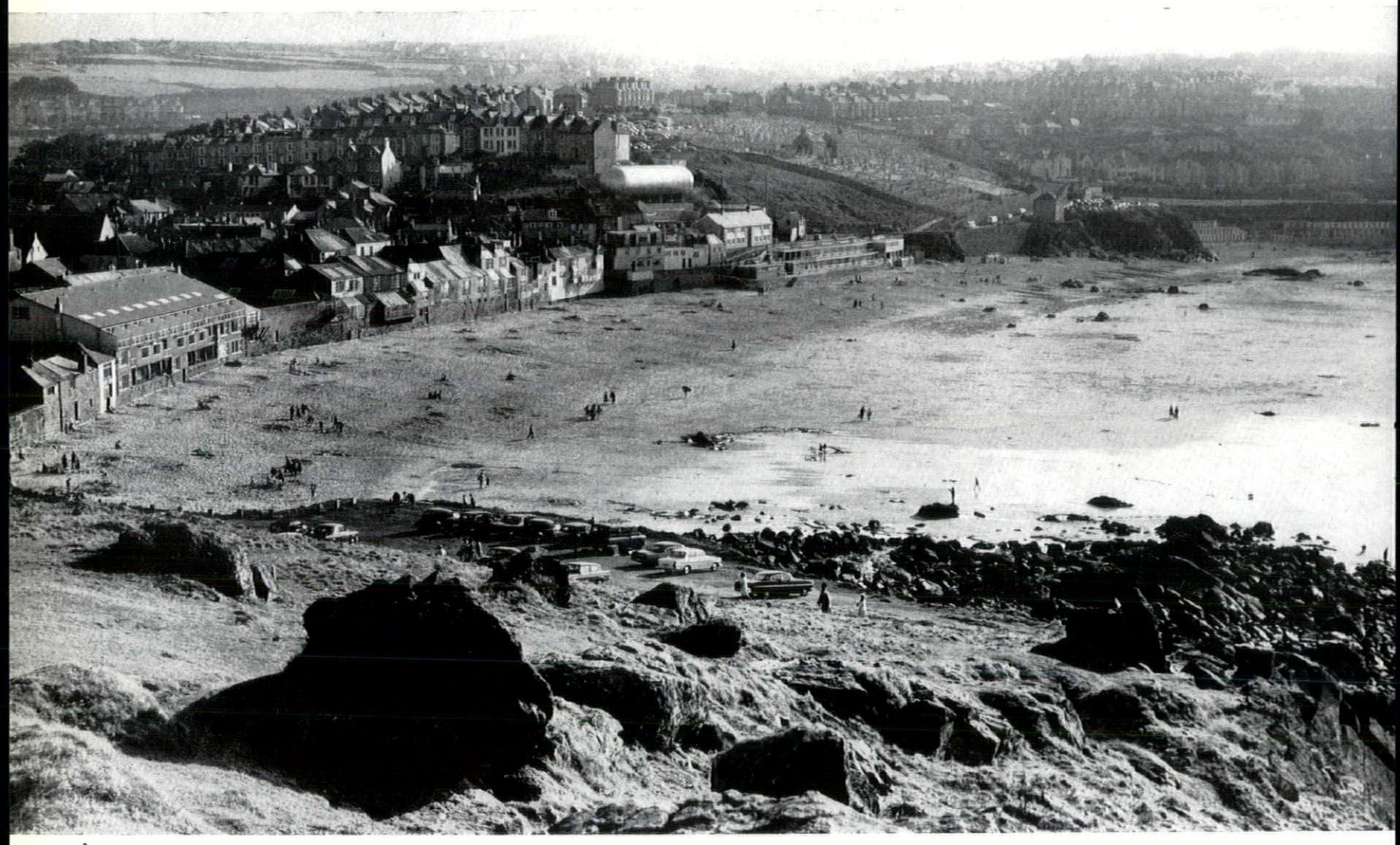
It is very difficult to convey the sculptural quality of the inside of the grinding room where the fine shapes of the plastered mud corn and flour bins and the wheel housing curve round the mill-stone. This is emphasized by the coating of fine white flour which covers everything, including the millers, except the spinning focal point of the hard grey stone and the dry yellow corn streaming into it.

Information about other mills of the Greek type now or recently working would be most welcome. Their present distribution seems to cover parts of the Balkans, Spain, Portugal, Peru, Anatolia, Iran and Cape Province, South Africa with recent working examples in Shetland, Israel and Crete. There must almost certainly be mills in remote parts of Scandinavia and there should be remnants in North America since such a do-it-yourself piece of machinery would be most useful to settlers. (*The Young Millwright and Millers' Guide*, 1826, by Oliver Evans, describes the design and construction.*) ELISABETH BEAZLEY

* *Watermills with Horizontal Wheels*, by Paul N. Wilson, SPAB, 1960.

ACKNOWLEDGMENT:
I am most grateful to the millers of Band-e-Emir and Mhurgab for so kindly showing their mills, to Miss Olive Kitson who took the majority of these photographs, and to Mr. Martin Weaver both for help in the survey and for the diagram illustrating the machinery. Shortage of time meant that the survey was exploratory and far from complete; the diagram of the layout of Band-e-Emir has been sketched and not measured.

NEWCOMER IN ST. IVES



1

One of the housing projects that has recently won a Ministry of Housing and Local Government award is sited right on the beach at St. Ives, Cornwall, 1, and is notable for the efforts that have been made to fit it into its surroundings, which are a typically Cornish jumble of styles, from medieval to mid-nineteenth-century, predominantly of wide-jointed granite blocks but with some areas rendered and colour washed, some slate hung and some of black painted woodwork. The project, known as Barnaloft flats, is also notable for the number of artists who have acquired studios there, including Barbara Hepworth and Bernard and Janet Leach, the potters.

The building was designed by Henry C. Gilbert for the Porthmeor Development Co. The site, just behind Back Street, slopes down to Porthmeor Beach, one of England's finest and still relatively unspoiled urban beaches. Facing north, the beach is bounded on the east by the rocky promontory known as The Island, surmounted by the granite built 'Fishermen's Chapel' and on the west by the cliffs of Clodgy Point. To the south is the older part of St. Ives, rising steeply with its jumble of old fishermen's cottages, sail lofts and so on, now mostly converted for use as houses, studios and art galleries. The site of the flats was previously occupied by a large pilchard-curing cellar, with a seine-loft above called 'Barnaloft,' after which the new building has been named.

The long, low façade of the new Barnaloft, fronting on to the beach, 2, uses traditional wide-jointed granite blocks and granite columns, with some areas faced and finished in slate grey and white emulsion paint. The south, landward frontage is a more outspokenly modern statement,



2

but it still blends with the typical old Cornish buildings that form its immediate surrounding. One comes upon it, quite suddenly, by a narrow entry running down from the narrow Back Street. The main building stands back, with a large courtyard, bounded on the opposite side with a row of garages and a smaller building containing two flatlets, linked to the main block by external stairways. At first-floor level, between the two buildings, 3, has been placed as a permanent feature a sculpture group of two pierced forms by Barbara Hepworth, bought from the artist by the developer. The south façade is 144 ft. long and has vertical tiling in grey slate-finished tiles, and rendered areas finished in white and slate grey emulsion paint. The deep timber handrails to the external stairways and terraces are painted black.

There are three ground-floor flats, three first-floor flats, four 'cottages,' each with rooms on ground and first floors, one 'house' occupying three floors, and ten split-level residential studios at the top, all with balconies facing the sea. The same team of designer, client and builder are now to build a similar block on the adjoining site to the west. LUCIEN MYERS



3

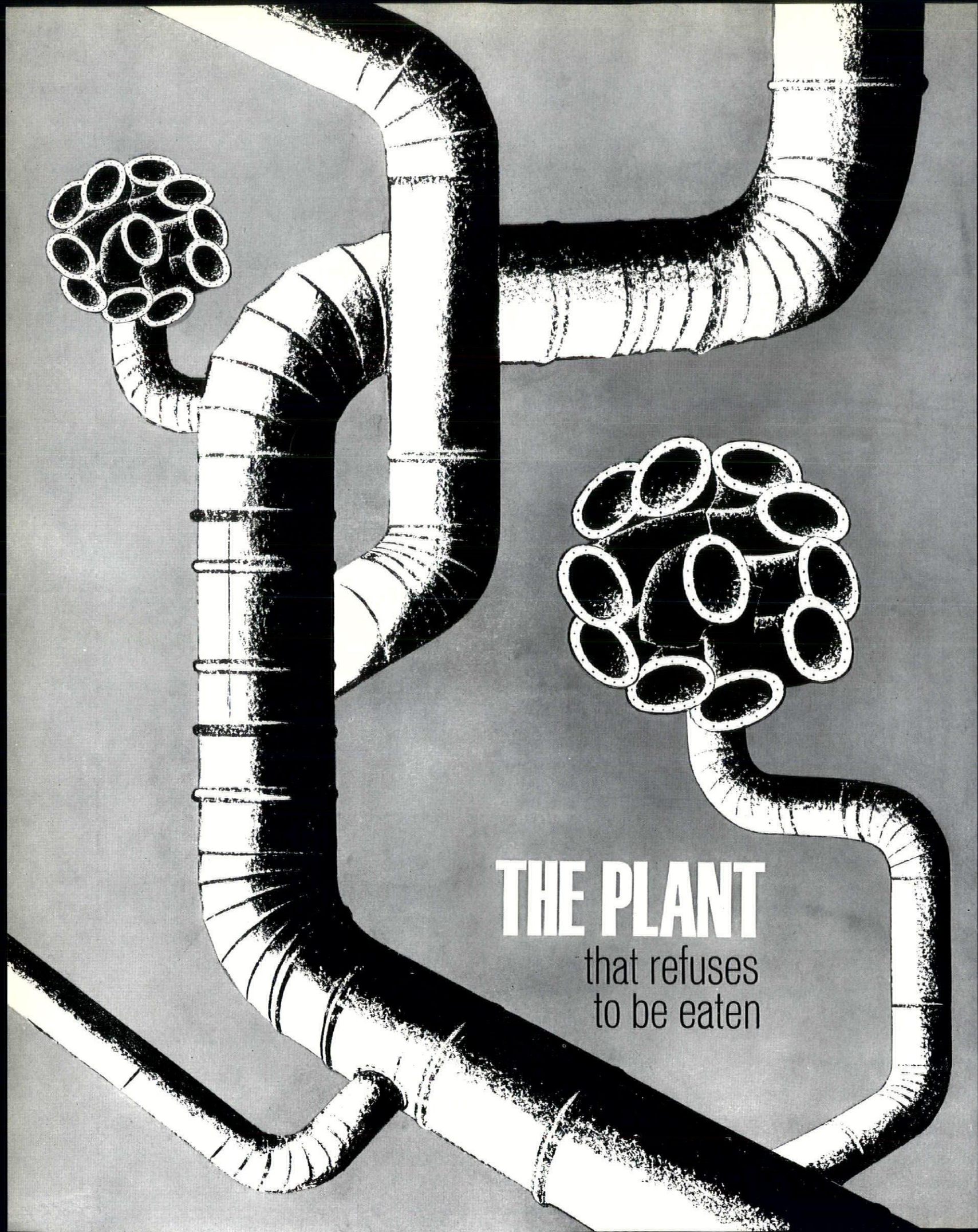
functional tradition

THE HULKS OF HOLY ISLAND



1

A romantic variation on the theme of the celebrated black-tarred fishermen's sheds at Hastings (AR, July, 1957; March, 1962) is to be found on Holy Island off the Northumbrian coast, where a line of sheds, also used by fishermen and made from the upturned hulks of boats, stands on the shore just above highwater mark, 1. Their weather-beaten textures are shown in the close-up of one of them, 2, in which the figure of a fisherman also serves to indicate their size—indiscernible in the general view. The sheds stand between the village and the sea, near where the causeway (built in 1954) by which the island can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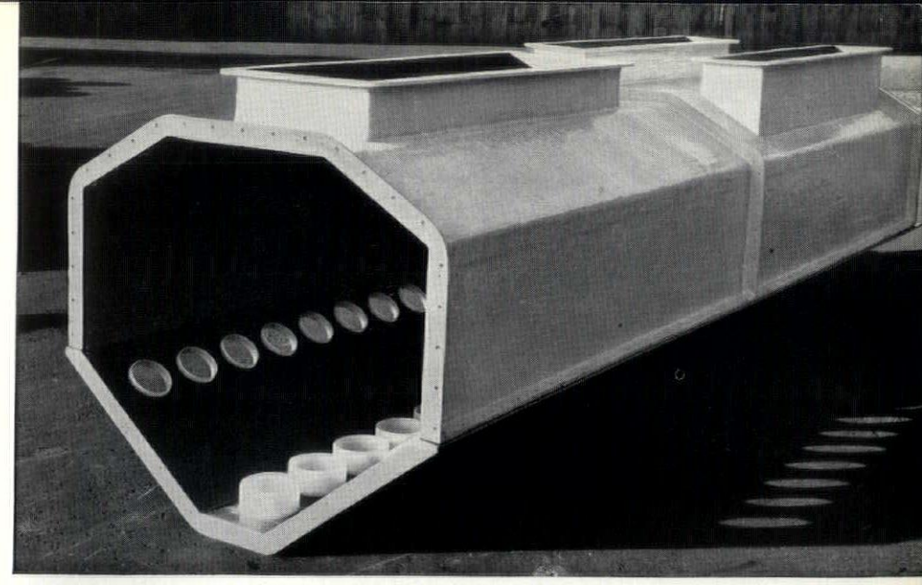
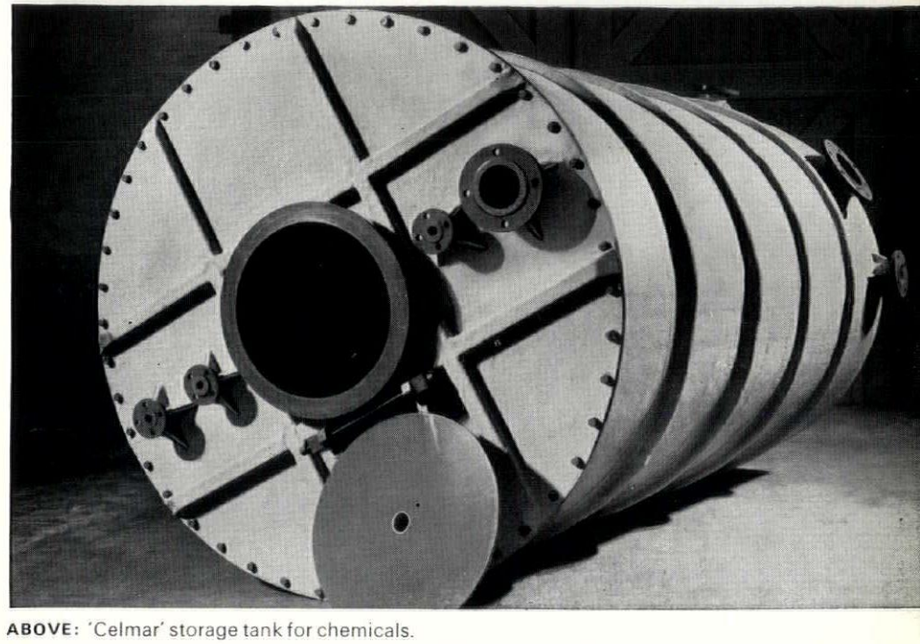


ABOVE: Fume duct for chemical plant fabricated in 'Celmar'.



ABOVE: 'Celmar' storage tank for chemicals.

BELOW: Welding in progress. Although 'Celmar' is a new material, operations such as bending, cutting, sawing, drilling, routing and welding can all be done with standard tools and equipment.





2



3

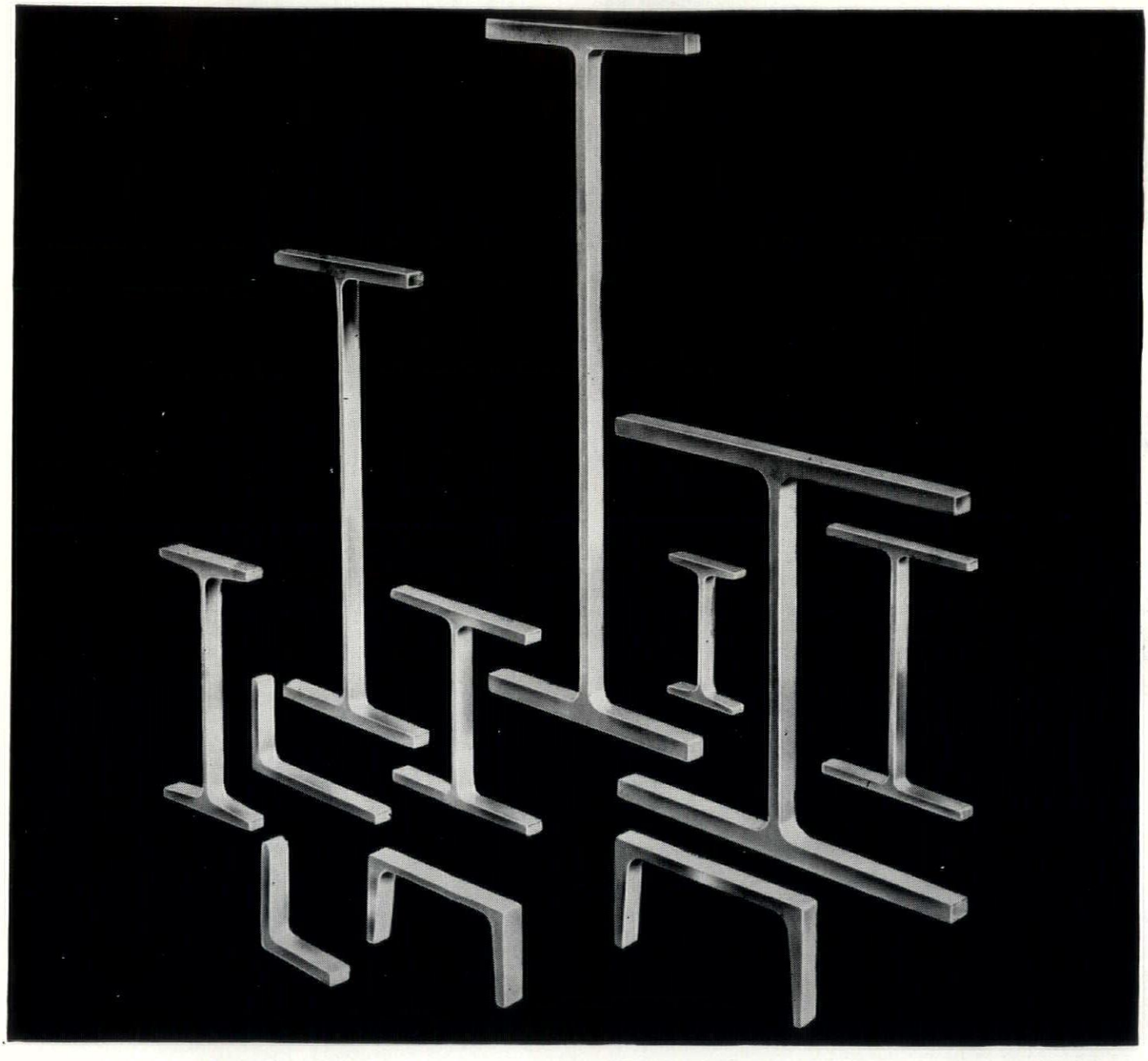
be reached at low tide joins it. Some of the sheds can be seen on the far right of 3, which has the causeway in the foreground and the priory ruins on the left.

A local fisherman told Mr. Edwin Johnston, who took these photographs, that the sheds had been there for about forty years and that the boats they are made from had originally been used by Newcastle colliers as bulk carriers.

Fishing is no longer a major industry; this died out before the end of last century, soon after the lime industry (which, together with herring-fishing, had occupied the population of about 300) ceased in 1880. The population is now about 170, and lives partly on fishing and farming, but chiefly nowadays on the visitors that are drawn to Holy Island by its ecclesiastical history—it was the home until A.D. 875 of the Lindisfarne gospels, now in the British Museum, and St. Cuthbert was bishop of Lindisfarne from 685 until his death—by the priory and castle ruins, by its bird life and by its natural charms.

APPLEBY-FRODINGHAM

STRUCTURAL STEEL SECTIONS



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

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SKILL

PLASTICS: TECHNICAL PROSPECTS AND ARCHITECTURAL IMAGERY

Many observers have noticed a disparity between the ascertained qualities of plastic materials and the kind of architectural imagery that plastics have generated. Below is the first of two articles on the subject by David Kirby, an architect who has specialized in the use of plastics in building. In this first article David Kirby distinguishes three types of development in plastics: client directed, production directed and design directed; and begins an historical review of the works to which these three have given rise.

THE DOMESTIC ENVIRONMENT

Houses and Homes

Even with the re-development of the central areas of cities incorporating domestic accommodation, domestic building in the next 25 years is likely to consist more of houses than flats. . . .
60 per cent of the dwellings are likely to be owner occupied. . . .
. . . traditional external materials, such as brick, tile and slate.
Plastic pipes will be used.

Ronald Brech: 'Britain 1984.' A forecast prepared for Unilever.

'. . . Plug-In City is a linear city housed in a high, narrow grid system. . . .
'In Plug-In days, according to Warren Chalk, plastic and metal rooms will be mass produced, cheap and expendable.
'The plastics the plug-in units are made of will be soundproof. . . .'

'Plug In City' (Chalk, Crompton and Cook, architects). Reported by Priscilla Chapman, *Sunday Times*, September 20, 1964.

Here are two quotations. Both are serious, calculated expressions of their authors' respective faiths.

Brech's—factual, numerical—assumes that nothing but quantity changes, it assumes a static technology, a static human organization and static desires. It approaches the enormous problem of predicting the future with the small, inaccurate tools of statistics. True, Brech would agree to the limitations of his assessment, a small part of a wide picture, yet this is the data on which industry and government will base its future planning and his are the techniques on which factories are planned and buildings commissioned.

Can it be claimed that the 'Plug In City' group has a clearer picture of the future? In some ways, yes. Bypass the pseudo-technology and a sense of growth and adaptation is found as the real mainspring of the schemes. It is not necessary for displays of technical virtuosity to be undertaken, in order to house the world's population in decent conditions. But it is necessary to find some way of using statistics and other factual data to create the urgency, the technical and commercial environment in which innovation can prosper, to the benefit of the human race.

Ohl, in a lecture on industrialized building, summarizes the need: 'We have no other choice in order to be effective than to use the machines of industry as tools to realize our projects. . . . The isolation of the artistic—or the formal interest in the past 100 years—has taken the task of architecture and the architect away from its important productive situation. . . .'[1]

Fantastic schemes have a significant place in the development of architecture. City plans were created by architects, expressing formal ideas and by philosophers expressing symbolic ideas.[2] Generally the results were in advance of their time in everything except technology, which still imposed massive disciplines on all except the most wayward imaginations.

Occasionally, idea, time and place might coincide, as when Walpole created his world of the imagination at Strawberry Hill or Morris imagined his creation of the world at Kelmscott. But the main effect was that of the feed back system, with a slow interchange of ideas between client, designer and constructor, modifying, restraining, improving and constantly developing. This effect can still be seen in the stylistic changes which affect modern building; in, for example, the rounded corners of the Furniture Research Laboratories at Stevenage by Howell, Killick, Partridge and Amis[3], akin to the moulded forms thought suitable for Plastics and the future.

If development in architecture is apparently slow, development in industry is superficially fast. Taken as a whole, the appearance of speed may be misleading; commercial development is generally short-term and pragmatic. Only very rarely is development thinking systematic and fundamental over the whole range of a product application. The motor car is a classic example; hardly any formal change, designed without reference to its use as part of a transport system and with only one or two significant production and marketing developments in the 80 years of its development, it has reached a point where development is stultified by its own marketing and production technology.

One aspect of technology has, however, begun to develop methods for the dynamic forecasting of the course of events, allowing for the alternatives of change, failure and success. Post-war developments in missiles and space vehicles have evolved techniques of 'whole system' production and development programming, of which the programme evaluation and review techniques and Critical Path Methods now penetrating the building industry are only examples.[4] Significantly, it is space vehicles and movement which provide the inspiration for the formal seekings of the fantasy makers of modern architecture. Yet their ideas and inspirations have made little impact upon the creative sections of industry and they themselves appear unwilling to learn by closer contact with the emergent technology of the new materials which they advocate.

Historically, development in building has been limited by the availability of materials. The origin of the Building Research Station in 1920 is attributed[5] to 'four powerful forces, . . . cheap transport, new materials . . . more complicated types of building . . . increased speed of erection.' In spite of this awareness of change, however, material and production development have not involved the modern architect to the extent that studies of user requirements have. The selection and training of architects has seldom fitted them to deal with the specialized technical literature of materials, and little of that literature has ever been presented in forms suitable for ready absorption by the building industry. In conjunction with the intermittent economic pressures which operate on the building industry, it is hardly surprising, therefore that material and production technology has far outstripped the slow rate of change in the building industry.

Historically, building and architecture have developed with the interchange of ideas between designer, craftsman and client. In modern building, it is necessary first to distinguish between research and development. Both research and development may then be divided in three according to whether the interests of client, producer or architect are most nearly involved.

As an example, current development activity can be classified:

A. Client directed

User studies based upon existing building types, with a view to standardizing requirements; Consortia-type developments, accepting certain production limitations but developing specific building types.
Technical studies to improve user conditions based upon existing techniques.

B. Production directed

'Rationalization' programmes, often based upon assumed user standards, always based upon assumed social standards.
Component development to meet the 'market need.'
Technical studies to improve existing material usage and to provide 'trouble-shooting.'

C. Design directed

The study of buildings for their own sakes, the normal interchange of information on buildings, via journals, professional groups and individual effort.
The exchange of information on visual subjects between the fine arts, by and with various media.

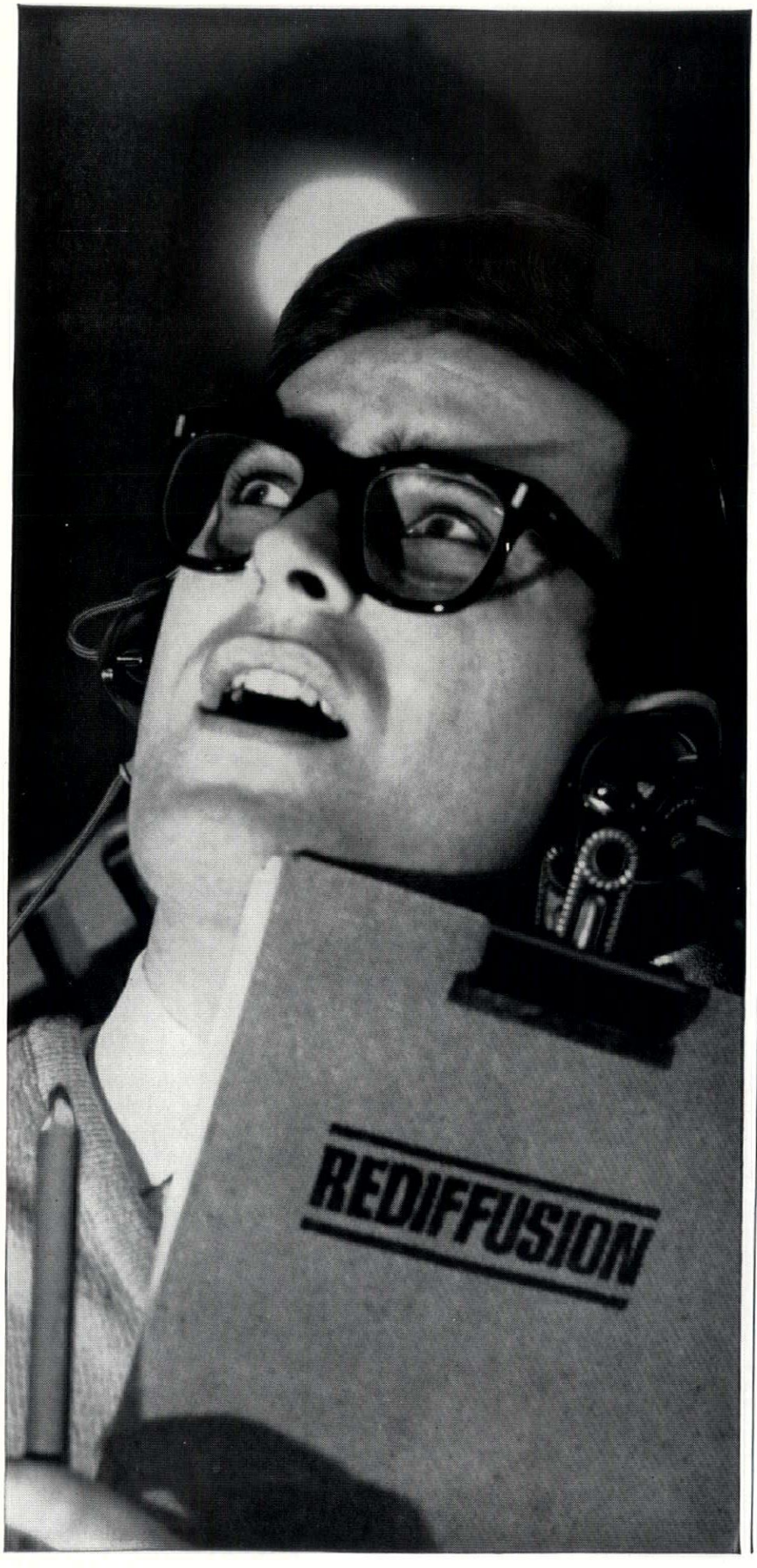
Research work is perhaps more difficult to relate to building activity. This is a problem which is not unique to building but, with the lack of communication in the industry as a whole, is exaggerated as each study group works in isolation. The practical architect of the correspondence columns is as averse to the 'boffin' as to the 'longhaired boy'—and probably each is averse to the other. Yet both the serious student of building science and of building art is involved in the development of the architecture which will be the stock in trade of the practical man two generations hence. Research work may be tentatively classified:

A. User directed

Environmental studies—physical, social, psychological.

[continued on page 320

[1] H. Ohl: 'Industrialized Building,' reported in *Architectural Design*, April, 1962.
[2] H. Rosenau: *The Ideal City in its architectural evolution*. Routledge & Kegan Paul, 1959.
[3] *The Architects' Journal*, November 4, 1964.
[4] See, *inter alia*, *Schedule, Cost, and Profit Control with PERT*, R. W. Miller, McGraw Hill, 1963.
[5] *RIBA Journal*, 1936, p. 790: 'The BRS, its origin, work and scope.' By E.L.B.



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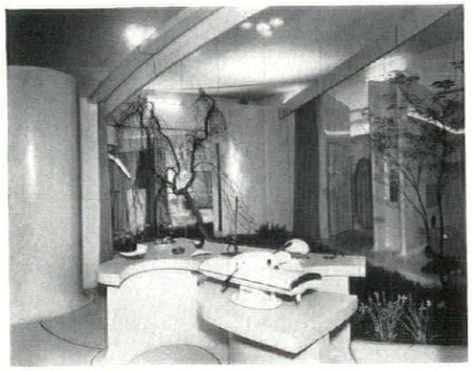
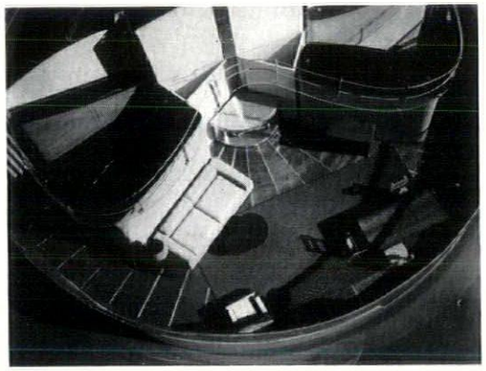
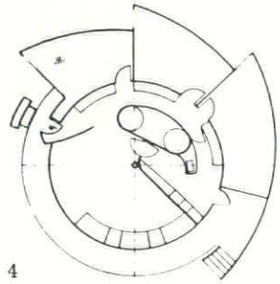
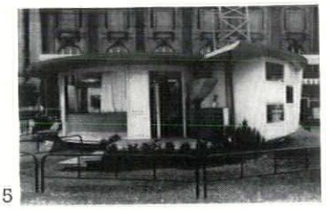
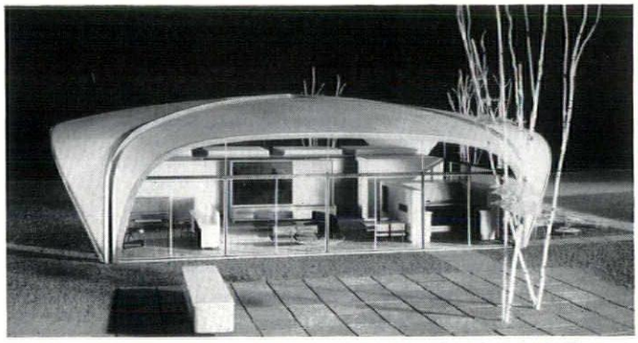
Plastics building projects: a classification

	1955	1956
A user directed performance in use trials subjective reactions information for the use of the constructor information for the building industry		 3, *'Plastics House' at Ideal Home Exhibition, London. (P. and A. Smithson.)*
B production directed material data engineering data engineering trials pre-production prototype	 1, *model of Fuller House (roof and ceiling removed). (R. Buckminster Fuller.)*	 4  5  6 4, 5, *all plastics house at Salon des Arts Menagers, Paris. (Schein, Magnant and Coulon.)* 6, *beach hut. (Schein, Magnant and Coulon.)*
C design directed idea investigation formal study future prediction	 2, *house shown at Seventh National Plastics Exhibition, New York, by B. F. Goodrich Chemical Co.*	

continued from page 318]

B. Production directed

Material studies.
Engineering studies.
Management studies.

C. Design directed

'Fantasy' or 'idealist' schemes; studies in formal properties, shape, colour, etc. Studies in design method.

It has long been recognized that no barrier exists between the various attributes of personality. The man who chooses to be an environmental physicist will probably advocate a rational approach to human problems. The architect who uses method-design techniques will attract clients who are themselves rationalistic.[6] For various reasons, few groups show more consistent characteristics than those who create idealistic solutions to meet their view of the problems facing them and architects are no exception to this generalization. In the past, it was sufficient to create a fantastic view of the future by size and decorative detail alone, by the nineteenth century, however, social and moral values had to play their part, as in Pugin's view of the Gothic town.[7] In this century, technology is the chosen vehicle for fantasy and the architect, barred from the comfortable dreams of the Styles, turns to new materials and new social and technical orders to develop his art.

In all the wide range of modern materials, none has attracted more attention or caught more at the imagination than plastics in this context. Perhaps no group of materials represents the divergent nature of our society so well, from imitation wood veneers and flowers to printed circuits, submarine cables and rocket nose cones; from dogmatic aversion by the aesthete to passionate advocacy by the avowed modernist. However much the arbiter of taste may shudder, they form a large part of the imagery of the time.

Plastics also represent the isolationism in all research and development work in building. The first regular references to plastics in architectural journals start nearly 30 years ago[8] and educational articles have appeared regularly since with little change in content or tone. In spite of this, architects and builders confess to complete ignorance on the subject and students write proposals for 90,000-population satellite towns, in plastic towers, fire and sound-proof—and receive their lecturer's permission to go ahead.

How far can plastics in building be classified under the three headings set out previously? The problem is not easy, since many plastics projects are initiated with very mixed motives. The manufacturer building a plastics house may wish to learn of the performance of his materials, to study the installation of new components and to educate the building industry; the architect may wish to suggest a new social order, a way of life and a technical invention. Nevertheless, an approximate grouping can be made, in so far as three main types of experiment have been carried out and these conform very roughly to the idea of research into user, production and design interests.

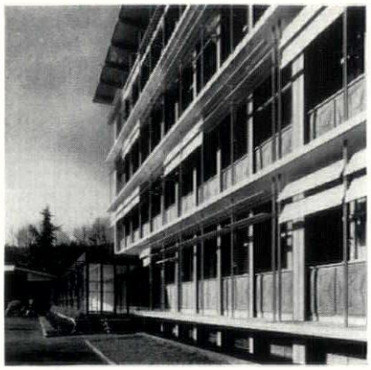
The largest single obstacle, at present, to the understanding and correct use of plastics for building purposes is the general lack of information on the subject. Since the materials have been little used in the past, little information is available in the form most generally acceptable to the building industry, that is, from other building experience. For this reason, a considerable number of buildings, chiefly houses, have been

[6] See G. Rattray Taylor: 'Psychology, the Architect and the Patron,' *The Architects Year Book*. 1957.

[7] A. W. N. Pugin: *The true principles of Gothic or Pointed Architecture.*

[8] E.g. 'Plastics in Architecture.' *Architectural Forum*. 1937, p. 147.

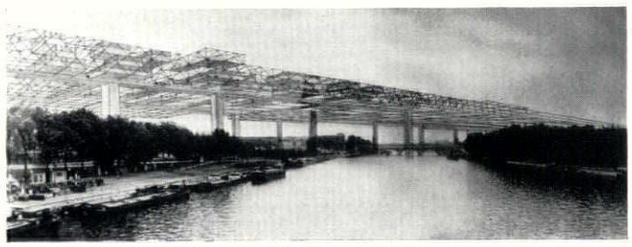
1957



7, *Mazzucchelli Building at Castiglione Olona.* (*A. Fiocchi.*)

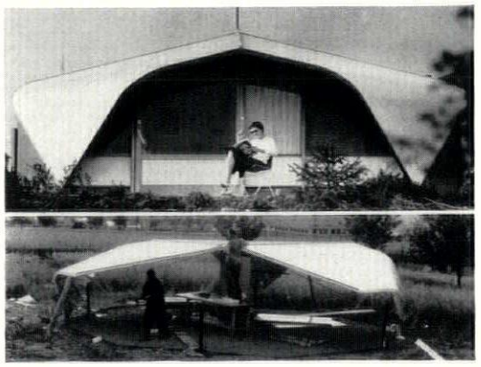


8, '*House of the Future.*' (*Martin Goody.*)



9, *Groupe d'étude d'architecture mobile.* (*Yona Friedman.*)

1958



10, *house shown at Stuttgart Plastics Exhibition.* (*Rudolf Doernach.*)

erected to provide some history of experience in the use of plastics. This type of study is perhaps the nearest to user-directed research which any material study can approach and trial houses have therefore been classified under this heading.

Production-directed research involving material and engineering studies can be more easily recognized; unfortunately the useful data are seldom published in journals normally circulating among architects. Such work may, of course, contain 'user' implications: the reactions of visitors and the supply of performance information can both be studied. If, in addition, the visual impact is 'right' then, at least, the design research group will be fed with technical support for some of their work. This can be unfortunate; it appears to have led to flat, stressed skin panels, for which plastics are highly suited as both skins and cores, being largely ignored in favour of the sculptured shell, wrongly assumed to be inherently a plastics (material), as opposed to plastic (sculptural) shape.

Design-directed research is the easiest to classify and perhaps the most fascinating to study. It is difficult to draw the line where plastics cease to be significant when compared with the urban, social and psychological theories of the individual creators. However, it might be suspected that the choice of material is often defensive; few architectural critics can comment on the technical feasibility of a scheme said to be constructed of an apparently universal material, plastics. This bears out the earlier comments on the significance of plastics imagery: since man has undertaken the construction of his own raw materials, it is felt that he must be able to produce them to meet his farthest dreams. Nevertheless, the design directed research represents a valid enquiry into ideas of form on a scale grander than that of sculpture. As such, its minimum contribution should be to free the minds of those more involved in short and medium term development.

The first instalment of a tentative classification of some of the various projects known to have been carried out, involving plastics, is shown above. For the sake of continuity, the discussion of these schemes is presented in chronological sequence.

In 1938, a house was shown at the Plastics Exhibition at Frankfurt. This was perhaps the first attempt to show in one place uses for plastics materials, in building, but little information appears to have survived.

In spite of a proliferation of articles in the later years of the war, around the subject of the contribution plastics might make to new building, it was not until 1956 that examples of assemblies began to accumulate. The 'Projected Wonder House of 1964' produced in model form in 1954 by the American General Electric Co.[9] might, however, be considered a forerunner of the comparatively rapid developments in the late 'fifties.

In the USA, the B. F. Goodrich Chemical Co. exhibited a show house, collecting together as many examples of plastics applications as possible, at the Seventh National Plastics Exhibition at New York.[10] The user interest was certainly emphasized, with domestic articles of all types included.

The same year saw the 'snail shell' house, designed by Ionel Schein and Yves Magnant, being shown in France at the Salon des Art Menagers de Paris and at other European exhibitions.[11] Constructed by Messrs. Camus and backed by a number of other important French companies, it has probably done more to establish the pattern of thought behind

[9] *Modern Plastics*, February, 1965
[10] Catalogue, B. F. Goodrich Chemical Co.
[11] *The Architects' Journal*, April 5, 1956. AR, August, 1956.

the approach of most other designers to this problem, than any other single structure. Around the circular living and services area, bedrooms are arranged. It is these bedrooms which give the segmented pseudo-spiral appearance, providing the snail shell association and a sense of organic growth. The detailing continues this sense, particularly in the three-part bathroom unit. The fundamental principle is, of course, to mould into one piece as many functional elements as possible and the bathroom area provides the finest opportunity for this. Other walls continue the principle, with window edges, fitted cupboards and built-in bunks integrally moulded with the walls. Both walls and floor are laminated structures of polyester, foam and honeycomb cores, being 30 mm. and 80 mm. thick respectively. Structurally, however, the house is less interesting than the other major seminal influence, the House of the Future, built by Monsanto Chemical Co. The Schein/Magnant house has a steel tube central column, acting as a rainwater pipe, and steel floor joists radiating out from it. The house is now installed on a site outside Paris and is said to be occupied by a family. In addition to various types of houses, a common subject for plastics trials is the factories and offices of the plastics manufacturers themselves. About 1956 an Italian company, Industrie Mazzucchelli built a block of offices, designed by A. Fiocchi.[12] Infill panels of vacuum formed PVC, column soffit linings of extruded PVC and many internal finishes in a variety of plastics were assembled together without either producing a character of technical virtuosity or ignoring the plastics content altogether.

Within a year of the Schein/Magnant house appeared Monsanto's 'House of the Future.' This was the result of co-operation between Professor A. G. H. Dietz, of the Massachusetts Institute of Technology, M. E. Goody, architect, and the Monsanto Chemical Co.[13] Although intended to provide information under all the classification headings, the most important aspect of the work, distinguishing it from the French example, was the thorough nature of the engineering work, particularly in relation to long term performance under the exhibition service conditions prevailing at Disneyland, where six million people are said to have walked through it.[14] A further aspect of the design was the standardized nature of the major components. Limited by transport conditions to at least one dimension not exceeding eight feet, the four cantilevered wings were made from 16 identical components, with obvious production and economic advantages.

Co-operation has continued between Monsanto and MIT. The emphasis on structural performance has also continued and, perhaps for this reason, the work has made little impact upon architects. A small school building[15] constructed about 1961 from an assembly of glass reinforced polyester (GRPE—an abbreviation preferred to the misleading 'Fibreglass') hyperbolic paraboloids is, however, a particularly elegant and graceful structure.

In 1958, Rudolf Doernach, a German architect who had made a considerable study of plastics technology, produced a small house, about 45 m.², which was shown at the Stuttgart Plastics Exhibition. Doernach, and his family, subsequently lived in the house for four years. The construction of the main shell consisted of four stressed skin panels, bent across one of the diagonal axis so that one curved triangle formed the roof and the other, part of the walls. The voids were then glazed. This house unit was capable of repetition, to form larger houses. The structure was self supporting. The stressed skin panels were fabricated on site by a simple technique of bending the panels after applying the resin adhesives.[16] On setting, the curvature is held by the different shapes of the two skins. This aspect of plastics, involving the transportation of light, compact loads to the site and their conversion to light but bulky building is another theme of plastics in building, distinct from the factory, mass production unit idea. There are frequently building problems, in emergency, or for military and scientific reasons, where buildings are urgently required; techniques such as that used by Doernach and, alternatively, in-situ foaming of plastics resins have all been studied from time to time for this purpose.

[12] *Domus*, No. 353.
[13] AR, December, 1959; also *Modern Plastics*, June/July, 1957.
[14] Performance Study. *SPE Journal*.
[15] *Modern Plastics*, March, 1962, p. 92.

[16] A full technical description is published by Doernach in *Kunstoffe*, 1960, No. 6.

CONTRACTORS, etc

Officers' Married Quarters, Malta. *Architects:* The Austin-Smith, Salmon, Lord Partnership. *General contractor:* S. C. Xmereb Ltd. *Sub-contractors: Heating installation:* Amalgamated Engineering Co. *Electrical installation:* Thorpe & Thorpe Ltd. *Plumbing and water mains:* Carmelo Farrugia. *Metal windows:* Crittall Mnfg. Co. *Sliding door gear:* Hill Aldam & Co., Esavian Ltd. *Kitchen fittings:* Peerless Built-in Furniture Ltd. Edwin Showell & Sons Ltd. *Sanitary fittings:* Twyford Ltd., Bilston Ltd., Barking Brassware Co. *Trees and shrubs:* Muscat's Flora. *Paint:* Goodlass Wall & Co. *Pitch-fibre pipes:* Key Engineering Co. *Garage doors:* P. C. Henderson Ltd. *Water meters:* Parkinson Cowan Ltd. *Copper pipes:* Yorkshire Imperial Metal Ltd. *Lead core:* The Ruberoid Co.

Royal College of Physicians, Regent's Park, London. *Architects:* Denys Lasdun and Partners. *General contractor:* G. E. Wallis & Sons Ltd. *Sub-contractors: Acoustic treatment:* Sound Control Ltd. *Aluminium roofing:* Manchester Slate Co. *Applied lettering:* The Lettering Centre. *Asphalte roofing:* Faldo Asphalte Co. *Cement glaze:* John Ellis & Sons Ltd. *Cinema screen:* Rank Audio Visual. *Double glazing:* Steeles (Contractors) Ltd. *Electric lifts:* Otis Elevator Co. *Electrical installation:* Troughton & Young Ltd. *Fibrous plaster:* Jonathan James Ltd. *Fitted carpets and curtains:* Heals Contracts Ltd. *Flooring:* Philip Flooring Co. *French polishing:* J. R. Beadon Ltd. *Gates and railings:* Clark Hunt & Co. *Glazing:* Faulkner Greene & Co. *Hardwood flooring:* Acme Flooring Ltd. *Heating, hot water services, air conditioning and plumbing:* G. N. Haden & Sons. *Kitchen equipment:* Benham & Sons Ltd. *Lavatory cubicles:* William Verry Ltd. *Library and reading room fittings:* H. H. Martyn & Co. *Lighting protection:* R. C. Cutting & Co. *Linoleum:* Catesbys Ltd. *Marble work:* J. Joslin & Co. *Metal balustrades:* Culford Art Metal Co. *Mipolam handrail:* Wiggin-Sankey Ltd. *Modernfold door:* Horsley Smith & Co. (Hayes) Ltd. *Mosaic fixing:* Marriott & Price Ltd. *Moving book stacks:* Acrow Engineers Ltd. *Plastering:* H. E. Badcock Ltd. *Precast concrete roof members:* Concrete Ltd. *Reinstatement of Censor's room panelling:* D. Burkle & Sons Ltd. *Rooflights:* S. Warner & Sons Ltd. *Rolled asphalte paving:* Herbert Paving Co. *Rolling shutters:* Dennison Kett Ltd. *Simultaneous interpreting:* Recorded Sound Ltd. *Speech reinforcement:* Westrex Co. *Steel handrail:* Fair Greene Engineering Co. *Structural steelwork:* Lindsays (Paddington) Ltd. *Suspended ceilings:* The Expanded Metal Co., Steel Bracketing & Lathing Ltd., Campbell Denis Ltd. *Traffic signs:* Light Steelwork (1925) Ltd. *Wall and floor tiling:* Parkinsons (Wall Tiling) Ltd. *Waterproof rendering:* Quickset Watersealers Ltd. *Windows:* Henry Hope & Sons Ltd. *Aluminium trim:* Alcob Metal Co. *Bronze bearing bars:* McLaren Johnson & Co. *Ceiling diffusers:* Waterloo Grille Co. *Clocks:* The Synchronome Co. *Common bricks:* London Brick Co. *Concrete aggregate:* James A. Howard & Co. *Concrete ballast:* Ham River Grit Co. *Callumix rendering:* Cement Marketing Co. *Doors:* H. H. Martyn & Co., Gliksten Doors. *Door closers:* Alfred G. Roberts (Export) Ltd. *Doormats:* R. E. Richards (Flooring) Ltd., National Institute for the Blind. *Exit signs:* F. H. Pride Ltd. *Facing bricks:* Richard Parton Ltd. *Grilles:* RCM (Air Distribution) Ltd. *Ironmongery:* James Gibbons Ltd. *Lecture theatre seating:* Race Contracts Ltd. *Light fittings:* Allom Heffer, Atlas Lighting Ltd., Hollophane Ltd., Rotaflex (Great Britain) Ltd. *Mirrors:* Stitsons Sanitary Fittings. *Mosaic:* Dennis M. Williams Ltd. *Paving bricks:* Pratt (Watford) Ltd. *Prestressed cables:* Rylands Brothers Ltd. *Prestressed cable ducts:* Cable Covers Ltd. *Prestressed concrete beams:* Pierhead Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings. *Slate cills and copings:* Bingley Son & Follit Ltd. *Softwood joinery:* Bryce White & Co. *Steel balustrades:* J. Clark Engineering Co. *Steel reinforcement:* Rom River Co. *Stock bricks:* Eastwoods Froy Ltd. *Strong room doors:* Chatwood Milner Ltd. *Zip-up staging:* Access Equipment Ltd.

Show Offices, Mayfair, London. *Designer:* George Montague. *Subcontractors: Teak storage cabinets, low seating:* Hille of London. *Teak desk table:* Design Associates Ltd. *Glass table:* Interiors International. *Desk and side chair:* Interiors International. *Desk lamp:* Merchant Adventurers Ltd. *Table lamp:* Rotaflex Ltd. *Concealed downlighters to ceiling:* Merchant Adventurers.

Physics Building, Hull University. *Architects:* Architects' Co-Partnership. *General contractor:* Johnson & Bailey Ltd. *Sub-contractors: Mechanical services:* Matthew Hall & Co. *Electrical services:* Stewart Maggs & Co. *Lifts:* Evans Lift Ltd. *Furniture:* Armstrongs (Hull) Ltd. *Icemakers:* Auto-Ice Ltd. *Metal windows and drips:* Aygee Ltd. *Autopa car park post:* Le Bas Tube Co. *Galvanized steel roller shutters:* G. Brady & Co. *Anchor cover caps:* Burnett & Jackson. *Ironmongery:* Smith Bros. & Widdowson. *Sheet metal workers:* Sutton Sheet Metal Co. *Stainless steel trays:* The Taylor Rustless Fittings Co. *Chalkboard fabrics:* Tidmarsh & Sons. *Brickwork:* Richard Thomas & Baldwin Ltd. *Service bollards:* John I. Thornycroft & Co. *Steel shelving:* The Welconstruct Co. *Rooflights:* Quicktho Engineering Ltd. *Seating:* Race Contracts Ltd. *Metal furniture:* Roneo Ltd. *Roofing finish:* Ruberoid Co. *Furniture:* Rymans Ltd., Lucas of London Ltd., Sintacel Ltd., Hille of London Ltd. *Castors and rigid brackets:* H. C. Slingsby Ltd. *Undercill shelving:* Kingston Architectural Craftsmen Ltd. *Venetian blinds:* London Blinds Ltd. *Number plates:* MacGregor Industries. *Electrical engineering services:* Stewart Maggs Ltd. *Wastepaper basket 'Mallod':* William Mallinson & Sons Ltd. *Laboratory taps:* W. Markes & Co. *Sandstocks facing bricks:* Henry J. Greenham (1929) Ltd. *Ventilators:* Greenwood's & Airvac Ventilating Co. *Educational furniture:* Geo. M. Hammer & Co., Hangers Paints Ltd. *Woodwool blocks, cork tiles, cork inset blocks:* Hollis Bros. *Zinc and copper roofing contractors:* Holloway Metal Roofs Ltd. *Lino flooring:* Horsley Smith & Co. (Hayes) Ltd. *Sink, cupboards, drainers:* Jayanbee Joinery Ltd. *Applied acoustics:* Johnson & Bailey Ltd. *Stainless steel trays, mirrors:* G. Johnson Bros. Ltd. *Office furnishers:* Kidds Business Service Ltd. *Fire appliance manufacturers:* Kinsford Products Ltd. *Piling:* Holmpress Piles Ltd. *Isotopes block covers:* Albert Cook & Son (Founders) Ltd. *Siporex roofing slab:* Costain Concrete Co. *Graph cloth:* T. E. Cundy & Son. *Acoustic ceilings:* Dampa Acoustics Ltd. *Balusters:* Dover Ltd. *Precast concrete planks:* Dow-Mac (Products) Ltd. *Galvanized chains:* G. C. Dunwell Ltd. *Curtain supplier:* East Riding Furnishing Co. *Polystyrene louvres:* Elco Plasties Ltd. *Anti-vibration mountings:* J. H. Fenner & Co. *Formica sheets:* Formica Ltd. *Spiral staircase:* Gardiner Sons & Co., Richard Graefe Ltd. *Precast facing slab:* Naybro Stone Ltd. *'Zaplon' soap dispensers:* Newton Chambers & Co., W. & J. Oliver Ltd. *Flooring skirting:* Phoenix Rubber Co. *Plasterers:* James Phillips (Plasterers) Ltd. *Television monitor cradles:* K.M. Pressings Ltd., Josiah Parkes & Sons Ltd.

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Ian Nairn

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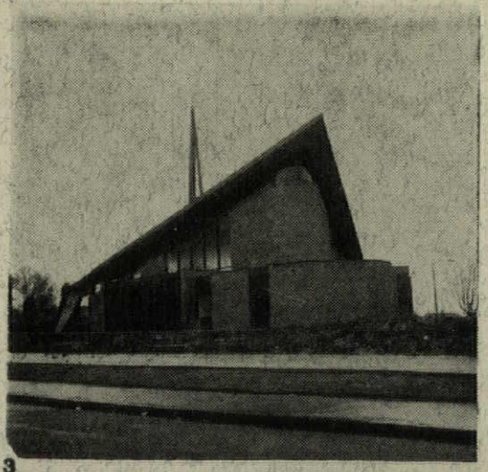
SOS

STOCKPORT, CHESHIRE
Tiviot Dale Station, a fine bit of arcaded design which expresses the rhythm in an almost Italian way, 1. It is sadly dilapidated and deserves a better fate than to be knocked down in some scheme of rationalisation.

OUTRAGE

ARCHITECTURE AS SHE IS SPOKE
. . . in a variety of styles: new housing at Heslington, 2, next to York University of all places—and a new church at Gloucester, 3.



3

CAUTION

HALESOWEN, WORCESTERSHIRE
A recently completed prize-winning scheme, 4. Yet, however crisp the details, the blocks have no real relationship to each other; they are simply scattered about at mathematical intervals. Until they do, modern architecture will never appeal to people's imagination in the way that Baroque or Gothic did.

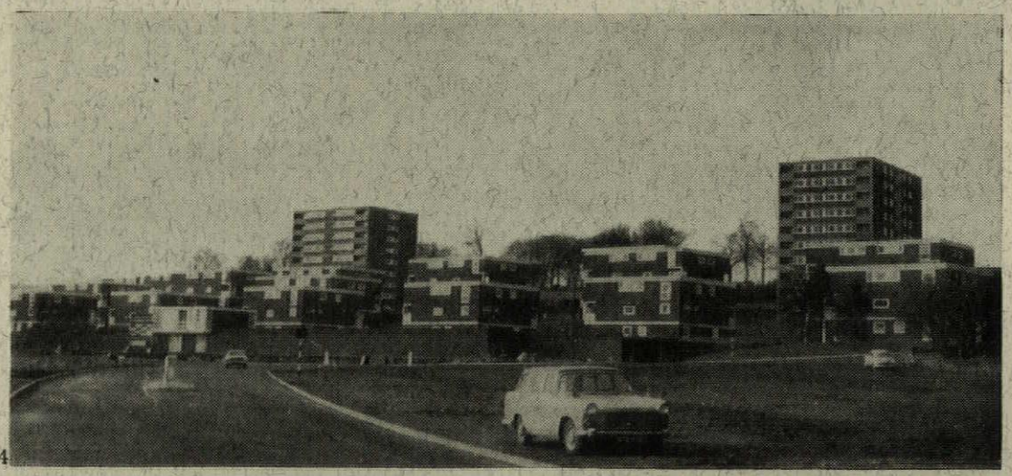
CITY OF LONDON
. . . or rather a Cautionery Tale of three pieces of lettering at Old Street. 5, the fine Victorian alphabet of the old Crosby Head; 6, the pernicious anaemia of the new—a competition winner. Yet all the time something of the old tradition



1



2



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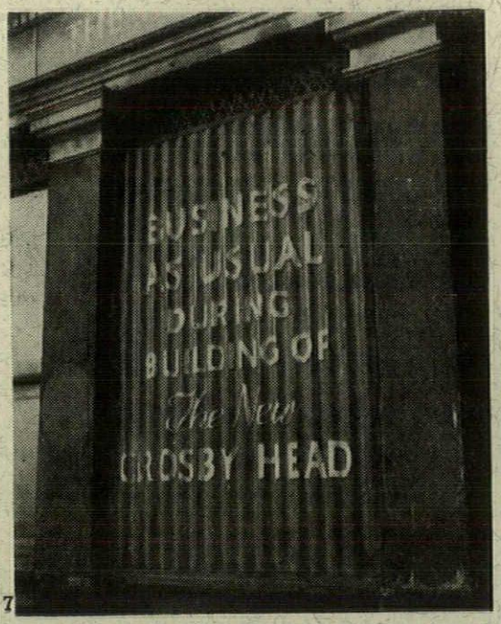


7

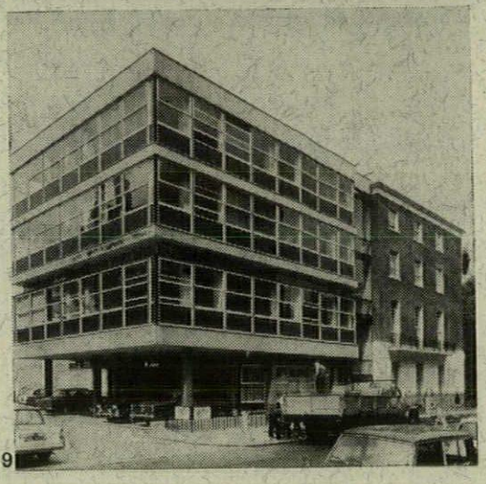
is still alive in the temporary notice, 7, put up whilst demolition was in progress. It's a funny world.

CREDIT

LOUTH
Burton's shop now has its upper storey, 8, and the AR is happy to amend a previous comment (June 1964). The only trouble now is that the fascia is rather large, but you can't have everything.



8

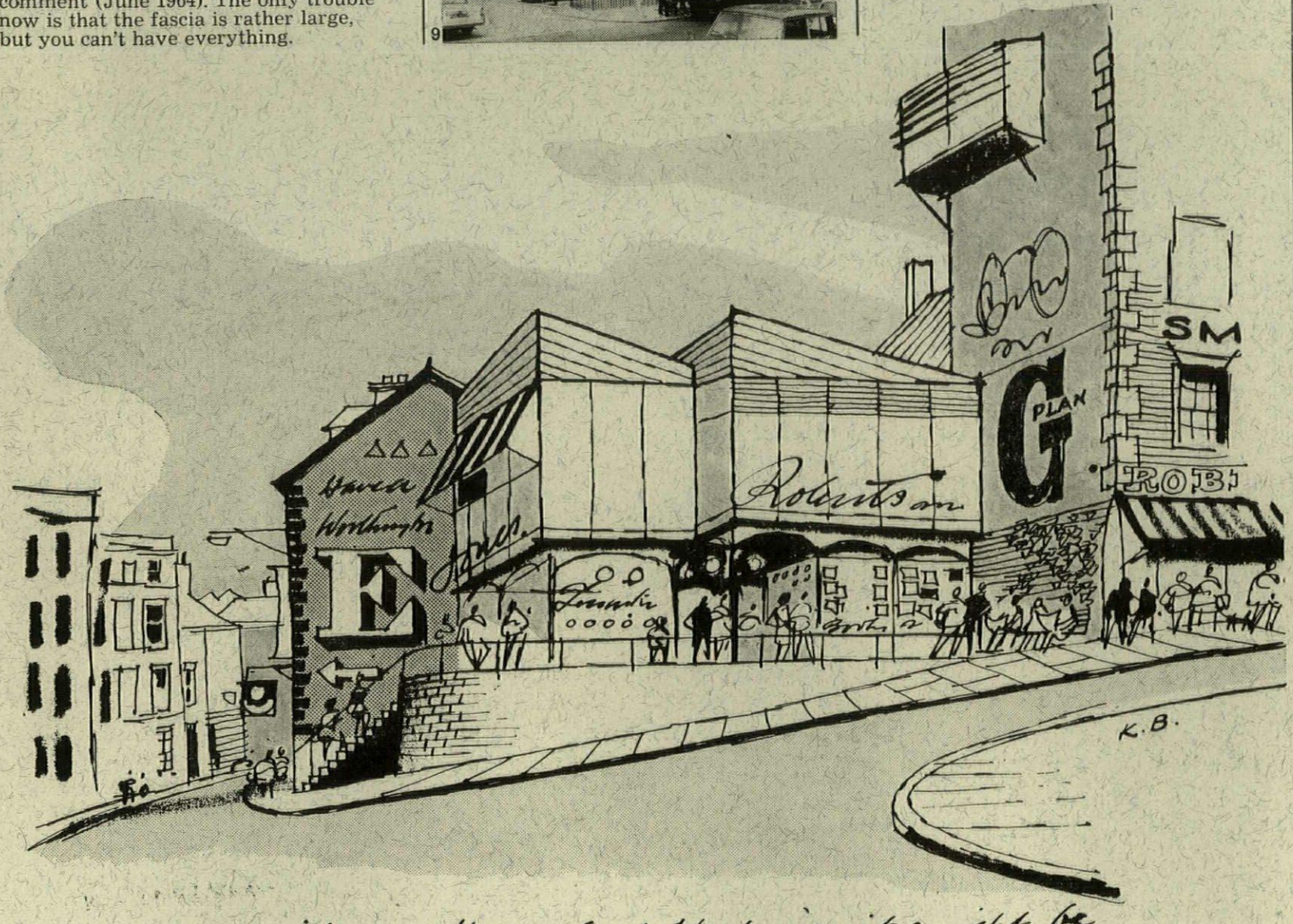

9

MARYLEBONE
Old and new in a harmonious marriage near Marylebone station, 9. In fact, both were designed by the same architect —C. H. Elsom and Partners. One a reinstatement of the end of Dorset Square, the other a modern block to close a yawning gap at one end of Marylebone station yard.

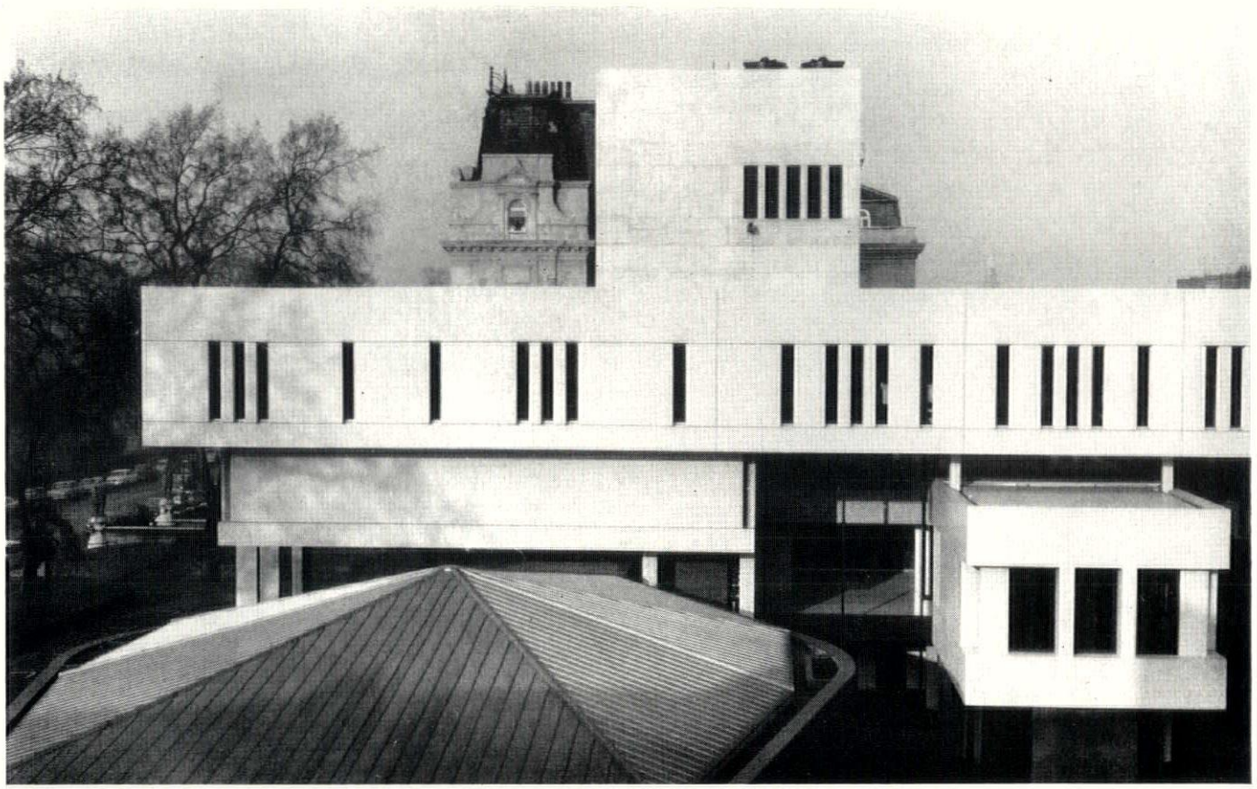

10

OPPORTUNITY

HAVERFORDWEST, PEMBROKE
An awkward street corner site, 10, which is crying out for imaginative treatment, either with new buildings or a multi-level sitting-place. Kenneth Browne's sketch, 11, shows one solution.



11 corner site — Haverford West - as it might be



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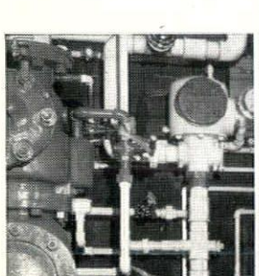

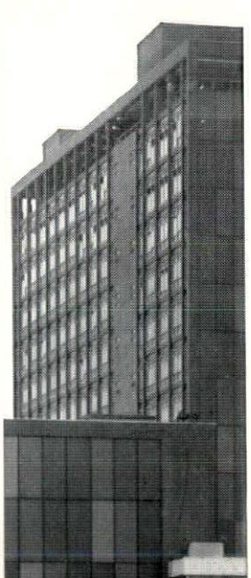

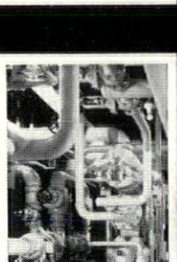

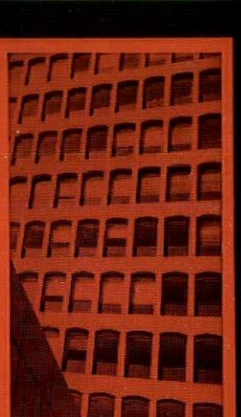

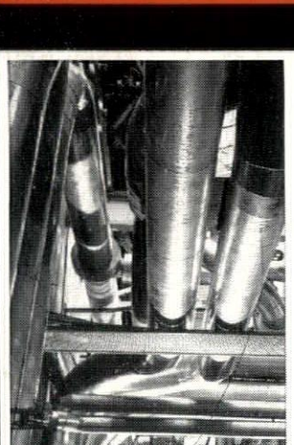

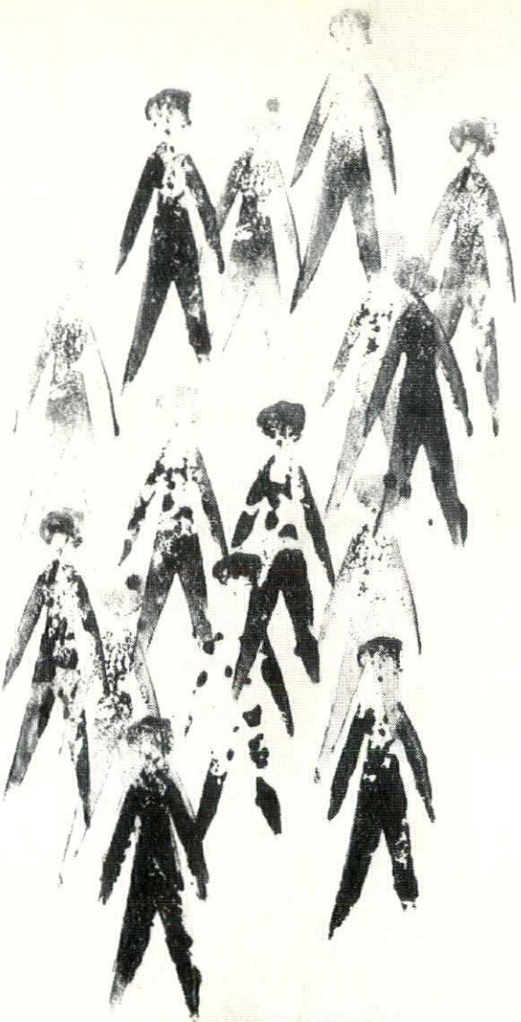

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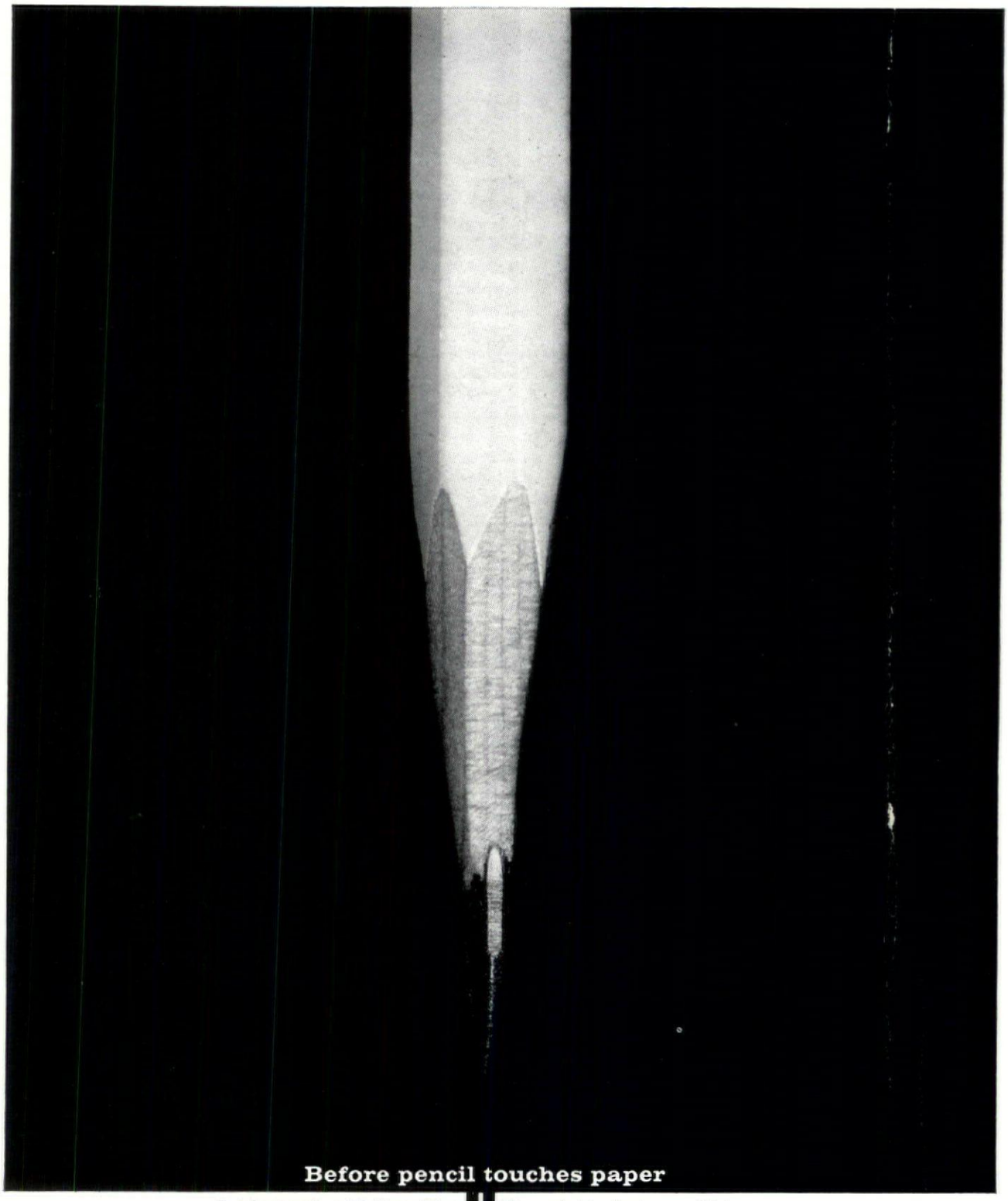

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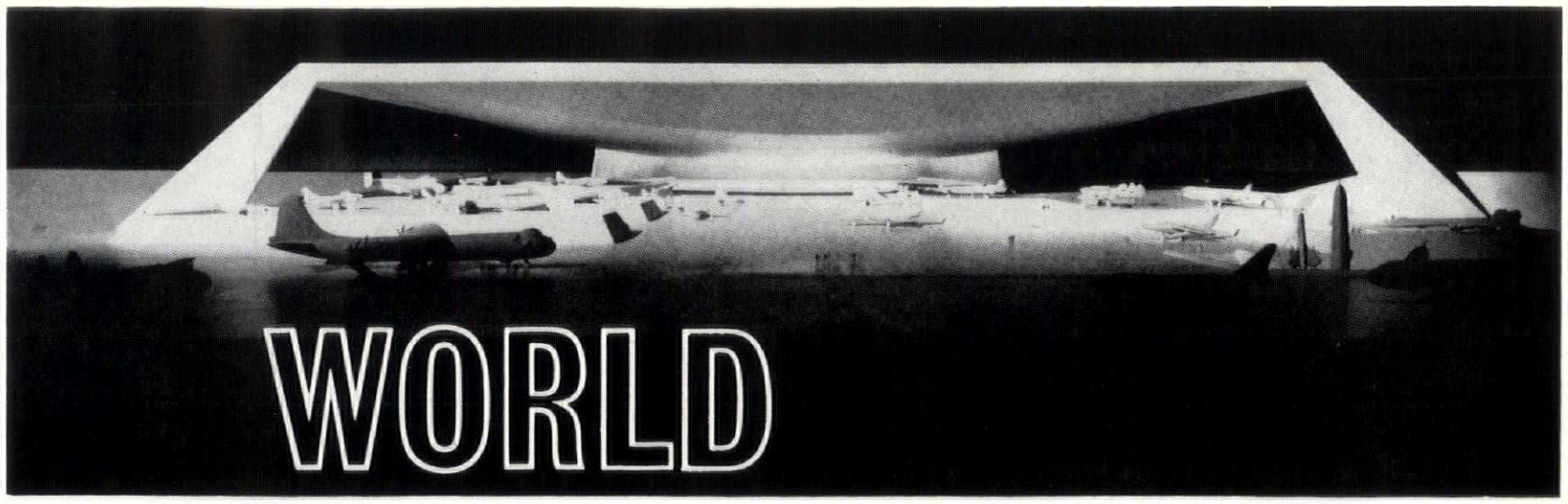

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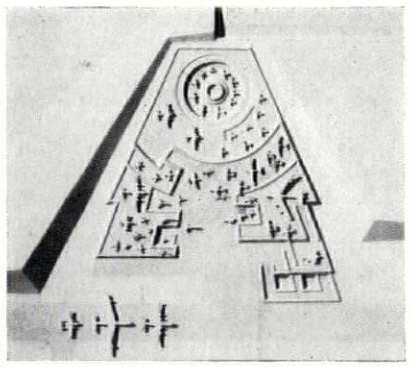
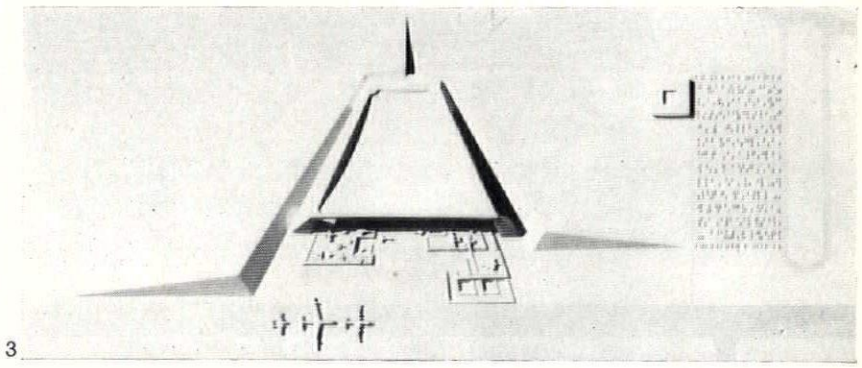
MUSEUM'S 700 FT WING SPAN



2

Perhaps the best tribute to Eero Saarinen's inspired pragmatism is that, even after his own last building (pages 364–371 of this issue), his firm is proving itself capable of continuing the same risky path. The Air Force Museum at Patterson Base, near Dayton, Ohio, has been designed by Kevin Roche as a single span of steel cables and plates, 700 ft. across at its mighty opening, 1. From the car park the spectator will enter the banked enclosure, 2, within which the aircraft cluster, 3.

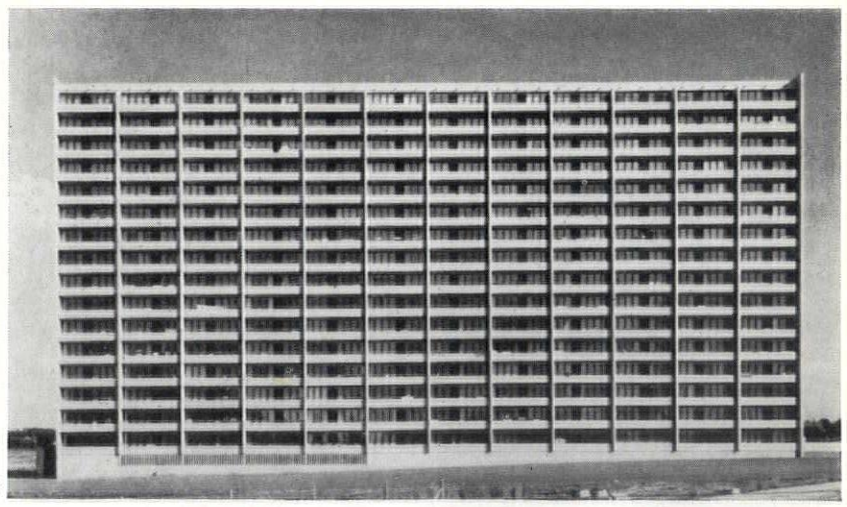


3

BALLERUP FLATS

The discovery of faulty soil conditions except in one small area drove the developer of land at Ballerup, in Denmark, into building an unusually stark and disciplined sixteen-storey slab of flats, 7, known as Praestevaenget. Haldor Gunnlogson and Jorn Nielsen have designed it as a Scandinavian paraphrase of Maekawa, a splendid grey and black monolith on a heavily shuttered base, 6. This massive foundation slab, containing the car park, effectively symbolizes stability amid shifting sands—the Danish word for it is *bastion*.

The block itself is built of precast concrete cross-walls, and *Arkitektur's* December issue criticized the excessively repetitive layout of the flats within these confines. Each flat has living room, kitchen and two bedrooms. The living room and one bedroom enjoy a continuous balcony on the west side, 5, which perhaps smacks more of SOM. On the east side, however, 4, it is back to old Japan, with a dark asbestos cement finish accentuating the lift towers (each one serving two flats on each floor). In spite of its repetitive structure, this is undoubtedly an extreme case of the one-off block (it is alarming to imagine half a dozen).



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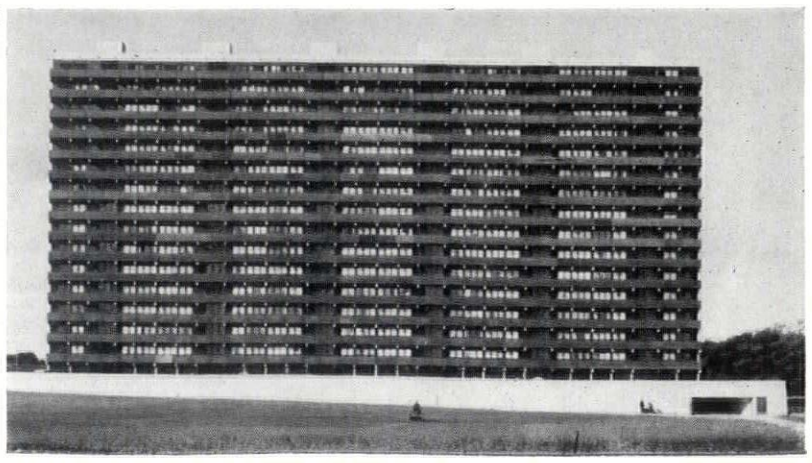

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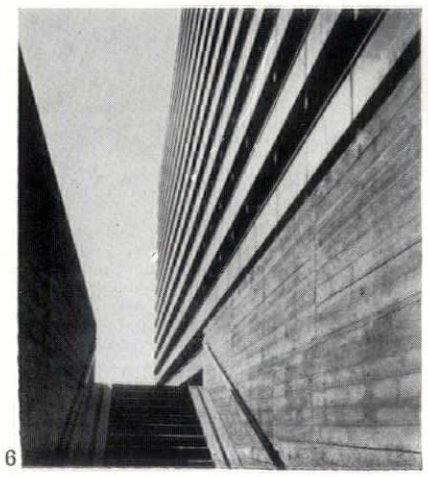

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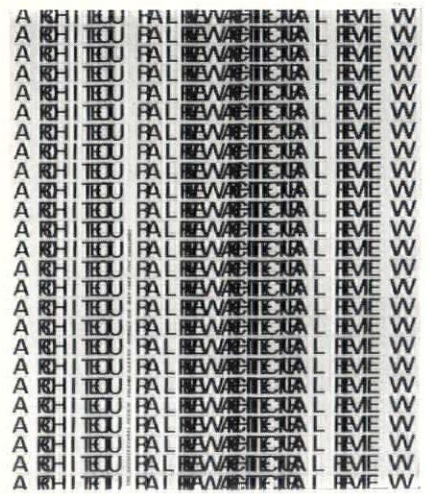
7

acknowledgments

WORLD, pages 325–328: 1–3, 26, 29, 30, *Progressive Architecture;* 4–7, *Arkitektur;* 8–14, 20, 21, 27, 28, *Arts & Architecture;* 15–19, *Architektura CSSR;* 22–24, *Bauen+Wohnen;* 25, *New York Times Magazine.* TEACHERS' TRAINING COLLEGE, STREATHAM, pages 336–342: Galwey Arphot. THE PRIVATE POOL, pages 343–350: 2, 3, 10, Julius Shulman; 6, 7, Otto Valentien; 8, Barry Lategan; 9, Nicolas Breton; 12, Institute of Landscape Architects; 15, C & CA; 16, Apex Photos. SEVENOAKS, page 354: Aerofilms & Aero Pictorial. INTERIOR DESIGN, pages 359–363: 1–4, 6–9, Augustin Rico; 5, Oronoz. CRITICISM, pages 364–371: Ezra Stoller Associates. SANTORINI REBORN, pages 372–376: 1, Vassilis Bogakos; 2, Associated Press. GALLERY, pages 377–380: Hogarth and Others, 1–4, John R. Freeman & Co.; Play Area, Crispin Eurich; DR, pages 381–382: 1, 2, 5–7, 9–11, Galwey Arphot. MISCELLANY, pages 383–391: New Festival Hall, 1–3, 6, 7, 9, 11, 12, Toomey Arphot; 4 Millar & Harris; 5, 8, 10, Galwey Arphot; Return of the Barbarians, Ivy de Wolfe; Museum in the country, 2–8, Robert J. Anderson; Programme Backcloth, Nicholas Harper. SKILL, pages 392–398: 3, *Kunstoffe;* 6, *The Builder;* 9, *Modern Plastics;* 10, Novosti Press Agency; 11, Clari; 13, Ernest A. Cook; 15, *Sunday Times;* 20, Pierre Joly-Vera Cardot. THE INDUSTRY, page 400: 1, Ellegaard; 2, Brian Field. STOP PRESS, pages 401–402: 1, 4–10, Nairn Arphot.



This month's cover is by Philip Thompson

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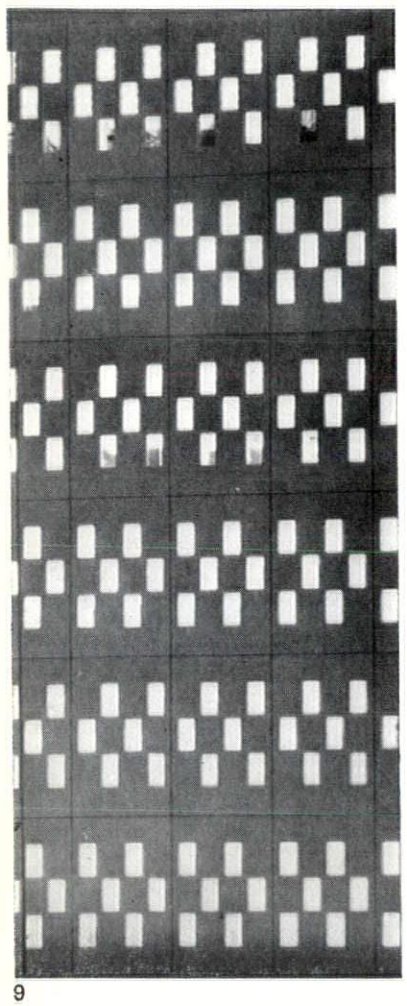
PUNCH-CARD AESTHETIC

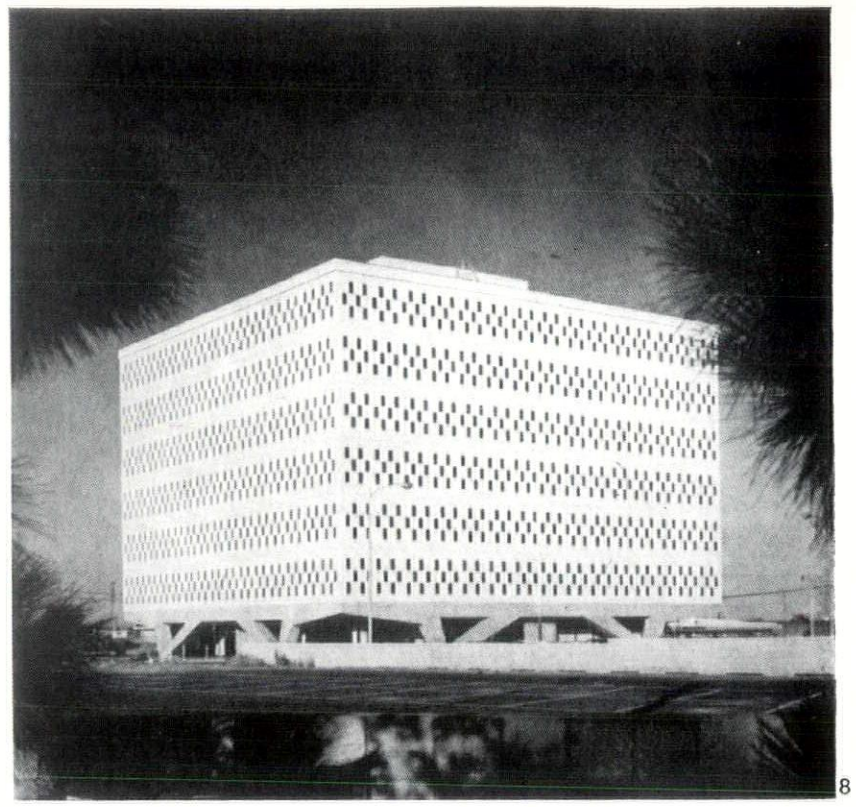


9

The recently completed aerospace headquarters of IBM at Los Angeles, 8, designed by Eliot Noyes and Associates, is a masterly example of architectural double-take: at first glance, eighteen storeys of office accommodation swathed with broad bands of services and supported on gargantuan pilotis 13. In fact, it is a relatively small building, six storeys of offices only with a central core of services, 10. What is gargantuan is the size of each precast facing panel, containing six small windows and forming a perfect brand image of computerization, 9. When all the obvious jokes have been made (by *P/A* as usual), the question remains: What sort of environment for work has this created? 12 shows the prototype panel erected in the Noyes family residence, with a chair to give scale. Noyes advocates his detailing as 'the kind of window wall which one encounters in India'—so evidently this



10



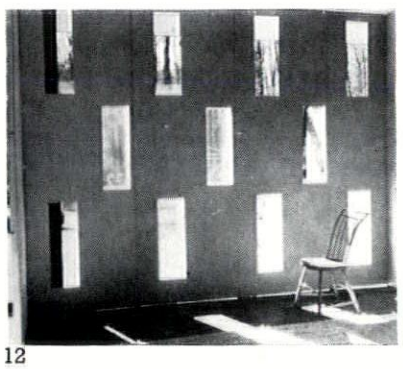
8

is another version of Ed Stonework, giving pleasantly uniform lighting in the main offices with a rather niggling repetitiveness.

For their world headquarters, 14, decentralized to Armonk, 35 miles outside New York, IBM turned to the New York office of Skidmore, Owings and Merrill. What can one say except that SOM have done it again? The white quartz external frame avoids the excessive monumentality of the Banque Lambert or the John Hancock Building by being open in long strips on the north and south sides. The natural rocks outside (imported?) are matched within the two great courtyards, 11, by artificial creations of Noguchi, following as dauntingly symbolic a programme (Man's Future, Man's Past, Heredity, etc.) as ever faced an English Victorian sculptor.



11



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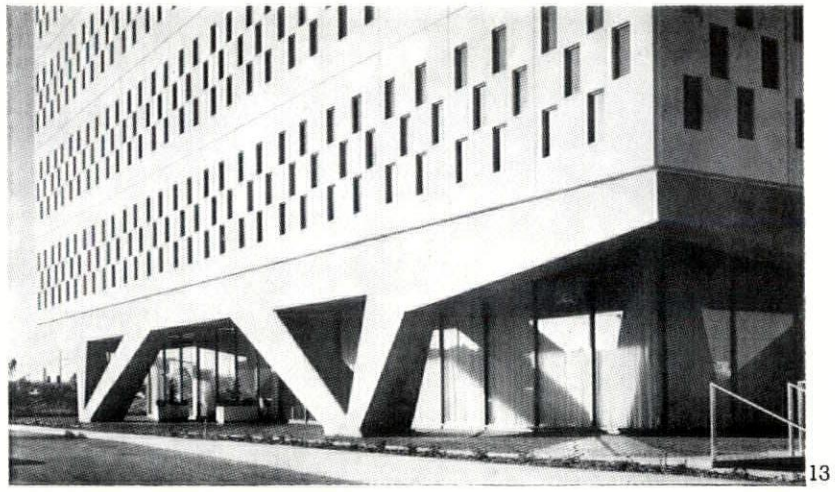

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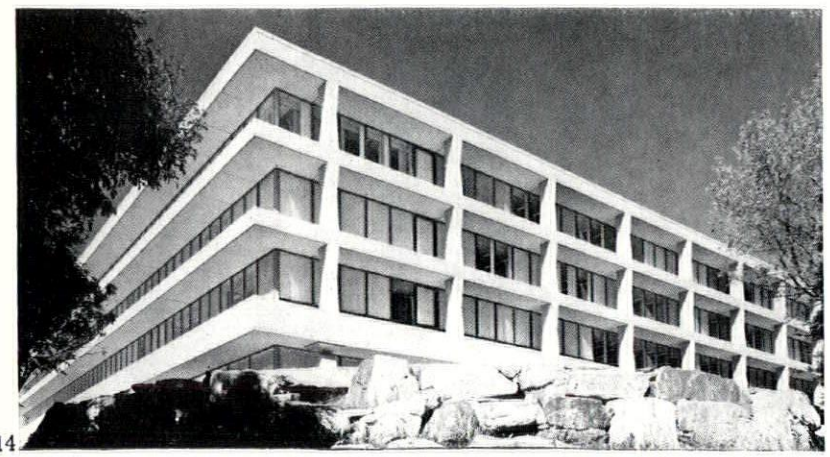
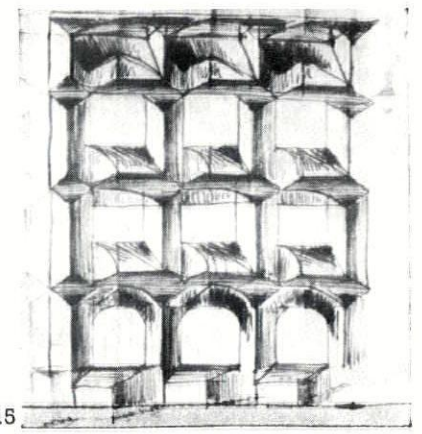


14

HOFMAN

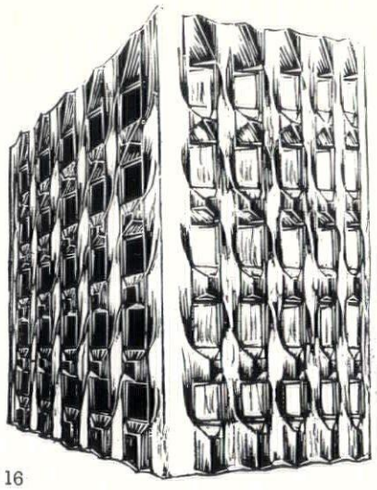
An interesting result of the Communist thaw is, not merely the rehabilitation of 'early modern' work of between the wars, but also the discovery of pre-1914 pioneers. *Architektura CSSR* recently unveiled the designs of Vlatislav Hofman, who died only last year aged 80. Hofman's post-1919 reputation was that of Czechoslovakia's leading stage designer, Expressionist in style, the highly modelled facade detail on the right, 15, however, is part of a design



15

HOFMAN

of 1914, which could well be a precast extravaganza of the 'free world' in the last ten years. 16 shows a complete building, also of 1914, reminiscent in its plastic originality of the contemporary projects in England of Randall Wells (AR, November, 1964). Neither of these was executed; some earlier furniture (1910–11) evidently was, and even an obscure photograph, 18, shows its strength and precision. The earliest architectural design shown is another office building of 1910, 17, which shows Hofman's concentration on a standard elevational grid in place of classical hierarchy. Although *Architektura CSSR* showed post-1918 designs for bridges and for an exhibition hall, the only one actually built seems to have been the Jirásküv bridge at Prague (1929–33), 19, with strong modelling beneath the arches only. Are there other such early masters awaiting rehabilitation in Eastern Europe, one wonders?



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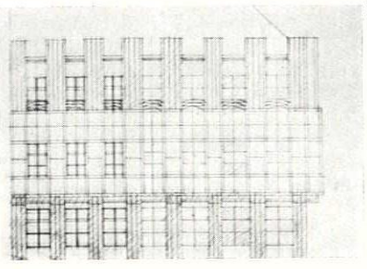

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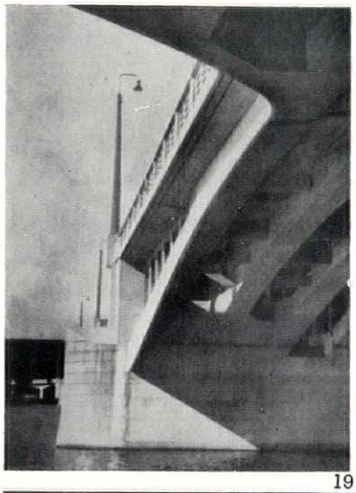

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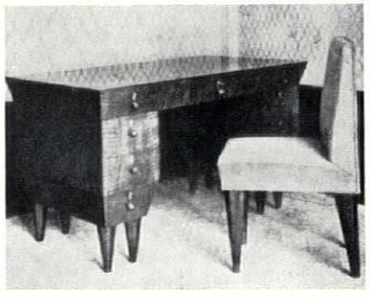

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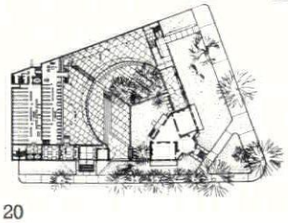
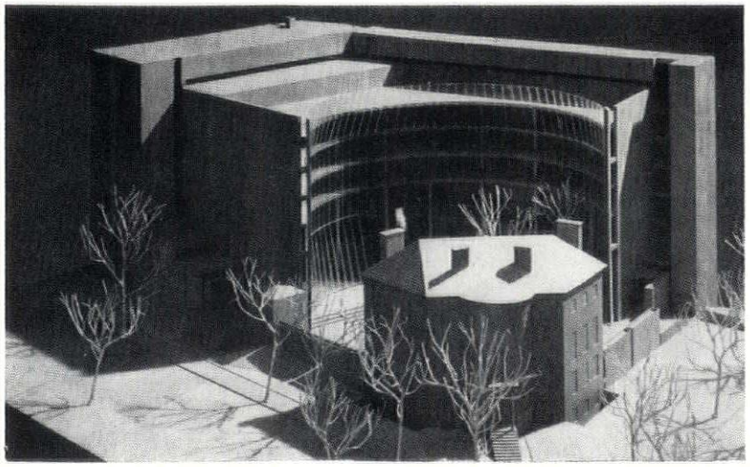


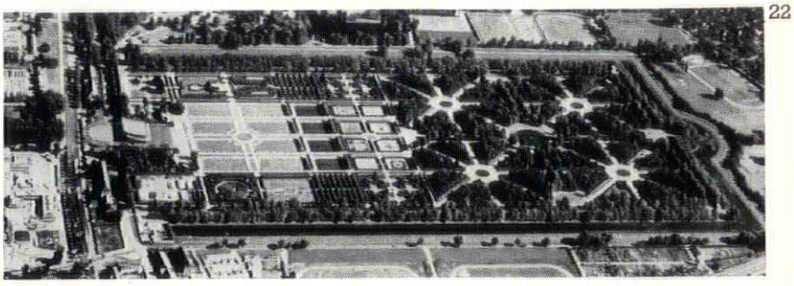
20

Now that Grey Wornum has gone into the limbo of unfashion, English readers may shudder at the thought of such competitions within the profession. The American Institute's attempt has produced an interesting winning plan, 20, by Mitchell Giurgola Associates: the institute's Octagon House of 1800 is encircled by battered glass-walled foyers, behind which lies the conventional office block, 21. As *Arts and Architecture* remarked, 'fitting new buildings to existing ones sensitively and intelligently is a neglected art in the US.'



21

GARDEN GATE BY JACOBSEN

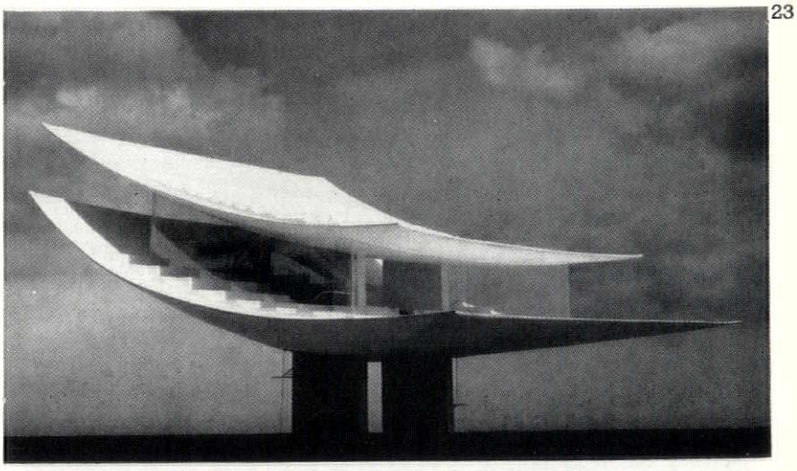


22

Arne Jacobsen is still with honour in his own country (a 40-page review of St. Catherine's in the January issue of *Arkitektur*) in spite of the increasing internationalism of his practice. From England he has now gone to Hanover, to the gardens of the former Herrenhäuser palace of the Kings of Hanover (and England), 22. This splendid garden, with both formal and English sections, lost its focal point with the palace's destruction in 1943. Fortunately ideas of replacing it with a revived-classical *Schlosshotel* in the early fifties were shelved. Jacobsen has catered for the garden's function as a setting for concerts and ballet, and as part of an education precinct.

The structure, 23, consists of two raised basins, the lower containing a restaurant and terrace, the upper being a grandstand for concerts. Kitchens and chair storage are underground. Construction is of steel with a skin of polyester-concrete. Particularly successful is the way in which the underside of the basins, 24, leads the visitor in to the garden on emerging from a pedestrian underpass beneath the main road outside. Jacobsen has once again proved that it takes a real puritan to design an emotive landmark.

Jacobsen has also produced designs for Hanover's new art gallery—a vaster version of St. Catherine's dining hall and its exposed cross beams.



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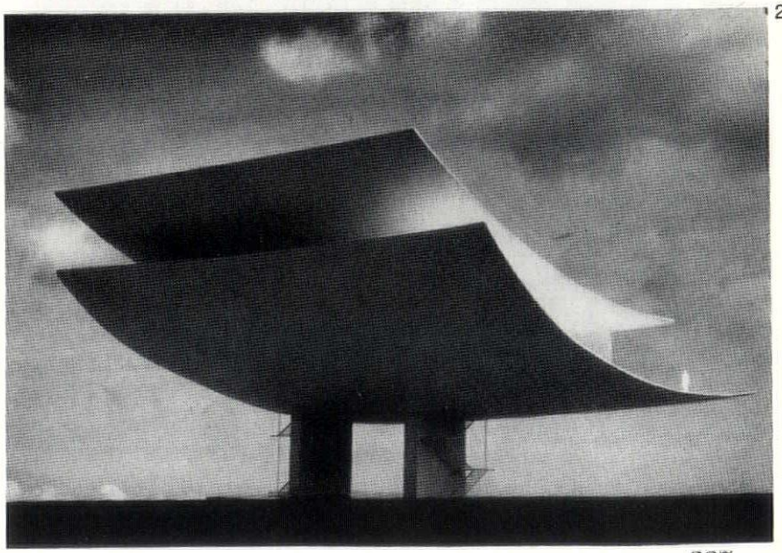

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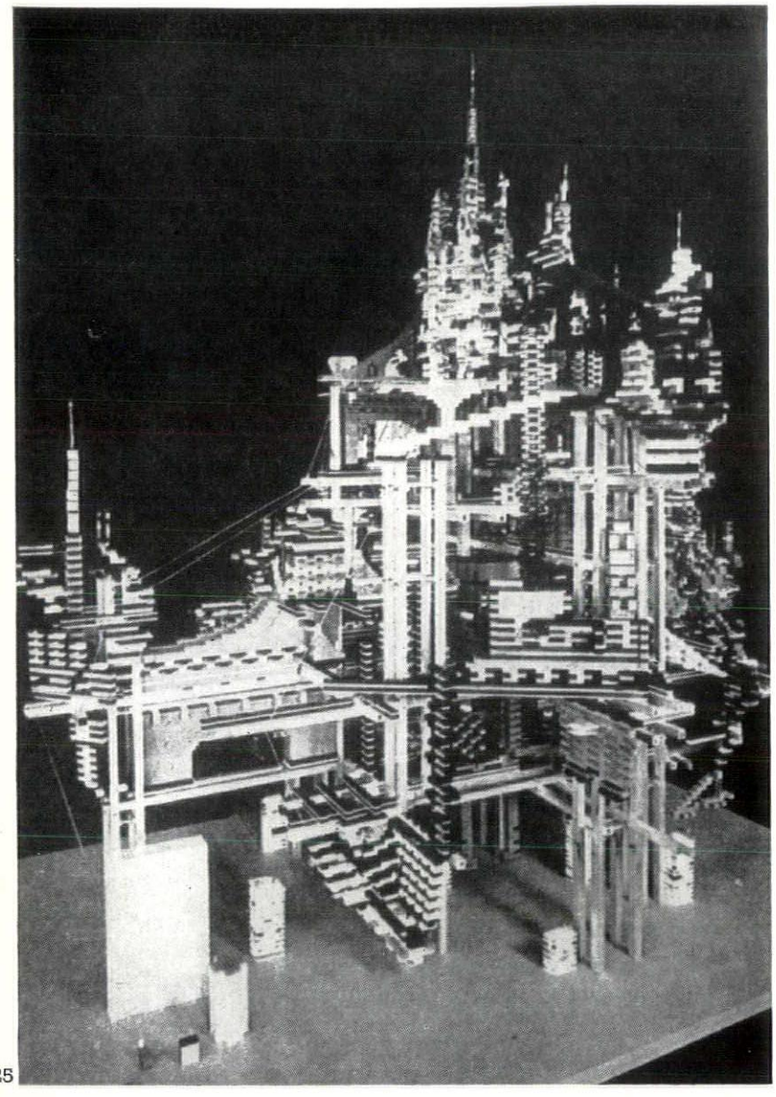
CASTLES IN THE AIR

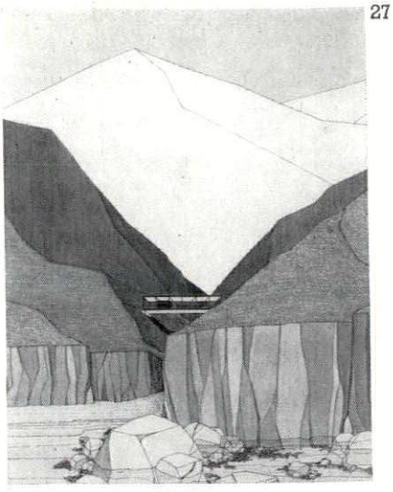


25

The future of America is so imponderable and the architectural profession is so busy conforming to momentary fashions that the amateur prophet has a rich opportunity. The novelist Norman Mailer had an article in the *New York Times Magazine* for January 31 on 'Cities Higher than Mountains,' illustrated, 25, by a 'model by the author' seven feet high. This represents an urban complex with 15,000 apartments, roughly 3,000 feet square. Mailer recognized his debt to Wright's Mile High City, but modestly compromised on half-a-mile (200 storeys). Perhaps most interesting in this lively article was, first, the author's full awareness of technology (prefabrication), secondly, his psychological thirst for the freedom of a mid-air position between earth and the space race, and thirdly, his curiously Gothick model reminiscent of the early Bauhaus.

An opposite approach was described in *Progressive Architecture* for February by architect Malcolm B. Wells. His hatred of man-made America is resolved by disappearing beneath a mass of real or made-up nature. His house of the future, 26, is scooped out of the earth, throwing up rocks and herbage like a giant mole. The essence of his approach is in the caption to 29: 'Reverence for Life . . . a skylit underground church, at peace with all of nature.' Inevitably one wonders what nature will be thinking when all those grabs and shovels get to work—for his (literally) 'downtown,' 30, for example. It has ten storeys of housing lit by narrow canyons, with offices and entertainment facilities buried in its centre.

From this, one can turn to the personalized package version of these dreams, as actually being built. First, the mid-air approach: Craig Ellwood has combined his recent Miesian detailing with a situation as eccentric as that of any of his former houses, 27, in this structure spanning a Californian coastal canyon. Edward Allen, by contrast, is a mole: his 'Earth House' at Orinda, California, 28, is constructed of stabilized earth like the hut of an African tribesman (assisted by 8 per cent Portland cement).



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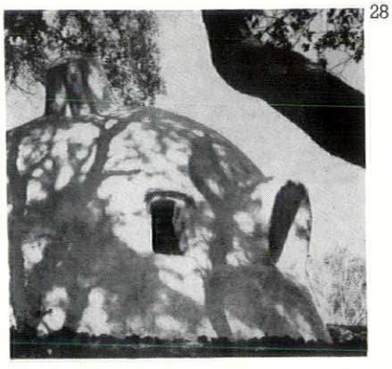

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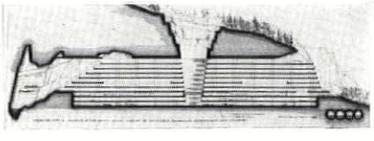

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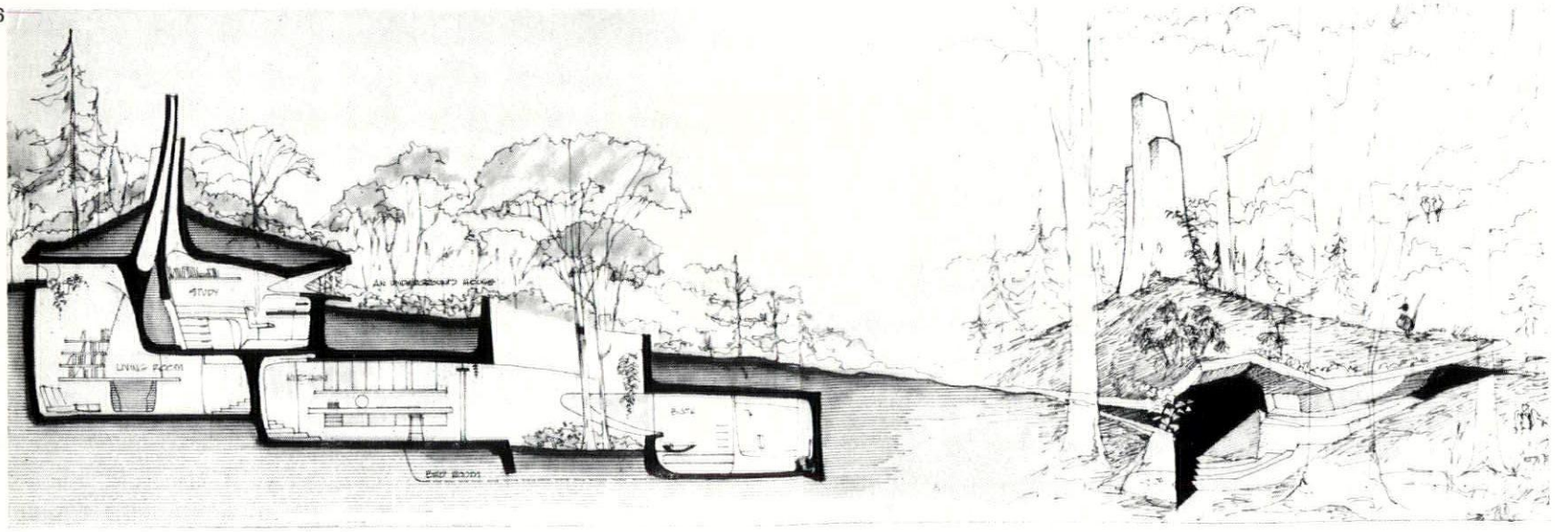
AND UNDERGROUND



26

VIEWS AND REVIEWS

marginalia

THEATRE FOR THE BARBICAN

The decision of the City Corporation to follow the advice of its artistic director, Antony Besch, and build a theatre as part of the Barbican scheme to be used for at least ten months each year by the Royal Shakespeare Company, is a decisive move towards the public support for the Arts which has been lacking hitherto in this country's business centre. It must be unreservedly welcomed—particularly as it has been put forward only as the first part of a complete arts centre. Curiously, the cultural section of the Barbican had previous been progressively narrowed—lending library cancelled, swimming pool, recreation centre and rebuilding of Cripplegate Institute deferred. Now the architects, Chamberlin, Powell and Bon, are having to find extra room. The theatre will be placed on the site previously intended for a concert hall, and it will share some foyer space and back-stage facilities with the adjoining smaller theatre of the Guildhall School of Music and Drama. The concert hall is being moved so as to fill the piazza in front of the central crescent of housing, between the tower blocks on which work has now started. The only fear is that this may cause some congestion and inconvenience.

There seems to be confusion at present over the form of the theatre: Mr. Peter Hall requires as many as 1,500 seats, none of them more than 75 ft. from the stage, without having 'theatre in the round.' These demands seem mutually incompatible. Nevertheless, this is a very early stage in the project and its progress will be followed with justifiable optimism.

DEDHAM VALE IN DANGER

Although the Green Belt is obviously the first essential for protecting the countryside round London, the situation may change if the Government's policy of decentralization is effective. The creation of new expanded cities in the provinces may indirectly affect landscape of high value which is beyond the Green Belt and which thus lacks special protection against piecemeal development. An example of this is the current threat to Constable's Vale of Dedham, an area about eight miles long and three miles broad which needs no introduction (particularly after the recent Mellon exhibition at the Royal Academy) as an unspoilt area of pastoral beauty. It has the misfortune to be divided longitudinally between the two counties of Essex and East Suffolk and is thus not treated as a whole for planning purposes.

The threat is easily defined: an estate of 260 houses at Dedham (Essex), an estate of 220 houses at Stratford St. Mary (Suffolk), and the proposed expansion of the third village, East Bergholt (Suffolk), from 2,000 to 4,000 people, in an estate of 450 private houses. Altogether this would increase the population of the three villages from 4,200 to 7,650; and they are only a dozen miles from Ipswich, which is to be doubled in size. Colchester, which is even nearer, is also expanding rapidly with overspill. The density of the three estates, all given outline permission, is deplorably low, and the very gentleness of the Constable landscape makes it the more vulnerable to insensitive intrusion. On March 25 a Ministry inquiry was held into the East Bergholt proposal. The council's case was a familiar one: the area is 'under pressure,' the planners want to 'avoid piecemeal growth,' the villages must therefore be 'rounded off' (i.e. doubled in population) in 'unified well-planned estates.' This is an attractive way of disguising weakness as firm decision. The basic question is whether any development on this scale should be allowed at all.

The Dedham Vale Society, founded thirty years ago, has prevented many excesses in the area, and scored a notable success recently in forcing underground a length of electric cable after a public inquiry. It is now petitioning the Minister to call in the current crop of planning applications so that the Vale's landscape can be considered coherently. The East Bergholt estate was dealt with as an isolated phenomenon. The area is not large, and in view of its high agricultural value, the conservationist policy is hardly one of sterilization. Because of its importance for other areas at a similar distance from London (the North Downs, the Berkshire Downs, the Chilterns), the Minister's reaction will be watched carefully.

WHAT'S YOURS?

The exhibition under the above title, sub-titled 'A New Look at the Local,' is the first combined exhibition of work of the design schools of the Royal College of Art since 'A Room of Our Own' held at the Tea Centre in 1959. Five of the large national firms of brewers are sponsoring the exhibition, the theme of which is the pub. It opened in the RCA's Gulbenkian Hall on April 28 and continues until May 22.

The difficulty, as the College explains, in a project of this kind is the impossibility of writing the brief. Every pub has its own individual character which is created more by the customer, the landlord and the beer—and more recently the entertainment—than by its architecture or its interior treatment. These differences vary widely and on national, regional or even immediate local levels, and cut across the old social structure: the dockside pub is full of debs; the flock-papered lounges of the metropolitan pub attract the lorry driver and the factory girl. Nevertheless, although many of the factors that make a pub successful are not within the designer's control, he can and must try to create an environment which will not preclude the establishment of the right atmosphere and will, if possible, inspire and enhance it.

Although the designs shown in the exhibition express a wide and varied range of ideas, behind them all a consistent design attitude was maintained. All interiors, furniture and items of equipment were designed to be robust in use, easy to clean and maintain, bold in colour and handsome to look at. No attempt has been made to cover the whole field of pub design, nor were all the design ideas formulated and discussed in the early stages developed to exhibition stage. A number of the items shown, however, have already been accepted by manufacturers for production.

The illustrations show a few of the designs for furniture, textiles and glass. Also included in the exhibition are some ideas for actual pubs and for how they might develop in the future. One of these is illustrated overleaf: Pub '84. It is based on the concept of self service, with automatic delivery and the use of a credit card system. It is conceived either as a self-con-



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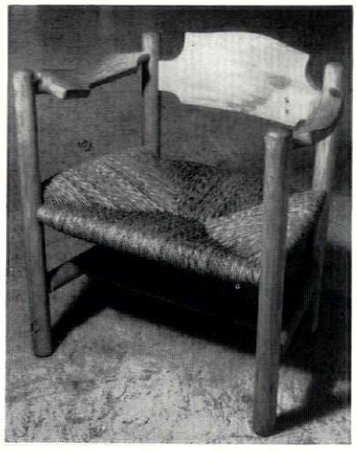

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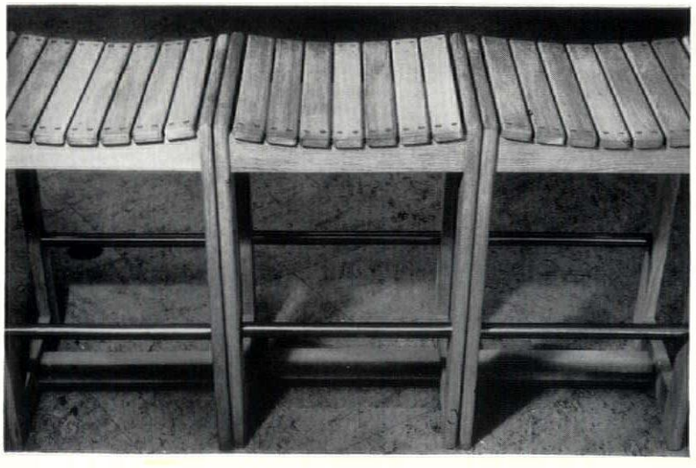
Exhibits from 'What's Yours?—A New Look at the Local,' at the Royal College of Art: 1, oak dining chair by Malcolm Peach; 2, oak chair with rush seat by Anthony Brooker (both third year Furniture School students). 3, two-tier storage jar by Valerie Cooke (second year, Department of Industrial Glass). 4, oak bar stools by Basil Horton (third year, Furniture School). 5, wall and ceiling surface decoration by Deirdre Baker (first year, School of Textile Design).



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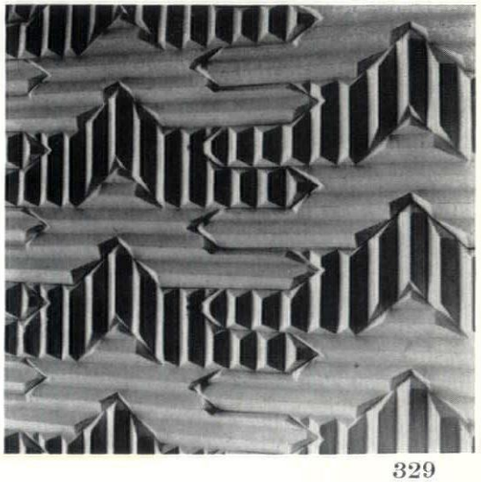

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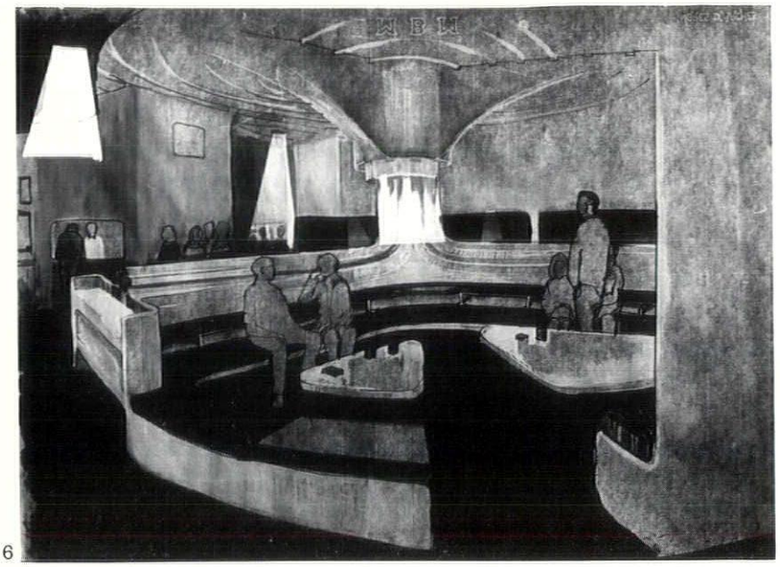

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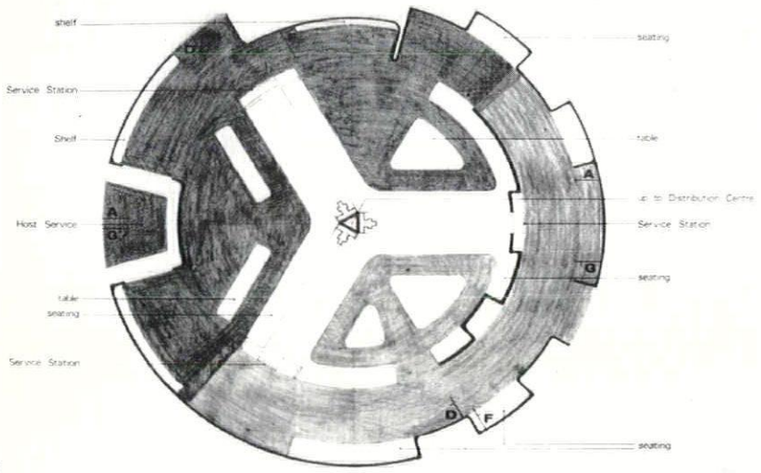
6, perspective and, 7, plan of 'Pub '84,' another exhibit from 'What's Yours?' Designers: Anthony Sully and Catherine Matthews.



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tained unit, like the ordinary pub, or as a social focus serving other large-scale activities in a community centre.

There is no bar counter as such, and service stations are positioned at suitable points to suit the seating arrangements. Any drink and food unobtainable at these stations would be fetched from a small supply counter operated by the host. All containers —for food, drink, cigarettes, ash, etc.—would be disposed of through waste extractors. The model shown here is to demonstrate the principle. Certain assumptions dictated the form which it takes; i.e. that the storage of supplies and the computer operated system were in this case above, and that the site was square in shape. The circular form that has evolved divides the space centrally and around the perimeter into areas of varying character suited to a particular activity—cards, television, conversation, standing about, and so on, and changing levels and colour are both used to accentuate these different areas. The interior forms and fittings are mainly of moulded synthetic material, hard-wearing and easy to clean and maintain. Lighting is concentrated mainly at service points.

CLASSICAL EXPERTISE

The series of six talks on 'The Classical Language of Architecture' which Sir John Summerson gave on the radio in the summer of 1963 has been praised before in these columns (July, 1963). It deserves a further welcome on its appearance as a paperback (Methuen, 8s. 6d.). Sir John states that 'a script written for broadcasting is a script written for broadcasting and it is, I think, a mistake to try to turn it into something else.' This is a reasonable standpoint, but it is possible that a few superior readers will be put off by Summerson's approach: 'One thing at a time. First, what are the orders?' and 'Now, why are there five orders? This is a little more difficult . . .' Once into each paragraph, however, any reader will be enthralled by this, the first serious attempt to interpret the language of classicism for the liberally educated layman of today.

It is a brilliantly successful exposition, in which the radio's demand of brevity brings out at its best Summerson's special gift of seizing on the significant building or group of buildings, and expounding it lucidly, avoiding digressions. His chapter headings are 'The Essentials of Classicism,' 'The Grammar of Antiquity,' 'Sixteenth Century Linguistics,' 'The Rhetoric of the Baroque,' 'The Light of Reason—and of Archaeology' and 'Classical into Modern.' These phrases are obvious enough, yet form only the surface of a subtly cross-referenced argument, from Greece and Rome to Behrens and Perret. There is only one significant omission: although he emphasizes the classical background of Le Corbusier's work, Sir John does not continue the story to include the new formalism in American architecture of the last fifteen years, in the works of Mies, Johnson and SOM.

The illustrative section, prepared originally for the BBC booklet accompanying the talks, shows why it is that Sir John's books appeal so widely to the general public. His other career as an architectural journalist has given him an eye for layout and presentation which is often lacking in eminent scholars. The author shows the same *expertise* as the classical buildings he describes. The juxtaposition of five pictures of the *tempietto* theme and six showing the development of ideas from the Colosseum and the Arch of Constantine is made possible by the sensible adoption of a larger page size than is usual in the University Paperback series. The series includes, as its only other architectural book, Geoffrey Scott's *The Architecture of Humanism*; perhaps this attachment to classicism could now be usefully extended with additions of, say, Alberti's *Ten Books* and Wittkower's *Architectural Principles in the Age of Humanism.*

THE DEFENCE OF YORK

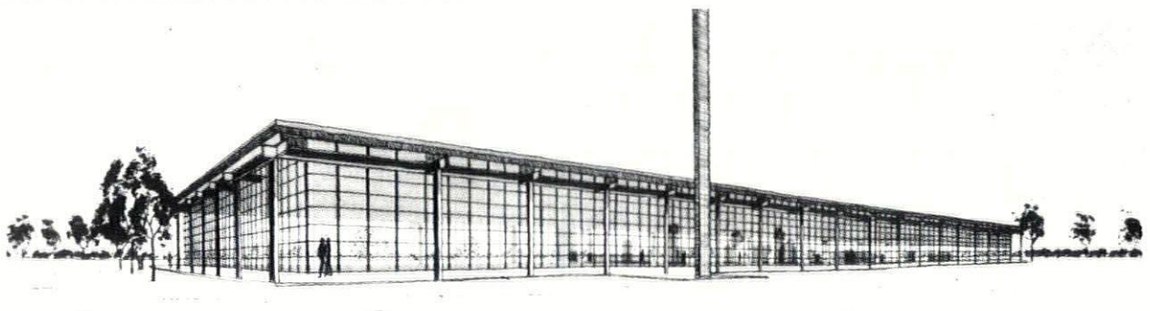
Some dire things have happened lately in York—central road widenings, insensitive new multiples and so on—so it is encouraging to find that the York Civic Trust's new pamphlet, *Historic Buildings: Problems of their Preservation*, is written by a member of the city engineer's staff, Miss June Hargreaves.

The bulk of the booklet is a concise and comprehensive survey of the current planning situation with regard to historic buildings. Miss Hargreaves's emphasis on the multitude of opportunities available to enterprising authorities and on the work carried out by such bodies as the Civic Trust is clearly intended as a challenge to her employers, the city council of York. In her concluding pages on current cases in York itself, she implies that, far from the much maligned city engineer being entirely responsible for recent demolitions, it is the corporation itself which is to blame. For example, no grants have yet been given to York under the 1962 Local Authorities (Historic Buildings) Act. The Queen's Head Hotel in Fossgate and 59 Low Petergate were both demolished after a long period of fruitless discussion without any positive steps being taken to give financial assistance for preservation. Miss Hargreaves stresses the need for a detailed survey of structural condition as well as simple listing. She also recommends that 'areas of special control' should be designated. All this is good sense, but it will only come into effect if there is a change of heart among the city fathers. At the lowest level of expediency, it is clear that the whole economy of York will suffer if the buildings are demolished on which the tourist trade depends. It is a pity that the university is too far out of the centre to make its architectural enthusiasm felt there—even though its Institute of Architectural Studies is itself an outstanding example of the intelligent conversion of a redundant church.

BENZOLE BASTIONS

The latest of the admirable National Benzole Books edited by Sir Hugh Casson is *Castles* (Chatto and Windus, 6s.). The same team as before, Paul Sharp for drawings and E. M. Hatt for text, has covered 95 castles in England and 110 in Scotland and Wales. While those in Wales are well known, the Scottish castles are not at all easily accessible in general publications. Southerners may like to add to their holiday list names such as Dunstaffnage, Caerlaverock, Dunnottar and Castle Sween. Castles suit Paul Sharp's neo-romantic style of watercolour; Burges's Cardiff and the cylindrical keep at Conisborough come off particularly well.

Using the same intentionally rusting steelwork as the Deere company headquarters (see pages 364–371 of this issue), Eero Saarinen and Associates' first building in Britain since the London Embassy, the £2½ million factory, 8, for Cummins Engine Co., a subsidiary of Chrysler, is now under construction at Darlington. The 153,000 sq. ft. building on a 30-acre site is articulated as a single temple of industry, with Japanese-style curtain walling in anti-glare glass on a podium of exposed blue bricks. Work started last summer.



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BRIDGE DESIGN

On the initiative of the Royal Fine Art Commission, which had been increasingly concerned with repetitive problems concerning the design of bridges, the Ministry of Transport has issued an illustrated booklet called *The Appearance of Bridges* (HMSO, 6s.). The Commission itself helped with its preparation. It is intended that the booklet should give, not specific solutions, but general guidance, which will help on all but the most intractable problems and avoid the delay and trouble of consultation with the Commission in every instance. Over 70 illustrations show the best of historic bridges, such as Clifton and Pont-Cysyllte, and the best of the more recent designs from Waterloo to Hammersmith to Doncaster By-pass. Generally the advice given is practical and easily understandable by the lay committees who have to deal with bridges. Particularly good is the section on the adaptation and widening (if unavoidable) of old bridges. For a future edition the Ministry would be well advised to illustrate more than merely four of the excellent bridges on the Continent, and to give captions which name the engineer and/or designer of each bridge shown (only Brunel, Rennie and Telford receive this honour).

book reviews

ROOF FOR THE WORLD

MAN'S STRUGGLE FOR SHELTER IN AN URBANIZING WORLD. *By Charles Abrams. MIT Press, Cambridge, Mass.* $7.95.

The title of this book—with several five dollar words—is somewhat misleading. Coupled with the name of the author who is well known for his work in various spheres of urban planning, it leads one to expect a wide-ranging, analytical book on problems of housing and urban growth, especially in developing countries. Charles Abrams stresses the need for such a volume. 'There is not a single textbook (good or bad) on urbanization problems.' Regrettably, this volume does not fill the gap.

This is not to say that the book is barren or lacks merit. On the contrary. Its main fault is that is says too little about too much. It refers to a wide range of questions—social, economic, political, legal, technical—which arise in the building of settlements and homes. It deals with diverse subjects—such as squatting in Jamaica; rent control in Bolivia; British new towns; the World Bank; core housing in Columbia; a new university in Ankara; the family structure of the USSR; the recruitment of international experts. All this, and a good deal more, is rather loosely strung together and illustrated by examples drawn from technical assistance missions to various parts of the world. Whenever such examples are fairly detailed, they are most useful. It is thus the more frustrating that the tour is generally too hurried. And as a result, there are bound to be inaccuracies. (For instance, the references to the history of municipal housing in this country are incorrect; again, the United States have not, as the author says, 'adopted' our public housing programme, nor has Britain —fortunately in my view—as yet adopted 'the American pattern of urban renewal,' though the term is now current here.) Altogether, at the end, the reader knows perhaps more what he has missed than what he has gained.

The trouble is that in writing the book as an international expert, Charles Abrams has not done justice to himself as international expert. Contrary to his intentions, he seems to have addressed himself primarily to a small 'reference group' of other international advisers, and of eggheads (or roundheads) in Washington, DC. Hence there are lengthy passages which resemble inter-office memoranda to UN and State Department establishments. They contain a directory of US aid agencies with assorted initials (including AID); proposals for their reorganization; and statements such as 'We should encourage the employment of as many American experts on US missions as possible.' (Who are 'we'?) All this is rather tedious reading matter, even if—in transatlantic academic parlance—it does provide some 'meaningful insights.' (Thus the description of zealous American assistance for housing in Latin America after the emergence of Castro, as compared with persistent parsimony elsewhere, is not without interest.) Nevertheless, these sections might well have been left in the files.

Moreover, because Charles Abrams has written this book as an expert, it tends to be inconsistent in its treatment of diverse subjects. Though he himself rejects a 'crude set of pat remedies,' there are traces of 'patent-medicine' prescriptions in his own proposals, positive and negative. Contrary to his own views, he seems to be preoccupied with solutions, rather than with a thorough analysis of problems in various parts of the world. Though he warns against rash generalizations, and emphasizes the need to distinguish between the common and the specific elements in causes and symptoms of urban growth, the theme is hardly developed. Highly controversial issues are dismissed with categorical pronouncements in one place—and flatly contradicted in another. 'The greater the industrialization, the greater the housing problem, and it matters little what political system ushered in the industrialization.' But a few pages later we read: 'The USSR has . . . attained a higher rate of new housing construction than any other country for which statistics are available. . . .' And: 'There is no doubt that planning by the state . . . can sometimes work miracles. . . . With state planning there is more accuracy in the forecast and in the product.' Again, it is difficult to reconcile the author's insistence on planning for change (which can be regarded as axiomatic) with his fixation on private property rights. He advocates 'planned slums,' designed for temporary use in such a way that they do not become permanent. But he also stipulates that 'the separate shelters' in such areas should be 'individually owned.' Surely —as his experiences have shown—this would be the very method of obstructing change.

All sorts of promising ideas and unexceptionable statements are left in the air. There is only a single brief reference to the question of restricting luxury housing in developing countries. There is no detailed discussion (though an excellent example is drawn from Lagos) of the crucial problem of how to determine priorities in investment for sanitation, for other basic services, for nutrition—as compared with investment for housing as such, especially in squatters' areas. We are told: 'The social cement that holds neighbourhoods together is as important as the cement that binds the buildings.' (Agreed—though one might have phrased it differently, quite apart from the fact that in the shanty towns of developing countries cement is a rare building material.) Why then has not more attention been given in this book to the great differences between the social organization (or disorganization) of miserable settlements which may look superficially alike—between the bustees of Delhi, for instance, and Kingston Penn, Jamaica (where the number of squatters has, incidentally, been underestimated)?

It is one of the occupational diseases of international experts (perhaps of all 'experts') that they tend to over-emphasize what might be called a crudely rational approach. Mr. Abrams, though well aware of the risk of contagion, is not immune. 'The main obstacle is of course the dearth of talent and knowledge for meeting the challenges of urbanization.' The *main* obstacle? Why then does the poverty of Harlem still exist next to the affluence of mid-town Manhattan? 'Sometimes,' says the author (*sometimes*) 'the newly arrived expert discovers that what the country really wants is beyond the talents of one man.' It is also one of the afflictions of international experts that however much they strive for objectivity—as this author does—they can hardly be expected to be entirely detached from their own ideological upbringing. Hence, for example, this author's insistence on the virtues of private enterprise and private capital. 'Property rights in land may be viewed as a basis for the extension of some of the other freedoms. . . .' 'Far from regulating the capitalist, the state must more often be prepared to favour him with offers of free land, tax immunities and other incentives. If he seems to exploit labour while establishing a textile mill, he may not otherwise be able to enter his goods competitively in the world market.' 'Home ownership should be encouraged wherever possible,' while rent control should be discouraged. ('Revision of rent controls is another imperative.')

Some of these tenets appear to be rather out of place in the vastness of Asian, African and Latin American poverty. But nowadays, it is fashionable to delay, or even to prevent, a genuine discussion of such controversial matters—as indeed of the role of social principles in the direction of development—by exhortations to achieve 'togetherness'; the proper team spirit—an 'interfusing of disciplines' in 'a realistic science of urban development.' But is that not perhaps a case of putting the cart before the horse? Of course, the reaction against over-specialization is a legitimate one. No doubt this author, especially—as a man who is catholic in his interests and knowledge—is well qualified to advocate the 'fusion' of disciplines. But how is it to be brought about? How can it be distinguished from mere eclecticism? He has not told us yet. I hope he will now write three books to give the answers. RUTH GLASS

IDEAL CLIENTS

NEW HOUSES. *By Penelope Whiting. Architectural Press.* 30*s.*

In collecting these recent houses together the author has taken as her frame the architect-client relationship and has done some interesting research into it. The clients sound quite ideal! It makes one wonder what happens to the others; perhaps, like old soldiers, they 'simply fade away.' One expects the architect-client to produce an interesting house, but the tailor-made house of builder-client seems a new trend, and may be a sign of more architectural influence in housing generally through the filtration of ideas even if those ideas become somewhat unrecognizable in the process.

These are presumably the most interesting houses of the early 'sixties; they contain some of the gimmicks of American houses of the 'fifties, which do not always adapt very well to our climate and conditions. The author draws attention to some of the problems of materials which should be taken as a warning, as here could lie the budding gimmicks of the later 'sixties.

One rather more traditional house included seems an odd choice as it is not very distinguished even of its kind. On the other hand, some of the country houses are trying to develop and modernize the vernacular in an interesting way; and this is very well done and should not offend anyone's susceptibilities. The best and most up-to-date examples are very good and reflect the trends in design taking place in larger buildings. They are often from the board of architects distinguished in those other fields and even if they have not done the detailing themselves they have chosen their assistants well. The more ordinary examples sometimes try to gain interest by the use of a complicated plan leading to difficulties and untidyness at roof level. Even a house requires the same skill and attention to details as a larger building to make it into a piece of architecture. JUNE PARK

TO OVERSEAS SUBSCRIBERS

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The challenge for architects in underdeveloped areas is whether they can develop an adequate environment from existing traditions, without imposing an artificially 'simple life'. One of the most interesting experiments in this field is described by Marina and Robert Adams on pages 372–376 of this issue: the rebuilding of earthquake-shattered housing on the Greek island of Santorini, where surviving villages (above) are now matched by the clustered concrete vaults of the new houses (below).





PATTERN OF CHANGE

The newly formed Commonwealth Association of Architects is meeting in Malta next month. The article that follows, written by a young British architect now teaching in Nigeria, presents a challenge to the Association and demands a fresh look at the role, the range of interests and the training of the architect in relation to the needs of the developing countries.

There is a breadth of experience in the Commonwealth —Ottawa to Kuala Lumpur, Melbourne to Lagos— that could make of the Commonwealth Association of Architects a workshop like no other in the world for transmuting the architectural profession into a service for development. Can this new association find its first motive in the reconsideration of what architects ought to be doing, ought to be trained for, in a world which is becoming aware of, and appalled by, quantity: of people, of nations and of buildings?

Architecture must somehow augment its qualities to fit into this pattern of change. The architect's role must be seen to be one of urging environmental adaptation. Architecture as a profession certainly *knows* that it is no longer a matter of design alone, a duologue with individual clients on the subject of individual buildings. But it is taking a long while to divest itself of this glossy image.

Architectural education in most places has grown haphazardly, sometimes gracing the Arts Faculty, sometimes Technology. The architects who have emerged have been burdened, sometimes deservedly, with a lay image that presents them and causes them to be used as designers of one-off products, but not of anything more utilitarian, not if it is a question of saving money. It has been a vicious circle, of architects inappropriately used because of inappropriate training, and inappropriately educated because no one had yet thought out a more suitable way of using them.

Take the example of Nigeria, which is just emerging from ten years of intensive and costly building activity made necessary by independence. The prestige buildings are now up: the Ministries, the hotels, the stadia. More talk is heard now of the 194,000 school classrooms needed to bring full primary education to the north, of the thousand rural dispensaries that would complete the first thin web of rural health posts. The prestige building has been almost entirely the work of expatriate architects—the output from Nigerian schools is only now maturing. And it is maturing to be presented with a role for which it has not been educated. The kind of architect that seems to be needed now is one who is prepared to take a wide fundamental responsibility for environment; who can use a hygrometer and read a population graph as readily as he can use a T-square; who sees himself as having the responsibilities of planner, economist, sociologist and engineer *in the matter of building*, and who therefore knows how to use the work of these other specialists. Demarcation need not worry him. It is not stealing work from anyone else; no one else is taking responsibility for the building industry at large.

What will be especially difficult for the new graduate, something that goes entirely against the grain of his present education, is that he must see himself as a parer-down of building pretensions, as the man with the blue pencil who saves the money, who niggles away at other people's standard plans until they are cheap enough and foolproof enough to serve a mass programme; the man humble enough to apply other people's work, to adapt inherited conventions and to bring sense to half-complete ideas.

So long as an architect sees himself as a person who designs 'a building' he can only see his own progress in terms of grander and more expensive buildings. This is reflected in his education: the first year student designs a park shelter, the fifth a luxury hotel. Most countries, like Nigeria, need smaller buildings and more of them. Only when he can see himself as a designer of *methods* of building, as well as a designer of buildings; when he can see himself as formulating housing programmes, modifying tendering systems, stimulating component-manufacturing industries, will he be able to set himself personal ambitions of a kind that accord with, rather than go contrary to, development economics.

The sort of architect that could well be used in many government departments would spend only a small part of his time designing and executing actual building work. The rest would go in the organization of construction, in considering the economics of building materials, the application of current research, the development of a responsible contracting industry, experimenting with direct labour and programming—even if it is programming nothing grander than getting twenty classrooms in twenty villages built between the end of one rainy season and the onset of the next.

Most architects, city-centred, are at the end of a telephone. The talent should be spread wider, to the end of the laterite tracks. In Nigeria, if you put a newly qualified architect of twenty-five into a local authority spending £100,000 a year on building, he will be likely to be the most highly educated man in it. This is where he is needed, on the condition that he can prove himself to be a saving and not an added expense. And he is bound, in such circumstances, to be used for more things than design.

In Nigeria there are still only a handful of qualified Nigerian architects. These few, mostly young, by their own view of themselves, create the character and role of the entire profession. When there is no lead from Government (which does not yet recognize the possibility of using architects in the development role), when the only way Government presents itself to the student is as the 'sponsor' of studies, exacting in payment a two-year stint in the Ministry of Works, it is not surprising that the student reacts by seeing himself rather as a rich and independent private practitioner in the capital city. Little that is taught in the studio at the present time, and little he sees in European magazines, equips him to invent a more relevant frame of action.

Architectural education is the most apparently sensible road to changing the role of the architect—first, because it is the moment of learning; and second, because professional associations, such as the members of the Commonwealth Association of Architects, have a direct influence over curricula and examinations. The CAA itself could be a kind of grand external examiner to the (roughly) twenty-eight schools of the Commonwealth, their four thousand students and four hundred staff, making new demands on the institutions that are training its future members. Perhaps the first move could be a series of meetings, on a broad front, between the architect's clients and his teachers. No one should know better what a country wants from the creators of built environment than the directors of Public Works, heads of departments of education, health, economic development, housing. And if the sad truth is that they themselves have only a hazy idea, such a discussion might provoke them to define it more closely. No one can create architects to fill their needs except principals and lecturers in schools of architecture. How often do these and the official clients, in fact, meet in the course of their work?

At meetings like these, not only should the client impress the educator with his needs; the educator should make clear to the client his need for guidance. Few architectural schools know strictly where they are going. How many architects does Nigeria need? When does it need them? In what fields of activity are they to be employed? Some sort of a plan for this branch of higher manpower, some prediction and phasing, are essential. They are needed out of fairness to the students who trustingly arrive at Commonwealth schools to take up their careers in something known as 'architecture,' the exact nature of which is sometimes as much of an enigma to the authorities as to themselves. This confrontation between client and teacher might be the basis for a study (on the scale of the RIBA's *The Architect and His Office*) on 'future requirements of the architect in development.'

If there is indeed a new and relevant role for the architect in a developing economy, then it should be reflected in his education. He should be involved early in enquiry, in collecting and analysing locally relevant material, in contact with local builders, and with other disciplines: geography, economics, science. It may, therefore, be time to face properly the much-discussed idea of a new breed: the architect-planner, or the architect-builder, diverging from the design specialist for the last two of his five years training. Someone, and plenty of him, must emerge from the education system capable of moving, through experience, into a responsibility for the whole field of environmental development. Final thesis subjects give a good clue to the way students see themselves. Popular subjects here are not unlike those in published lists from British schools: regional libraries, city airports, multi-storey carparks. They present interesting design problems, it is true, but they beg many questions. Once the four Regions of Nigeria have their libraries, what then? What Nigerian cities merit multi-storey carparking and in what quantity? A student put forward the theme of a Fire Station. After some conversation he began to be interested in studying *fire hazard* in a West African city and considering architectural measures for its prevention. This would have been the only subject in the year to break new ground, to start with a problem (fire risk) rather than with a solution (fire station). But the student reverted

to his former idea because he did not feel confident of himself, nor of the staff to support him, in the analytical study which was needed. In a sense he was justified, because the architecture course as it now exists in many schools is not conceived to support the student in open-ended enquiry.

It is all very well Buckminster Fuller urging architectural schools to map the resources of their continent. Few of them as yet have mapped their local province, or looked at its communications network, its population trends, its current building practices and costs. Few even think it relevant to do so. There are new expedients that could be tried even within the framework of existing curricula. A first step could be to open a Data Room to serve the school, in which staff and students would build up information on environment through continual enquiry into the realities of the region outside the school. The data fed into this information store would then provide a source of material for students in their schemes: accurate, detailed and up to date.

Ideally, there should be an environment tutor working with students and staff in connection with such a Data Room. If experienced teachers are not to be found, it should not prove difficult to recruit a postgraduate research student fulfilling one year of his professional practice requirement. An idea that can be tried without extra staff is the introduction to students in early years of a Research Notebook,* with prepared prompts and guides to enquiry into factors surrounding and underlying building activity. Each student has his copy to complete gradually over two or three years—at the end of which it may be hoped that he will have not only informed himself to some extent on his environment, but also acquired some rudimentary research techniques to carry him forward into postgraduate work.

The Commonwealth Association of Architects could generate a motive force that could urge its members into looking for a new brief for the architect—a brief that would serve him in any country, whether hot and poor or cool and rich, that is a developing region with an environment to improve. It could do it through persistent enquiry and discussion; by providing the forum and also presenting the theme for debate. It means, however, the Secretary and everyone else concerned with the CAA taking the problem seriously. The advertisement for the post of Secretary indicated that 'part-time' applicants would be considered, that only a 'limited amount of travelling should be involved.' The Secretary's job includes 'raising money for the Association' which, on the record of many institutions, could take him twenty-four hours of every day without looking at any more creative aspect of work that he might himself prefer to do.

If an extra effort by the RIBA in terms of time or money can turn the CAA into a productive, permanent conference and study group it would surely be worth making. It is too easy to throw over the responsibility for the emergent professions in former colonies because of the many changes to be worked out at home first. Whether we like it or not the United Kingdom architectural scene as it makes these changes is being viewed from abroad. There is an urgent need to improve both the programmes and the transmission. In the modern sense, after all, architecture is a European profession. It was exported to non-European countries while it was still in the course of inventing its contemporary tools, and only slowly coming to grips with mass building needs; when Britain, for one, was not aware that her colonies would be considered 'developing countries'. Europe is beginning to see now, in the post-colonial years, that many of the exported institutions were not perfectly suited to the countries that received them. In many cases it is too late to modify or enhance the export now. But the RIBA still has an interested concern in the architectural professions of other Commonwealth countries and through the CAA it may perhaps be in a position to act. By participating in a reassessment of the architect's role in development, Britain would be serving home needs too—which are increasingly recognized as comparable to those experienced in less mature economies.

CHARLES COCKBURN

*A specimen of such a Research Notebook compiled by the author and his wife in Nigeria has been furnished by the author and seems fully to justify his claims as to its usefulness as a teaching medium.—*The Editors.*

COMMUNAL & RESIDENTIAL

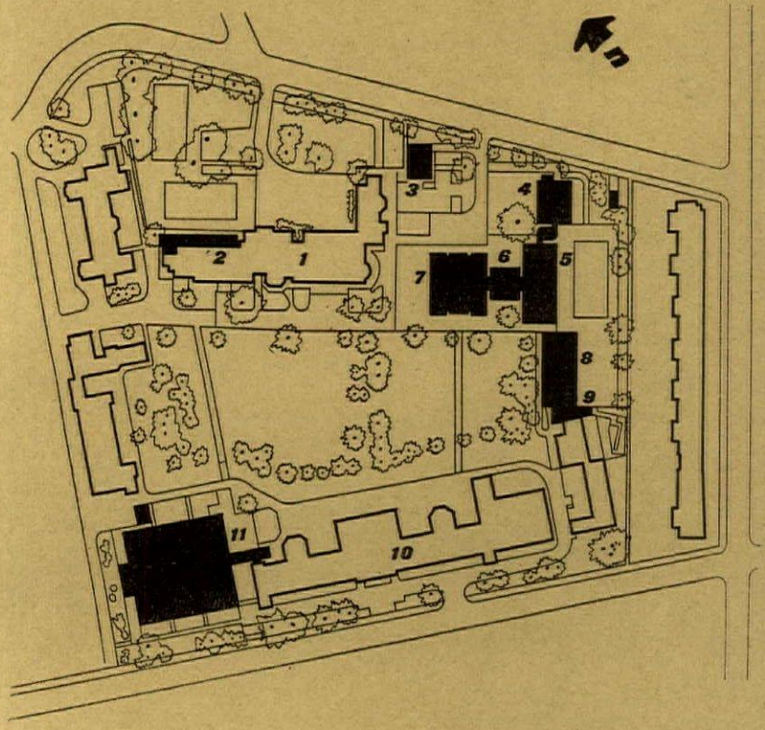


1

TEACHERS' TRAINING COLLEGE, STREATHAM

architects **LEONARD MANASSEH AND PARTNERS**

photographs by H. de Burgh Galwey



site plan

key
1, Furzedown House
2, new music room
3, principal's house
4, 5, four-storey residential blocks
6, common room
7, tower block
8, science block
9, schoolkeeper's house
10, existing college building
11, communal block

1 (title-piece), from the south-west, with the 11-storey hostel block on the right and Furzedown House on the left. 2 (opposite), the communal blocks, with the link to the old college buildings on the left.

The buildings illustrated herewith are additions to an existing training college based on an old house—Furzedown House, after which the college is named—and surrounded by a Victorian garden. The existing buildings have been adapted for teaching and the new work consists of hostels to rehouse some of the students and to increase the residential accommodation to 450, a science block, a communal block (comprising dining-room, kitchen, multi-purpose assembly hall and common-room), music rooms and a detached house for the Principal.

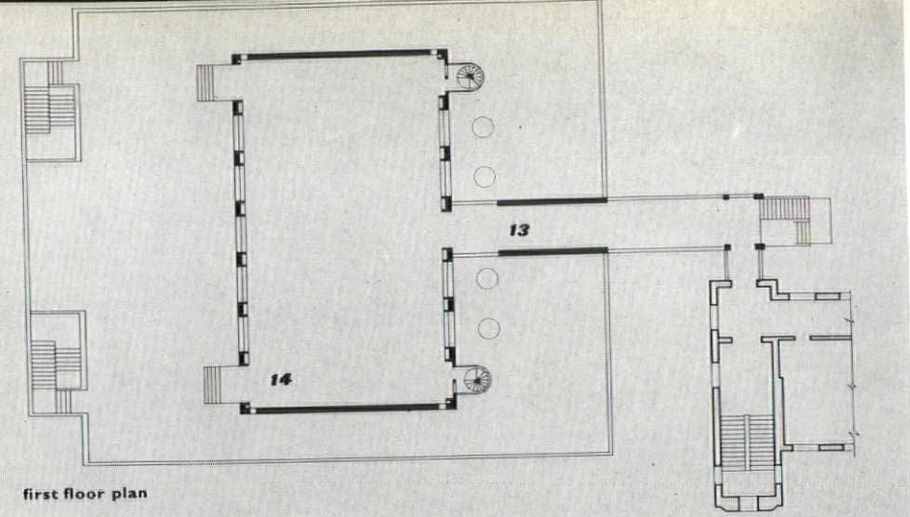
The hostel blocks contain 244 study bedrooms in an eleven-storey tower and two linked four-storey blocks, joined by a common-room at ground level. Each study bedroom has a built-in wardrobe and wash basin. On each upper floor of the tower block sixteen study bedrooms facing east, west and south surround a core of bathrooms, w.c.s, laundry-utility rooms and the vertical circulation. A staff flat replaces three study-bedrooms on the sixth floor and the ground floor contains three more flats for warden and bursars. In the basement is the boiler room for the whole college.

The science block consists of three similar floors with two laboratories and a connecting preparation room on each. The corridor along the west side has tutorial or dark rooms at either end. A school-keeper's house is attached to the south end. The new music rooms consist of a single-storey block, mostly top-lit, built on to the back of Furzedown House. The new communal block (replacing a dining-room and kitchen block which has been demolished) contains the main kitchen, dining-hall, assembly-hall, common-rooms and cloakrooms. To give some height to the building—which the general layout required—the two halls have been placed above one another, with the kitchen on the west side alongside the existing service road and the remaining accommodation on the east, facing the main college building and the students' entrance. A first-floor gallery, used for showing paintings, links the new and old buildings. The assembly-hall has a demountable stage which can be placed at either end. Circular staircases leading down to the cloakrooms and common-rooms allow these to be used as changing rooms and green-rooms. The dining-hall has been given clerestory lighting and cross ventilation by raising its ceiling 2ft. above the surrounding ceilings.

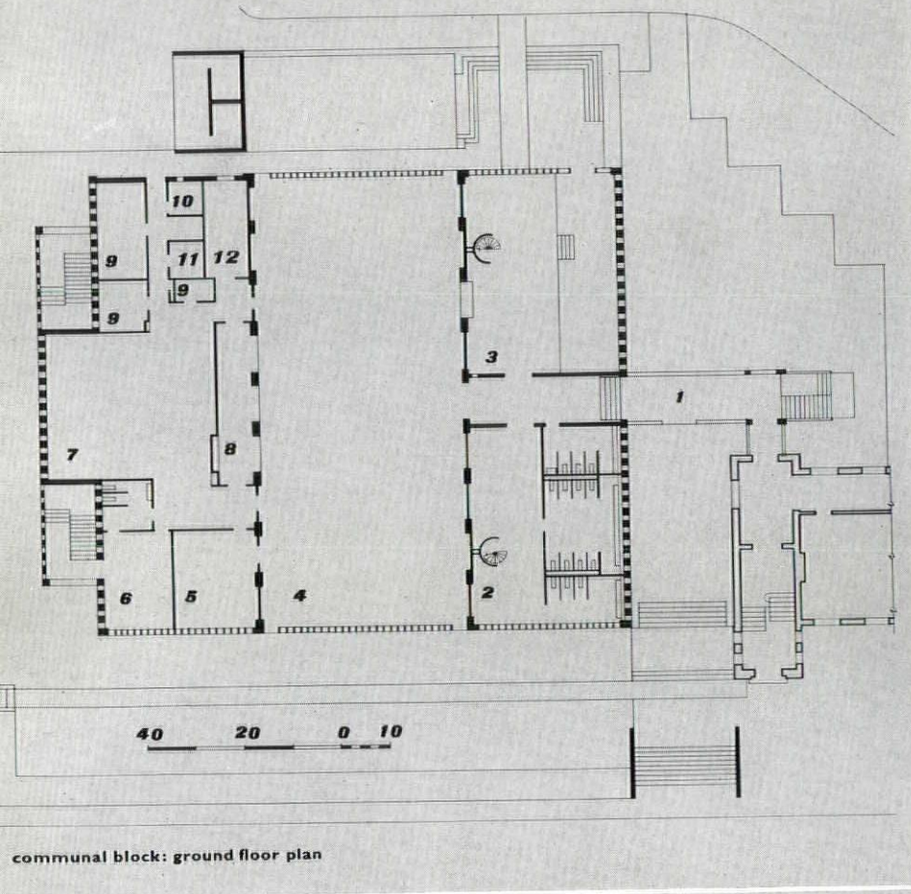
All the new buildings, except the tower hostel block, have load bearing brick walls or piers of Leicester grey facings. In the communal block the brick piers surrounding the assembly hall are hollow and contain fan convectors. Beams and slabs are reinforced concrete. The dining-hall windows have timber mullions 12in. deep designed to add privacy. The tower block is constructed of precast concrete units, made in steel moulds. These units, which also serve as cladding, form the complete window wall of one bedroom; they are deeply recessed to give a sense of individuality to each room and protection from glare and to reduce vertigo. The precast floor units bear directly on the head of the wall-window units, which in turn bear on the floor units below. To give sufficient bearing, the bottom of the window unit projects forward, which also gives protection and insulation to the ends of the floor units, the space below the window cill being recessed.

Structural consultants, Flint and Neil.
Mechanical services consultants, A. C. Mann & Partners.
Electrical consultant, chief engineer, LCC.
Quantity surveyors, Davis, Belfield & Everest.



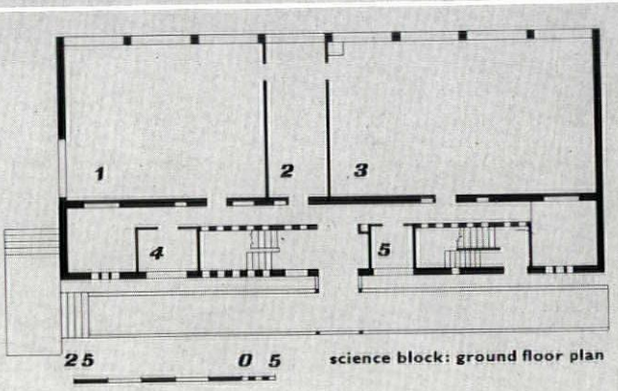


first floor plan



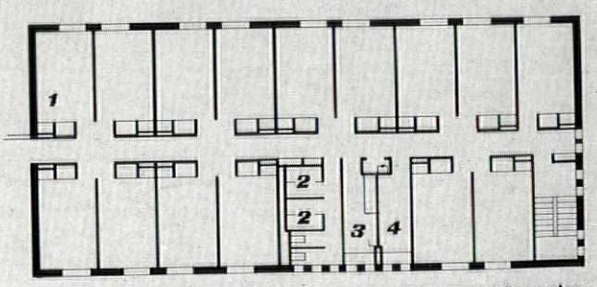
communal block: ground floor plan

key to communal block
1, link with college building
2, cloakroom
3, common room
4, dining hall
5, lecturing staff dining
6, staff dining
7, kitchen
8, servery
9, store
10, office
11, larder
12, wash up
13, gallery
14, assembly hall



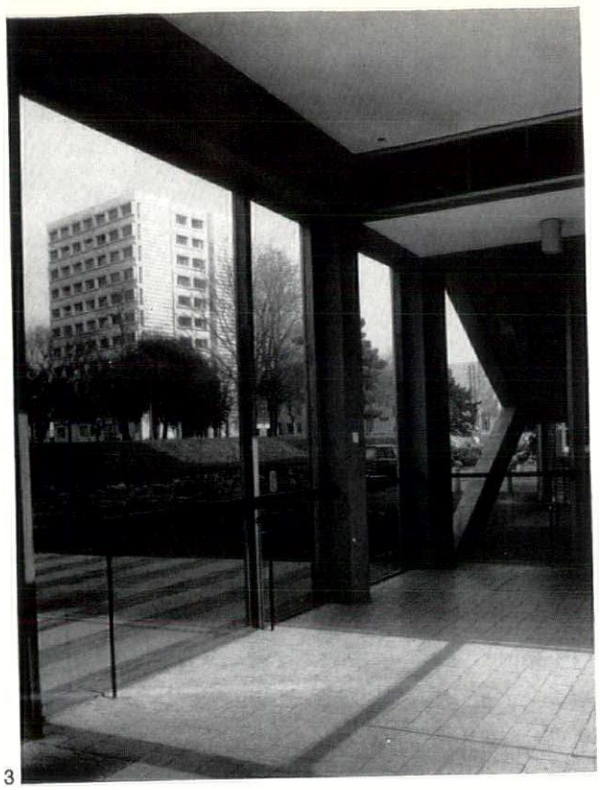
science block: ground floor plan

key to science block
1, advanced laboratory
2, preparation room
3, general laboratory
4, tutorial
5, store



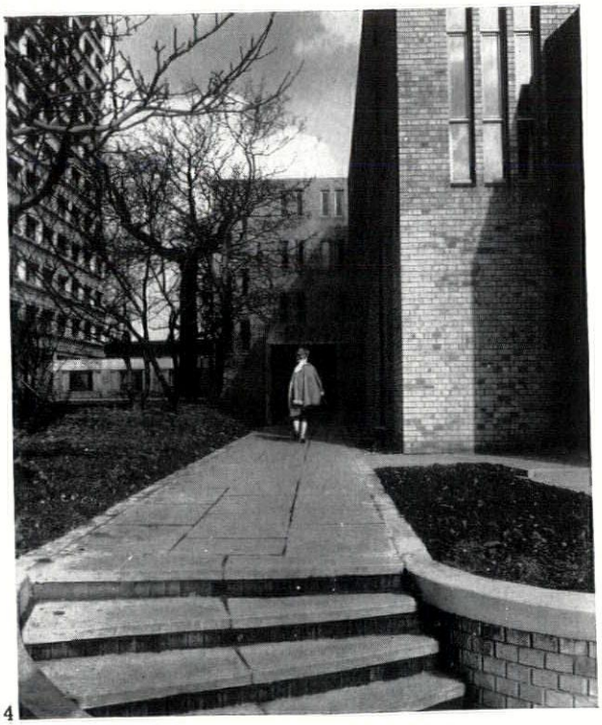
4-storey hostel block B: typical floor plan

key to 4-storey hostel block
1, study-bedroom
2, bathroom
3, utility (cooking)
4, utility (laundry)



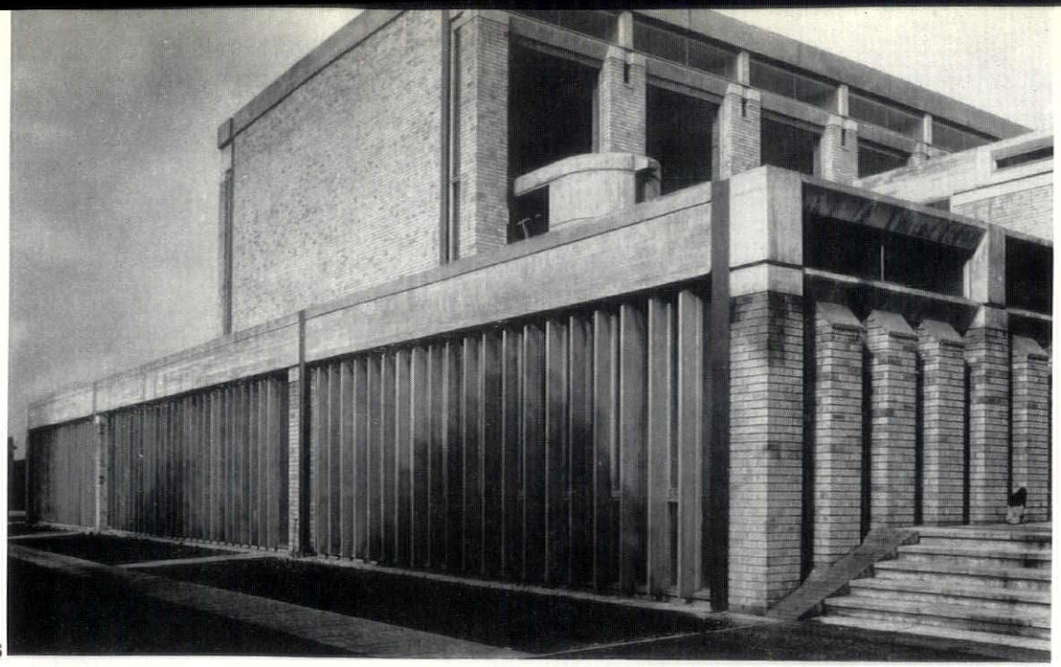
3

TEACHERS' TRAINING COLLEGE, STREATHAM



4

3, the entrance hall of the communal block looking out towards the 11-storey hostel block. 4, the approach to the 4-storey hostel block B, with the science block on the right and the tower block on the left. Opposite: 5, the south side of the communal block. 6, looking through the 2-storey link between the communal block (right) and the old buildings of the college (left).



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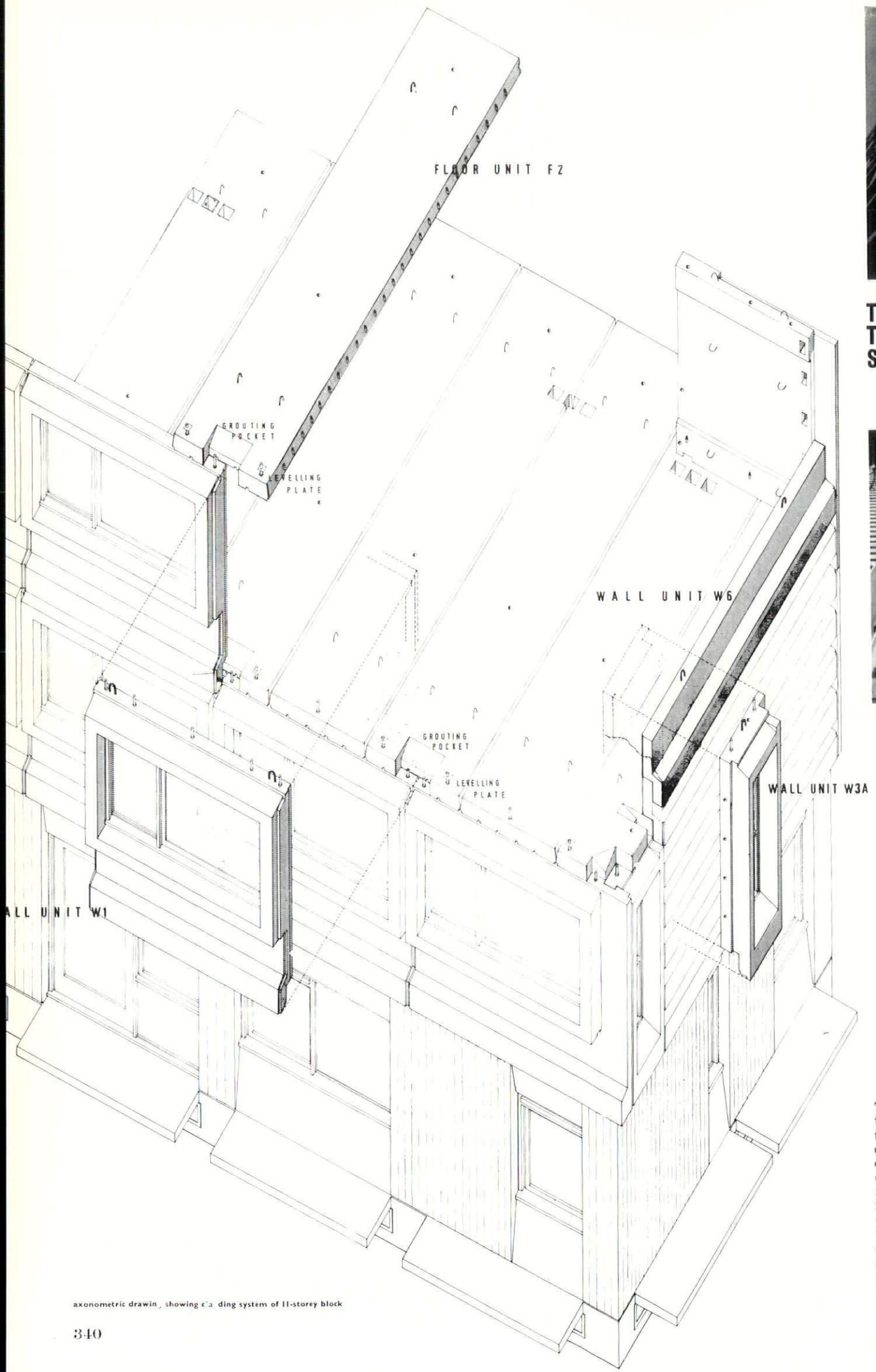
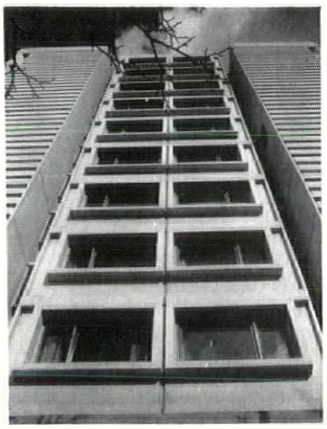


axonometric drawing showing cladding system of 11-storey block



7

TEACHERS' TRAINING COLLEGE, STREATHAM



8

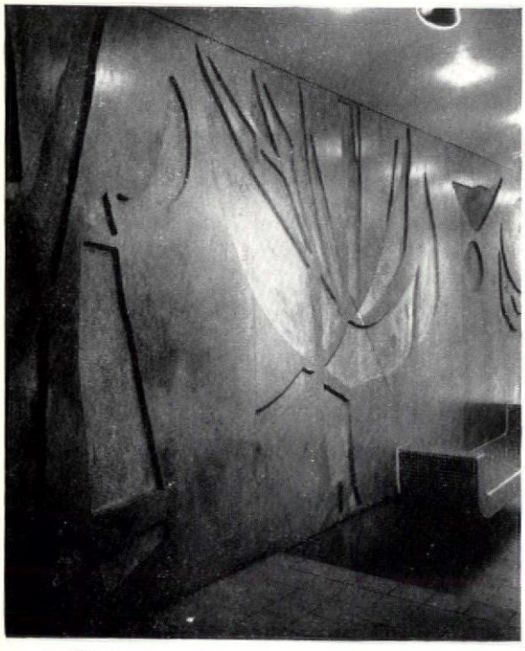
The 11-storey hostel block: 7, the south-west corner and, 8, the south side showing the precast concrete cladding units, one of which forms a complete window wall for each study-bedroom. 9 (opposite), general view from the south, with the main entrance on the ground floor, which also contains staff flats and common-rooms. The single-storey common-room is on the right and a bay window of Furzedown House is on the left.

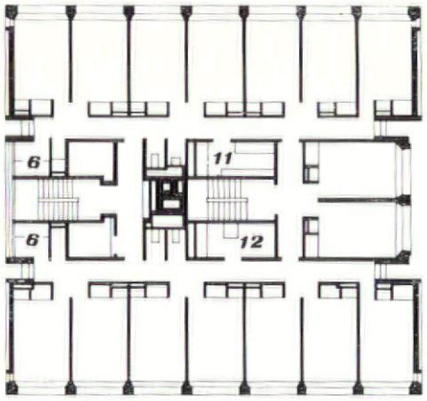




TEACHERS' TRAINING COLLEGE, STREATHAM

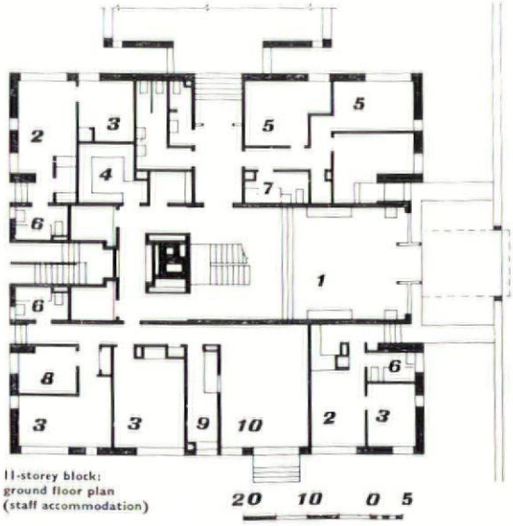
10, close-up of the ground floor of the 11-storey block, with the main entrance on the left. 11, in situ fair-faced concrete mural in the entrance hall of the tower block; this will eventually be filled with mirror glass by students of the college.





upper floor plan (study-bedrooms)

key
1. entrance hall
2. sitting room
3. bedroom
4. linen store
5. staff bedroom
6. bathroom
7. staff bathroom
8. study
9. kitchen
10. living room
11. utility (cooking)
12. utility (laundry)



11-storey block:
ground floor plan
(staff accommodation)

Elisabeth Beazley

THE PRIVATE POOL

Ten thousand swimming pools are said to have been constructed in private gardens in Britain during the past year, and this reflects their increasing popularity and range. They are no longer only for the very affluent; in fact a large number are in whole or part constructed by their owners. Judging by magazine photographs and advertisements it would seem that, although these ten thousand may represent that number of excellent water tanks for a refreshing dip or swim, they also represent, in terms of the landscape of the medium sized gardens in which most are sited, a dismally high proportion of disappointments. This article discusses what goes wrong and how it may be remedied.

It might be wise for any architect with a private house on the drawing board to agree now with his client on a site for a pool, however remote its realization may seem, for it is in its siting and integration with its immediate surroundings that things seem to go wrong, seldom (except sometimes in over-ambitious shapes) in the design of the pool itself. Perhaps one reason for repeated failures in this respect is an incurable English romanticism about what the pool is really going to look like. The word is in itself misleading: the less attractive description 'small swimming bath' is much nearer the mark. Pools conjure up mysterious depths, plays of light and shade, sun filtered through branches, leaves drifting idly on the water, all of which are conditions which most experts strive to avoid. A swimming bath on the other hand is expected to be bright, clean and hygienic; the algae are not allowed to multiply and to this end leaves are instantly removed.

It therefore follows that the pool tends to be divorced from such hazards as trees (which are often in boundary fences) and weeping shrubs; plants are discouraged even in the joints of the surrounding paving. The dream pool is pushed out on to the lawn and the dappled depths of our imagination become a uniformly blue intruder, often out of scale with its surroundings and nearly always discordant in colour and texture. It is perhaps indicative of the situation that whereas numerous lavishly illustrated books have been published both here and abroad which temptingly show the possibilities of ornamental (for want of a better word) water in gardens, very few have tackled the problem of the small swimming bath.

A welcome exception, which covers all aspects of the problem, is an American publication* intended chiefly for those wanting pools in small gardens. Here the typically English mistakes in siting hardly seem to arise. There may be practical reasons behind this happy state of affairs: first the yard or lot where the pool is to be sited is small; of such a size that it can be assumed that the boundary wall or fence will form a screen to at least one and maybe two or three sides of the pool;† secondly, although the American book is aimed at a public living in an immense range of climatic conditions the majority of pool-addicts will live in a zone where for several months of the year the sight of water will be a positive attraction, and a pool near the house will have the added advantage of cooling the hot dry air. At other times the yard may be under snow, so those grey days when any pool seems depressing are comparatively few. This means that it is often sited close to the house as well as being adjacent to at least one party fence; it is thus automatically integrated with the architecture and the hard landscape of the site rather than appearing in an indeterminate position on some carefully tended lawn.

The influence of the climate is underlined by other examples from overseas. Some

* *Swimming Pools* (A Sunset Book). Lane Publishing Co. California. 1959.

† This is also the case in small town gardens in England where the pool's integration with its surroundings is usually much more satisfactory than in bigger gardens.

superb pools have been designed for houses on the edge of the desert. Here the immensity of the sky is reflected by the pool and man's physical thirst for water is so all pervading that it becomes a psychological need. In the arid lands of the Middle East a similar situation arises: no Persian garden is complete without its pool, and whether it was designed as such or for ritual washing as in the courtyards of the mosques, or as a sounding board in the Shah's garden across which musical performances could be enjoyed, the spiritual refreshment given by water in close association with a building is quite as great as the physical; they cannot be subdivided.

Contrast such climatic conditions with those of a typical dank August English morning when one's sneaking wish is for either the sight of an open fire to compensate for the sun or for the central heating to dry out the atmosphere, rather than for a cool turquoise bath ruffled by steady rain. Under such circumstances the gulf between the practical reality of such water in close juxtaposition to windows and the drawing board sketch is easily appreciated. It is underlined by successful pre-war examples in England, usually in the larger grounds of country houses where the pool was either some distance from the house or was separated from the rest of the garden in a walled or hedged enclosure. In these cases, too, an aristocratic disregard for algae often allowed for pond-like water which made it easier to weld the pool visually with its green surroundings.

Functional requirements

Even in small-medium sized gardens in the English climate a more thorough analysis of the requirements shows that functional requirements are not, as superficial appraisal seemed to suggest, incompatible with successful siting. In fact they tend to reinforce rather than undermine visual requirements. A priority in siting is maximum sunlight, and it is probably because of this that so many pools are, in other respects, too exposed to give the best service. Shelter from draughts, both for the pool and the sitting out space beside it is essential, and this paved area must also have some shade.

On suburban plots a pool needs some privacy: the noise which is a by-product of much bathing makes this as necessary for the neighbours as for the owners. The hard reflecting surfaces of the water and paving bounce back sound and the happy shouts of children over the fence need to be baffled and absorbed by planting and screening. A physical barrier cutting off the pool is often necessary, particularly in the suburbs where trespassing two-year-olds might drown even if the owner's children are pool-worthy. Pool covers are seldom very satisfactory from this point of view (although they can be useful in keeping the warmth in the water) both because of their blind look and the bother of moving them; they must be strong enough to take a child's weight if there for protective purposes.

Ancillary buildings are seldom essential: much depends on the relationship of the house to the pool. Where they are provided the filter, pump and heater do not have to be immediately adjacent to the pool, and they can be housed partly or completely below ground in a space of approximately 3 ft. 6 in. square by 2 ft. 6 in. deep (this obviously varies with different models). It is worth bearing in mind, particularly in small town gardens where this equipment may be sited in the house itself, that if advantage is to be taken of cheaper off-peak electricity the motor must not be positioned where it will disturb people at night. A sound which is hardly discernible during the day against general traffic and town noises can be annoying when they die down.

Owners may find that the only alternative to dripping visitors paddling through the house is the provision of a couple of changing cubicles. Some provide a shower and w.c. This type of provision can only be settled by the scale of use and the plan of the house and the pool's relationship to it. The need for a special store for garden chairs, pool cleaning equipment, etc., again depends on the distance of garden stores, but there is no doubt that where ancillary buildings are provided they can also be very useful in giving shelter as wind breaks and as safety fencing, and can be very helpful in integrating the pool with its surroundings.

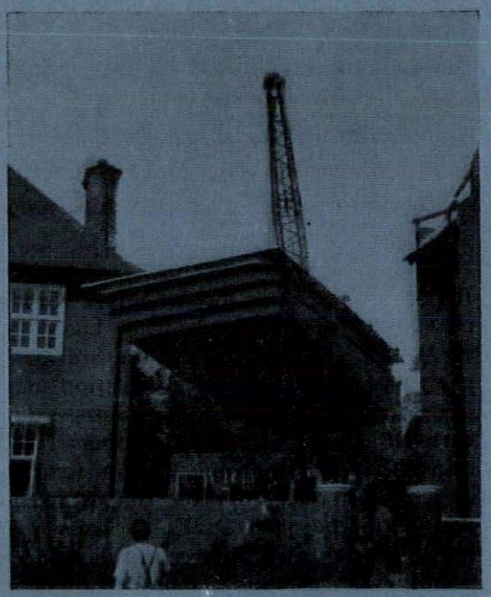
Siting

Except in small town gardens where the whole garden becomes a pool enclosure, separation of the pool from the rest of the garden may be practically necessary and is often visually desirable; otherwise it must be firmly tied into the design of the garden by both contours and planting. Even outward-looking pools on terraced hillsides are all the more successful when the inner boundaries of the terrace give a sense of enclosure and protection.

If a pool enclosure is the answer, the blank elevations of such out-buildings as garages, garden or fuel stores may be used to wall it in. This suggests that the pool will be close to the house, and provided it is not closely overlooked by ground-floor windows this seems to be all to the good. There is little doubt that the nearer together the sitting-out space for the pool and the house the more useful it will be to the household generally, whether or not they are actually swimming; garden chairs, etc., will always be at hand and if meals are to be eaten out of doors this patio can be planned conveniently close to the kitchen. The cost of paving and walling suggests that they should be made to serve a dual purpose wherever possible.

An incidental but very real advantage of siting the pool close to the house is ease of maintenance. Pools do not look after themselves. An owner of a filtered pool described it as being about the same amount of work as an extra room to keep clean. The water level was checked daily against evaporation (the inlet was fairly high so this was necessary to prevent possible air-locks) and the pool was skimmed of insects and leaves. Twice a week it was vacuum cleaned (say half an hour).

The best aspect for a family pool is south and west since it will be used chiefly in the afternoons and evenings, and the pool itself is ideally sited on one side or the other of a line between the setting sun (say July-August) and the sitting-out area. Other items which will govern siting are underground hazards such as drains and services; underground springs can cause considerable difficulties if not diverted, but the soil structure is unlikely to present problems which cannot be solved by one type of pool or another. Where a traditional pool is envisaged, a small excavator or tractor with mechanical digger should be able to get into the site, but if one of the modern fibreglass or vinyl lined pools which can stand out of the ground is to be used, this is not essential. However, a fibreglass pool can itself present problems



1, a fibreglass pool: access to the site can be tricky.

in access to town gardens, some of which can be ingeniously overcome by skilled crane operators. The cost of a dug-in pool will be considerably reduced, and the design of the surroundings often improved, if the excavated material is used to bank the surrounding land.

Plan shape

Rectangular pools are usually more satisfactory to look at and cheaper than the various free shapes which have been tried in an effort to achieve a more 'natural' pool. The results of such attempts often seem meaningless, perhaps because the

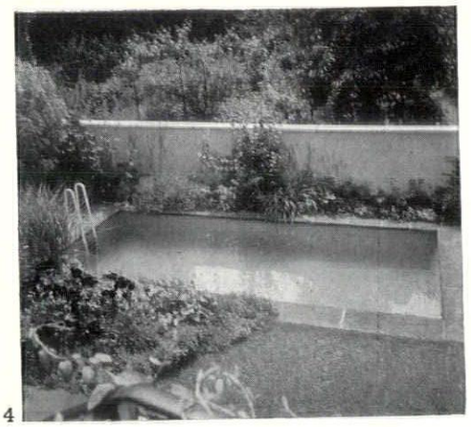


2

The success of a pool which has been designed as an extension of the living area depends first on climate: the hotter and drier the better. This unfortunately rules out such plans in Britain except in holiday houses, 2 *and* 3, *two houses by Richard J. Neutra in the Colorado Desert, in which the geometric precision of the pool is admirably intergrated with that of the architecture.*

3





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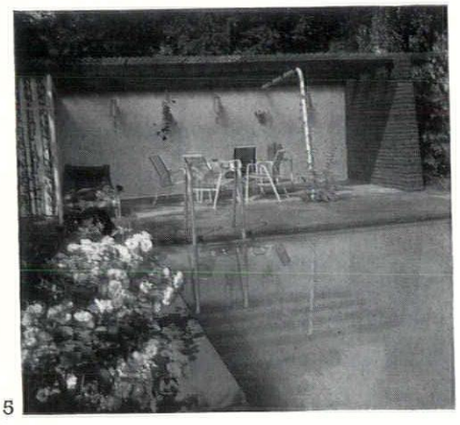
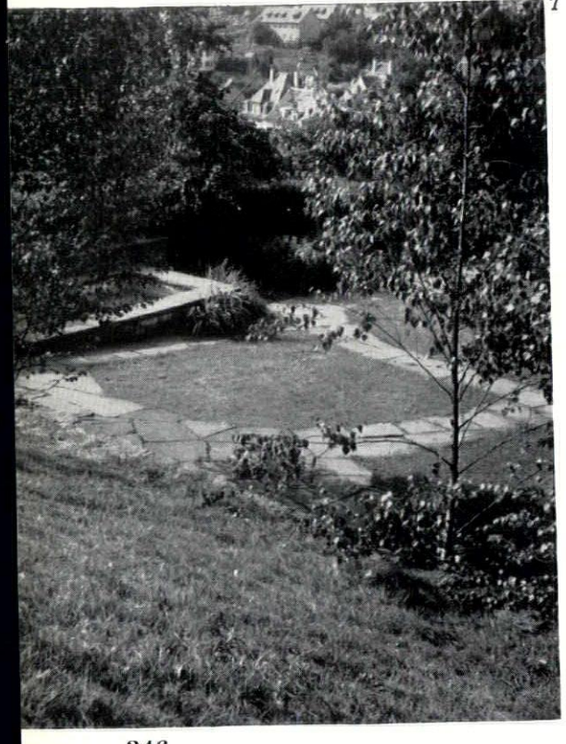


5

Too often the indeterminate siting of a pool wrecks a garden. It is artificial and is usually most successfully handled when integrated with the hard landscape of walls (as in 4–6, 8); its uniform colour, usually pale turquoise, will never look 'natural' and will often be discordant alone on a green lawn. Planting, deplored by some experts in close juxtaposition to the water, has been most successfully introduced here. (4-7 are in Germany: designers, 4, 5, R. Willumeit; 6, 7, Otto Valentien; 8 is in Chelsea, London.)



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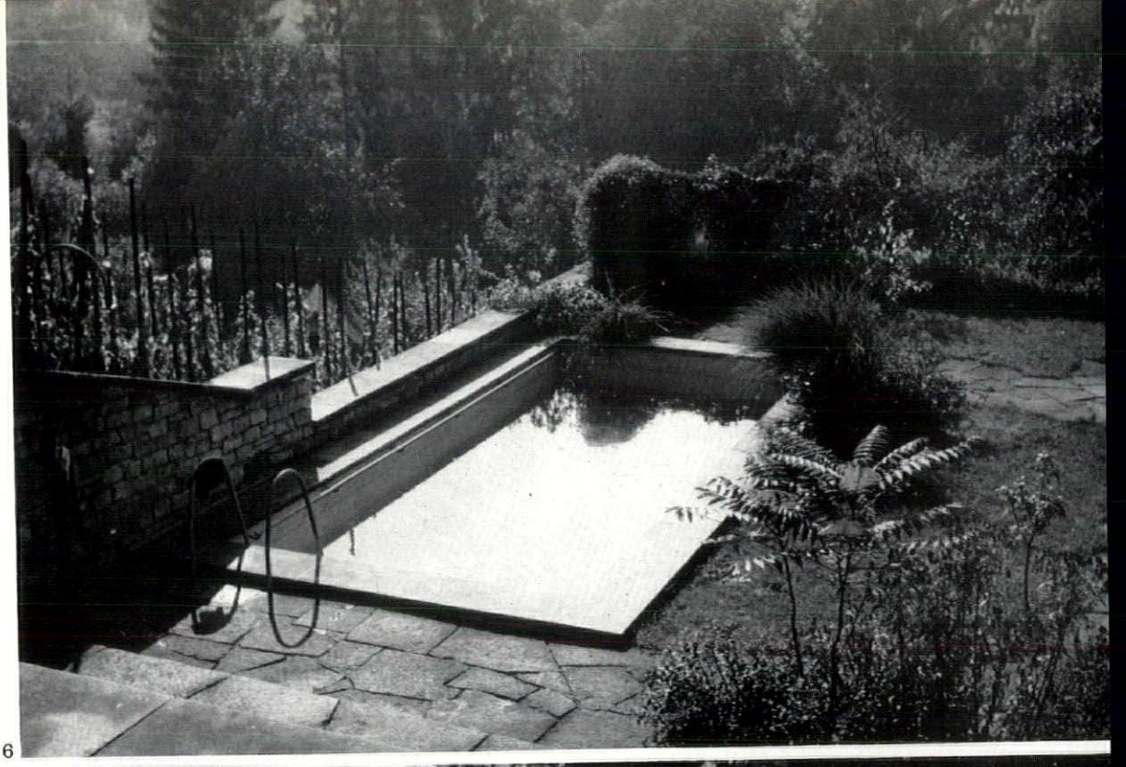

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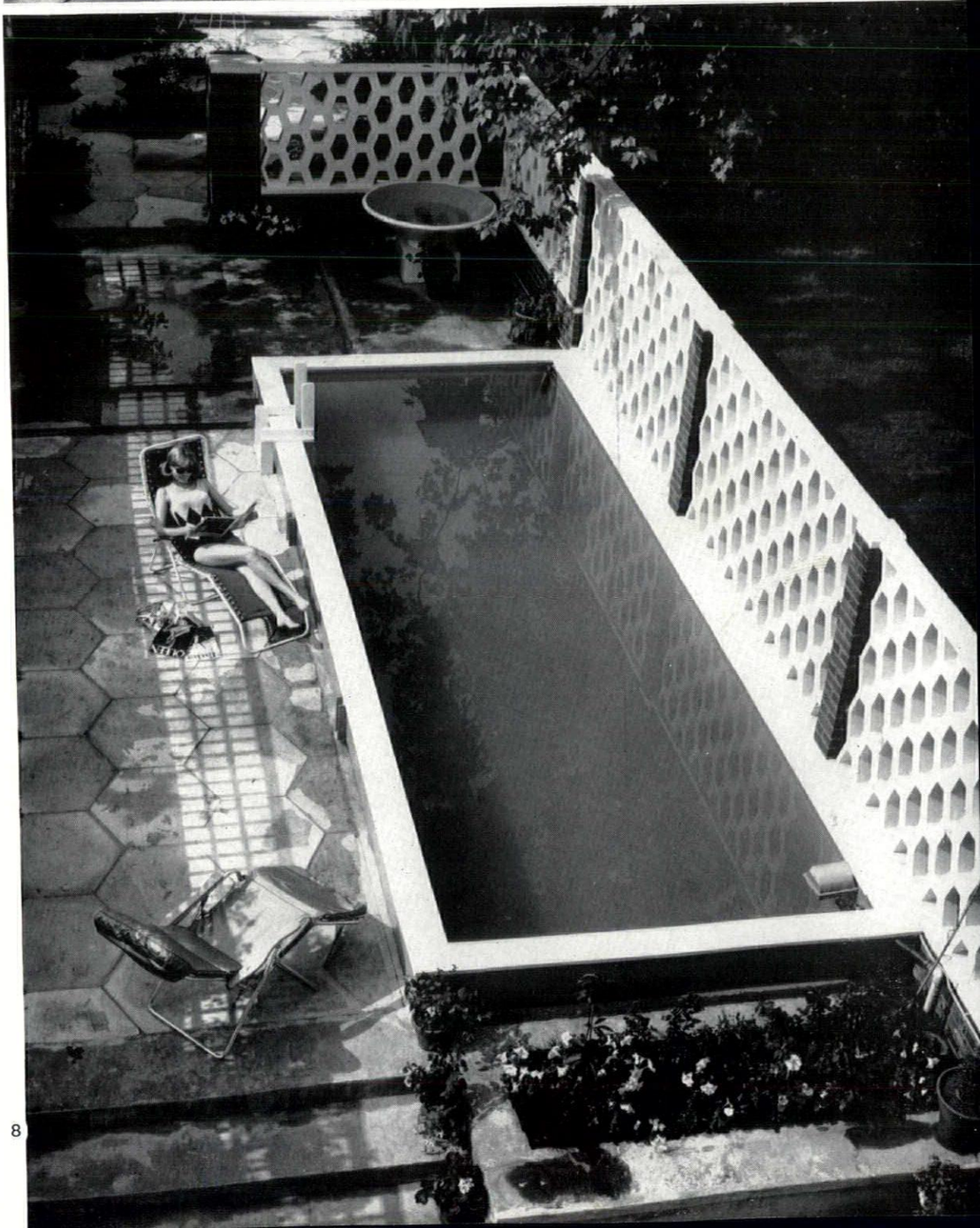

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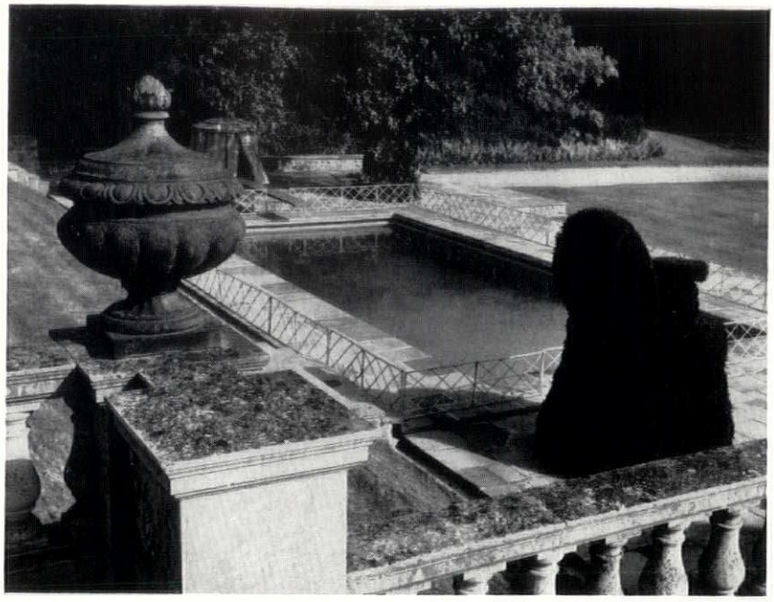

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10

11

9, at Fairlawne, near Tonbridge in Kent, has been formally integrated with the landscape of the garden by the grass bank (left) and the balustrading (architects, Casson, Conder and Partners). **10**, *a Californian house which itself walls the pool (architect, Richard J. Neutra).* **11**, *a pool separated from the lawn in a giant yew-walled enclosure at Watlington, Oxon (architect, Lord Esher).*

12

Circular pools form an easy link between the formality of paving and turquoise water and the informality of grass and planting, particularly where the ground falls to the pool, 12, 14. *Free shapes, on the other hand, usually seem wilfully contrived unless steeply contoured banks enclose them.* (12, *at Caracus, Venezuela, is by Marx, Pessolani, Stoddart and Tabora;* 13, 14, *in Germany, are by R. Willumeit).*



13



14

landform round the pool does not reflect its shape; water following the outline of an outcrop of rock or a grass bank will give an entirely different impression to that of the same outline on a flat lawn. Scale also plays an important part, and a shape that may give satisfaction on parkland scale can seem wilfully contrived when translated into curves of a few foot radius. Round pools on the other hand seem to give an easy link between the formality of paving and clean water and the informality of grass and trees beyond. Gang planks, plank bridges or projecting slabs, on which bathers can sunbathe or simply dangle their legs, can add greatly to the attraction of a pool particularly to children. Some pools are made with steps running the full width of the shallow end; this is attractive both to use and look at and saves the need of a ladder.

Size

Pools of up to 30 ft. length are common in smaller gardens. Some pools are deep enough for diving (recommendations vary from 6 ft. for diving off the edge to 8 ft. 6 in. for low spring-boards). In small pools it is often thought better to stick to one depth, since a sloping floor may be too steep and some consider both it and a stepped floor to be dangerous. If a shallow end for small children is needed a temporary platform can be put into the pool and its edge roped off. But a sloping floor does give the advantage of a deep end with considerably less excavation.

Colour

If the walls of a pool are white, sky reflection will turn the water light blue; this colour has nothing to do with the addition of chlorine. Unfortunately this blue, although attractive enough in brown arid landscapes, and customary in swimming baths, has little to link it with the greens of an English lawn or garden. Here it will always seem what it is: unnatural. This seems argument enough in itself for linking the pool to the garden by screen walls and paving, rather than leaving the colours to fight it out on the lawn.

Some firms recommend that the pool should be cream rather than white in order to give a less icy blue. Fibreglass and vinyl linings come in light colours (usually blue, making the water appear deep blue), seldom in a pure white. It would be very interesting to experiment with different background colours and their effect both on the colour of the water in relation to its surroundings and on the quality of enticement to the potential bather. Is it possible, for instance, that the peat brown of the pools of mountain streams might be the answer in some heath gardens? Dark colours which absorb the heat would make the water warmer (sheets of black polythene laid on the surface of the water can considerably raise the temperature by cutting down surface reflection).

Hard surfacing adjacent to the pool

A 3 ft.–4 ft. paved edge or sitting-out space must not kick up small pebbles, etc. which might get in the pool. It should fall away from the pool; some form of land drainage may be necessary at its junction with grass or beds to prevent the ground becoming soggy. If the area round the pool is entirely paved, drainage should be provided in it. Asphalt, which reacts to chlorine or hot sun, should be avoided. Concrete or stone slabs and brick paving and cobbles are popular. In situ concrete offers scope for non-slip techniques both in the shuttering or in the exposure of the aggregate. Straightforward subdued colouring is best for concrete. Some sort of handgrip is essential in deeper pools and is often integrated in the top course of concrete blocks, also forming a scum channel.

Filtration and emptying

Technical details concerning filtration and emptying for cleaning are beyond the scope of this article. Most pool manufacturers also supply this equipment and heaters where required. It consists basically of a diatomaceous earth filter, a motor, pump and piping. Many owners rely on periodic emptying and the addition of chlorine by hand, and it is important to check that the waste of five or ten thousand gallons may be emptied into the sewer or local river. Where there is any danger of upward pressure from water in the ground under the pool when it is emptied, a hydrostatic valve should be included in the outlet.

Pool furniture

When it comes to 'personalizing the area', the Americans are far advanced with old iron stoves to warm midnight swimmers and gas flares to liven the scene, all singularly appropriate to Britain. Whether or not we plan for barbecues, there are a few basic fixtures that should be considered because much of the pleasure of outdoor living in an unsettled climate is lost if the furniture and gear is awkward to assemble. The more that can stay out for the summer, if not the whole year, the better. In a walled patio, cantilevered shelving (reinforced concrete or stone) can conveniently take food and drink and save it being knocked over. This is particularly useful if in the shade. A solidly built timber divan which can be covered with rugs or cushions for sunbathing and used as a table or bench will save a lot of furniture heaving. It should be about 7 ft. by 7 ft. and, being heavily built, should be regarded as a fixture and be planned from the start. Herring baskets are useful for carrying cushions, etc., from the house and these can be stowed away on pegs in the patio wall (also useful for unwanted wraps, towels, etc.). A mangle (with a drain to a soakway) and a clothes-line are essential.

Planting

This can only be touched on in the most general terms. First the attitude of mind of the owner on priorities in the conflict between clear water and foliage must be decided. Although many experts are against neighbouring trees, one or two good specimens which do not actually overshadow the pool may be felt to be well worth the trouble of falling leaves. It is in autumn, when most swimming is over, that the majority of deciduous leaves are shed.

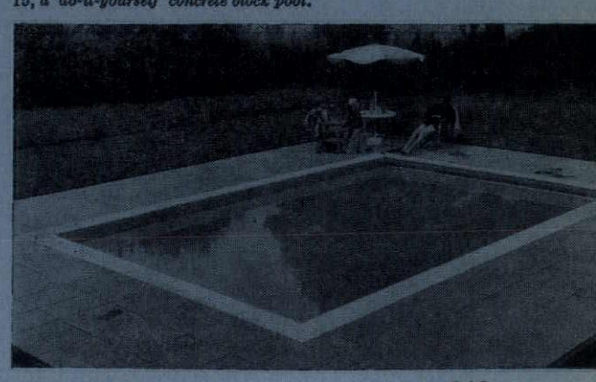
Pools have been designed with an adjacent pool of only a few inches depth for the growth of water-plants, and certainly the most attractive looking pools are those where trees and planting are closely integrated, but it might be borne in mind that, water gardens apart, the plants which will probably thrive in the well drained patio-like conditions beside a pool are those which will tolerate dryness and heat rather than cool damp conditions, and so a conflict in types of vegetation must be avoided. Incidentally, since the typical swimming pool is so un-pond-like in character, such patio plants may look better than green moisture-loving specimens.

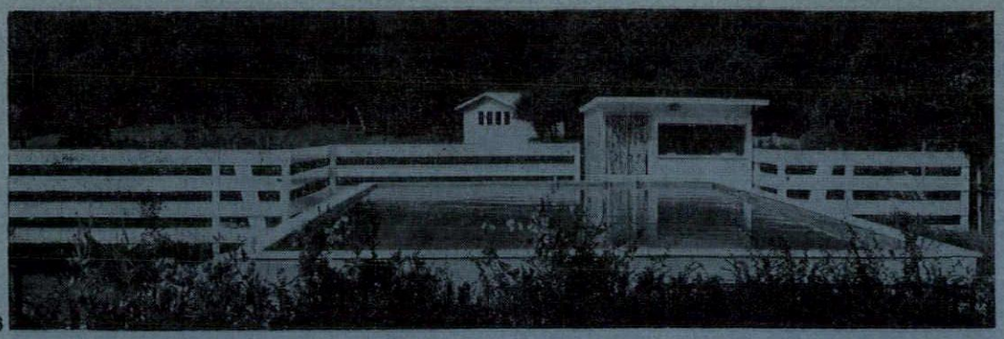
Types of pool

The range extends from the traditional pool sunk in the ground, in which the earth walls of the excavated hole are retained by in situ reinforced concrete or block, to the new man-made fibre variety which consist essentially of a waterproof shell or a skin supported by a framework which may be above or below ground level or be partially buried. While the traditional types are obviously integral with the garden and its landscape, the others can (but need not) be designed on opposite principles: i.e. of the light man-made object contrasted with its surroundings. But if this approach is to succeed all must be ship shape, very well detailed and maintained. Otherwise the sordidness to which all seasonal structures that have outlived their original purpose are subject can quickly creep in. What was brave and gay with white paint and new canvas may have the forlorn look of a forgotten exhibition-stand in January.

Concrete block, brick, reinforced concrete and gunite construction: walls are usually rendered and then painted annually, but some renderings contain marble chippings and

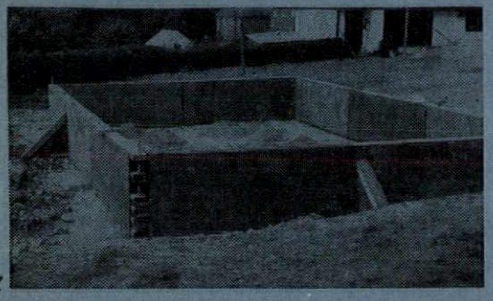
15, *a 'do-it-yourself' concrete block pool.*





16

16, *a vinyl-lined pool—in this case designed to be partly out of the ground.* 17, *timber formwork being erected for a vinyl-lined pool.* 18, *a fibreglass pool in position.*



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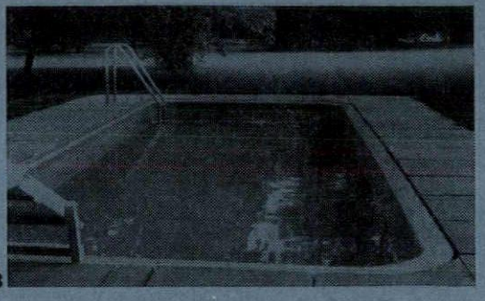


18

are not painted. Pools of these materials are usually completely sunk. Any size is possible, but the Cement and Concrete Association recommends depths of up to 3 ft. for do-it-yourself block pools.

Sprayed gunite: a very useful reinforced concrete technique much used in North America and capable of following irregular contours. After the pool is excavated a basket of reinforcement is fixed in position and the liquid concrete sprayed on. Subsequent treatment is as for other concrete pools.

Fibreglass: a logical extension of the idea of a washing-up bowl. The pool arrives in one unit complete and ready for installation. Its size is therefore dependent on the capacity of the road transport and the accessibility of the site. Pools of up to 35 ft. by 14 ft. by 3 ft. 6 in. to 7 ft. 6 in. are included in the standard ranges.

In these and vinyl-lined pools the smoothness of the wall itself discourages algae and eases cleaning without recourse to painting. The pool is designed to withstand possible water pressure in the ground only when it is itself full, and it must therefore not be left empty. Pools can be partly or completely out of the ground provided adequate support is given. White pools are sometimes available; light colours are common.

Vinyl-lined pools: in the shallow (3 ft. by 4 ft.) standard framed pools these may be considerably cheaper than other types, but it should be remembered that the expectancy of life of the vinyl liner is only five years. However, it is designed for replacement and the cost of a liner for a 25 by 9 by 3 foot pool might be in the region of £25–£30. The supporting frame may resemble light timber aircraft construction, or vinyl is occasionally used to line a traditional concrete pool. Untreated vinyl may deteriorate where exposed to direct sunlight, so the section above the water line is a source of weakness; manufacturers have experimented and found methods of combating such deterioration. White vinyl is not available.

Costs

Standard pool sizes differ from firm to firm and it is very difficult to get comparable costs for theoretical sites, but once a particular site and approximate size are settled, quotations can be compared. However, it seemed better to include the accompanying brief list than omit all mention of price. Prices given below exclude excavation. Some obviously include fixing; others are ex-works to which delivery would have to be added even if the customer is erecting the pool himself.

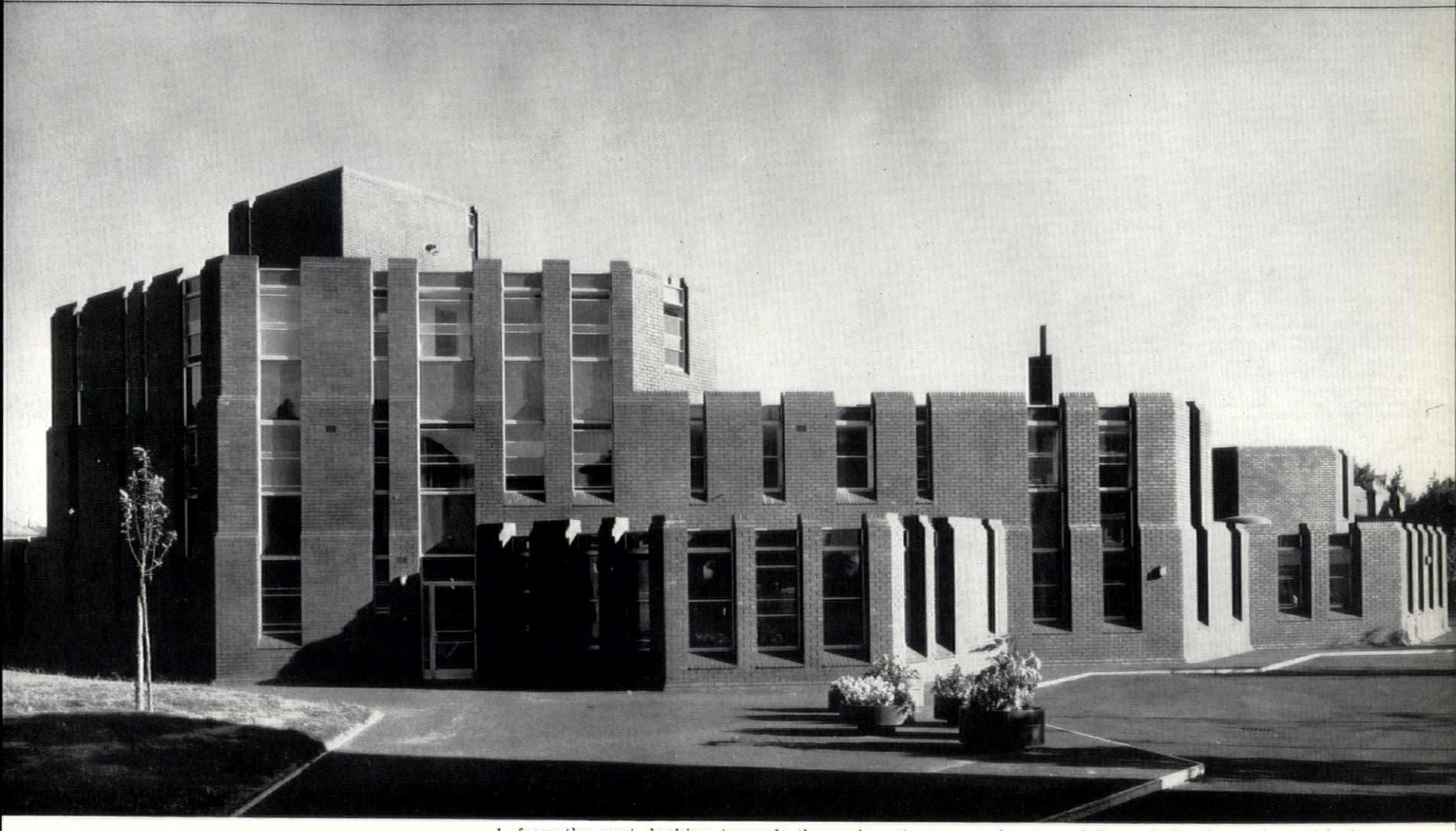
Naturally enough much pools advertising is sprinkled with status symbolmanship: that the two-car family will automatically think next of a pool, but priorities may need adjustment. As Buchanan predictions prove themselves, an increasing number of households may opt for a week-end in their own pool in their town or suburban garden rather than one in which several exhausting hours are spent on traffic-saturated roads. Whether this will mean an increase in the consultation of landscape architects and architects is anyone's guess; now they are too seldom consulted in matters of siting and present trends suggest that 'site for future pool' should be allocated on all house plans as an elementary safeguard. In most gardens a swimming-pool is too large, dominant and artificial an element in the design for its position to be left to chance.

Type of pool and manufacturer	*Length* ft. in.	*Width* ft. in.	*Depth* ft. in.	ft. in.	*Price* (*November* 1964)	
Concrete	30 0	15 0	3 6	— 6 6	With filter, installed	£1,250
(Gilliam & Co. Ltd.)	36 0	16 0	3 6	— 6 6	Ditto	£1,750
Fibreglass	27 0	12 0	3 6	— 6 6	Without filter ex-works	£680
(Gilliam & Co. Ltd.)	35 0	14 0	3 6	— 7 6	Ditto	£930
Fibreglass	28 0	12 0	3 4	— 5 10	Without filter ex-works	£515
(Regency)	24 3	10 3	4 6		Ditto	£365
Vinyl lined timber framed	25 0	17 0	3 0		ex-works	£205
(Purley Pools Ltd.)			4 0			£279
	33 0	17 0	4 0			£350

The cost of a filter, pump and piping is likely to be in the region of £130 to £200.

ACKNOWLEDGMENTS: The Cement and Concrete Association and the following manufacturers have kindly provided information for this article: J. F. Buckingham Ltd., Gilliam & Co. Ltd., Purley Pools Ltd., Regency Swimming Pools, Rutherford Construction Co. Ltd.

IN THE FUNCTIONAL TRADITION



1, from the west, looking towards the main entrance on the ground floor of the three-storey block.

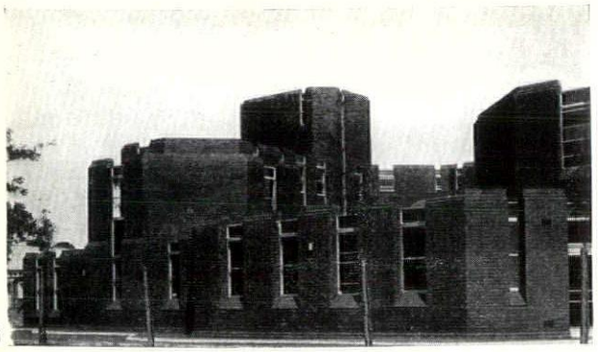
OLD PEOPLE'S HOME, BLACKHEATH | *architects* JAMES STIRLING AND JAMES GOWAN

The Perrygrove old people's home, designed for the London County Council, houses 62 infirm old people, 32 in single and 30 in double bedrooms. The site is behind an existing children's school and a block of flats and is overlooked from all sides, but by arranging the accommodation around a courtyard, a completely private garden is provided for the residents. To get maximum sunlight into this courtyard, the highest floors of the building are grouped on the north and east sides.

The majority of bedrooms are for single people and they occur on all three levels of the building. On the ground floor are most of the communal rooms, including the dining room and the residential lounges. One of these lounges overlooks the courtyard, another overlooks the approach to the building, and a third overlooks the children's school. In addition there are two other lounges, one on each of the upper floors. The matron's office is adjacent to the entrance hall, from which there is a private staircase up to her flat. Her office and flat are so located as to give her a view both of the entrance to the site and of the courtyard garden. The assistant matron and two other resident staff have their rooms in a group at first floor level above the service areas of the building.

Although the overall plan of the building has few right-angle corners, the majority of residents' bedrooms are conventional in shape. The unusual spaces which sometimes occur elsewhere are for the most part service rooms such as stores or are lavatories where a triangular shape is frequently an asset since it can accommodate a wheel chair, etc. In addition, the plan form creates casual sitting areas for the residents off the central corridors.

The external walls are of weight bearing brickwork, and the floors are of insitu reinforced concrete..



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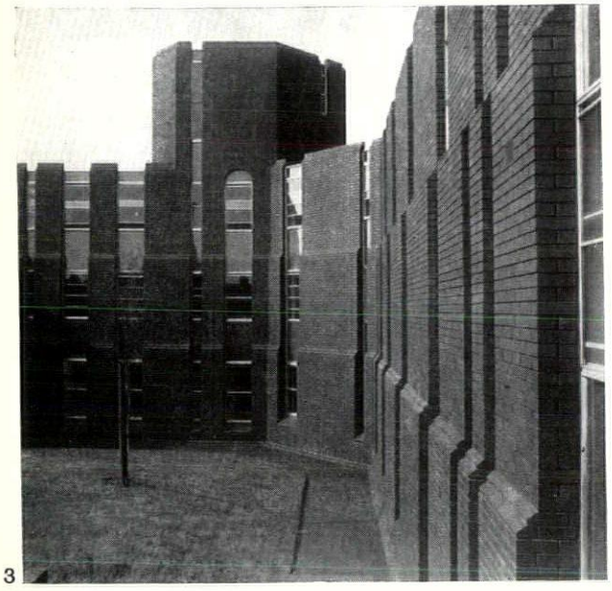


3

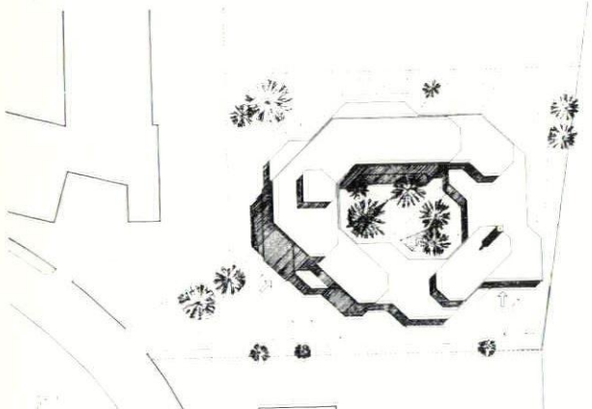
2, from the south, with the dining room and kitchen in the foreground. 3, the north side of the courtyard garden, with the main staircase block on the left.

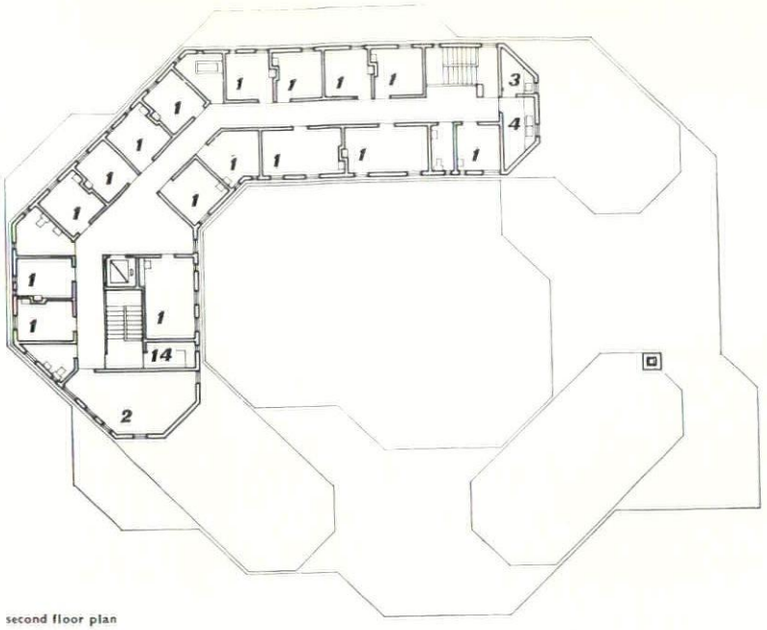
OLD PEOPLE'S HOME, BLACKHEATH

key

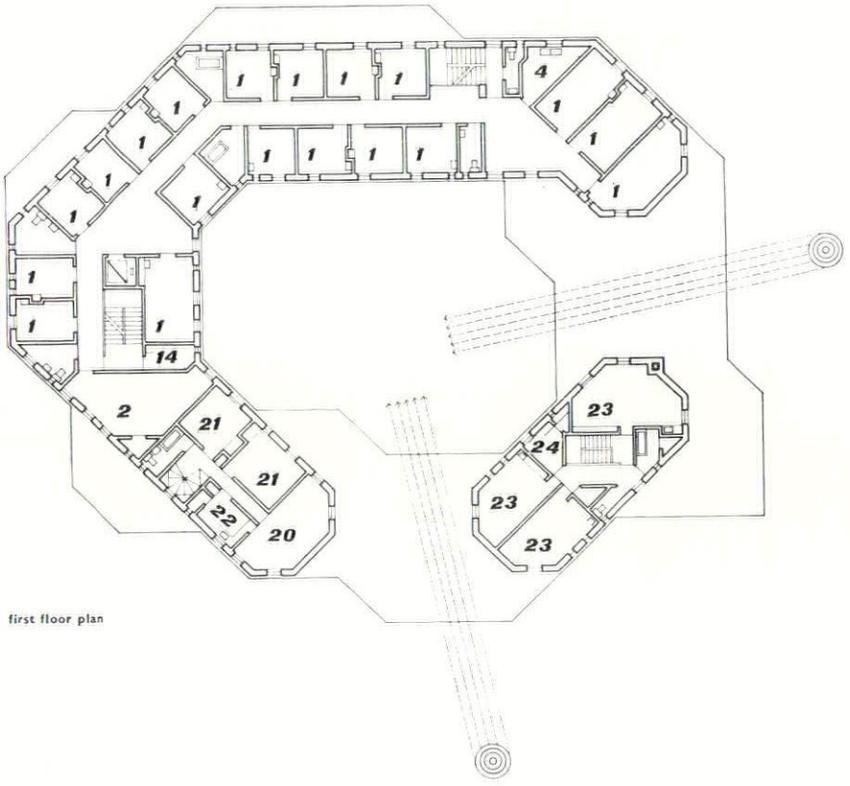
1, resident's bedroom
2, resident's lounge
3, store
4, utility
5, dining
6, kitchen
7, larder
8, refuse
9, garage
10, oil store
11, boiler
12, staff dining
13, laundry
14, linen
15, staff
16, doctor
17, matron
18, entrance hall
19, courtyard garden
20, matron's living room
21, matron's bedroom
22, matron's kitchen
23, staff bedroom
24, staff kitchen

site plan

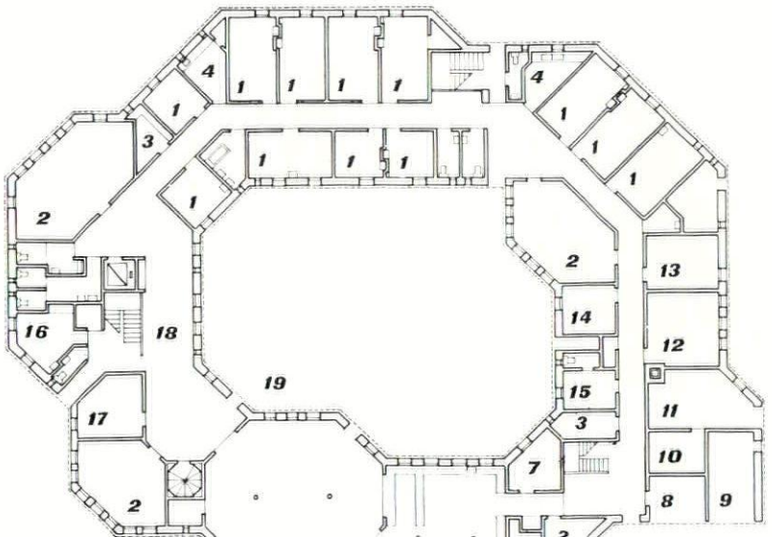


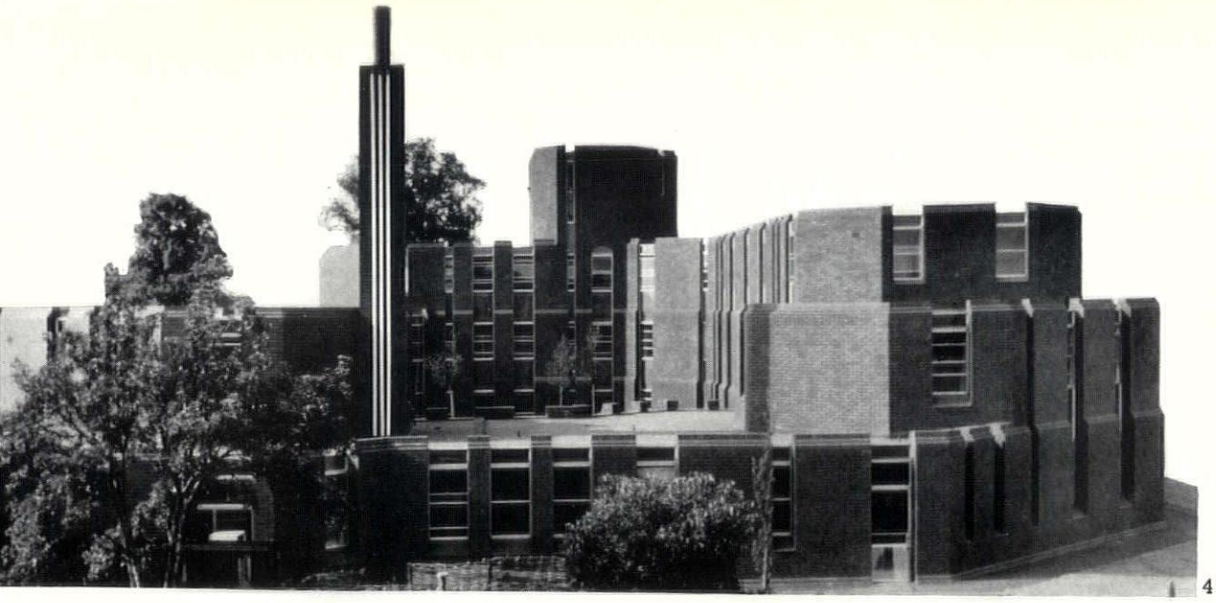


second floor plan



first floor plan





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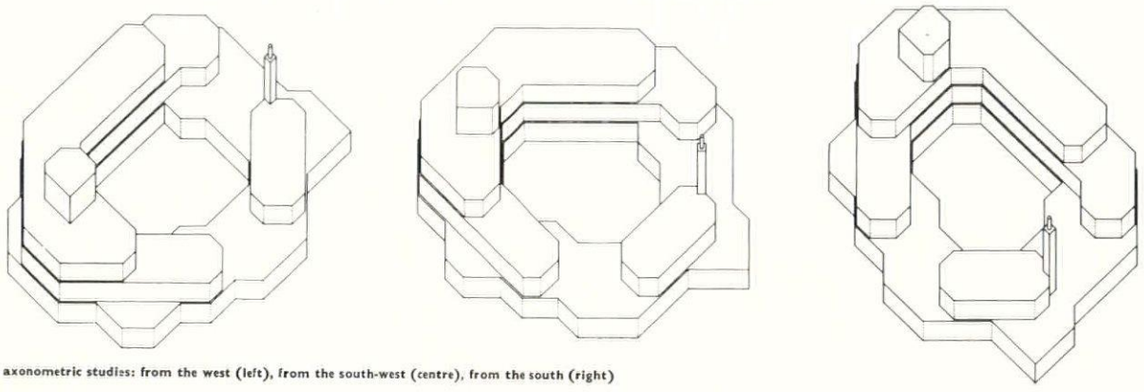
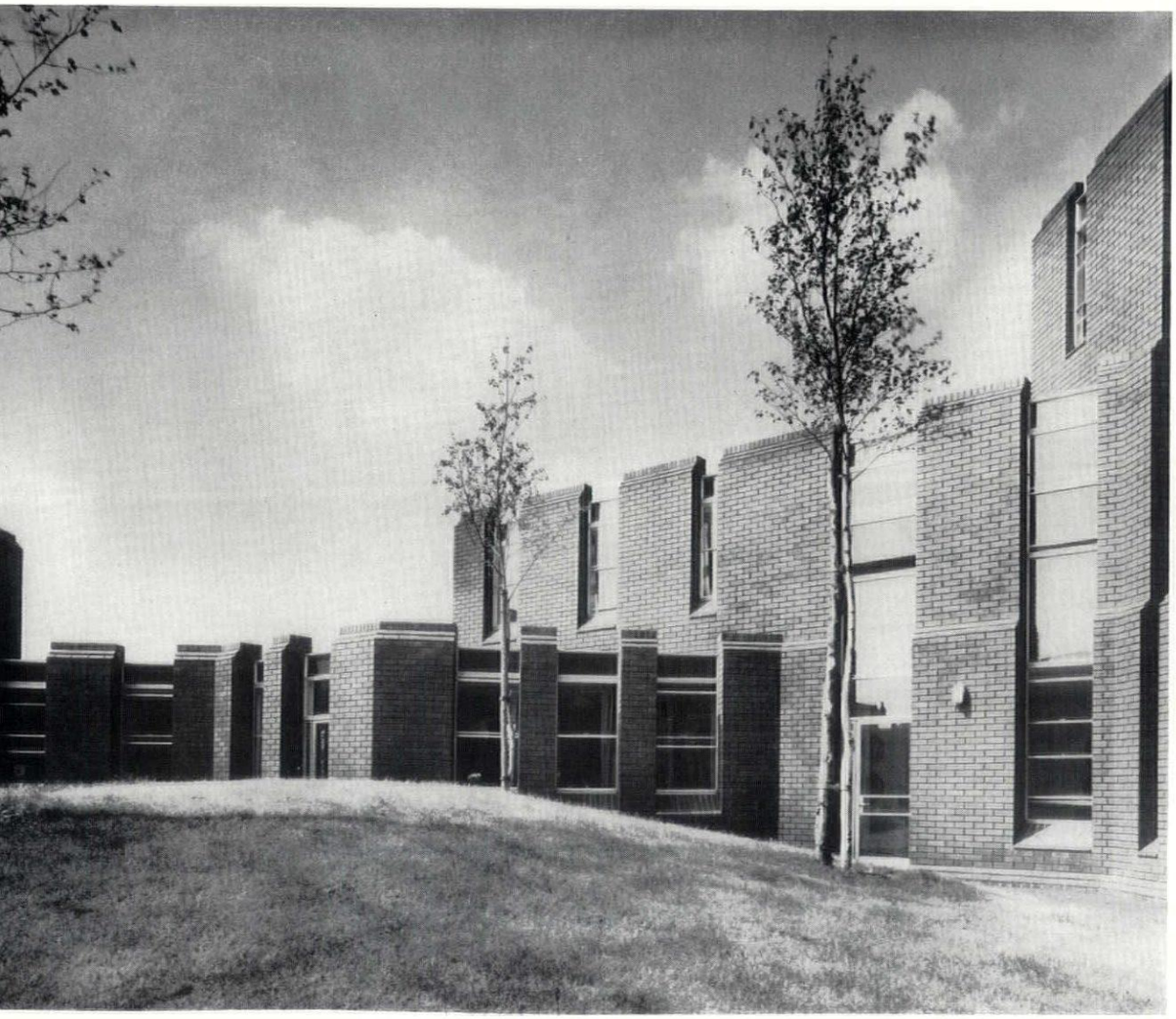


axonometric studies: from the west (left), from the south-west (centre), from the south (right)

4, general view from the south-east. 5, west side of courtyard garden, looking towards the dining room.



5

SEVENOAKS

Below is an air view of Sevenoaks, looking south, showing the approximate line of the proposed relief road which would sever the town from Knole Park. **A** *is the wedge-shaped centre block explored in Richard Reid's drawings on pages* 356-358.

Photograph by Aerofilms and Aero Pictoria



Richard Reid and William Carr

SEVERED OR LINKED?

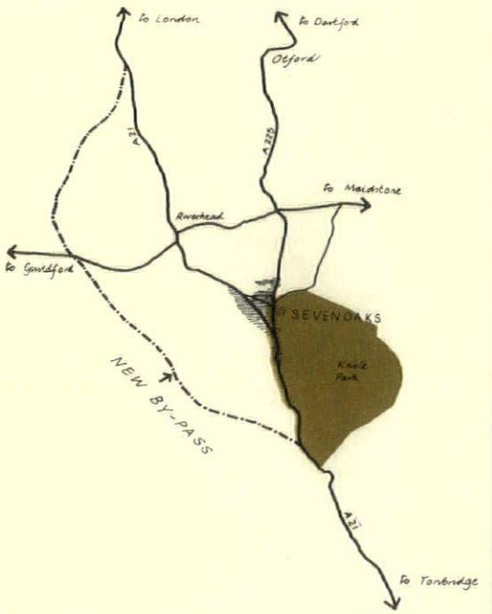
Sevenoaks is a straggling, uphill town, tilted north and open to the wind. Its long High Street is a picturesque hotch-potch of buildings of all shapes and styles, but only by the Vine cricket ground to the north and by the church and Sevenoaks School to the south are the buildings of real quality. In fact, quite the best thing about Sevenoaks is its immediate proximity to the fine landscape of Knole Park, bordering it on the east; cars in streets to deer under beech trees in one minute flat; perfect contrast, enviable amenity (see map 2).

What an asset, you might say, for any town. Yet this partnership of town and park will be wrecked for all time if a road proposal put forward recently, in a statement* by the Sevenoaks Council, is indeed carried out (see map 3 and air view opposite). Part of a scheme for replanning the town centre, it shows a new A-class road to carry fast traffic running north and south between town and park (X on plan), inevitably divorcing one from the other. Pedestrian bridges or underpasses would no doubt be provided, but even so the present easy connection would be broken once and for all. And the crazy thing is that this road may be quite unnecessary.

The apparent need for it, according to the statement, stems from an opinion expressed by the then Minister of Housing in 1962 that the High Street, Y, should be limited to pedestrians only with a principal north-south traffic route provided to skirt the central area†. At present the High Street carries the A225 Dartford/Tonbridge traffic, and it is to accommodate this, when the street has been closed to vehicles, that the new road is proposed. Yet, at this moment a Sevenoaks by-pass west of the town, to take the A21 London/Tonbridge traffic which now uses London Road, Z, is under construction (see map 1). Surely it is logical that the Dartford traffic should be diverted on to this in some way, either near Otford or at Riverhead, instead of building a separate road to take it, especially a road with such devastating landscape consequences. If this were done, and sufficiently drastic traffic management introduced, the road between park and town

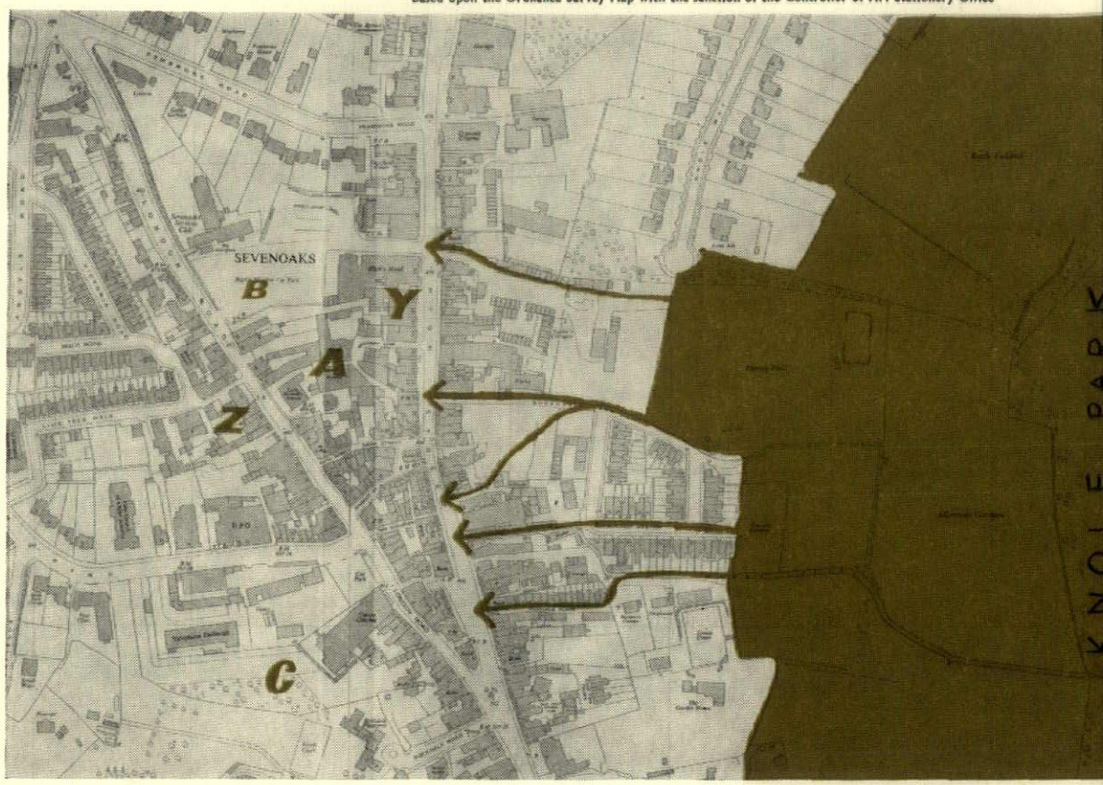
*Statement on Town Centre Proposals by Sevenoaks UDC, March 1965.

†When rejecting a previous town centre scheme in July 1962.

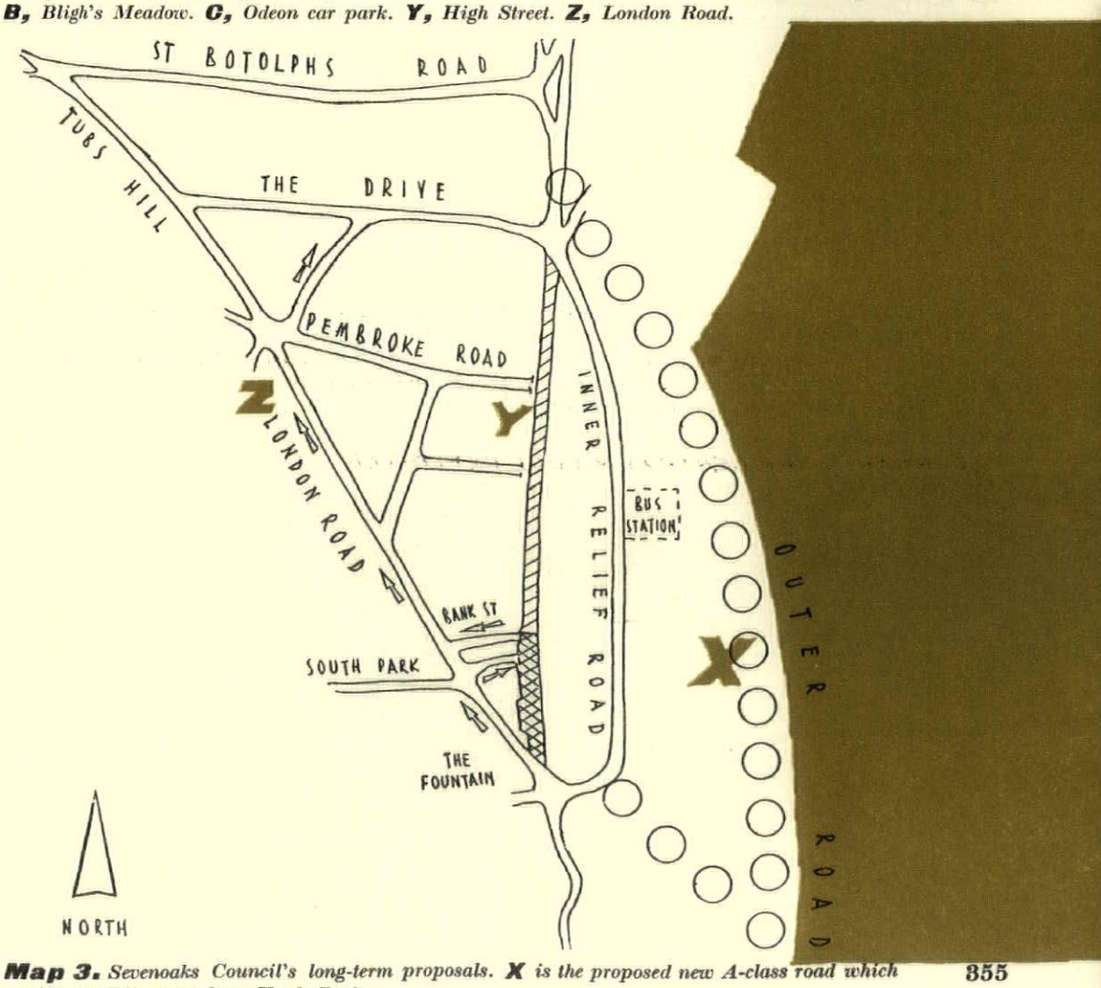


Map 1. *Sevenoaks and the surrounding district.*

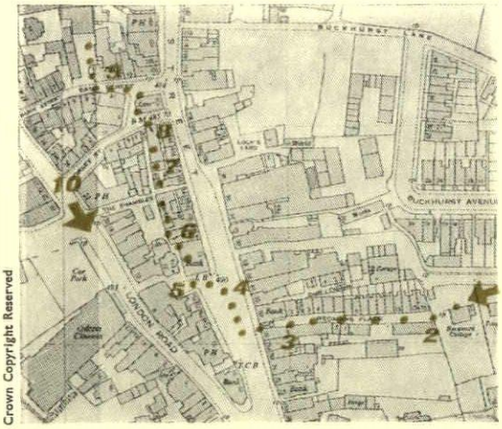
Based upon the Ordnance Survey Map with the sanction of the Controller of HM Stationery Office



Map 2. *Sevenoaks today, showing the close connection between the town and Knole Park.* **A,** *central wedge.* **B,** *Bligh's Meadow.* **C,** *Odeon car park.* **Y,** *High Street.* **Z,** *London Road.*



Map 3. *Sevenoaks Council's long-term proposals.* **X** *is the proposed new A-class road which would cut off the town from Knole Park.*



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Map 4. *The route through the central wedge (**A** on Map 2) taken in Richard Reid's drawings, starting below.*

could be dropped, for there would be no need to make the High Street pedestrian. Purely local traffic could then be dealt with by instituting a one-way system round the wedge-shaped centre block via High Street, London Road and Pembroke Road, or alternatively The Drive (such as that already proposed as an intermediate step by the Council) with only off-street parking allowed.

From the statement it appears that the Council's consultants* have made a careful study of the town itself and intend to safeguard its character and scale as much as possible. Yet the fundamental error of accepting the severance of town from park as inevitable, would be disastrous to that character. Anyway, the High Street—a quarter-mile long and exposed to the north winds—is far from ideal for leisurely shopping. Indeed, this is perhaps the occasion to protest against the indiscriminate pedestrianization of miles of linear shopping streets regardless of suitability; pedestrians need to be protected from the traffic but they also want the right kind of spaces to use.

For instance, as the statement points out, the large wedge-shaped area, A (see map 2), in the middle of the town has great possibilities, at present almost entirely neglected. In the narrow point around the Shambles, Dorset Street and Bank Street there are alleys and small courtyards and twisting streets which hint at how attractive this area could become. Now it is a scruffy, rather uninviting jumble; the backsides of shops in the main streets, coal yards, small industries (rabbit-skin processing is one) and builders' yards. Yet, protected from the wind by the enclosing buildings (unlike the High Street) this is perfect pedestrian territory. It could provide the opportunity for enjoyable leisurely shopping conditions by means of a series of small squares, linked by alleyways and arcades, with shop fronts facing in to them and animated by cafés and pubs.

How this might look is shown in the sketches on the following pages. To the north the wedge widens, and at Bligh's Meadow, B, now a bus station and car park, it is 500 feet across. Here is a splendid opportunity for rebuilding in what could become the hub of the town. The position of the present bus station acknowledges this and in a different form, probably roofed over, it should stay.

Briefly then, this is the policy that should be followed:

No severance of town and park by an ill-placed road between them, but all through traffic to be diverted on to the western bypass. A minute or so extra in travelling time, but worth it to save such an amenity.

Make the central wedge, A, a kingsized roundabout (with no delivery vans between 9 a.m. and 6 p.m.).

Build the service road, shown on the Council's plan, parallel to the High Street to service development between itself and the High Street.

Turn the present Odeon car park, C, into multi-storey with residential development built on it, terracing back with the slope.

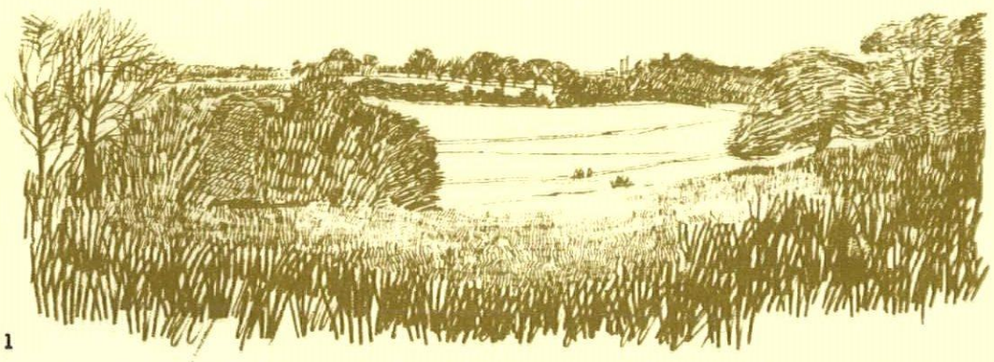
Bridge across to the centre wedge from the sides, as, for example, across London Road by the cinema (see 10).

Tidy up the Shambles area and ban cars here and in Dorset and Bank Streets.

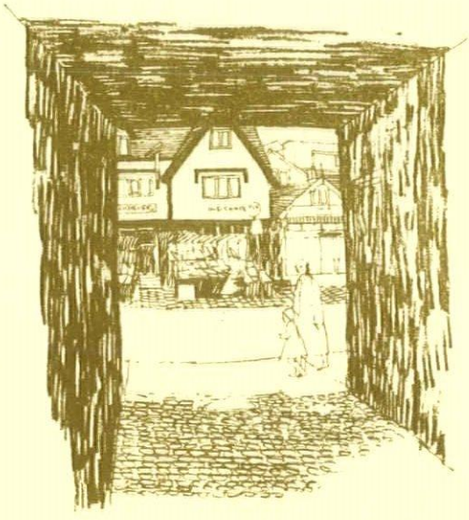
At Bligh's Meadow build up over multi-storey car park and bus station with shops, offices, flats, restaurants and perhaps a town square.

One general point: everything at Sevenoaks needs to be considered not just in plan but in relationship to the very hilly site. By clever use of the change in levels, as is done at Bath for instance, streets could be crossed in such a way that the use of bridges and underpasses seems inevitable rather than a tiresome imposition.

*Gerald Eve and Co. in association with Nathaniel Lichfield (town planning consultant) and Gollins, Melvin, Ward and Partners (architectural consultants).



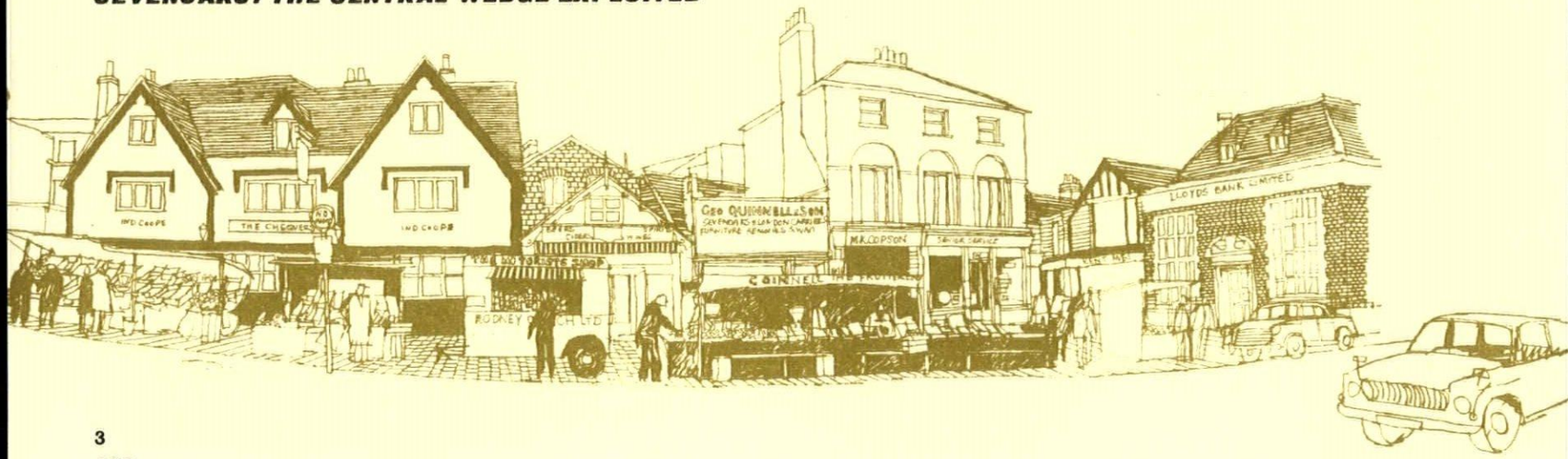
1



2

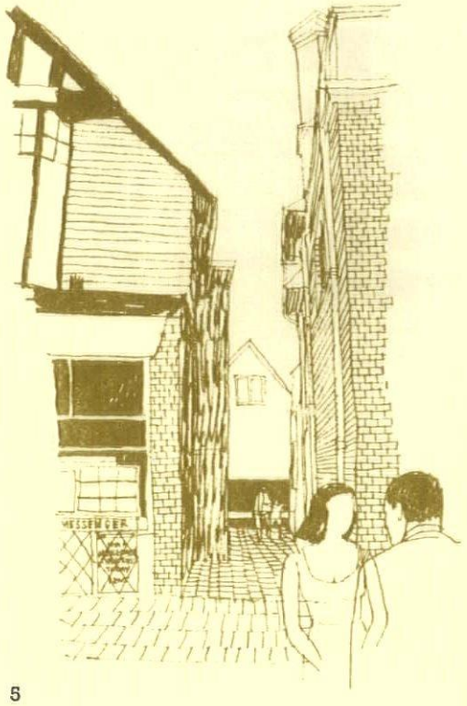
1, *from Knole Park the first sight of the town is the tower of Sevenoaks church nestling among the trees. From the park you penetrate to the High Street by alleyways; this one,* 2, *brings you out opposite The Chequers in the market place,* 3. *A week-end market now which becomes a small car park during the week. No reason why it should not stay so but definitely no cars at week-ends. Then the pub has extra drinking space and shoppers can walk past without going into the road.*

SEVENOAKS: THE CENTRAL WEDGE EXPLOITED



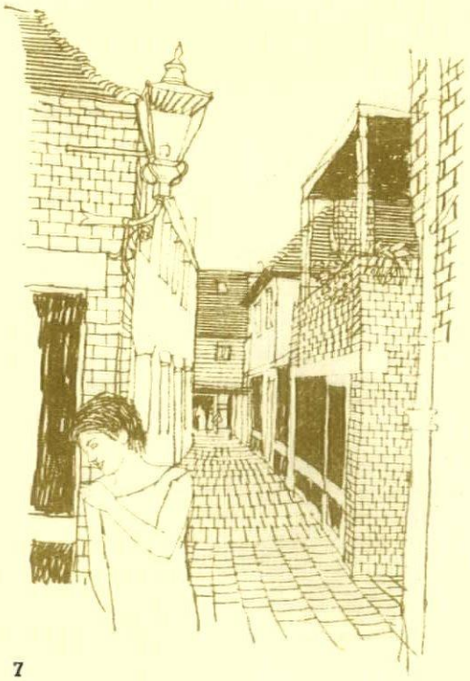
3

To the right of the market place there is a set back, 4, *between Lloyds Bank and the* Kent Messenger *offices, off which is a skin-tight passage,* 5.



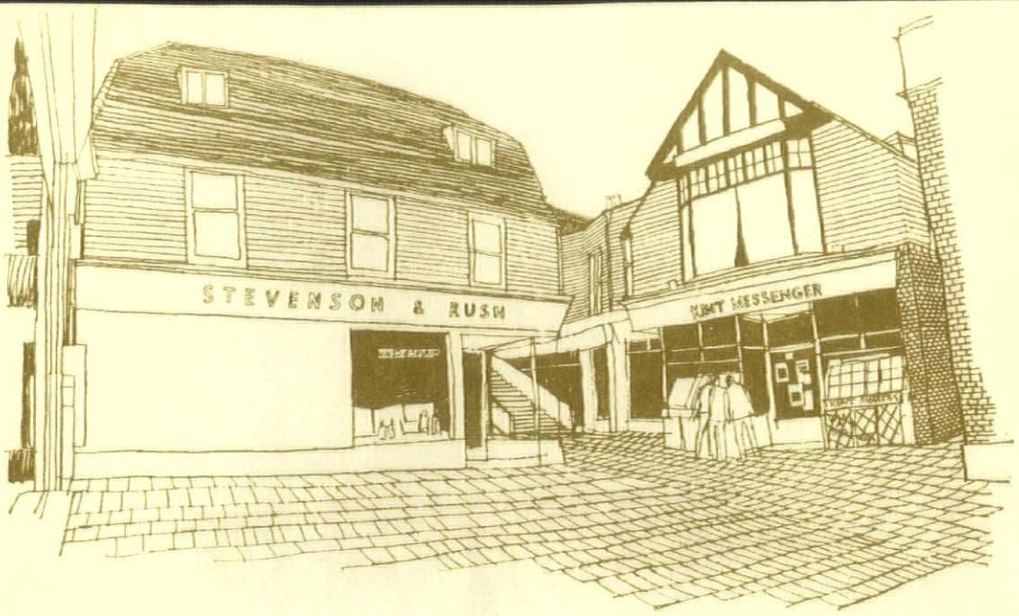
5

6, the passage leads to the Shambles; remove the cars and delivery vans of today and it could be like this. Add some colour such as the tree, the open-air café with its sunshades, and the roof gardens above the converted shops and the place is completely transformed.



7

7, past the travel bureau, down the passageway to the right with the High Street given a second shopfront. Beyond the archway at the end is Dorset Street, 8, *which would become pedestrian space. The Old Corn Exchange, right, has its dignity partly restored with a change of use from public lavatory to antique shop.*



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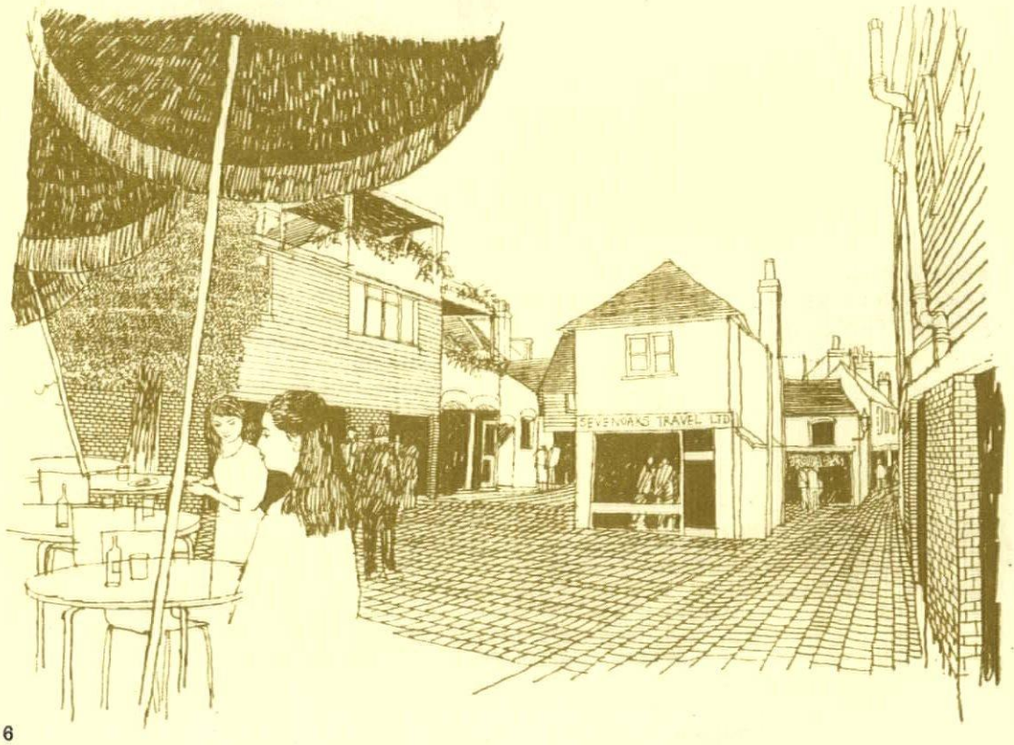

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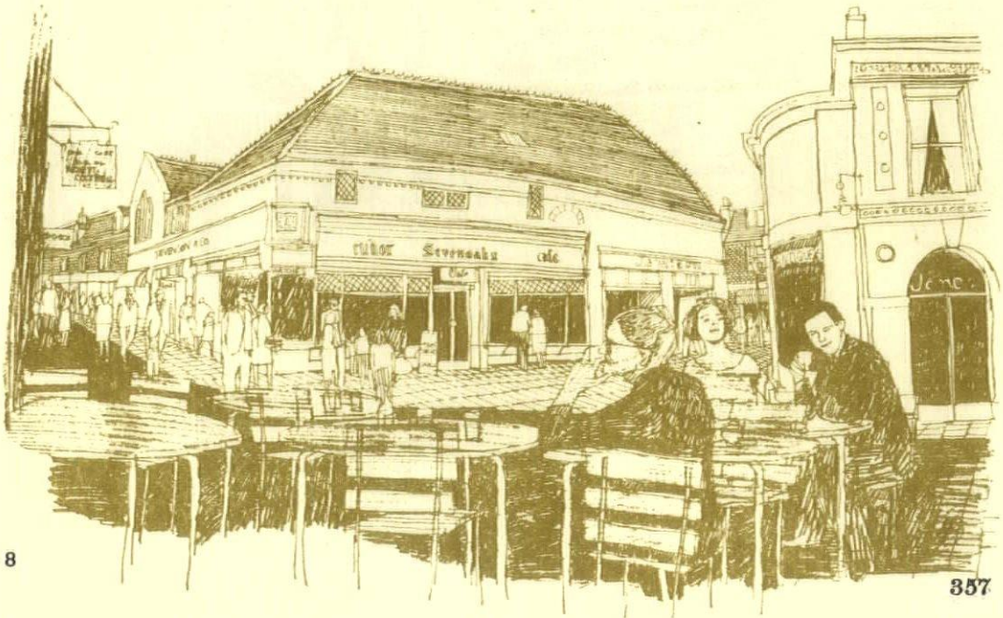

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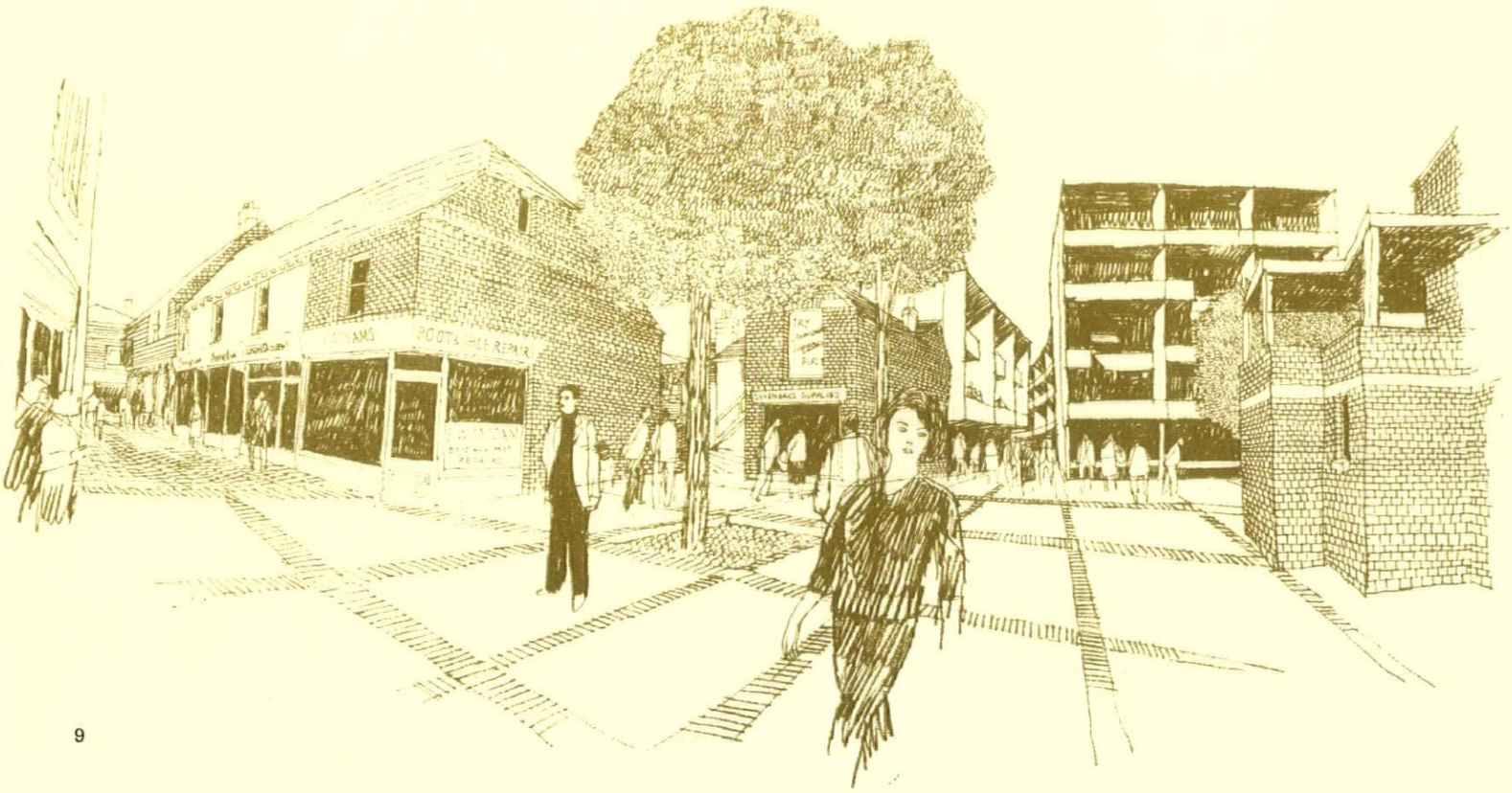
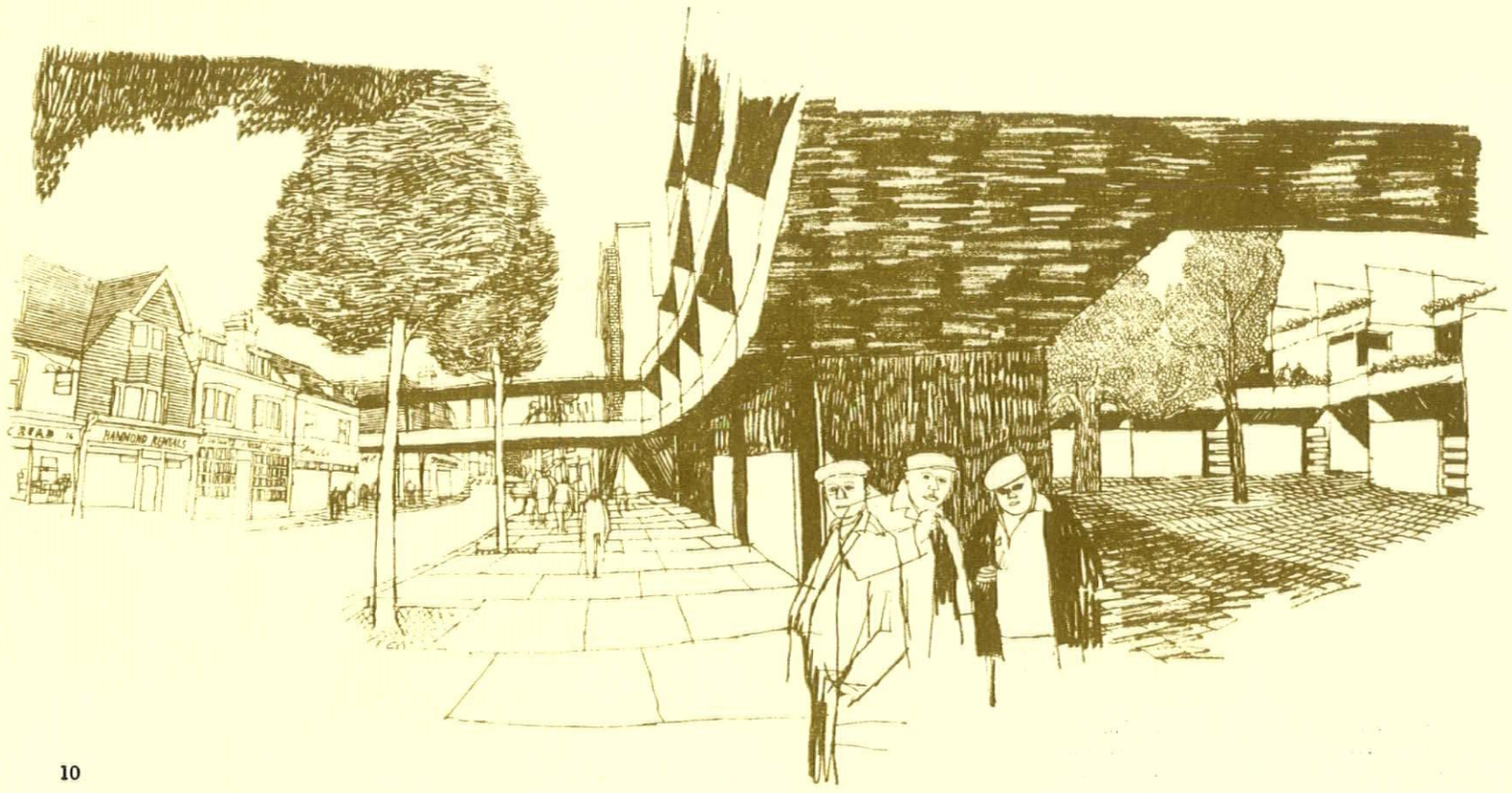


9

SEVENOAKS: THE CENTRAL WEDGE EXPLOITED

Turn into Bank Street, 9. *The space beside the Black Boy pub is at present just a gap and a small car park with an old wall and sheds behind. These are scheduled for demolition so why not turn the car park into a square with trees and with a new shopping street carrying on from the far side and leading eventually to a new town square?* 10, *returning up London Road the central wedge (on left) would be linked to the other side of the road by a pedestrian bridge near the Odeon cinema. The present sadly bedraggled GPO car park on the right would become an attractive residential square.*



10

Publishers' Office, Madrid

designer: F. Peter Hoffer

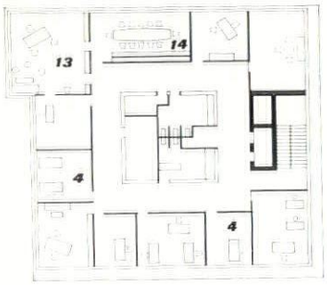
photographs by Augustin Rico

ID

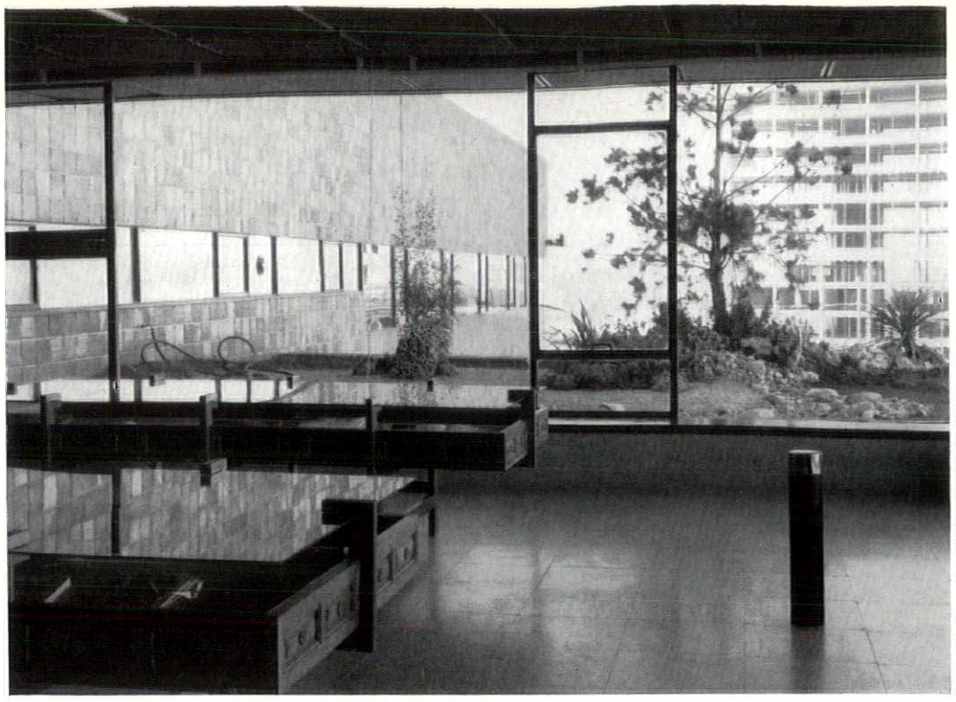
Interior Design

1, *detail of the base of a conference table in mahogany, for the boardroom and library.*

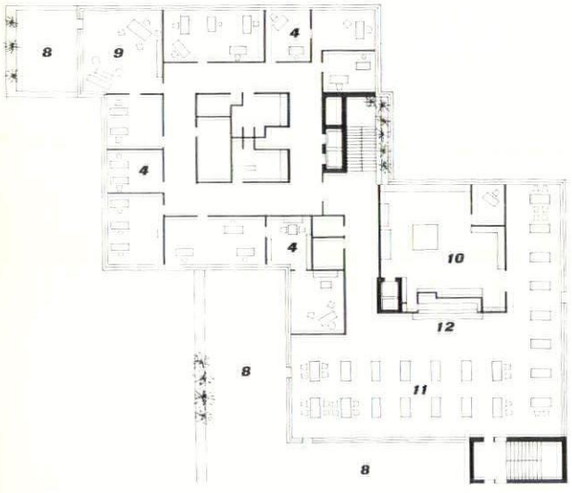




third floor plan



2, *view from the first-floor exhibition area on to the terrace over the main entrance. The facade through the window on the left of the picture is faced with hand-fired tiles.*



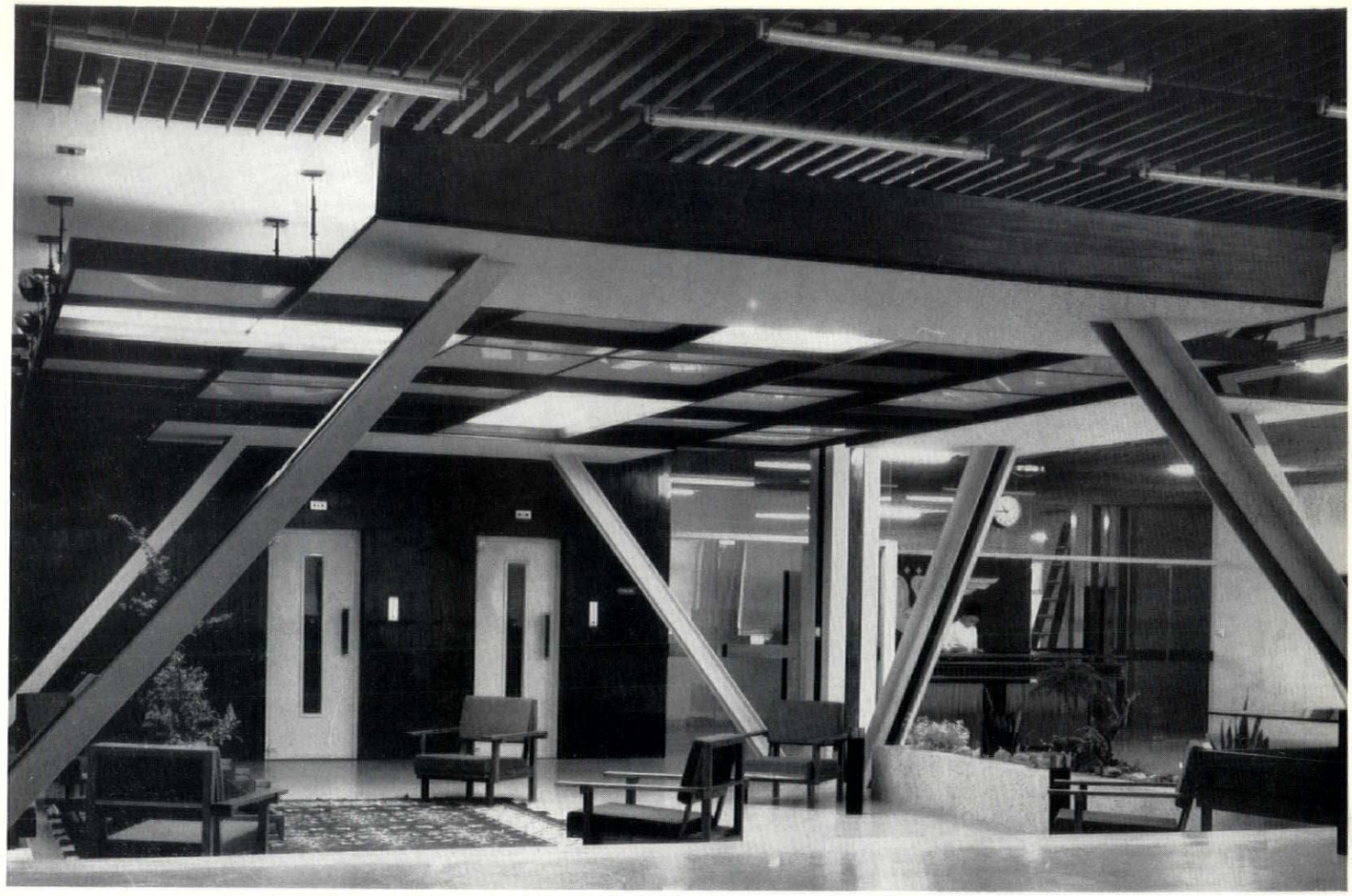
second floor plan

key
1, exhibition hall
2, vestibule
3, reception area
4, offices
5, machine shops
6, re t space
7, open working space
8, terrace
9, managing director's office
10, kitchen
11, cafeteria
12, bar-servery
13, director-general's office
14, boardroom and library



first floor plan (scale 1: 500)

The offices are in a new building housing the Iberian edition of the Reader's Digest, sited near the motorway that runs from Madrid to the international airport at Barajas.
The building itself, designed by Carrales and Malezun, is of steel frame construction and consists of a two-storey coverage of the site with a three-storey tower on the north-east corner, the whole on a modulus of ninety square centimetres. Wherever possible the steel structure is incorporated in the decorative scheme of both the exterior and interior of the building. A unifying interior scheme was necessary in order to tie together the large open centralized areas with the smaller surrounding production departments and offices. Although the parentage of the firm is non-European, it was thought best since the company and staff are Spanish, that this scheme should have a definite national flavour. The designer found that well-designed and produced modern furniture in Spain is almost entirely imported or manufactured under foreign patents. This gave him the opportunity to design almost everything in the building and so to differentiate office interiors one from another according to the individuals occupying them. Furniture for the public parts of the building, bearing in mind their storage and possible use in offices, had to be strong, cheap to produce and easy to assemble. This resulted in a ' construction kit ' assembly, simple enough for porters, etc., to put together. Traditional materials such as wood of colonial origin, hand-made ceramics and tapestries are used almost exclusively and cost less, or no more, than their mass-produced equivalent in other countries.



3

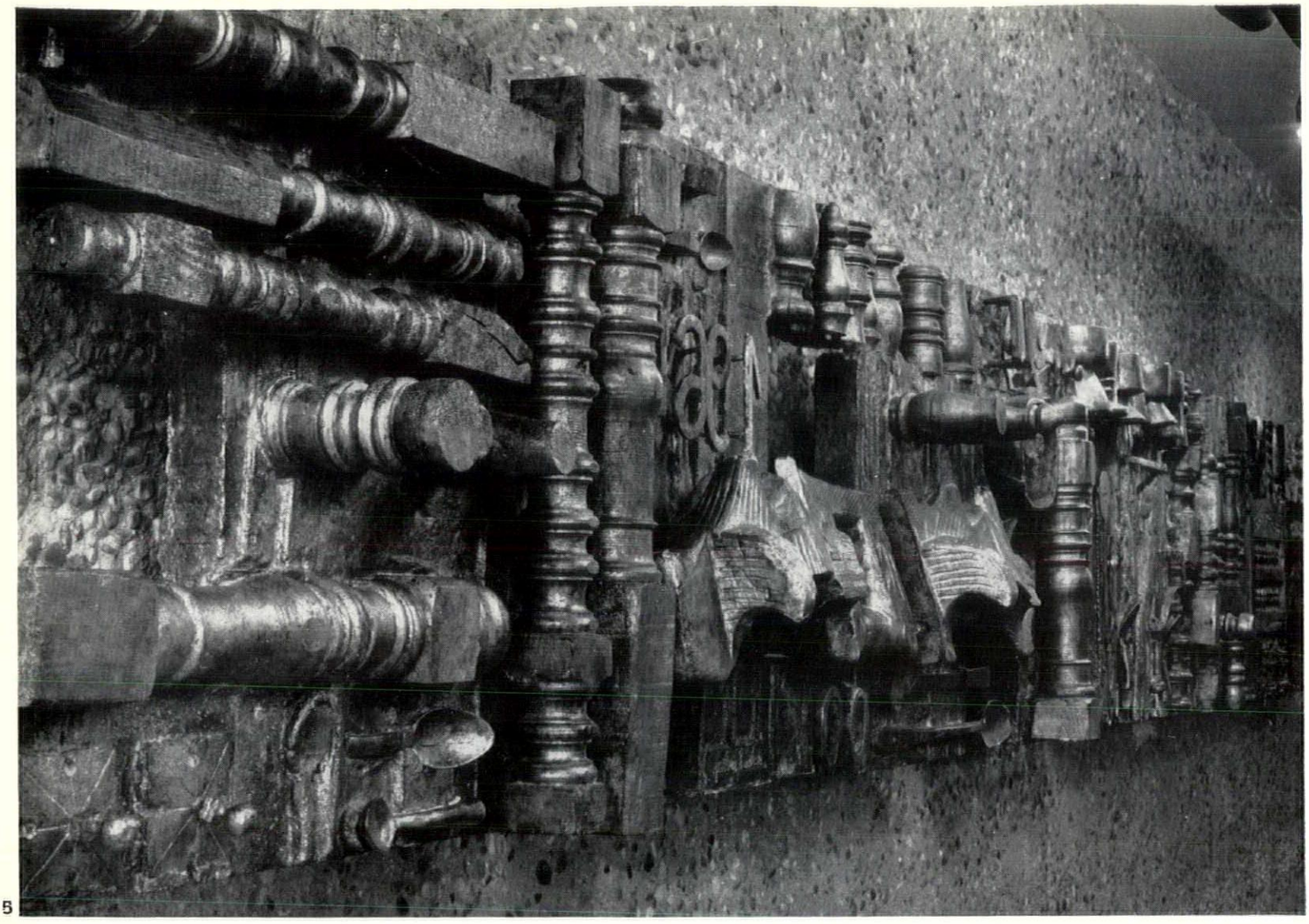
3, the vestibule seen from the exhibition area. The lowered ceiling hides the cross members of the supporting girders. 4, hall leading to the second-floor cafeteria.



4

Publishers' Office, Madrid





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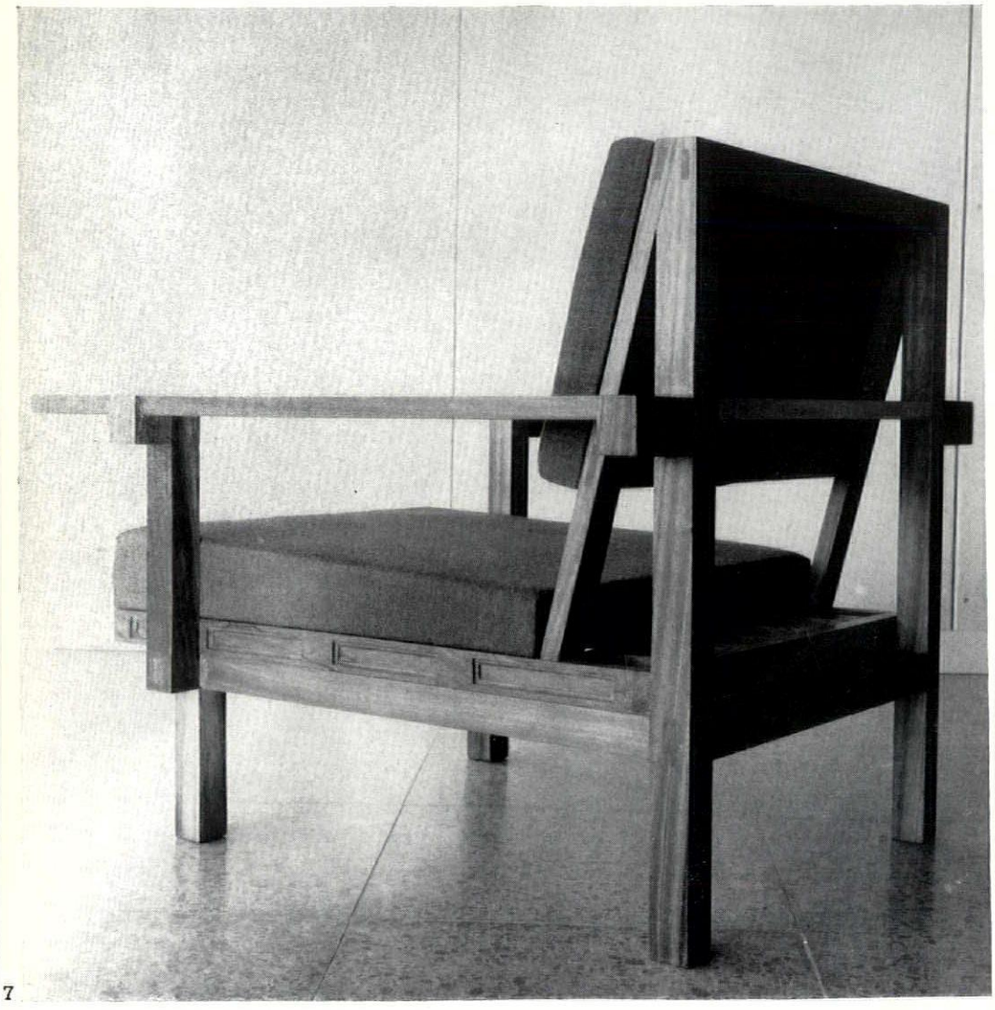


7



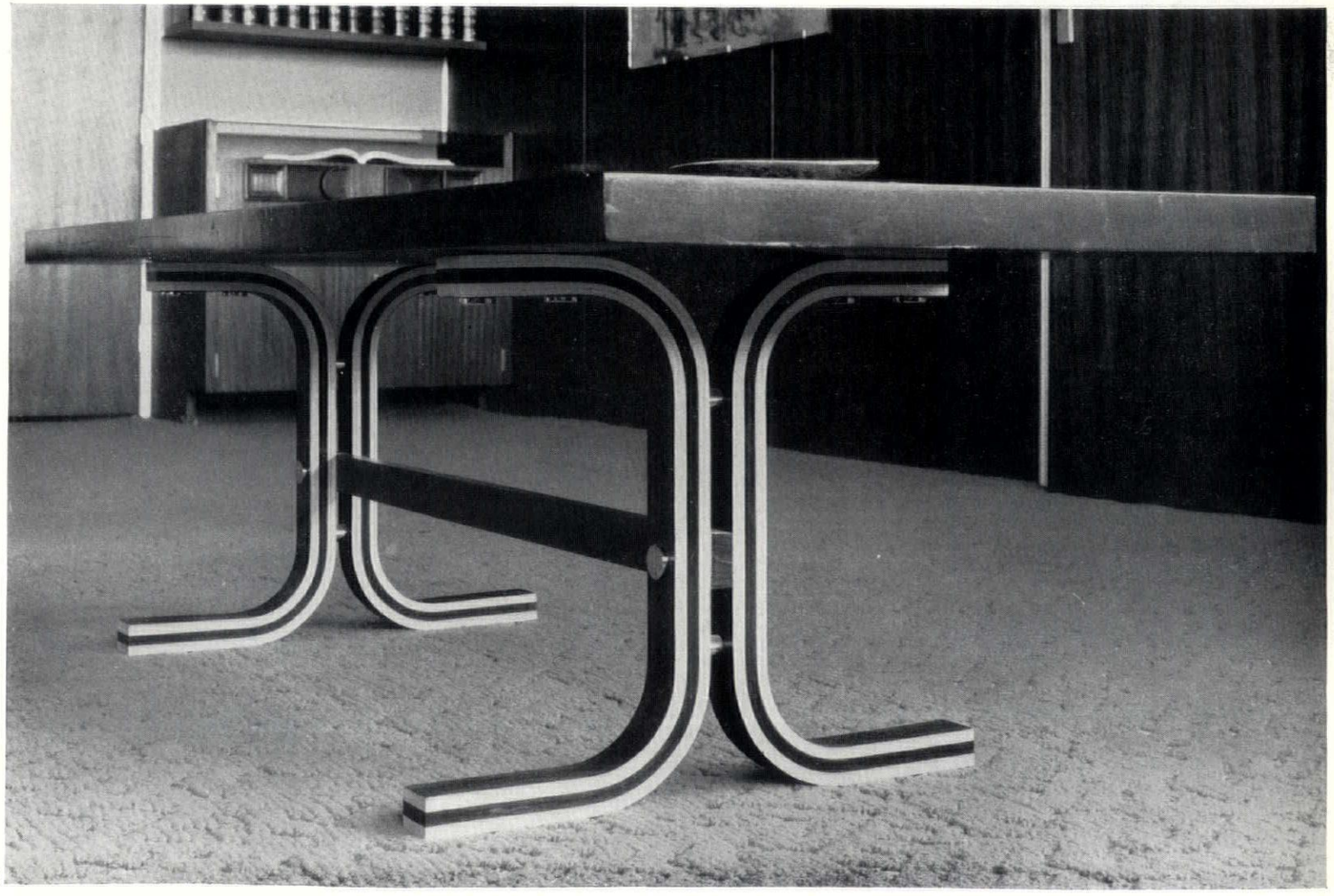
6

5, detail of sculpture by Jose Luis Sanchez on one wall of the vestibule. The elements used in the sculpture are objects found in Madrid's open-air market, the Rastro. The whole piece is covered with a burnished gold patina.
6, the sculpture in its setting in the waiting area of the vestibule.
7, easy chair in mansonia for use in the public areas of the building.
8 (opposite page), one of the demountable units in mansonia wood.
9, occasional table in black lacquer and zebra wood for the director-general's office.

Publishers' Office, Madrid



8



9



1 (*facing page*), *the fixed steel sun louvres on the south side of the general office building. 'Not even the Japanese active in the last decade . . . have managed to come up with anything so satisfactory in terms of solar control, or of the visual interpenetration of exterior and interior.'*

criticism

John Jacobus

Architect: Eero Saarinen and Associates

John Deere office building, Moline, Illinois, USA

Eero Saarinen was a singular architect during a decade of modernist conformity, and with his untimely death three years ago we were well aware of the magnitude of loss. Less clear then was the nature of that loss. Surely he would have altered the face of contemporary design over the next few years, whether continuing in the erratic path that he had followed ever since his father's death in 1950, or turning to the exploration of some unfamiliar new territory. But how? The works in progress at the time of his death offer tantalizing suggestions; indeed they tempt us to ask questions that can have no answers.

The singularity of Saarinen's buildings from General Motors onward—the urge that drove him to make every design a new start, a new beginning in which the accumulated gains of personal experience could only be used in peripheral or incidental ways—exacted a terrible toll in terms of bogus monuments and pretentious structural soliloquies. Yet in spite of everything, of the naive commemorative arch, the flawed yet striking airport termini and the earnest, bombastic embassies, we sensed that he was driving at some certain thing just beyond the threshold of his as well as of our own awareness. I think it likely that the future will cherish his work, even the botched jobs, because, more than most, he was willing to plunge into the unknown, to go in search of some rare trophy.

Under these circumstances we are willing to bear his endless solecisms in design made in the name of machine-age aesthetics, his guileless prattle about wanting to be an architect for the future's history books, and, above all, his artless, unsophisticated belief in Modern Architecture as summarized by the three banal principles of 'function, structure and being a part of our time.' As if anything else were possible. Happily, his buildings as works of art cut far deeper into the problems and substance of twentieth-century architecture than his spoken theories and attitudes.

It has been in the three years since his death, and with the completion of most of the designs that were substantially evolved at that time, that we have been able to perceive the nature of our loss. While it would be an exaggeration to claim that the John Deere & Company Administrative Centre at Moline, Illinois, finished in the spring of 1964, would have inaugurated a new phase in his work (since, in effect, every one of his buildings represented a new style or category), we do encounter there a really different tone, a profundity and thoroughness not customary elsewhere in his work. At last we have from his pen a total and organic design, and not just a flawed realization of some sketchy notion. John Deere is not just another architectural epigram based upon some oversimplification or distortion of the programme, or upon some arbitrarily selected structural image.

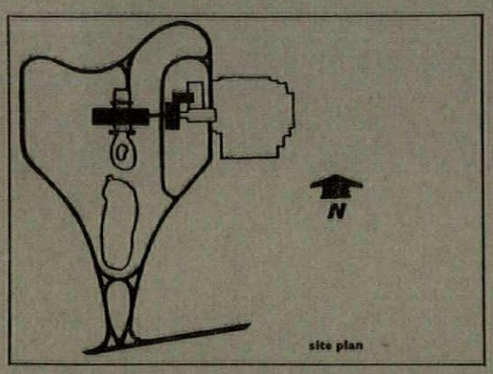
Saarinen's belated mastery of the substance of contemporary architectural tradition, not just of its vocabulary and superficial incidentals, is manifested in both the setting and form of this midwestern office building for a firm specializing in farming and construction machinery. To explain why this should happen at John Deere, but not in most of the many buildings finished in the architect's lifetime, is perhaps impossible. This posthumous maturity has little to do with such 'externals' as the happy choice of high-tensile Cor-Ten steel (heretofore used chiefly in railroad construction, but now being employed in such current buildings as C. F. Murphy Associates' Chicago Civic Centre) as the major structural material, or of its expressive use in the wide-flaring sun shades of the exterior. While this material, with its darkly rusted surface, gives the building a distinctive allure, it does not alone account for the superiority of the design. The major issue is a substantive change leading to the architect's domination and total control of form, not just of the more or less academic skill connected with design alone, or with the choice of material.

In arriving at this solution Saarinen not only triumphed over the limitations of his own past as an architect, but over those of most of his philosophical shortcomings as well. I think that he ceased here to be concerned about obvious and naïve effects of a picturesque nature in order to concentrate upon some guttier issue. Moreover, had there been one or several sequels in this genre of design, it seems likely that a more orderly use of the achievements would have been made and even the 'style' of John Deere would have been in order. After wandering in the wilderness of contemporary architectural clichés for more than a decade, and having fallen prey to easy temptation more often than one cares to remember, Saarinen found his way back to the very tradition in which his first success, General Motors, was nurtured; a tradition compounded of Mies, of the myriad uneven designs of the Albert Kahn staff, and of a particular American pictorial vision of a metallic, industrialized building style set in an ordered, uncluttered landscape—the vision of Sheeler, Demuth and Hopper.

In 1960 Vincent Scully identified the historic roots and the present prospects of a so-called Precisionist Strain in American architecture, invoking some of the conspicuous monuments of the late 'fifties, notably (and for somewhat different purposes) the SOM Air Academy and Louis Kahn's Richards Medical Research Building. Citing the sudden collapse of the once-promising neo-classic new-humanist tradition of the early 'fifties into the decorative brittleness of Yamasaki, he found renewed cause for optimism in Louis Kahn's robust yet still linear and sharp

images of structure and enclosure. Saarinen, then much associated with concrete things in a mish-mash of Corbusier, Nervi, Candela and old-fashioned Expressionism, was not mentioned in this context, though of course his earlier MIT auditorium and chapel were very much a part of Precisionism's predecessor. However, paradoxically, it seems that at John Deere Saarinen has rescued this design idiom of crisp details and sharp linear contours from further debasement at the hands of fashionable decorators. At a moment when Louis Kahn's interest was turning away from structural expression of a linear, skeletal sort towards a concern for solid volumes and massive silo-like clusters, Saarinen filled the breach.

John Deere, by its constructive clarity, its box-like forms and its stress on right-angle intersections, turned its back upon the immaturities of Dulles and TWA with their sagging shell vaults and the inconclusiveness of IBM Yorktown, where rough masonry and random forms compete in futile contrast with the sleek curve of the glass wall. The sheltered ravine in which the John Deere headquarters building is sited offers a major view over a broad valley, a view which is framed by low projecting hills. The main façade, but not the entrance, faces this natural stage across an irregularly shaped reflecting pool (which does double duty as the cooling basin for the air-conditioning system). The principal entrance is uphill and to one side. Arriving by car, the road meanders up the ravine to the top of the rise. The entry vestibule is, in effect, a catwalk that cuts across the large, detached exhibition hall, which functions as a showroom



site plan

for the company's machinery products. This entrance axis, which is at right angles to the main façade and to the road up the ravine, is in turn continued by a glass-enclosed bridge that connects the display pavilion with the main, eight-storey office block at its fourth storey level.

This last feature is made possible and natural by the steep decline of the site between the pavilion and the office block. The 'way in' is thus handled with sensitive regard for the site as well as for the interior circulation, since the worker or visitor arrives on an intermediate rather than a ground-floor level. The site and the building become one, not just because the shape of the building happens to float with attractive proportions across the ravine, but chiefly because one proceeds from without to within, from the entry to the site to deep within the working space in a smooth, sequential way. Saarinen, who tended to be neglectful in the design of entries in the various parts of GM and had experienced difficulty in fitting doors into the irregular, non-rectilinear forms of TWA, hit upon an entry solution in John Deere which is perfectly dovetailed to the contrasting requirements of both interior circulation and exterior appearance. Whereas at IBM in Yorktown he sought to identify the vast building with its hillside site through the visual device of the long curved façade which follows the crest of the hill, at Moline he contrived a more genuinely architectural solution to the problem of relating the building to its environment. Instead of concentrating upon one single image he concerned himself with the integration of the building to its setting through the imaginative handling of space and circulation.

Likewise a part of the interior-exterior totality of John Deere is the sunshade outrigging, which plays a major role in enlivening the simple mass of the building, while giving character as well as protection to the office spaces inside. Just as the flanking hills on both sides of the ravine frame the building itself as well as limiting the scope of the view from the building, the exterior structural members (of dark, rusted Cor-Ten steel) provide a frame for the view apparent from each interior cubicle, thus projecting the regular order of the building's fabric upon the informal landscape. This spectacle of nature is almost always present and visible on the interior. Generous use is made of partly glazed partitions for those private offices situated at the core of the structure, so that even these have at least indirect views of the park.

Furthermore, because of the radical projection of the fixed steel louvres, it is only occasionally necessary (when the sun is strong but low in the sky) to lower the interior shades. Paradoxically, the outer structure sheltering the glass wall serves to integrate rather than to isolate the working spaces from the landscape; the outrigging provides a rhythmic, measurable relation between the workers within and the verdant spaces without. I know of no other modern glass-walled office building that so dramatically establishes and maintains this important relationship under so many contradictory conditions of light and weather. Certainly not since Le Corbusier's Marseilles *Unit* has the concept of a façade in depth been handled so satisfactorily. Not even the Japanese active in the last decade, with all their special insight into the Corbusier manner, have managed to come up with anything so satisfactory in terms of solar control, or of the visual interpenetration of exterior and interior.

Consequently the working spaces at John Deere are not dominated by those ubiquitous enamelled metal and plastic surfaces, or by omnipresent luminous ceilings, features which have become so arid and antiseptic in most modern office buildings. While these materials and surfaces are there, they are kept in their place by the spectacle of nature itself, which only rarely needs to be screened off for reasons of glare. The irony is that this very virtue was long ago advanced as one of the features of any glazed structure whatsoever—something that was real and actual only when the sun was behind, not in front of, the wall in question. If Le Corbusier could solve this dilemma with his *brise-soleil*, the Precisionist taste (among other considerations) of American architects could not accept the apparent crudity of this form. It remained for Saarinen to find an acceptable solution, one that would work and that would be in accord with late machine-age aesthetics in the US. The significance of the metal superstructure of John Deere is thus much more than that of one more design gimmick; indeed it is much more than the simple accretion of yet another stylistic feature to the repertoire of contemporary design.

In addition to the office spaces, the exhibition hall and the necessary dining facilities, Saarinen was required to incorporate a 384-seat auditorium to be used for conferences with sales and field staffs. Quite simple, this is one of the most delightful small theatres to be found in the entire gamut of contemporary architecture. Since the 'actors' in this theatre are often the tractors and other self-propelled machines produced by the firm, the stage with its revolving floor is backed by huge glazed doors which give out on to a brick-walled compound which can be used for the 'live' demonstration of the machinery at work. Architecturally the theatre possesses one splendidly whimsical conceit, which is also deceptively sensible: three tiers of balconies designed 'in reverse.' That is to say, the highest of the three is thrust out further forward than the others, the lowest tier being furthest to the rear. The result is a gain of intimacy on the part of the 'skied' spectators.

The office building set on a rural or suburban site is, of course, one of the most frequently encountered programmes in post-war American architecture. Most of such buildings have been, stylistically, of a pronounced urban flavour; neither Wright nor Goff nor Paolo Soleri nor any other architect of a romantic, organic or earthy orientation has influenced the



2



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John Deere office building, Moline, Illinois, USA

2, 3, two more views of the fixed steel louvres of the general office building. 4, the office building seen from the south-east, with part of the lake in the foreground. When water in the offices' air-conditioning system heats to more than 85 degrees it is pumped into the lake and sprayed into the air to cool it.



4





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5 (facing page), the offices from the south-west. 6, interior of the exhibition hall. 7, the bridge from the exhibition hall to the offices.



7



8

John Deere office building, Moline, Illinois, USA

8, working areas in the office building. 9, executive secretaries' room on the second floor, with an executive office on the left. 10, the vice-president's office. 11, the lobby of the auditorium, which is the block on the north side of the exhibition hall. 12, interior of the auditorium showing how the three tiers of balconies have been designed 'in reverse,' with the lowest tier at the back.

photographs by Ezra Stoller Associates

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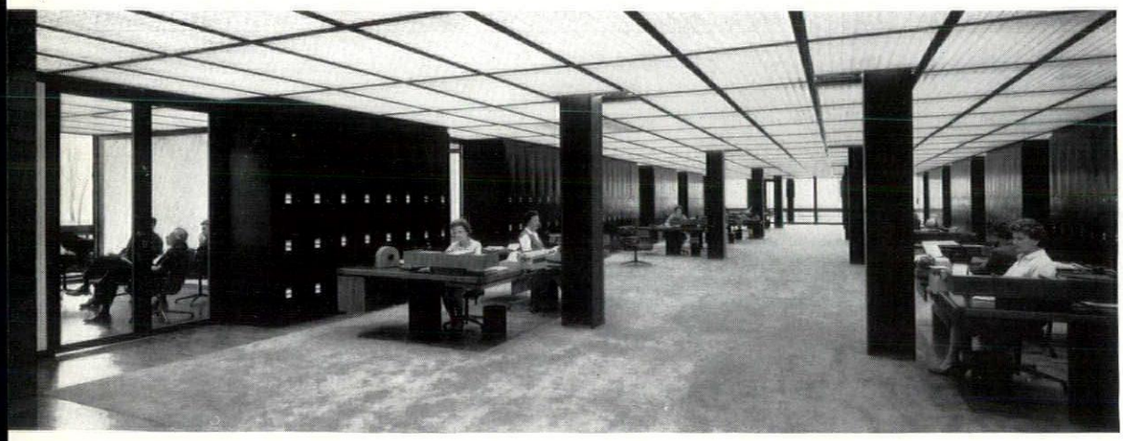

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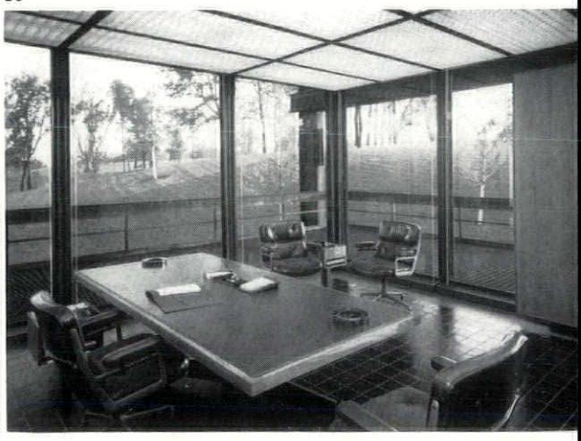

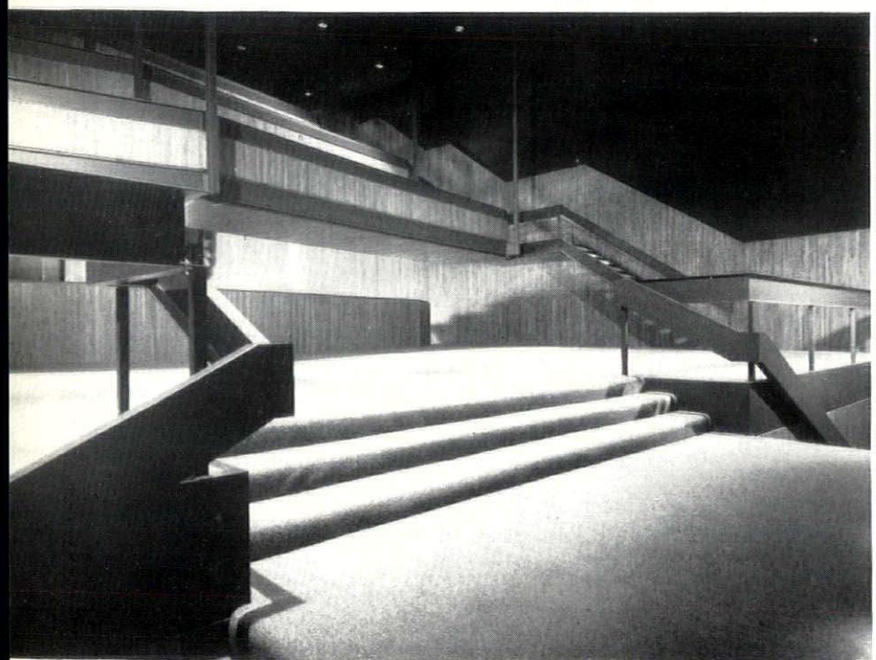

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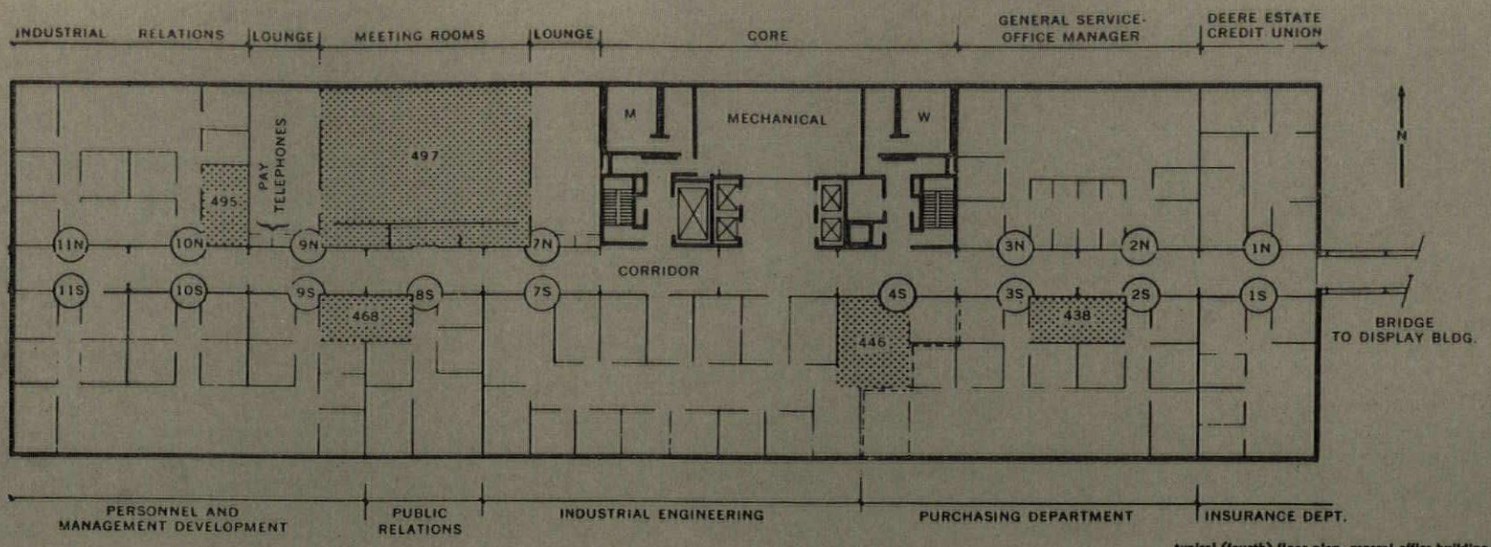


typical (fourth) floor plan, general office building

architecture produced by this migration of the office to the countryside, a countryside which has become, it is true, partly overrun with asphalt parking areas and networks of feeder roads. Yet its public, 'display' side has often been handsomely landscaped by way of compensating for the mutilation caused by the automobile. Part of the charm of John Deere comes from the steep, accidented site, which contrasts with the usual prairie-like site for buildings of this genre. This location ensured greater intimacy and privacy, and helped to encourage a concentrated eight-storey block instead of the customary two- or three-level structure. In this way the horizontal ennui of GM or of SOM's Connecticut General or Upjohn (Kalamazoo) is avoided, and Saarinen's building seems less like the inevitable spatial extension of a shapeless parking mall than is sadly the case in most of these big office structures, which are inherently vulnerable to the sneering criticism of being nothing more than reclining skyscrapers in form.

If most buildings in the genre have possessed individual virtues of function or appearance, none have been total works of art, as is John Deere—with the possible exception of GM, where the lively colours help the low, ground-hugging forms to come within an ace of dominating the wind-swept site. It somehow seems appropriate as well as classically apt historically to encompass Saarinen's restless, indolent creative life with these two taut, vital yet precise designs. They will never conceal those other rambling designs that they chronologically punctuate, but they will remind us of the quality to which he always aspired.

Saarinen was a pathfinder and yet lacked the particular capabilities of a leader in his art, and in this respect his virtues and vices were the almost exact opposite of those belonging to Mies. Where many others, including Saarinen himself for a time, could follow in Mies's path, there will be none who can pick up the trail of so footloose a scout as Saarinen. Viewed as an ensemble his work lacks orderliness, direction and purpose, and the suggestiveness of his bolder creative thoughts were often neither germane to the programme at hand nor to the evolution of contemporary architecture itself.

There will, I understand, be a successor firm, and there is every reason to think that it will continue to produce designs of quality and character, but, if history is any lesson whatsoever, its partners will swiftly seek to establish their own identity. To do so they will have to find some path other than Saarinen's; here they have no choice. Furthermore, it seems unlikely that there will be any significant legacy in the works of others outside of Saarinen's immediate entourage. He was never especially fashionable among architectural students of the past decade (this in its own way is an ironically refreshing circumstance). By and large they were smart enough to see through his bad work but not acute or patient enough to catch the point of his best. Saarinen was pre-eminently a client's architect (Mies and Louis Kahn being, for purposes of comparison, architects' architects), and he worked best when and where the client was around, not to interfere but to stimulate and provoke. Not all contemporary situations will work to the advantage of an architect of this predisposition, though a certain few will. John Deere seems to have been, from all accounts, one of these happy encounters.

Some architects of the twentieth century have proven unfathomable and hence un-followable because of their idiosyncrasies of style or form-making, or because of their cannibalistic behaviour in the face of would-be disciples. Saarinen's uniqueness lay elsewhere; in a passive, relaxed demeanour in which people, places and programmes were allowed to jostle and stimulate.

Marina and Robert Adams

An account of the reconstruction work undertaken by the housing department of the Greek Ministry of Public Works on the Aegean island of Santorini (Thera), following the devastating earthquakes of 1956. Architects in charge: C. Decavallas; V. Bogakos; S. Kondaratos; N. Sapoundzis.*

SANTORINI REBORN

The island of Santorini with its volcanic geology, its ancient monuments and its vernacular architecture is one of the finest in the Mediterranean, and one of the achievements of its reconstruction is that the new work both enhances and links visually with the traditional. This traditional architecture had its origins in the limitations imposed by the exceptional geological formation, by the harsh climate and by the lack of resources generally. Built of local materials (Theraic earth, sand, lava, and pumice) and expanded as necessity arose, the houses, whose few openings punctuate large plain surfaces, are clustered in compact groups, creating an exciting interplay of masses and voids, light and shadow, as the photographs of surviving examples show.

The primary aim of the architects in charge of the reconstruction was the urgent rehabilitation of the population without destroying Santorini's unique character, while keeping in mind the relative smallness of the financial grant made by the Government for the reconstruction, the limited skilled labour available and the transport problems.

The reconstruction was in two phases: first rehousing the earthquake victims, building and repairing schools and restoring churches; second building community centres, restoring zones of architectural and tourist interest and rebuilding houses on their old plots, where the ground was stable, so as to retain the cohesion of the traditional groups.

Overall, ten housing groups were constructed, and one totally new village, Kamari, replacing another village abandoned because of severe damage. These groups are linked coherently with the old neighbourhoods. Community centres have been incorporated within each group, comprising a church, school, shops, community building and communal drinking-water supply. Passages linking these centres with the houses are narrow and short, terminating in cross walls placed to cut down wind speed and exposure. The short rows of houses, a single dwelling deep, are arranged in clusters to avoid monotony. Open spaces—'gossip squares'—arranged within them provide a contrast to the narrow passages. Motor vehicles are scarce and one road links all the villages.

There are two types of house: single- and double-vaulted; they contain two or three rooms and a kitchen, and a paved courtyard enclosed by walls. For people able to make some payment towards the cost of construction, flat-roofed houses were designed as extensions to the main vaulted unit. All hard surfaces collect water for utility purposes, which is stored in an underground cistern. A dry earth closet is situated outside the house. To suit the climate, the houses are sited facing south and east, avoiding exposure to the cold north winds and the hot westerly aspect. Ventilation windows are the only apertures in the north and west walls, and recessed windows and covered passages protect the interior from the heat. The materials used are all local except for cement, iron for reinforcement, and wood, which were shipped to the island by the Royal Greek Navy.

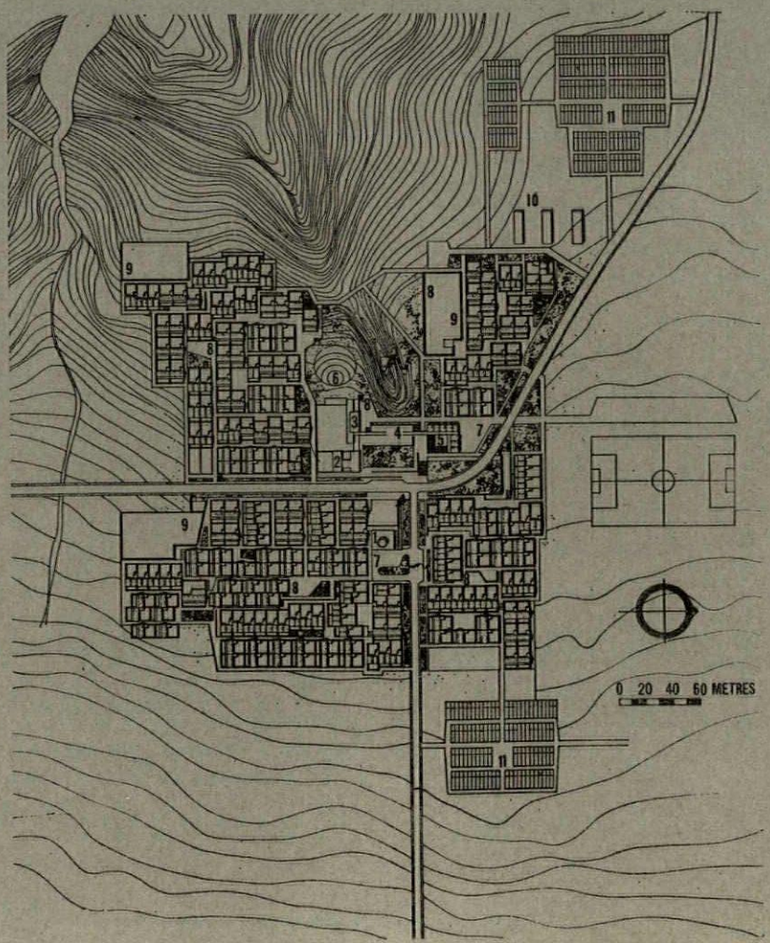
The vaulted roof, met in the vernacular architecture, was chosen as a strong design feature, since it offered economy in cost, speed in construction and reflective qualities, and not for reasons of imitation. All details were standardized (see sectional drawing on page 376); the building blocks, of pumice concrete, and the wooden shuttering (which could be dismantled entire and re-used) were prefabricated on the island. No scaffolding was necessary since all dimensions were within reach of the builders. The school and community buildings were also based on the unit system; in the smaller villages a two classroom unit was used, while in Phera, the capital village, there is a six classroom unit. Here the contours have been effectively used to avoid monotony.

One does occasionally see, in Santorini, some rather haphazard siting of buildings and some monotony in the rows of vaulted houses. There are two explanations of this: that immediately after the earthquakes the islanders built where they chose and that the reconstruction programme was too rapid, resulting in a lack of control over the siting of buildings. For the latter reason also certain constructional details, such as insulation and rendering, have in some places proved unsatisfactory and now give an unkempt appearance to parts of the island.

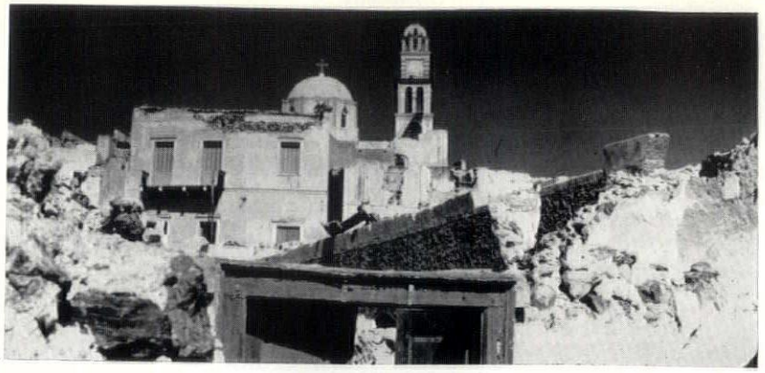
These apparent failures are linked with an inadequate study of the housing and population needs. Although one quarter of the total housing was destroyed in the earthquake (1,000 houses out of 4,000) more than 1,000 houses were either newly built or restored; but the population (8,000 in 1956) is dwindling, and as early as 1961, when the major part of the reconstruction programme had been completed, some of the newly built houses were already being abandoned. Also, no effort was made to develop the island's economic potential which depends on agriculture and the export of pumice stone, and this has led to the gradual desertion of the island for the metropolis.

However, the concept of Santorini has resulted in a modern architecture geared basically to the needs of the simplest of peoples, and it is not the fault of the architects if they have created an empty community.

site plan of Kamari: key 1, church. 2, kindergarten. 3, elementary school. 4, community centre. 5, market. 6, theatre. 7, parking. 8, gossip squares. 9, communal water supply cistern. 10, agricultural co-operative storehouses. 11, stables.



* For a report on the first stages of the work see AR, March, 1960.



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1, 2, *ruined houses on Santorini after the earthquake of* 1956. 3, 4, *two of the four basic chimney types on the new houses.*

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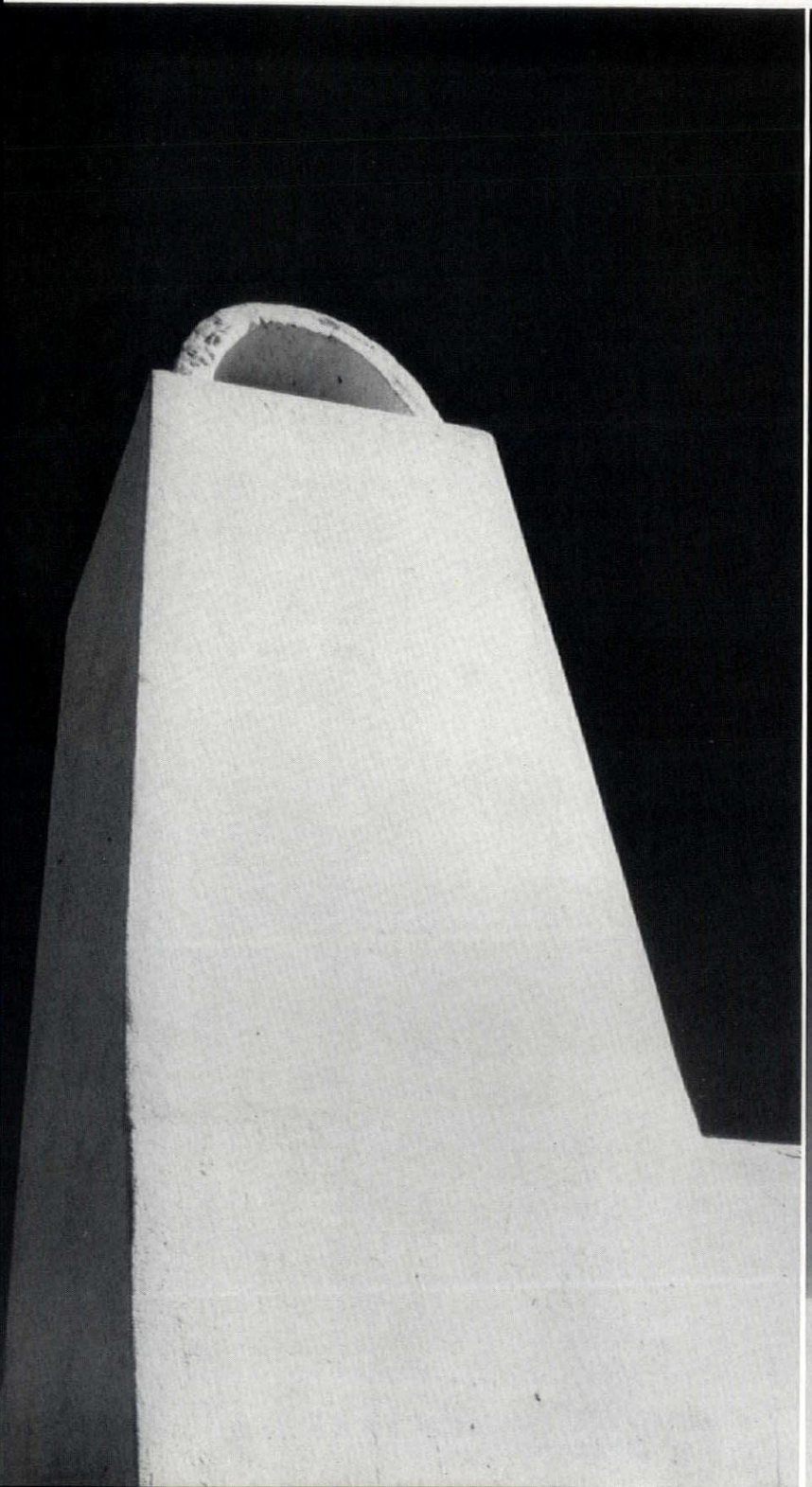

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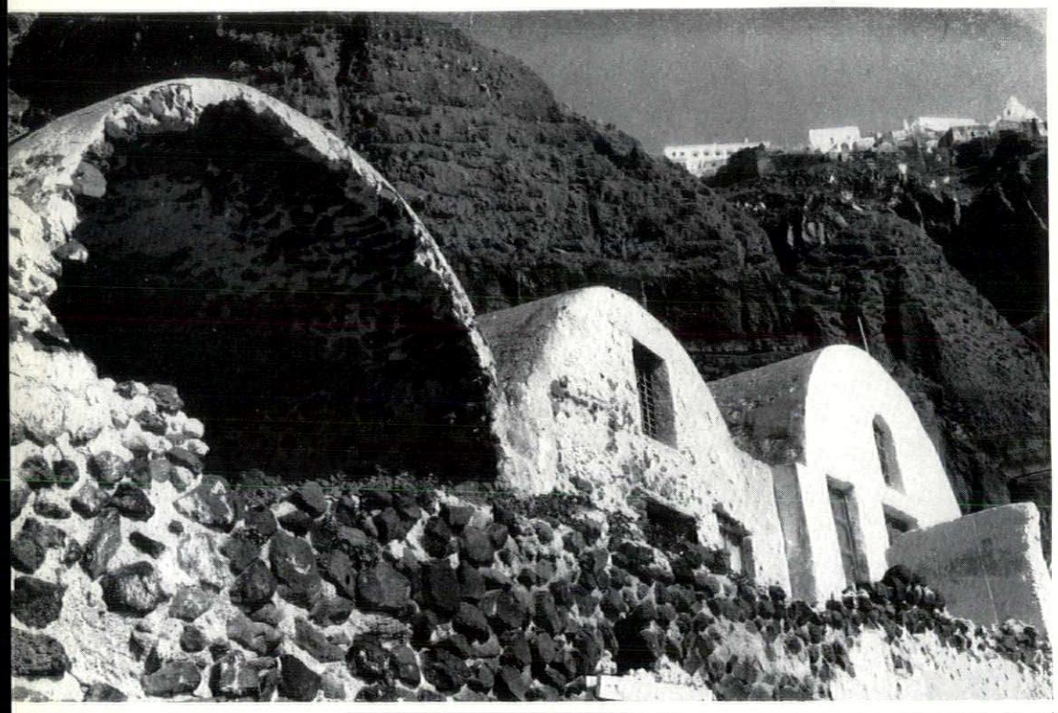
5, 6. *houses surviving from before the earthquake, with the traditional vaulted roofs on which the new housing is based.* 7. *only a steep mule ramp links the small harbour with the main village, Phera, making the transport of materials extremely difficult.*



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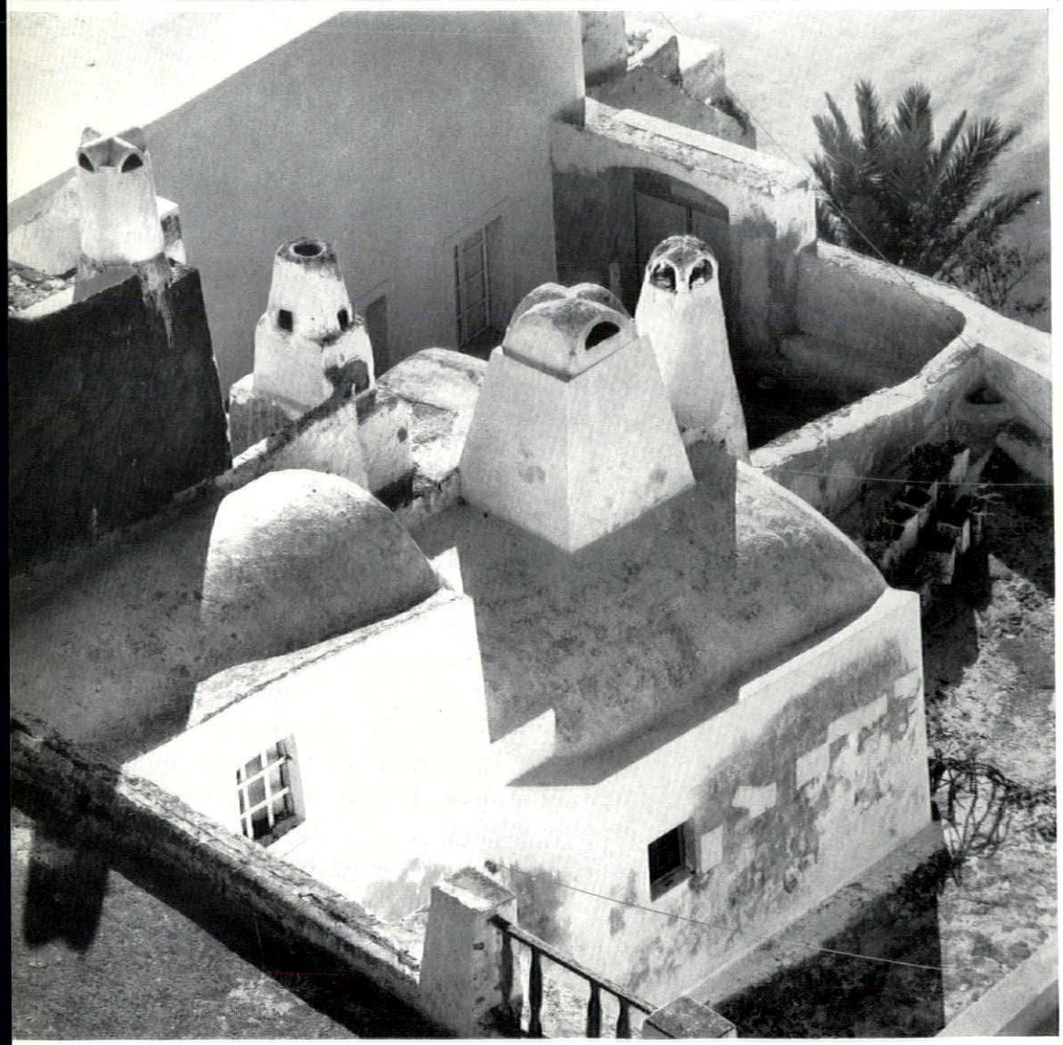

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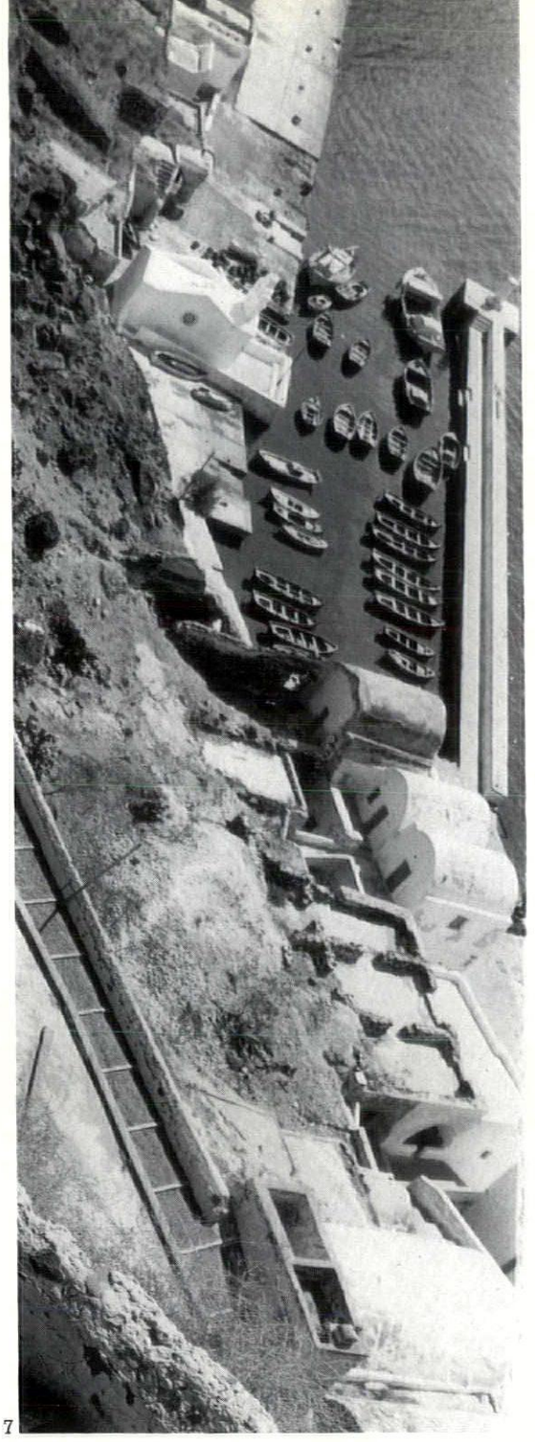

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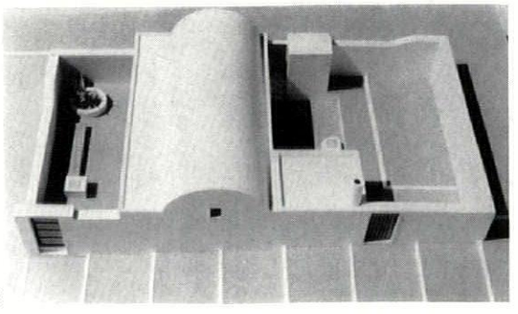
SANTORINI REBORN



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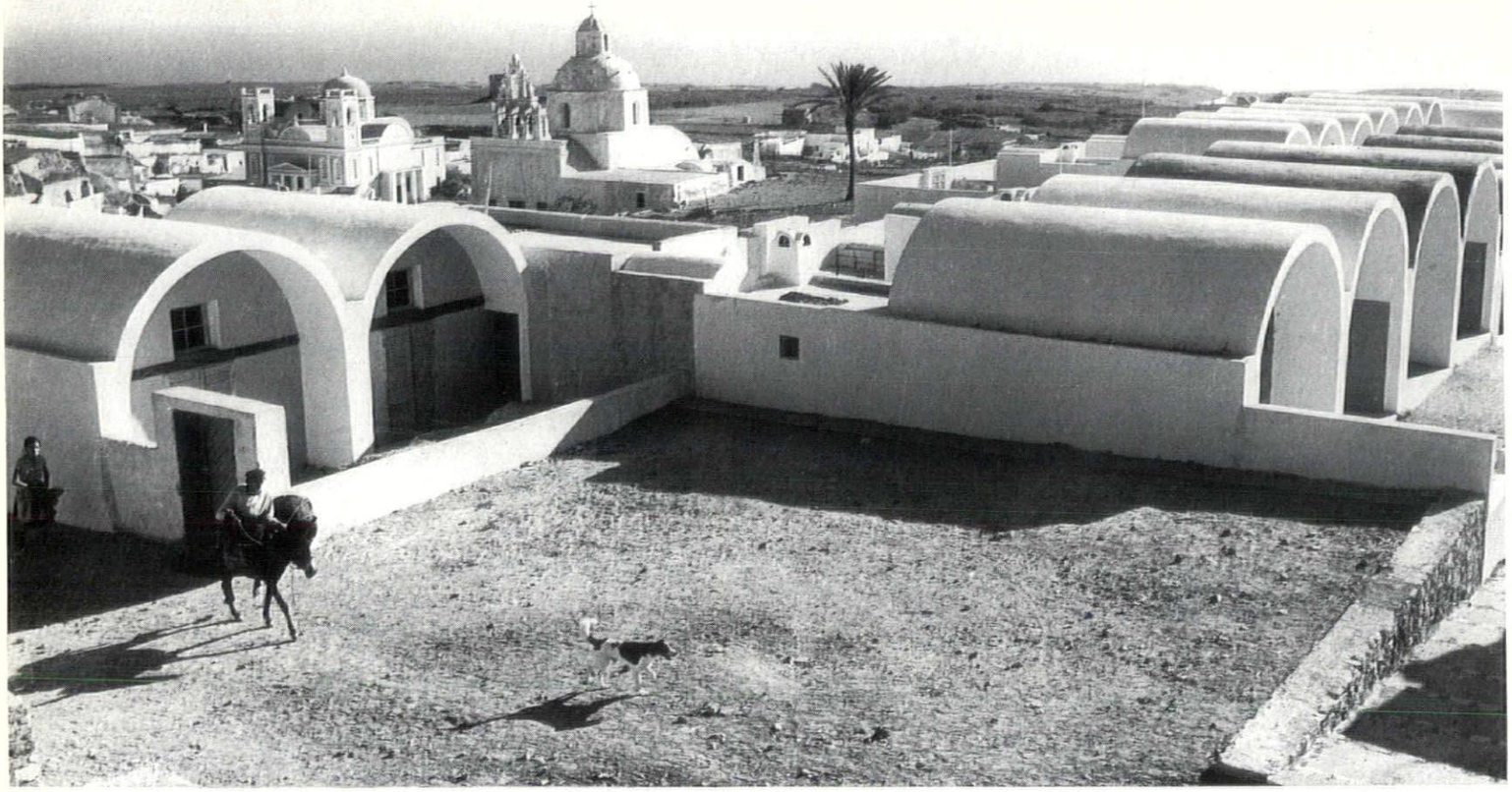
8. *model of a typical single-vaulted house—one unit of the new housing clusters in the rebuilt areas. Facing page,* 9. 10. *close-up views of examples of the new housing.*





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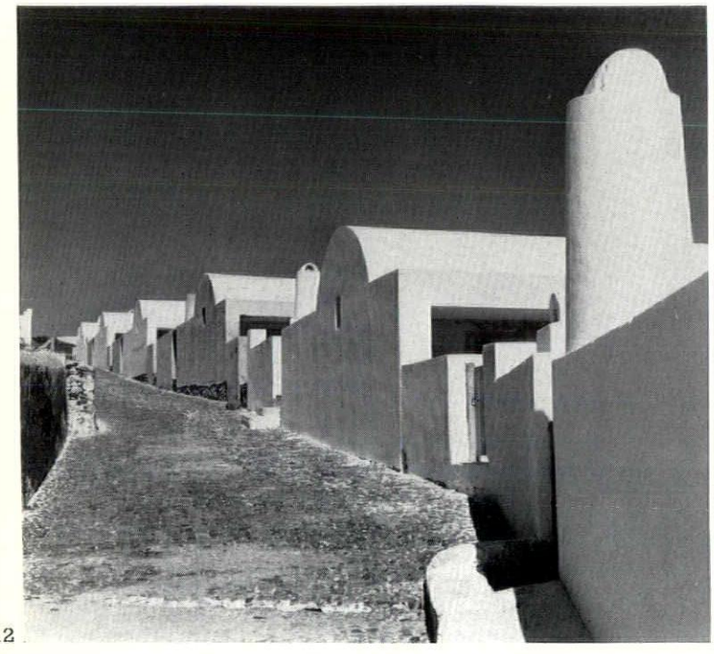

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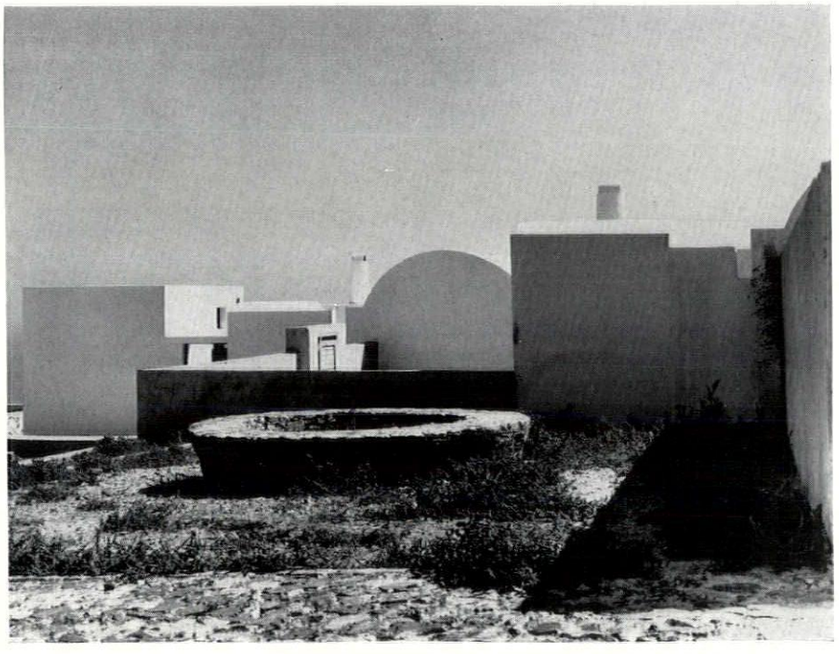

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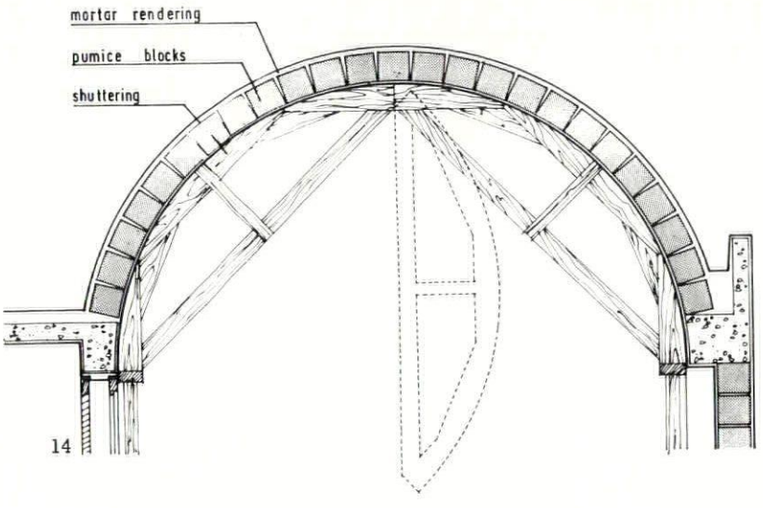
SANTORINI REBORN

11, *a cluster group of vaulted houses with, in the background, derelict houses and two restored churches.* 12, *a cluster of single-vaulted houses.* 13, *flat-roofed houses mixed with the vaulted types.* 14, *section through a typical vaulted roof, showing construction and removable shuttering.*



14

HOGARTH AND OTHERS

Robert Melville

The melancholy Edwardian silence of the British Museum Print Room provides the perfect ambience for the engravings brought out to mark the bicentenary of Hogarth's death. The thought of the drudgery involved in making a million minute careful scratches on a metal plate in order to produce an inert black-and-white copy of a painting shrivels the spirit, and I have always kept these things at arm's length, never wanting to scrutinize them for fear that the depression that overcomes me at the mere sight of them might deepen if I looked more closely—and perhaps do me a psychological injury. But the atmosphere of the Print Room almost compels one to pore over the exhibits. Bending down to look into the desk-like cases gives one the illusion of being engaged on scholarly research and tempts one to go on looking.

The famous print called 'Strolling Actresses dressing in a Barn,' 1, was familiar enough from a distance, but before my visit to the BM show I could have recalled it only as a dark clutter with a pale, plump female figure forming a core of light, and with Baroque diagonals running through two rows of figures like invisible skewers. I had always supposed that somewhere there was a painting in which these compositional elements were more subtly conceived, and I learnt from the catalogue that there was one until 1874, when it was destroyed by fire. No doubt the engraving technique did its usual deadly work of making the details too coldly explicit, but the print is all that we have.

It was a curious experience suddenly to be seeing all the detail for the first time. I had taken it for granted that it was a naïve and overstuffed contribution to *genre*, with so many unrelated activities packed into a confined space that it was brought unthinkingly and insensitively close to the dreadful estrangements of the madhouse. Something of this atmosphere of alienation persists, but it's less inappropriate than I thought, for I have belatedly discovered that, far from indulging in crudely exuberant *genre*, Hogarth is contrasting the reality of the human condition and the



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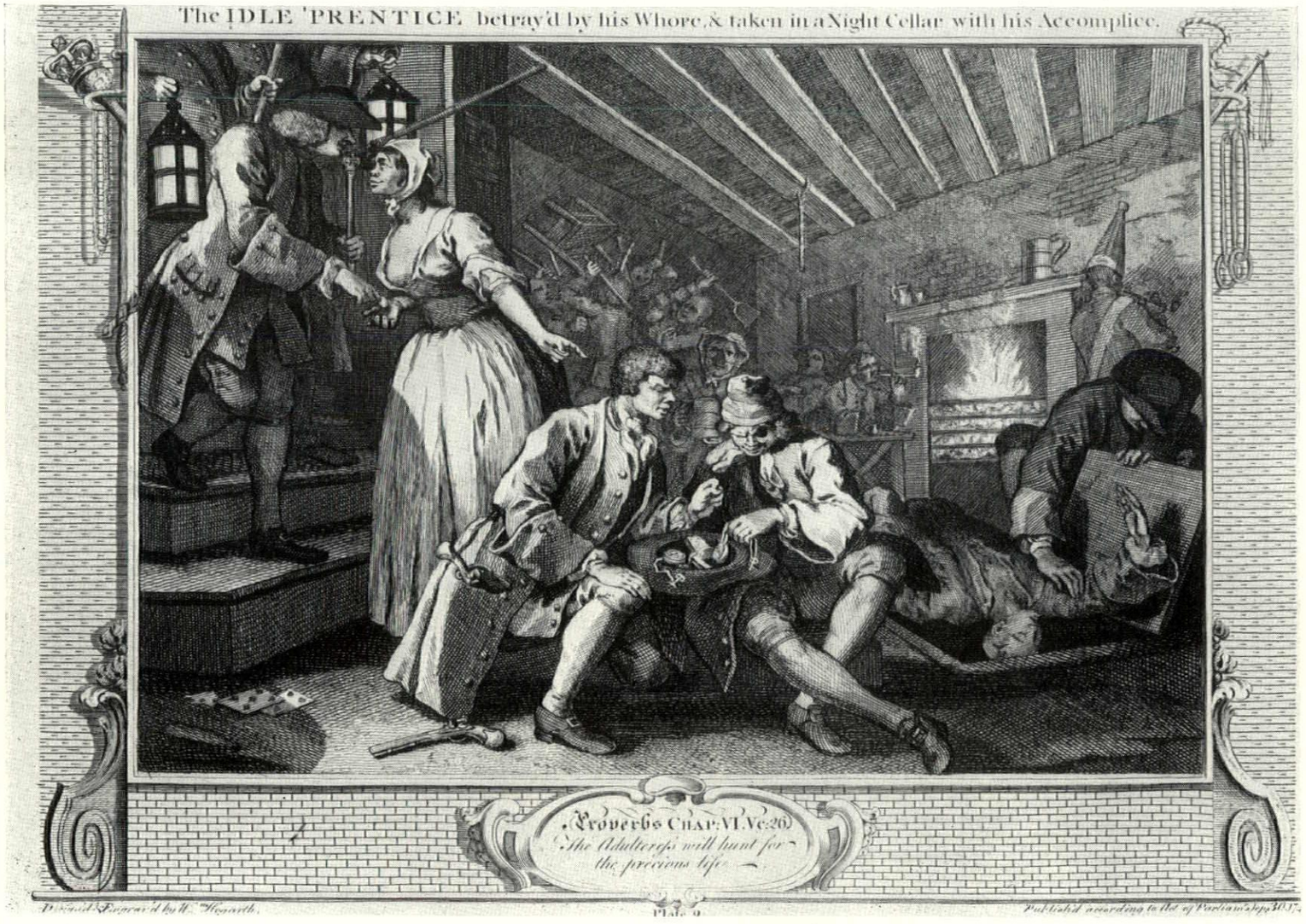
daily round with the dream of immortality and ideal beauty. The roles that the actresses will be playing are for the most part still mingled with their mundane activities. A woman wearing an eagle's head feeds a child, another with a huge fish-tail pours a drink, two others have forgotten their preparations, absorbed by their cruel attentions to a cat. Jupiter and Cupid are trying to pull a pair of stockings off an imitation cloud. A monkey pisses anxiously into the helmet of one of the gods; a chamber pot stands beside a crown.

All this is on the *genre* level, but the three women who will be goddesses in the play illustrate three stages in the process of their transformation. The woman kneeling beside the standing central figure is curling her hair, the woman in the foreground, with one leg stretched out so that a hole in her stocking can be mended, casts up her eyes in a blank stare as she memorizes her part, and the woman standing in the centre is still in her shift but has taken up the declamative stance of a leading role, and in spirit she is already on Olympus. She has become a goddess more movingly than she could ever be in the play. Her shift is stirred by a breeze that affects nothing else. She is estranged from the surrounding company, and the theme confirms the general compositional effect which I have described as a dark clutter with a core of light.

Among a number of engravings from the works of Hogarth's precursors and contemporaries there were two based on paintings by Chardin, who was two years older than Hogarth. They both had a strong feeling for everyday life and they both praised such virtues as temperance and diligence. But whereas Chardin could celebrate the virtuous life by carefully observing without comment quiet little girls, good housewives and industrious servants, Hogarth liked to demonstrate



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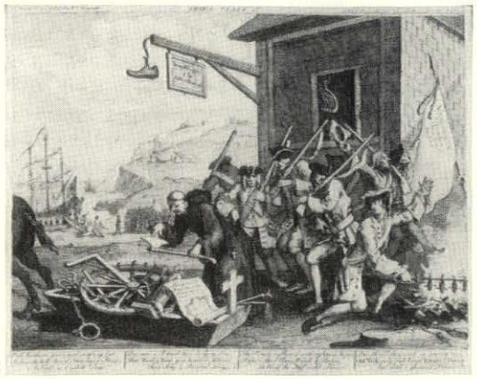

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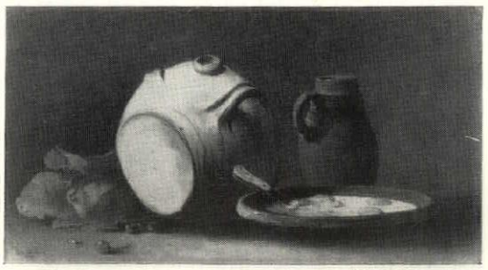
the bad end in store for those who were *not* temperate and diligent. Nothing could be more opposed to the spirit of 'A Harlot's Progress' or 'Gin Lane' than Cochin's engraving, '*Simple dans mes plaisirs . . .*', 2, from a Chardin painting, which retains something of the master's wonderful, undemonstrative sense of the mystery of human presence.

The catalogue refers to Hogarth's capacity to seize on the dramatic moment, and remarks that 'he wished his "moralities" to be judged as "stills" from a play.' He is in fact the greatest pictorial storyteller this country has ever had, and the scene for instance in 'The Idle 'Prentice' cycle, in which the wretch is 'betrayed by his Whore in a Night Cellar with his Accomplice,' 3, is more eloquent than any frozen moment of a play could be. The gestures make words superfluous, and the brilliantly controlled lighting of the scene allows Hogarth to include subsidiary activities which may or may not be taking place at the same time as the betrayal but are splendidly informative without obscuring the main action. Hogarth is the Eisenstein of the comic strip.

'The Invasion: French Preparations,' 4, is one of two plates, etched by Hogarth himself, which were issued at the beginning of the war against France in 1756. It is anti-French and anti-Catholic, and the coffin being prepared for the English is not only loaded-up with a gibbet and instruments of torture but contains plans for a monastery at Blackfriars and an effigy of St. Anthony with his pig. I would have thought that St. Anthony, with his strong appetites, might have appealed to



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Hogarth, but I suppose he picked on him because he was the patron saint of syphilitics. There is a deliciously comic detail on the right. A French officer is making an heroic gesture and at the same time cooking a row of frogs hanging from his sword-blade. What a chauvinistic old devil Hogarth was!

The rich clutter of paintings and statuary at the Arcade Gallery brings to mind the barn where the strolling actresses are dressing amidst their stage props, and one can come across chance juxtapositions there as *outré* in their way as Hogarth's crown and chamber pot—an African mask beside a graceful Hellenistic hermaphrodite, a Fontainebleau



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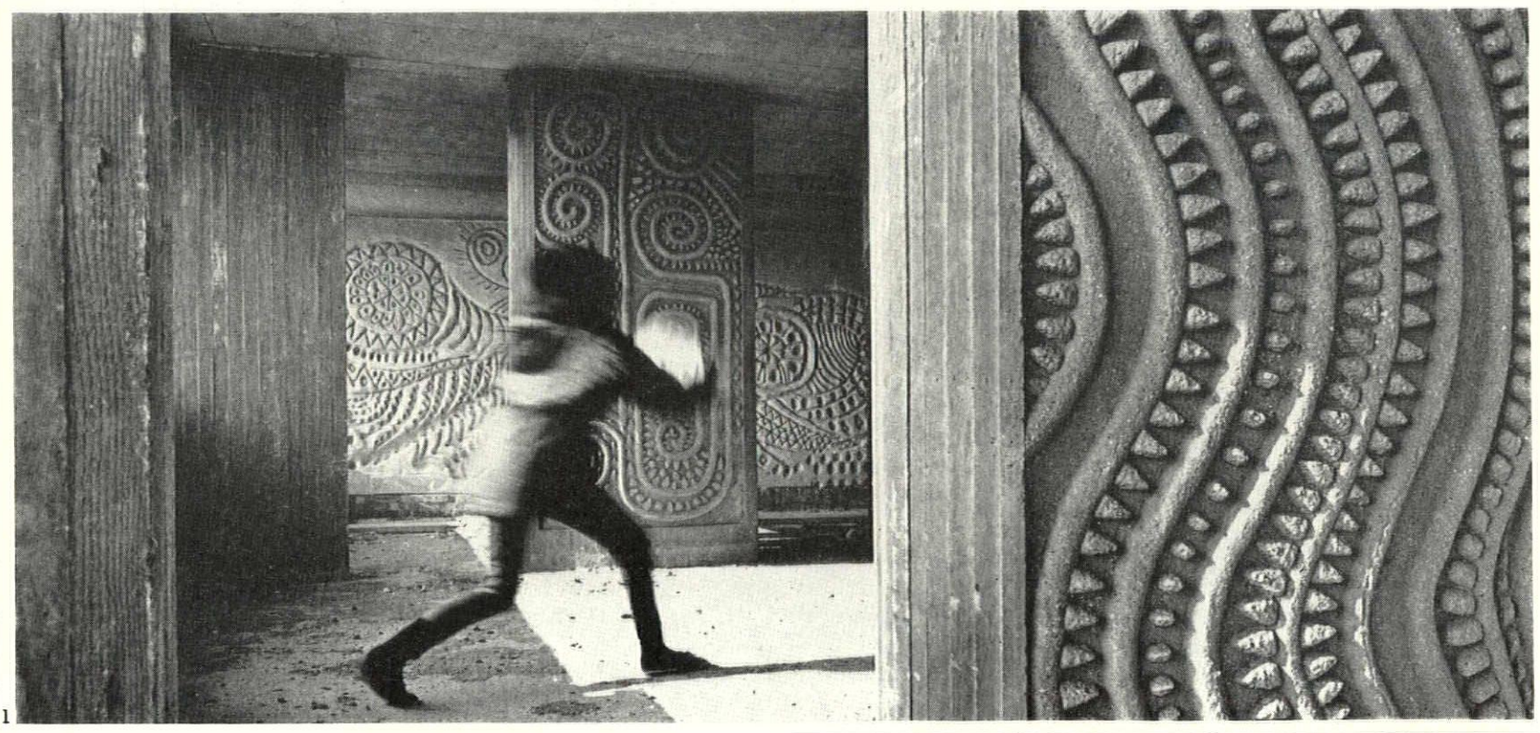
love scene next to a painting of the Virgin. But Mr. Wengraf recently cleared enough space to hang a small but entrancing exhibition of paintings by the nineteenth-century French painter Théodule Ribot, whose best work is in the manner of the seventeenth-century Neapolitan tenebrists. He was a marvellous little reactionary, and the show included a fine, shadowy semi-nude of a man sharpening a knife and two superb still lifes, one with broken eggs and the other with fried eggs in a dish, 5, in which the yolks glow in the brown twilight like emblems of the sense of glory. But the work which impressed me most of all was a drawing of a hand, 6, limply held out against what appears to be a dark sky and stormily lit in a way which brings to mind a leaping hound. It's a wonderful bit of romantic realism, worthy of Daumier.

An exhibition of seventeenth- and eighteenth-century Italian sculpture held recently at Colnaghi included some fascinatingly elaborate pieces. There was an extraordinarily restless seventeenth-century bronze of the Baptism of Christ, by Melchiore Caffá, with a putto in mid-air between Christ and St. John, clinging precariously to their strangely jagged robes, and there were two lovely Florentine terra-cotta reliefs with delightfully decorative cloud effects. One of these was 'The Adoration of the Magi,' illustrated here, 7.

PLAY AREA

Situated on the tenth floor of a twenty-two-storey block of flats at Battersea, London, these sculptured concrete walls and columns, 1, form part of a children's play area and were designed and carried out in shot- and sand-blasting by W. G. Mitchell and Associates.



1



THE MAGNIFICENT INTENSITY OF THE JUNGLE



From an inspiration
by Betty Middleton-Sandford

"I work mainly on abstract design, approaching it as a fine art subject. But, on this occasion, I challenged myself to do an up-to-date floral. So that I could obtain a fresh, personal quality I took no direct reference from any particular flower, allowing the form to develop while I was working. In this way I hoped to create the natural growing form of a jungle flower."

Jungle. Screen - printed chintz, glazed and unglazed. 48″ wide. Five colourways.

Edinburgh Weavers seek their inspiration from the world's leading designers. They recognise no barriers, no single field of art, in their search for individual expression.

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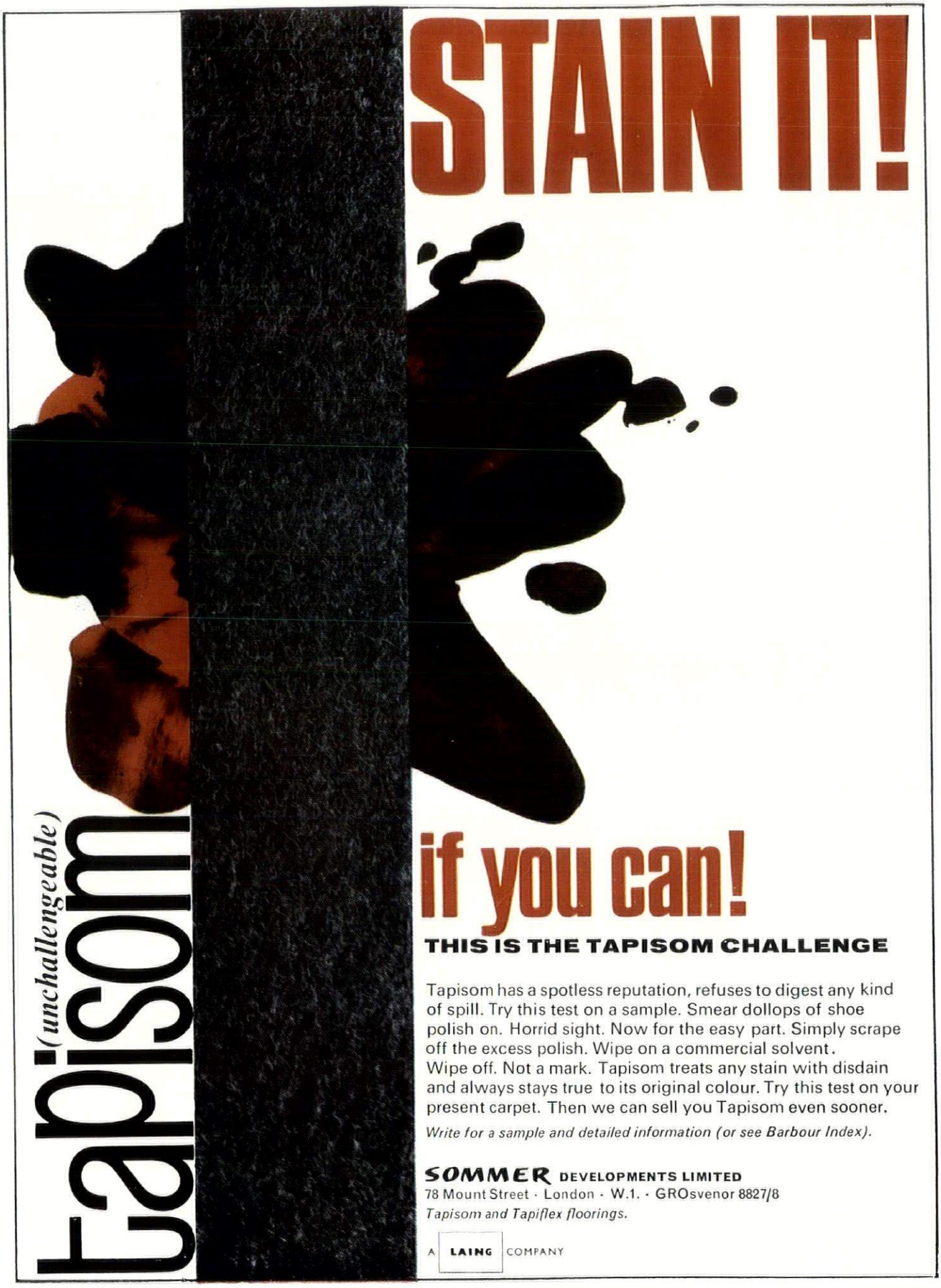
Edinburgh Weavers search the world for good design



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A LAING COMPANY

Reclining and easy chairs

The two most significant reclining chairs developed in recent years are those by Charles Eames, the 670 lounge chair, 1, and the 683 from the aluminium group, 2, now being produced in Britain under licence by Hille. I mention these chairs because, although no longer new, they



1,2

establish a norm by which most other chairs can be measured. To a large degree they resolve the conflict between comfort and elegance and amalgamate the use of new materials and the new use of traditional materials with techniques that are part of, and in sympathy with, this technological age. No other period could have produced the die-castings of the one chair or the preformed ply shell of the other, and only a designer of the calibre of Eames could have integrated form, function and construction with such sophistication and confidence.

We are witnessing today the development of two divergent trends in furniture design: on the one hand the application of modern materials and techniques producing a machine aesthetic, as in the Eames chairs, and on the other hand the trend, now clearly discernible and increasingly fashionable, of using traditional materials in a simple and direct manner resulting in a rusticated brutalism. The latter trend, when executed by its leading exponents, is acceptable, sometimes delightful, especially in domestic settings, but when manipulated by the trade, as seen at the recent furniture exhibition, it becomes banal, crude and absurd. When plank and quartered timber sections are fashioned and brought together in a way that suggests an abundant timber economy,



3



4

where skills and know-how are limited and the simplest of machine tools are used with cost a basic essential, the sanity of this approach is obvious, but where the technical potential is rich and materials diverse, this folk cult is perverse and could easily become, in design terms, a fashionable blind-alley.

However, the ergonomic basis for chair design is also suspect, since the human body is rarely content with one position, no matter how ideally comfortable this calculated position is when achieved. Neither is the body constant in its requirements for, alas, it grows old, sometimes sick, certainly tired and is subjected to excesses of all kinds. Thus the Victorians developed the sprung, stuffed and upholstered chair to accommodate the many positions the body demands, and the result was often, both to young and old alike, enormously comfortable and inviting. But modern economics have tended to destroy this conception of comfort; the cost and quantity of materials, the labour, and the essentially craft-based skills required for manufacture are no longer easily available. Moreover the need for furniture of less weight and bulk, tailored to the smaller spaces in which most people live and work, has been instrumental in dictating the form of many of the best modern chairs. But the combination of elegance and comfort is rarely achieved; the conflict between romanticism and technology makes the synthesis as elusive as ever.

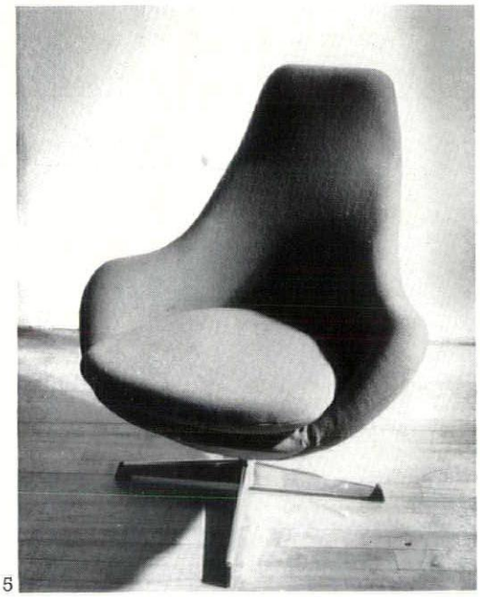
It is difficult to measure a chair's comfort simply by sitting in it for a few minutes, since any inherent weaknesses emerge only slowly and even then opinions will differ according to physical needs and mental attitudes. The four chairs shown here (3, 4, 5, 6), marketed by Heal's under the trade name Contex, come from Sweden and were designed by Arne Dahlen. They

have different functions but all seem very comfortable, small in scale and ideally suited to most domestic and other interiors. The Juliet, 4, and Gretel, 6, chairs are intended for uses of limited duration, but none imprisons the torso and each allows for considerable movement; change of position and direction is controlled by the swivel action of the base. These four chairs are refreshingly devoid of any forced styling; their form and other advantages derive from an intelligent assessment of physical needs and the application of materials in the most fitting and direct manner. The colours of the fabrics in which they can be covered are excellent and the textures good. The Hansel, 5, and Gretel can also be obtained in PVC.

The Conran Tiffin chair, 7 and 8, has a demountable beech frame with seat and back in heavy stitched canvas. It is clearly inspired by the Safari type chair and the overall visual impact is excellent. Some may find the leather straps forming the arms a trifle high, but the sympathetic use of natural materials, the high quality finish and the degree of comfort achieved at a relatively low price contribute to a design that for certain applications is probably unequalled in value. The canvas and frame can be obtained in coloured and natural finishes.

Another moderately priced, demountable easy chair recently introduced by Race Furniture is the FXT1 designed by Nicholas Frewing, 9. This design is based on a unique hook-together principle, enabling the chair to be assembled or taken apart without tools and in a matter of seconds. Because of this inbuilt flexibility, the skids of the chair adjust themselves without strain to any variation of floor surface. Although the chair is comfortable, this flexibility creates an unfortunate feeling of instability when the chair is sat on. It is, perhaps, a primeval instinct of man to require a firm and stable seat, and if he is to rock or swing he must be reassured by unequivocal movements and his power to control these when in a state of relaxation. However, this is an ingenious design, getting the best out of materials and modern techniques, and has much to commend it. It is obtainable in a range of fabrics and also in a high back version.

The Leo and Taurus chairs, 10, 11, designed by Robin Day for Hille, are serious attempts to move towards a more comfortable conception for deep relaxation and the Leo largely succeeds in this. It is visually less satisfying than the Taurus, for the arms appear mannered and these and the seat demand a tautness in the leather covering which it will be hard to maintain in use. Whether this chair will stand the test of time remains to be seen but, without doubt, it is one of the most comfortable chairs produced in this country by a British manufacturer. It is approximately half the price of the 670 lounge chair mentioned above.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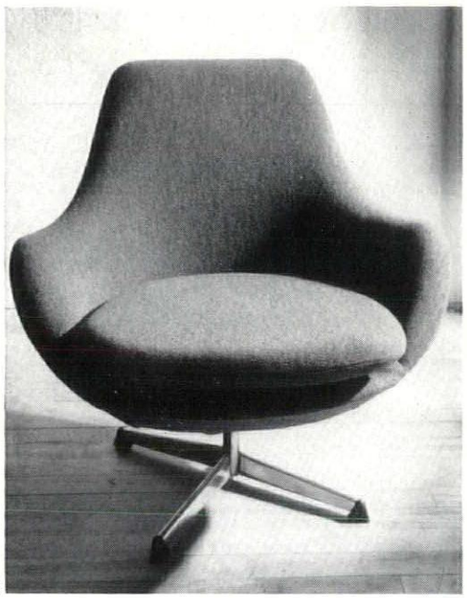
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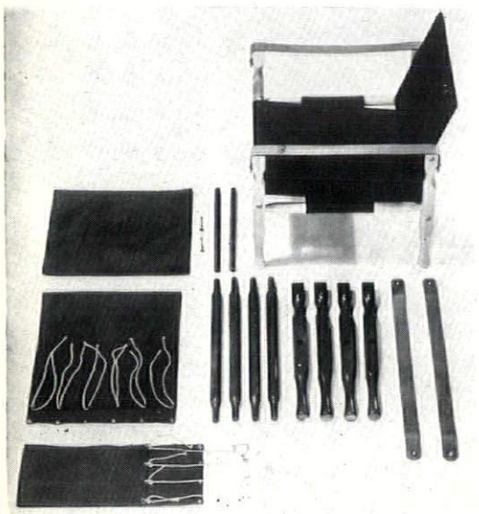
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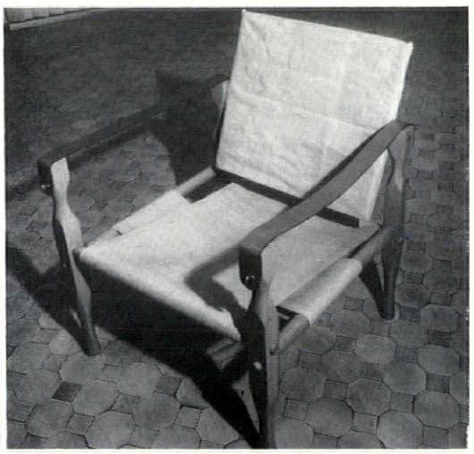
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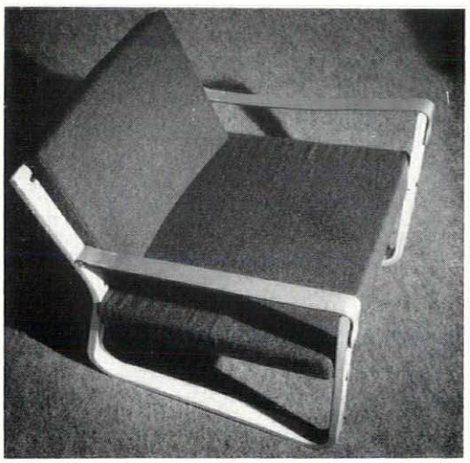
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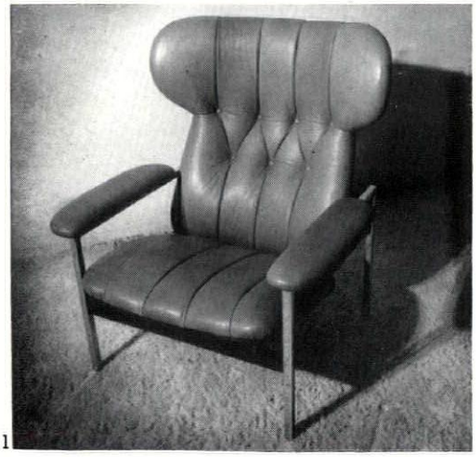
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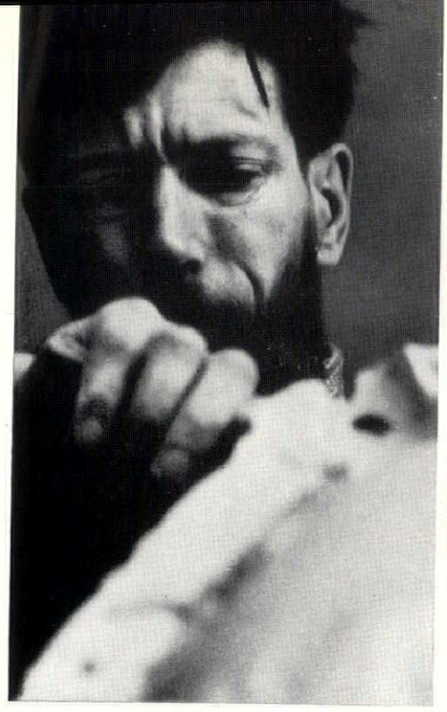

THE WONDERS OF THE EVER CHANGING FORMS OF NATURE

From an inspiration by Dennis Hawkins

"Like the Oriental painters, I have a strong feeling for colour. I look to colour for every mood. For example, this design is fragile and delicate in one colourway; strong, almost barbaric, in another. It is a personal interpretation of a flower, with the image hovering between a flower and a butterfly. I have tried to suggest a metamorphosis of nature—from the seed to full bloom to the dead flower. The original painting was called Butterfly Seed. I'm told it was renamed because people felt it showed strong associations with Japanese art."

Sookhothai. Screen-printed cotton satin from an original painting. 50" wide. In five exotic colourways.

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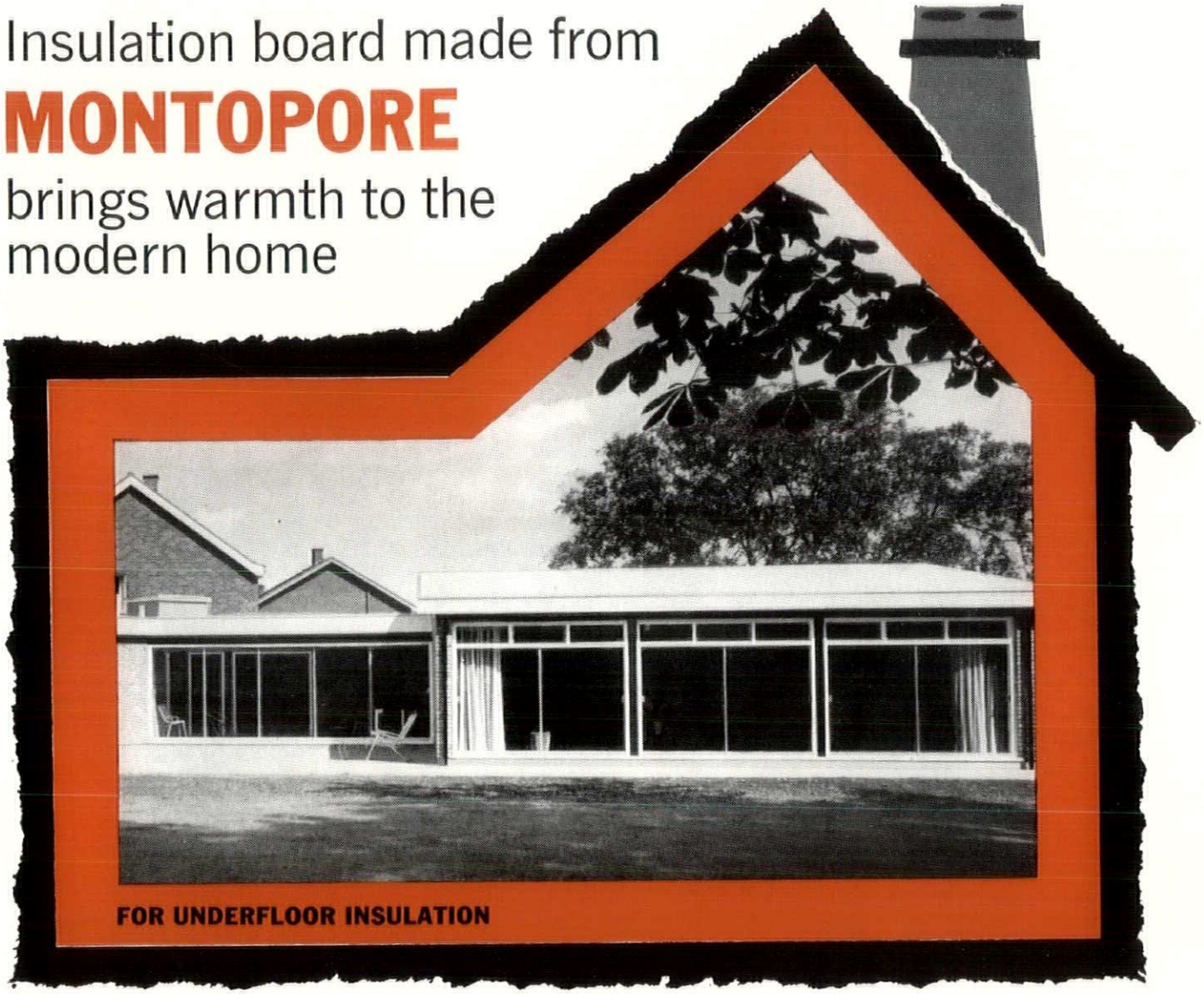

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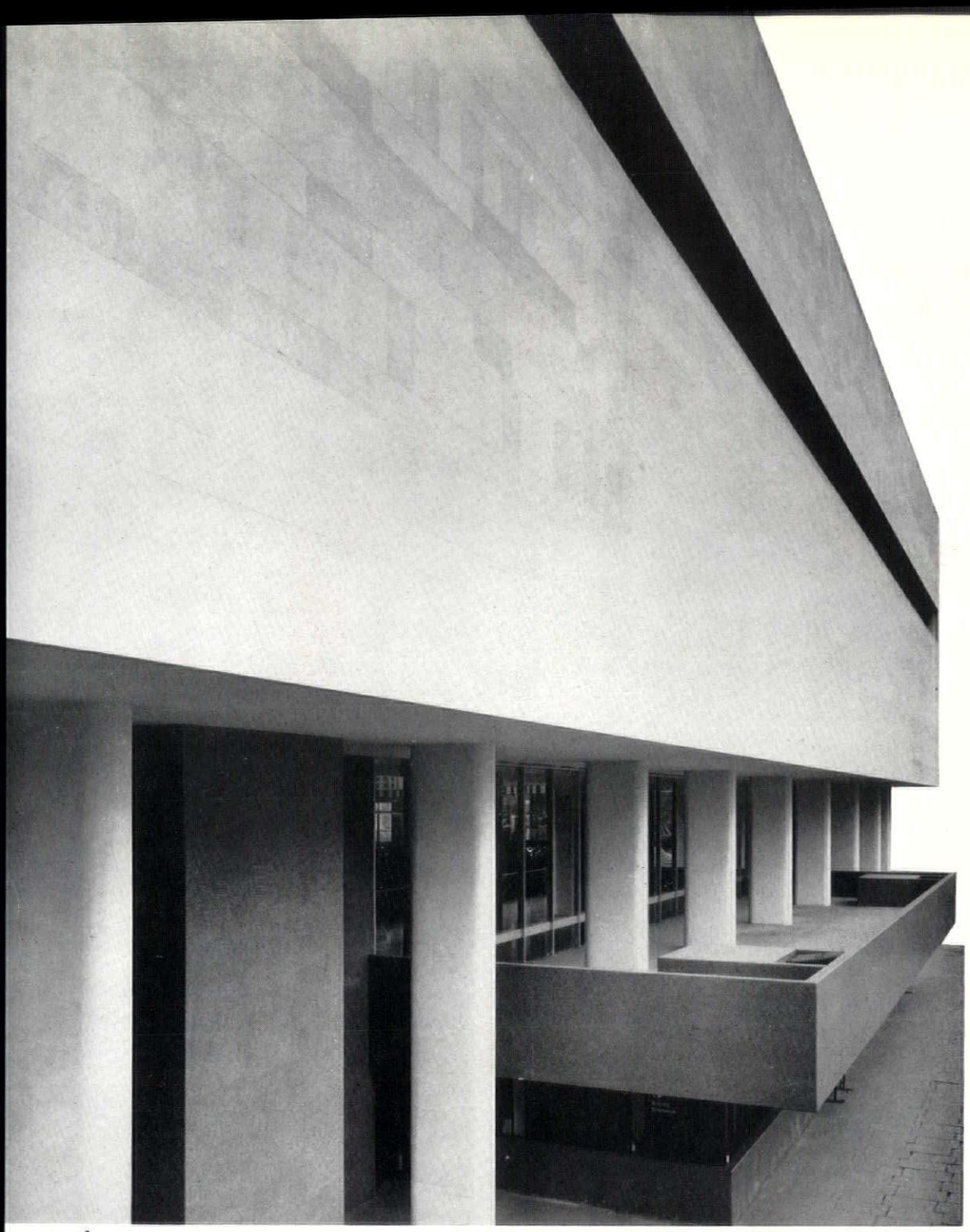


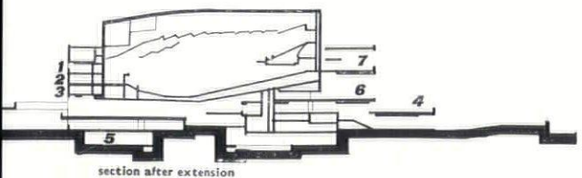
1

MISCELLANY

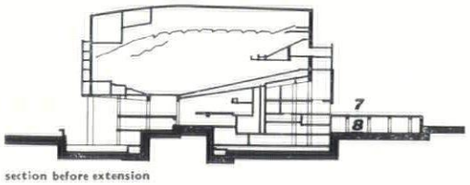
criticism

NEW FESTIVAL HALL

key
1, general offices
2, corps de ballet dressing
3, orchestra dressing
4, pedestrian walkway
5, plant
6, restaurant
7, terrace
8, car park



section after extension



section before extension

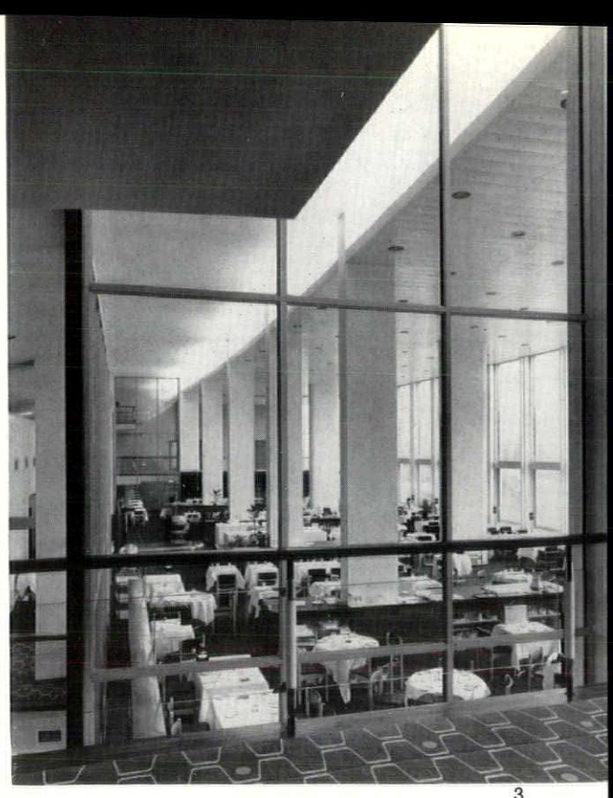
The most difficult time at which to add to a building, particularly one which has a decisive character, is about a dozen years after its completion. Half a generation is long enough for the original design idea to have lost its logic, but not long enough for it to be seen in perspective. This has been the underlying problem of the present LCC architect, Hubert Bennett, and his staff in designing the recently opened final sections of the Royal Festival Hall on London's South Bank. In the interior of the 1949–51 Hall we had a masterpiece of spatial design and, thanks to the humility of the 1962–64 architects (group leader, A. J. G. Booth; job architects, H. V. Abbott and D. N. Wisdom), we still have this masterpiece, even after alterations costing at present prices more than the whole of the original building. Their problem has been one of replanning, not restyling, yet—and this is the point of contention—when faced with external detailing which smacked too blatantly of dated festivity, they have 'trimmed it up a bit.' The LCC say that the original architects were consulted; the principal architect involved says he was not.

As the sections below show, the additions are of two kinds: the enlargement of the whole building by some 30 feet at either end in order to provide facilities which neither time nor money allowed in 1951; secondly, the incorporation of the Hall into a new multi-level system of circulation continuous with the Small Hall and Arts Centre now under construction towards Waterloo Bridge. This has meant turning the building (though not of course the auditorium) back to front, with a new two-level entrance for motorists and pedestrians in place of the previous river-front terrace and car-park. (The cars—50 of them—have been passed on to the already congested National Theatre site in front of the Shell building.) At the Waterloo end, the four upper floors are devoted to much-needed rooms for the orchestra and the ballet, general offices and space for plant. The river front has a greatly extended restaurant with an open-air terrace and larger foyer spaces above and around it. There are more lifts, more bars, more exhibition space. All this is admirably laid out.

Aesthetically, we have a mixed bargain. It must be difficult for middle-aged readers to realize what delicious 'period charm' the Festival of Britain style already has for the younger generation (the author of this note was ten at the time). Its essence was lightness, transparency and a proliferation of pretty materials—all things hitherto forbidden by a siege economy. Internally, the new architects have reproduced the Matthew-Martin style admirably in the public spaces, extending both the



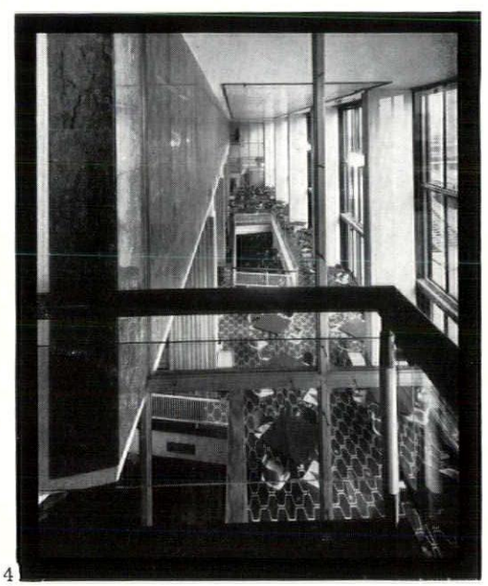
2



3

grey-green carpet with its shimmering hexagons and the equally famous balustrade with its 'cricket stumps' of aluminium, bronze and plastic. Such spaces as the promenade and terrace, 2, and the restaurant, 3, have turned out as perfectly legitimate pastiches. The effect of freely suspended space is even more exciting than before, and a well inserted side window on each side of the promenade gives a calculated wide-screen frame-up of a famous view. Comparison with the original restaurant, 4, however, shows not merely that a piquant stair-well has disappeared, but that the carpet has been exchanged for a rather dull red pattern of no particular vintage. The lower foyers and bars seem to have had their furniture thinned out and slatted screens removed. More important, the new entry from the riverside means that there is a zig-zag approach to the concert hall, no longer the compelling continuity of approach under its rising underside. The auditorium itself, however, is still magnificent, unaltered except for added resonance, improved stage machinery and general cleaning. Spatially it remains breathtaking—with that quality of tautness and 'expectancy' noticed by J. M. Richards (AR special issue, June, 1951) even before the opening.

The exterior of the Hall was certainly never a masterpiece in the same way—but the ingredients were similar and needed only slightly longer in the oven for the necessary cohesion. There was a promising monumentality in the naturally symmetrical *parti* of doubled lifts and staircases. Against this were the blue tile patterns on the flanks, the panels of red-brown tiles on the river front, and the peppering of little windows on the escape stairs. Most of these have now gone in favour of a uniform cladding of Portland stone. The river front, in spite of the loss of the Shot Tower and the graceful masts in front, is undeniably more successful from a distance, 6—few will regret the substitution of the open colonnaded terrace for the famous stone apron in the centre.



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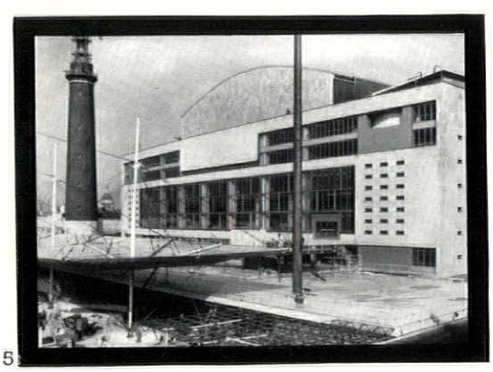

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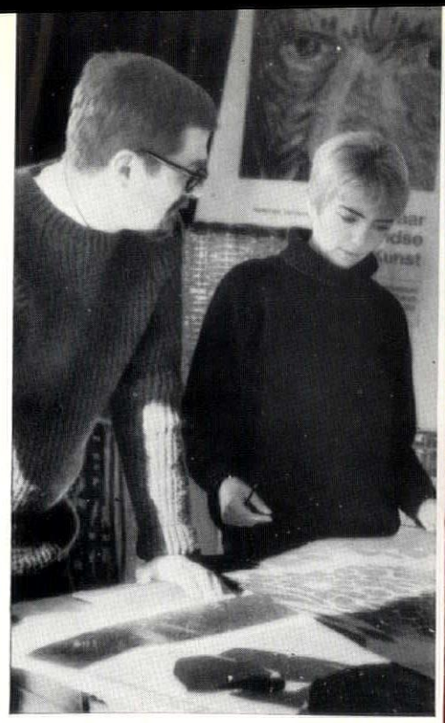

The Aztec heritage of Mexico



From an inspiration by Carola and Daniel Olsen

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Zacatecas. Cotton satin screen print. 50″ wide. Three colourways.

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Edinburgh Weavers search the world for good design

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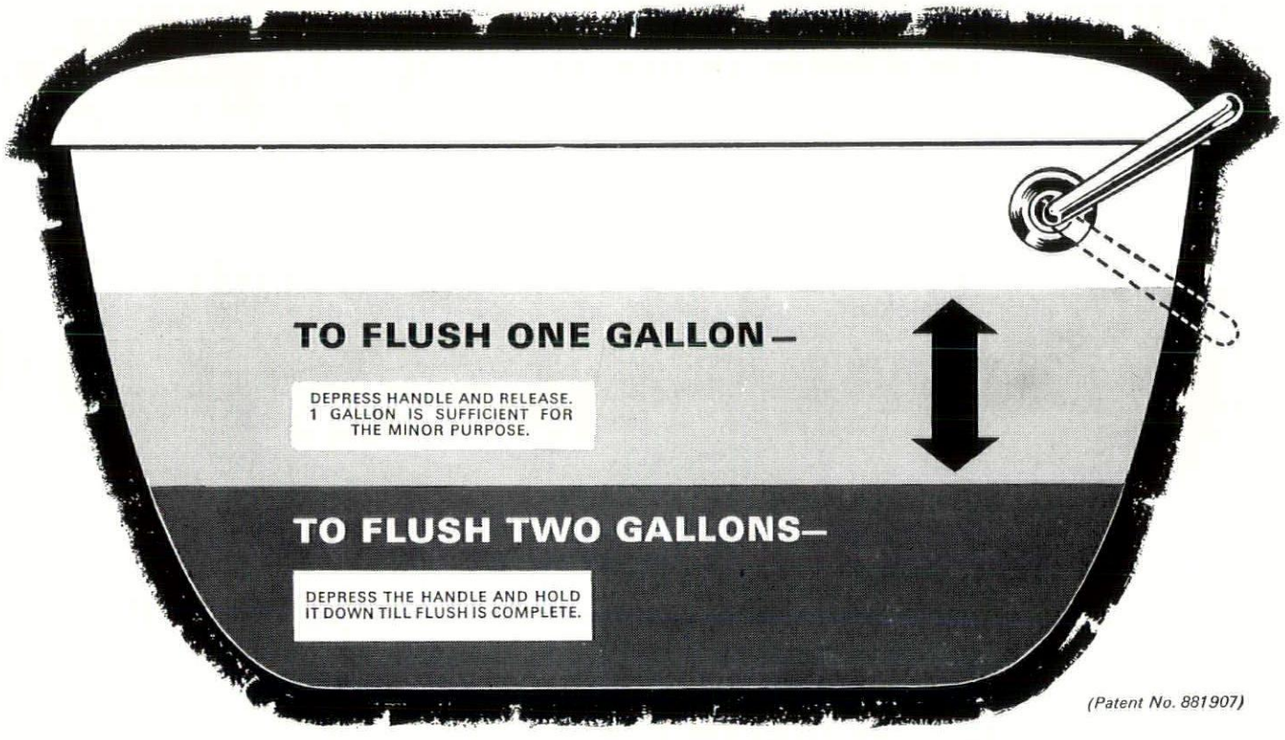

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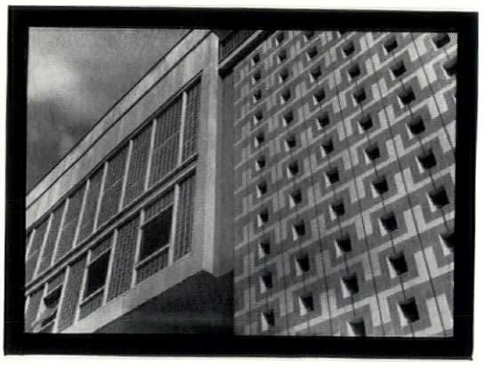
Close to, however, doubts multiply. The Derbyshire marble facing to the auditorium weathered so differently inside and out that its continuity was never convincing; nevertheless the massive core did stand out from the surrounding foyers, 5. With the extension, which unlike that of the Waterloo end was not intended originally, the auditorium disappears from sight, like the dome of St. Peter's behind Maderna's nave. The main new accent is the row of white-plastered columns which rises unbroken through every level; oddly enough, the same miscalculation has been made about weathering, for the open air columns on the terrace will surely go grey. Even though the stated intention has been that the auditorium should rise up in contrast with the new surrounding buildings and walkways, in fact, 7, the heaviness of the restyled front is clearly of the same vintage as the rough shuttered mushroom columns and precast balustrading below.

The real trouble is that the style of the



7



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exterior has been replaced by a non-style. The Portland stone is not even uniform; it has painful blotching where new meets old and where the staircase windows have been blocked. Reaction against austerity has been replaced by reaction against affluence, and the tiling, 8, was no doubt felt to be frivolous. 'In view of the greatly enlarged scale of the surrounding development since 1951,' says the LCC, 'and the



9



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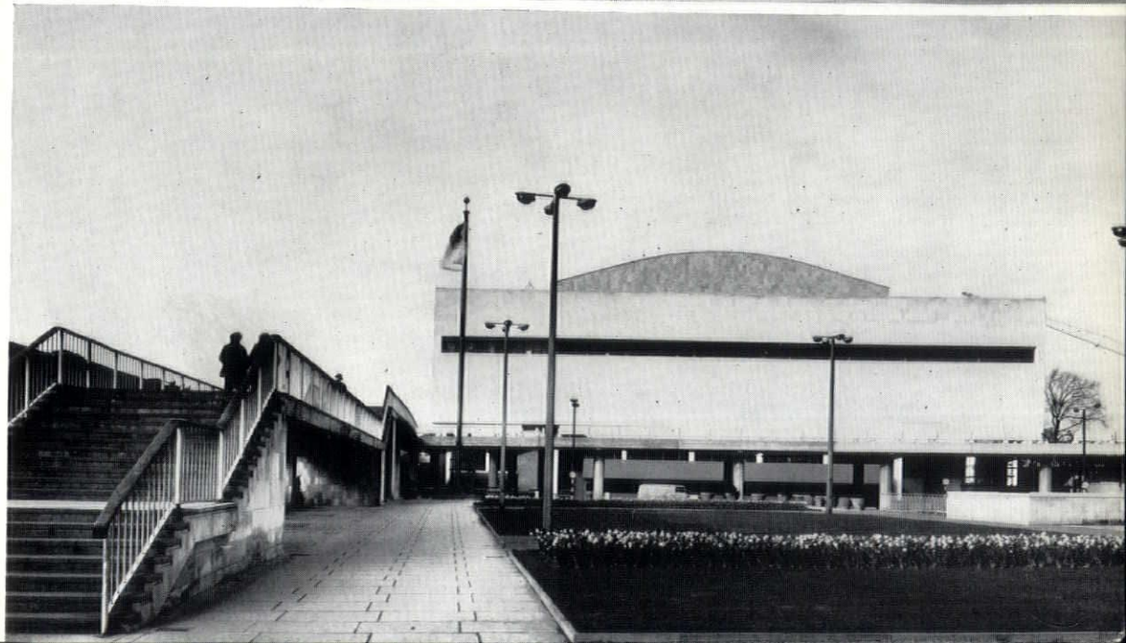
consequent diminution of the Hall, the external detailing has been simplified . . . to scale up the major elements of solid and void.' Yet this argument surely leads to the opposite conclusion: namely that, given the mammoth dullness (and similar Portland



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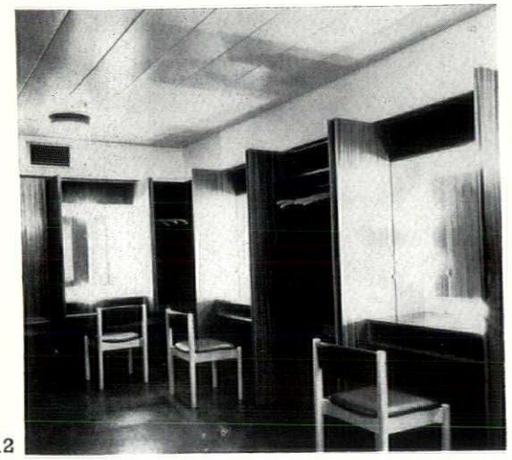
stone) of Shell as a background, 9, the Hall should not have tried to compete in scale, but should rather have been set, so to speak, as a sparkling jewel of culture against the barbarism of profit. Only the central bars and terraces on each side have been kept more or less the same within the cold embrace of the solid flank walls.



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Particularly distressing is the way in which, to quote the LCC again, 'all surfaces below are clad in grey mosaic to unify and neutralize the irregular outline of the structure.'

The original Waterloo front, 10, was only temporary (though oddly it had more monumentality than any other part). It has been replaced, 1 and 11, with an almost Prussian effect of heaviness and 'high art.'

How can the LCC say that they have aimed at 'retaining the typical ideas of the floating box, the light enclosing screen'? Why should only the offices have windows? The rooms for ballet, 12, and orchestra, although no doubt functionally adequate, are a rabbit-warren without natural light and with almost all their furniture in a dark and massive sapele wood—quite different in character from the lightness and grace of 1951, but with few compensating virtues of 1964.

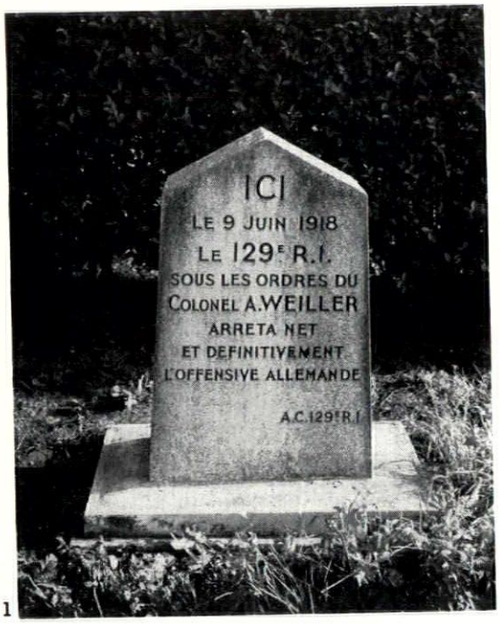
Most surprising of all, given the LCC's fine record in matters of townscape, is the apparent lack of care in the one part of the scheme that is decisively of 1964—the elevated walkways. Admittedly, the whole precinct is unfinished and there will eventually be nothing else as confused as the Waterloo approach, 11, with its three different sections of footbridge (Easton and Robertson 1958, LCC and Arup 1962, LCC and Arup 1964). However, in the paving, for example, there is a clumsy change of direction on the railway side of the Hall, and through the glass screens of the river front there is an awkward change in module between interior and exterior. With the National Theatre and Opera House planned for a site across the railway, a great deal of thought will be needed on the problem of how to prevent the South Bank becoming an empty concentration of culture—Kensington without the Prince. The sheer lack of humour of the restyled exterior of the Festival Hall is a disturbing portent.

NICHOLAS TAYLOR

outrage

RETURN OF THE BARBARIANS

Compiègne, north-east of Paris in the *département* of the Oise, is in the history books as the furthest point reached by the German armies in their invasion of France during the First World War, and the point where they were finally turned back. A monument commemorates the occasion. It was photographed recently by Ivy de



1

Wolfe, 1, who found, however, that if those barbarians were driven away other, native, barbarians are now at work. The neighbouring countryside, 2, typical of that



2





3,4



5

smiling pastoral region, was, at the precise moment the photographs were being taken, the victim of a destructive process as ruthless as any caused by war. 3, 4 and 5 show its successive stages. Huns, it seems, don't only come from the east. With the trees laid flat only the monument stands upright. *Quis custodiet*, etc., is what Colonel Weiller might well ask.

conversion

MUSEUM IN THE COUNTRY



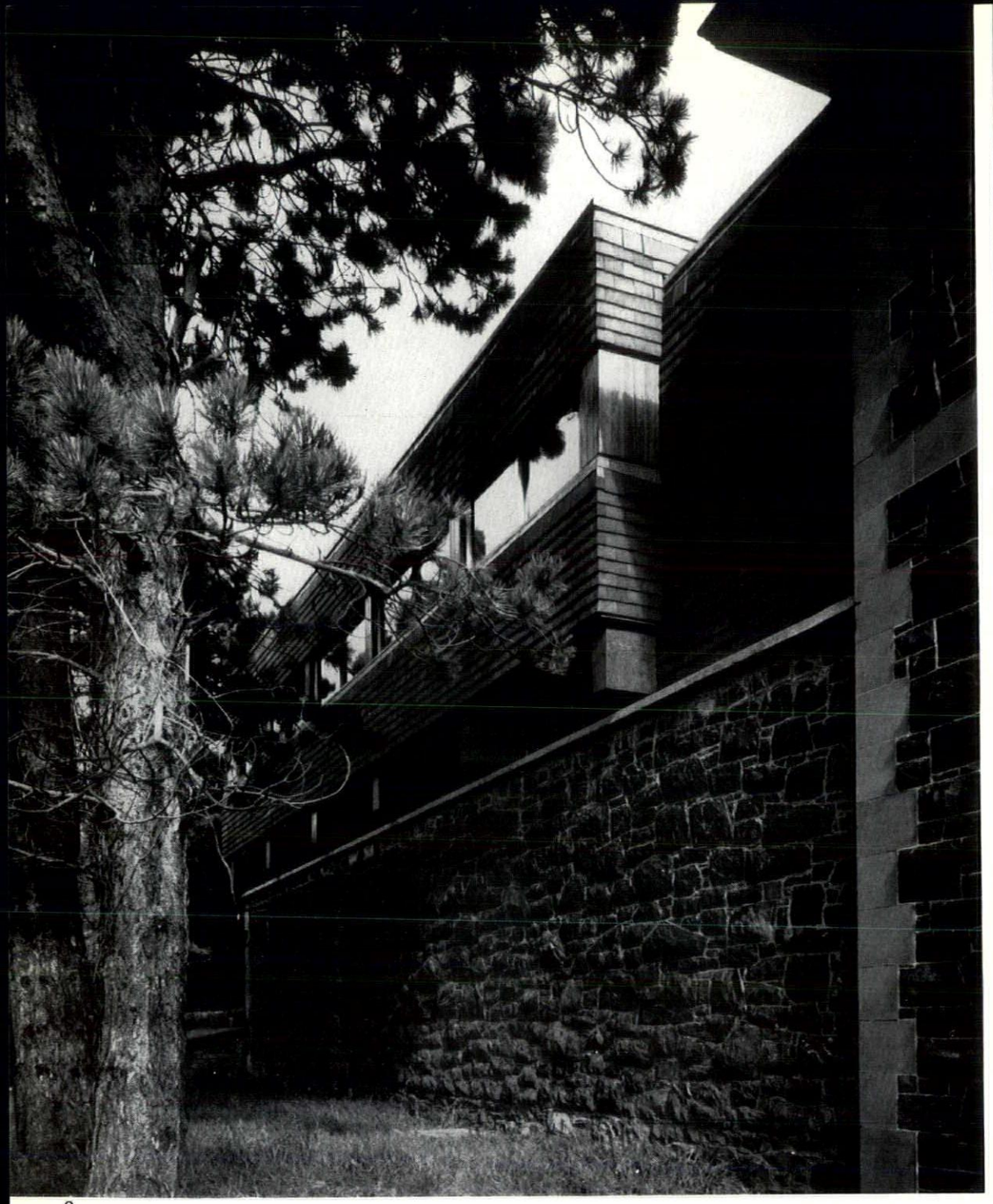
1

The traditional picture of the museum as a Greek Revival building in a city centre is being rapidly superseded by the growth of folk and science museums, on the Skansen model, which require a great deal of space for both indoor and outdoor exhibitions. The Ulster Folk Museum, opened last summer at Cultra Manor, eight miles out of Belfast, is typical of the trend, and in this case the work of conversion has been done to a high standard with Robert McKinstry as architect, in association with Ian Campbell.

Built by the Kennedy family in 1902–4, Cultra Manor is a dour but dignified pile in the local whinstone. The three parts of the house can be clearly distinguished in 1: the main living rooms, the servants' quarters and (behind the tree) the garage

courtyard. The success of the conversion scheme lies partly in the apparently 'natural' re-allocation of these three parts. The main rooms have become exhibition areas, the servants' quarters have become workshops and library, and the garages, besides their use for delivery and storage, have had an extra floor of administrative offices added. This extension, 2, is a laminated timber structure, clad externally with blue-black tiles matching the whinstone, and internally with horizontal pine boarding, 3. The office space, open at present, can be partitioned if necessary.

In the exhibition areas, the shape of the main ground-floor rooms has been kept, apart from the removal of mantelpieces and chimney breasts. There is an overall white background, except in the tea room, where the Edwardian flavour of existing plasterwork and doorways has been height-



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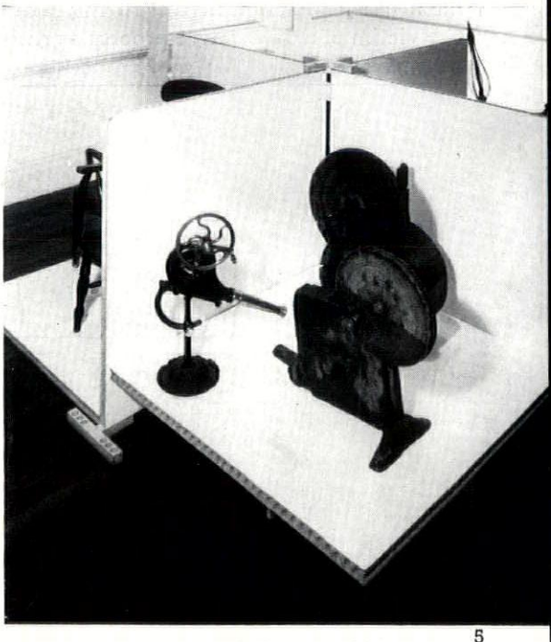
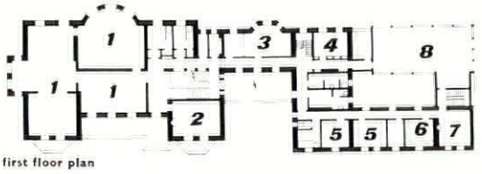


5

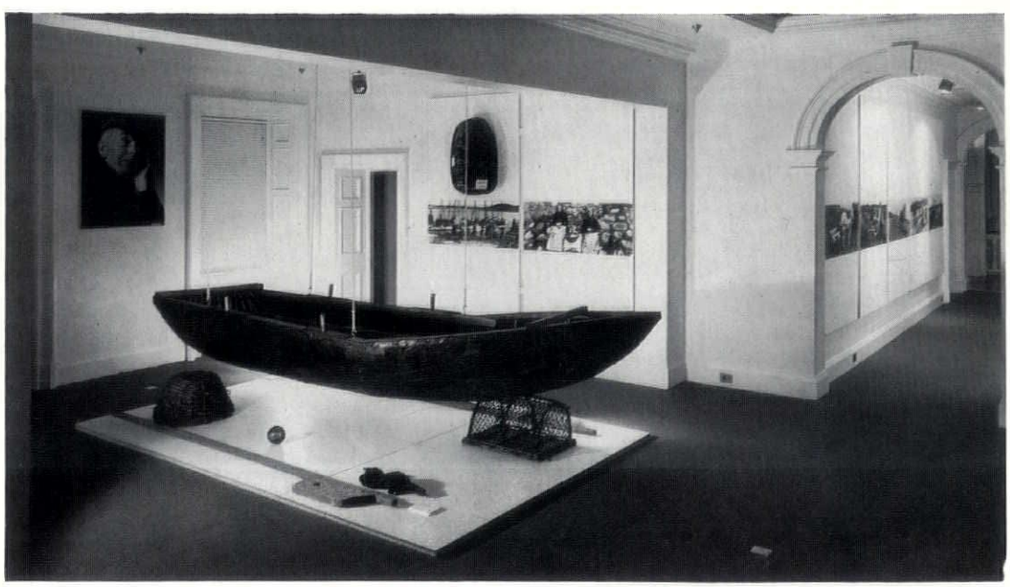
key
1, exhibition area
2, board room
3, general office
4, director
5, bedroom
6, kitchen
7, living room
8, office



first floor plan

6

ened with a sage green Morris wallpaper. The first exhibition is experimental and introductory, so there are no permanent display cases. Instead, a most interesting technique with tables has been invented. On the ground floor, 4, where the subject is 'The Home,' the low white tables stand out against the teak flooring. The tables are made of 2 in. thick proprietary partition panels, cut into 4 ft. squares and set on cruciform bases made of interlocking pieces of 1 in. blockboard. Wood dowels fixed into the row of holes (which form visually an attractive frame for each table) are used to secure together stands of equal height; the dowels with small cruciform and T-shaped fixing pieces allow the panels to be set vertically, 5, to form space dividers and backing for exhibits. Objects needing protection are displayed under

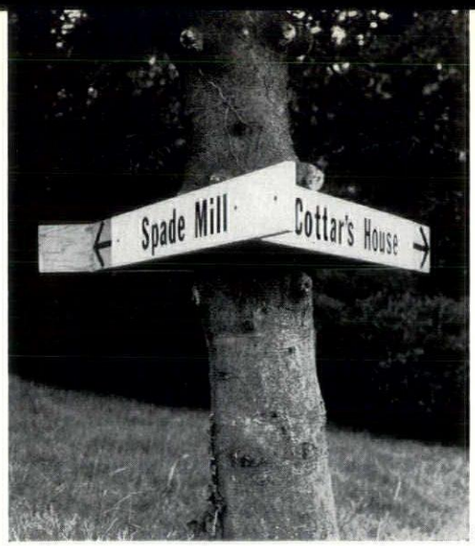


7

pyramidal plastic rooflights (seen in the foreground in 4).

This technique enables the evocative abstract shapes of traditional implements and artefacts to have the maximum of impact, silhouetted at varying heights and constantly changing their relationships with each other as the visitor moves round. Upstairs, where the flooring is of cedar brown sisal carpeting, the exhibition of 'The Harvest of the Land and Sea' achieves effects of surprising grandeur, 6. There is a very successful use of blown up photographs of traditional industries, taken mainly in 1912. These are set against 8 ft. by 4 ft. blockboard panels painted white. Spatially, there is a quiet continuity where the bedroom walls have been removed to accommodate larger objects such as a Donegal curragh, 7.

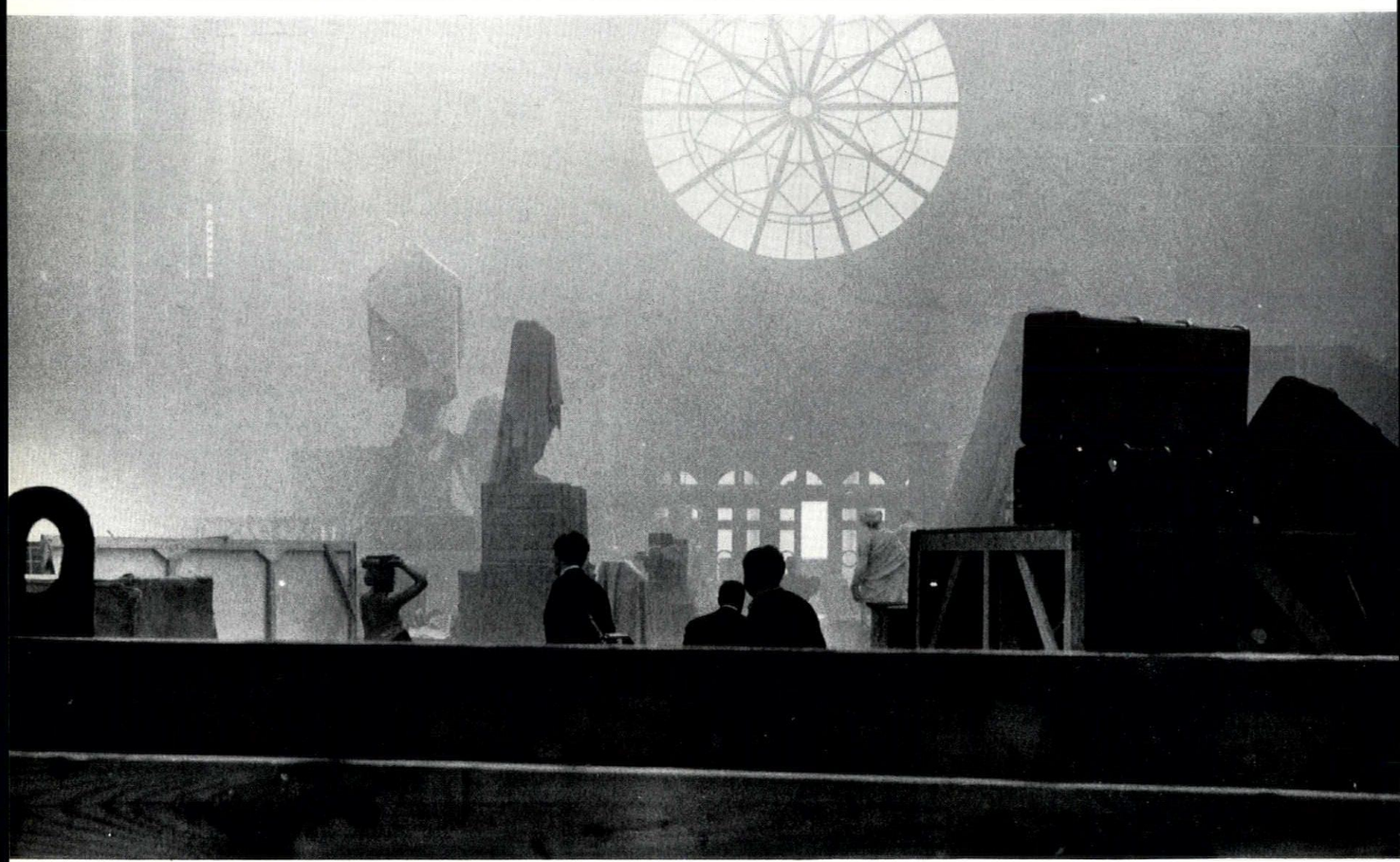
Fortunately, the same care has extended to the outside exhibits. Eventually it is intended there should be a large folk park; already the museum has re-erected an eighteenth-century cottier's house and a mid-nineteenth-century spade mill. The architects have designed sign boards, 8, many of them fixed direct to trees, which match the unpretentious dignity of the objects on show.



8

ambience

PROGRAMME BACKCLOTH



The new series of the BBC's fortnightly television programme on the arts—'Monitor'—compèred by Jonathan Miller, was launched—imaginatively and aptly—in the haunted halls of Alexandra Palace. As these photographs, taken by Nicholas Harper during rehearsal, show, the self-confident spanning of space, the misty romanticism of the background, the sculp-



tured virtues and the symbols of imperial power displayed against crated products of industry, together with the hint of moral uplift in tracery and organ pipe—all so characteristic of their period—provided a wittily sympathetic setting for this most Reith-like of programmes.

Scenery 'as found' perhaps, but searched out, observed and used with enough sensibility to arouse hopes that in future Monitor programmes architecture will receive equally sympathetic treatment (the flutteringly inconclusive interview with Philip Johnson, in which no attempt was made to put his work into perspective for those to whom his idiosyncratic sentiments must have given an utterly misleading picture of modern architectural ideas, may be excused as a temporary lapse).

Appropriately enough it was from the Alexandra Palace (John Johnson, 1873–5), as the older MARS members will remember, that, nearly thirty years ago, John Summerson—his El Greco face flickering uncertainly on the primitive television screen—declared open that epoch-marking MARS Group exhibition staged in the New Burlington Galleries in 1937. The Palace will no doubt house many more revolutions in taste before it is finally allowed to disintegrate, but its present users clearly know the visual value of what they have got.

H.C.

SKILL

PLASTICS: TECHNICAL PROSPECTS AND ARCHITECTURAL IMAGERY

In this second and last instalment David Kirby completes his review of realizations in plastics and goes on to consider the urban projects of Yona Friedman and Arthur Quarmby. He questions whether, in our imaginative interpretations, we have really understood the technical prospects; and, in particular, our fixed notion that plastics are best suited to produce plastic sculptural form. The article finishes with a consideration of the industrial and intellectual climate in the main centres for plastics endeavour.

It is essential to the fabrication of thermoplastic materials that they be produced by means of expensive moulds and machinery, unlike some of the resin products—whether reinforced or not—which may be fabricated by hand application on low cost moulds for prototype purposes. Studies involving the use of thermoplastic materials have therefore tended to be less 'advanced,' particularly when compared to the structural applications in GRPE. Greater detail potential in shape, a wide variety of materials and the possibility of lower prices all suggest that thermoplastics will provide the larger tonnages of plastics materials absorbed by the building industry; at the same time, the type of application—panelling, service pipes and the like—requires close contact with the regulations and the acceptance attitudes of the conventional building industry. It may be for these reasons that it was not until 1959 that the first 'house,' designed as a composite of plastics materials, with the stipulation that all components should be commercially available, was erected. The German company, Dynamit Nobel Ag., undertook the development to the designs of Ing. Frenz.[1] Sandwich panels of phenolic foam and melamine laminated sheet were used for the walls—thermosetting materials, but restricted in form by the requirements of heat and pressure during manufacture. The frame construction was of PVC coated steel sections, epoxy-glued at junctions. In addition to the main construction, plastics were used as extensively as possible on finishes and services.

The first British contribution to this history does not appear until 1961. Perhaps typically in the current building situation, the initiative came from official architects, in the Eastern Region of British Railways, who designed the small signal relay room, constructed at Stanford-le-Hope in Essex,[2] by Mickleover Transport. Although formally bearing a relationship to both Schein and Monsanto, the concept of a set of shells, able to cope with a variety of room sizes, is a further step forward in development. The double curvature shells are effectively double skin lamina. An outer face of $\frac{1}{8}$ in. GRPE, a core of phenolic foam and an inner face of $\frac{1}{8}$ in. GRPE make up the shell, with pure resin flanges to take the services and assembly bolts.

This development is the forerunner of several schemes, which are linked by some of the personalities involved. Arthur Quarmby, an architect in the design group, has since developed a number of advanced structural concepts, which are discussed later; Mickleover Transport Co., the development contractors, have used the original moulds as the basis for several projects, notably the Telephone Exchange at the factory of Bakelite Ltd (1963), in conjunction with S. Smith as architect, and also the British Antarctic Survey laboratories (1963). These had to be transported to the site, floated ashore in sections and erected by unskilled labour (the scientists for whom they were intended) in the brief summer season.

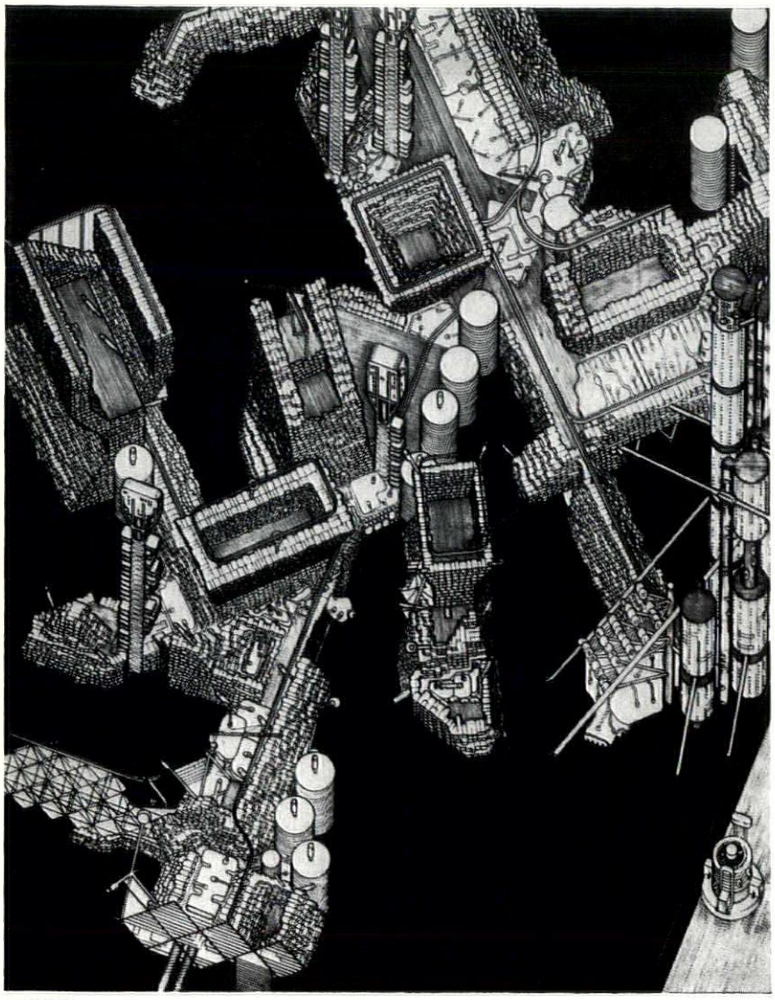
The 'Buege' house in Midland, Michigan, USA,[3] is an exceptionally interesting development in the 'conventional replacement' category. To

[continued on page 394

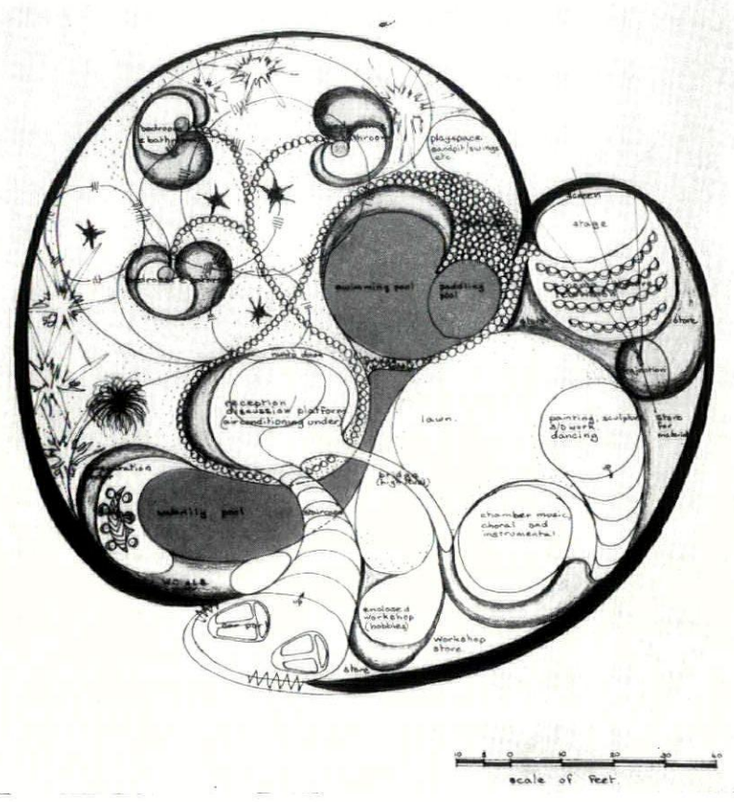
[1] Technical description in *Kunstoffe*, 1960, No. 6.

[2] See *British Plastics*, April, 1961.

[3] See *Modern Plastics*, December, 1962, p. 94.



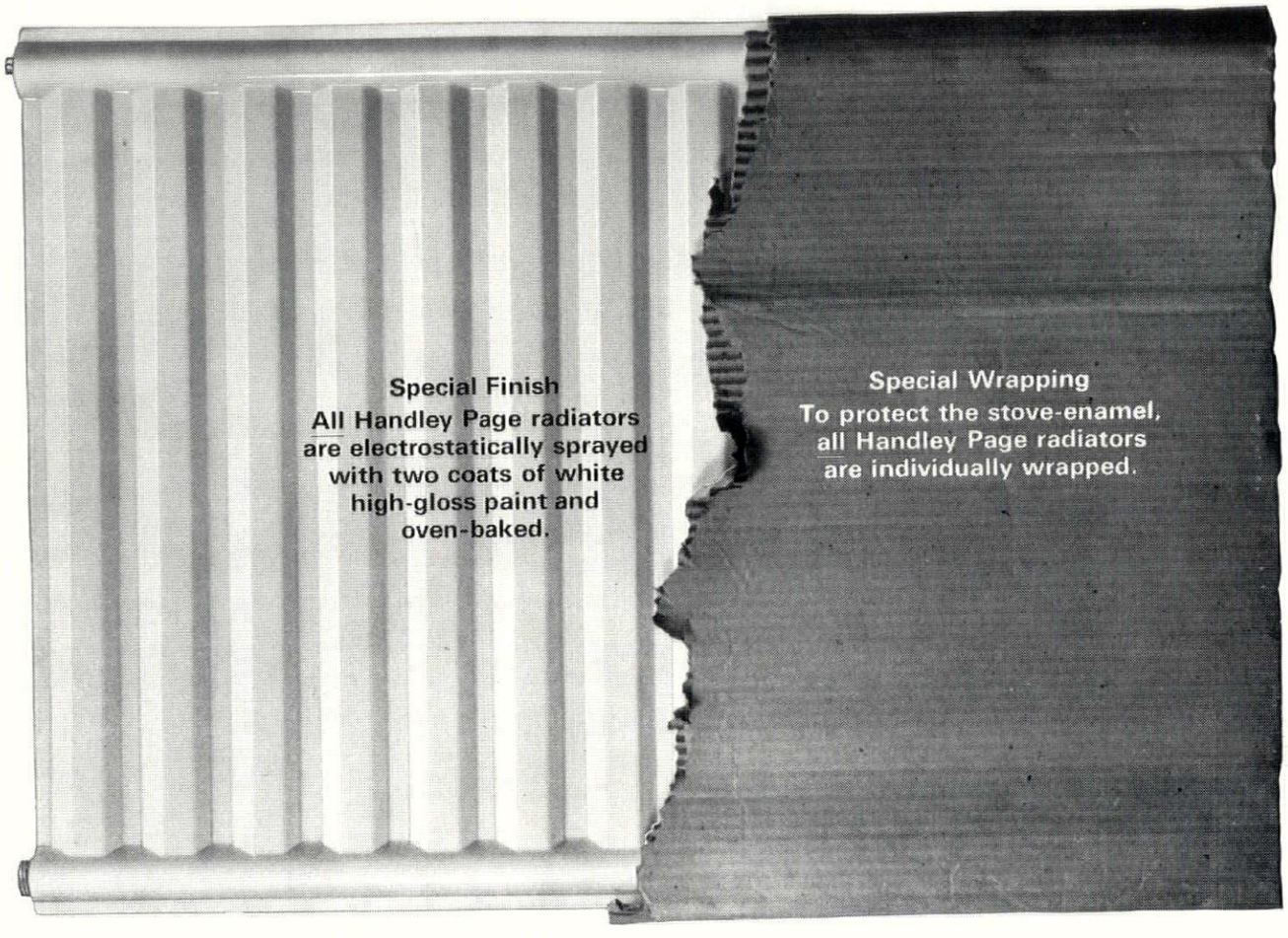
1



2

1, Plug-in City, a project by Warren Chalk, Dennis Crompton and Peter Cook, 1964. 2, project for house and garden by Arthur Quarmby.

Two special extras without extra cost



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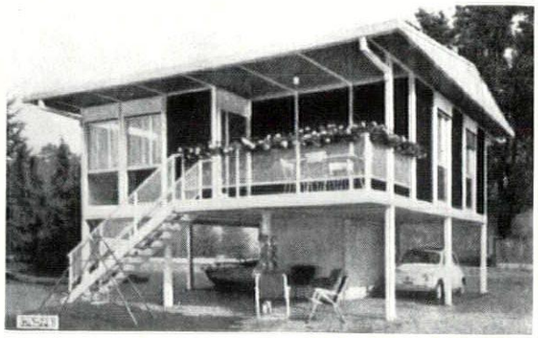
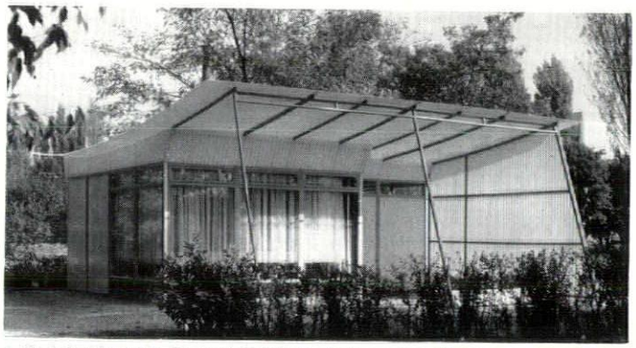
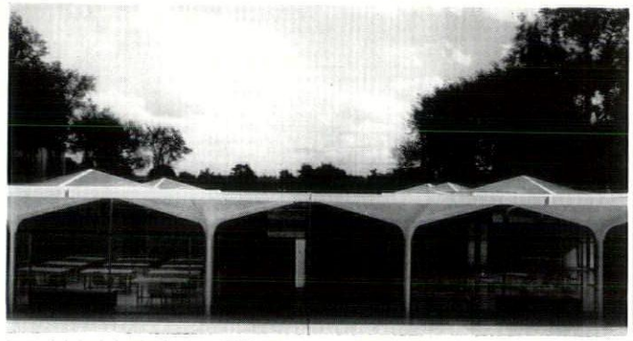
WR7

Plastics building projects: a classification

	1959	1960
A user directed performance in use trials subjective reactions information for the use of the constructor information for the building industry	 3, *holiday house by C. Pea and M. Maino.*	
B production directed material data engineering data engineering trials pre-production prototype	 4, *Troisdorf house by Dynamit Nobel Ag. Designer, Ing. Frenz.*	 5, *prefabricated schoolroom, MIT.*
C design directed idea investigation formal study future prediction		

continued from page 392]

quote *Modern Plastics*, in American style:

'Taken as a whole, it's an exciting mosaic of modern plastics art and technology that should convey a convincing message to architects and builders.' The most important aspect of this house is the use of plastics as additives to inorganic compounds. Resin supplemented mortars enable 4½ in. brickwork to be load bearing up to two storeys and can eliminate lintols over garage door spans. Similar additives may be used in concrete to produce lightweight or high strength and rapid hardening properties. Some of the cheaper resins, such as phenolics and ureas, added to local earths might, by these techniques, provide more effective disaster area housing than the more sophisticated, exportable structures sometimes suggested.

In 1963, the Plastics Development House, built for Imperial Chemical Industries, Plastics Division, by the Research and Development Group of John Laings, was announced.[4] Structurally one of the most conventional of the buildings discussed here, it contains a number of specific experiments, particularly concerned with the performance of materials, alongside a wide variety of 'off the peg' applications assembled together for performance trials and information purposes. It is significant of the need for this type of information that technical visitors to the house in its first year totalled approximately 4,000. Where design directed research frees the mind for the next development stage, this type of work prepares the committee which will finally approve it!

In the same year, Arthur Quarmby, an architect previously mentioned in connection with British Railways work, published his proposals for a multi-storey construction system for producing high towers of flats.[5] The technical thesis of this work is that intelligent design can overcome most of the limitations of plastics materials, enabling the advantages, particularly light weight and mass production, to operate to produce living conditions at once superior to existing ones and capable of being changed to keep pace with modern developments.

Quarmby's proposal consists of a central shaft of precast concrete 'scoops,' each one bearing two shells of plastics material. These shells contain the living units, which may be changed by a crane situated on top of the central shaft. Changing may be undertaken for population mobility, the shell moving with the inhabitant and being rehooked on to a similar tower in some other part of the country.

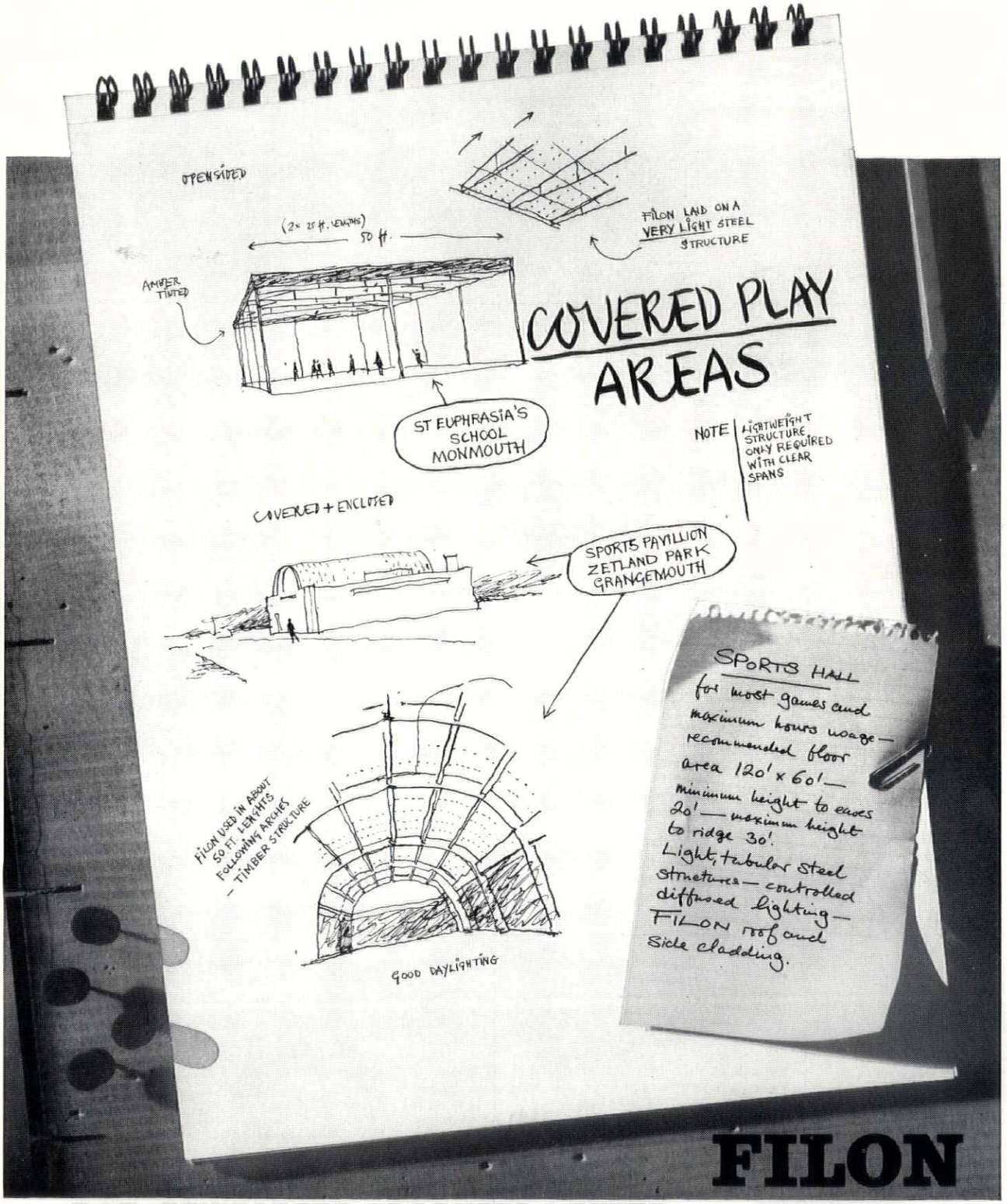
The shells have 'sweeping out rooflights'; the main living room window is likened to a 'bomber blister,' sweeping around the room and even cutting into the floor area to provide 'a remarkable view.'

This interest in vast space is emphasized in Quarmby's later scheme: *House and Garden, a re-interpretation*, published in 1964. He states that modern housing suffers from the lack of open space and an atmosphere of contemplative calm and suggests that one cure is to open our houses to the sky space, utilizing a transparent dome to provide environmental control. By involving both house and garden within this control, further space is released into the house, which contains a long series of highly specialized spaces. If all the activities catered for were being pursued, there would appear to be little opportunity for contemplative calm. Quarmby has, however, a real point in the exhilaration provided by the sky space. James Stirling, in a lecture on his work, stated that the students in his Leicester University Engineering Department, with its large areas of

[4] See *The Architects Journal*, August 28, 1963.
[5] 'Techniques et Architecture,' *Matieres Plastiques*, No. 4.

[continued on page 396

PAGES FROM AN ARCHITECT'S NOTEBOOK:



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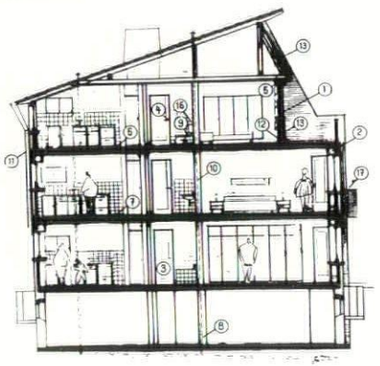
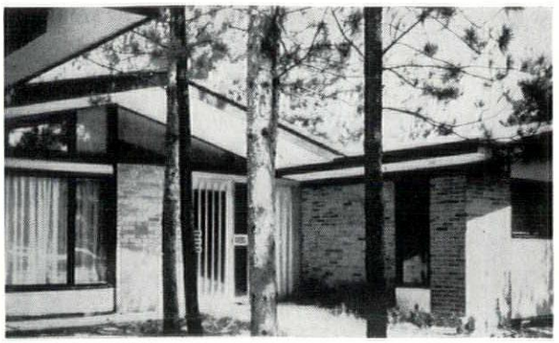
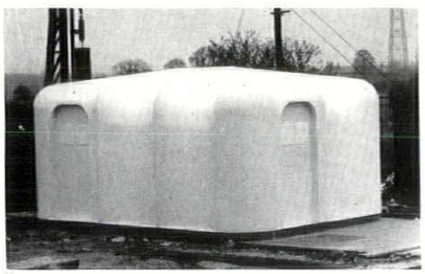
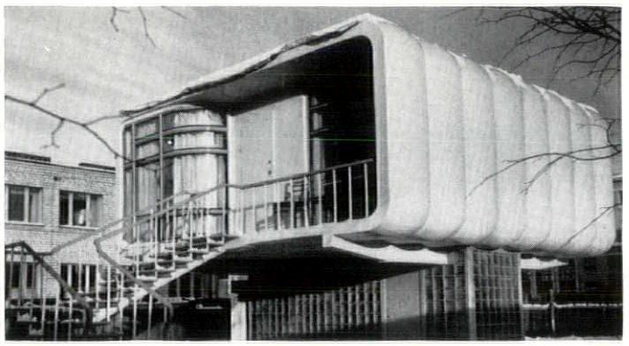
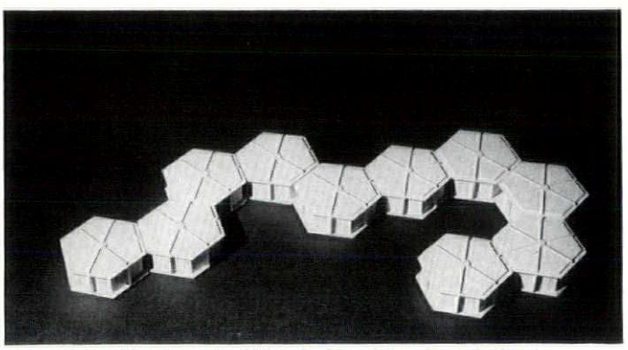
Plastics building projects: a classification (continued)

	1961	1962
A user directed performance in use trials subjective reactions information for the use of the constructor information for the building industry	 6, *plastics house, Chemische Werke Huls, Germany.* key 1. rain guttering at window frame 2. venetian blinds 3. door facings 4. door surrounds 5. decorative strips 6. floors 7. skirting boards 8. cold water pipes 9. pressure pipes in toilets 10. internal outlet pipes 11. guttering 12. attic balustrade (inside) 13. attic balustrade—exterior cladding 16. w.c. cistern 17. balcony cladding	 9, *Buege house, USA.*
B production directed material data engineering data engineering trials pre-production prototype	 7  8 7, *signal Relay Room, British Railways, Eastern Region.* 8, *plastic-faced panels with phenolic cores for multi-storey flats. LCC Architects Department.*	 10, *Leningrad house, USSR.*
C design directed idea investigation formal study future prediction		 11, *experimental housing units, Milan, by Manufattura Ceramica Pozzi.*

continued from page 394]

glass roof and wall, do feel acutely aware of the changing weather states around them and enjoy the heightened consciousness thus provided.

The *House and Garden* is a highly individual statement, but the elements—precisely allocated spaces with nature fully tamed by environmental control and all sense of social involvement removed, suggest an ultimate in suburban isolationism. In this context, the arbitrary shapes must be called in question and one is led back to the multi-storey structure. Are such free shapes so essential to plastics? If they are, are they ergonomically convenient for habitations? If they are not convenient, will not people seek preferable materials?

Fantastic architecture has an extensive literature of its own.[6] It is not until the late 'fifties, however, that concepts of dynamic structures as part of major town units begin to be discussed. Kenzo Tange in Japan, Yona Friedman in France and the members of 'Team 10'[7] all suggest free space structures, independent of existing cities, utilizing modern transport methods and providing hierarchies of life for the various building elements. The most detailed of recent schemes has been the 'Plug-In City'.[8] Basically, directly related to Friedman's ideas of an over-structure, the study investigates the technical aspects of producing a living environment within such a framework. Although the techniques of overhead crane and plastics capsule resemble Quarmby's work, the attitude is, in some respects, more social—however, the social concern only extends to the up-and-coming inhabitants of go-ahead Plug-in, the old folks and families still apparently being left in the by-passed ancient cities.

Priscilla Chapman, in reviewing *Plug-In City*, quoted 'an eminent designer' as saying that the scheme 'would need a dictator.' The historical content of this article has tried to show that the full range of idea experience, from brilliant innovation to solid checking is available on plastics, as it is, in fact on other 'new materials' too. It is seldom that those interested in one aspect are sufficiently aware of the other but this is an educational problem. What cannot be so readily shown is the cost of this type of work, which is frequently beyond the comprehension of those involved in normal building. To achieve a simple application in plastics, replacing a conventional application by a new material, will involve, in addition to the tooling, machine and development costs, a considerable delay while acceptance, official and commercial, is gained. More speculative projects, involving both technical and commercial risk, would always be subject to careful scrutiny, even by a dictator, who would probably have many outlets for his limited stock of capital. Complex development tends to be an accretory process, therefore and it is interesting to examine, by way of conclusion, the systems which have themselves developed in different countries to deal with these problems.

USA: The distinguishing factor in America is the close co-operation which exists between the Government authorities, the universities and industry. The long history of co-operation between MIT and Monsanto in this respect is classical. More recently, Ann Arbor Uni-

[continued on page 398

[6] *L'architecture d'aujourd'hui*, June-July, 1962. *L'architecture d'aujourd'hui*, June-July, 1964, 'Recherches.' *Fantastic Architecture*, Conrads and Spehrhich, Architectural Press, as well as historical works and other journals.

[7] Team 10 Primer, *Architectural Design*, December, 1962.

[8] *Sunday Times*, September, 20, 1964. Amazing Archigram 4, Spring-Summer, 1964. Published Cook, 59 Aberdare Gardens, NW.



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Plastics building projects: a classification (continued)

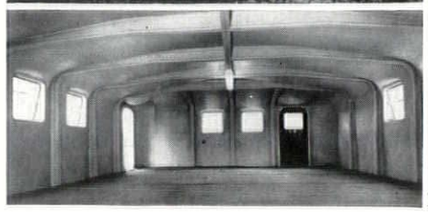
1963

1964

A user directed

performance in use trials
subjective reactions
information for the use of the constructor
information for the building industry





12, *ICI Plastics Development House. John Laing Research and Development Group, architects.* 13, *telephone exchange at Bakelite Factory. Architect, S. Smith.*



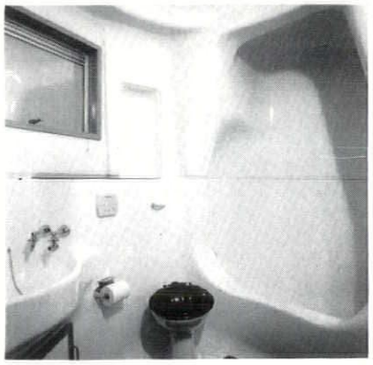
17, *plastic sheeting at New York World Fair.*

B production directed

material data
engineering data
engineering trials
pre-production prototype



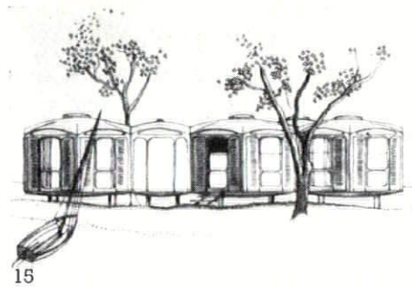
14, *continuously laid polystyrene foam dome, Ann Arbor University department of architecture and Dow Chemical Co.*



18, *bathroom in ICI prototype service core at IBSAC exhibition.*

C design directed

idea investigation
formal study
future prediction



15



15, *design for summer chalets by John Prizeman.* 16, *project for a block of flats by Arthur Quarmby.*

16





19, *exhibition dome, Afghanistan, by Buckminster Fuller.* 20, *prototype mass-produced housing by Hausermann, Lanodetti and Horchel.*

19

20

continued from page 396]

versity, Michigan, under Professor Paraskevopoulos, has been commissioned by the State department to study low cost housing. This work has then involved various manufacturers developing possible solutions, with Ann Arbor's architects co-operating with the technicians to produce prototypes and building studies.

Germany: The technical colleges in Germany also serve many of the testing functions carried out by the Department of Scientific and Industrial Research in this country. This tends to integrate academic and industrial effort to some extent. The most famous institution, the Hochschule fur Gestaltung at Ulm is supported by the Federal Government. In addition, the policy of accepting industrial commissions has led to many successful developments. They have not been so successful in building as in other industries however; building in Germany is strictly governed by regulations and building consumers are said to be extremely conservative.

France: In France, the individual carrying out research into form at its most advanced appears to flourish through the pages of the journals. In fact, the constant complaint[9] is lack of official support or action.

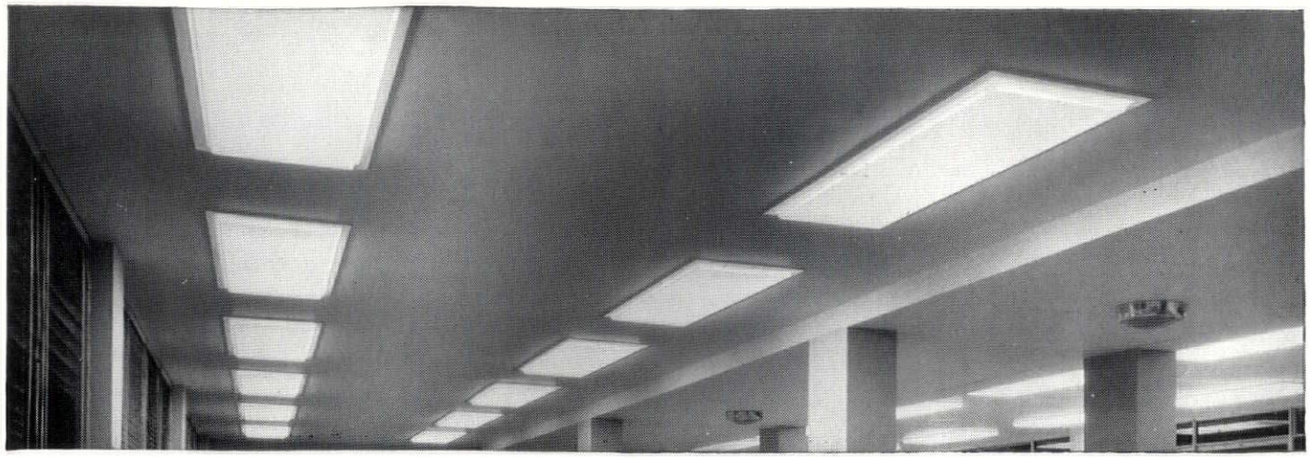
In the smaller European countries, official research and development departments are closely integrated with the official executive functions. Rational planning and improved techniques therefore tend to progress gradually but the resources to make a drastic breakthrough are generally lacking. Comparing the USA and Germany, a strange contradiction is perceptible: in the latter, town dwelling attitudes, familiarity with central authority, and the tendencies of many of the best designers all suggest the need and opportunity for an exciting breakthrough in new techniques of housing. However, rigorous building regulations and fixed attitudes to construction bar the way and the consequence might appear to be a growth of 'bungalow-stil' ribbon development as prosperity rises.

In the USA, however, development is uninhibited by cost, regulation or attitude. It is doubtful, however, if urban schemes would meet with general approval, although this factor might change. The detachment of the 'House of the Future,' the isolation of Quarmby's House and Garden, may perhaps be more in tune with the realities of the situation than the dense, urban developments favoured by Friedman or Cook. Since both these houses could never be cheap, the image of the low cost house may require re-appraisal.

The situation in Britain is, however, unusually exciting. Chronologically, it will be noticed that Britain was late on the scene with plastics houses. During the past few years the situation has changed; the group of developments around the original relay station, while showing a strong streak of opportunism, have added to the general experience of plastics structures; the Service Core Unit development of ICI building development group, with its stated aim of commercial production of a large, complex plastics component and the engineering studies of Professor Makowski at Battersea have all attracted international interest.

At the same time, architectural and social developments by the LCC, by Sheffield at Park Hill and in several other areas, suggest a climate in which apparently fantastic schemes may well flourish. The most exciting prospect of all at present is the proposals for a new town in Buckinghamshire, which, if it is to fulfil its promise must surely call upon the new materials of our time.

[9] See Marc Gaillard, *Arch. d'Aujourd'hui*, June-July, 1964.



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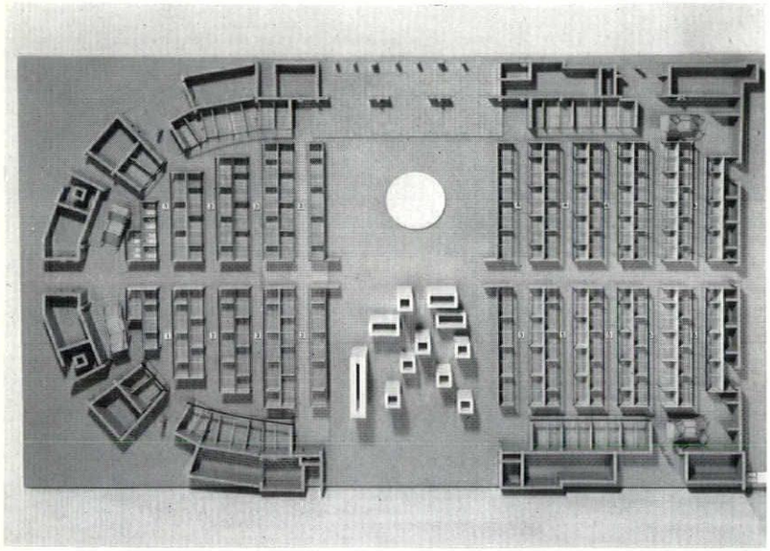
THE INDUSTRY

Model system

The use of models as a means of communication between architect and client is sometimes inhibited by the cost of preparation, the necessity for swift decision and the obsolescence of the model as changes are made. Although the Danish Modulex System has a modular basis and therefore a restricted use, it could be a valuable tool in internal planning, 1, and the presentation of buildings, 2. The range of components is small but the design of the system is ingenious and comprehensive within its intentions. Because the design is necessarily semi-abstract, use can be extended to industrial layout, town planning, traffic analyses *et al.*

The components are made of plastic and no adhesives are used. The module of the system is 5 mm. There are three standard assortments priced at £47, £49 10s. 0d. and £87. Standard packs of additional parts are available.
Modulex 3-Dimensional Planning Ltd., 62 Brompton Road, London, SW3.



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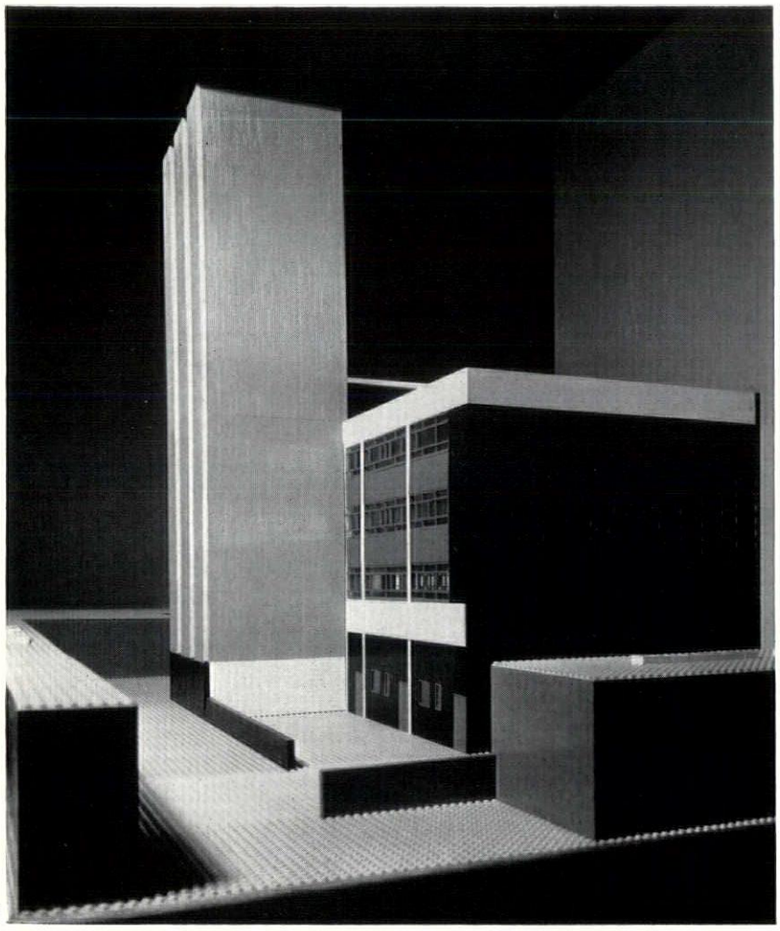


2

Restoration of timbers

A technique for the restoration of timbers which have been attenuated by rot or worm has been marketed under the name of 'Insitim.' This consists of a rigid bulk element which is mixed with resin-bonded glass fibres and is claimed to make possible the repair of timbers in situ. It is said to confer strength although it is reasonably light. The technique appears simple: the rotten sections, 3, are cut away, the surrounding areas burnt and the cavities are filled with 'Insitim,' 4. A corresponding material, 'Insiplas,' is used for plaster-work.
Cuprinol Preservation Centre, Grosvenor Gardens, London, SW1.

Perforated bricks

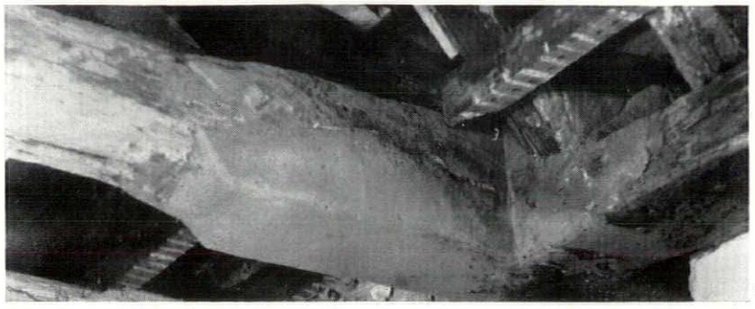
The strength of very strong perforated bricks compared with high strength solid bricks has been indicated by recent tests carried out at the Building Research Station. The tests were made with perforated bricks with 16 per cent and 25 per cent voids. Details of the tests which may encourage wider use of perforated bricks are clearly given in the publication *Calculated loadbearing brickwork: Supplement one.*
Sussex and Dorking Brick Companies Ltd., Graylands, Horsham, Sussex.

Ceramic wall tiles

A model range of forty colours has been selected from BS 2660 with the advice of H. L. Gloag. The total range of eighty colours now available also includes five new mottled colours and sixteen stock delivery colours. The range of strong colours is, perhaps not surprisingly, limited.
Carter Tiles Ltd., Poole, Dorset.



3



4

CONTRACTORS, etc

Teachers' Training College, Streatham. *Architects:* Leonard Manasseh and Partners. *General contractor:* Allen Fairhead & Sons. *Sub-contractors: Precast concrete structure of tower block:* Modular Concrete Co. *Mechanical services:* A. G. Manly Ltd. *Electrical installation:* K.S. Construction Ltd. *Passenger lift installation:* Express Lift Co. *Luggage lift installation:* Elliston Evans & Jackson Ltd. *Lightning conductor installation:* J. W. Gray & Son. *Mosaic work:* Anglo Mosaic & Terrazzo Ltd. *Balustrades and railings:* Light Steelwork (1925) Ltd.; Clark, Hunt & Co. *Spiral staircases:* Wessex Guild Ltd.; Haywards Ltd.; S. W. Farmer & Son. *Piling:* Cementation Ltd. *Lightweight screeds:* Isocrete Co. *Wood block and strip flooring:* Hollis Bros. *Suspended Ceilings:* Petradene Ltd.; Bracketing, Centering & Lathing Ltd. *Ironmongery:* Alfred G. Roberts Ltd. *Quarry tiles:* Wheatly & Co. *Windows (timber):* John Sadd & Sons. *Metal windows and glass louvres:* W. James & Co.; Crittall Manufacturing Co. *Paints:* Hadfields (Merton) Ltd. *Pressed steel rainwater goods:* G. A. Harvey & Co. (London) Ltd. *Sliding door gear:* P. C. Henderson Ltd. *Acorn stove:* Ocees Components & Structures Ltd. *Flush doors:* Leaderflush Ltd. *Plastic-veneered worktops:* Max E. Ott. *Grilles:* Greenwoods & Airvac Ventilating Co.; F. H. Biddle Ltd. *Precast concrete pavings:* The Marley Concrete Co. *Stainless steel tables:* Modern Metal Products (Catering Engineers) Ltd. *Flexible doors:* G. Brady & Co. *Purpose made light fittings:* Russell Bros. (Paddington) Ltd. *Roller shutters:* Shutter Contractors Ltd. *Acoustic telephone hoods:* Williaam J. Cox Ltd. *Concrete blocks:* Thermalite-Ytong Ltd.

Old People's Home, Blackheath. *Architects:* James Stirling and James Gowan. *General contractor:* Wilson Lovatt & Sons.

Building techniques, materials and equipment, furnishings and fabrics are the tools that architects must use. Many British and foreign products introduce themselves by way of the REVIEW'S *advertisement pages—and the AR Reader's Enquiry Service, contacted by using the reply-paid form at the back of the magazine, will produce more detailed information without waste of time.*

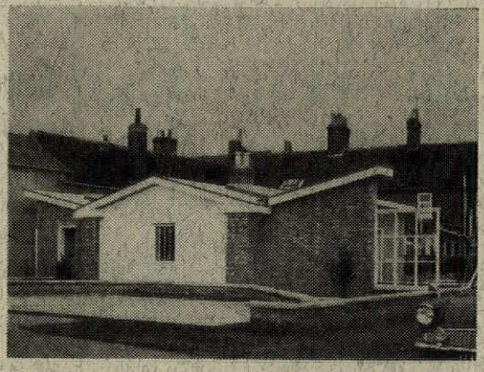
Ian Nairn

STOP PRESS

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

OUTRAGE

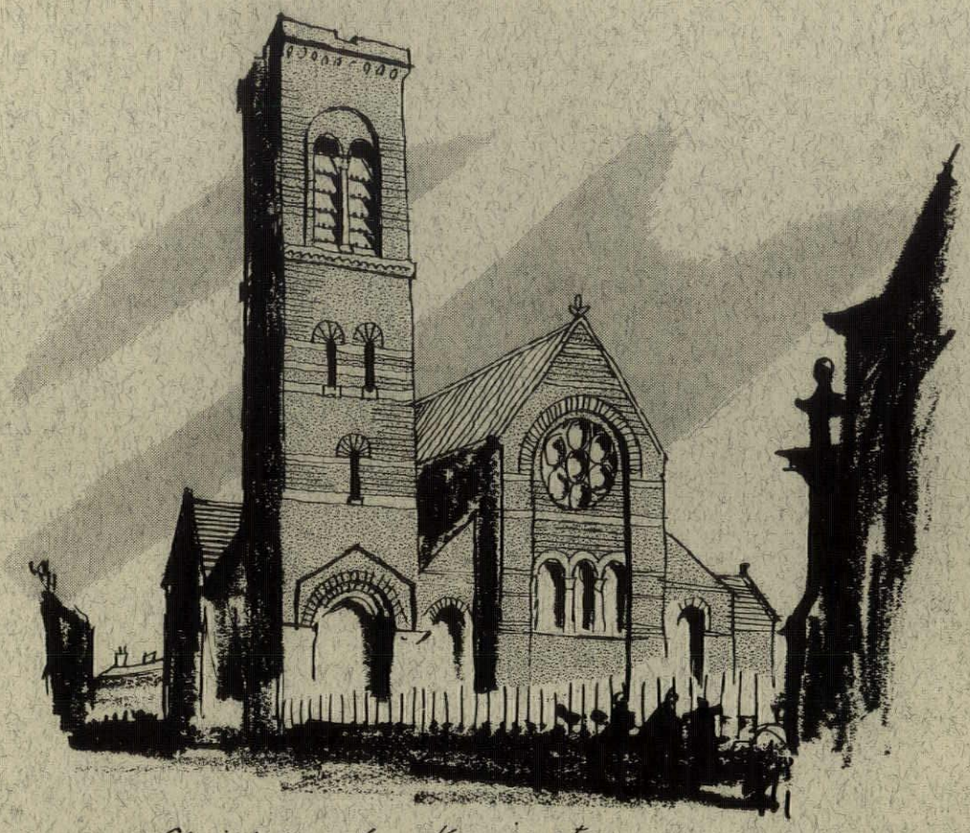
ARCHITECTURE AS SHE IS SPOKE
A public lavatory at Burnham on Crouch, killed by trying too hard, 1.



1

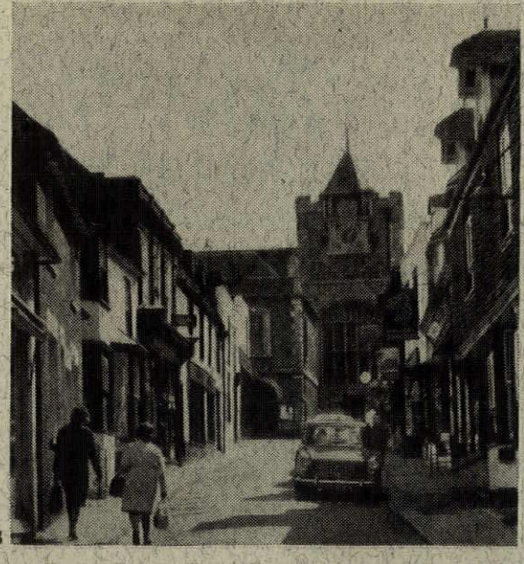
CAUTION

LIVERPOOL
Now that the Audsley's great church of St. Mary Anfield has gone, this building—Christchurch, Kensington, 2—is the last of their major works to survive. Polychrome from head to foot and full of guts, it needs watching, for it is in a slummy area and could all too easily disappear in redevelopment.



2

RYE, SUSSEX
The intimate, small scale charms of a place like Rye, 3, need careful handling. Yet the council has proposed replacing all the existing street lights, old fashioned but unobtrusive, by sodium lamps on ill-designed posts. Surely this is absurd, for the residential streets can be quite adequately lit by tungsten, often in existing fittings. Add to this the horror-comic look that sodium gives to everything, killing colour stone dead, and it is obvious that the council must think again. Seek aesthetic and technical advice, not let the matter be settled by a show of hands.



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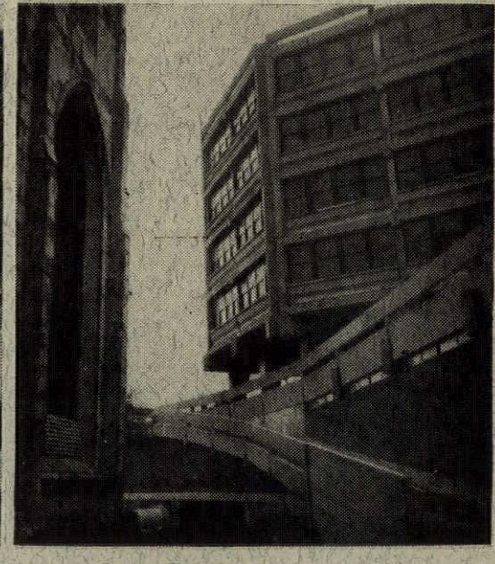


4

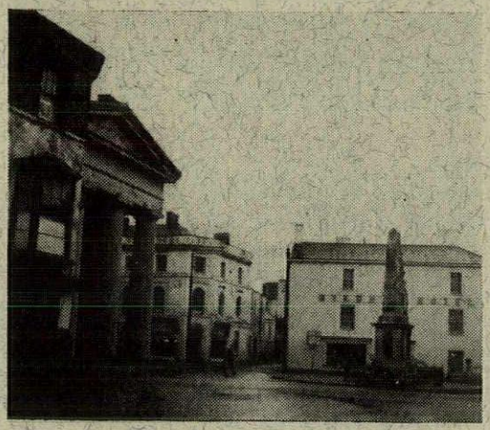
YORK, STONEBOW
This scheme was praised as a project in the AR two years ago, for the way in which it fitted into the townscape. The actual result is not really so happy, 4, 5.

BRIDGEND, GLAMORGAN
The western approach into the town has a noble townscape sequence, with an apparently innocuous square, 6, being



5


6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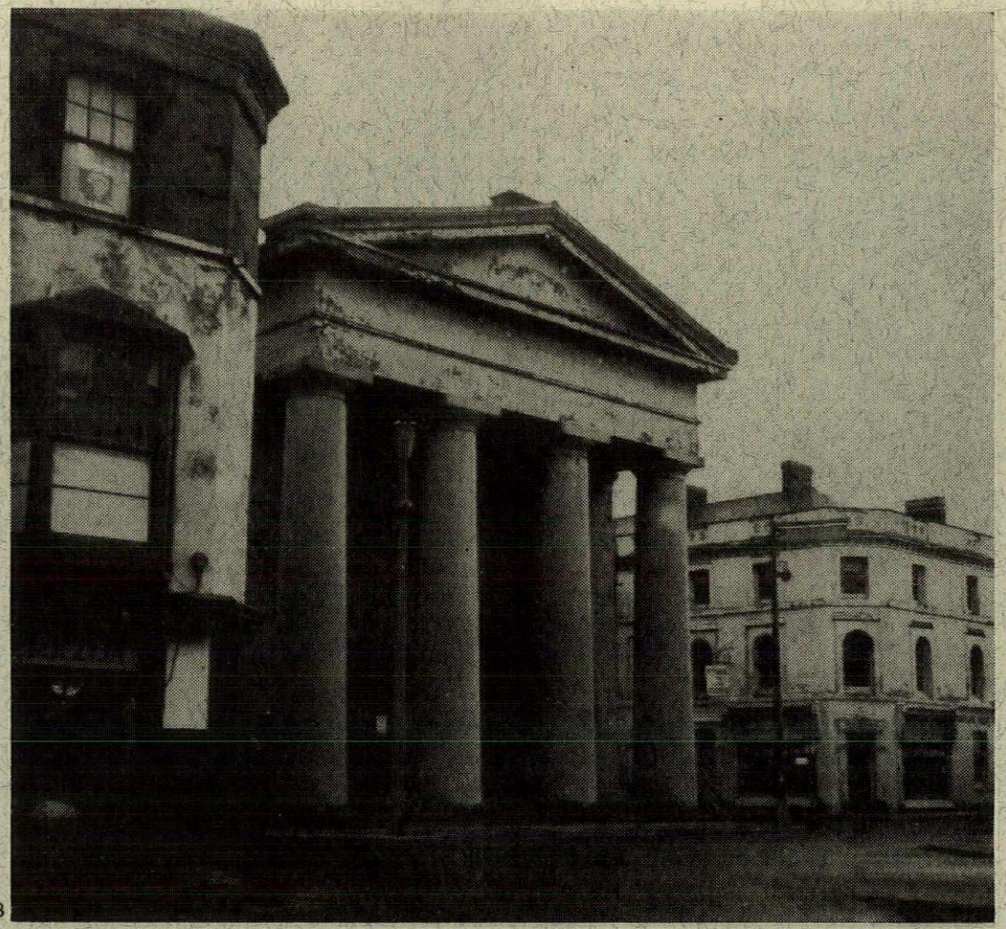
nudged by something enormous, 7, revealed as a Grecian Town Hall, 8, with the crude force of an elephant. Big new schemes are brewing in Bridgend, and it is vital that this effect remains unaltered even if some of the buildings change. The Town Hall and the Wyndham Hotel must stay in any case.

OPPORTUNITY

KIRKCALDY
The old cliff side above the harbour, 9, a dramatic site pierced by sets of steps which are kept brilliantly whitewashed. But all the old fishing cottages are gone or going. It seems a perfect site for a new close knit village, using the slope to achieve pedestrian separation.

IMMINGHAM, LINCOLNSHIRE
And on an immense scale. The town centre has stayed half-built for almost forty years, 10, yet Immingham is a thriving port and new industries are moving to the south shore of the Humber. There is still enough vacant land to make a first-class centre—but the chance will be frittered away on piecemeal development if Lincolnshire waits much longer.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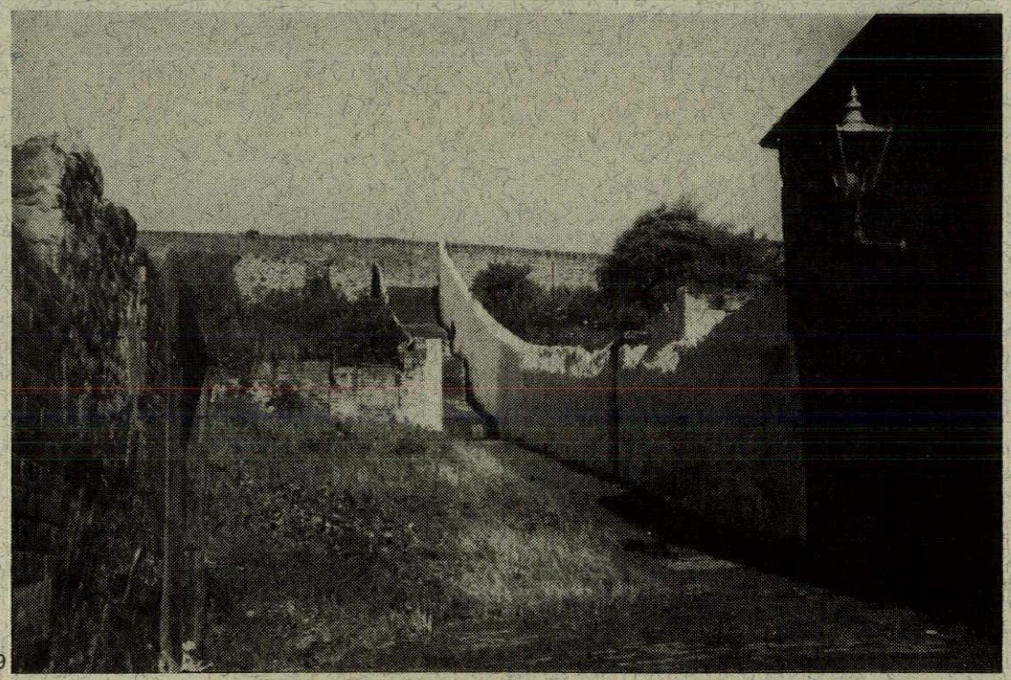
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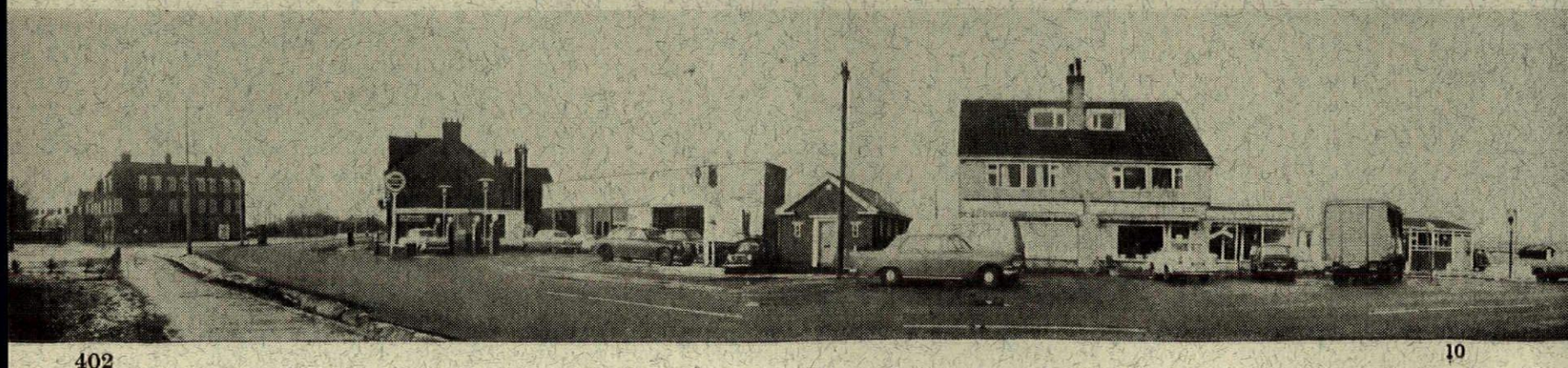
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THE NATIONAL CARAVAN COUNCIL ANNOUNCE INTRODUCTION OF A SCHEME TO GRANT APPROVAL FOR RESIDENTIAL CARAVANS THAT COMPLY WITH BS 3632, 1963

Following detailed negotiations with British Standards Institution and other interested parties, the National Caravan Council has devised a Scheme whereby a Badge and Certificate will be awarded to those residential caravans that comply with British Standard 3632. (Unfortunately, BSI was not able to apply the Kite Mark scheme to this Standard for technical reasons.) Under the Scheme any caravan manufacturer—whether a member of the National Caravan Council or not—will be able to apply for the approval of his residential models.

Independent Professional Consulting Engineers have been appointed to carry out the inspection of the Manufacturers' works and the caravan models.

Those manufacturers and models that are approved following this detailed inspection will be granted a Certificate in respect of each model produced.

A newly designed Badge will be issued for the Manufacturer to affix to all caravans produced of the approved models. At the same time Certificates will be issued bearing serial numbers corresponding to the serial numbers on the Badges, and these Certificates will be issued to the caravan purchaser at the time of buying.

Object of Scheme

When the Caravan Act was passed in 1960 the then Minister of Housing said that no provisions were made in the Act to allow Local Authorities to lay down the materials used in caravan construction. However, he asked BSI to prepare a Standard and this was to be the basis for any quality control.

As caravans are produced by production line methods it is essential from the Industry's point of view that a standard interpretation is applied to the BS 3632.

This Scheme has been devised in order to achieve this and so as to allow Local Authorities easily to recognise those caravans that have been inspected and approved.

Local Authorities will have the satisfaction of knowing that residential caravans bearing this Badge will comply with BS 3632 in all respects—including such important factors as thermal insulation, the adequacy of space heating, and the standard for number of occupants. The Standard, of course, also covers many other things.

Application of the Scheme

This is a preliminary announcement which is being made to Local Government only at this time. Full publicity for the Scheme will commence in September 1965.

It is the hope of the National Caravan Council that Local Authorities will wish to ensure that in due course all residential caravans in their areas conform to the British Standard. However, it is essential that this is not done in such a way as to cause hardship to present caravan residents.

The National Caravan Council proposes, therefore, that Local Authorities should take powers to introduce new Conditions in Site Licences as from this September and suggest that these new Conditions should be based on the following principles:—

(*a*) That all NEW residential caravans brought on to Caravan Parks in their area as from a date to be agreed (preferably not before 1966) shall conform to the British Standard in accordance with this scheme.

(*b*) That gradually by the means of natural wastage and replacement all residential caravans within the Local Authority area shall comply with the British Standard in accordance with this Scheme within an agreed number of years (say, not less than five).

(*c*) In the event of any residential caravans remaining on Parks in the area that have been in regular use since 1965 and are still in use by the time the limit set in (*b*) above expires, that Local Authorities shall have powers to allow their continued use subject to the appropriate Local Government Official satisfying himself that the residential caravan is not below the standard to any substantial degree.

NATIONAL CARAVAN COUNCIL
40 Piccadilly, London, W.1

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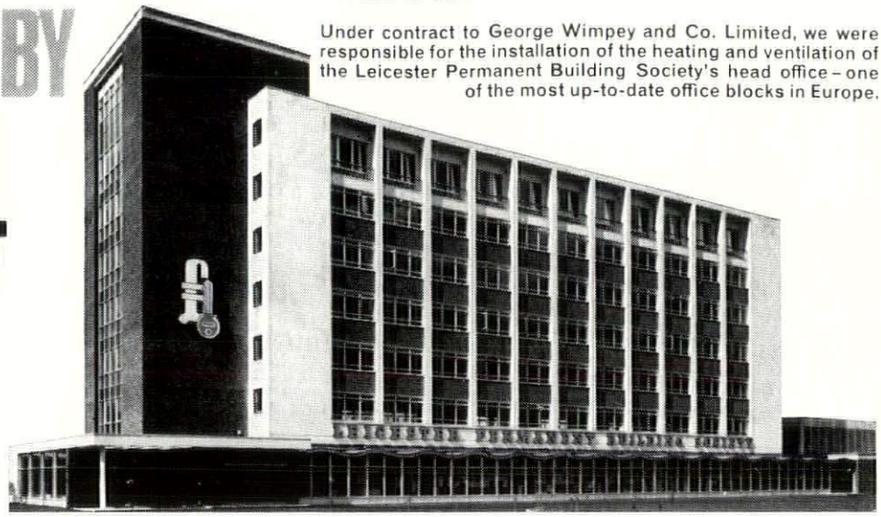

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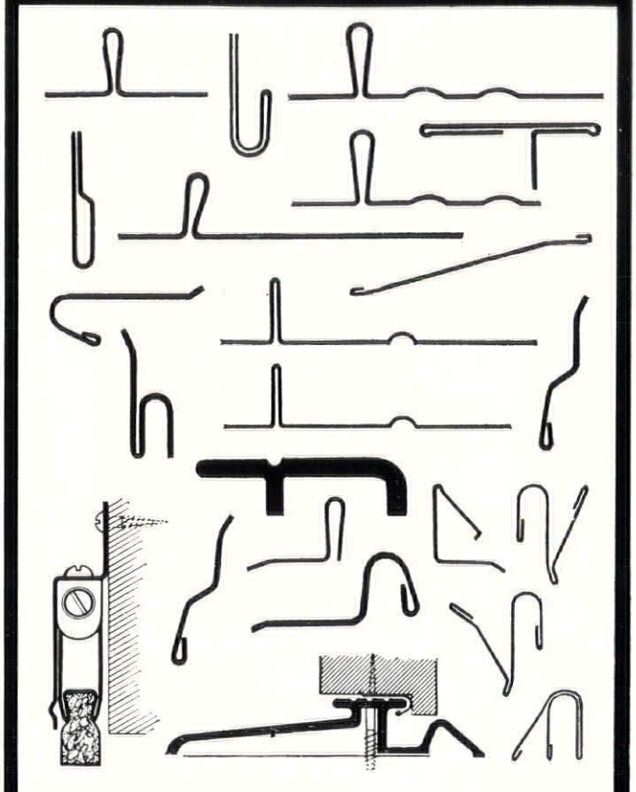

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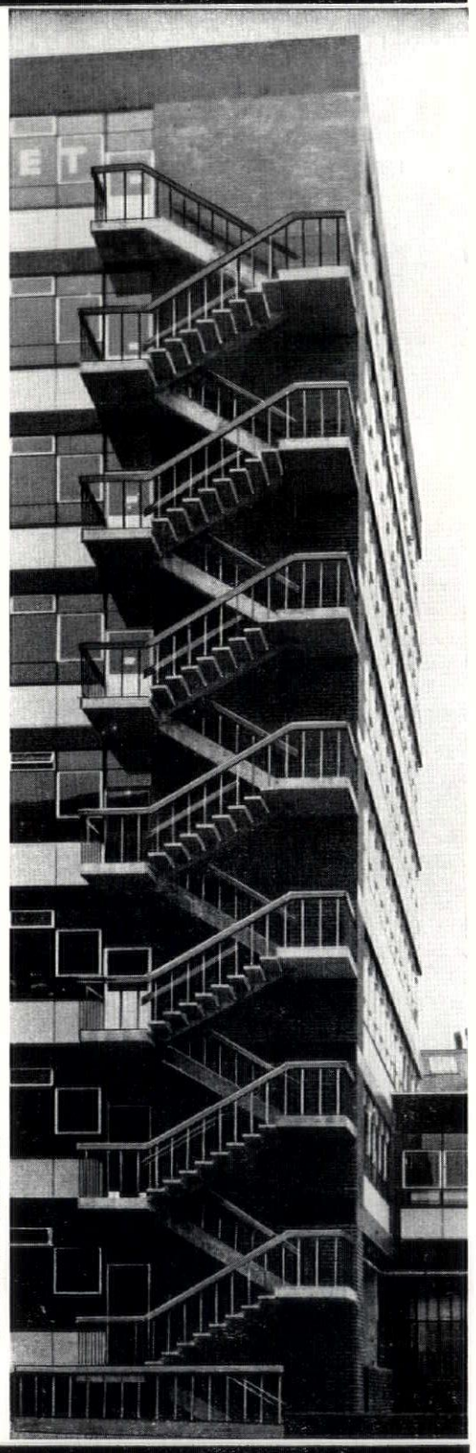



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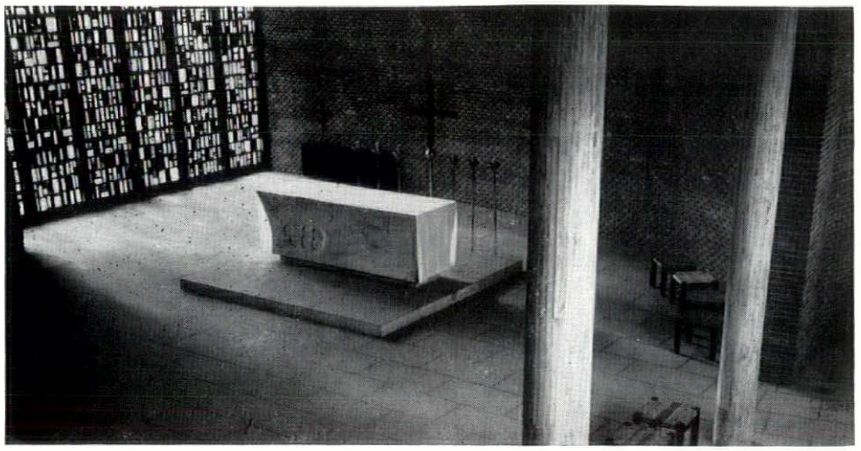

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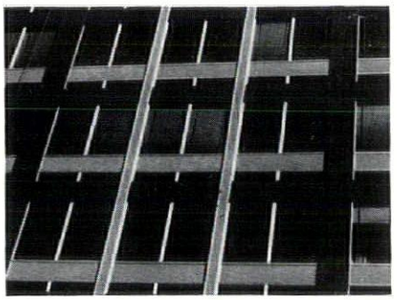

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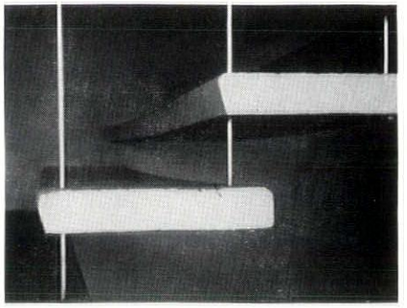

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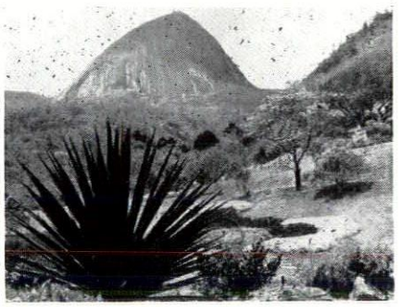

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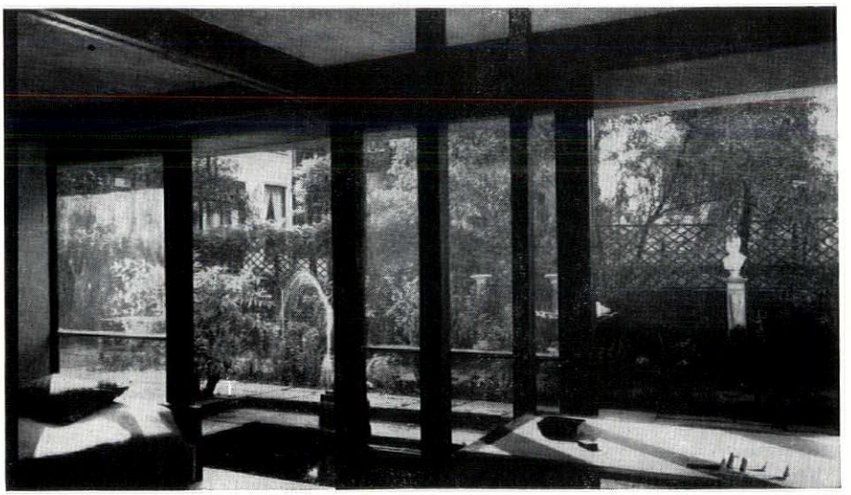

New Houses by Penelope Whiting
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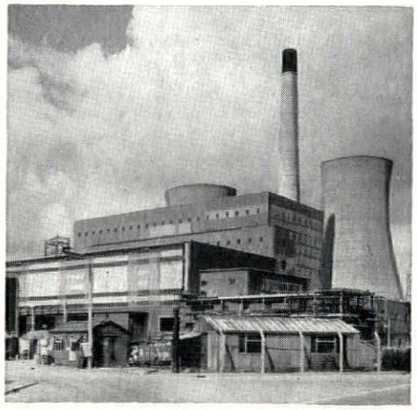





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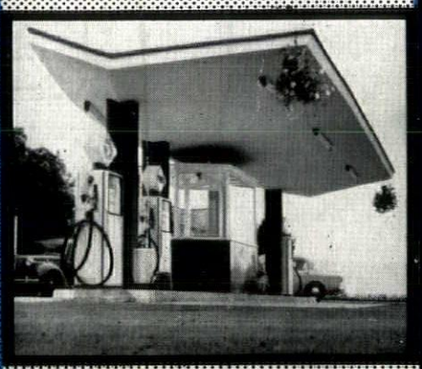

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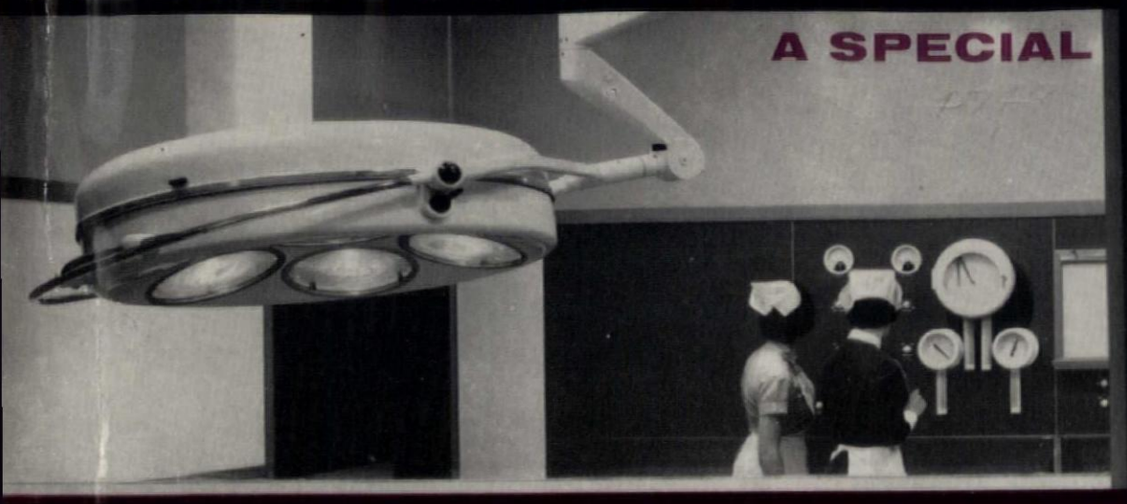



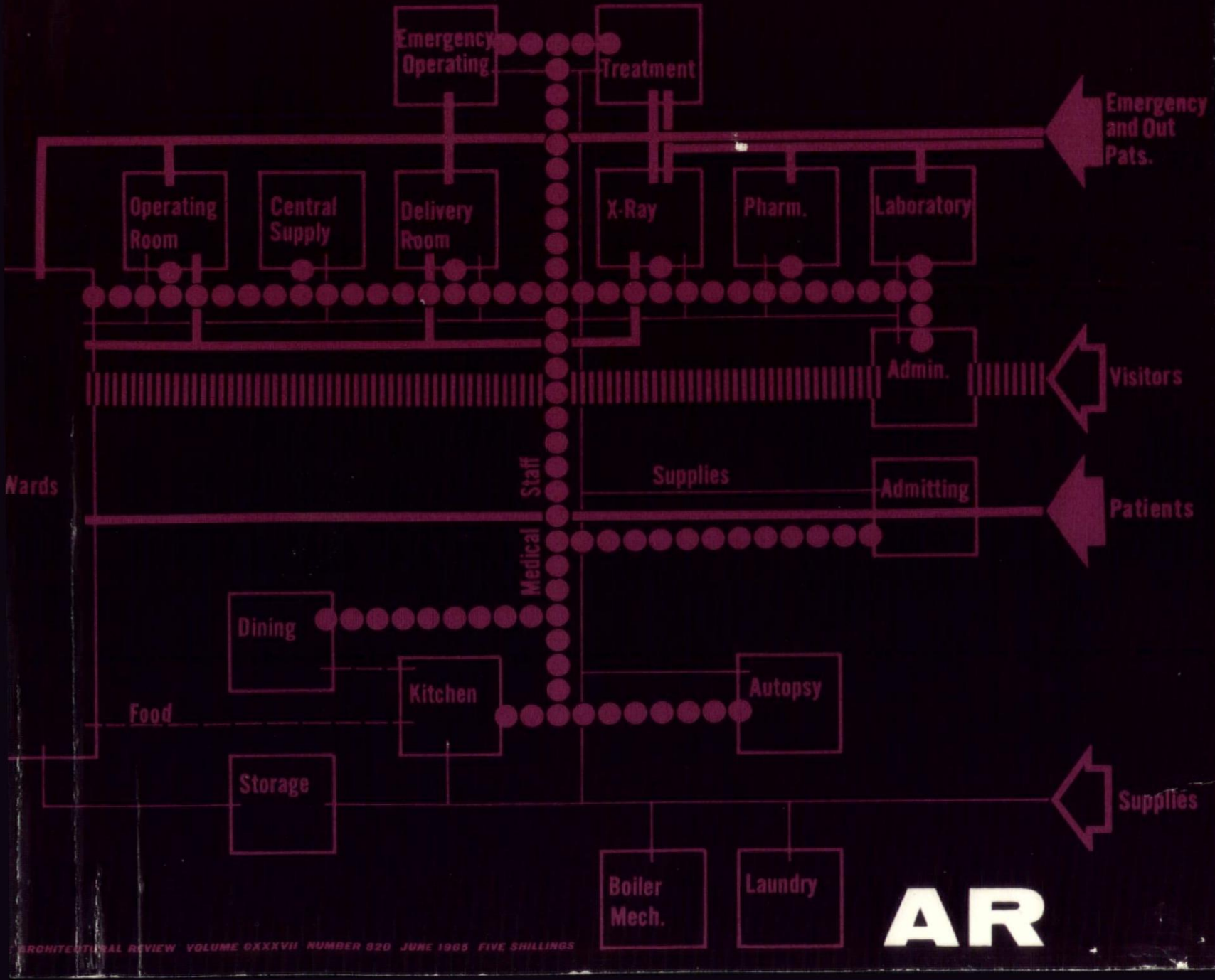

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GLASS IN MODERN AIR CONDITIONING

The purpose of this advertisement is to bring to the notice of architects, engineers and other members of the building team, the 26-page report of a symposium on "Glass in Modern Air Conditioning Practice" organised by Pilkington Brothers Ltd., at the Lathom Laboratories, near St. Helens and published May 1964. Before outlining its contents, however, it may be useful to refer to other recent findings having a bearing on windows and air-conditioning.

Ventilation problems

Probably the most directly relevant statement is the one by the Building Research Station[1] that, according to recent surveys into environmental conditions in modern office blocks, bad ventilation is the main cause of complaint from the occupants.

On the other hand, it has also been established[2] that the conditions of lighting nowadays, both natural and artificial, give rise to comparatively little complaint. That this should be so is probably due as much to the use of big windows as to deliberate concern in recent times with the establishment of proper lighting standards in office buildings. However, it is also noteworthy that, outside a few specific investigations in recent years, the last official attempt to assess properly the lighting needs of modern offices is contained in "Post-War Building Study 30, The Lighting of Office Buildings", issued by H.M.S.O. in 1952. Most of the information in this study is, in any case, based on work carried out in the mid 1940's.

An even wider gap exists between available research and design applications when office environment as a whole is considered. Some 108 million square feet of office space has been built in England and Wales in the last 20 years. In addition, there are some 3,000,000 office workers in this country. Yet, despite all this, no scientifically organized comprehensive investigation into the *fundamental* requirements of office building as such has so far been made in Britain.[3]

Not enough research

Considering the enormous cost involved in Britain's office building programme, this is surely a surprising situation? Against such a background it is not too improbable to suggest that a great deal of modern office design is based on assumptions which careful research may well prove to be incorrect.

Two very full investigations into office conditions, are now fortunately in the course of publication. One, a precise, analytical report based on observations on some new office buildings appeared in May as the study on office environment by the Pilkington Research Unit of the Department of Building Science, University of Liverpool. The other, based on a survey of some two thousand offices built in London since 1948, carried out by the Building Research Station, is now being printed. Some findings have been published.[4]

Among these findings, it is stated that the greatest number of complaints in the offices visited were directed against noise and the conditions of the thermal environment. In listing levels of complaints, the report says that "in summer, for instance, the major factors governing internal temperatures are: (a) the amount of fenestration, (b) the orientation, (c) the presence of heavy traffic within 200 yards".

Traffic upsets ventilation

"Heavy traffic causes overheating in offices because the noise it generates interferes with proper use of windows for cooling and ventilation". In south-facing offices with window walls, for instance, the survey found that traffic noises, which dictate the closing of windows, push complaints of summer overheating up to 66% compared to 47% for similar buildings away from heavy traffic. Where offices face north, noise still causes windows to be closed but the overall level of complaints against overheating fell from between 48 - 23%—presumably due to the lack of solar radiation.

In offices generally, where 90 – 100% of the external wall above the sill is glazed, it was found that an average of 44% of the occupants complained of summer overheating. With between 60 – 90% of glazing this figure fell to 38%, and with 40 – 60% of glazing to 30%.

But, at the same time, in offices with minimal fenestration (60 – 40%) only 44% of the occupants generally were satisfied with the amount of light they had to work by. However, in offices with 100% glazing, the average satisfied did not rise higher than 55% as one might have expected because complaints against glare had now risen to over 14%.

Very likely these reports will attract considerable debate when issued. While it is not our intention to anticipate such debate, we do however feel that some of the preliminary conclusions in the BRS report demand further consideration.

North facing

It is said, for instance, among other things, that "the high degree of fenestration in modern office buildings—over one-third being continuously fenestrated—is responsible for a considerable proportion of overheating complaints . . . For optimum daylighting, full fenestration is justified only in north-facing walls . . . While it is evident that increasing fenestration causes a complex of thermal problems, it is doubtful whether it necessarily achieves a declared aim of improved daylighting".

Bad design

In the conclusion that traffic noise causes overheating because windows have to be closed, criticism of big windows is implied but there is no accompanying implication that it is manifestly bad design to specify opening windows as the main, or sole ventilation source, which are however kept closed against outside noise. No proposals are evident in this interesting and informative preliminary report favouring the use of fixed windows, single or double, in air conditioned buildings as a logical necessity in our present day urban environment. It may well be that to look for objective counter measures to problems of unsatisfactory thermal conditions in offices, in a report that is predominantly historical, is to ask too much? Were it not for the implicit criticism of large windows that these conclusions contain, we would, perhaps, have welcomed without reserve so useful a report. But, when it is suggested, that big windows only cause complicated thermal problems without actually improving daylighting, we are bound to protest.

Solutions

Precise examples abound, in temperate as much as in tropical regions to show that carefully studied solutions to daylighting problems do produce not only satisfactory windows, also windows which, because of their functional demands, are of necessity, big. It is entirely a question of good design. If the Building Research Station therefore, is moved to conclude after a survey of some two thousand recent buildings that full fenestration causes more problems than it solves, we feel that we must turn the question round the other way, and ask: Are architects of office buildings in this country, by and large, designing windows as they ought to be designed?

Leaving aside zoning or town planning factors, is it correct for instance, to specify opening windows for ventilation when traffic noise keeps them shut? Similarly, is it not better to seal facades completely and air condition buildings so as to use windows for light alone?

Sun control

As we believe, among others, that there is undoubtedly a stronger case *for* big windows than *against* them, is it not also reasonable to

expect that, where solar radiation is a problem, methods of sun control such as outside shades are more possible to design than generally seems to be accepted in this country?

Above all, apart from modern architecture being glass architecture, we are moved to say that we believe big windows are used nowadays because people generally, not simply a few architects, *want* big windows. Windows provide daylight and a view. As more and more, today, people are obliged to work indoors out of contact with nature, surely it cannot be reasonable that the link that they have with the outdoors, the window, should be restricted, or as sometimes happens, severed altogether? But then, this is probably as much a moral as an architectural problem. In this context, however, it is interesting to refer to the response to a very detailed investigation in the Co-operative Insurance Society's (C.I.S.) new tower in Manchester.[5] According to B. W. P. Wells, a psychologist, replies to questions to the 2,500 employees: "Have made it clear that people feel that daylight and a view from the building are exceedingly important factors in their working environment".

Seeing out

Answering the question whether it was important to be able to see out of the office, even if there was plenty of artificial light to work by, the response, says the survey, "was overwhelmingly that people felt this to be important. 65% replied definitely so, 24% moderately so (a total of 89%), 11% thought it unimportant and 1% thought it positively unimportant".

As two eminent authorities on lighting have observed in another context[6] "this kind of evidence is by no means conclusive, but if one wants to believe that daylight is necessary for human well-being, it reinforces that belief".

In another context too, are the comments on the extensive use of glass by James Stirling —one of Britain's most brilliant younger architects.

Speaking at the RIBA on February 23, 1965, on his approach to architecture, he said, among other things, that he thought that glass used on a large scale was a form of construction thoroughly appropriate to the English climate. "It keeps the rain out and lets the light in."

Function should decide shape

What could be more sensible, he argued, than deciding ideal room shapes by their function, putting them together to make up the building, and then covering the whole complex with glass which could be pushed in or out to suit the shape? He said, of course, that such an approach did imply the invention of new methods—particularly of window cleaning.

Before concluding this advertisement with the outline of our symposium* we should refer briefly to some of the findings of the extra-mural course on 'Office Design and Environment' held recently at the University of Liverpool by the Pilkington Research Unit, (7) Here it was considered that while flexibility of office space will demand a more considered approach to the design of heating, ventilating and lighting, it is particularly important to build-in means of replacement of service installations, whose life tends to be considerably shorter than that of the building fabric.

Pilkington symposium

The symposium Glass in Modern Air Conditioning Practice was held on October 9, 1963 and the findings published in May 1964. In the paper Condensation Control, A. W. Pratt of BRS, Physics Division, covered the process of condensation in general terms so that its actual incidence in particular circumstances could be predicted irrespective of the materials used.

In the paper Glass Insulation for Opaque Areas, A. Pimblett, Product Development Department, Fibreglass Ltd., dealt with the physical properties and practical applications of glass fibre products in air conditioning.

In the paper Heat Transfer through Windows, T. A. Markus, then manager of our Products Application Department, dealt with the calculation of heat transfer through window-blind combinations dealing simultaneously with a comprehensive body of the other factors involved in window design.

In the paper Economics and Optimum Positioning of Insulation, K. G. Colthorpe, Liaison Officer, Heating and Ventilating Research Association, dealt with the amount of insulation and its optimum location in a structure in terms of temperature gradients, non-steady state heat flow and intermittency of heating, showing how wrong assumptions can lead to over-estimates of heating energy up to 30%.

In his paper, Modern Air Conditioning Practice Applied to Windows, by Mr. L. C. Bull, Air Conditioning Manager, G. N. Haden & Sons Ltd., dealt with the impact of windows on air conditioning in a general review, from the standpoint of an air conditioning engineer. Making no claim for or against large windows, Mr. Bull considered that the most important effect of windows on air conditioning is the increase in cooling load they cause through solar radiation. In even a modestly sized window of only 40% of the wall area provided with venetian blinds internally, the sun on the glass accounts for no less than 50—63% of the total sensible heat gain into the room.

In his opinion the best way to reduce solar radiation is by external shades, even though they are often claimed as impracticable in the UK. Mentioned in the subsequent discussion on his paper, however, were the woven nylon shades, as an example, being fixed on the outside of Littlewoods new office tower in Liverpool which are claimed capable of excluding 80% of the solar heat gain.

In commenting that solar heat gain can be efficiently carried off by a properly designed air conditioning system, Mr. Bull made the point that it is often only by the provision of such a system that many modern buildings remain habitable in the warmest weather.

Easier Calculations

Dealing with the calculation of the air conditioning load from windows, Mr. Bull probably made his most important contribution. In noting that in the classical approach of calculating the position of the sun for the latitude, day and time of day is found first, he said that the whole calculation is tedious and must be repeated for each date and time of day if a full picture of the heat transmission through the windows is to be obtained. Even when all this has been done the air conditioning engineer cannot use the figures directly in making his estimates. The heat that enters in the form of radiation does not immediately appear as a load on the system but must first be absorbed by the structure and room contents, which are thereby warmed. This heat is eventually released to the room air, but the peak load is less than the maximum rate of insolation and there is an appreciable time lag between the two events.

As things stand today, if the engineer uses the classical approach, he must make an arbitrary reduction in the calculated instantaneous load and then guess the time lag in order to arrive at the air conditioning load. Obviously the whole process is too time consuming especially in relation to the accuracy of the results obtained.

He then suggests an alternative. In the main body of a very detailed table he gives the air conditioning load resulting from solar radiation through unshaded windows and windows with venetian blinds. The figures for other arrangements are easily obtained by applying other factors in the second part of the table. In order to make the table independent of temperature it is based upon the assumption that the absorbed radiation that enters the room is the amount that would flow inwards if the outside and inside temperatures were equal.

Thus it is only necessary to add to the figure in the table an amount of heat equal to 'U' times the temperature difference between outside and inside to arrive at the total load from the window in a given case. The table is largely based on data published in the USA for practising air conditioning engineers, but the presentation however is by the IHVE.

As a final comment, Mr. Bull reiterates a fact that is often heard today in many disciplines—that the architect very often does not consult the air conditioning engineer early enough in a project.

REFERENCES

1 Building Research, 1963, HMSO, 8s. 6d.

2 The Editors, *Architects Journal*, 17 February 1965.

3 Hard Facts on Research, Peter Manning, *A.J.*, 20 January 1965.

4 Thermal Conditions in Modern Offices, F. J. Langdon, report of a survey by the BRS, *RIBA Journal*, January, 1965.

5 Subjective responses to the lighting installation in a modern office building and their design implications, by B. W. P. Wells, *Building Science*, January 1965.

6 Lighting: the use of PSALI, R. G. Hopkinson and J. Longmore, *A.J.*, page 311, 1959.

7 Office Design & Environment W. White, *A.J.*, 21 October 1964

* See also: Better Offices/2, The Institute of Directors, Autumn 1964, 21s.

Copies of the air conditioning report are available free from Pilkington Brothers Ltd., 25 Dept., St. Helens, Lancashire.

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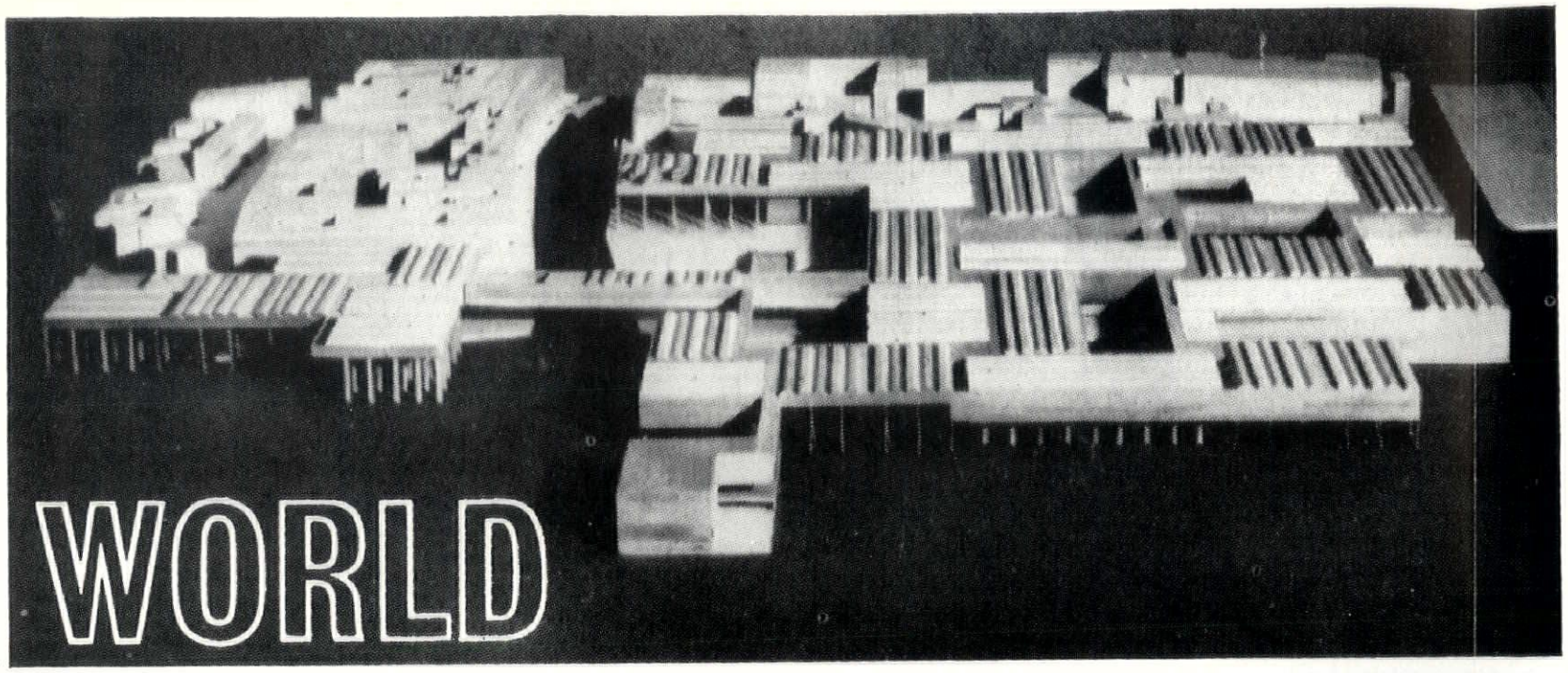
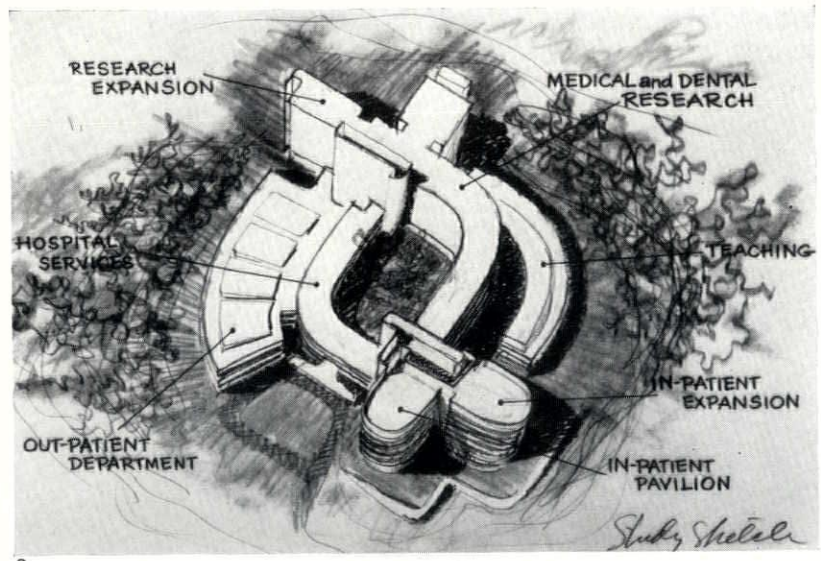


1

Fortunately, this special AR on hospitals has coincided with the first news (in *Time*, April 30) of a major hospital design by Le Corbusier himself in the ancient centre of Venice, 1. The site is a seven-acre slum clearance area in the San Giobbe district, close to the entrance to the city (see World, January). Corb, in complete reversal to his iconoclasm of the 1920s, has declared that Venice is 'a modern city made for man, without the oppression of machine civilization' and that 'the silhouette of Venice is sacred.' He has therefore fixed a maximum height for the hospital of 50 ft., and has extended the building on stilts over a further five acres of water. The horizontal massing is broken into units for 50 patients each, who will all inhabit the top floor, in 10 ft. by 10 ft. rooms with skylights only.

As townscape, in its irregular and flexible extension of the Venetian squares and quays, 2, the design promises well. But why should the patients have only skylights? Corb says that bed-ridden people prefer to see the sky and the birds and the stars above them. What he seems not to appreciate is that the whole emphasis of hospital care in recent years has been on encouraging the convalescent patient to get up at the earliest possible moment. In any case, what will the Italian sun say to the skylights? The layout poses problems, too: the editors of this issue point out that Powell and Moya's Slough reaches perhaps the limit of purely horizontal expansion, yet it is planned for only 400 beds against Corb's 1,200. What will the extra cost be for those stilts? *Time's* estimate of $11 million must refer only to the first stage.

CORB'S SKYLIT BEDS



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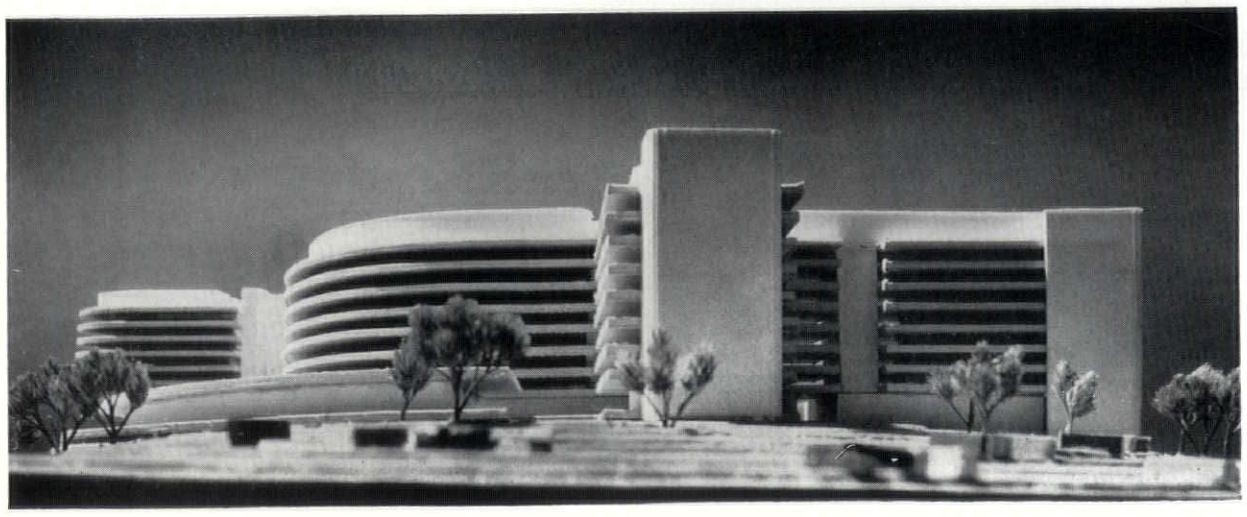

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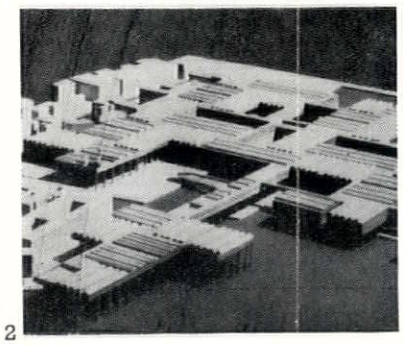


2

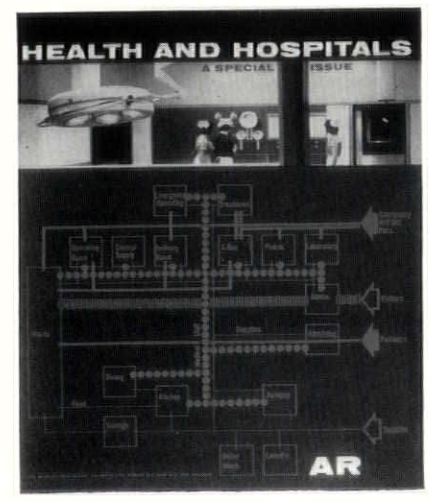
KLING'S IMAGE

Image-building is the bugbear of American hospital design. The heart sinks on reading that Vincent Kling's $47 million health centre for the University of Connecticut is 'tomorrow's acropolis of health' and that the architect himself has stated that 'the Center will crown its hilltop site in a symbolic gesture to the community, a gesture that says, here one arrives at the summit for health care.' Certainly Kling's image is impressive in its model form, 3. Around the summit of the hill at Farmington, seven miles from Hartford, the teaching and research facilities are tightly clustered around an elliptical courtyard. On one side are hospital services and the out-patient department; on the other are teaching space and medical and dental research facilities. There will be a total of 400 medical and dental students. The first phase will be ready in 1968 and the whole complex will be finished two years later.

Is such a plan flexible, as well as providing a compelling shape and a Mendelssohnian elevation, 4? Kling emphasizes that 'the human side of healing' will be uppermost in the hospital, even though its buildings will be of crushing size. The in-patients will occupy two seven-storey semi-circular pavilions (one at first, the

acknowledgments

COVER: top photograph by Henk Snoek. WORLD, pages 403–406: 1, AFI, Rome; 2, *Edilizia;* 3–5, Lawrence S. Williams; 6–10, *Bauen+Wohnen;* 11–15, *Arkitektur;* 16, 17, *Acropole;* 18, NY State University Construction Fund; 19–21, *Architectural Record;* 22–25, *Techniques et Architecture;* 26–29, Alan Vaughan-Richards. VIEWS AND REVIEWS, pages 407–409: 1, T. & R. Annan & Sons; 2, 3, James Macaulay; 4–6, Deegan; 7, 8, A. L. Hunter. FRONTISPIECE, page 410: Henk Snoek. GENERAL HOSPITALS: pages 426–430, Galwey Arphot; page 431 (left), Galwey Arphot; (right), Alfred Cracknell; pages 432–433 (right), John McCann; page 433 (left), Alfred Cracknell; pages 434–435, Henk Snoek; page 436 (top), Sam Lambert; (bottom), Herbert H. Ballard; pages 437–438 (top), John Rawson; page 438 (bottom), Henk Snoek; page 439, Toomey Arphot; pages 440–442, Galwey Arphot; page 443 (left, centre and bottom right), Galwey Arphot; (top right), Alfred Cracknell; page 444, John Dewar; page 445 (top), J. Roman Rock; (centre and bottom), W. J. Toomey; page 446, James R. Smith & Son. THE TEACHING HOSPITAL, page 450, Henk Snoek. RESEARCH AND TEACHING HOSPITALS: page 452 and page 454 (top), E. R. Yerbury & Son; page 454 (centre and bottom) and page 456, Sydney W. Newbury; page 457 (top), A. C. K. Ware; (centre, bottom left and right), Colin Westwood, *The Architect & Building News;* (bottom centre), Peter Waugh; page 458, Aberdeen Photographic Service. FOUR AMERICAN HOSPITALS: page 465 (top left and right), David G. Harris; pages 466–467, Lou Brierley; pages 468–470, Selwyn Pullan. PSYCHIATRIC HOSPITALS: page 479, Henk Snoek. STOP PRESS, pages 491–492: 1, 2, Edwin G. Peckham; 3-5, 7, 8, Nairn Arphot.



This month's cover: *the top illustration shows part of the operating theatre at the Huddersfield General Hospital (see pages 434-435.) The lower illustration is a circulation diagram for the West Haldimand Hospital, Ontario (see page 464).*

THE ARCHITECTURAL REVIEW

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other for expansion later), which seem complete in themselves and incapable of further expansion. Again, the facilities on the 'inner circle' around the courtyard seem difficult to expand. Research facilities will grow out at one end, but they may not be able to extend far without damaging the landscape and overtaxing service runs. Much will obviously depend on the quality of the detailing, and it is encouraging that the out-patient department, monolithic in the model, is to be divided into small clusters of treatments rooms around courtyards. Staff and student housing will be situated in wooded ground nearby (background of 5). The whole site amounts to 106 acres, enough for a more diffuse layout.

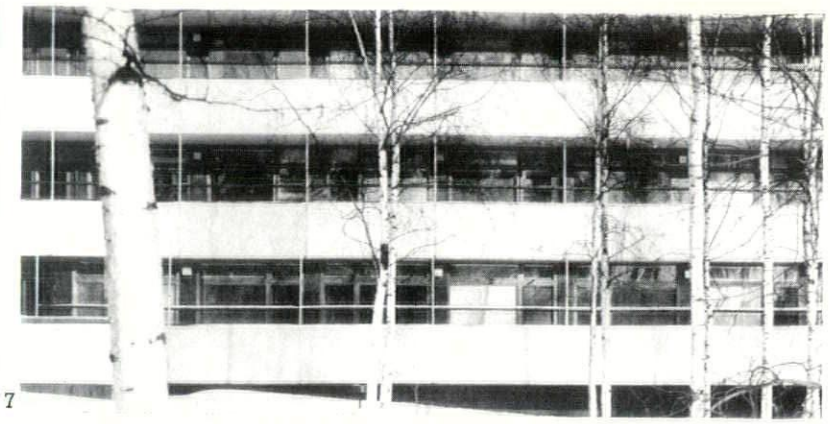


5

PURITY AT TAMPERE

The special issue of *Bauen + Wohnen* on hospitals (March) consisted chiefly of a long and meticulously detailed account of German hospital design by Richard-Joachim Sahl and the magazine's editor, Ernst Zietzschmann. In spite of some good projects at an early stage and also impressive evidence of hospitals actually being built, the total impression was curiously safe and orthodox and pre-war. The principal building illustrated, though not in Germany, turned this same orthodoxy into a positive virtue: the central hospital at Tampere in Finland, 6, won in competition in 1955 by Erkki Helamaa and Viko Martikainen. This 1,000-bed hospital has a 13-storey ward block, forming a T-shape with lower surgical and diagnostic block (not visible in 6). Across one end is a large paediatric wing. On rising ground to the north are the staff residences. An isolation block has yet to be built on part of the wooded ground in the centre of 6.

The whole scheme seems intentionally to echo the hospitals of the 'heroic' modern period, in the Paimio tradition. The facades are carefully detailed in the purest black and white: 7 shows the long balconies in front of the children's wards, and 8 gives a close-up view of the fenestration of the main ward block. The rhythm clearly expresses the internal arrangement, with bed spaces alternating with large windows beneath a continuous clerestory. The impression of a conscious revival (or survival in this specialized field?) of International Style values is even more apparent in the interior. In the corridor between the lifts and the main entrance hall, 10, chromium strips whiz round curved white columns in a chilling display of hygienic and washable surfaces. By contrast, the staff houses, 9, are constructed of wood and clustered round small garden courtyards — more obviously Finnish work of the last five years.



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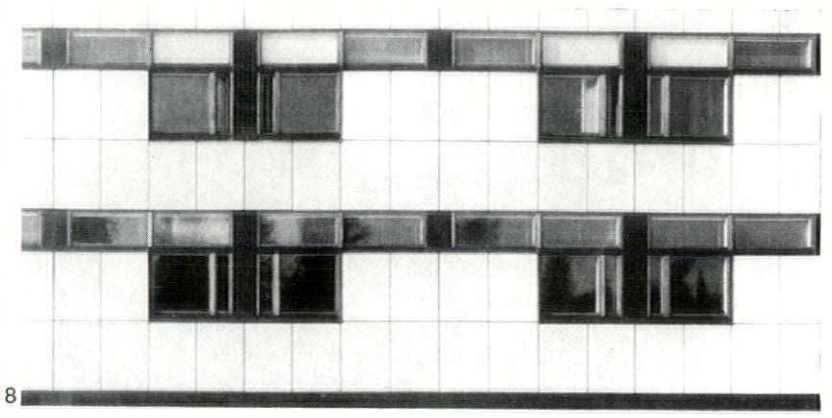

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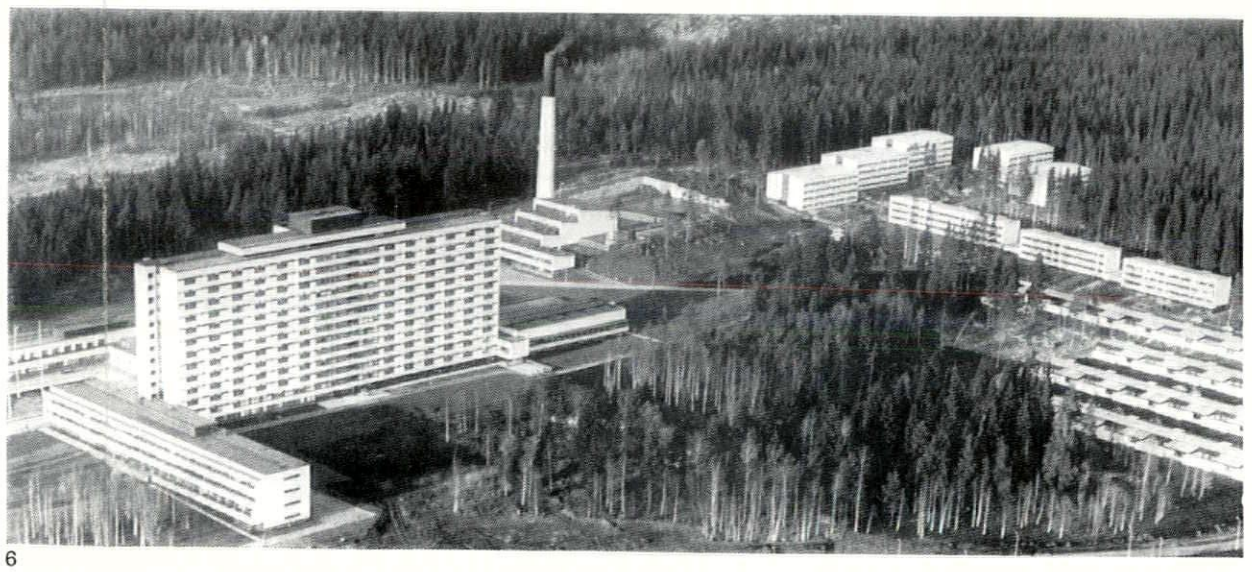

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10



11

RINGBO CHAIN

The work of the Copenhagen city architect, F. C. Lund, and his associate H. C. Hansen, is always interesting, if sometimes over-picturesque. The Ringbo nursing home at Bagsvoerd, 11, is a large institution for elderly psychiatric patients built in 1962–3. Lund and Hansen have broken it down into twelve separate units, each out-

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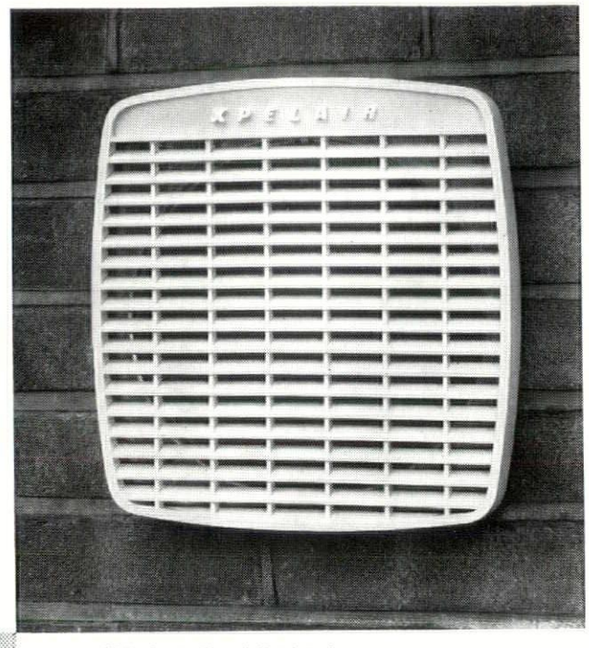

Exterior grille of Xpelair fan

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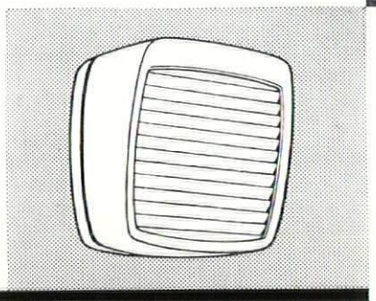
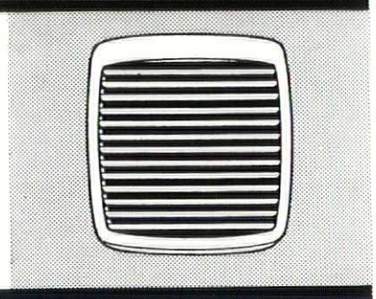
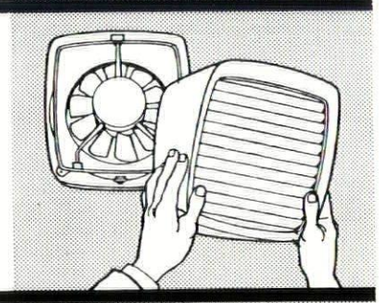


Built-in automatic shutters—open instantly the fan is switched on . . . close when you switch off.

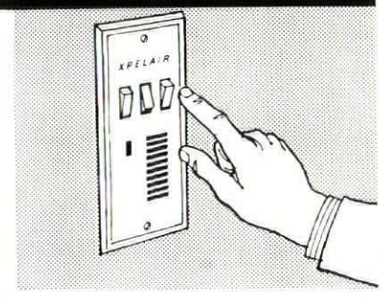


Press-button front release—enables the front of the fan complete with shutters to be instantly removed for cleaning.



—PLUS

5-way remote control. This control switches on, reverses the fan and gives a choice of 2 speeds each way—extraction or intake.



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NEW XPELAIR

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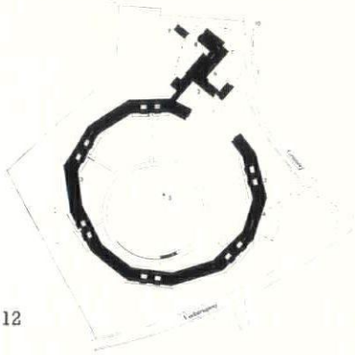
RINGBO NURSING HOME



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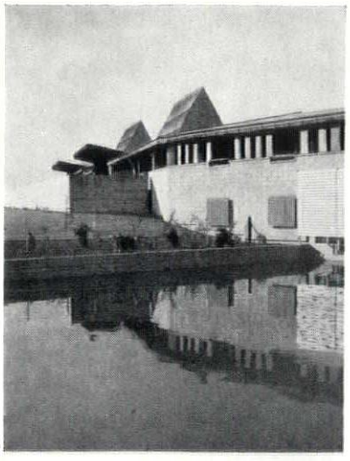

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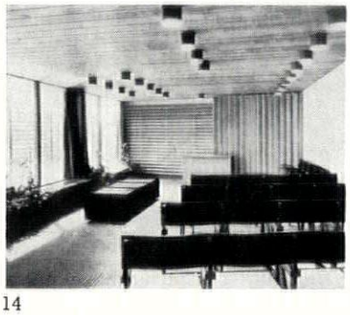
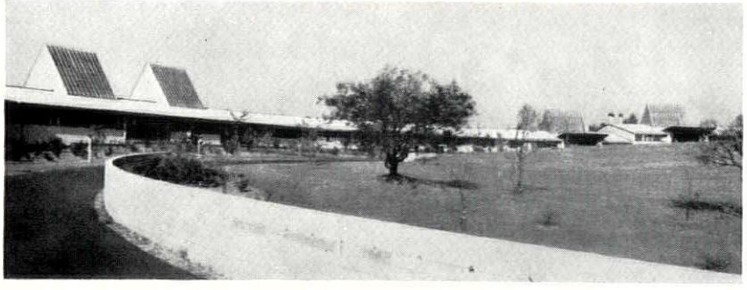


14

wardly marked by the high toplight of its lounge. The twelve sections are joined to form a vast sickle-shaped chain encircling a landscaped park, 12. Administration forms a separate wing.

The detailing in untreated concrete blockwork, with grey asbestos cement roofs and dark red wooden window frames, is matched by the attention to landscaping. The reservoir, 13, lies outside the chapel, which has a calm and friendly interior, 14. The general layout does arouse some doubts: the corridors are excessively long, and the park, 15, is too large to tie the community together (it has a rather ludicrous clock tower in its centre, where the administrative buildings could well have been placed).

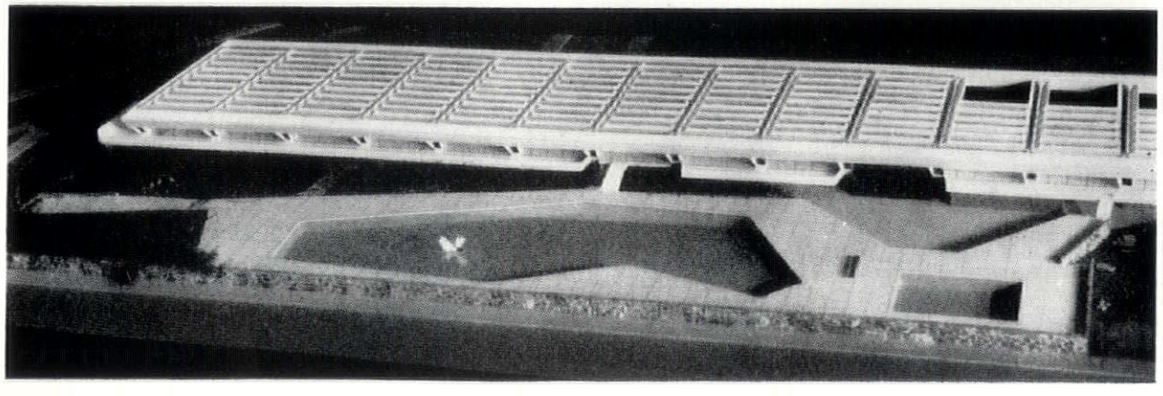
15

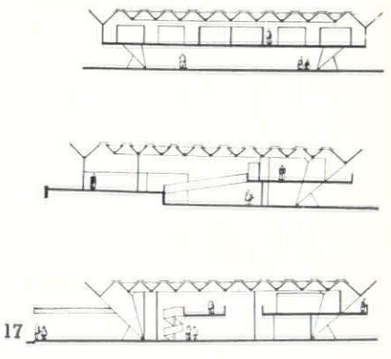


BUCOLICS OFF

Sports clubs are a special contribution of South America to the architecture of health buildings. The November-December issue of the Sao Paulo magazine *Acropole* illustrated a powerful project in concrete for the Anhembi tennis club, 16, by J. Vilanova Artigas and Carlos Cascaldi. It consists of an open ground floor, 17, with assembly hall, gymnasium, bowling alley and skating rink, supporting a closely subdivided upper floor of offices, changing rooms and restaurant. An open-air swimming pool of irregular shape lies alongside. According to *Acropole*, the guttering is combined with the pilotis 'to give a bucolic sound effect of falling water' on rainy days.

16





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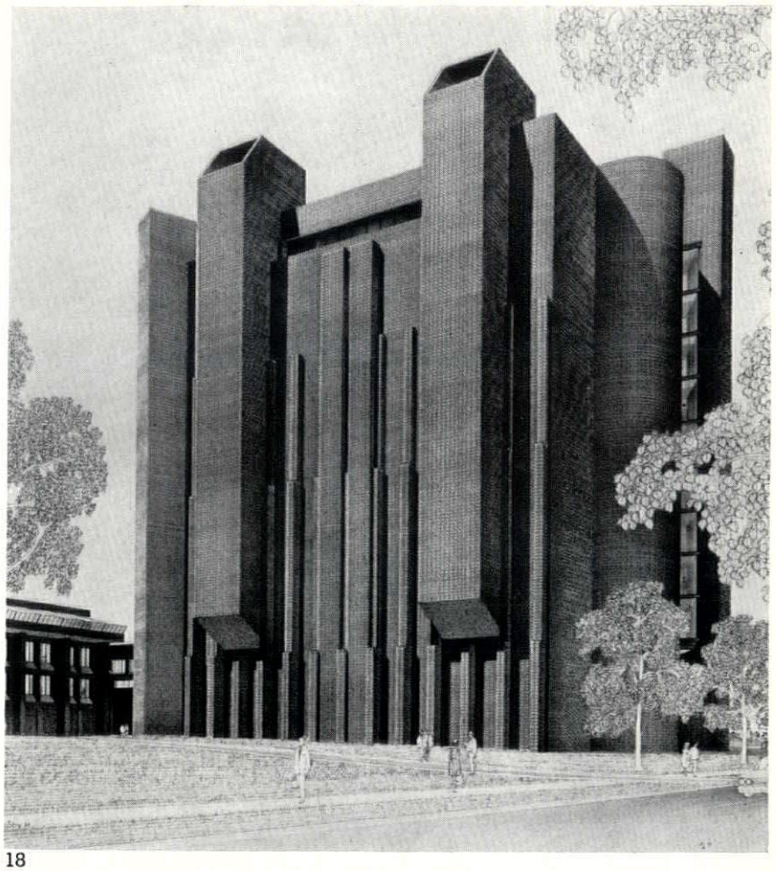

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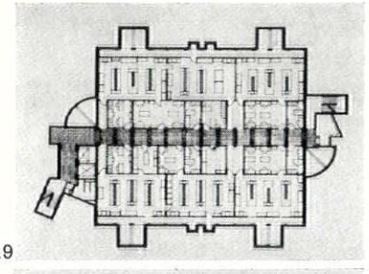
ON FROM KAHN



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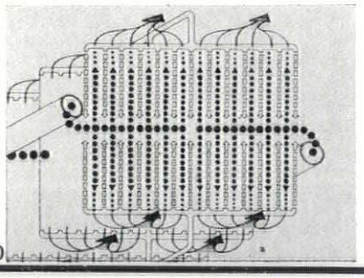


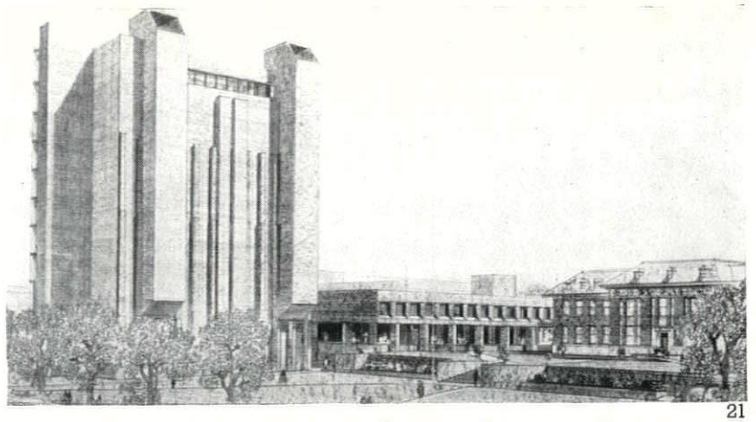
20

Ulrich Franzen's $6 million, eleven-storey agronomy building for the New York State University at Cornell, 18, can be appreciated on two levels. On the one hand there is its emotive neo-medieval image, designed expressly to give a morale boost to the State University's campus, overshadowed at present by Cornell University next door. Franzen takes his cue from Kahn's medical research laboratories at Pennsylvania. According to *Architectural Record's* April issue, he 'believes that Kahn to his great credit has reminded architects of the strong and evocative potential inherent in vertical massing' in contrast to the International Style's influence, which encouraged architects 'even when designing skyscrapers to organize form in interpenetrating horizontal elements.' Suspicion of art for art's sake is increased by the fussy detailing of thin pilaster strips (which turn out to

FRANZEN'S CORNELL LABS

be old-fashioned masonry piers)—and by the acute-angled window, right in 18, which Franzen calls an 'oriel.'

Such hasty dismissal, however, would be wrong. The importance of this building is on quite another level: that, by eliminating natural light from working areas altogether, it avoids the Kahnian contradiction between glazed but permanent labs and massive but flexible service towers. Admittedly Franzen still makes his service towers look absurdly fixed in their form—he has not yet fully expressed their clip-on nature. The services and working spaces are brilliantly organized. In the plan, 19, the offices back up to a central corridor, containing the inflow of the conditioned air supply, shown in the heavy dots in the diagram, 20. The air, having been pumped up from the basement in semi-circular towers on the north and south faces (next to the lifts and stairs), is distributed to the labs along the east and west sides, and is finally disgorged through the four belching exhaust stacks which dominate the exterior. At each alternate 8 ft. 6 in. module, provision is made for the pressure services, acid waste pipes and electricity supply (the white arrows in 20), contained in the thicker projections between the pilaster strips in 21. It seems sad that this technical brilliance has to be hidden under such elaborately styled brickwork, in pretentious harmony with the adjoining neo-classical survival.



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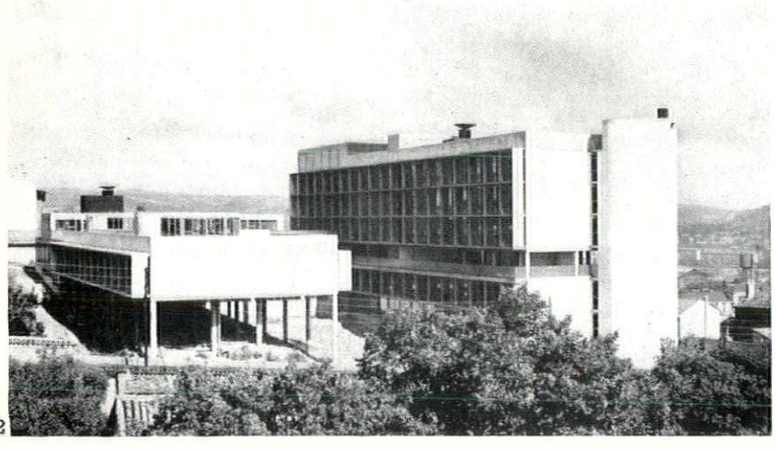
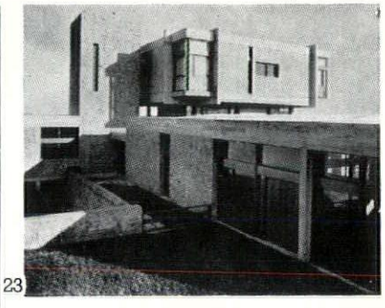
evocative of what?



22

BRUTE WELFARE

A depressing issue on hospitals of *Techniques et Architecture* was relieved by some pleasant welfare buildings in the late Corb idiom, most notably the hostel for young workers at Saint-Etienne by André Wogenscky, 22, and the local authority crèche at Montrouge, by Rénandie, Riboulet, Thurhauer and Veret, 23, in which two flats are set over the single-storey children's room. This type of approach can become merely boorish, a tendency not escaped by the young workers' hostel at Romans, 24, by the Atelier d'Urbanisme et d'Architecture. The same organization has designed an interesting old people's home at La Courneuve, 25, with two wings of staggered apartments radiating from a polygonal block of communal rooms.



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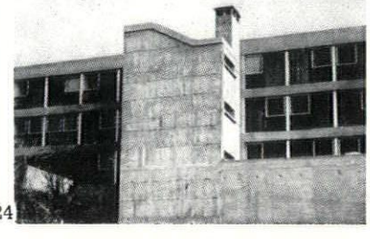

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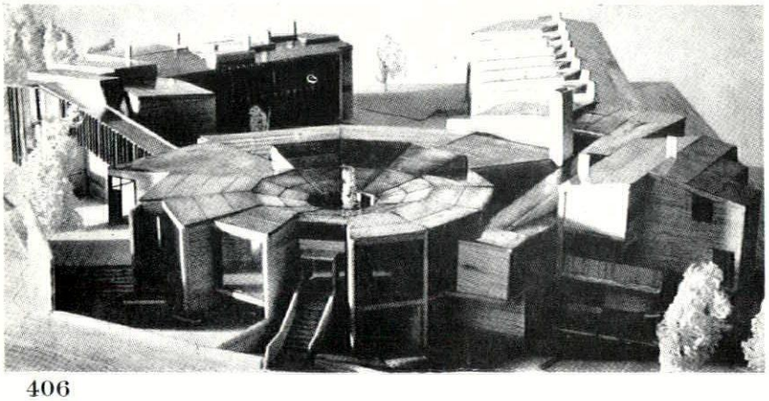
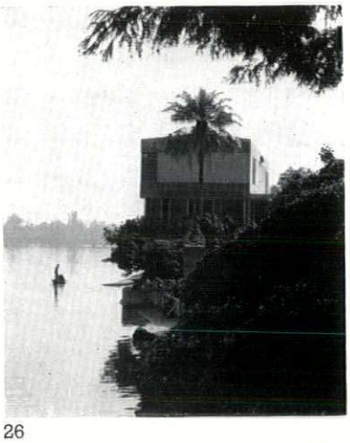


25

DONS IN LAGOON

The University of Lagos has recently completed an estate of staff housing on a beautiful waterfront site, 26, next to flats for BP by Cubitt and a house by Architects' Co-Partnership. The University architect, Alan Vaughan-Richards, was formerly an associate partner of ACP and his own house is on the site. The waterside houses, 29, are three-storeyed, attractively positioned at the water's edge, with service courtyards screening them from the highway, 28. Houses further inland are two-storeyed; next to them is a seven-storey tower of 14 flats, 27. There is a straightforward use of concrete, maximum use being made of the site to give a series of enclosed spaces, gradually opening out to the lagoon.



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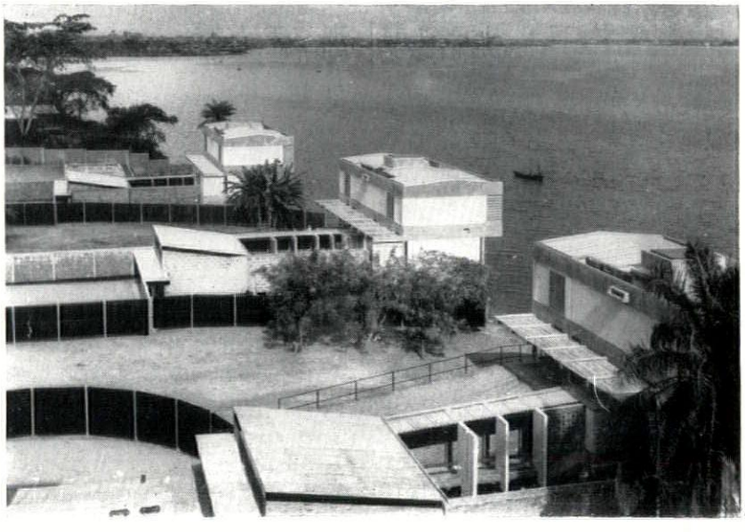


29

VIEWS AND REVIEWS

marginalia

PARK CIRCUS, GLASGOW

In June, 1962, Glasgow Corporation announced that it would seek powers to control future developments in the Park Circus area. Such powers would establish official safeguards over amenities and architecture.

The Park district was laid out in the middle years of the last century as a residential quarter for the wealthiest classes of the Second City. Fortunately, the architects, working still in the Georgian tradition of discipline in the use of materials and in planning, gave Glasgow the finest Victorian layout in Scotland, or indeed in Britain, which has its counterpart in the New Town of Edinburgh and the great London squares.

The lower slopes of the hill were built up first. There was Taylor's Royal Crescent and before that Woodside Terrace, Crescent and Place as well as Newton Place, all accredited to George Smith of Edinburgh. These early terraces are important, for they set the pattern which later architects closely followed. They are part of a landscape which includes communal gardens, approaches and service lanes. They are never more than four storeys high and are decidedly classical in form and in the decorative details of porches, mouldings and pilasters. However, with the work of Charles Wilson the style is Italianate, especially in his great college with its trilogy of deeply grooved towers. He was also responsible for Park Terrace, Quadrant and Place as well as the noble Circus where two half circles of houses gaze across a central garden. Some small parts of the Park area can be faulted for coarseness of massing, inelegance of detail, lack of fulfilment of the overall plan. But not the Circus. It has all the virtues of the aristocracy and their faults, especially a certain withdrawn, introspective quality as the houses recede one after the other in polite regression, which might be mistaken by the untutored for haughtiness.

Today the Park area is almost wholly commercial. Some firms have taken to altering their premises. Brick walls have replaced iron spear-headed railings, red quarry tiles and terrazzo are the substitute for stone steps, cornices have been cut back, roof parapets removed to allow more light in top rooms, porches built in and signs hung out. The worst offence is the wrong use of colour. In a stone district, and particularly one of such monumental character, strong colour disrupts the entire facade pattern, destroying the relationship of detail against mass and the subtlety of mouldings and ornament. An outstandingly bad example is the end of a facade which is in green with every detail in red.

Physical change, too, is to be deplored. One corner of Somerset Place has been rebuilt as a not very convincing copy of what was there before. In Berkeley Street, a very neat douce little terrace, which has the unusual merit of being regular on both sides, a mid-terrace house has been replaced by a contemporary office which, from ironwork to bands of windows to height, is an alien intrusion in a very domestic scene. Lastly, the Corporation's inner ring road will remove some of the early nineteenth-century houses in Woodside Crescent, that *grande allée* which leads up past curve and garden to the heights of Paxton's Kelvingrove Park.

However, the greatest and most immediate concern must be for the future of the Park Church by Rochead (1858). The church is poor architecture; still, the contrast of its one buttressed and spiky tower when viewed from afar, and from any angle, against Wilson's Italianate essays forms one of the most theatrical townscapes any city can show. As there is no congregation the demolition of the church and the consequent rebuilding on the site could break up a superb grouping of verticals. With the rise in commercial values the possibility of such an event is very close indeed—which would allow a modern development in a wholly nineteenth-century context.

After its original announcement in 1962, the city Corporation appointed Mr. Alfred G. Lochhead and Mr. W. Gillespie to reassess the architecture and landscape of the total area. Unfortunately, since the reports were submitted the Corporation has neither said whether the recommendations are acceptable nor whether they will be enforced. In view of the changes in the area it is important that restrictions on advertisements, signs, external colour, alterations to windows, demolition and the preservation of the landscape should be introduced as speedily as possible.

In charity, it could be said that the Corporation's intentions towards Park Circus are honourable. Nevertheless, after three years and with nothing to show the earlier announcements look like lip-service. Now there is the danger that the reports will be set aside to allow more work and time to be spent on the comprehensive development areas which catch the public eye and the professional write-ups. Yet the fact is that unless action is taken now, given another ten years and the Park area may not be worth saving as a unit.

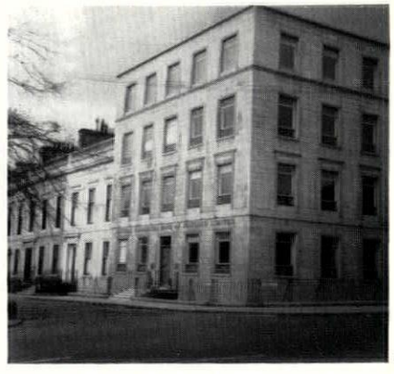
JAMES MACAULAY

NORFOLK ASSOCIATION

Each new amenity society, as it is established, adds to the strength of the others. An especial welcome should be given to the Norfolk Association, which was founded in February at a meeting held at East Dereham vicarage, because this is one of the unspoilt areas of the southern half of Britain



2



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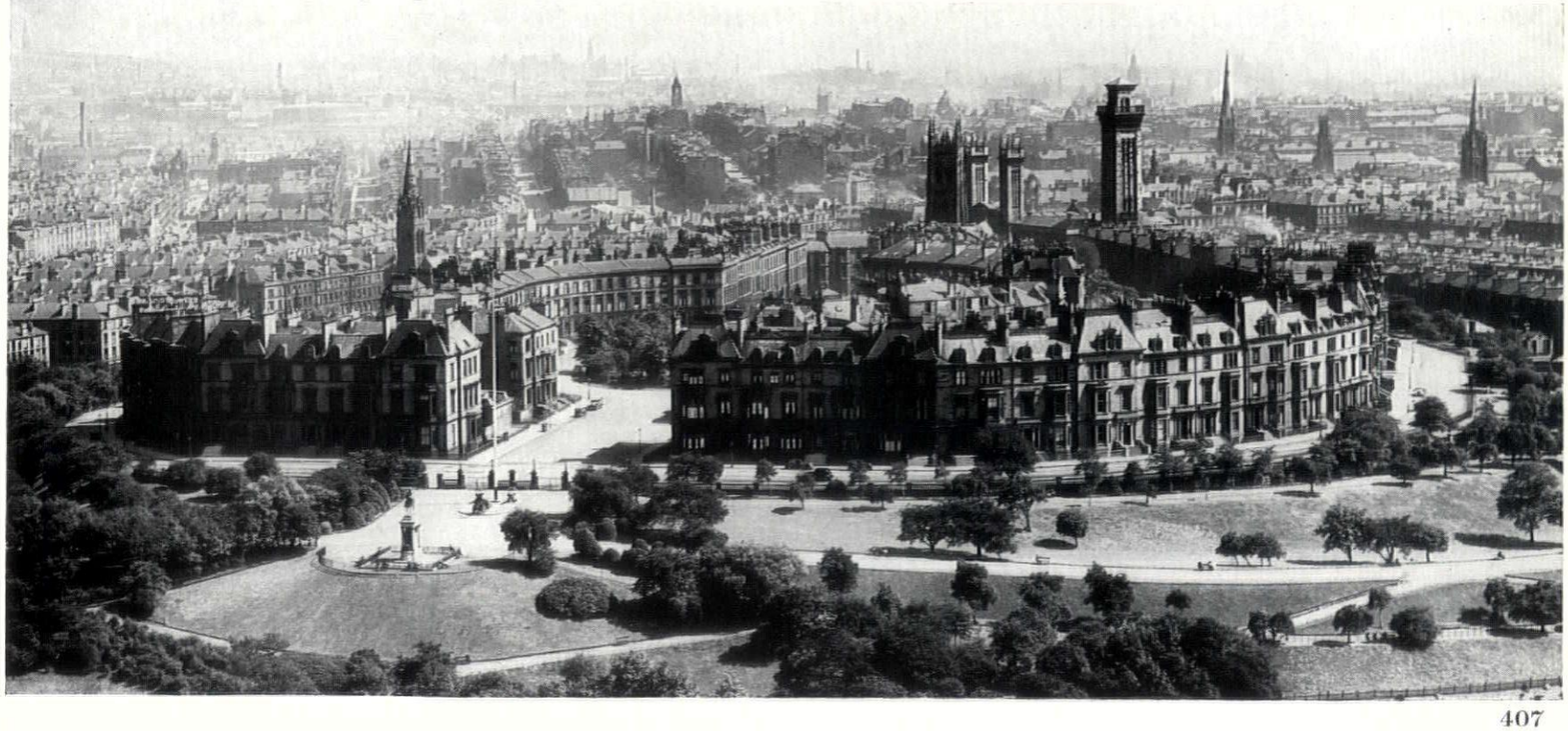
1, aerial view of Park Circus, Glasgow, and its neighbouring planned layout, the subject of the note alongside. In the background are the Italianate towers of Trinity College, designed by Charles Wilson, the architect of the Circus, and the Gothic Park Church, by Rochead. 2, part of the north side of Berkeley Street, showing how some of the streets and terraces comprising this planned layout have been mutilated by recent intrusions. 3, office block at the corner of Somerset Place, again showing the destructive effect of new work.



1

which needs guidance if it is to develop in the right direction.

Among the purposes of the Association are stimulating the founding of local societies, promoting the planning of villages and the redevelopment of towns, promoting the planting of trees and the better fencing of roads, bringing public pressure to bear on the problem of car-dumps and unsightly dealers' yards and tips and helping to educate schoolchildren on amenity matters through the CPRE Junior Section and by providing a panel of lecturers.

The secretary of the Association is Mr. B. M. Feilden, of 72 The Close, Norwich.

KENNEDY HALL

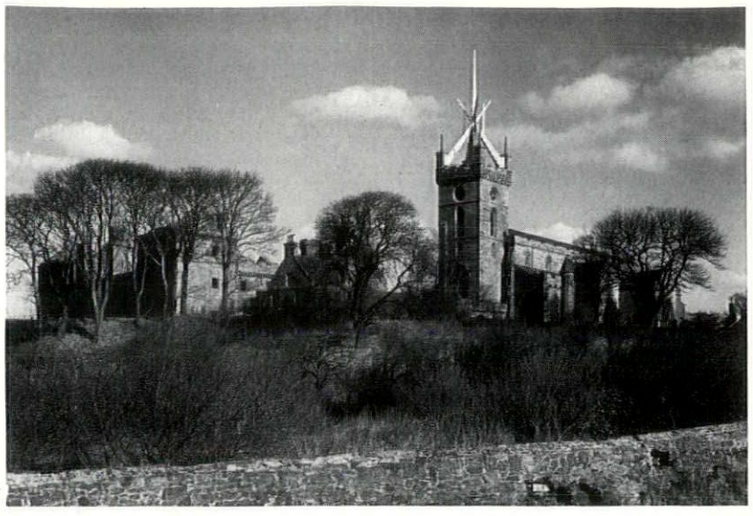
Raymond McGrath's designs for a concert hall to be built in Dublin by the Irish Government as a memorial to the late President Kennedy show a large multi-level central foyer giving access at one end to the main auditorium—an octagonal chamber seating 1,840—and at the other end to a smaller recital hall. The latter, which has its axis at right angles, seats 464. The foyer will also be used for exhibitions. The main auditorium will have a full range of mechanical and electrical equipment, accommodation for an orchestra of 120 and a choir of 220, an organ and a stage with hydraulically operated sections that will enable it to take the form either of a flat floor, a series of ramps and steps or a stage plus orchestra pit. It (and the smaller hall) will have simultaneous translation and public address systems to allow the building to be used for conferences and the like, but it has been designed primarily for music.

The site is not in the centre of Dublin, where the Government earlier considered putting it but where space would have been very constricted. It is at Haddington Road, Ballsbridge, an area which has already developed some international atmosphere through the presence of the new US Embassy (AR, December, 1964). The Irish Government already owned most of the site proposed for the Kennedy Memorial, and their ultimate intention is to build here a complex of public buildings, including a national library and Government offices. The concert hall has been conceived as the first instalment of this complex.

Mr. McGrath and his building committee, before the design process began, visited modern concert halls at Bonn, Bad Godesberg, Stuttgart, Berlin and Copenhagen, and the architect has said that he was especially impressed by those at Berlin and Stuttgart. The acoustic consultant for both the latter halls was Professor Cremer, and he has been appointed consultant for the Dublin building also. The plan shape of the main auditorium was not designed by Mr. McGrath primarily for acoustic reasons but in order to create as intimate an atmosphere as possible in a large amphitheatrical space that would also have good sight lines and seating arrangements. Professor Cremer has, however, accepted it as a working basis for the acoustical design.

NEW CROWN FOR LINLITHGOW

The prolonged controversy over the liturgical merits of Spence's Coventry Cathedral has tended to obscure its overwhelming, and in the best sense *popular*, success as a mingling of old and new—part of a living tradition of renewal that has a theological as well as an aesthetic value in the history of the Church. A striking new example of this can be seen at Linlithgow, one of Scotland's most beautiful historic burghs, where Geoffrey Clarke, on the strength of his Coventry work, was chosen in 1962 to design a new 58-ft. spire on the tower of the parish church in place of the medieval stone 'crown' which was removed in 1821. The church's consulting architects, Wilson and Wilson, had first tried to design a replica of the crown, but there was conflicting historical evidence on its exact appearance—and the Minister, the Rev. David Steel, was in any case doubtful of its relevance in the 1960's. Sir Basil Spence was consulted and agreed with the Minister; so did 14 out of 15 members of the church's restoration committee.



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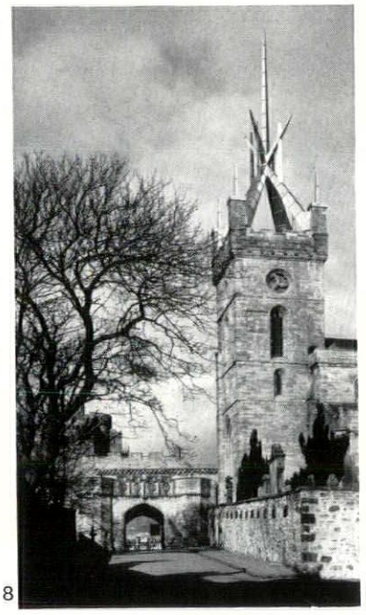

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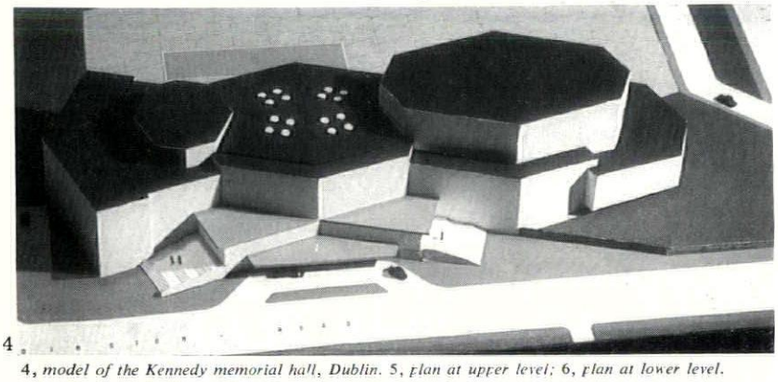
7, 8, *Linlithgow church, with the new 'crown' by Geoffrey Clarke on the tower.*

The new crown, completed soon after Christmas, is composed of laminated timber box sections with welded steel joints, clothed with anodized aluminium sheet dyed to a pale gold colour designed to harmonize with the weathered stonework of the church and of the adjoining Palace. The pointed wigwam silhouette forms the apex of the town, linking the ruined square-towered Palace on the hill with the huddle of roofs of different dates in the valley below and with the open countryside and large lake beyond. Time will show whether this is a landmark with which Linlithgow citizens will be able to identify themselves. It certainly has a brisk, extrovert quality, graceful but a little cheeky, which should appeal to the secular multitudes for whom a church spire still supplies a necessary point of reference in daily life.



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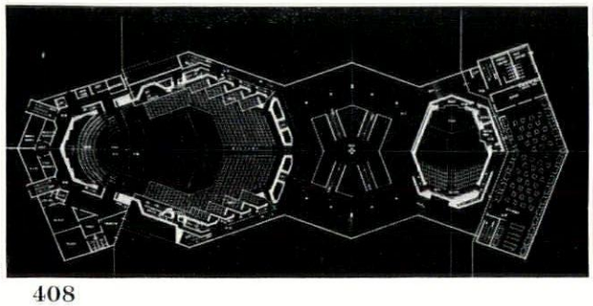

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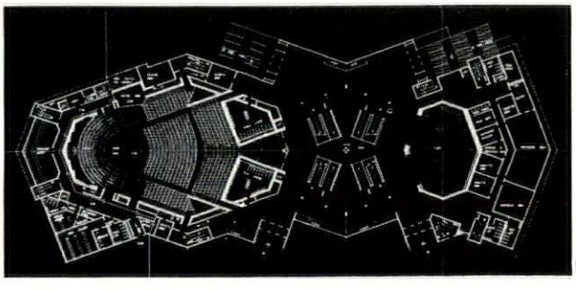

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4, *model of the Kennedy memorial hall, Dublin.* 5, *plan at upper level;* 6, *plan at lower level.*

correspondence

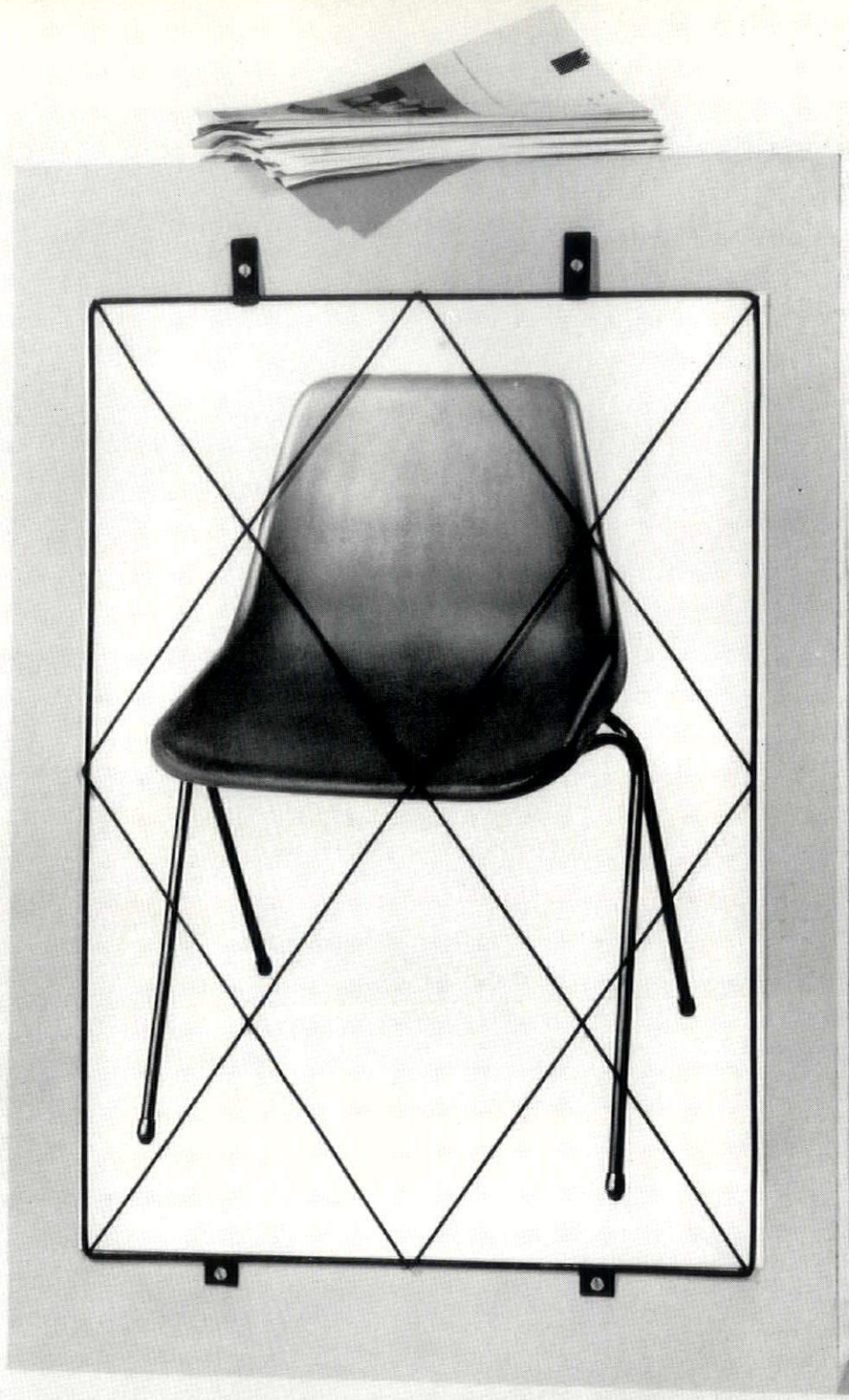
PLYMOUTH HOE

To the Editors.

SIRS: I am glad to see that you are keeping the city of Plymouth under review with Kenneth Browne's article 'On the Hoe' in your March issue. Although the Abercrombie plan, laid down in 1943 for the rebuilding of the city after the bombing, has been developed into a commercially successful shopping centre, the City Engineer has been prepared to rest on past glories and no plan has been worked out for the areas fringing this centre. Two separate reports have been produced which affect the area south of the shopping area towards the Sound, but the first of these, on which your article was based, considers only a very narrow waterfront strip of land, of which the City Engineer, in his report, writes: 'At West Hoe is the only extensive piece of land which can be redeveloped in depth for purposes associated with the Sea Front. . . . The proposed Pavilion . . . will form a prominent feature on the West end of the foreshore. This will resolve the thorny problem of providing a suitable site for a Concert Hall for the city.'

I think that both the Junior Chamber of Commerce scheme (numbered ii in your feature) and Mr. Kenneth Browne's own (numbered iii) indicate one basic fault in the City Engineer's. This is that the West Hoe site is unsatisfactory as a site for a complex of facilities and entertainments of an all-year-round nature, to serve both the city and its region. It is physically detached both in distance and visual connection (through the configuration of the land, which places the city centre over the hill in a shallow valley) from any other grouping of entertainments and from the commercial centre, nor is there any existing or proposed communication link mentioned in the report to alleviate this.

My own proposals are based on



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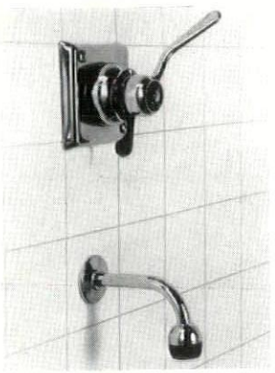
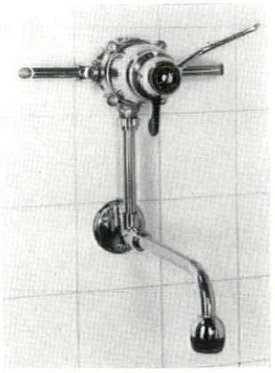
How many of these water usages in your **next** hospital should be thermostatically controlled?





All types of hospital

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Shampoo sprays in ward bathrooms, staff quarters and hairdressing sections.
Ambulance washing in the garage.

Mental hospitals

Sitz baths
Continuous flow or prolonged treatment baths in the hydrotherapeutic department.
Disturbed or agitated patients' baths.

Maternity and childrens' hospitals

Infants' baths.
Pre-natal baths.
Baby bottle washing.

Appropriate department

Arm baths.
Leg baths.
Combination arm, leg and hip baths.
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thinking around three elements: the relation to the shopping centre, which must be successful if the scheme is to have any economic basis during winter months; the connection to the Guildhall and Civic centre for conferences, receptions and banquets; and the Barbican, which has a genuine life of its own and could contribute its own atmosphere to a leisure district. These elements could form a linear chain of activities which lead to the water front and its seasonal life.

I mention the connection with the life of the Barbican since this district forms the subject of the other report by the City Engineer. It is treated in complete isolation and seems to be a reluctant document to satisfy the preservationists. Since the article on the Barbican appeared in the AR in April, 1957, a few more holes have been blasted in the fabric of this area and the report sets out to show how these can be filled with multi-storey car-parks. There is a faint mention of a suggestion by the City Architect, whose voice seems to be too seldom heard in matters of environment, of building a car-park over the Bretonside bus station. The full value of this is discounted by reason of its distance —a full three minutes' walk.

I don't wish to be unnecessarily vindictive about the efforts made by the city authority, but they are at the moment totally unrelated to any overall scheme. The city requires the hand of a sensitive but tough architect-planner to coalesce the south-central area. It could usefully be the newly appointed City Planning Officer's first job. For Abercrombie let praise be given; now clear our minds for the new ways of solving the problems.

Yours, etc.,

ROBERT B. VICKERY

Weybridge, Surrey.

TOWARDS A THEORY

To the Editors.

SIRS: Mr. Smith's useful article, 'Towards a Theory' (AR, February, 1965), explains with admirable clarity various current attitudes, but his final paragraph seems to me ambiguous; for when he demands 'a theory which lays down what it is that architecture should express,' and then asserts that a *real* theory of architecture must be concerned primarily with 'delight,' he seems to suggest that architectural expression and the beholder's delight are two aspects of the same thing. I personally would contend that 'expression' is concerned with function and structure, whereas 'delight' is concerned with proportion and texture, and it seems to me that those proposing new theories have an obligation to disprove this traditional attitude before asserting the need for some alternative.

Yours, etc.,

PETER COLLINS

McGill University, Montreal.

Mr. Donald Smith writes:

In my article the word *delight* was put between inverted commas in order to make it clear to readers that it was taken from that famous assertion (quoted by Wotton in his *Elements of Architecture*, 1624) that good building should have 'three conditions, commoditie, firmenes and delight.' *In this context* delight was a useful word for my purpose, which was to do no more than to explain that an ideal theory, unlike the other theories discussed earlier in the article, must deal primarily and explicitly with this aspect of building rather than with commodity (user requirements) or firmness (structure and materials).

The proposal for definitive roles for the words 'expression' and 'delight' put forward by Professor Collins seems a doubtful substitute for a theory as it stands. It is to be hoped he will illustrate his use of these terms by examples of their application and provide a list of texts in which the tradition to which he refers is more fully expressed. When this has been done it will be more easy to see if any demonstration of its inadequacy is necessary.

book reviews

JOINT OPERATION

PRINCIPLES OF HOSPITAL DESIGN. *By Hugh Gainsborough and John Gainsborough. The Architectural Press. 45s.*

The authors of this book, doctor and architect, have set out to guide their fellow professionals in the principles of hospital design, mainly from a medical standpoint but with sympathy for the patients' viewpoint also. The case for better control of infection, and of patients by nursing staff, is argued on the lines of 'isolate and overlook.' To these ends an increase in the number of single rooms is recommended by comparison with the Ministry of Health's standards (with a corresponding increase in the area and cost per bed), and principles of planning are defined to aid nursing supervision of patients. While it is impossible to define adequately the standard of performance which a hospital should attain in respect of patient care, the Gainsboroughs give us a fairly clear idea of what they think these standards should be. They also point out the degree of variation in the opinions of doctors and hospital staff to be encountered by the hospital planner and the sort of layout principles which can help to provide the necessary flexibility.

Some of the ward layouts suggested would seem, however, not to be as flexible in operation or layout as the authors would perhaps like them to be or imagine they are. To suggest placing operating theatres in small groups on alternate floors to gain better communication with the surgical wards does not seem to answer the need of either ward or theatre organization in a flexible or economic way. One circular ward for general purpose use is included among other proposed schemata of single and double corridor layouts. It has been shown by studies in the USA, referred to in this book, that even for intensive nursing a circular design has considerable limitations, though also some attractions; but when it is advocated for general use as a 32-bed unit inevitably detached from adjoining similar units, then the plea for flexibility in layout and operation seems to be being ignored. In fact all the proposed layouts are limited in this way by being detached units. The one exception is a double corridor layout of 66 beds with a high proportion of single bedrooms (nearly 40 per cent), but with a lift hall of generous dimensions separating each 33-bed unit from its neighbour. The layouts assume also that other floors above and below contain wards or other departments of essentially similar layout.

The book is oddly weighted on the side of ward planning, about three-quarters being devoted to this aspect of hospital design, the remainder being almost entirely taken up with other diagnostic and clinical departments. While recognizing that a hospital's *raison d'être* is clinical, many of the biggest planning and economic problems in hospitals are to do with communication, supply and administrative aspects. Neither is there any mention of the function of the hospital in relation to the community, nor of the operation and layout of the hospital as a whole.

The diagrams in the book for the most part are consistent and very clearly drawn, with the odd exception of the diagrams of ward layout which were used to illustrate some points of principle in the Ministry of Health Building Note on Deep Planned Wards. These are reproduced as originally drawn. They were clearly intended not to be taken too literally as type layouts (as a quote from the Building Note alongside the diagrams explains), but the authors have nevertheless chosen to be highly critical of certain details in the planning, in particular the location of the nurses' station. They say of one of the plans: 'this is closed round by kitchen, treatment room and bathroom.' In fact it is on the corner of two corridors and is open on two sides. It is also in a key position in relation to single rooms, a shared multi-bed area for more seriously ill patients, and the clean supply room and dirty utility room. A ward plan which the authors regard as being ideal in many respects (Aberdeen Royal Infirmary), and which they say, among other things, has the nurses' stations logically situated and clearly planned, proves on inspection to have two of its three nurses' stations surrounded on three sides by clean utility, flower room and dirty utility and from which the nurse, if sitting, can see the door of only one single room. The other nurses' station surveys a group of eight single rooms and is well related to these and other ancillary rooms, but it may well not be staffed at night. The furthest beds in this plan are also further (35 ft.) from the nurses' station than in the Ministry plan.

The Aberdeen plan would certainly cost considerably more to build than the double corridor Ministry plan owing to its very much higher proportion of single rooms, and it would seem to be less flexible for variation in bed groupings. The authors clearly think that the more expensive plan must give a better performance in respect of patient care. Nurses would probably not agree with this.

It is doubtful if this book will wholly achieve its declared object of making it easier for doctors and architects to work together and of enabling hospitals to be planned more efficiently and economically. The book is bound to be widely read in view of the lack of adequate detailed information on ward planning and hospital planning generally; nevertheless it is interesting to compare the Gainsborough book with another book which has appeared recently from the USA: *Hospital Function and Design* by the American Hospital Planning Consultant, E. Todd Wheeler, who is a member of the firm of Perkins and Will. By comparison the American book is better balanced and more informative, if perhaps somewhat reactionary and over-simplified. It also costs more than twice as much in the UK as the Gainsborough book.

Lastly the index. This is inadequate, being confined to names of people and hospitals, no subjects at all being referred to. This is especially frustrating in a book of reference where one is more likely to want to refer to, say, 'Treatment rooms, use of,' than to 'Whitesburg Hospital, USA'.

J. R. B. GREEN

ONE MAN'S WORK

CARLOS RAUL VILLANUEVA AND THE ARCHITECTURE OF VENEZUELA. *By Sibyl Moholy-Nagy. Stuttgart: Verlag Gerd Hatje (Britain: Alec Tiranti. 90s.).*

Venezuela followed Brazil and Mexico as the third main centre of modern architectural activity in Latin America, but modernization there happened so quickly after the country's oil resources began to be exploited that Caracas, the capital, might easily have become a chaos of unplanned development—as it were, an oil-rush city. This is indeed to some extent its character, but the saving presence of any responsible public architecture, of any intelligently laid out housing and of any sense that modern building technology has been exploited for other than immediate profit are due to one man—the subject of this monograph.

Villanueva, now aged 64, was trained at the *Ecole des Beaux Arts* in Paris and started practice in Caracas in 1928. He was successively architect to the Venezuelan Ministry of Public Works (1929–39) and to the Banco Obrero which initiated forward-looking schemes for workers' housing at a time when responsible public authority housing hardly existed on the American Continent. He was also the principal architect responsible for the University City at Caracas, built in stages between 1944 and 1958 and including a large hospital and medical school and a number of athletic and swimming stadia that are probably the largest and best equipped in any university.

They illustrate his vigorous use of concrete construction, his plastic ingenuity and his enthusiasm for allying architecture with the other arts. This lavish monograph describes this and Villanueva's other work thoroughly. The photographs are excellent. There are adequate plans. The text is informative but somewhat inflated in style for a subject that does not yet lend itself to final historical definition and is made to seem more so by a number of irrelevant illustrations. It was not really necessary, for example, to include a picture of the Colosseum at Rome in order to show that the Caracas stadium is less massive in form, or one of the Mexico university library in order to make the point that the library at Caracas university is not covered with mosaics.

J.M.R.



H+H

HEALTH AND HOSPITALS: *This special issue of* The Architectural Review *has been compiled on behalf of the Editors by Richard Llewelyn-Davies, Professor of Architecture at University College, London (and formerly director of architectural studies at the Nuffield Provincial Hospitals Trust and the Nuffield Foundation), John Weeks, and members of the firm of Llewelyn-Davies, Weeks and Partners. They are also responsible for the running commentary accompanying the illustrations of new hospital buildings.*

foreword

This issue is published at a moment when hospital building in the United Kingdom is being reviewed at national level, which makes it timely to consider both the achievements of the last two decades and to speculate about the future. In one of the introductory articles Mr. Peter Cowan gives a picture of the hospital situation as it existed at the beginning of the rebuilding plan. At that time a very large number of hospital beds were in cottage hospitals and the proposed rebuilding under the plan was at a modest rate, lower than in the pre-war years. The plan focused mainly on the provision of new general hospitals which were envisaged as being between 300 and 600 beds in size. It also envisaged the construction of a limited amount of new accommodation for the mentally ill in hospitals of about 300 bed size. The plan was purely a hospital one, and as such not concerned with the integration of the services given by other arms of the health service—general practitioners and local authority health services.

Later in the issue Professor T. E. Chester discusses the scale of hospital building in the immediate future. The problems involved in getting the programme off the ground have been very great. The most obvious difficulties were the shortage of architects with hospital building experience, and the lack of any comprehensive body of knowledge on hospital planning. Whereas in the neutral countries and in the USA hospital building had proceeded continuously over the war years, creating a stock of knowledge and a cadre of experienced architects, there was little to build on in the UK. However, in 1950, the Nuffield Provincial Hospitals Trust had established a multi-disciplinary team of research workers to study hospital function and design. This team, which was led by the consulting editors of this issue of the REVIEW, published its findings in 1955 and its work formed the foundation for a rapid period of development. The Ministry of Health and the Nuffield Trust together organized special courses for architects in hospital planning first at Oxford and later at University College, London. The Ministry of Health established

The change in hospital design from high-walled, grimly axial institutions to a flexible, informal layout, in which human scale is paramount, is illustrated dramatically in this photograph of the model of Stillman and Eastwick-Field's new psychiatric hospital at Upton, near Northampton (see pages 479–481 of this issue), on which work will shortly start. The individual units, hugging the contours of the site, cluster around a community centre.

its research and development group, which produced a series of Building Notes, a very thorough guide to hospital design.

These efforts were, by and large, successful and rapid progress was made in raising the standard of British hospital design, which has now caught up with, and perhaps surpassed, that of other countries. Perhaps the most interesting of all the developments has been the growing realization by British hospital planners that the problems of growth and change must be met by new approaches in design. Only two or three years ago most hospital planning took as its dominant aim the need to compress the hospital as far as possible in order to reduce distance from point to point. This aim still dominates most American and Continental planning. Practically all the hospitals described in the December, 1964, edition of the German periodical *Architektur Wettbewerbe* still show compactness and compression as the guiding idea. But in the last two or three years English thinking has undergone an important change. It is now seen that a hospital must be able to grow and change to meet the shifting needs of society and the advance of medicine. The hospital in which this lesson has been taken most seriously is the Northwick Park project (illustrated on page 456 of this issue), but the influence of planning for growth and change will be seen in many other of the new English projects illustrated which have a characteristic looseness of structure in contrast with the rigid monoliths being planned in many other parts of the world.

Even more far-reaching changes in hospital thinking may result from the work now going on towards integrating the hospital with its community and with the other arms of the health service. An important step forward in this direction was taken by the Birmingham General Hospital and the Nuffield Provincial Hospitals Trust when they sponsored a research study at Birmingham University and University College, London. A report of this study is about to be published, under the title *A Balanced Teaching Hospital.*

This, and other studies in progress at the present time, may result in a radical review of our concept of the hospital. It may even be that the present concept of the district general hospital will need to be changed, particularly if the general hospital in future assumes care for the mentally ill and the old in addition to its traditional role of caring for the acutely sick.

Articles in this issue describe ways in which the relationship which must exist between hospitals and the community they serve are being studied from the socio-medical and town-planning standpoints. Health services generally have so far been insufficiently integrated into town planning. No new town is planned without deep thought being given to the proper distribution of shopping centres and educational facilities but, generally speaking, little or no thought is given to the location of the health facilities and their relationship to centres of population and city centres. Serious problems are arising in our existing cities as hospitals come up for rebuilding. Existing sites are often small, and under our present arrangements the health authorities may be unable to acquire sufficient additional land; it will be hard to plan hospitals on these restricted sites to take adequate account of growth and change in the communities they serve. There seems need for urgent study of hospital location in urban centres.

What is the architectural quality of present-day hospital design? The examples illustrated on the following pages will enable readers to make some appraisal, but it does seem that while architects are beginning to master technical problems of hospital planning they are not yet fully in command of architectural form. This is not difficult to understand; the technical problems of hospital planning have undergone such radical re-thinking in the past ten years, at every level, that the old forms and the old scale of thought have been outstripped. A whole new architecture of health buildings may be needed.

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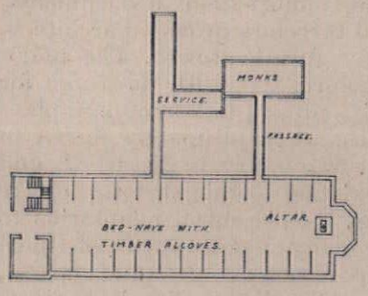
P.J.Stone

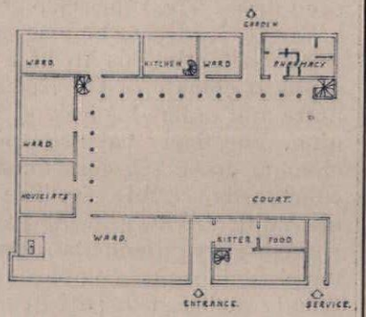
ELEMENTS OF THE HOSPITAL: 1300-1900

Although medicine is nearly as old as man, the hospital, as an institution in which to practise it, is very much newer. As a semi-charitable organization, a hospital depended heavily upon the community's economic and moral support and could not, therefore, exist until a society had developed its social conscience at least to the stage where landowners (who had always been able to afford personal physicians) were willing to treat their serfs not as disposable items but as persons worthy of medical attention. Consequently, early hospitals are rare. Examples are known to have existed in the civilizations of the Indus, Ceylon, Persia and Arabia, but it was not until the coming of Christianity, with its new concept of pity, that any sustained progress was made. Christianity provided a ready-made organization for coping with the sick. It established religious orders dedicated to their care, and founded primitive hospitals relatively early in the Church's history, such as Bishop Basil's in Caesarea in AD 370 and Archbishop Chrysostom's in Constantinople in AD 400.

The temporary slave hospitals of the late Roman Empire were replaced by more permanent monastic institutions, some of which still stand. In England the infirmaries of Canterbury and Ely can be still recognized easily in their main constituents. In France a particularly telling example is the Hopital de Tonnerre, 1. Built in 1293, it consisted of a single great nave over 300 ft. long sub-divided down each side into cubicles for the sick. Each cubicle held one bed that could be curtained off from the communal space, at one end of which was the chapel area dominated by the altar where mass was celebrated. This simple plan emerges again and again through the ensuing centuries. One of the finest examples is the Hotel Dieu at Beaune (1443) founded by Nicolas Rolin, chancellor of Burgundy. The bed-nave, some seventy-two metres long, is again sub-divided into cubicles, 2, and an upper level gallery provided to enable staff to supervise the thirty beds.



1, *Hôpital de Tonnere, France,* 1293.



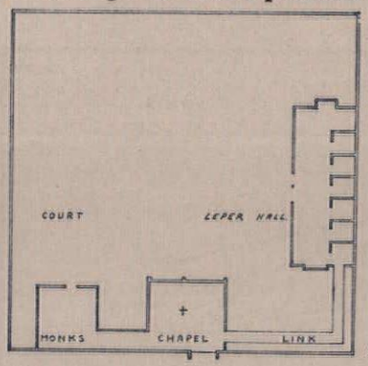
2, *Hôtel Dieu de Beaune, France,* 1443.

The ancillary buildings comprising the pharmacy, stores, kitchens and staff quarters define a rectangular court, the fourth side of which remains open, thus anticipating an element that becomes a common feature in late nineteenth-century plans. A two-storey timber gallery overlooks part of the courtyard, one floor being reserved for poor and the other for rich patients.

Although the hospital as an institution became more complex, the bed-nave retained its original form. It reached incredible dimensions in the Hotel Dieu in Paris before that hospital's destruction in the holocaust of 1772. From that time onward the religious emphasis in its internal planning was replaced by more scientific principles, although the general envelope still remained. To-day the 'Nightingale Ward' is the bed-nave's direct descendant. These were the most important elements in hospital design until the bed as a basic functional unit was displaced by the diagnostic facilities of the twentieth century.

In the twelfth century infectious patients, usually lepers, were separated from the so-called non-infectious, and the lazar-house was a common sight until the decline of leprosy in the fifteenth century. It usually consisted of separate cottages and a chapel within a walled enclosure sited at some distance from the town, but one plan in particular is interesting for its physical separation of function. In the fourteenth century at Tortoi, for example, 3, the chapel is extracted from the bed-nave and placed between it and the monks' quarters, where it acts as a buffer zone. The sick were confined to their own quarters, the walled yard and half the chapel. The monks celebrated mass in their portion of the chapel and supervised the patients' beds in the sick-hall by means of an overhead gallery. They therefore could remain untouched by the inmates. Establishments of this kind were usually limited to less than a dozen patients.

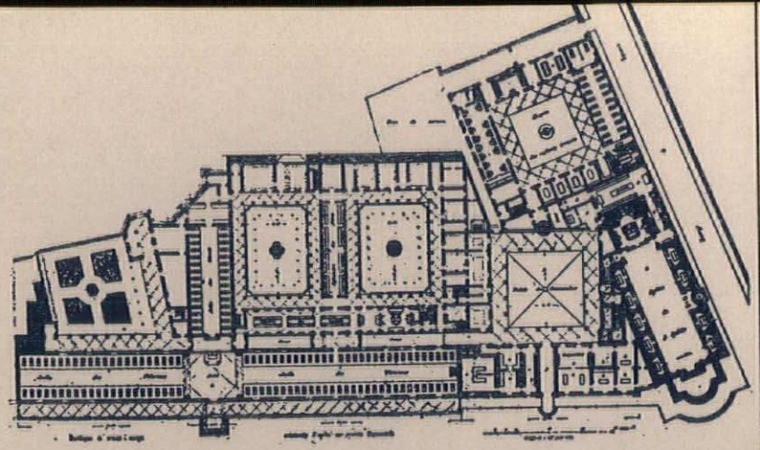
During this period in Western Europe the land remained rural. A feudal society busied itself with internecine wars; the crusades uprooted communities; famine and epidemics were rife. The population was scattered thinly over the countryside and even in urban centres the social and economic structure of society was not conducive to hospital growth. Consequently the sick-halls in religious establishments were designed to accommodate an arbitrarily defined but finite number of beds, so forcing bed-bound patients to double up in times of crisis.



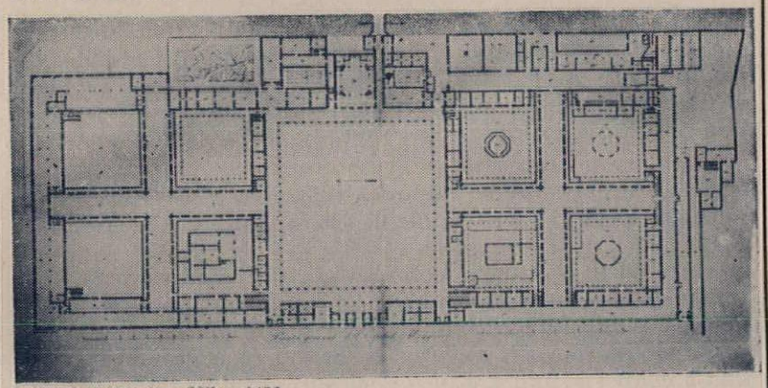
3, *Maladrerie de Tortoi.*

The plan pattern remained stable until the Renaissance generated the need to reassess the situation.

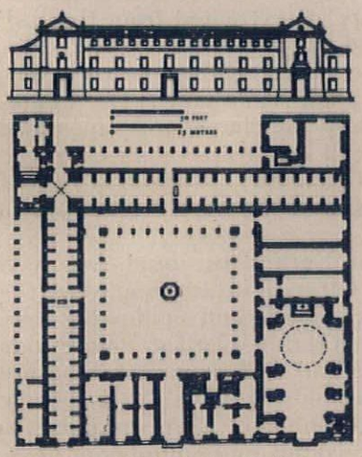
Renaissance principles of design and proportion were soon applied as a matter of course to hospital structures, and underlying these principles were the scientific discoveries of the age. The problems of ventilation and sanitation began to be investigated and principles of hygiene to be enumerated. Santo Spirito in Rome, founded in 1198, reconstructed by Marchione d'Arezzo and enlarged in the late fifteenth cen-



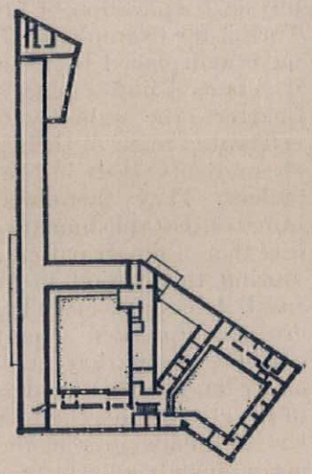
4, *Santo Spirito, Rome.*



5, *Ospedale Maggiore, Milan,* 1456.

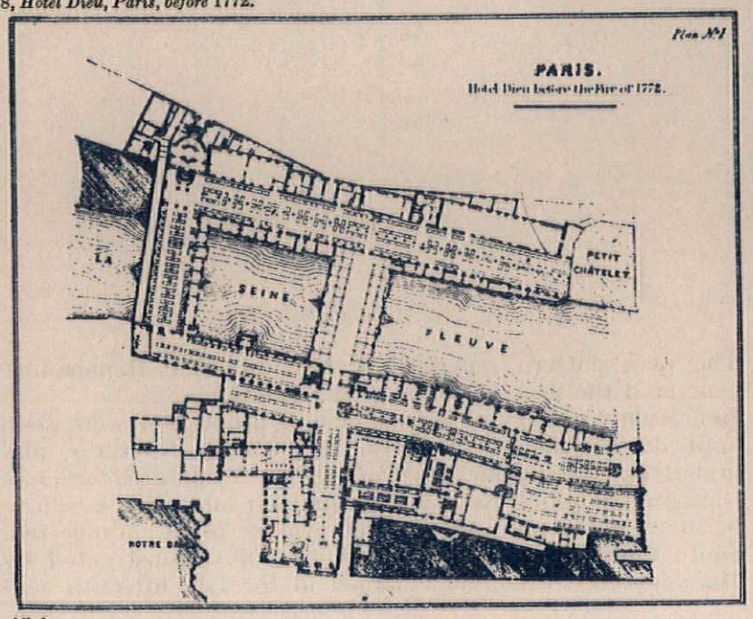


6, *Medina del Campo, Spain,* 1591-1616.



7, *Great Hospital of the Order of St. John, Malta.*

8, *Hôtel Dieu, Paris, before* 1772.



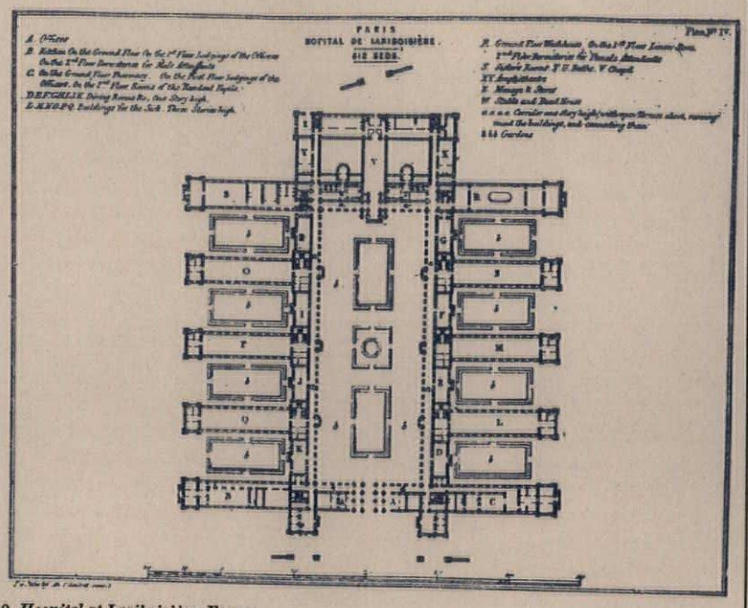
tury, is typical of the period, 4. The mediaeval communal wards are retained and at their intersection (the old transept crossing) an altar is still the focal point. The herb garden, pharmacy and chapel comprise the therapies; the laundry, kitchen and refectories, the service facilities. The wide courtyards are girdled by colonnades. These descendants of the mediaeval cloister now serve a further purpose for, in addition to being exercise and communication routes, they provide protected external living spaces for patients and are directly accessible from the wards. As remedial zones for the patient they comprise a new element in the planning fabric.

Milan provides the grandest example of all—Filarete's great masterpiece of 1456, the Ospedale Maggiore, 5. Here, two great communal wards each in the shape of a cross lie on opposite sides of a central courtyard, itself originally to be dominated by a grand chapel, the proportions of which were reluctantly reduced as work proceeded. The hospital contained all the departments common in such an establishment of the time, including a well-stocked herb garden, and was sited adjacent to the town moat which it used as a sewer. To assist hygiene, undercrofts beneath the complex contained canals (at a level above the moat) to which patients could descend from their wards by means of a stair and door between each pair of beds. These sanitary sewers were flushed clean in wet weather by storm water that descended through the ventilation pipes beneath the undercroft ceilings, and represented a considerable advance on the stream that was occasionally diverted to run beneath a monastic dormitory.

Filarete's plan is one of the milestones in hospital planning, and many derivatives can be seen throughout Europe where hospitals at this time were often established on the popular pilgrim routes. The hospitals of Santiago, Toledo and Granada, all by Enrique de Egas, are arranged in a cruciform, radiating from a central chapel, and the courtyards are colonnaded. The Medina del Campo by Juan de Tolosa, 6, has wards bounded on both their longer sides by colonnades, thus enabling the outer colonnade to be reserved solely for patient use. Farther south, in Malta, the Knights of St. John had established the Great Hospital of that Order in 1575. With its schools of anatomy, surgery and pharmacy founded by Cottoner in 1674, it was to become one of the leading medical centres of Europe, 7. The plan, remarkably similar to Santo Spirito, was dictated mainly by the peninsula of Valletta and the need to land wounded from galleys in the harbour. Its eleven wards contained 500 iron-pillared beds ranged in bays down each wall. The great ward was 185 ft. long, 34 ft. 9 in. wide and 31 ft. high, but the windows were small and ventilation poor. Many hospitals such as this were eventually added to as the need arose. The time scale of such multi-stage developments, however, tended to be long and therefore provided architects with little stimulus to plan for future growth. The philosophical climate of the Renaissance, too, with its search for finite and ordered solutions, discouraged indeterminate planning. The finely balanced plans, when ultimately forced to change, do so self-consciously. Symmetry is disturbed, and courtyards are filled in. The existing Gothic structures were also subjected to growing pains. By piecemeal adaptation to changing requirements over many years, some of them developed most complex circulation routes and spaces, totally unsuited to patient care. The Hotel Dieu in Paris, 8, is a prime example.

In the fifteenth and sixteenth centuries, hospitals in France averaged 300 to 500 beds, but by the seventeenth century French colonialism was at its height; commerce developed and towns grew; problems of hygiene arose and the State was forced to introduce health measures such as forty days' quarantine for all travellers. The sick no longer lay scattered in the countryside; they crowded the urban hospitals which gradually expanded to receive them.

The plan of the Hotel Dieu before the fire of 1772 shows this haphazard growth clearly. The whole comprises several



9, *Hospital at Lariboisière, France.*

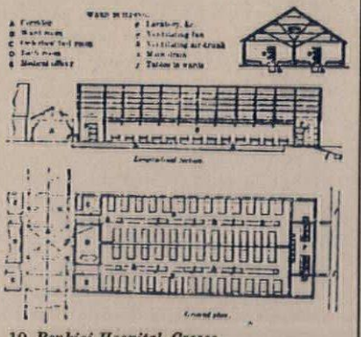
separately indentifiable communal wards, interlocking one with another to form unending volumes of space. The five hundred beds per floor sometimes contained up to eight people in each bed, and at one period 7,000 sick inhabited this warren, where one in four died. The ever-present danger of cross infection in such a place began to be realized, and in 1788 Lavoisier and some colleagues submitted a scheme to the Academie des Sciences which was designed to reduce the spread of airborne bacteria. This was the Lariboisiere Hospital, 9, and, like the Ospedale Maggiore, was to become a planner's standard reference. Florence Nightingale quoted it as a perfect block plan and advocated its use widely. Classical in layout and non-extendible, the colonnades of the central courtyard were adapted to the climate of northern France and became corridors. Simultaneously the three-storey wards, each containing thirty-two beds and its own toilet facilities, were placed at right-angles to the corridor system, allowing fresh air to cross-ventilate each block. Thus the corridor and pavilion soon dominated the nineteenth-century hospital scene. Lariboisiere was not built until 1846–53, by which time the 612 beds were artificially ventilated and warmed. Unfortunately, the extract system promoted, rather than reduced, airborne cross-infection and the mortality rate was high, despite the superb block layout.

In England the situation was no better than in France. Following the dissolution of the monasteries, virtually no hospitals existed for two hundred years. Between 1700 and 1800 the population nearly doubled as the effects of the Industrial Revolution began to be felt. The Enclosure Acts compelled people to seek work in the new industrial centres that were mushrooming at an alarming rate. Sanitary facilities in these places were soon inadequate, whilst long working hours and poor nutrition encouraged illness. As their numbers grew, the plight of the sick began to impinge upon the conscience of some humanitarians, and in 1720 a society was formed in London to help these unfortunates. A hospital was founded which eventually came to be known as St. George's. It was to be the first of many voluntary hospitals whose numbers increased rapidly over the next century. Simultaneously various improvements were introduced: Aitkin's book *Thoughts on Hospitals* was published in 1777; Howard and Pringle advocated fresh air and cleanliness, established minimum ventilation standards, and debated the optimum distance necessary between beds if one patient were not to infect his neighbour.

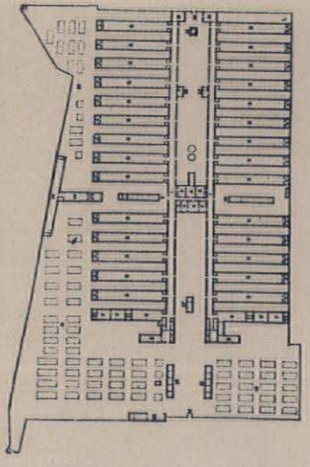
In 1834 increased demands were made upon the voluntary hospitals by the revision of the Poor Law. Their out-patients' departments, in particular, had to expand without jeopardizing the running of the establishment, wards became overcrowded, and it was not until the Metropolitan Poor Law Act of 1867 that relief came. This followed an outcry against the appalling conditions found in the workhouses at that time and led to separate hospitals being founded for people suffering from fever, tuberculosis and mental illnesses. These, however, were either constructed as additions to existing buildings or designed as new hospitals, every bit as unadaptable as their predecessors.

All the primary elements of a hospital now existed and were well tried. Numerous variations on the corridor, courtyard and pavilion theme were constructed, but it required the conditions of the Crimean War and the genius of I. K. Brunel to make a significant advance. In February 1855 he was commissioned to design, and have transported, hospital buildings for the wounded and dysentery-ridden troops in the Crimea. He resolved that the structures should 'be capable of adapting to any plot of ground within reasonable limits' and be cheap, comfortable and capable of limitless expansion as the casualty-list lengthened. Taking the corridor as his prime element, he magnified it into a 22 ft. wide, open-sided spine a third of a mile long, through which it was proposed to run a railway from the harbour in order that the sick could be unloaded directly into their wards, 10. To either side of this open-ended spine were attached the ward pavilions, each containing two wards of 26 beds complete with flushing closets and an input ventilation system (whether he had learnt from the extract system of Lariboisiere is unknown). The timber was white-washed and the roofs covered with polished tin as protection against the sun. Only the washhouses and kitchens were of iron. The whole system was so simple that it took only eleven weeks from inception for the first shipload of repetitive units to be despatched from England. Seven months later the hospital at Renkioi was treating 1,500 patients.

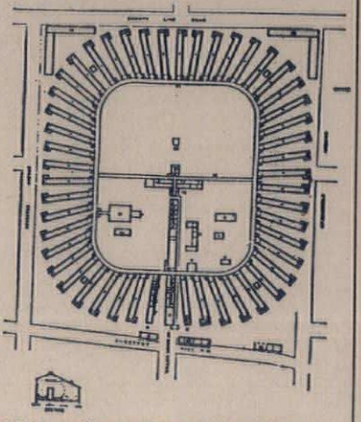
The American and, later, the German armies adopted some of Brunel's techniques. The casualty rate in the American Civil War compelled the building of hospitals with speed and economy. By adopting and modifying the lessons learnt in the Crimean campaign, the Union Army alone built over one



10, *Renkioi Hospital ,Greece.*

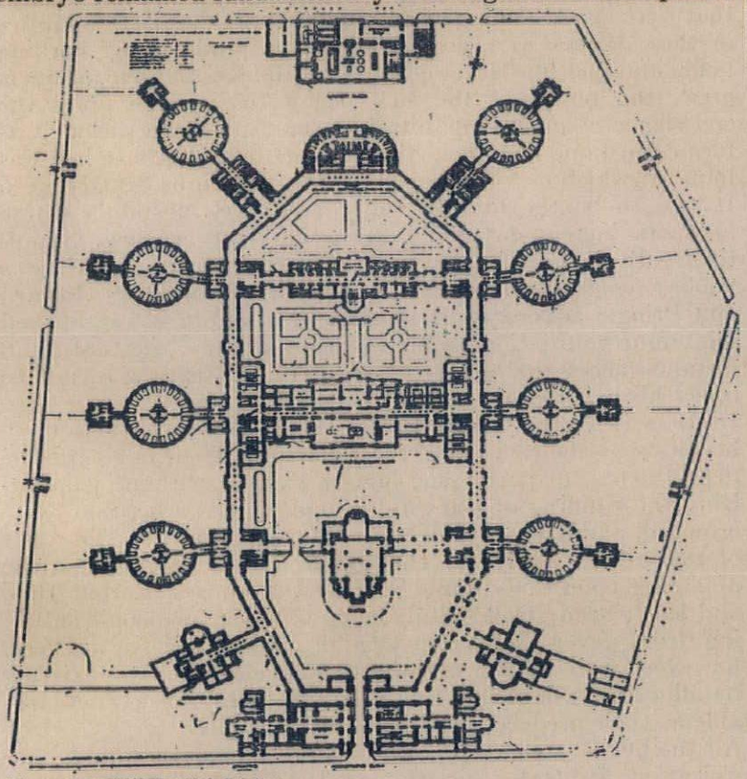


11, *Satterlee General Hospital, Philadelphia.*



12, *Mower General Hospital, Philadelphia.*

hundred and fifty hospitals capable of housing nearly 60,000 patients in eight months. Satterlee General Hospital in West Philadelphia, 11, was their largest, with an official capacity of 3,519 beds. Many, with very slight adaptation, could have been enlarged still further had time and money been available. But some, such as the Mower General in Philadelphia, 12, could not. Its circular plan was thoroughly finite. Brunel's theory of extendibility, if it was ever truly understood, was soon forgotten; outside the military sphere, when the time scale and admission rate were less acute, planners remained entombed in the Beaux Arts coffins. A few current medical theories caused slight variations, but the corridor and pavilion embryo remained fundamentally unchanged. A few hospitals,



13, *Antwerp Civil Hospital, Belgium.*

like the Civil Hospital at Antwerp, 13, achieved a superb elegance, but the lessons of the Crimea were never seriously applied at home.

By 1900 the bed, as the basic functional unit of any hospital, began to lose ground in the face of the growing diagnostic facilities. Anaesthesia had, by the middle of the nineteenth century, turned surgery into an exploratory science; Pasteur, Lister, Von Bergmann made inroads against infection, and in 1895 Roentgen discovered the X-ray. The telephone and motor car expanded the patient catchment area and yet the significance of these events and the subsequent pressures they gave rise to were still not allowed to disrupt the established pattern of hospital planning. The concept of change had no place in physical terms. The hospital as an inflexible monument of civic pride was to remain so until the second half of the twentieth century.

REFERENCES

Brunel (fils): *Life of Isambard Kingdom Brunel*. Longmans Green & Co.

BIBLIOGRAPHY

Dr. R. F. Bridgman: *L'hopital et la Cite*. Editions du Cosmos, Paris.

P. Letarouilly: *Edifices de Rome Moderne*. Vol 5. Tiranti, London.

Arthur Byne: *Spanish Architecture of the Sixteenth Century*. G. P. Putnams & Sons.

Quentin Hughes: *The Buildings of Malta*. Tiranti, London, 1956.

F. Nightingale: *Notes on Hospitals*. Longman, Green, Longman, Roberts and Green, 1863.

Barbara Duncum: *Background to Hospital Planning*. Lecture, Nuffield Foundation and Nuffield Provincial Hospital Trust, September 1960.

Joseph P. Peters: 'How Civil War Hospitals changed Hospital Care'; *The Modern Hospital*. Vol. 98, No. 5.

Burdett: *Portfolio of Plans of British, Colonial, American and Foreign Hospitals*. J. & A. Churchill, 1893.

Sir Arthur Thomson: 'History and Development of Teaching Hospitals in England.' *British Medical Journal*. September 10, 1960.

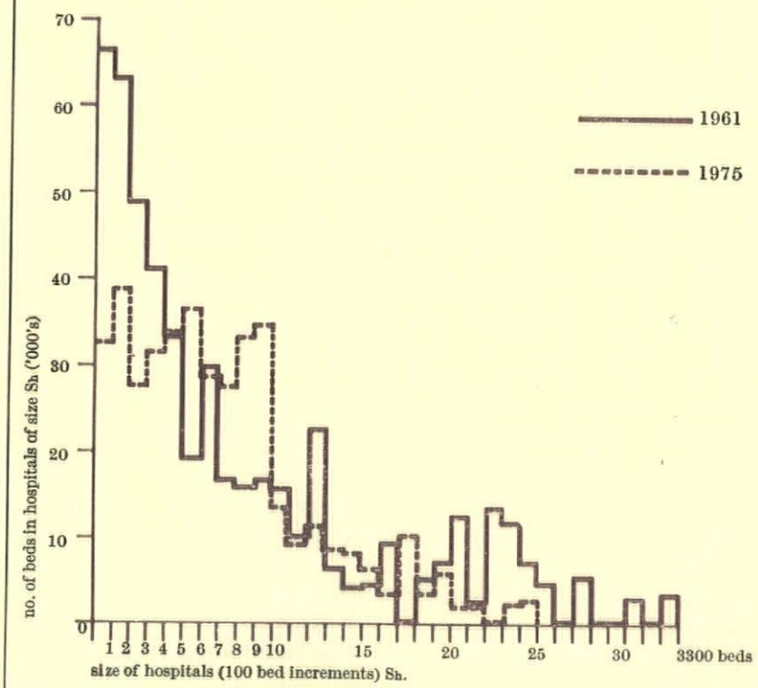
Sir Allen Daley: 'British Hospitals as they were before 1948.' *British Medical Journal*. September 10, 1960.

G. Kubler and M. Soria: *The Pelican History of Art: Art and Architecture in Spain and Portugal and their American Dominions* 1500-1800. Penguin Books, 1959.

Peter Cowan

HOSPITALS IN TOWNS: LOCATION & SITING

The Hospital Plan for England and Wales[1] proposes major changes in many aspects of hospital provision. First, the Plan suggests radical reforms in the *kind* of hospital most suited to modern industrial society. It proposes that hospital care should be concentrated into District General Hospitals, each sufficiently large to cater for the needs of a local community. Second, the Plan affects the *size* of hospitals. It suggests that small hospitals should be closed; that some large hospitals should also be shut down, and that the size of new hospitals should lie somewhere between 300 and 800 beds. The size of hospitals has been discussed by the author in a paper[2] which also attempts to indicate the effect of the Hospital Plan upon the size of hospitals in this country. 1 indicates the changes which are likely to occur between 1961 and 1975.



1, comparative size distribution of hospitals in 1961 and 1975 (England & Wales)

Third, the Plan proposes some changes in the *location* of hospitals. The various proposals put forward by Regional Hospital Boards affect only a fraction of the total number of hospital locations in the country (an analysis of the Plan indicates that 69 new hospitals are to be located on new sites) and in this respect the Plan is most interesting for what it does not propose. Proper planning of hospital location is as important as proper design of hospital buildings. The present pattern of hospitals represents a huge investment in buildings and in land. It is unthinkable that it could be swept away and replaced entire overnight. The system must be replaced gradually part by part. This will take some time, and must start from an understanding of the pattern as it has evolved. The first step is to uncover reasons underlying the system of siting and location. This is necessary for two reasons:

First, in order to test the pattern as it operates today. Although parts of the pattern do not work well, others may, by accident or design, continue to play an effective role in the health service.

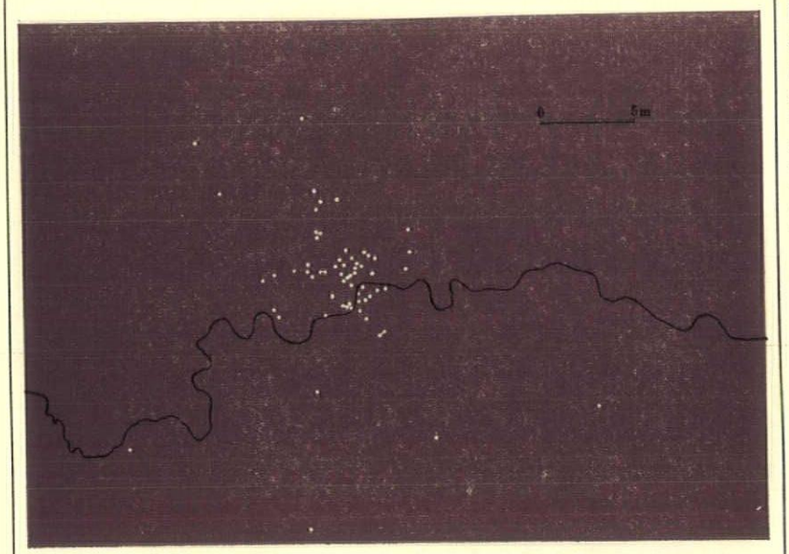
Second, as a means towards improving future planning. This is a continuing need in all social services. As new plans are produced, so they influence and change social circumstances, creating new patterns of behaviour and demand, and new problems for planners. Social planning is never finished. The final word on hospital location can never be said. One can point to generally desirable objectives but these will never be achieved, for the process of planning itself will change the objectives.

THE PRESENT PATTERN

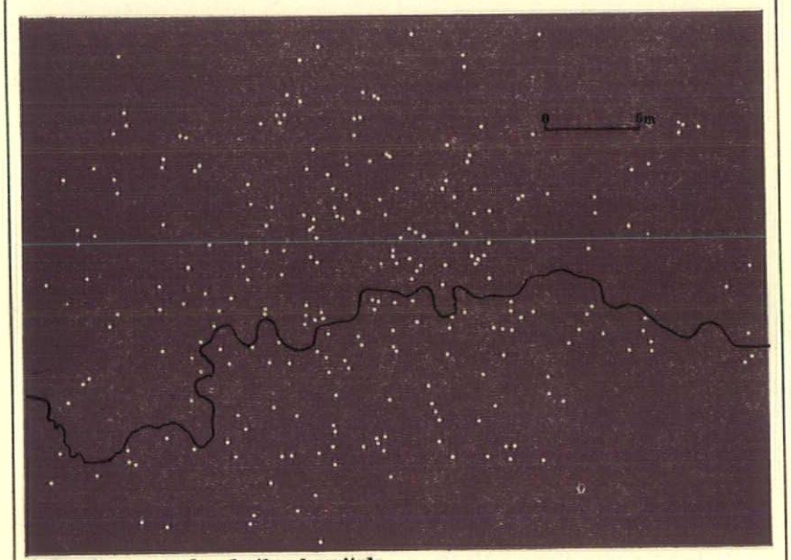
Until comparatively recently very few observers felt the need to plan the distribution of hospitals, or any other kind of medical service. Most people seemed content to let the pattern develop naturally. The experience of London had shown the problems which could come with unco-ordinated expansion. These lessons were forgotten as hospitals grew and spread throughout the country. Some areas had too many hospitals, others had too few. The pattern of provision depended on the donations of the living and the legacies of the dead, rather than on any ascertained need for hospital services.[3]

Yet during the nineteenth century many recommendations were made concerning the best sites for hospitals. Florence Nightingale thought that a rural situation was the most suitable for a hospital. She was primarily concerned with the problem of cross infection. 'The first requirement of a hospital is that it should do the patient no harm.'[4] Drs. Holmes and Bristow, commissioned to draft a report to the Privy Council in 1864, did not consider that a rural situation was so necessary to health. They also had views upon the best size for a hospital, which they concluded did not matter very greatly. 'Whether the hospital contains 100 beds or 1,000 does not matter.'[5]

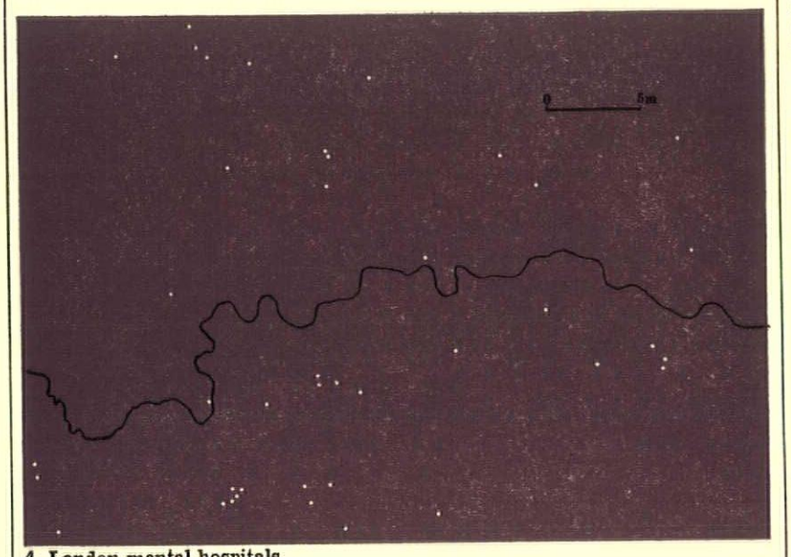
But the greatest nineteenth-century figure in hospital planning was undoubtedly Henry Burdett, whose *Hospitals and Asylums of the World* appeared in 1893.[6] Burdett discussed many aspects of hospital planning and administration, and his views on hospital siting and location were most interesting. He believed that mental hospitals should be located on the fringe of cities: 'An asylum for the insane should occupy a site not much overlooked by public roads. It should be within two miles of a railway station, and somewhat centrally placed as regards the district from which it draws its patients. To be near a large town is a decided advantage to the staff of any asylum, and where there is a choice of suitable estates care should be taken to select one within a mile or two of a town.'[7] Burdett also complained that the great teaching hospitals in the centres of large cities were cramped by their sites: 'Every year our great cities become more congested, as the population continually increases in number. Every year the difficulty of providing sites in suitable situations for great hospitals in cities increases, and yet the site is, on the whole, probably the most important of the many factors which collectively constitute what we include in the phrase 'hospital construction.'[8] He also carried out the first complete analysis of



2, London teaching hospitals



3, London general and other hospitals



4, London mental hospitals

hospital sites, concluding that 'the thing to aim at is to have a site of sufficient area to provide at least 300 superficial feet per bed. The site should be self-contained; that is to say, it should be so chosen as to enable the authorities to prevent the hospital from being deprived of light and air by contiguous buildings. To ensure this result it is desirable that the hospital should be entirely surrounded by streets of a reasonable width.'[9]

Thus, while the great hospital movement of the nineteenth century was under way, a number of individuals were offering advice and counsel on various aspects of siting and location. Many of these were involved in planning and running hospitals (Burdett was for some time Secretary and General Superintendent of the Queen's Hospital, Birmingham) and their advice was practical and most useful; but planning on a wide scale was impossible. Hospitals were divided into three main classes. First, there were the private 'voluntary' hospitals, which cared for the acute sick; second were the public hospitals, which grew up in mid-nineteenth century, developing from workhouses and Poor Law Institutions. These cared for the destitute and chronic sick. A third class of institution, which grew up somewhat later, was the great asylums for the insane.

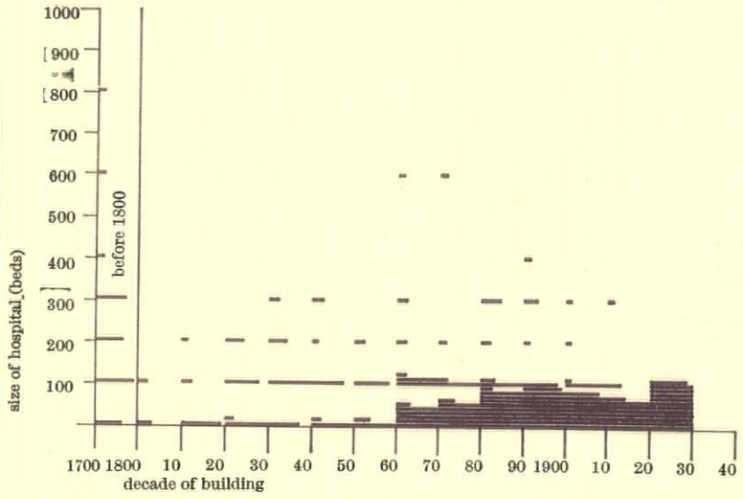
We can plot the locations of these three classes of hospital and see a characteristic distribution, 2–4. Teaching hospitals in this country have developed as part of the old voluntary hospital system. Not only did voluntary hospitals arise early in the history of our cities, but they had to have a central location in order to occupy prominent sites and attract funds. In addition, voluntary hospitals were usually staffed by the most eminent doctors of the time, and were located so as to be near to the fashionable town houses of these men. Dr. Abel-Smith, in his book *The Hospitals*, summarizes these various factors. 'A hospital in an outlying district would have found it difficult to get the amount of attendance from distinguished doctors which the chief hospitals of London now enjoy. It would also have found it difficult to obtain a good committee of management, as many of the most useful members of such committees had businesses of their own and could not conveniently attend at a great distance. Nor would it have been found easy to obtain public contributions for a removed hospital.'[10]

General hospitals developed in response to an increased awareness of public responsibility for the sick. Public authorities began to locate and build hospitals during the nineteenth century. These were sited to be near a local population, and in many cases as so to use cheap land, or land that could be easily acquired by public authorities. In our work at the Joint Unit for Planning Research at University College, London, we have examined the sites and locations chosen for general hospitals and have found a strong correlation between cemeteries, burial grounds, gasworks and other indications of low land values, and the location of hospitals. Over half the cemeteries in London have hospitals next to them, and over one-third of the hospitals in the same area are adjacent to cemeteries. These hospitals, developed during the mid-nineteenth century, form a wide circular band round the city. Very few public hospitals lie within two miles of the centre but they extend outwards to the edge of the built-up area.

Public hospitals were larger than private ones, and the influence of means of support upon the size of hospitals can be easily traced. Where the founding of a hospital depended upon voluntary support, the funds raised did not permit a very large number of beds. This can be illustrated by the number of small voluntary hospitals built in this country in the decade 1920–30, 5. These were usually the product of the war memorial movement: the funds produced by an appeal for a local cottage hospital as a war memorial did not permit a unit of more than about 20 to 50 beds. Public hospitals, on the other hand, accommodated a large number of patients because there was a medical need for such numbers and

because large institutions were more economical to run. Thus the sites for public hospitals had to be large enough to accommodate many beds.

Finally we come to mental hospitals and asylums. These are found in a fringe round all our large cities; they are part of



5, number and size of voluntary hospitals built between 1700 and 1930

the urban penumbra. Most mental hospitals were built by public authorities during the mid-nineteenth century. Their location is described in a paper by Alexander Walk on Mental Hospitals: 'The earliest asylums, like the older hospitals, were within the cities or towns; Bethlem and St. Luke's in fact remained on urban sites until well into this century. But from about 1815 onwards the best authorities began to stress the importance of "healthy, airy sites," of a pure water supply, and of sufficient land to allow of exercise and outdoor occupations. The actual location of individual asylums was determined by such factors as proximity to the county town, road, canal and later railway communications, a central position making patients' transport expenses as near as possible equal for all parishes, sometimes by plain jobbery. Many years later, when asylums were commonly of a size far beyond what had been contemplated, and were thought to need estates of up to three hundred acres, the cost of land pushed their sites further away from the large towns; but later still others which had originally enjoyed country surroundings were engulfed in the spread of urbanization.'[11]

It can be seen that the development of our existing pattern of hospitals has been due rather to social attitudes, administrative convenience, and economic expediency, than to the medical needs of the community. Nevertheless, though far from perfect, the pattern did work quite well for the time.

RELEVANCE OF THE INHERITED PATTERN

But however perfect the pattern of health plant might have been for the time and place in which it developed, changes have taken place which make revaluation an essential task. A pattern which evolved over a hundred years ago under a particular set of circumstances cannot easily remain valid today when conditions of urban life, of medicine and of political thought are so different. What are the changes most likely to affect the pattern of health buildings?

First, have been changes in population structure. A hundred years ago our population showed a pattern of high infant mortality and relatively short average life span. Today infant mortality is reduced, many more people survive into old age, and we have a consequent increase in the amount of degenerative illness occurring in the post-reproductive period, 6. There has also been an overall increase in the population and an increasing sophistication in the demand for medical care. These factors lead to an increasing demand for health plant, but should be balanced against shifts in demand created by changes in the internal structure of the population.

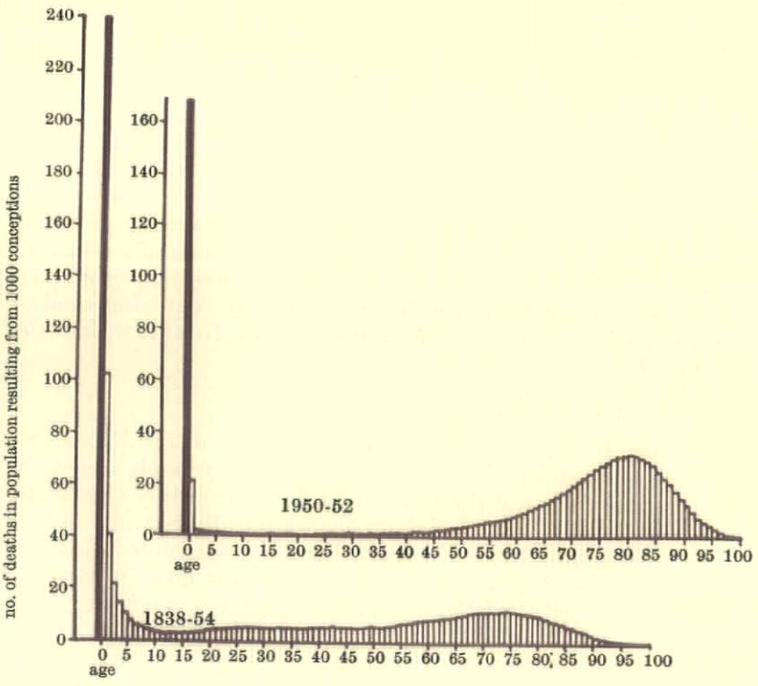
Second, there have been major changes in our conurbations. Such changes have affected the extent of built-up areas and their composition. The area of cities has spread enormously and rapidly. At the same time there have been major shifts in the location of population, an exodus from city centres, and migration to the suburbs. Today our teaching hospitals, situated as they are in the very centres of great cities, are left with little or no resident community to serve; whereas suburban hospitals, which were originally built on the outskirts of towns, have been engulfed by the spread of built-up areas. Third, accessibility has increased many times since the early 1900's. Changes in transportation have made the hospital a more 'footloose' institution.

Finally, the work of the hospital has changed, and this has altered its physical structure. Some consideration has been given to these problems in a recent paper by the author and Mrs. J. Nicholson.[12] In a survey of several hospitals they found in every case that areas of hospital buildings had increased by about 120 per cent in 40 years or so. Some consistency could be traced in the relative growth of various departments. Social circumstances such as wars or depressions played a major role in the growth of these hospitals, but the main influence was the introduction of the National Health Service in 1948. Since 1948 the growth within each hospital, and between all the hospitals themselves, has been much more balanced and consistent, 7. If the amount of change and growth in hospitals is of the order found in this study, many sites acquired in the nineteenth century are today almost used up, and the difficulty of obtaining more land must be arresting the natural growth of a number of hospitals.

EFFECTS OF THESE CHANGES

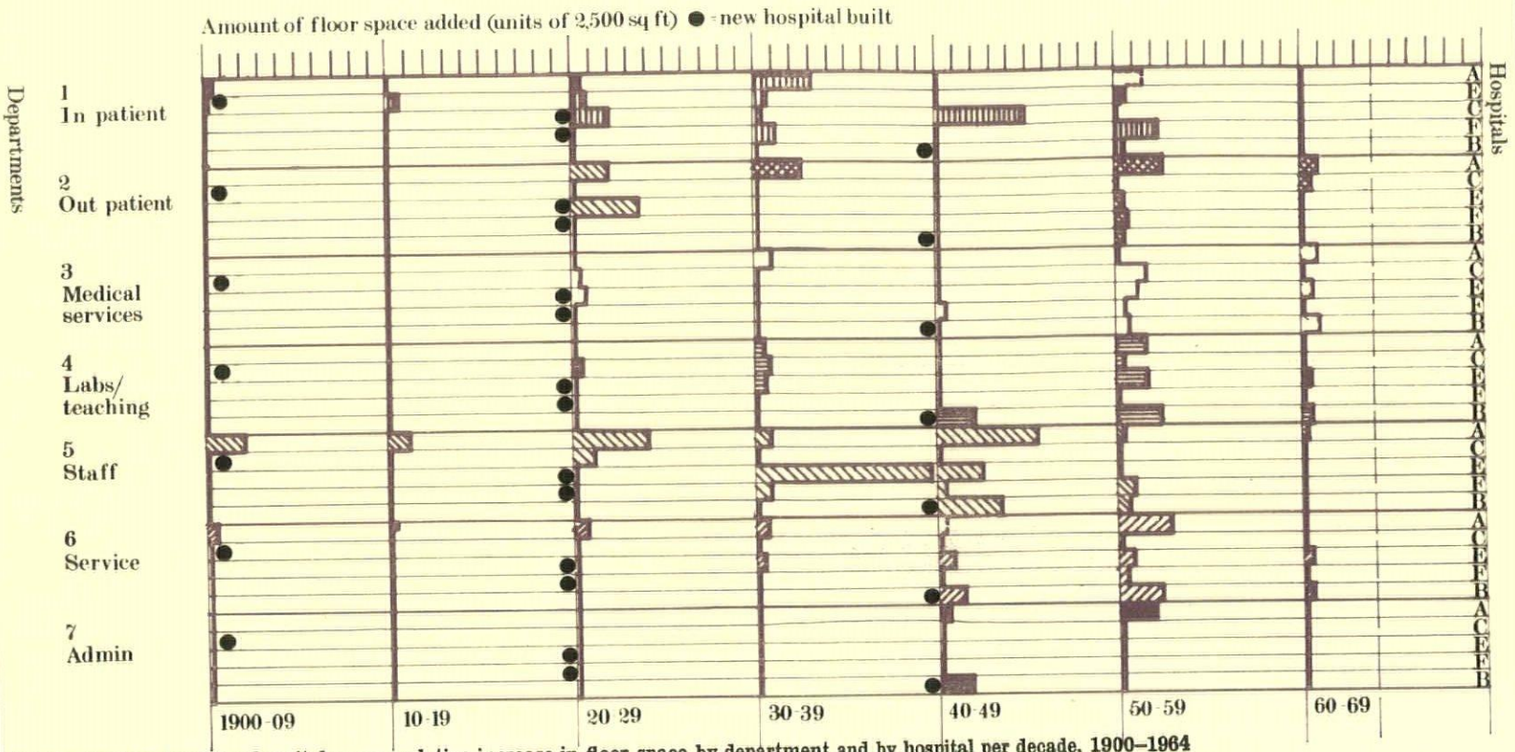
What has been the overall effect of these changes upon the utility of the present pattern of hospitals? Changes in medical policy have resulted in the closure of many small hospitals, and this is likely to continue. In addition some very large hospitals have been closed, and more will be shut down in the future. This will release land on the fringe of cities, mainly for agricultural use.

Changes in the structure of towns, and in the value of urban land, make it difficult for centrally sited hospitals to expand, and the movement of population to the suburbs has drained many hospitals in the central areas of a population to serve.



courtesy of Professor T. McKeown

6, number of deaths per thousand conceptions



7, Birmingham teaching hospital group: relative increase in floor space by department and by hospital per decade, 1900–1964

Changes in accessibility have increased the area which can be served by a hospital.

Changes in technology have altered concepts of the optimum size for a hospital. There is now no economic upper limit to the size of a hospital, although a hospital of fewer than 300 beds is likely to be rather expensive to run.

Changes in the economic structure of the country have altered the balance between capital investment and recurrent expenditure. Today the cost of running a hospital is an important factor in design.

The increased area of most hospitals means that many are cramped into inadequate sites, and the legislative structure of the Health Service prevents the acquisition of new land for increasing the adequacy of present locations.

Most hospitals are by now very old. By any measurable standard they should have been pulled down long ago.

In the light of these changes two trends seem likely. First, a concentration of special care, teaching, and research in a few widely separated, large and centrally placed institutions, requiring a great deal of space. Second, the present development of District General Hospitals will continue, but may be radically affected by accidents of land values, planning controls and the like, particularly in the absence of a coherent rationale of hospital location. Third, there will be an increase in the number of units for community care requiring modest amounts of land but with locations near to the residential community.

TOWARDS A MODEL OF HOSPITAL LOCATION

Let us try to build a theoretical model for hospital location. The non-deterministic character of such models must be emphasized. It is not possible to predict absolutely the future evolution of medical, social or economic affairs, and only a probabilistic approach will serve. The notes which follow are incomplete, as they are the subject of work now in progress in the Joint Unit for Planning Research at University College, London, which will not be concluded for several months.

Let us consider a hypothetical hospital on a site of fixed area. The hospital contains a fixed number of beds, and occupies a certain proportion of its site. The hospital is one of a number of similar institutions, spaced at equal intervals across an endless plain, which contains the population to be served spread evenly upon its surface. The area of the hospital will be growing and using up site area, even if the number of beds remains fixed. The previously mentioned study[13] indicated that the non-in-patient areas are the fastest growing parts of a hospital. For the purpose of our model we shall assume that the area of the hospital is growing at a fixed rate.

Next we assume that the density of population surrounding the hospital is increasing at a fixed rate. The rate of population increase will in fact not be uniform for all hospitals, since some will be in areas of population decline. As a result of this increase in density we can assume that the site is increasing in value. Lotka[14] has demonstrated that land values are density-dependent, and has pointed out that willingness to sacrifice effort for the sake of gaining elbow room is present in other species and 'exists independently of our peculiar method of expressing it in terms of rent.'

We can also assume that the work load of the hospital increases, although theoretically the actual geographical area served by the hospital should decrease. This may be simply that more work arises from the initial population, or it may be an effect of our next assumption, that accessibility to the hospital increases over time. The studies of Mizrahi, Mizrahi and Rosch,[15] and Januard and Lachene,[16] in France, and of Coughlin, Isard and Schneider[17] in the United States, have shown that attendance at a hospital falls off with distance. A corollary is that with improved transportation systems accessibility increases.

As accessibility increases two further consequences arise. First, the potential population served increases. Second, the value of the site is affected. Beesley and Kain[18] have suggested that it is possible to establish the effect upon land values of channelling large flows of traffic near at hand, although the assessment of such values in the case of public institutions is more difficult than similar assessments for land on the open market.

Finally, we can assume that the hospital is ageing at a fixed rate. Such ageing should take account not only of structural degeneration, but also of functional obsolescence. Ratcliffe[19] has described obsolescence as due to 'changes in tastes, fashions, design, materials and equipment.' It is difficult to

find measure of ageing in buildings, but for the purposes of this model actual empirical data is unnecessary.

What will be the future evolution of our uniformly distributed, equally sized, pattern of hospitals? To answer this we must assume that one of the hospitals becomes more important than the others. Such an assumption brings our model nearer to reality; most hospitals in this country are part of a hierarchy. Thus our hospital is located upon a site which is rapidly accumulating in value, and which is being used up as the hospital grows. This is in turn due to growth in the density of population and in increased accessibility.

The dilemma is plain. What should be done with this hospital and its site? There are three main alternatives: to increase the area of the site and retain the hospital in operation, to abandon the site altogether and build elsewhere, or to rebuild the hospital on the same site, but at a higher density. The first alternative is less disruptive to the hospital, but would mean acquiring land at a very high cost, since the density of population will have forced up values. It might also lead to the closure of some hospitals, and an increased agglomeration and centralization of facilities. The second depends upon the availability of alternative cheaper and larger sites, and the economics of disrupting the hospital, selling the existing site, and acquiring at less cost a new site on a less densely populated area. The third alternative is the most usual course in hospital planning at present. It entails no special costs in acquiring new land, but does bring difficulty and confusion in making over an ongoing institution. Furthermore rebuilding at a higher density only postpones the problem.

The answers to these questions must await more work. In particular we need more empirical data on densities, areas, growth rates and land values. But some consequences are already plain. First, if land values rise very quickly during the working life of the hospital, it may be possible to sell the site at a price sufficiently high to compensate for buying a new site in a cheaper area, moving the existing hospital and building a new one. But it will not usually be possible to acquire, at a reasonable price, land near the existing site. The cost will be high but will be spread over some considerable time, and therefore less apparent.

Alternatively, the hospital itself may use up the available site, and become obsolescent more quickly than the land rises in value. In such a case it may be possible to buy new land near the site at a reasonable cost, and to extend the viable life of the hospital fairly cheaply. In either case, if the hospital does remain in the same location, population movement may increase the number and length of journeys to hospital, and this will increase social costs.

Probably the final answer will lie in a combination of increased investment in central sites, and the rational acquisition of new sites in the suburban fringe of our large conurbations.

THE FUTURE

This paper has presented some observations upon the past and present pattern of hospital location in Britain; has speculated upon its possible future evolution; and has described the beginnings of a model for locating hospitals. What lessons can be learned for the future?

First, there will be a continuing need for some large sites in locations which are central to areas of dense population. Such sites must be quite large to allow for considerable growth, which will occur in these hospitals. By their nature large complex institutions last a long time, since capital investment is very high, and the longer they last the more they will grow. But sites chosen so as to be accessible to large centres of population will be very expensive, since land values are directly dependent upon density. If the future growth of cities could be predicted it might be possible to select sites in areas which will become densely populated in the years to come. This would enable large sites to be acquired cheaply, and might increase the viability of the hospitals and institutions of the future. A corollary might be to make some exchange of central locations between various institutions. For example, if several university or teaching hospitals were moved out of the centre of London, the universities, which are so cramped for space, might well take over the sites.

The problems of location for district general hospitals are similar, since they too require to be near, and accessible to, a local population, and have a limited site area available to them. But the solutions will be simpler, as the uniformity of the district general hospital makes the design of a comprehensive system of location easier. Such a system will be greatly aided by the development of theoretical models which include predictions of the future growth of the community in addition to factors concerning the evolution of hospitals and medical care.

In any event the problem of hospital location will continue to raise fundamental questions to society. Coughlin, Isard and Schneider, in their study of hospital location in Philadelphia[20], comment: 'It is clear that changes in hospital location, by affecting the person-miles of travel of each of the six groups examined, and the residential locations of physicians and employees, can lead to significant changes in cost to society.' But major decisions must be made concerning the use of urban land. The most desirable locations for hospitals are likely to be those which also attract many other functions, both public and private. The acquisition of large tracts of land for hospital functions is a major element of public policy, and these choices and questions cannot be answered purely in terms of the market. Hospital functions have a value to the community which is difficult to measure, but which must be taken into account when calculating the value of a particular site and location. Societe d'Economique et de Mathematique Appliques, in their Report *Besoins Hospitaliers en 1975*[21] describe this factor: 'In the case of public hospitals, land is generally provided free of charge by the municipality. But it is proper to put a price on such land. This represents the revenue recovered by the community when selling the land. Because of special consideration for hospitals the municipality makes a sacrifice, since it deprives itself of this eventual revenue. For each possible location one can associate the value of land which could be effectively used for the construction of a hospital.'

Thus the models which guide us in selecting sites and locations for hospitals cannot be cast in terms of classical economic theory, any more than the workings of the National Health Service can be so described. We must develop models for hospital location which allow for the importance to society of the role played by hospitals and health services.

REFERENCES

[1] *A Hospital Plan for England and Wales.* Command 1604. HMSO. London, 1962.

[2] P. Cowan: 'The Size of Hospitals.' *Medical Care.* Vol. 1. No. 1, pp. 1–10.

[3] B. Abel-Smith: *The Hospitals*, 1800–1948. Heinemann. London, 1964, p. 405.

[4] F. Nightingale: *Notes on Hospitals*, p. 1.

[5] T. Holmes and J. S. Bristow on the Hospitals of the UK. Report of the Privy Council, March 31, 1864, Appendix 15, p. 509.

[6] H. C. Burdett: *Hospitals and Asylums of the World.* Churchill. London. 4 vols., 1893.

[7] ibid. Vol. II, p. 1.

[8] ibid. Vol. IV, p. x.

[9] ibid. Vol. IV, p. x.

[10] B. Abel-Smith, op cit., p. 161.

[11] A. Walk: 'Mental Hospitals' in *The Evolution of Hospitals in Britain.* Poynter, ed. Pitman, 1964.

[12] P. Cowan and J. Nicholson: 'Growth and Change in Hospitals' to be published in the *Transactions of the Bartlett Society*, Vol. 3, 1965.

[13] ibid.

[14] A. Lotka: *Elements of Mathematical Biology.* Dover, New York, 1956, pp. 304–306.

[15] A. Mizrahi, A. Mizrahi et G. Rosch. 'les champs d'action des equipments hospitaliers.' *Consommation*, No. 3, Centre de Recherches et de Documentation sur la consommation. Paris, 1963, pp. 61–105.

[16] A. J. Januard et R. Lachene: 'Elaboration du Programme d'Equipment d'un Hopital, cas du Centre Hospitalier et Universitaire de Rennes.' Revue *METRA*, Vol. III, No. 2. Societe d'Economie et de Mathematique. Paris, 1964.

[17] R. E. Coughlin, W. Isard and J. B. Schneider: 'The Activity Structure and Transportation Requirements of a Major University Hospital.' *RSRI Research paper series No.*4. Regional Science Research Institute, Philadelphia, Pa., USA. January, 1964.

[18] M. E. Beesley and J. F. Kain: 'Urban Form, Car Ownership and Public Policy: An appraisal of Traffic in Town.' *Urban Studies*, Vol. 1, No. 2. November, 1964, pp. 174–203.

[19] R. U. Ratcliff: *Urban Land Economics.* McGraw-Hill. New York, 1949. p. 483.

[20] R. E. Coughlin, W. Isard and J. B. Schneider. op cit., p. 38.

[21] Societe d'Economique et de Mathematique Appliques. *Besoins Hospitaliers en* 1975. SEMA. Paris, 1964.

GENERAL HOSPITALS

COMMENT: The district general hospitals embody for most people the image of 'Hospital'. In them most patients referred to hospital by their doctors receive treatment and in them the National Health Service mobilizes all its skills and equipment in the service of the public. Most district general hospital buildings have been obsolete for many years and a rebuilding programme is now getting under way.

The Hospital Plan for England and Wales was published at the beginning of 1962, and it provided for a total expenditure on new hospital building in the first ten-year period of £500 million. In order to control the cost of individual schemes and to ensure a certain standard of functional planning, the Ministry of Health has published, from 1961 onwards, a series of Building Notes which have made recommendations as to both cost and content of projects, and have laid down a procedure for their approval.

Most of the buildings illustrated in this section were designed before 1961 and have not therefore had to comply with the Ministry rules. To a certain extent what is shown here is history: hospitals cannot now be built with the same freedom, even if those now being designed have the benefit of the Ministry's guidance material. This is now extremely competent and as thorough as that published by any government department. It is comparable with the material published in the 1950s by the United States Public Health Service, except that the latter included detailed plans rather than bubble diagrams. It is reasonable to expect that it will not take as long to brief hospital buildings now that this material has been published, and there is evidence that this is so. The briefing for Greenwich General Hospital, for example, began in 1961 and building is expected to start late this year, whereas Slough Hospital began to be briefed

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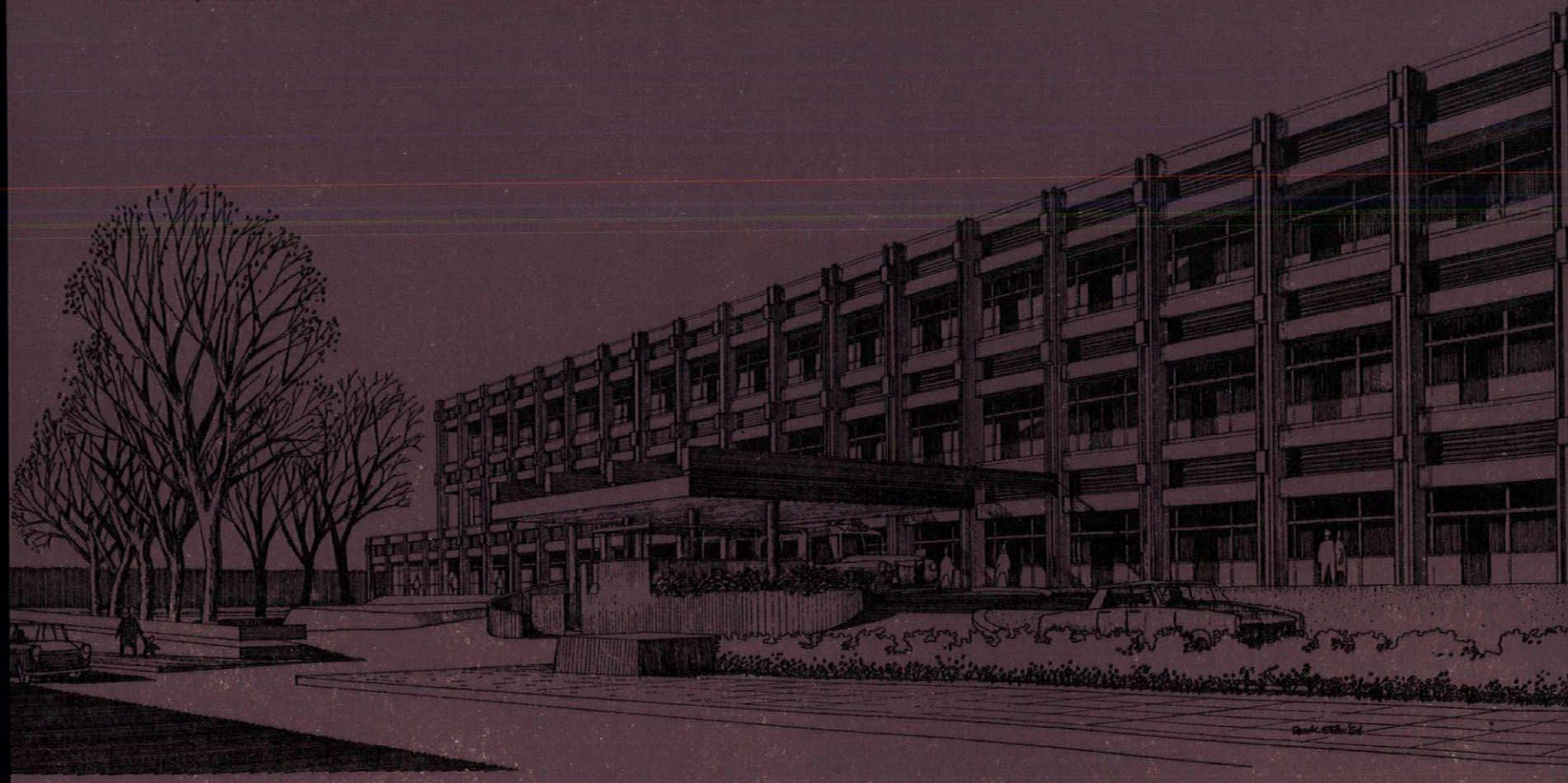
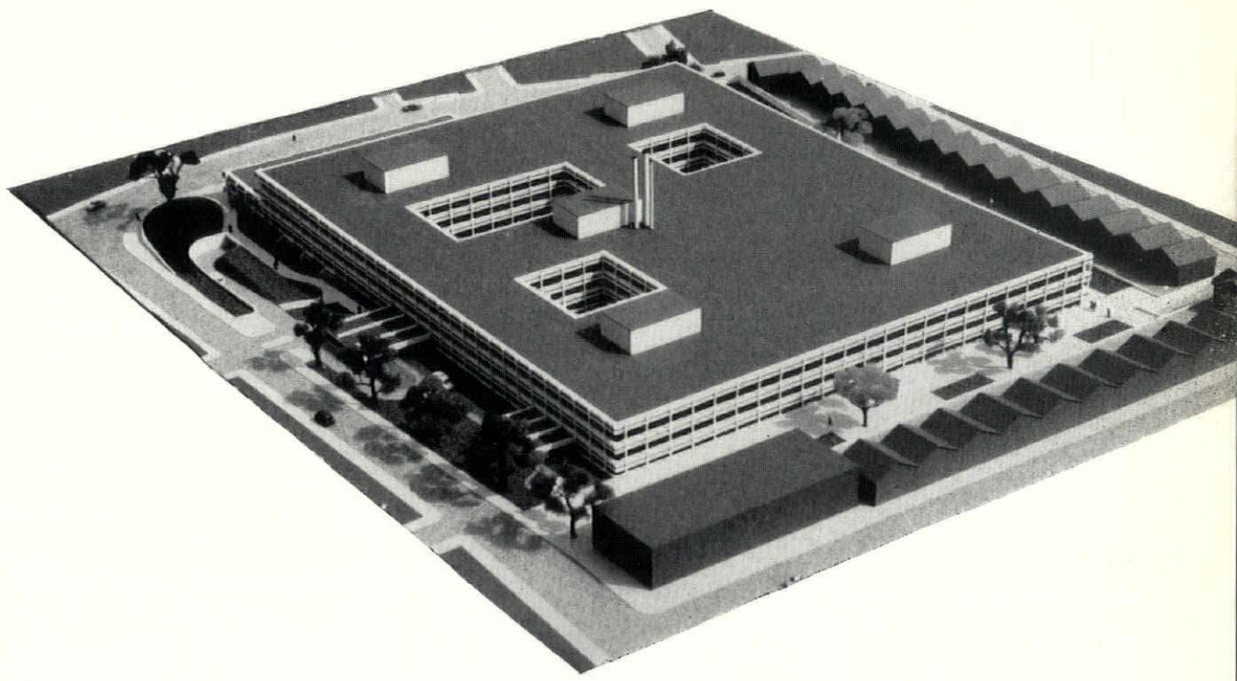


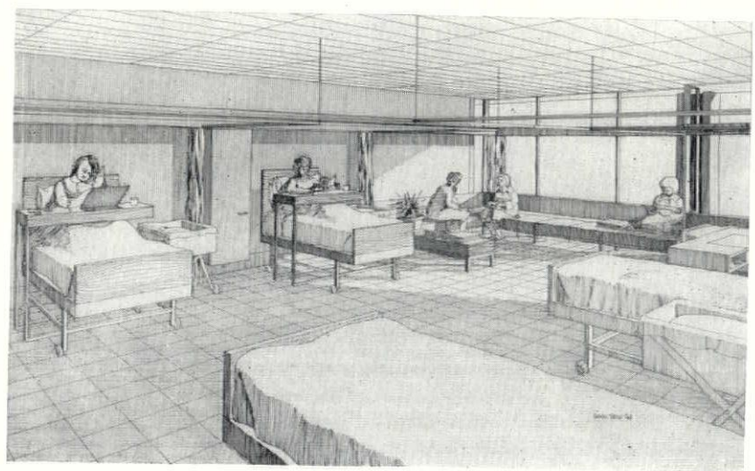
perspective of the main entrance on the west side of the new St. Alphege's Hospital, Greenwich

ST. ALPHEGE'S HOSPITAL, GREENWICH

W.E.Tatton Brown (chief architect, Ministry of Health)

CLIENT : South-East Metropolitan Regional Hospital Board in collaboration with the Ministry of Health.
SIZE : 800 beds.
DATES : Three phases to be built in five years; main building starts late 1965 or early 1966 ; residential block started March 1965. This district hospital is the third Ministry Development Project and the first occasion on which the Ministry's Hospital Design Unit have had the opportunity of designing a complete hospital. It is a three-storey building over a supply and preparation and car-parking area. An industrial zone has been built on another site, containing laundry storage and CSSD (central sterilization and supplies department) for about fourteen other hospitals in the area. Each floor is as far as possible a self-contained hospital, the ground floor being mainly public areas such as out-patients, ante-natal, accident centre, X-ray department and some geriatric wards. The first floor is mainly surgical beds together with the obstetric department, main theatres and intensive care unit, the second floor being mainly medical beds together with the pathology department. Each floor has its own kitchen, supply and disposal centre, together with staff and patients' dining rooms and some floor administration. The building is extremely compact and completely air-conditioned, the air-conditioning plant being housed in four engineering shafts in the four quarters of the building. Plant common to all engineering shafts such as refrigeration is housed as

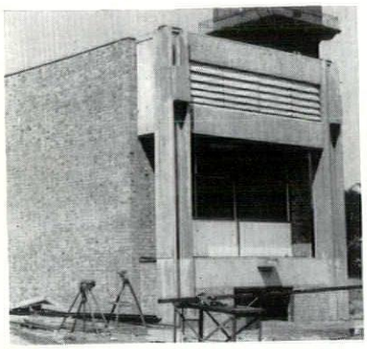




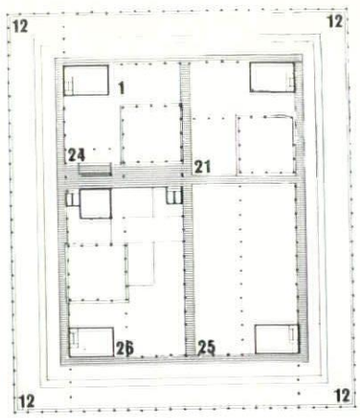
above, model from the south-west: below, interior of maternity ward

ST. ALPHEGE'S HOSPITAL, GREENWICH

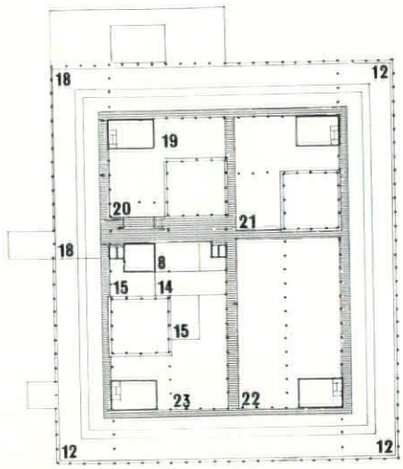
a fifth shaft in the centre of the building adjacent to the main lift bank. Ward areas are arranged around the periphery of the building in nominal 28 bed units. The wards themselves consist of five bed spaces each with their own small day space, with a limited number of single bed rooms. The wards are planned in a continuous strip with a 'swing area' between each ward unit allowing for a seasonal change in the bed numbers for each speciality; this change can be as much as 40 per cent of the bed numbers. The ward strip is planned to separate as far as possible the supply and disposal traffic from the working traffic of the wards. Hospital streets on a 'hot cross bun' principle link ward areas, therapeutic/diagnostic departments and the centre core. The structure comprises 64ft. span composite beams with solid ceilings and floors and an engineering service void between. The entire structure is precast, the floor and ceiling plates being a composite construction of dense concrete ribs and gas concrete infilling. These are imperforate when erected; any cutting will occur within the gas concrete (because of the grid planning), being done after the main erection has taken place. Partitions which are prefabricated are simply fixed between the solid floor and the solid ceiling. Because of the universal structure the departments are not defined by anything other than the partition walls and the ring main corridors, which do not necessarily coincide on each floor.



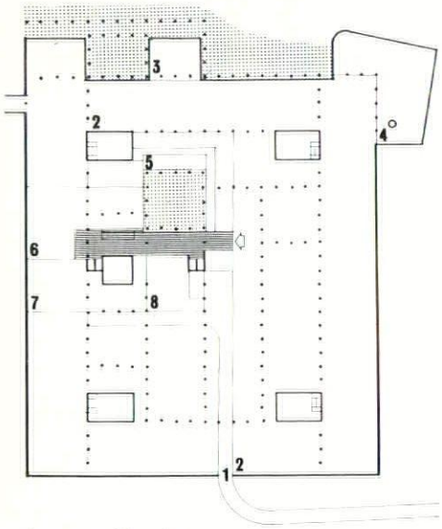
mock-up of structure



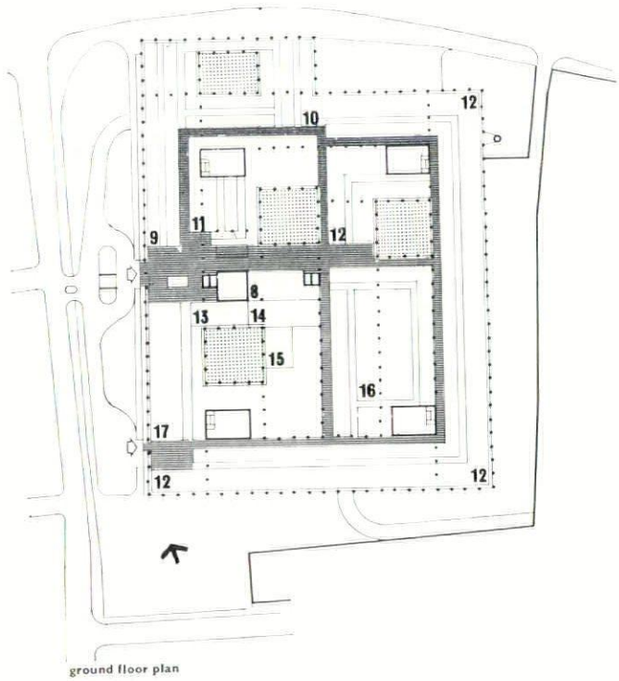
second floor plan



first floor plan



lower ground floor plan



ground floor plan

key
1. commercial entrance
2. parking
3. clinic
4. boiler house
5. physiotherapy
6. records
7. pharmacy
8. supply and disposal
9. out-patients' department
10. day ward
11. ante-natal
12. wards
13. cafeteria
14. kitchen
15. dining
16. x-ray
17. accident department
18. maternity wards
19. training
20. delivery
21. administration
22. theatres
23. intensive care
24. isolation
25. pathology
26. medical photo. etc.

continued from page 422

in 1955 and first stage building was not begun until seven years later. It is perhaps at the briefing stage that the greatest difference between pre- and post-1961 design work lies. Before that date briefs were hand-made for each particular circumstance and this process was lengthy. Since 1961 it has been possible to write a basic brief directly from the Building Notes and it is necessary only to discuss what additional facilities are to be provided to deal with each particular case.

The dominating influence in the first post-war hospitals built in this country was the report of the Nuffield hospitals research teams in 1955 on the designs of wards and out-patient departments. The characteristic of the Nuffield proposals for ward design—the first variation in this country on the traditional open 'Nightingale' ward plan—was small groups of beds on either side of a central block containing ancillary rooms and a day space. The report analysed nursing organization and procedures and developed its planning proposals from this analysis. The proposals are based on modern nursing methods in which a high proportion of patients are encouraged to get up for some of the day at a very early stage in their convalescence. Provision for these patients is made in large day spaces easily overseen by nurses and therefore useful for patients needing frequent supervision. Ample toilet compartments are provided which can very easily be reached by patients. The plans for the Swindon and Ulster hospitals show these principles particularly clearly.

The next big influence was the 'race-track' plan in which a ring corridor around the ancillary rooms gives access to all the beds. This plan was developed in America in the late 'fifties. Its attractions include extremely compact service arrangements and provision for considerable flexibility of allocation of beds by sex and sub-specialties. The High Wycombe ward block is based on the race-track principle.

In general, hospitals in this section follow the post-war hospital image of a multi-storey ward building on a widespreading podium for all other accommodation, with the nurses' living accommodation on a site close to the main hospital. This concept was first developed by Paul Nelson in his hospital at St. Lô in 1948. Significant exceptions to this rule are the Slough and Wythenshawe hospitals by Powell and Moya and the Ministry of Health research and development team's general hospital at Greenwich. The Boston Hospital, Lincolnshire, by Building Design

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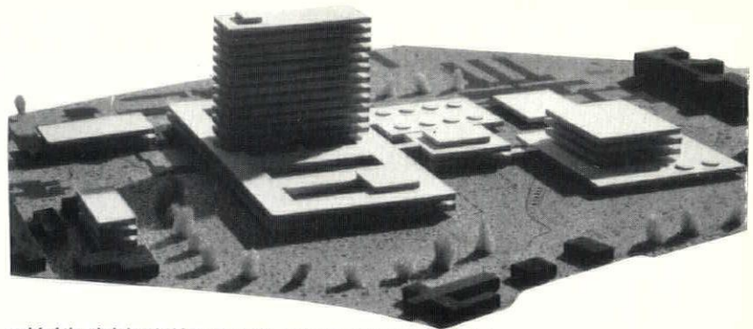
WALTON HOSPITAL, LIVERPOOL

W.E.Tatton Brown (chief architect, Ministry of Health) in association with T.Noel Mitchell (architect to the Regional Hospital Board)

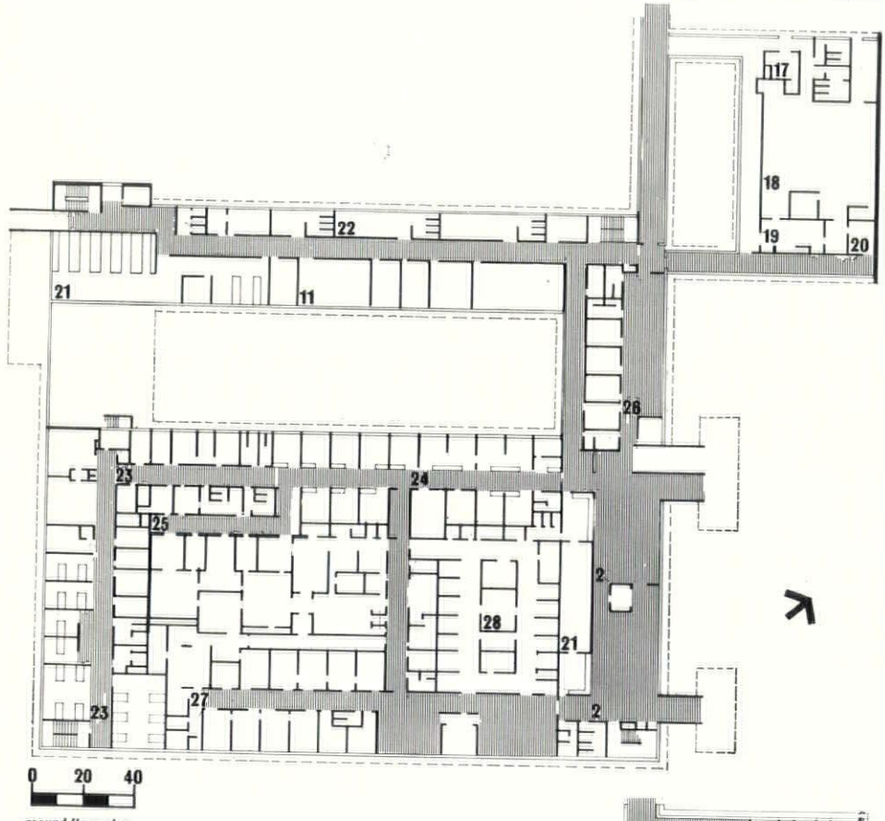
CLIENT: Liverpool Regional Hospital Board.
DATES: Design work begun, mid-1960. Out-patients' and accident departments begun, November, 1962; to be completed, end of 1965.

This is a pilot project by the Ministry of Health's research and development team. It forms stage one of a comprehensive redevelopment plan. The outpatients' department was designed by the Ministry, and CSSD, x-ray and accident departments by the regional architect within the same structural system. Two particular features are included: 24 combined consulting/examination rooms which can be used by all clinics except dental and eye suite, and day wards, for minor operations and examinations on patients who can be discharged within a day. The day wards reduce the load on in-patient beds and ease staffing problems by employing part-time nurses.

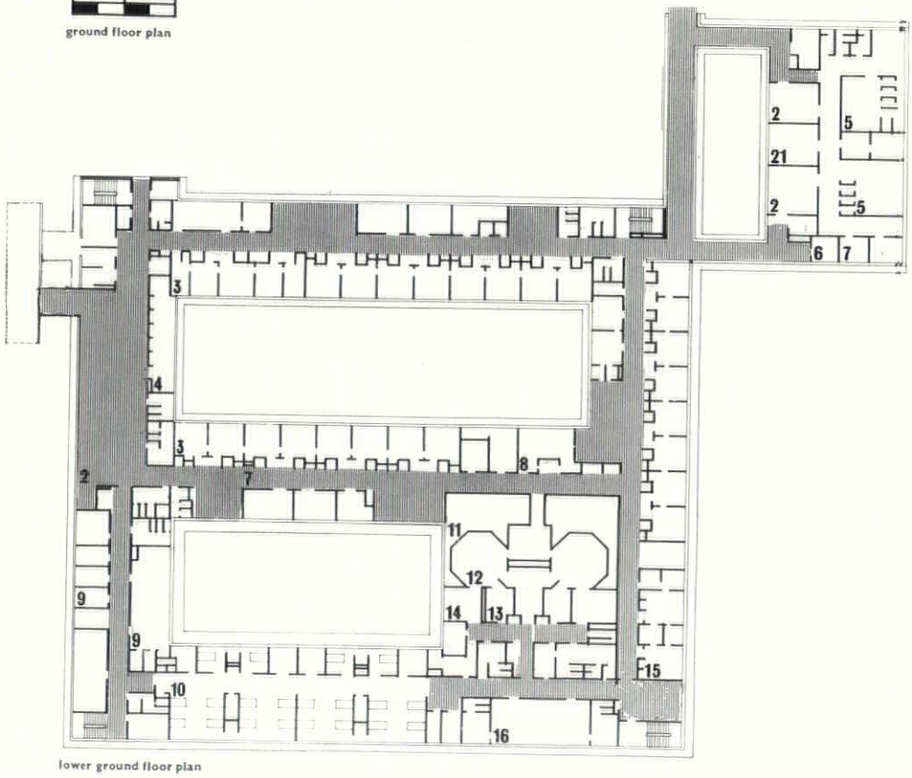
The precast concrete structure is on a 2ft. 8in. grid and is based on the 4in. module. Because of variation in room sizes the columns are placed outside the window wall, thus giving cleaning space and sun protection as well as extreme flexibility in planning. The double-storey height columns at 10ft. 8in. centres support vierendeel beams, 2ft. 8in. deep spanning 42ft. 8in. The services are contained in the 2ft. 8in. space between ceiling and floor. The floor slabs are of precast lightweight concrete. Efforts have been made to reduce maintenance; finishes within are largely of plastic.



model of the whole hospital from the south, with out-patients' and accident departments centre foreground

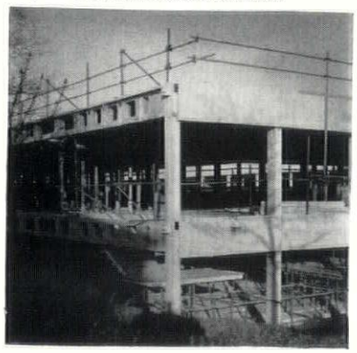


ground floor plan



lower ground floor plan

out-patients' department under construction



key
1. lobby
2. waiting
3. consulting rooms
4. reception
5. x-ray
6. dispensary
7. radiology
8. pathology
9. offices
10. bay wards
11. plant
12. theatre
13. scrub up
14. anaesthetic
15. dental
16. day room
17. disposal room
18. cleaning and packing area
19. sterile store
20. autoclave
21. records
22. staff changing
23. casualty wards and resuscitation
24. casualty and accident
25. casualty theatre suite
26. cold admissions
27. fracture and orthopaedic
28. redressings

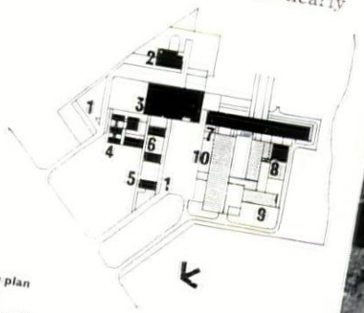
PRINCESS MARGARET HOSPITAL, SWINDON: SECOND STAGE

Powell and Moya
Consultants: Llewelyn-Davies, Weeks and Partners

CLIENT: Oxford Regional Hospital Board.

SIZE: 388 beds but later stages may bring the total up to about 750.

DATES: The hospital was designed to be constructed in at least three known stages comprising diagnostic departments, main ward block and services (308 beds) and maternity unit (80 beds) with the possibility of further stages in the future increasing the bed complement to about 750. The architects were appointed nearly fourteen years ago in August 1951. The diagnostic departments were started in February 1957 and completed in August 1959 (illustrated. AR February, 1960). The main ward block, service zone, nurse training school, hostels and boiler house were begun in September 1960 and completed in April this year. The maternity unit may start towards the end of 1965.



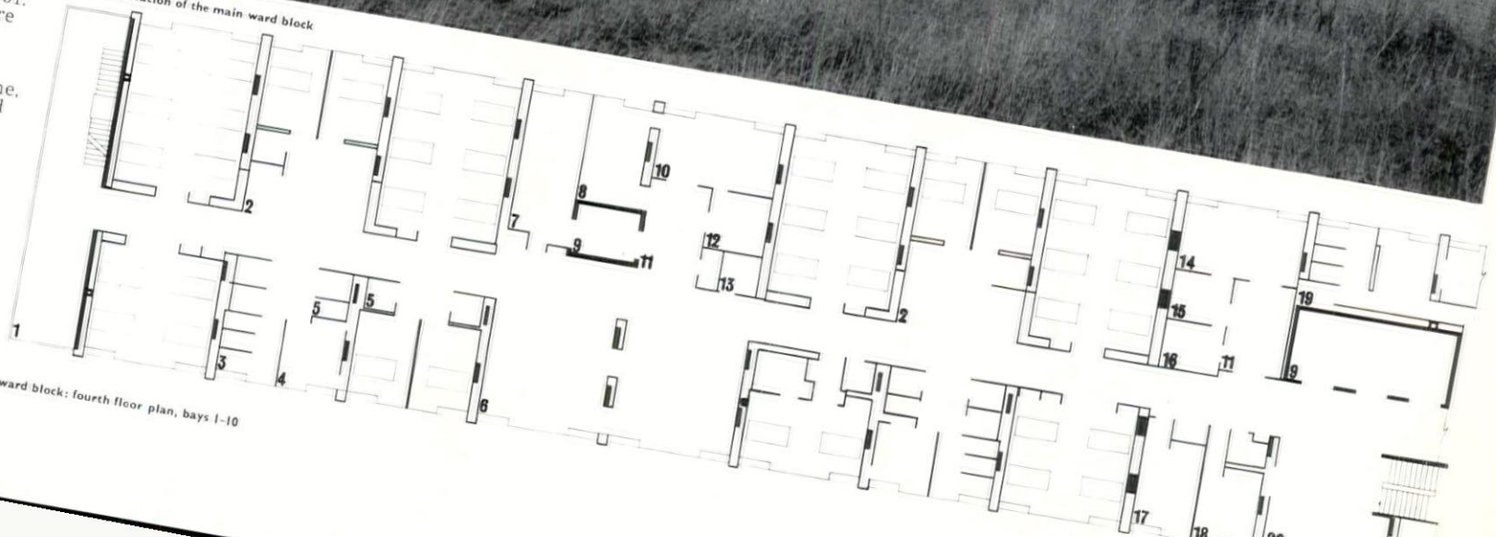
site plan

key

1. car park
2. boiler house
3. service zone
4. training school
5. flats
6. hostel blocks
7. ward block
8. operating theatre
9. physical medicine
10. out-patients' department



the east elevation of the main ward block



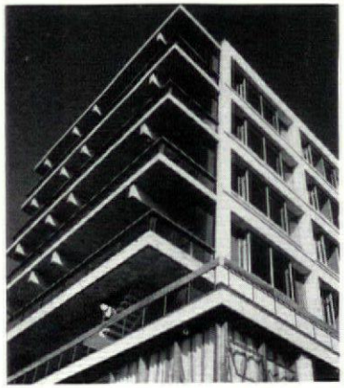
ward block: fourth floor plan, bays 1–10

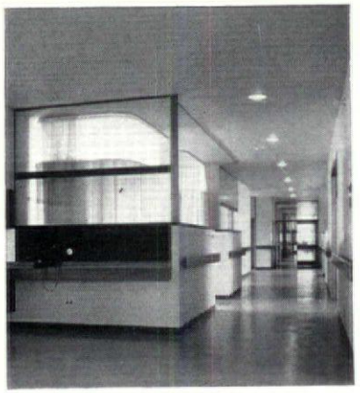
key

1. balcony
2. nurses' station
3. shower room
4. sluice room
5. w.c.
6. day space
7. kitchen
8. clean utility
9. lift
10. treatment room
11. lobby
12. dirty utility
13. bathroom
14. dermatology treatment room
15. dermatology bathroom
16. dermatology dirty utility
17. sisters' room
18. ward office
19. nurses' lockers and cloaks
20. waiting space



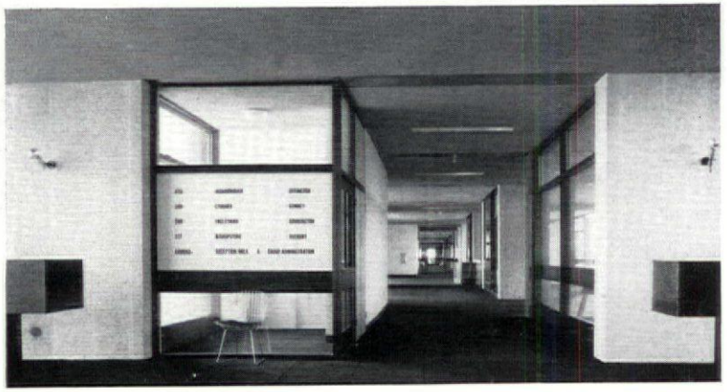
the ward block seen from the north, with the out-patients' department right

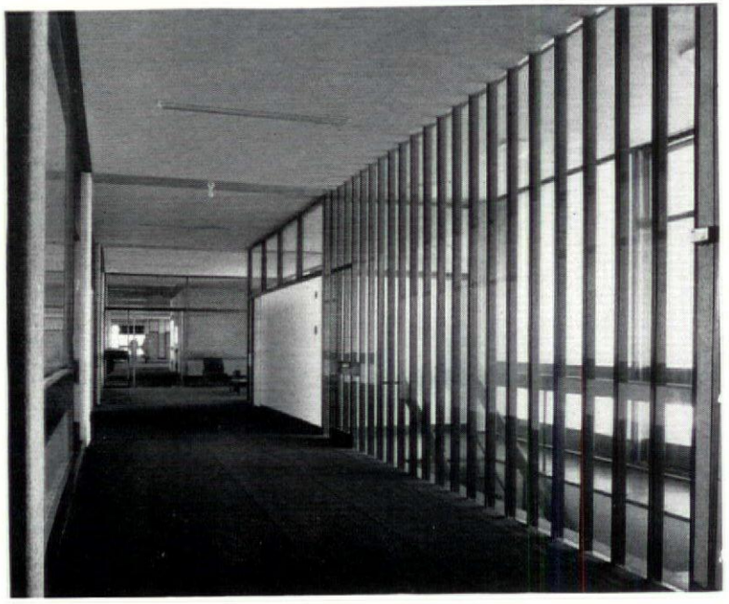




above left, the projecting balconies at the south end of the ward block: above right and below, three corridors in the ward block (consultants for interior design, Higgins, Ney and Partners): right, east side of the ward block

PRINCESS MARGARET HOSPITAL, SWINDON

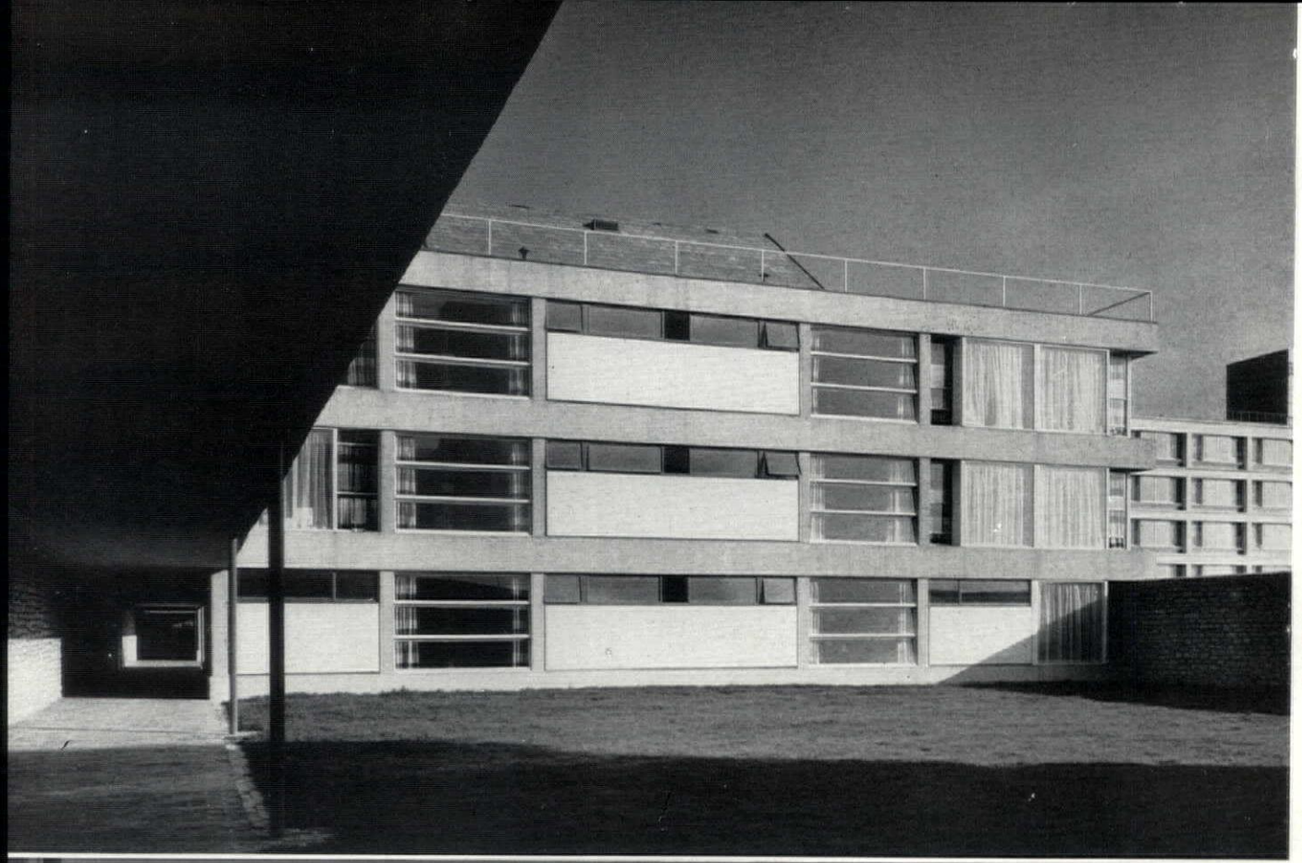




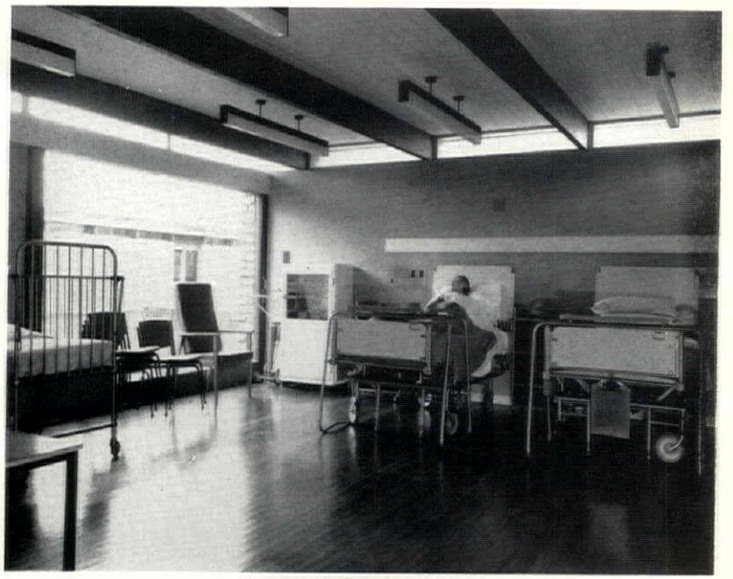


The southern portion of the site slopes sufficiently to enable a service network to be planned beneath the out-patients' and public entrance level thus separating these two categories of traffic. The wards, now nearing completion, are stacked eighty beds to a floor in a long slab block that is naturally ventilated and sits astride the carpet of diagnostic and service departments. Each ward comprises two twenty-bed nursing units sharing a central day space, kitchen and treatment suite similar to the Nuffield experimental ward in Belfast. North-east of the ward block and linked to it is a single storey structure containing kitchens, dining rooms and the engineers' department.

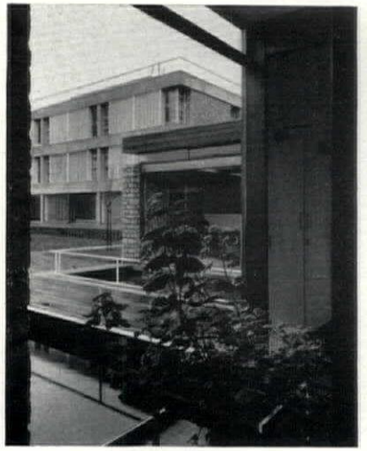
The three-storey hostels and single-storey training school are planned along a spinal covered way. The three hostel blocks and the block of flats are constructed of brick cross walls faced with off-white tiles and with flank walls of local Sherston stone, which is also used extensively in the training school in order to give continuity.

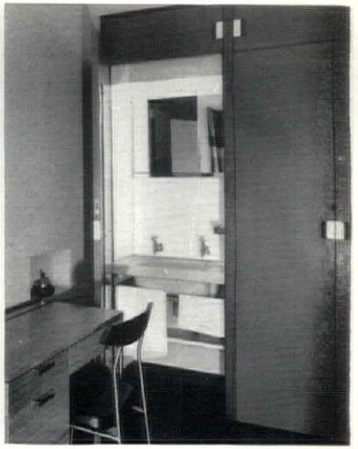




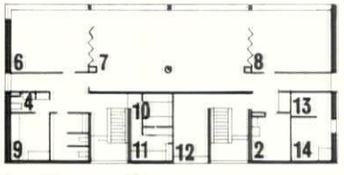


left and below left, two views of the three-storey hostel blocks for nurses, which are to the north of the main ward block: above, interior of ward in the training school: below left, pool and courtyard between the hostel blocks: below right, interior of a bed-sitting room in a hostel block





ground floor plan, hostel block



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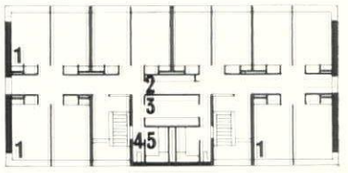
first floor plan



key

1, bed-sitting rooms
2, cleaner
3, utility
4, w.c.
5, bath
6, reading room
7, common room
8, sitting room
9, kitchen
10, clean linen
11, dirty linen
12, visitors' room
13, switchboard
14, cycle store

continued from page 424

Partnership, was in its original form also an exception, but the competition design was modified to its present form. In contrast to the traditional hospital block these hospitals are low buildings in which most travel by patients and staff is horizontal. Advantages of this type of planning are that it is easier to carry out staged development and to provide for future expansion and alterations. Objections that horizontal travel is time-consuming are not borne out by analysis. In hospitals up to four hundred beds the time taken to move in a horizontally planned hospital is not significantly different from similar journeys in a traditional multi-storey building. It is important that departments which depend upon each other for their daily work are closely related in clusters. Out-patient, X-ray and accident departments should always be close together.

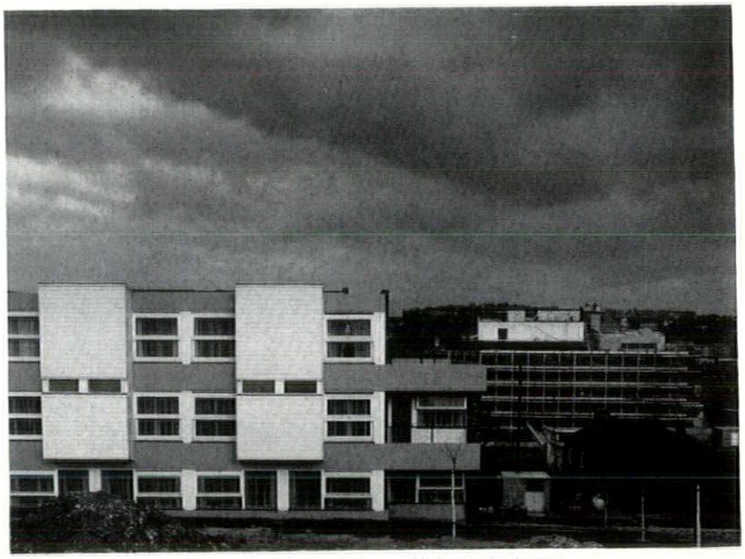
The only hospital to break with traditional form, apart from the two Powell and Moya buildings, is St. Alphege's at Greenwich. In this hospital very great internal flexibility is achieved by careful integration of mechanical and electrical services with the structure, leaving partitions completely free. This hospital also achieves a very high density by compact building and

continued on page 438

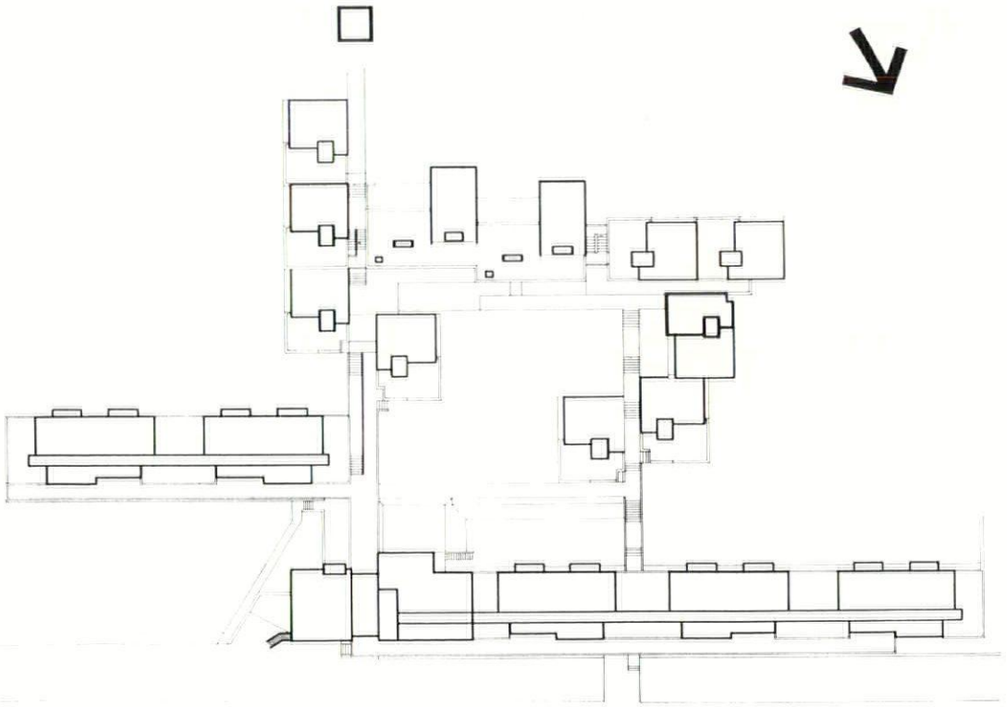
HIGH WYCOMBE WAR MEMORIAL HOSPITAL

Powell and Moya

CLIENT : Oxford Regional Hospital Board.
SIZE : 224 beds.
DATES : The hospital was designed to be built in four stages, the first and second of which overlap. Powell & Moya were appointed in February 1957. Construction of the nurses' hostel commenced in September 1962 and was completed by May 1964. In November 1963 work started on the ward block and operating theatres and this phase is expected to be complete by early 1966.
The site is extremely difficult and slopes steeply to the north. The first three phases are to be serviced by the existing hospital

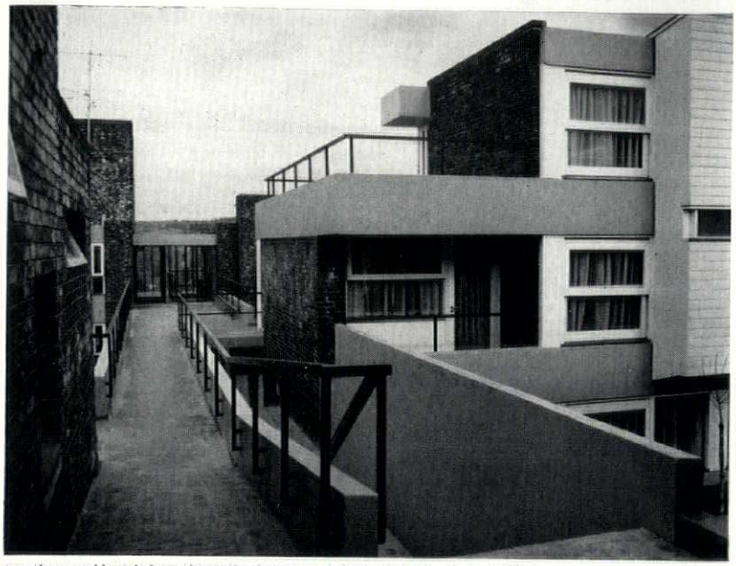


looking past the eastern block of nurses' hostels towards the ward block under construction

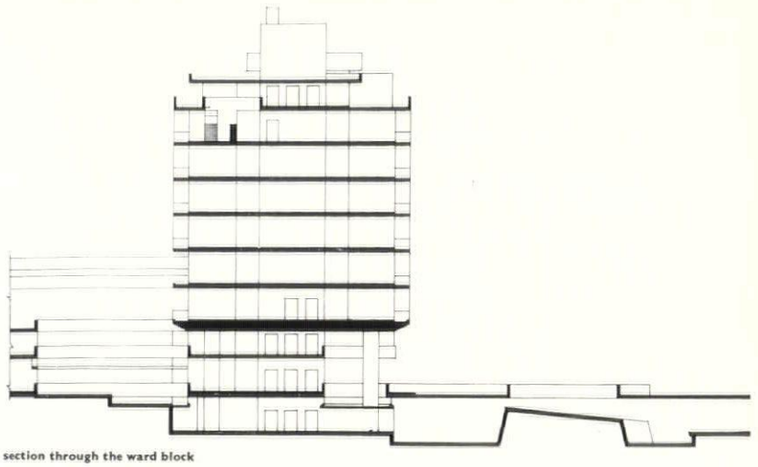


layout plan of staff housing nurses' hostels





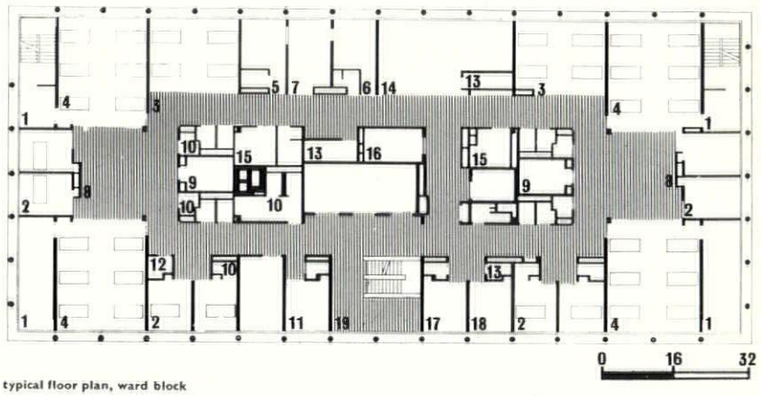
top, the nurses' hostels from the south: above, one of the streets linking the hostel blocks



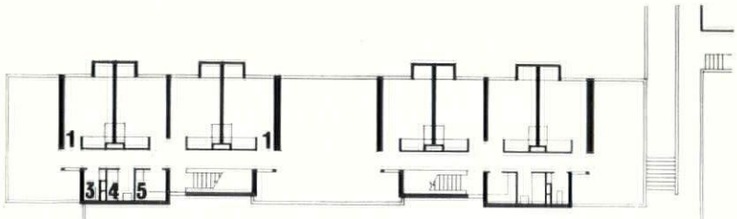
section through the ward block

key

1. balcony
2. single-bed ward
3. four-bed ward
4. six-bed ward
5. dirty utility
6. clean utility
7. treatment
8. nurses' station
9. sluice
10. w.c.
11. relatives' interview room
12. linen
13. store
14. day space
15. bathroom
16. kitchen
17. doctor
18. sister
19. waiting area



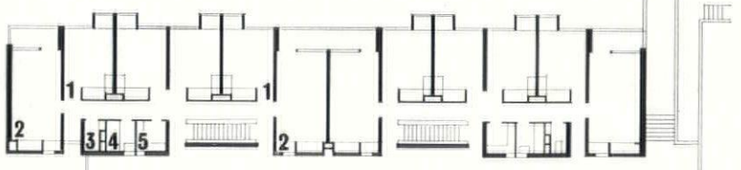
typical floor plan, ward block



upper level plan

key

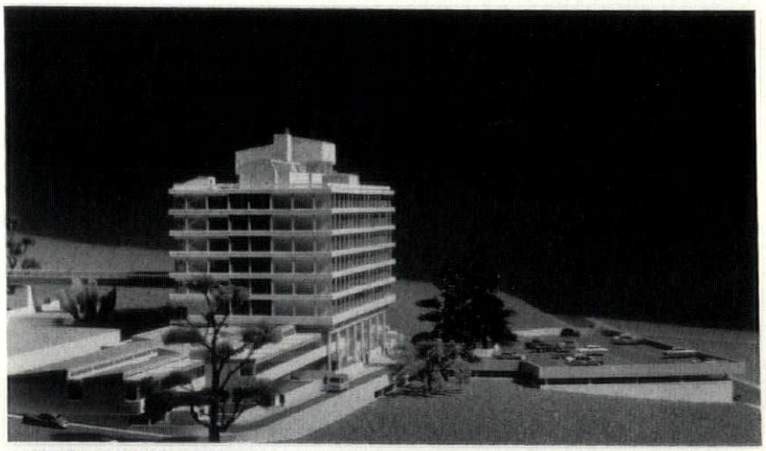
1. nurses' bed-sitter
2. staff bed-sitter
3. w.c.
4. bathroom
5. kitchen
6. cleaner's room
7. utility room
8. matron's flat (bathroom, bedroom and lounge)
9. store



entrance level plan



lower level plan, eastern block of nurses' hostels



model of the ward block from the east

through a flying corridor that spans over the third phase development. Ultimately the existing hospital buildings may be demolished and the bed complement increased to 375. The wards are planned on the 'race-track' principle with the centre core of ancillary rooms artificially ventilated. Each nurses' station serves twenty-two beds tightly bunched around it to reduce walking distances to a minimum, whilst one treatment suite and a day space serve the entire ward. The wards, theatres and pathology department comprise the first phase while the physiotherapy, casualty, X-ray and out-patient departments form the second. Due to the very limited and sloping site the out-patients' department has been placed two floors above the entrance hall to enable it to be naturally lit and to free ground level for physiotherapy patients. X-ray and casualty are contiguous at first floor level.

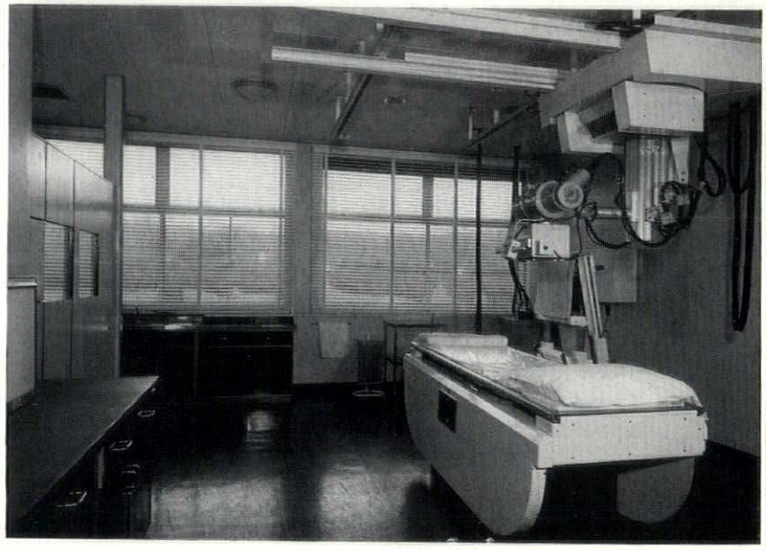


ULSTER HOSPITAL, BELFAST

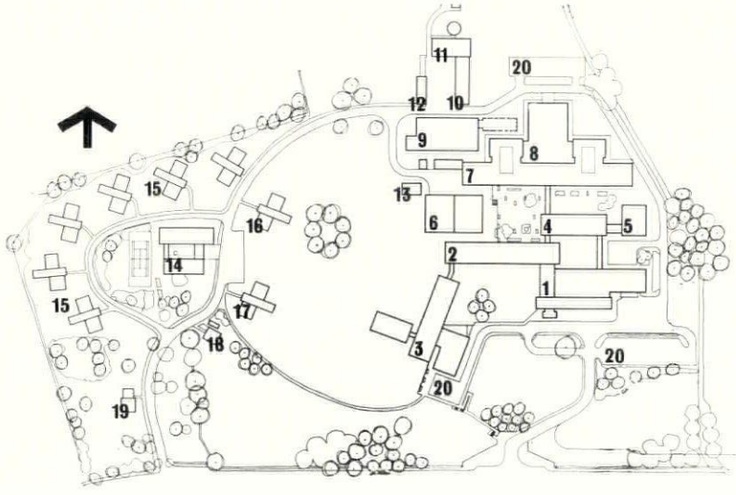
Frederick Gibberd

CLIENT : Northern Ireland Hospitals Authority.
SIZE : 543 beds.
DATES : Work began in January 1958 and finished in October 1962.
The hospital consists of a complex of comparatively low buildings fitted into the landscape in a cellular pattern. The group is designed as four distinct buildings: maternity, pædiatric, adults and out-patients. Other buildings are for radiology, physiotherapy, services and administration.
The principal buildings are parallel to each other with a southern aspect and step up the hill from the single buildings at the front to the five-storey ward block at the rear. All people entering the hospital use one of the entrances on the ground floor of the administration block from which they are directed into the various circulation streams. The central circulation spine at right angles to the building is on two levels : the staff use the lower one and the public the upper.
The buildings are of steel framed construction with prestressed concrete floors. External walls of the main building are precast concrete slabs faced with local granite and a local pearl grey concrete brick.
The main ward block and the associated theatre wing form the second stage. The west end of the block is connected with the service spine linking to the kitchens, staff dining room and the service departments. Each ward floor consists of four twenty-bed ward units with its set of ancillary rooms. The main wards are on the first and fourth floors. The ground floor has an admission unit, isolation unit, sleeping accommodation for duty medical officers and hostel accommodation The theatre suite is in a wing on the northern side which is an integral part of the ground floor plan.



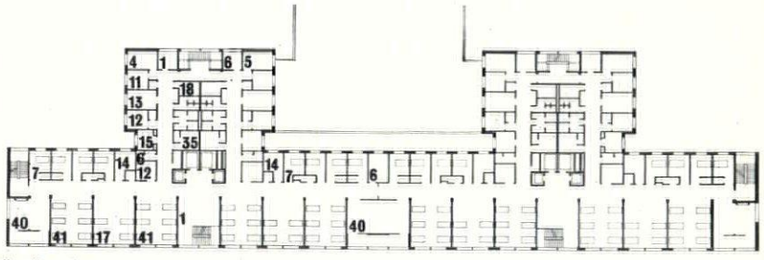


top, six-bed ward in the paediatric block: above, x-ray room in the radiology block, with lead-lined control screen left



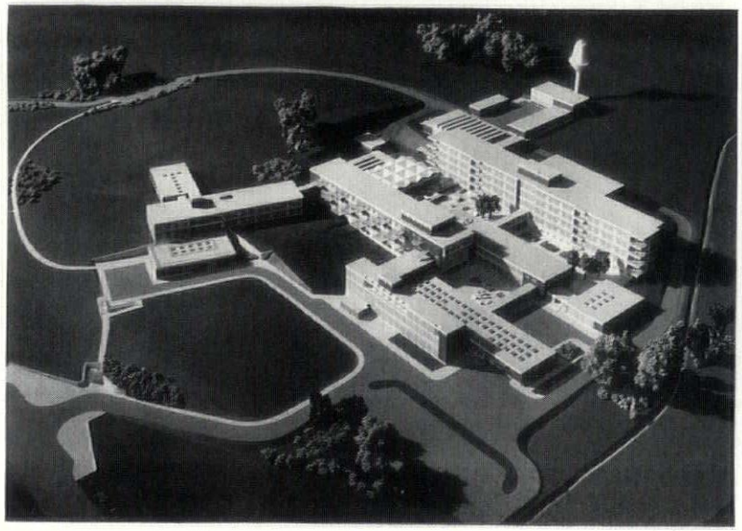
site plan: key

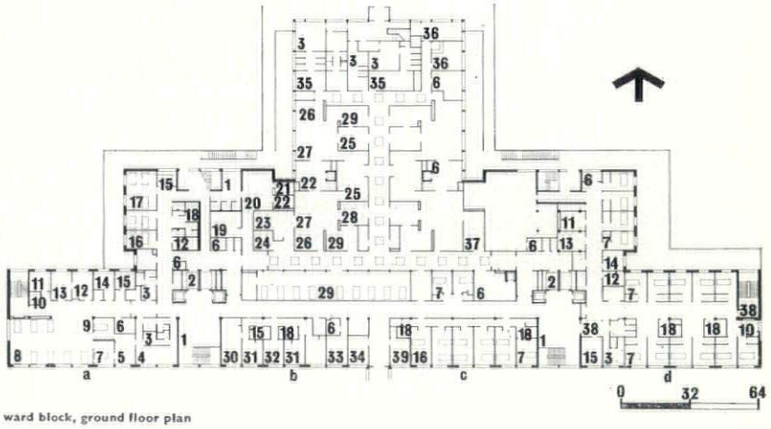
1. out-patients' and administration
2. paediatric
3. maternity suite
4. radiology and pathology block
5. physiotherapy block
6. staff dining and kitchen
7. main ward block
8. theatre suite
9. laundry
10. workshop block
11. boiler house
12. garage
13. electricity sub-station
14. central teaching block
15. nurses' blocks
16. sisters' block
17. medical officers' block
18. matron's house
19. senior nursing staff
20. car park



first floor plan

← facing page, projecting balconies on the south elevation of the paediatric block: below, aerial view of model of the main hospital buildings from the south-east





ward block, ground floor plan

key

1. waiting area
2. bed lift
3. changing
4. interview room
5. doctor
6. store
7. single-bed ward
8. eight-bed ward
9. nurse's station
10. linen
11. clean utility
12. dirty utility/sluice room
13. treatment
14. sister
15. kitchen
16. two-bed ward
17. four-bed ward
18. bathroom
19. x-ray equipment store
20. endoscopy
21. sterilizing
22. wash-up and disposal
23. plaster room
24. dark room
25. sterile lay-up
26. scrub-up
27. theatre
28. anaesthetics
29. exit and transfer
30. senior duty medical officer's bed-sitting room
31. duty medical officers' bedroom
32. sitting room
33. quiet room
34. chaplain
35. gowning
36. staff rest room
37. electrical equipment
38. air lock
39. assistant matron
40. day room
41. six-bed ward
a. intensive care unit
b. duty medical officers
c. hostel accommodation
d. isolation unit

HUDDERSFIELD GENERAL HOSPITAL

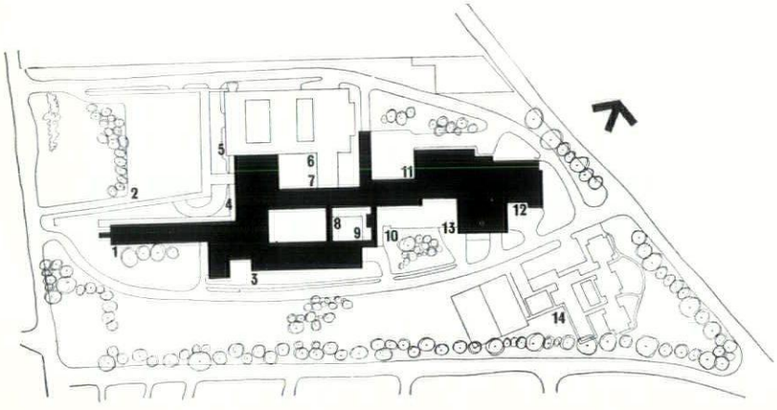
George, Trew and Dunn

CLIENT : Leeds Regional Hospital Board.
SIZE : 508 beds.
DATE : Originally designed to be built in three stages but now being constructed as a continuous operation. Work commenced on first phase in March 1960 : second and final phase to be completed early 1966.

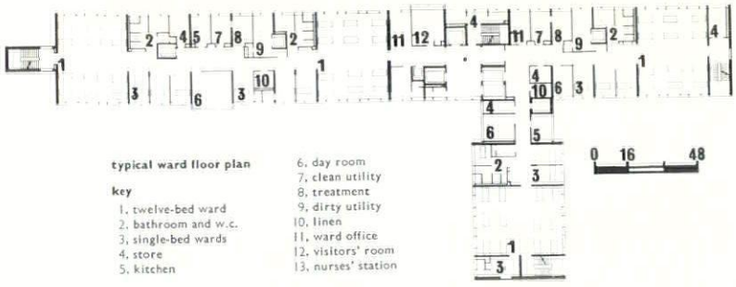
The site has a cross-fall of about 45ft. over the area of the buildings and this has been used to provide separate points of entry and of circulation for patients, visitors, staff and services. The buildings consist of two ward blocks, treatment block with operating theatres and X-ray department, out-patients' department and casualty block and a services block. Two ward units have been planned at each floor level in each ward block and two sets of vertical circulation connect every ward unit with the treatment block and services circulation.

site plan: key

1. ward block
2. visitors' car park
3. operating theatre block
4. main entrance hall block
5. out-patients' block
6. mortuary
7. gymnasium
8. coffee bar
9. future ward block
10. staff dining room
11. kitchen block
12. laundry
13. boiler house
14. nurses' home



general view from the south, with the ward block on the left

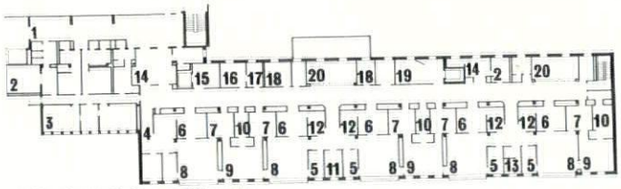


typical ward floor plan

key

1. twelve-bed ward
2. bathroom and w.c.
3. single-bed wards
4. store
5. kitchen
6. day room
7. clean utility
8. treatment
9. dirty utility
10. linen
11. ward office
12. visitors' room
13. nurses' station

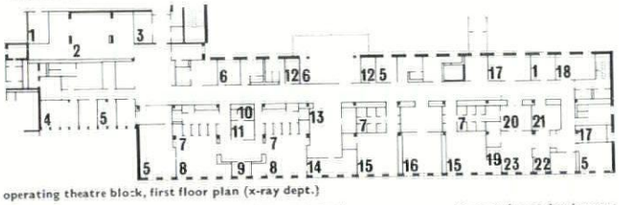
0 16 48



operating theatre block, second floor plan

key

1. bed parking area
2. staff changing and w.c.
3. staff rest rooms
4. preparation
5. scrub up
6. anaesthetic
7. sink room
8. operating theatre
9. sterilizing and tray setting
10. supplies room
11. pathological laboratory
12. recovery room
13. dark room and wet viewing
14. transfer room
15. disposal room
16. sister
17. office
18. equipment
19. work room
20. trolley bay



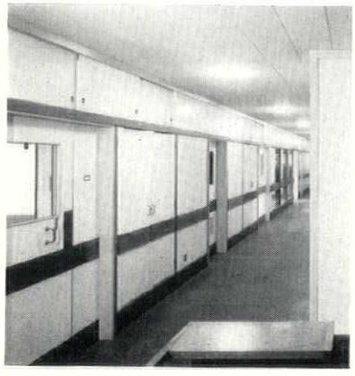
operating theatre block, first floor plan (x-ray dept.)

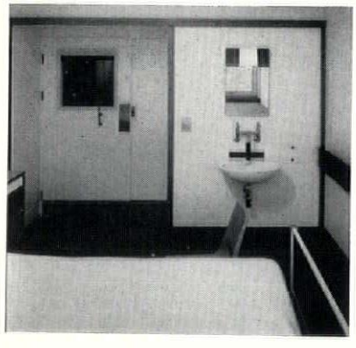
key

1. library
2. x-ray records
3. mobile x-ray
4. staff rooms
5. office
6. waiting
7. cubicles
8. gastro-intestinal treatment
9. barium kitchen
10. sluice
11. lavage
12. report
13. wet viewing
14. dark room
15. x-ray
16. x-ray future development
17. recovery room
18. demonstration
19. control
20. sterilizing
21. anaesthetic
22. scrub up
23. combined procedures room









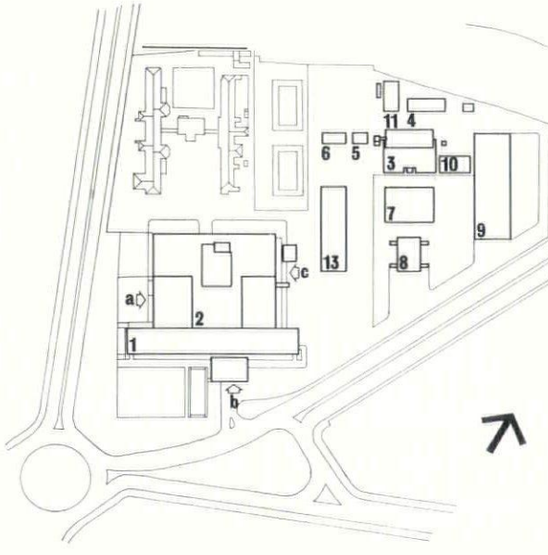


Huddersfield hospital: top left, nurses' station in the ward block: centre left, ward corridor: bottom left, single-bed ward: right, staircase between upper and lower entrance halls

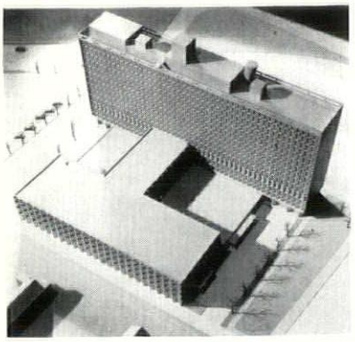
WESTERN GENERAL HOSPITAL, HULL

Yorke, Rosenberg and Mardall

CLIENT : Leeds Regional Hospital Board.
SIZE : 550 beds.
DATE : Architects appointed in 1958, final acceptance of brief 1960, contract let 1962.
The site which is in the centre of Hull has an area of 5.8 acres. It is bounded on the north by a railway and on the south and west by main



site plan: key
a, goods entrance
b, main entrance
c, casualty
1, ward block
2, kitchens, out-patients and treatment
3, boiler house
4, incinerator and stores
5, disinfector
6, animal house
7, training school
8, nurses' home
9, group central library
10, garage
11, workshops
12, married quarters
13, group headquarters



model of the ward and treatment block

traffic routes. To the east there are a number of old houses which will be demolished eventually to extend the site to just over twelve acres. The building is made up of two main elements—a fourteen-storey block containing mostly wards and a four-storey block containing the main diagnostic and treatment facilities. The wards are planned with two thirty-bed units on each floor. The building is now at an advanced stage of construction.

WESTERN GENERAL HOSPITAL, HULL

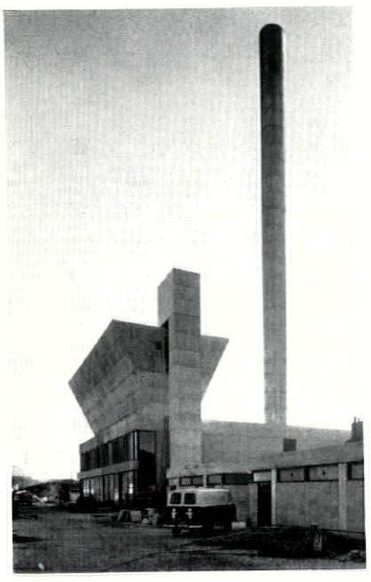
key

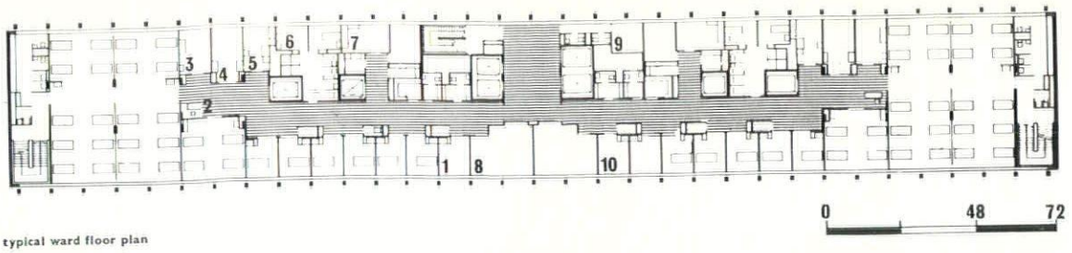
ground floor
a, main entrance
b, stretcher case entrance
c, walking case entrance
1, main entrance hall
2, out-patients' dispensary
3, pharmacy
4, pharmacy stores
5, manufacturing and dispensing
6, dental surgery
7, main kitchen
8, staff dining and rest rooms
9, central lockers
10, mortuary
11, orthopaedic clinic
12, waiting
13, examination
14, x-ray
15, casualty
16, examination
17, casualty officer
18, sister
19, theatre
20, sterilizing
21, recovery ward
22, services and plant
23, bulk stores

first floor
1, out-patients' waiting
2, almoners
3, senior sister
4, surgical department
5, examination
6, recovery
7, eye department
8, waiting
9, treatment
10, consulting/examination
11, e.n.t. department
12, children
13, hearing aid office
14, medical dept.
15, dermatology
16, laboratories
17, biochemistry
18, pathology,
19, public health laboratory service

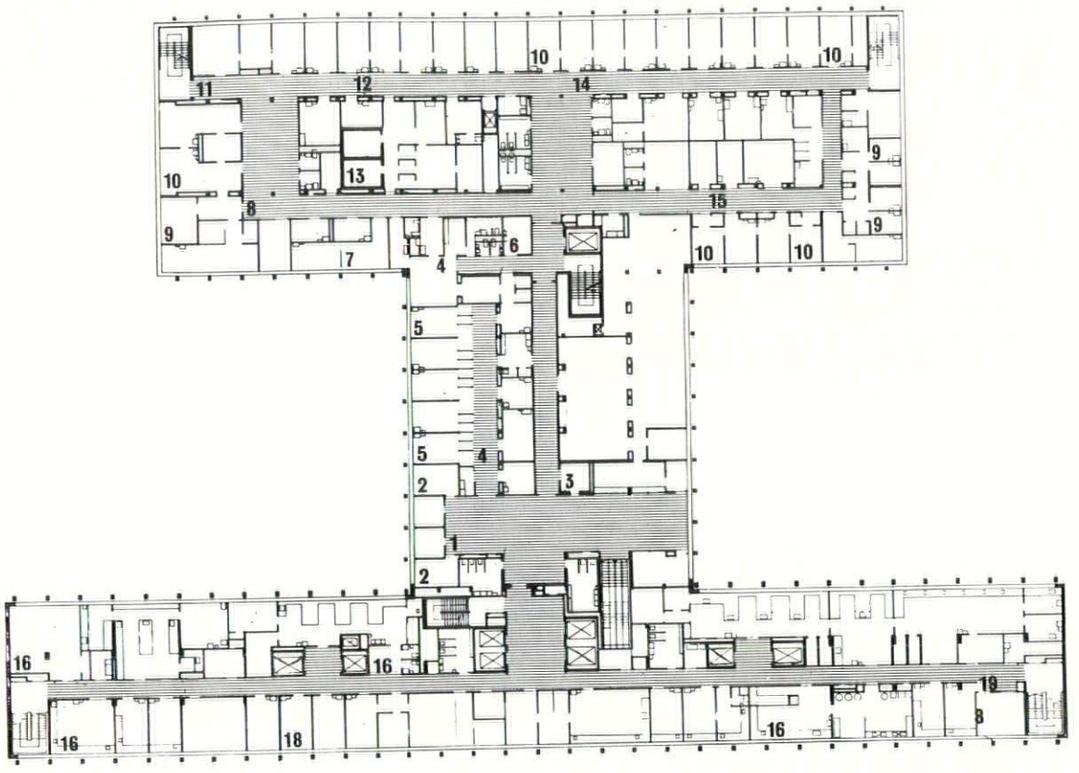
ward floor
1, ward office
2, nurse's station
3, utility
4, treatment
5, sluice
6, bath
7, kitchen
8, day room
9, visitors
10, doctor

the recently completed boiler house

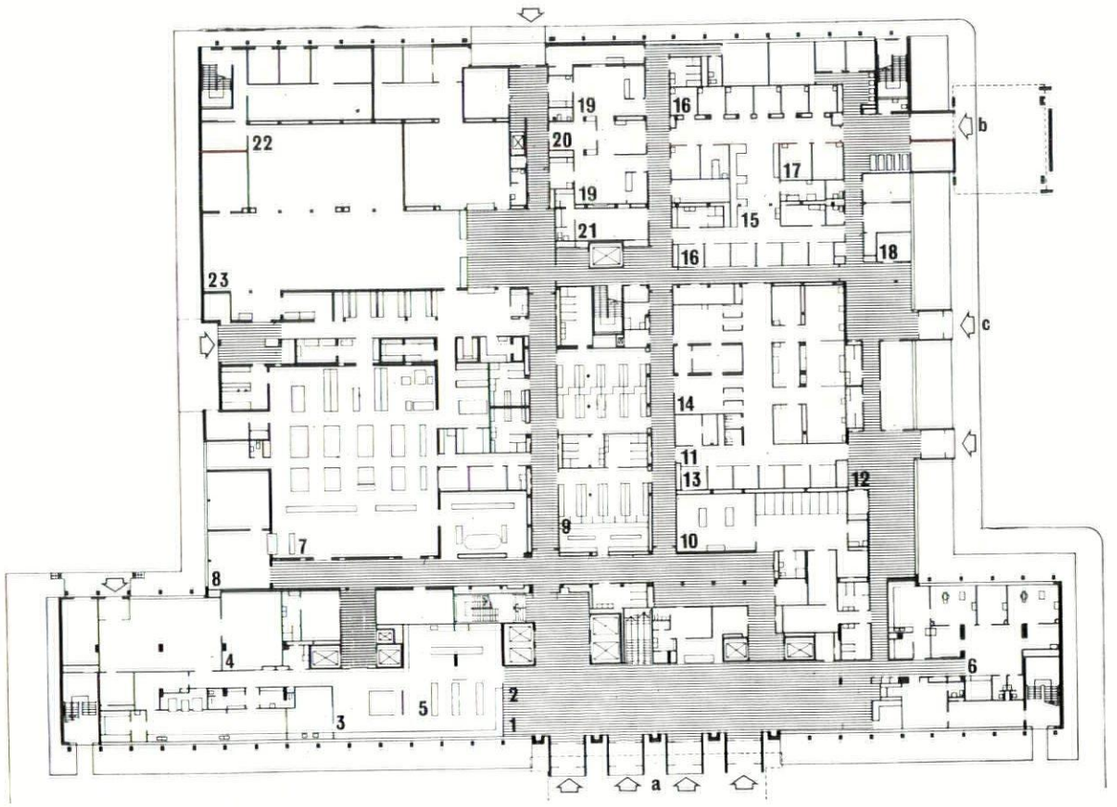




typical ward floor plan



first floor plan

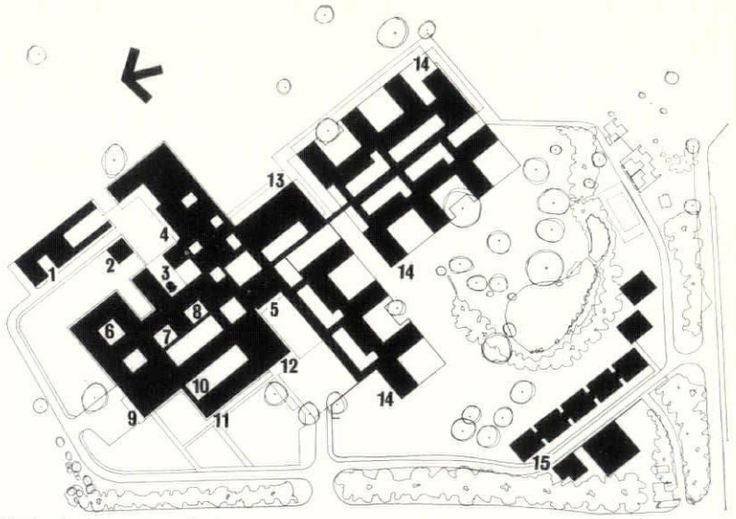


ground floor plan

SLOUGH GENERAL HOSPITAL

Powell and Moya
Consultants: Llewelyn-Davies, Weeks and Partners

CLIENT: North-West Metropolitan Regional Hospital Board.
SIZE: 296 beds, but a later stage may bring the total of beds up to about 400.
DATES: Building started January 1962 and completion of first stage is due in June 1965. (The architects were appointed August 1955.)
This hospital is planned entirely on ground level with the exception of the administration and medical staff residential units which are contained in the seven-storey tower block. The latter rises directly above the main entrance hall which in turn forms the intersection of the two main hospital streets on to which all departments are hooked. The wards are L-shaped and thus provide ample opportunity for planning garden courts that contribute to the intimate domestic scale of the whole. Each ward

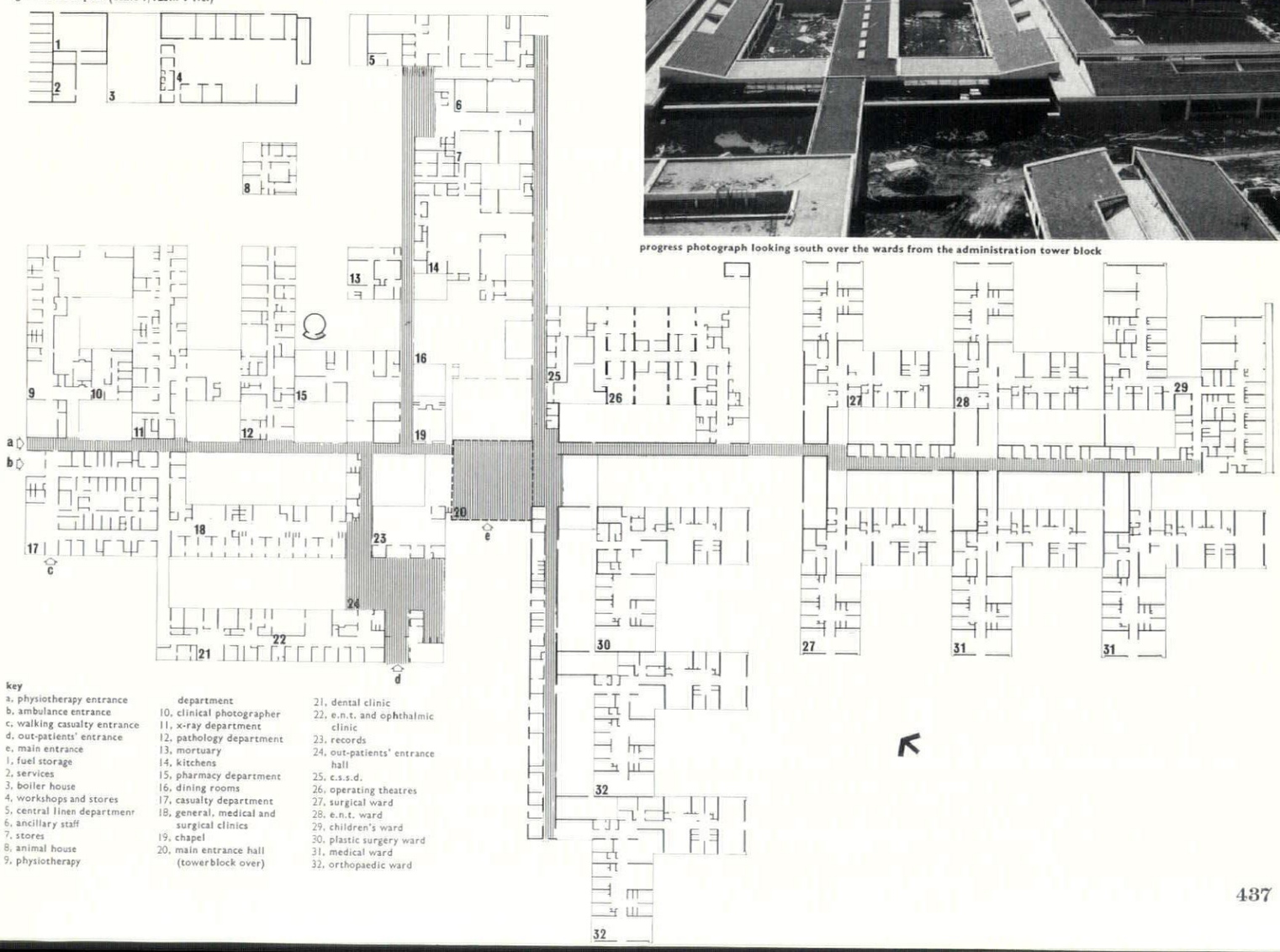


site plan: key
1, boiler house
2, animal house
3, mortuary
4, services block
5, administration block
6, physiotherapy and x-ray departments
7, pathology department
8, pharmacy department
9, casualty department
10, medical and surgical clinics
11, dental, e.n.t. and ophthalmic clinics
12, out-patients
13, operating theatres
14, ward blocks
15, staff housing

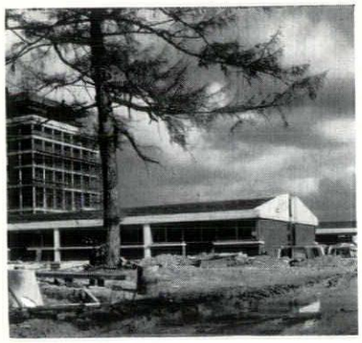


progress photograph looking south over the wards from the administration tower block

ground floor plan (scale 1/128in : 1ft.)



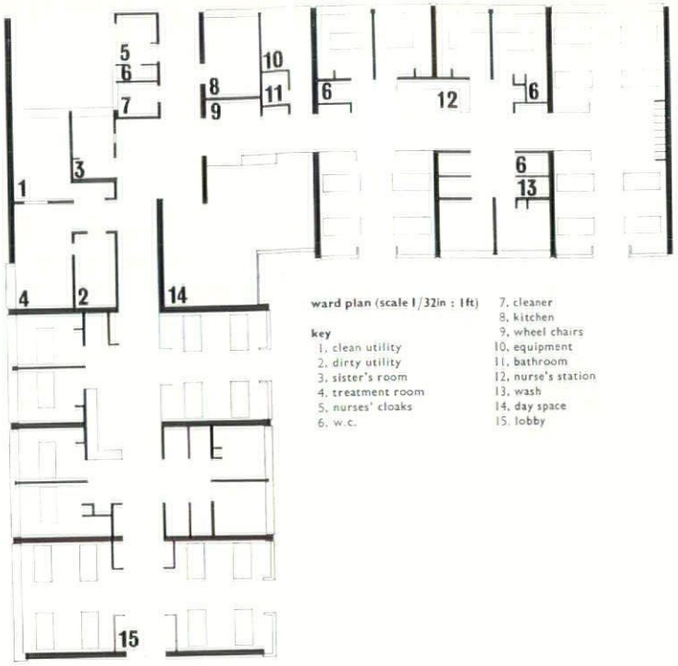
key
a, physiotherapy entrance
b, ambulance entrance
c, walking casualty entrance
d, out-patients' entrance
e, main entrance
1, fuel storage
2, services
3, boiler house
4, workshops and stores
5, central linen department
6, ancillary staff
7, stores
8, animal house
9, physiotherapy department
10, clinical photographer
11, x-ray department
12, pathology department
13, mortuary
14, kitchens
15, pharmacy department
16, dining rooms
17, casualty department
18, general, medical and surgical clinics
19, chapel
20, main entrance hall (tower block over)
21, dental clinic
22, e.n.t. and ophthalmic clinic
23, records
24, out-patients' entrance hall
25, c.s.s.d.
26, operating theatres
27, surgical ward
28, e.n.t. ward
29, children's ward
30, plastic surgery ward
31, medical ward
32, orthopaedic ward



ward blocks with the administration tower behind

SLOUGH GENERAL HOSPITAL

contains thirty-two beds with entrance, day space and most ancillaries planned in the elbow. Due to be completed this year, the hospital is easily extendable. A proposed further stage may increase the bed complement to four hundred.



ward plan (scale 1/32in : 1ft)

key
1. clean utility
2. dirty utility
3. sister's room
4. treatment room
5. nurses' cloaks
6. w.c.
7. cleaner
8. kitchen
9. wheel chairs
10. equipment
11. bathroom
12. nurse's station
13. wash
14. day space
15. lobby

continued from page 430

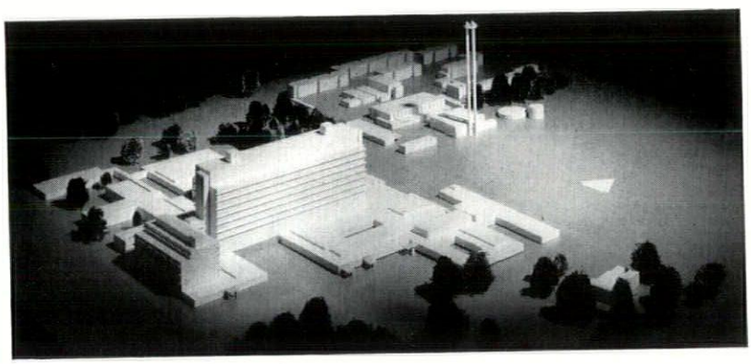
it includes an unusually large amount — for this country — of wholly internal space. It is possible to afford complete air-conditioning in this building only by virtue of its compact planning. Such a proposal involves extremely accurate engineering, since mistakes in the design or operation of the ventilating system leading to incorrect air circulation could be medically disastrous. Both St. Alphege's and the first stage of Walton hospital, Liverpool, are extremely interesting essays in structural design.

Swindon hospital was designed in principle in the early 'fifties—one of the first complete post-war briefings—and its building was delayed by a hospital building pause about twelve years ago, It is connected to the centre of Swindon by a bus route which terminates within the hospital grounds, and it is a measure of the popularity of this most distinguished building that it

continued on page 442

BOSTON HOSPITAL, LINCS

Building Design Partnership

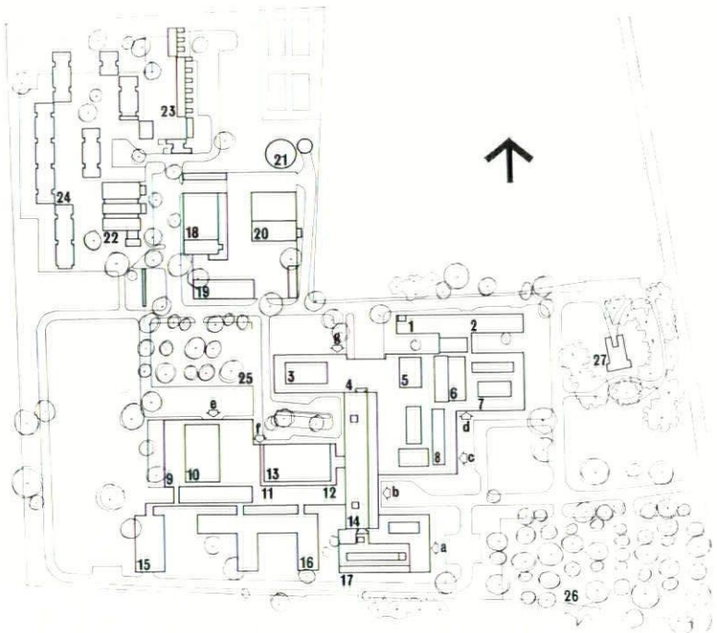


aerial view of model from the south-east

CLIENT : Sheffield Regional Hospital Board.
SIZE : 586 beds, including 72 maternity and 56 geriatric. Future addition of 56 geriatric beds.
DATES : Architects appointed, April 1961, as the result of a competition. Sitework starts, September 1965 ; Completion of phase one, the diagnostic departments, December 1969. Phase II, the remainder, to start June 1969, with completion in 1973.

This is a district general hospital, on a 29-acre site about one mile from the town centre. The design which won the competition was for a building of one and two storey buildings of the finger plan type on a site of eighteen acres. Immediately after the appointment of the architects, the Ministry Building Notes commenced publication and the schedules of accommodation were revised to bring them into line with the notes and cost limits, resulting in an increase in accommodation of about 15 per cent. The tightness of the site caused some radical rethinking of the ward block which took up a large ground area, and it was decided to stack all the wards in a ten-storey block of race-track design with the operating theatres linked to the central circulation and the maternity block linked to the children's unit. The diagnostic and service departments are all single-storey to allow for future extensions.

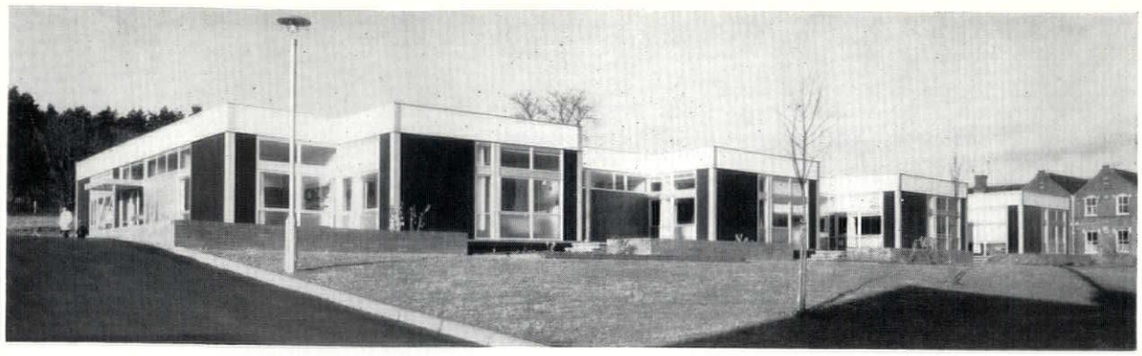
A further eight acres of land to the north-west was later purchased to provide extra space for the residential accommodation and allow more ground around the main hospital for possible future extensions.

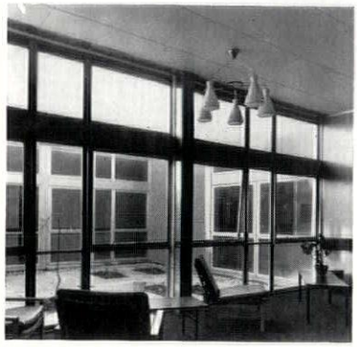


site plan: key
a, maternity entrance
b, main entrance
c, accident and emergency entrance
d, out-patients' entrance
e, loading bay
f, staff entrance
g, mortuary entrance
1, physiotherapy
2, occupational therapy
3, pathology
4, mortuary
5, x-ray
6, medical records
7, out-patients
8, accident and emergency
9, dining
10, kitchen
11, c.s.s.d.
12, pharmacy
13, operating theatres
14, main ward block
15, isolation ward
16, geriatric ward
17, maternity
18, laundry
19, works department
20, boiler house
21, reservoir
22, recreation hall and common rooms
23, two-storey staff houses
24, three-storey nurses' flats
25, staff car park
26, visitors' car park
27, existing Boston group h.m.c. offices

TOWNLANDS HOSPITAL, HENLEY-ON-THAMES

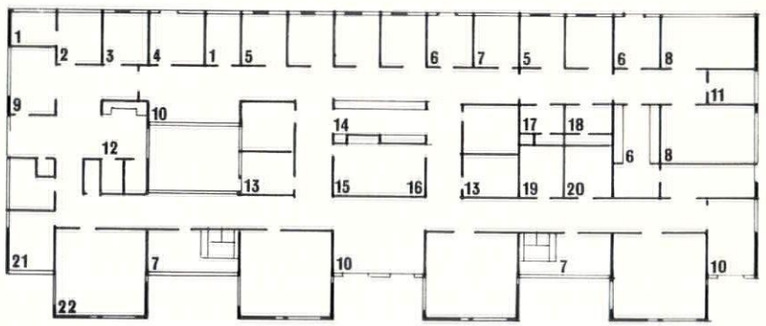
W.J.Jobson (architect to the Regional Hospital Board)







top, general view with the wards on the right: above left, day space and internal court: above right, the nurses' station: below, the entrance side



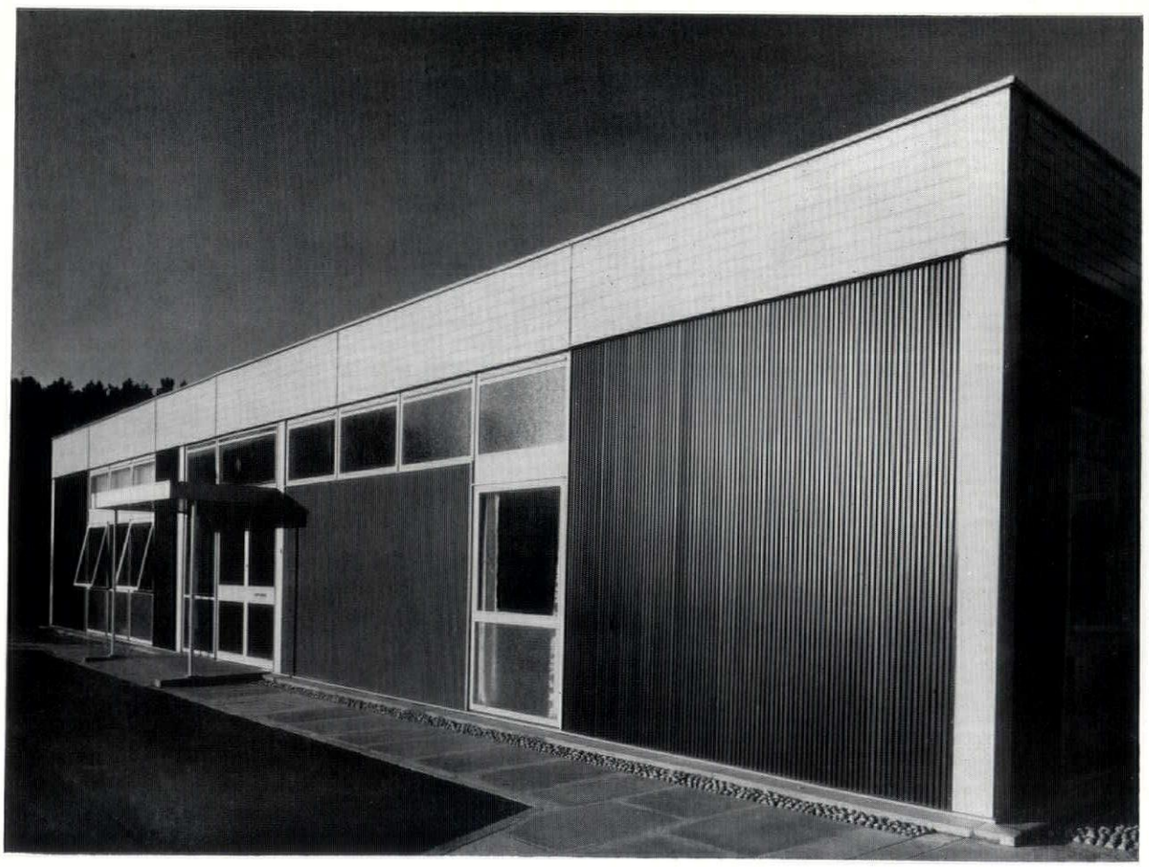
plan: key

1, bath
2, examination
3, sister
4, kitchen
5, single rooms
6, sluice rooms
7, w.c.
8, delivery room
9, records
10, day space
11, equipment
12, waiting
13, nurseries
14, nurses' station
15, milk kitchen
16, clean utility
17, doctor change
18, nurse change
19, linen
20, ward store
21, doctor
22, ward

CLIENT : Oxford Regional Hospital Board.
SIZE : 22 beds.
DATES : Work started December 1963, completed November 1964.

This general practitioners' maternity unit is small in size yet important as a prototype building. It incorporates work done by the research and development section of the Oxford Regional Hospital Board Architects' Department and utilizes a building system likely to be used for a wide range of future buildings by the Board. This system attempts to solve the fundamental problem of dimensional co-ordination while allowing an interchangeability of standard components. The details of the construction were published in the *Architects' Journal*, 10 February, 1965.

A general practitioners' maternity unit provides nursing and clinical facilities for normal maternity cases, with the additional advantage that medical care is provided by patients' own doctors. Functionally it is divided into the reception and examination suite, first stage single rooms, labour rooms, four-bed lying-in wards, bathrooms, w.c.'s and showers. The central core, in addition to the nurseries, is taken up by the clean and dirty utility rooms, stores, changing-rooms and internal courtyard. The waiting area, office, doctors' rooms, sisters' office and cloaks are grouped near the main entrance. Day spaces are dispersed throughout the unit, opening on to terraces sheltered by the alternating wings of the four-bed wards.




OPD goods only

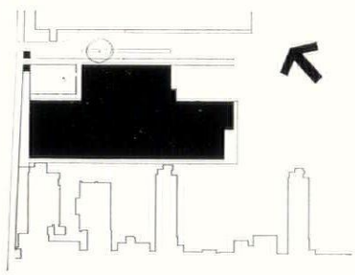
ST. STEPHEN'S HOSPITAL, CHELSEA: OUT-PATIENTS' DEPARTMENT

Richard Mellor (architect to the Regional Hospital Board)

CLIENT: South-West Metropolitan Regional Hospital Board.
DATES: This department, although only just completed, was originally planned some seven to eight years ago.

The clinics were designed to suit the various specialities rather than on the current principle of multi-purpose suites. There are surgical, medical and special clinics including dental, ENT and orthopædic (which is associated with the casualty area). There is a rheumatology unit, a physio-therapy department including a gymnasium and an occupational therapy department. There is a casualty and small accident department with separate entrance and waiting facilities; an X-ray department with four diagnostic rooms; the central records department for the whole hospital and almoners' offices; the pharmacy department with associated bulk stores, and a medical library and staff rest room. In effect this is a new diagnostic and treatment department rather than just an out-patients' department.

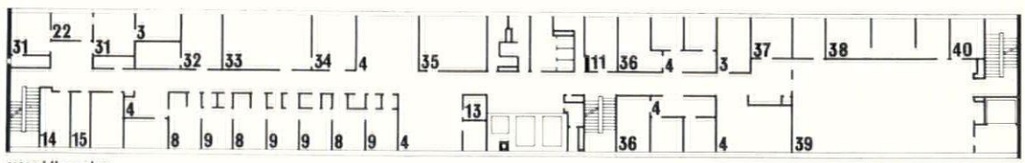
A special feature is the signposting inside and out. This is one of two pilot projects initiated by a working party appointed by the Ministry of Health and the Scottish Department of Health.



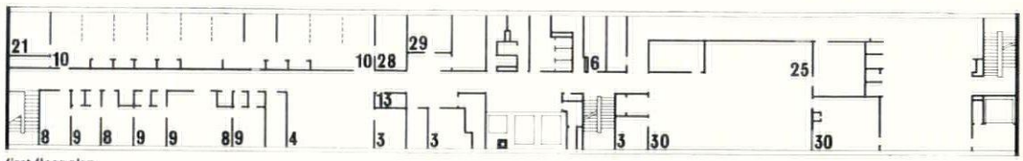
site plan showing relation of out-patients' department (solid) to fingers of existing hospital



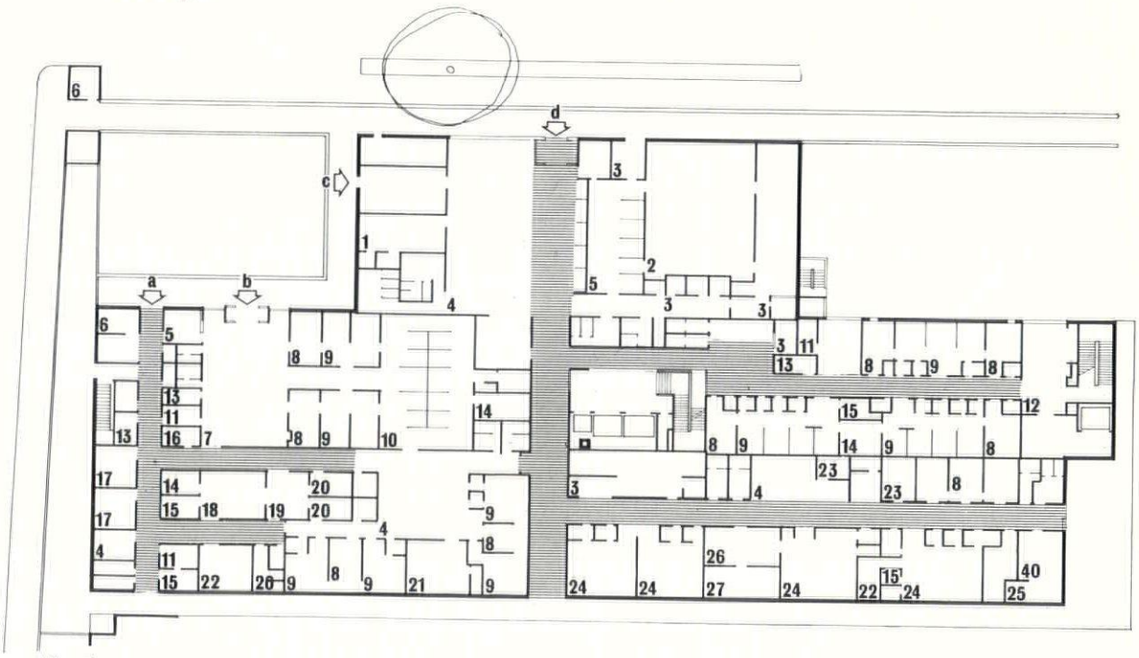
the reception area at the main entrance



second floor plan



first floor plan



ground floor plan

key

a. accident entrance
b. casualty entrance
c. pram entrance and ambulance collection
d. out-patients' entrance

1. children's room
2. records
3. office
4. waiting
5. reception
6. porter
7. casualty waiting
8. consultation
9. examination
10. treatment area
11. sister
12. service hall
13. linen
14. sterile
15. sluice room
16. casualty medical officer
17. accident room
18. minor operating theatre
19. anaesthetic room
20. changing
21. plaster room
22. recovery room
23. radiography
24. x-ray
25. kitchen
26. viewing room
27. manual
28. ultra-violet
29. physiotherapy
30. occupational therapy
31. dental
32. minor surgery
33. eye clinic
34. audio and perimetry
35. superficial therapy
36. almoners
37. pharmacist
38. preparation and septic
39. pharmacy
40. electrocardiography

←facing page, close-up view of the east corner: below, signposting in the main entrance corridor



continued from page 438

is not unknown for people to visit it for a Sunday afternoon's outing.

The planning problem at High Wycombe hospital on a steeply sloping site, already largely occupied by a working hospital, could only be solved by the use of a race-track ward plan, and intricate interlayering of the out-patient, diagnostic and therapy departments.

The Ulster hospital, the Huddersfield general hospital and the Western general hospital, Hull, were all designed well before the Ministry of Health guidance material and cost control system were published, and it may now be difficult to design hospitals with such elegant interior finishes within the cost limits.

Slough general hospital in 1955 was the first hospital to be planned on a horizontal basis, and it is unique in its single-storey design. It is entirely on one floor except for the administration building. It may be near the limit of size for such a plan. The planning system should enable the hospital to react positively to changes in medical need in the future through the rebuilding of units as required without interfering with the basic circulation system. Each ward has its own patio garden and it is possible, even in its incomplete state, to see that it will have a very high level of amenity for patients.

The design of Boston hospital was altered as conflict between the accommodation requirements and the size of the site became acute. Potential for expansion had to be sacrificed to high density planning except for the diagnostic and service blocks.

Townlands maternity unit is one of the few experimental buildings in addition to those designed by the Ministry of Health's own team. The hospital building programme for any one region is seldom large enough as yet to support an experimental building programme or to obtain the benefit of regular specialized component production.

The new building at St. Stephen's Hospital, Chelsea, although impressively detailed, particularly in its experimental sign-posting, is an ex-

continued on page 446

WYTHENSHAWE HOSPITAL

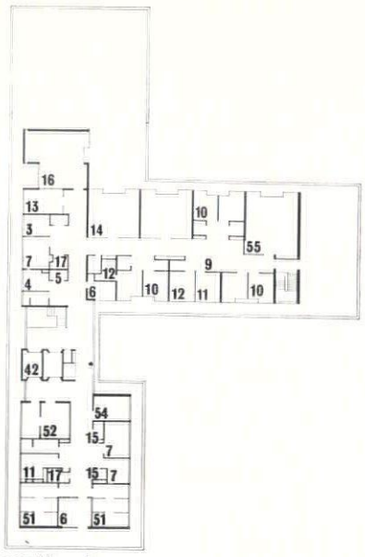
Powell and Moya

CLIENT : Manchester Regional Hospital Board.
SIZE : 404 beds, but it also contains a cardio-thoracic unit.
DATES : The architects were appointed in June 1956 and the first stage, a maternity unit of 80 beds, was started in December 1962. It was completed in May this year. The second phase of 324 beds is due to start in 1967.
Unlike Slough hospital, the slope here falls to the north causing the L-shaped wards, now stacked two and three storeys high, to step with the incline. The service block lies to the east of the administration tower and the cardio-thoracic unit to the west. The latter links with the operating theatres to the south and the out-patients' to the north.

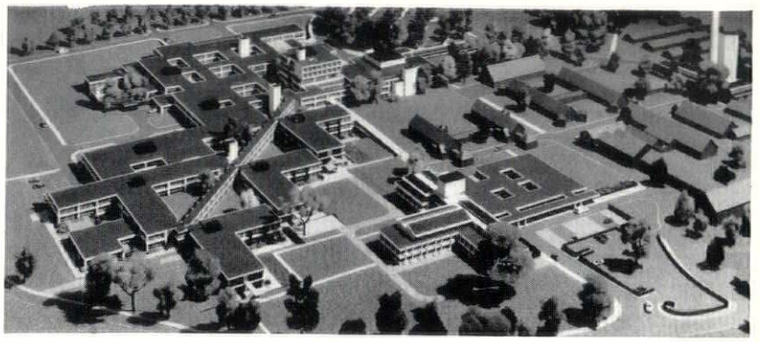
the maternity unit from the south-east

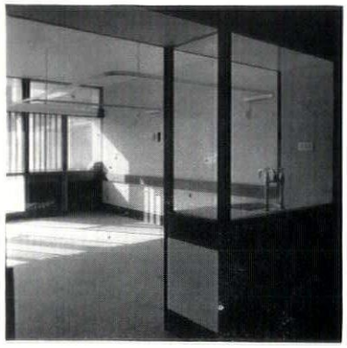


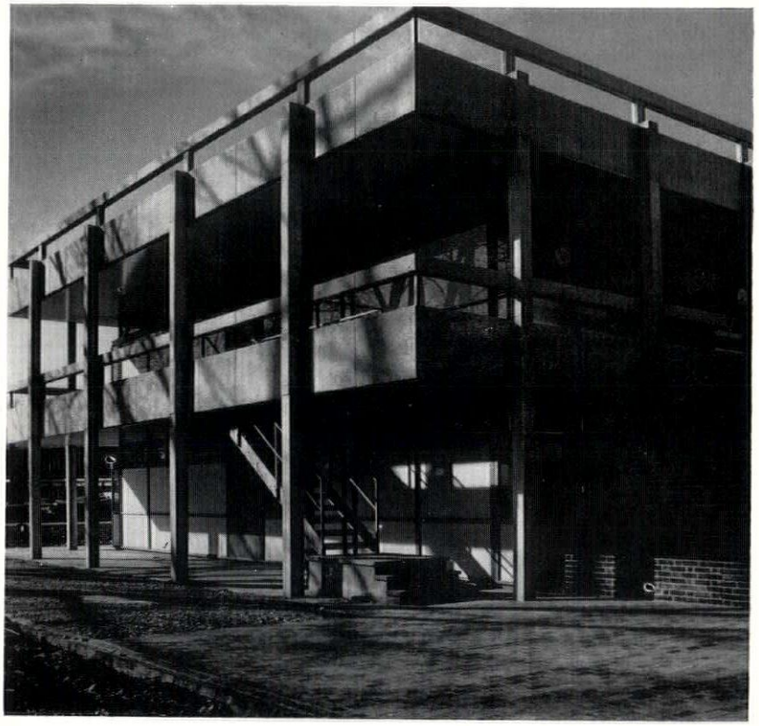
The maternity unit is an independent complex linked by a corridor to the main hospital. Admission and ante-natal facilities are contained within the single-storey portion whilst the T-shaped multi-storey unit comprises two floors of post-natal wards each of thirty beds with 'rooming in' allowance and a delivery unit at each level. Ante-natal beds and premature baby unit occupy the roof. A four-bed isolation unit accessible to visitors from the garden is incorporated into each post-natal ward.

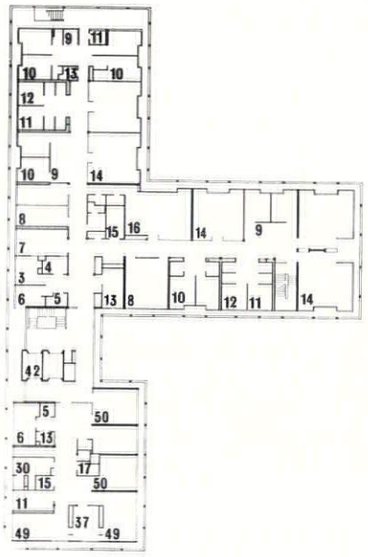


second floor plan


above, aerial view of model of whole hospital, from the south-west, with the maternity unit on the right: below, the south-east corner of the three-storey maternity block: bottom, the south-west side of the maternity unit


typical ward interior

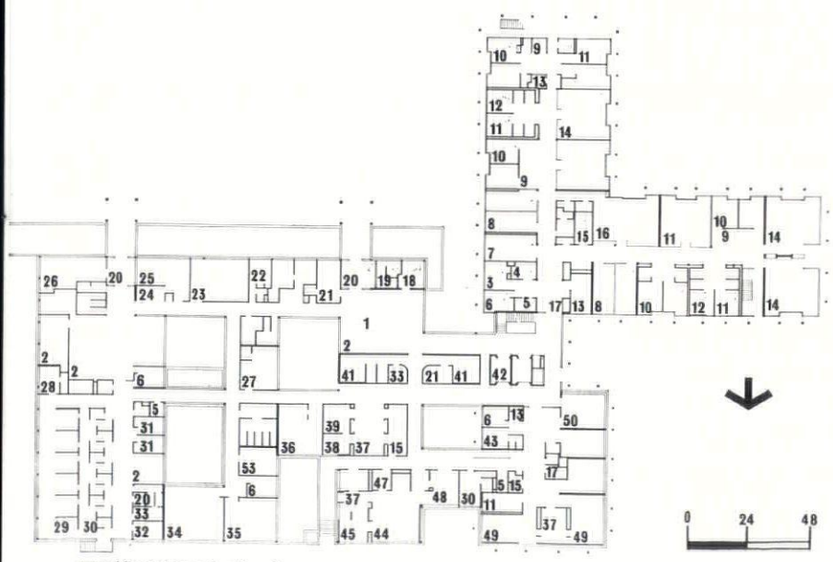




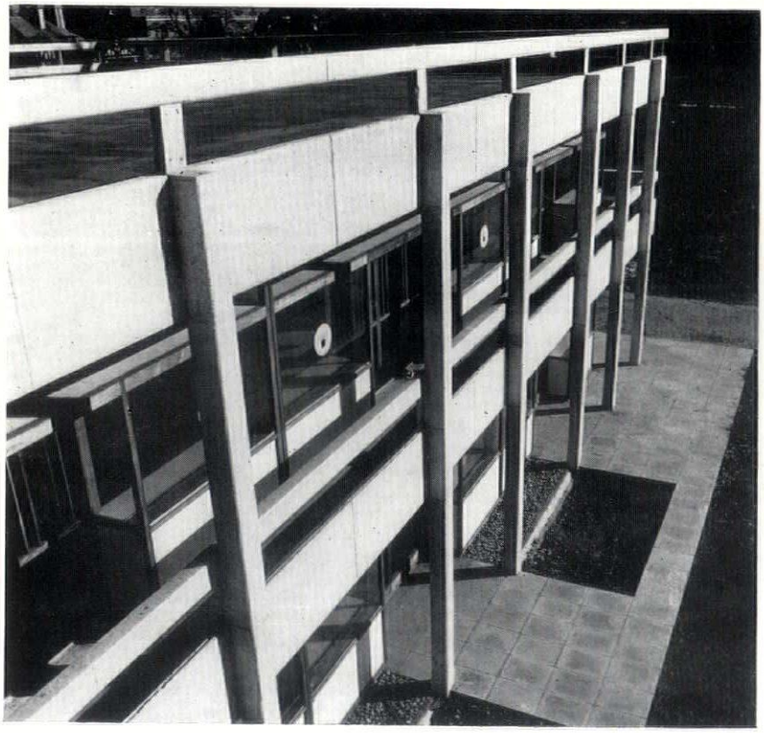
first floor plan

key

1. entrance hall
2. waiting
3. clean utility
4. dirty utility
5. cleaner
6. sister
7. treatment
8. nurseries
9. nurses' station
10. single-bed ward
11. sluice room
12. bathroom
13. kitchen
14. four-bed ward
15. store
16. day space
17. linen
18. night duty
19. porter
20. lobby
21. midwives
22. visitors' bed-sitting
23. exercise and lecture room
24. reception
25. office
26. almoner
27. medical staff
28. consultant
29. examination rooms
30. changing
31. case history
32. laboratories
33. urine testing
34. lecture room
35. library-museum
36. staff canteen
37. sterilizing
38. workroom
39. clean-up
40. sterilizing store
41. admission
42. bed-lift
43. doctor
44. operating theatre
45. wash-up
46. supply
47. scrub-up
48. anaesthetic
49. delivery ward
50. labour wards
51. premature baby ward
52. milk kitchen
53. study
54. demonstration
55. six-bed ward



ground floor plan, maternity unit



ASTLEY AINSLIE HOSPITAL, EDINBURGH: CHILDREN'S UNIT

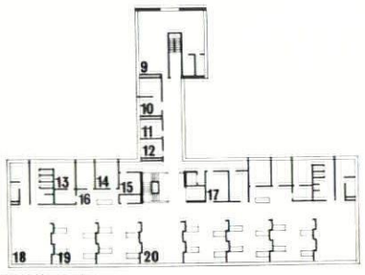
Michael Laird

CLIENT: Astley Ainslie, Edenhall and Associated Hospitals.
SIZE: 40 beds.
DATES: Building started January 1963; completed April 1965.

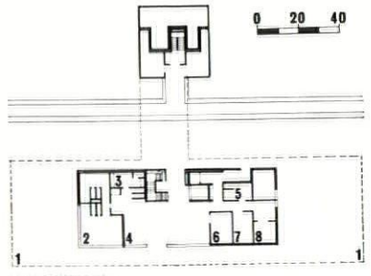
This children's unit is an example of formal treatment giving privacy to the accommodation of services. Situated in south-sloping wooded parkland it consists of two twenty-bed ward units on the two upper floors extending over covered play space. There is an isolation/physiotherapy wing to the north and a large sun room at roof level. Internally the four-bed bays are easily subdivided into single- or two-bed units and have fully glazed screens over the partition/storage units giving clear visual supervision overall. The semi-open ward layout integrates with the pattern of structure, which contains all services at floor level. The structure is of precast concrete members with exposed aggregate finish. The peripheral H-section columns are at 21ft. centres and internally at one-third span. Twin floor beams connect transversely. The beds back up to built-in storage units located over the twin beams, which contain all the services (including light, power, TV, water, drainage, intercom and vacuum cleaning system). The bottom shelves of the units are removable, making the services totally accessible without having to remove ceiling or floor panels in the ward bays.

key

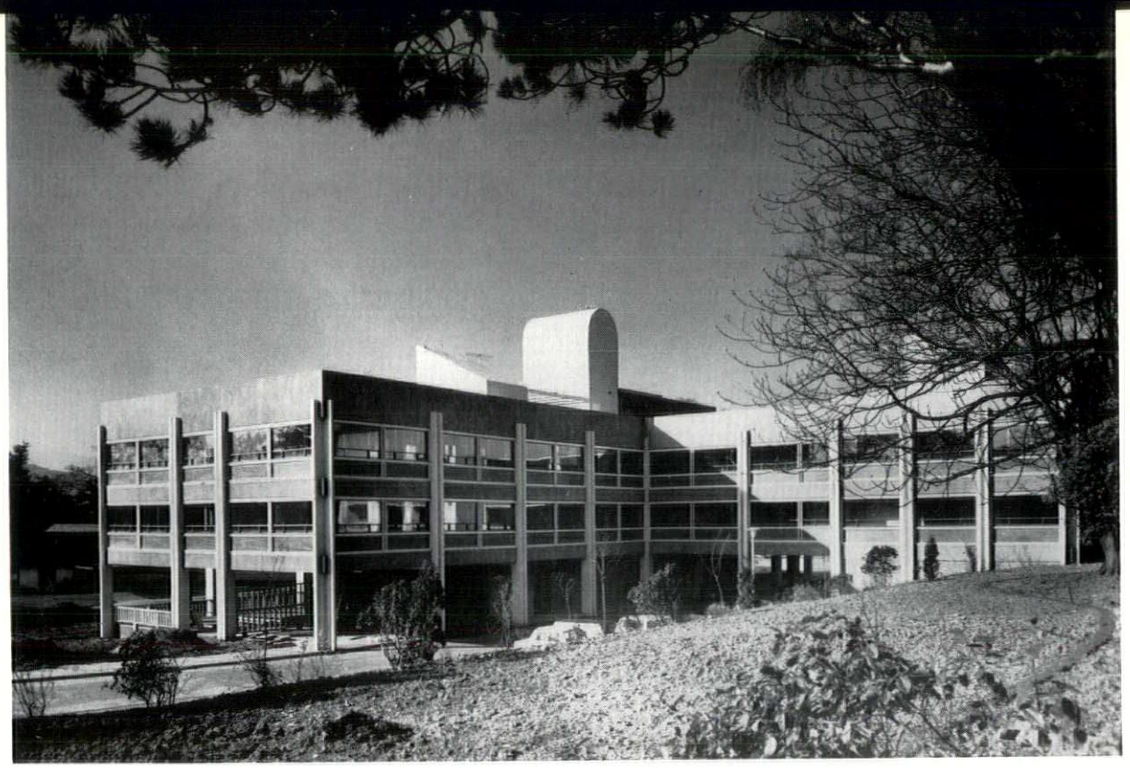
1. play area
2. cloaks and w.c.
3. rest room
4. visitors' waiting
5. maid
6. general purpose
7. linen
8. drying
9. physiotherapy
10. treatment
11. doctor
12. sister
13. sluice
14. clean utility
15. dirty utility
16. nurses' station
17. kitchen
18. day room
19. four-bed wards
20. day dining room



first floor plan

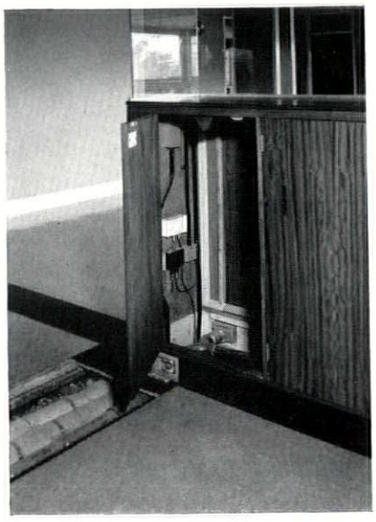


ground floor plan





top, general view of the exterior: above, typical ward interior: below left, storage unit with duct covers removed: below right, complete storage unit





CAMERON HOSPITAL, WINDYGATES, FIFE: GERIATRIC WARD

John Holt (architect to the Regional Hospital Board)

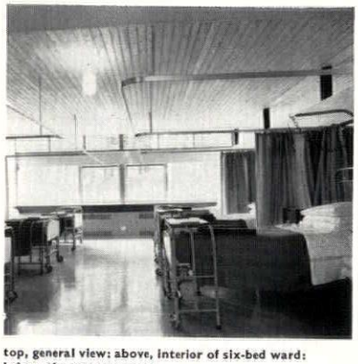
CLIENT : South-Eastern Regional Hospital Board (Scotland).
SIZE : 60 beds.
DATES : Finance allocated autumn 1961, building completed spring 1963.

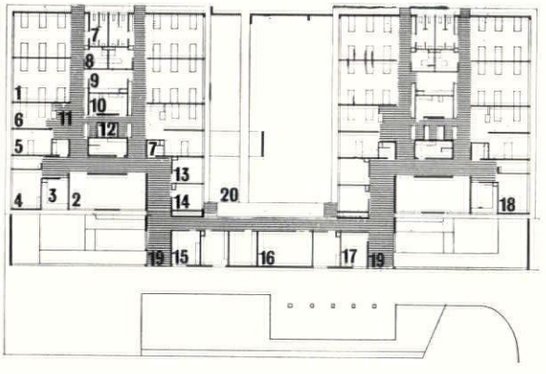
The plan, in order to save working drawings, was adapted from a nearby hospital designed for quick erection, and by an extension of that contract, it was possible to utilize the same experience.

The single-storey basic ward is in two fifteen-bed components separated by a central service core where, in the interests of economy of space, some rooms are shared. By this subdivision, male and female patients may be housed simultaneously, but when numbers dictate occupancy by one sex only, the staff have easy access to all patients through a short corridor linking the nurses' stations. The nurses' station commands the ward entrance and has a view over the entire bed area through glazed dividing partitions. Adjoining the ward kitchen and overlooking the entrance court to the south is the day-room which has a folding screen to permit subdivision for dining or other functions. A thermostatically controlled shower with a flexible spray arm is an additional item of equipment in the patients' bathroom.

The structure is of loadbearing brickwork, carrying open web nailable steel joists and a lightweight roof deck of wool slabs and bituminous felt, the advantages being thermal insulation value, speed of erection and freedom afforded for service runs. The cladding is of cedar boarding and asbestos infill panels.

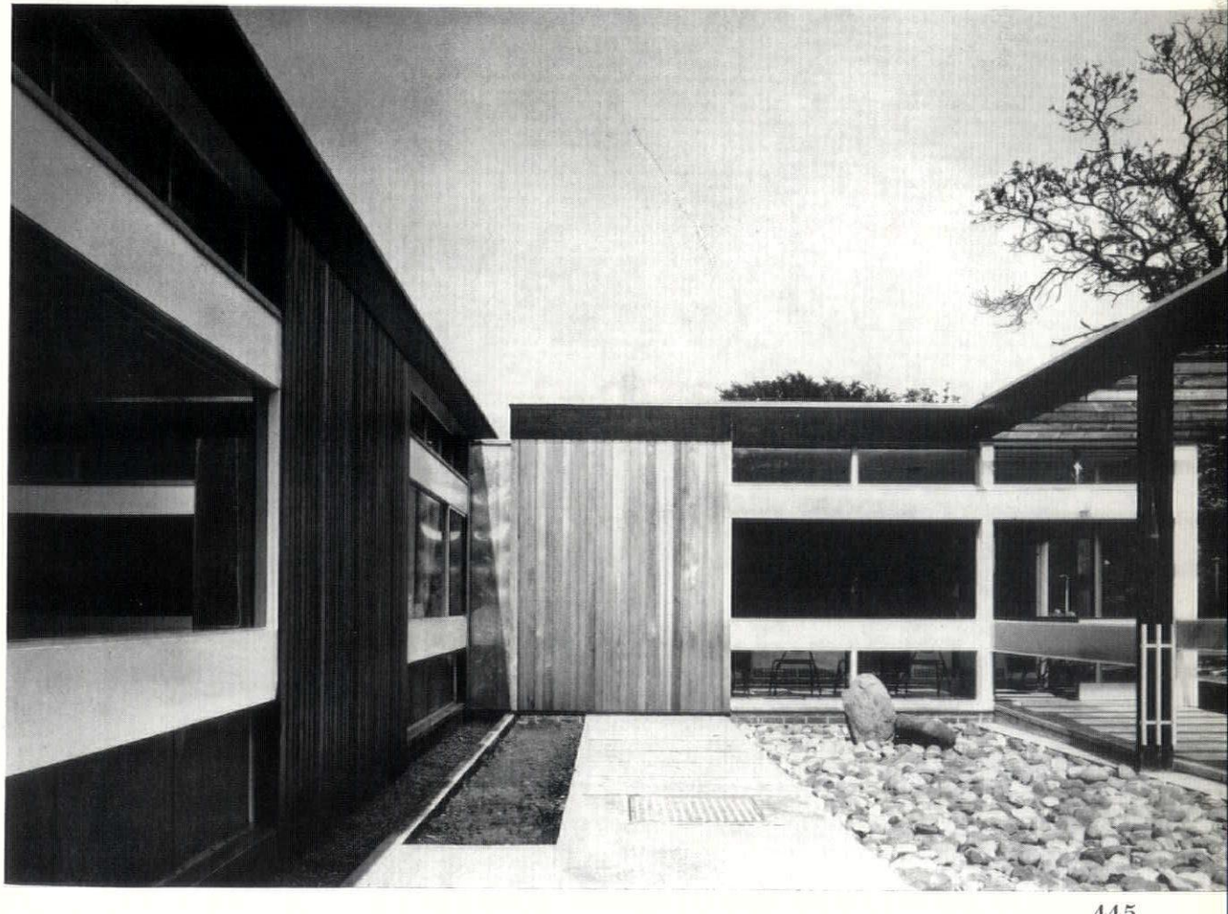






plan: key
1, six-bed ward
2, day room
3, kitchen
4, physiotherapist
5, single-bed ward
6, double-bed ward
7, w.c.
8, patients' bathroom
9, treatment room
10, sluice room
11, nurses' station
12, linen room
13, sister's room
14, waiting room
15, non-resident staff
16, plant
17, doctors' room
18, occupational therapy
19, service duct
20, entrance hall

top, general view: above, interior of six-bed ward: below, the entrance court

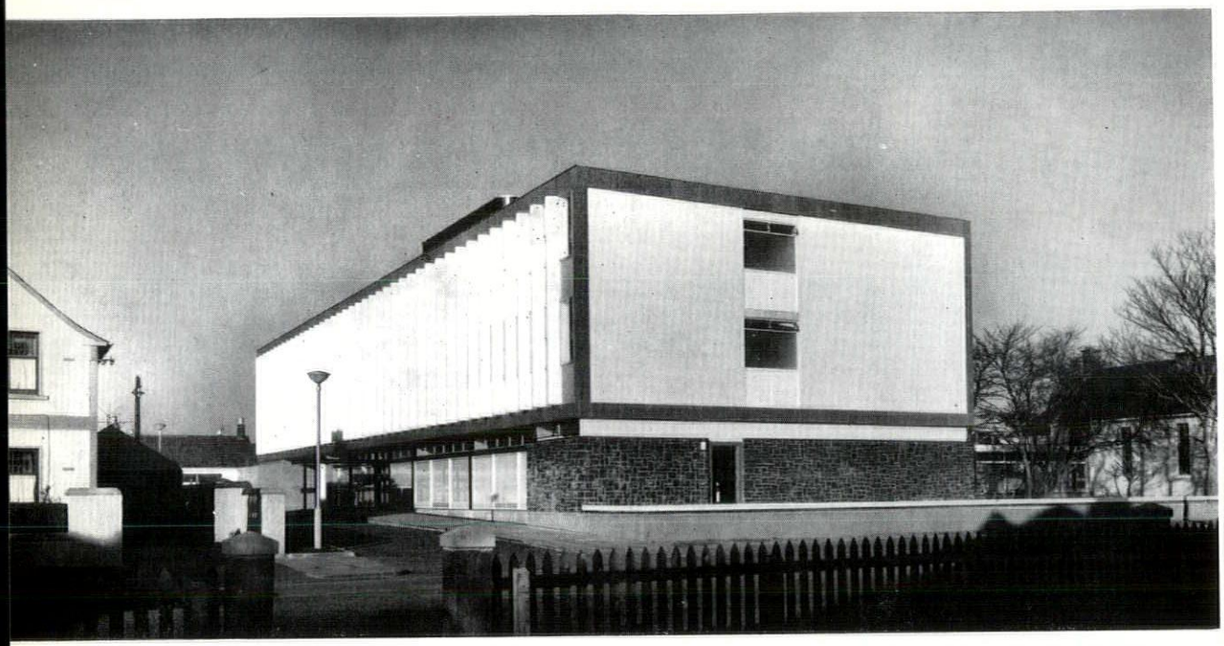


continued from page 442

ample of the complications to which particularized departmental planning leads. The plan would probably be more generalized if designed now, and the building would consequently be more flexible in use.

Wythenshawe hospital, another work by Powell and Moya, a mid-fifties commission with its first stage now complete, is a Slough-like development but two and three storeys high on a gently sloping site. As at Slough, the primary circulation routes are beautifully clear, quite separate from departmental circulation, and in principle extendible.

The last three buildings in this section are specialist units, new additions to existing general hospitals. Even where a whole new hospital is planned, there is often good reason to house the paediatric and geriatric sections in separate accommodation. Paediatric wards do not stack easily with adult wards; the proportion of bed-occupied to ambulant space is different, the supervision pattern is different and the proportion of isolation beds was found by the Nuffield children's ward study team to be ideally 50 per cent of all beds—a good deal higher than in general adult wards. Geriatric wards also have different space requirements from general wards. More space for up-patients, access to gardens and often close association with a day hospital precludes their close integration with the general ward buildings.



view from the south

RANDOLPH WEMYSS MEMORIAL HOSPITAL, BUCKHAVEN: GERIATRIC UNIT

John Holt (architect to the Regional Hospital Board)

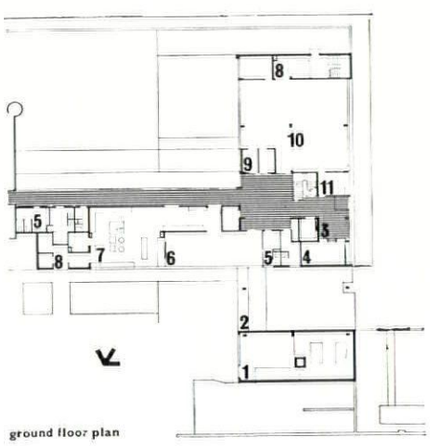
CLIENT: South-Eastern Regional Hospital Board (Scotland).
SIZE: 60 beds.
DATES: Work began June 1962 and completed in eighteen months.

The addition of sixty beds and the increased staff complement made necessary the provision of a new boiler house, dining room and kitchens. These are contained in the ground floor, together with a small physiotherapy suite. The structure of the main block is of reinforced concrete, the floors and roof spanning from column-supported central spine beams to the close-centred perimeter columns. These are precast in 22ft. lengths and act as sun baffles for the ward areas.

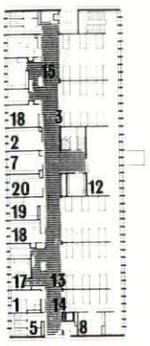
The wards at first and second floor levels are planned as large open spaces divided by glazed screens into six bed bays. Between the bed areas and the windows a gangway with a continuous hand-rail is provided to allow ambulant patients to exercise away from the main circulation corridor. The outlook from the wards is to the south-west. Behind the centrally placed nurses' station in each sixteen and fourteen bed unit lie the linen and sluice rooms and on either side are single bed rooms, patients' bathrooms and lavatories. Each patient is provided with a built-in locker for outdoor clothes.

Externally the grounds between the old and new buildings have been carefully landscaped to provide a garden accessible from the physiotherapy room with some degree of seclusion. A paved terrace and lawn for the use of patients has also been laid out on the west side of the hospital.

key
1 boiler house
2, covered court
3, entrance hall
4, reception
5, w.c.
6, dining room
7, kitchen
8, store
9, changing room
10, physiotherapy
11, doctor
12, day room
13, six-bed wards
14, three-bed wards
15, nurses' station
16, bath
17, sluice room
18, single-bed ward
19, clean utility
20, treatment
21, sister



ground floor plan



first floor plan

I.Berresford

THE TEACHING HOSPITAL

Twenty years have now elapsed since the end of the war, and the first teaching hospitals to be rebuilt since 1939 are at last beginning to emerge from the ground. It will be several years before they are completed, and it is significant that they will have taken as long as twenty years to build since planning started. The other important and noticeable characteristic is that of rising costs. The cost of many teaching hospitals has risen substantially from the original estimate and these escalating costs have no doubt had an effect on the hospital building programme, slowing down the rate of development. Due to the comparatively small investment in hospital building over the last twenty or thirty years, the majority of our hospital plant is obsolete. Most of the hospitals are in urgent need of replacement; their age and the rapid changes in medicine have made them functionally inefficient. The Boards of Governors of the existing teaching hospitals have endeavoured to cope with the many problems as they occurred, by adapting their existing buildings as best they could, and by filling every available space left on their sites with small additions to meet the various pressures. Sooner or later, however, buildings that have not been designed to allow for change reach a point where further modification is impossible. At the present rate of expenditure it must, nevertheless, be a considerable time before this situation is corrected. It is essential, therefore, that it should be appreciated how important it is for our new teaching hospitals to be able to survive into the twenty-first century.

As a result of the discoveries and continuous development in the medical sciences, coupled with the developing medical educational techniques, the teaching hospital is one of several building types which are in a continuous process of evolution. Architects who are working on the current design of hospitals, universities, new towns and other large developments are becoming increasingly aware of the fact that change itself is one of the few constant factors in the development of these complex organizations. Once the nature of the planning problems has been understood design techniques can be developed for solving them. But before considering how the design of teaching hospitals can be achieved more effectively, I propose to show the way in which our existing teaching hospitals have developed towards their present form.

Medical education can be traced back to the time of the early civilizations, and we know that the Greek and Roman students were trained by being apprenticed to physicians. The Roman approach to medicine, however, was more systematic as medical education was standardized throughout the Roman Empire and schools for formal learning were established. There is little knowledge of how the teaching of medicine developed from this time until the Italian medical schools were formed in the ninth and tenth centuries. In the middle ages medical faculties were established in many famous universities, and several medical schools and individuals made important contributions towards a more scientific approach to medicine. This resulted in an increase in knowledge which led to the foundation of specialization and to medical research. In this country most of the hospitals were monastic in origin and few survived the dissolution of the monasteries, but those that did included St. Thomas's and St. Bartholomew's in London. Italian Renaissance medical schools made an outstanding contribution to medical education and this proved to be so significant that large numbers of English medical students went to Italy for their education. The English universities in the fifteenth century were so concerned that parliamentary action was taken, which resulted in a decree requiring students to take a medical degree at either Oxford or Cambridge before they were allowed to practise in this country.

The Industrial Revolution caused overcrowding in towns, poverty abounded and people lived without proper sanitation. The constant threat of disease in these apalling conditions led to the foundation of the voluntary hospitals which were entirely dependent on charitable contributions. The teaching of medicine in the eighteenth century had been based on the principle of clinical apprenticeship, and the only centres of comprehensive medical education in this country were London, Edinburgh, Aberdeen and Dublin. The new voluntary hospitals provided an ideal opportunity for the extension of the system of apprenticeship to their wards, and members of the staff took responsibility for the training of apprentices in return for a substantial fee. The pupils provided cheap labour in the wards. This use of the ward for clinical instruction was the first stage in the development towards the clinical department associated with the ward as it exists today.

Medical schools at this time did not provide instruction in the basic sciences (i.e. the pre-clinical subjects) and to overcome this need private anatomy schools were established, the successful ones being taken over eventually by the medical schools. In many of our contemporary medical schools the pre-clinical school is still separately sited from the medical school and teaching hospital. The next step in the development of the teaching hospital was the establishment of the medical schools within the precincts of the hospital or closely associated with it. Most of them at this time were independent, and run as a private enterprise by the staff.

At the beginning of the nineteenth century there were many licensing bodies able to grant professional status after examination. These bodies were often dependent on the examination fees for their income and, in order to attract candidates, did not shrink from competitive advertisement. In the middle of the century concern was felt at the haphazard and unsatisfactory state of medical education, and in 1859 the General Medical Council was established with the aim of supervising and regulating the standards of professional knowledge expected of medical students before qualification, and also of forming a register of qualified medical practitioners. The teaching hospitals and private medical schools were immediately affected and many of the smaller institutions were closed. Medical schools were linked with larger teaching hospitals under the control of boards of governors. In Germany, at the end of the century, more than twenty medical schools were situated in major cities and were directly associated with the teaching hospitals and universities. This close association led to outstanding developments in patient care and clinical diagnosis, based on systematic examination and thorough laboratory analysis. The German approach to medical education also led to the introduction of the pro-

fessorial system, which was subsequently introduced into Britain. Medical science was by now developing so rapidly that it could not be carried out effectively by part-time staff, and it became necessary to appoint full-time academic staff. In 1915 the first whole-time academic unit was established at University College Hospital, London. These units were soon set up in other teaching hospital and medical schools. The Local Government Act of 1929 created hospitals that were run and financed by the local authorities, but the voluntary hospitals remained unaltered, still relying on charity, though contribution systems were later set up to finance them. In spite of the financial difficulties the voluntary hospitals still had a near monopoly of medical teaching, though some local authority hospitals were used for teaching on fever and mental cases.

At the beginning of World War II many of the better hospitals were in London and other vulnerable places, and their bed numbers were limited. Many additional beds were therefore needed and the emergency bed service was set up at the Government's expense to up-grade those hospitals outside the danger area. The staff of the teaching hospitals and the municipal and voluntary hospitals were merged and moved out to the provincial hospitals. This move had the effect of integrating the staff and the hospitals. The scheme proved successful and pointed towards a national hospital service, based on this wartime experience. It was clear that a hospital service must be planned on a regional basis, and that the general hospitals should be linked in some way with the teaching hospitals. The National Health Act of 1946 nationalized the hospitals under the newly formed Regional Hospital Boards. Teaching hospitals in England and Wales, however, remained under the control of Boards of Governors.

While little teaching hospital and university building had occurred, student expansion had increased, and far more students were requiring accommodation in the medical schools than could be found places. This brought overcrowding and keen competition for too few places. Thus when the National Health Service came into effect the Ministry of Health faced an exceedingly difficult problem. Most of the teaching hospitals were old and thoroughly obsolete. Towards the end of the war a growing discontent at the pre-war state of medical education had led to the appointment of a committee to study this important problem.[1] The terms of reference of the committee were to recommend the future policy on medical education. The subsequent report, published in 1944, was known as the Goodenough Report. It found little that was satisfactory in the medical education system. The main recommendations were that all schools should be integrated with the universities, and the fundamental relationship with the teaching hospital was recognized. The medical curriculum was strongly criticized and it was indicated that a drastic overhaul was an urgent necessity. The committee recommended that the General Medical Council should take the initiative in this matter; it also recommended that students should be provided with a cross-section of medical experience, and set out the manner in which a teaching centre could be organized to provide it. It pointed out the urgent need for more clinical professorial units, and for more co-ordination of teaching and research, together with a great increase of full-time staff. The report also stated that while undergraduate medical schools should concentrate on the teaching of undergraduates, it was essential that this should not prevent a build-up of postgraduate education facilities. The Goodenough Report has had a considerable effect on medical education since the war. Largely as a result of it, the General Medical Council in its Recommendations of 1957 set out the basis for the reshaping of the medical curriculum. While laying down certain principles, it placed on the individual universities the responsibility for defining their new pattern of education.[2]

The history of the development of the teaching hospital has shown a gradual move towards centralization of facilities. In the middle of the last century the medical schools were generally separate from the teaching hospital and few were related to universities. This situation has changed, and the National Health Service placed the teaching hospitals at the hub of the regional hospital service and related them to their parent universities. The need for medical schools to be on the same site as the teaching hospitals was recognized. Since the war the basic concept and pattern of the teaching hospital and the important relationship of the elements within it has become clear.[3] These relationships result from the overlapping of the various activities. The teaching hospital, while providing comprehensive patient care, also provides the material essential for clinical research. The medical school provides teaching facilities for students, both undergraduate and postgraduate, and also facilities for clinical investigation and laboratory research. It is important that the medical school full-time staff should be closely associated with the university, and also that the clinical departments of the medical school should have their research and teaching facilities near to the patients.

After many years of piecemeal planning the first ten-year plan for hospital building,[4] published in 1962, at last gave the programme some sense of policy and purpose. Unfortunately the rate of redevelopment of hospitals predicted in the plan is not being achieved. Many hospitals are now functionally obsolete and of such an age that maintenance costs are exceedingly high. It is clear that there is a considerable backlog of hospital building to be made good. Teaching hospitals in these circumstances should be designed with a permanent structure capable of lasting for a considerable period, but with their internal planning organized to allow and encourage the development of medical education techniques. The planning teams dealing with the design of the individual teaching hospitals and medical schools generally consist of busy members of staff with full-time commitments, who have little previous experience to assist them in the planning and design problems encountered. The fact that there has been a lack of any comprehensive planning guidance and design criteria published in this country, for teaching hospitals and medical schools, may well be partly responsible for the considerable time that it is taking to design and build them. The planning teams have been faced with the problem of designing a 'one-off' building of considerable complexity, but most of the teams have been dealing with similar problems, which represents a considerable duplication of effort. An International Symposium on the design of hospitals and medical schools was held at Dundee in 1961.[5] At this meeting representatives of many teaching hospitals that were being rebuilt exchanged their experiences. This was clearly of value, and it is unfortunate that similar meetings have not been organized since. If an organization had been created in order to enable planning teams to meet and exchange ideas and experiences this would have been of advantage to all concerned. In the United States there has been more co-ordinated effort, and the position is quite different. A recent book, *Medical Education Facilities—Planning Considerations and Architectural Guide*,[6] published in 1964 by the United States Department of Health, Education and Welfare, is of particular interest. It sets out the various approaches to the medical education curriculum and relates it to the physical facilities required for its implementation. The study covers the interrelationship between the various elements of the medical school and the teaching hospital. It also provides guidance in broad principles, as well as in detail, for the design of all departments and indicates how they might function. The book does not set out to establish standards to which all must conform, but it surveys the basic problems and is intended as a point of departure. A similar approach could be of great assistance in this country by helping to reduce the time taken to prepare a project brief.

Another study is now being made of medical education facilities for the Veterans Association Hospitals in the United States, and an interim report was issued in 1964.[7] This document, together with the *Architectural Guide* previously referred to, suggests that recent experience in America is producing trends which may have an effect in Britain.

We accept the need for a close relationship between the teaching hospital and the medical school, though our pre-clinical schools are often separate. In America a much closer integration is now thought to be essential. The basic sciences or pre-clinical years are becoming fully integrated with the medical school, the teaching hospital and the parent universities. There is a trend for medical students to be introduced to patients at an earlier stage in their training than hitherto. This now takes place during the pre-clinical years while studying the basic sciences.

The method of teaching the basic sciences is changing, and the use of multi-discipline laboratories is increasing in America. In this country the Royal Victoria Infirmary, Newcastle, is soon to be rebuilt and a new curriculum is being developed, providing for the first time on a large scale for the integration of the teaching of the basic sciences, taught in multi-discipline laboratories. Each group of 16–24 students is provided with its own laboratory and individual work places, which the students can use during their free time. These laboratories are used for teaching all the basic sciences with the exception of gross anatomy. Staff come to the students and thereby avoid the need for large groups of students, say 50–100 in number, to move from one teaching laboratory to another in a different department. The area taken up by multi-discipline laboratories is less than is required by the conventional pattern. There is a similar trend towards providing medical staff with a home base, so that all medical staff have better facilities for working. As in Britain, the planning recommendations for the design of American teaching hospitals suggests a greater interest in teaching in the out-patient department, and the relation between this area and the medical school is becoming increasingly important. Teaching or demonstration/seminar rooms are being provided in most parts of the hospital in order to facilitate teaching where required. The use of closed circuit television coupled with these facilities will encourage more decentralization of teaching.

The increasing specialization in medicine may well lead in the future to the need for community care to be concentrated at the hospital, which can provide all the necessary supporting facilities. The increase in medical knowledge has resulted in the formation of new specialities and sub-specialities. Many of the new and developing techniques of diagnosis and treatment involve the use of complex equipment. Laboratory technicians, electronic technicians, scientists, engineers and others all make their contribution to patient care. New supportive groups work together with the doctors, nurses, therapists, clinical psychologists, almoners, etc., to form the 'health team.' The training of these growing supportive professions presents many problems, and at a new Health Sciences Centre at the University of British Columbia in Canada,[8] and also in several American teaching hospitals, it is proposed to integrate the training of these with the medical education of the doctors, thus fostering the co-operation and understanding of all members of the 'health team' from the outset.

In the United States Department of Public Health, Education and Welfare publication, *Medical Education Facilities*, the estimated time required to design and build a teaching hospital, from start to completion, is given as five to eight years, with the basic science departments commencing teaching before the total building is completed. In Britain the new teaching hospitals and medical schools will in some cases have taken as long as fifteen or twenty years to complete since planning first began. It should be possible using present planning procedure to design and build a *district general hospital* in about five years, providing the design techniques adopted are suitable. The Ministry of Health Building Notes and cost guidance material have simplified the planning problems and reduced the time required to design a district general hospital.[9] Once the basic medical need has been established the schedules of accommodation, equipment and cost can be defined from the published standards. In the case of a *teaching hospital*, planning must start from first principles, without the advantage of defined standards and costs. As a result the time taken to establish the case of need, prepare the outline of functions, operational policies, development plan and to establish the provisional cost limit, can take several years of intensive work before sketch planning can begin. It is unfortunate that so much work is involved before the financial implications of a project can be determined. Much of the work undertaken may prove to be abortive if the cost should prove to be too high.

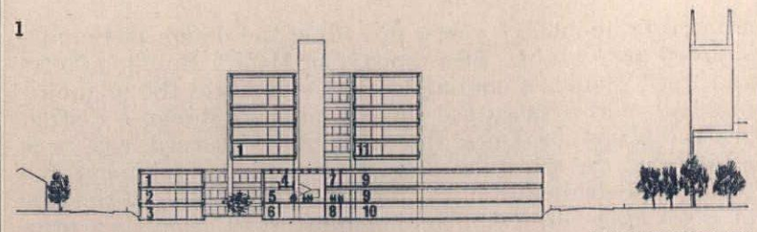
It is essential to speed up these preliminary stages of the planning of a teaching hospital, if the total time taken to design and build them is to be reduced. The planning and design technique adopted must produce a building which will allow for growth in size and change in organization in the future, and throughout the planning process. The important result of such a design technique is that an exact brief or assessment of the divisions of accommodation is not vital at the outset. This approach to the design of hospitals has been appropriately described by John Weeks as 'Indeterminate Architecture.'[10] The flexibility that can be achieved with an indeterminate design system can be utilized to speed up the design stages of a project. One way to design a teaching hospital, in the absence of comprehensive planning standards, would be to prepare at the outset a detailed feasibility study. The purpose of this would be to establish at the outset the principles of the development and its financial implications. It would define the basis of the planning system, the method of allowing for growth and change in the future and the way in which it would work within the limitations of the site. To achieve this a general assessment of the medical need would be required, setting out the number of beds, the student intake, the supporting facilities, and if necessary the priorities in the phasing of the development.

The feasibility study would enable the design system to be established and approved at the start. Subsequently the detailed brief would be written and all planning would be developed within the basic design framework. The operational policies, schedules of accommodation and other stages of the procedure could be undertaken as a series of activities, carried out in parallel and properly co-ordinated with the planning. The design of the structure, the services, the working drawings and details could also be started at an early stage in the development of the project, thus reducing the total time before building commences. It should be possible in this country, as in America, to start building a major project about three years from the start of planning.

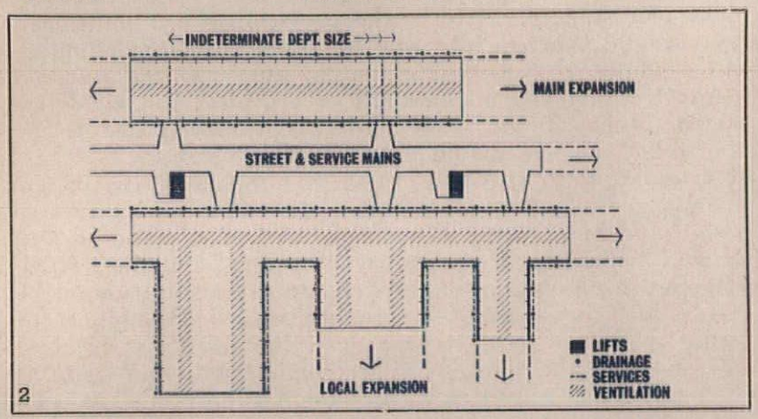
There are no doubt many ways of achieving an indeterminate design system, and John Weeks has described in some detail the method that has been applied to one large project.[11] The nature of the system, which would be suitable for a large teaching hospital, may be decided by several important factors. The relationships between the various elements of the hospital and laboratories, or medical school areas, will influence the approach. Most departments need to grow, but it may not be possible for them all to expand independently of all other departments, particularly if the site is restricted and the density of development is high. Many teaching hospitals are sited in urban areas where land is expensive and therefore limited.

The following principles are being used on the design of a large postgraduate hospital (drawings overleaf) for an urban site, using a plot ratio of 2.5:1. This hospital is made up of several existing hospitals and their associated research insti-

1



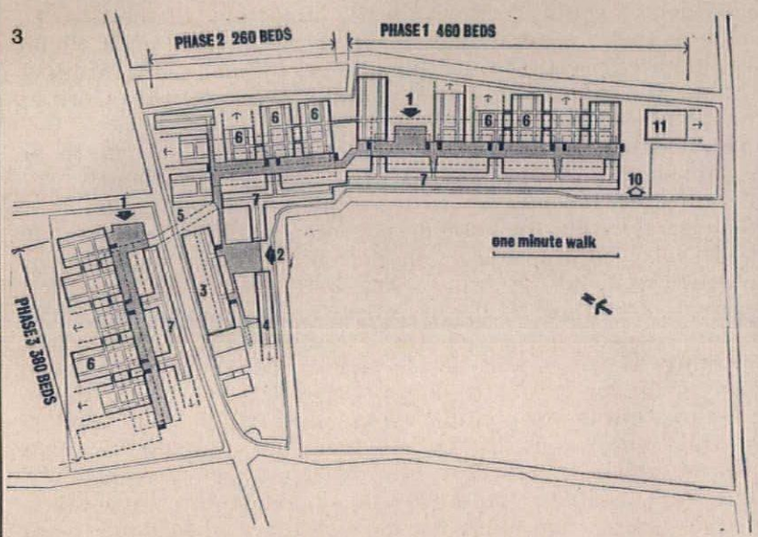
key to section
1, institute laboratories
2, administration
3, institute service departments
4, institute street
5, concourse
6, institute service street
7, hospital street
8, hospital service street
9, diagnostic and treatment departments
10, hospital service departments
11, wards



2

Project for a postgraduate hospital by Llewelyn-Davies, Weeks and Partners: 1, *a typical section that is used for most of this development. This shape has resulted from the need to build with the daylighting angles taken from the roads on either side of the building and also height limitation.* 2, *diagram showing the design principle which has been adopted. The communication network can be extended and lifts provide access to the wards and laboratories over. Multi-purpose space is proposed which is designed and serviced to enable various departments to be accommodated but to grow and change in the future.* 3, *upper ground floor plan, showing the main communication network concourse tinted. The diagnostic and treatment departments occur at this level and at the floor above, where the whole complex is connected by means of streets which link all the buildings including those on the south side of the main road. The supply and service departments are on the lower ground floor.* 4, *a typical upper floor plan, with ward areas related to the main clinical laboratories. The wards are planned to allow adjustment in their size and wards and laboratories are interchangeable.* 5, *model of complete project when all stages have been built.*

3



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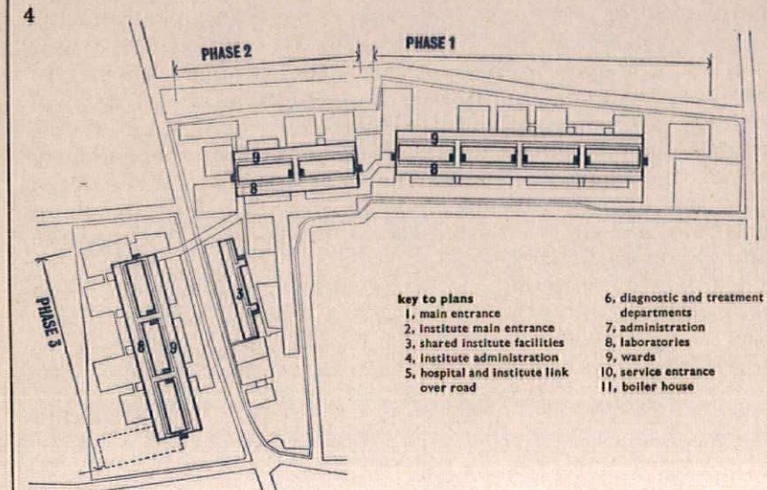
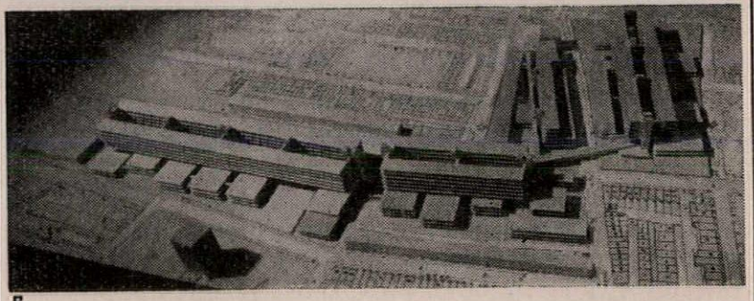


key to plans
1, main entrance
2, institute main entrance
3, shared institute facilities
4, institute administration
5, hospital and institute link over road
6, diagnostic and treatment departments
7, administration
8, laboratories
9, wards
10, service entrance
11, boiler house

tutes, and they are to be rebuilt together on one rather long and narrow site. The daylighting angles projected from the surrounding streets determine the basic section of the building, 1, which is planned in parallel zones of accommodation running along the length of the site. These zones are made up of a series of departments placed side by side or end to end so that the distribution of space can be adjusted between them. Some local growth is possible, though the main expansion of the scheme, as subsequent phases are built, occurs along the line of the communications system, 2. This network runs through the centre of the site and links all building and lift shafts. Hospital traffic has been separated from that associated with the laboratories and a separate supply traffic route has been provided. The upper level is high enough above street level to serve all parts of the site, bridging over the intervening main city roads.

The main diagnostic, treatment and administrative departments are planned in low buildings, above the main service and supply departments, 3. The wards and laboratories are in two parallel blocks, 4, served by lifts from a concourse, slightly above natural ground level. The wards, laboratories and administrative offices are designed to fit within one standard structural unit. The operating theatres, X-ray and out-patient departments and the service areas in another. Throughout the scheme it is intended to provide, as far as possible, standardized space which can be used for many purposes. A servicing system is being developed to allow ward and laboratory areas to be interchangeable. Though some areas, such as the operating theatres and animal house, will require mechanical ventilation, the plan is designed to allow natural ventilation to the major part of the complex. The advantages of an indeterminate design approach have been utilized on this project. Design problems of teaching hospitals can be solved through the use of a simple framework, such as has been described, which allow for the evolving pattern of medical education, yet provide a useful planning discipline. Solutions of this kind can lead to much quicker planning due to inherent flexibility. It is important that architects designing teaching hospitals fully understand the nature of the problem; but the co-ordinating authorities must also design administrative procedures which deal with the problems realistically.



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REFERENCES

[1] Report of the Inter-Departmental Committee on Medical Schools. Chairman Sir William Goodenough. HMSO, 1944.

[2] J. R. Ellis: *The Objective of Medical Education in Great Britain*: paper given to International Symposium, Hospital and Medical School design, Dundee, 1961.

[3] Professor R. B. Hunter: 'The Teaching of Medicine.' *Architects' Journal*. July 7, 1960.

[4] *A Hospital Plan for England and Wales*. HMSO. January, 1962.

[5] G. H. Bell: *Hospital and Medical School Design*. Report of International Symposium held at Dundee, 1961. E. & S. Livingstone Ltd., 1962.

[6] United States Department of Health, Education and Welfare: *Medical Education Facilities—Planning Considerations and Architectural Guide*. Public Health Service Publication No. 1180-A-lb.

[7] A. C. Green, W. F. Koppes and M. C. Gassman: *Facilities for Education in Veterans Association Hospitals*: interim report, Rensselaer Polytechnic Institute, Troy, New York, 1964.

[8] L. F. Detwiller: 'New Health Sciences Centre, British Columbia.' Series of articles published in *Canadian Hospital* February to October, 1963.

[9] W. Tatton Brown: 'Hospitals: Designing the Medical Community.' *RIBA Journal*, February, 1965.

[10] J. Weeks: 'Indeterminate Architecture': *Transaction of the Bartlett Society University College*. London, 1963–64.

[11] J. Weeks: 'Hospitals for the 1970's.' *RIBA Journal*. December, 1964.

REFERENCE (HISTORICAL)

H. G. Dunn: *University Medical Schools*—PH.D. Thesis, University College, 1964.

Sir Arthur Thomson: 'History and Development of Teaching Hospitals in England.' *British Medical Journal*. September 10, 1960.

Sir Allen Daley: 'British Hospitals as they were before 1948.' *British Medical Journal*, September 10, 1960.

RESEARCH TEACHING HOSPITALS

COMMENT: *This section illustrates a number of hospitals in which the function of patient care is combined with the provision of teaching and research. Some, for example at Edinburgh, Newcastle and Dundee, are undergraduate teaching hospitals with substantial provision for research. The Royal Marsden is a postgraduate hospital in which a major research institute in central London is linked to patient care elements in the peripheral hospital and a relatively small number of students work in both places. The hospital at Northwick Park combines patient care with advanced medical research. In each case one of the main architectural problems is to plan a relationship between the patient care areas and the research and teaching accommodation which need in some cases to be very intimately linked. In spite of this close link, however, the circulation needs of students and hospital staff may need separation.*

The Royal Infirmary of Edinburgh is to be built on a site which, while larger than is normally found in London, is only just big enough. It is, however, closely associated with the university, which is not usually the case in London where only University College Hospital is adjacent to university buildings. In the sketch plans, provision is made for separated hospital and school circulation, the students entering the complex on the university side of the site.

At Ninewells Hospital, Dundee, the plan is mainly on three levels and the relationship between the wards and the teaching and research areas is developed horizontally, the wards forming the front line backed up by the professorial and

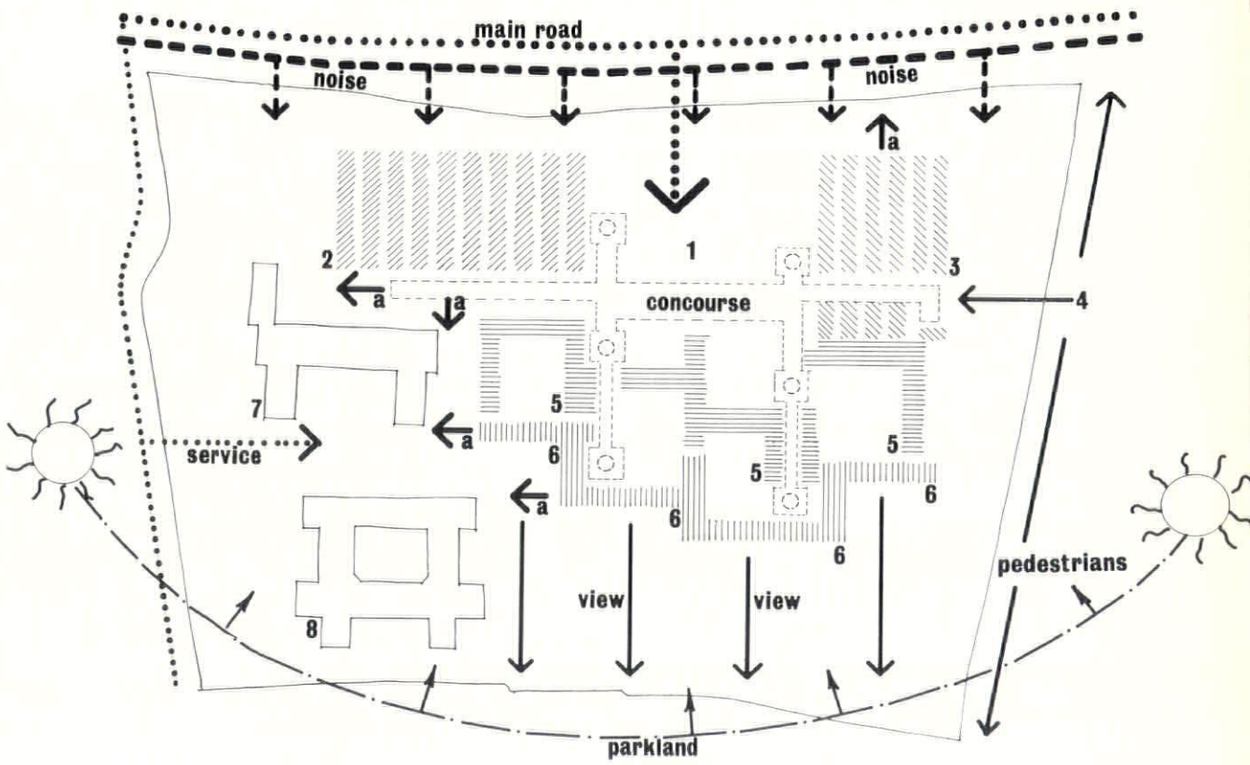
continued on page 458

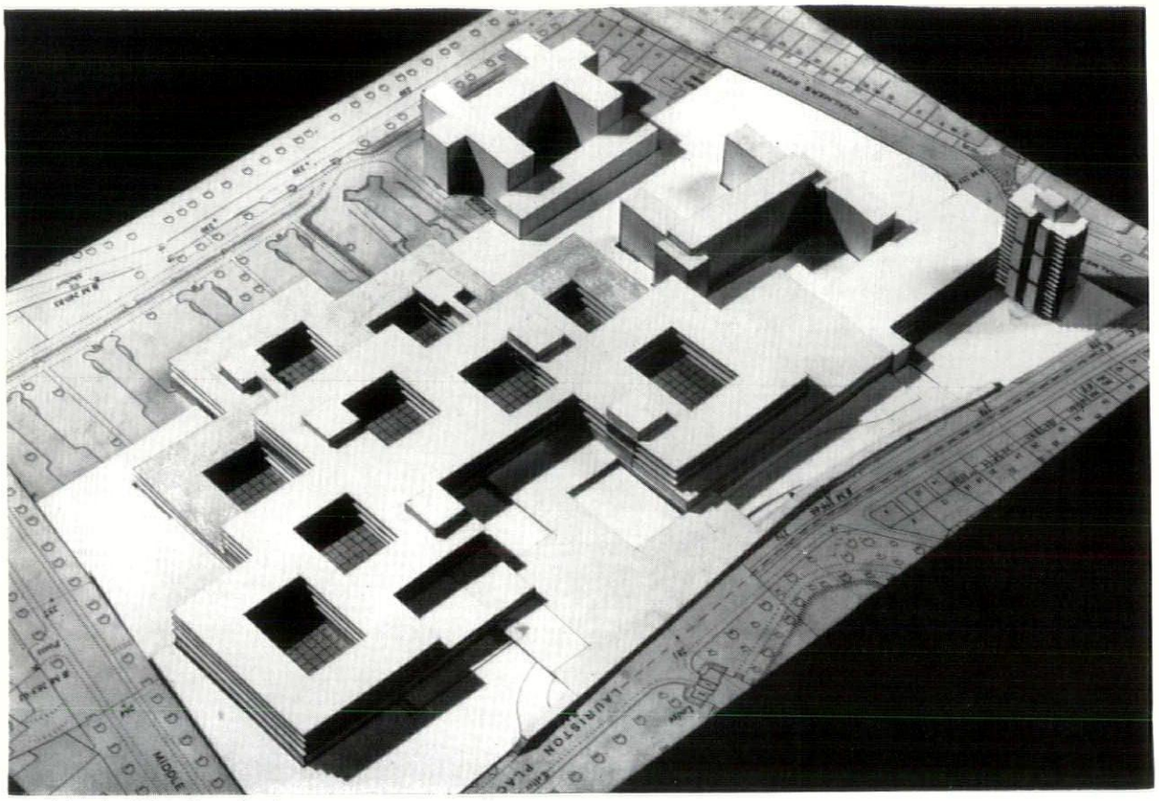
ROYAL INFIRMARY, EDINBURGH

Robert Matthew, Johnson-Marshall & Partners
Consultants: Llewelyn-Davies, Weeks and Partners
Consultant (laboratories): John Musgrove

CLIENT: South-Eastern Regional Hospital Board (Scotland).
SIZE: 860 beds.
STUDENT INTAKE: 100 per annum.
DATES: Tentative planning has been proceeding since 1955. The final brief was approved in February 1965 and the architects have now been instructed to proceed with a development plan and the preparation of a provisional cost limit.
This is an undergraduate teaching hospital, except for the pre-clinical school which is in the university buildings on the adjacent site.
The site is that occupied by the present Royal Infirmary but it is planned to replace the whole of the present buildings with the exception of the Maternity Hospital and the newest building, the Florence Nightingale Nurses' Home. The Royal Infirmary and the Western General Hospital will together constitute the major teaching hospital complex in the region. The Royal Infirmary will therefore contain facilities for teaching postgraduate and undergraduate medical students, with the associated facilities for clinical research required of a modern teaching hospital, in addition to the diagnostic and treatment element of a hospital service for the community within the region.

diagrammatic site plan key
1. main entrance
2. operating theatres and out-patients
3. paraclinical
4. student and pedestrian traffic
5. clinical
6. wards
7. Florence Nightingale Nurses' Home (existing)
8. Simpson Memorial Maternity Pavilion (existing)
a. future growth

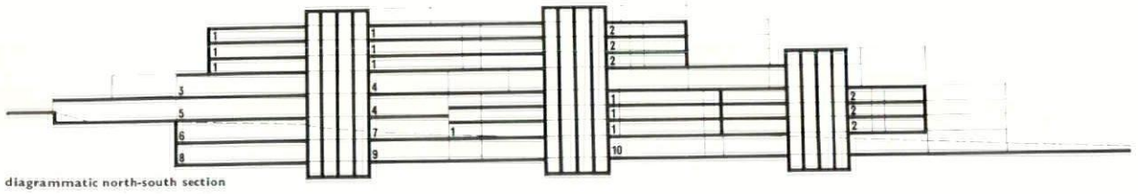




general view of model from the north-east

The rebuilding is to be phased so that the present service can be maintained during the building period. The site is bounded on the north and the west side by public roads and the University is on the east side of the site and separated from it by a pedestrian walkway and one of Edinburgh's open spaces, The Meadows, adjoining the site on its southern boundary. There is a 40ft. difference in level between the northern and southern boundary. Because of the site's proximity to Edinburgh Castle and its relation to the Edinburgh skyline the problem of the overall mass of the building has had to be considered very carefully. The communication systems within the complex of buildings are designed to enable expansion to take place westwards should further building space be available in the future and northwards near the University.

ROYAL INFIRMARY, EDINBURGH



diagrammatic north-south section

key
1, clinical
2, wards
3, out-patients' department
4, X-ray
5, accident and emergency
6, operating suite
7, pharmacy
8, mortuary
9, works department
10, catering

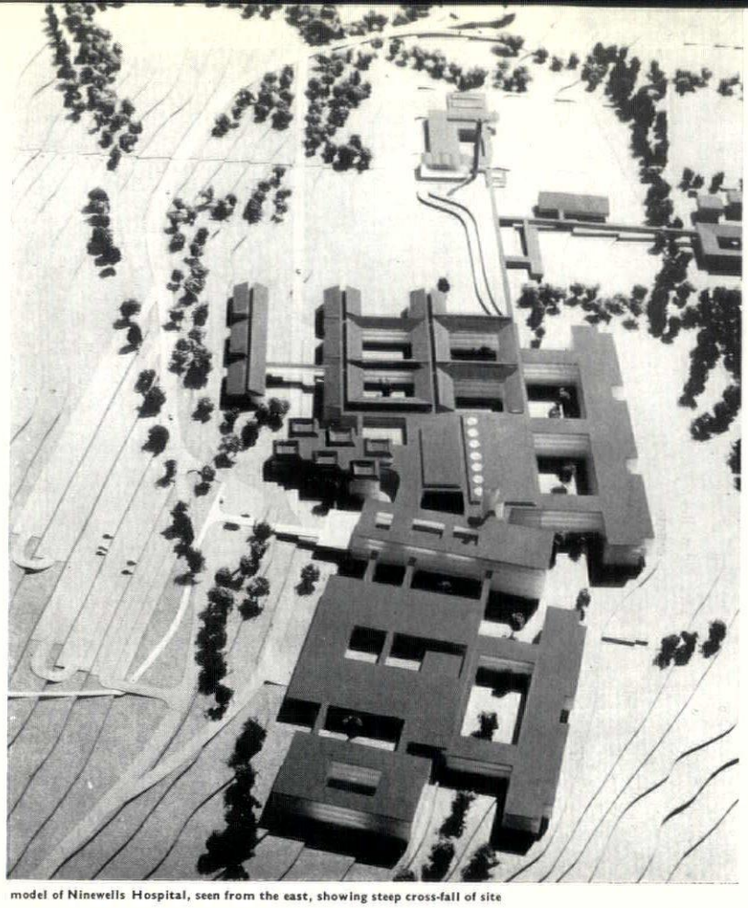
block plan: key
1, maternity ward block
2, polyclinic
3, minor specialty ward block
4, concourse block
5, library
6, lecture theatres
7, main operating theatres
8, main ward block
9, medical physics
10, paraclinical laboratories
11, clinical laboratories



NINEWELLS HOSPITAL, DUNDEE

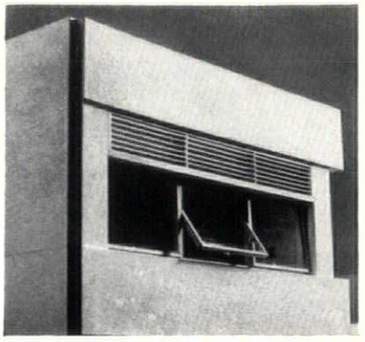
Robert Matthew, Johnson-Marshall & Partners

CLIENT: Eastern Regional Hospital Board (Scotland) and the University of St. Andrews.
SIZE: 760 beds.
DATES: Brief issued, September 1960; start of major work on site, August 1964; estimated completion date, 1970.
This is an acute general hospital, one of two for Dundee and the region. Ninewells will be the major teaching centre and the attached Medical School will provide 80 per cent of the undergraduate teaching in the clinical years and extensive laboratory accommodation for diagnostic and research work. The site comprises about 200 acres of agricultural

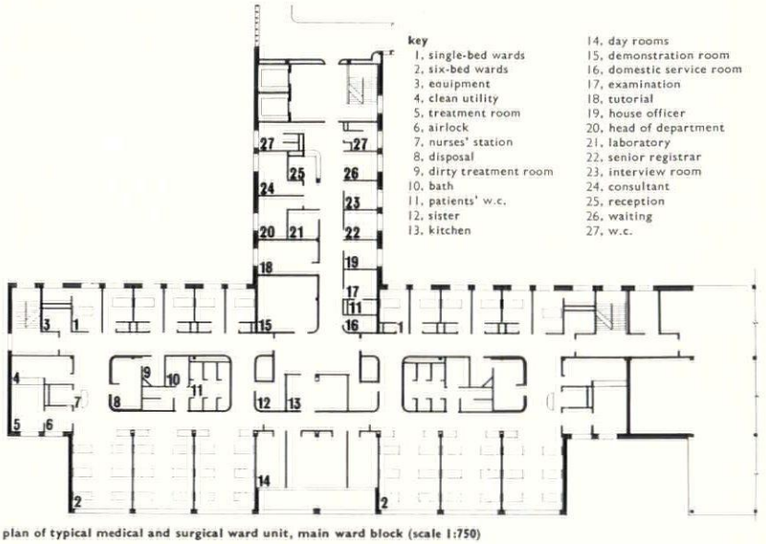


model of Ninewells Hospital, seen from the east, showing steep cross-fall of site

land on the western outskirts of Dundee, sloping between one in ten and one in twenty.
The broad objective is to achieve the closest possible relationship between the Medical School and the Hospital (the policy known as 'embedding') but in so doing to allow for a high degree of adaptability to meet internal change and external growth, particularly for diagnostic and research facilities. It is to be a predominantly three-storey scheme planned in depth with the main arteries allowing for a linear pattern of growth on the principal axis of the scheme. The degree of embedding of the Medical School is a balance between close proximity to the professorial ward units and the economic grouping of expensive laboratory accommodation. The grouping of other major departments has been determined largely by the organization of traffic routes related to a three-storey 'hospital street,' and the fact that there is one main entrance for staff, students, visitors and out-patients. The 'street' is the main artery connecting all the principal patient care departments. There is an external entrance to each of the three levels: supply, treatment and the main concourse. The concourse provides a single main entrance to the Hospital and Medical School, and is situated at the top level of the street at the focal point of the internal circulation routes.
With the exception of the boiler house, workshops and laundry, the construction is of reinforced concrete with in situ coffered floor slabs of a constant depth.
External cladding is of precast concrete panels with an exposed large white aggregate finish.
Windows generally are teak-faced and the pitched roofs are covered in dark grey asbestos cement sheeting.



detail of mock-up, showing precast panels



plan of typical medical and surgical ward unit, main ward block (scale 1:750)

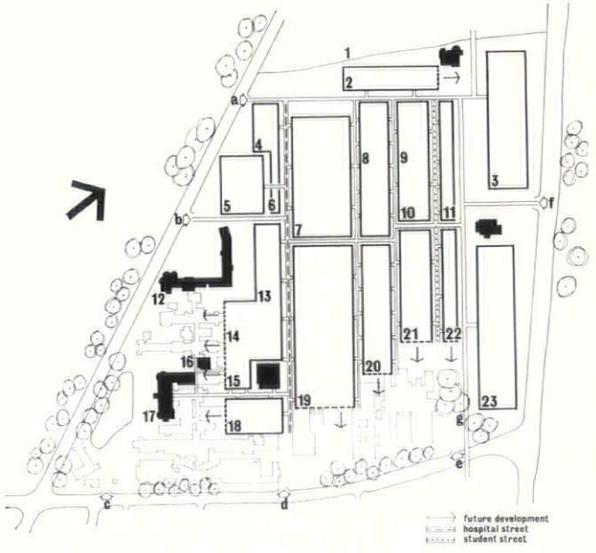
ROYAL VICTORIA INFIRMARY, NEWCASTLE

Robert Matthew, Johnson-Marshall & Partners
Consultants: Llewelyn-Davies, Weeks and Partners
Consultant (laboratories): John Musgrove

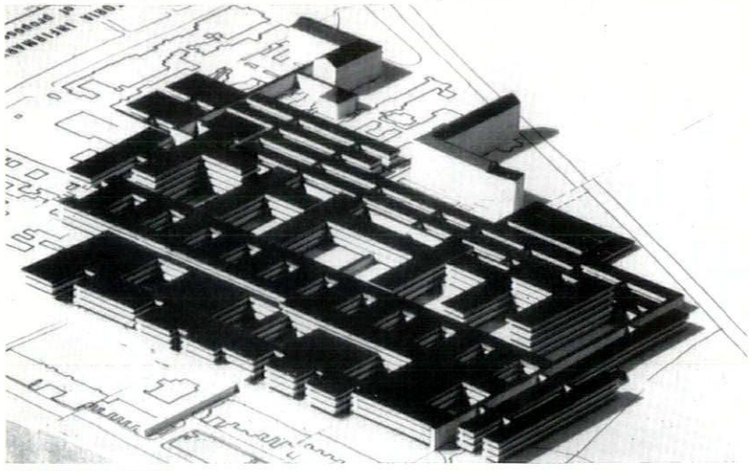
CLIENT: Board of Governors of University of Newcastle Teaching Hospital of the Royal Victoria Infirmary.
SIZE: 1,200 beds.
STUDENT INTAKE: Just over 100 per annum.
DATES: Architects appointed spring 1961. Outline of functions and operational policies submitted to Ministry 1965. Permission has been received to proceed with development plan and draft schedules of accommodation are now being prepared.
The Royal Victoria Infirmary is located on an urban site of about thirty acres with an eight and a half acre virgin site, owned by the Board, on its western boundary. The Medical School, Dental School and Hospital and the Maternity and Children's Hospitals are elsewhere in Newcastle, housed in inadequate or obsolete buildings. On the enlarged site, all these buildings will be brought together in a comprehensive medical centre. Accommodation will be provided for teaching science students from other faculties, thus enhancing the existing close relationship between the Faculty of Medicine and the rest of the university.
The total re-development is to be carried out flexibly in several phases, without hampering existing departments on the site. A very close relationship is required between the treatment and diagnostic facilities of the hospital and the research and clinical investigation departments of the Medical and Dental Schools. In the Medical School, an integrated curriculum has been adopted which supersedes the traditional system of departmental teaching. Multi-discipline laboratories will be required in which practical work in all disciplines (except gross anatomy) will be carried out. The accommodation falls into five clear zones: out-patient, in-patient, medical school clinical and para-clinical departments, mass teaching, and shared teaching facilities. These have been planned

site plan (existing buildings black)
key
a. dental/maternity entrance
b. main entrance
c. administration entrance
d. accident entrance
e. service entrance
f. medical school entrance
g. raised pedestrian access

1. site for university students' halls of residence
2. dental hospital
3. medical staff housing
4. maternity out-patients
5. operating theatres
6. recovery
7. ward blocks
8. dental school departments
9. dental teaching
10. medical teaching
11. museum, library, etc.
12. nurses' home
13. polyclinic
14. out-patients' physiotherapy
15. X-ray
16. chapel
17. administration
18. accident/emergency department
19. ward blocks
20. medical school departments
21. science teaching
22. shared lecture theatres
23. proposed biological sciences building, University of Newcastle



ROYAL VICTORIA INFIRMARY, NEWCASTLE



model seen from the north

in strips running from west to east linked by parallel circulation routes which allow easy relationships between zones at all phases of development. Occasional cross routes allow direct access through all zones. Patients and visitors enter a hospital 'street' giving access to all out-patient departments and ward lifts. A corridor above connects wards to operating theatres and other treatment facilities while an exclusive basement corridor network links kitchens, main stores and CSSD with service lifts to all departments. A student 'street' provides the main student circulation route and gives immediate access to the multi-discipline laboratories, dental and science teaching laboratories and the shared teaching facilities. It is connected to other university buildings by a pedestrian route which also gives access to the biological sciences building proposed for the adjacent site to the north.

Buildings are mainly two and three storey with some ward blocks rising to five storeys. To avoid the cost of extensive mechanical ventilation, most of the buildings will be of the single corridor type, planned round courtyards.

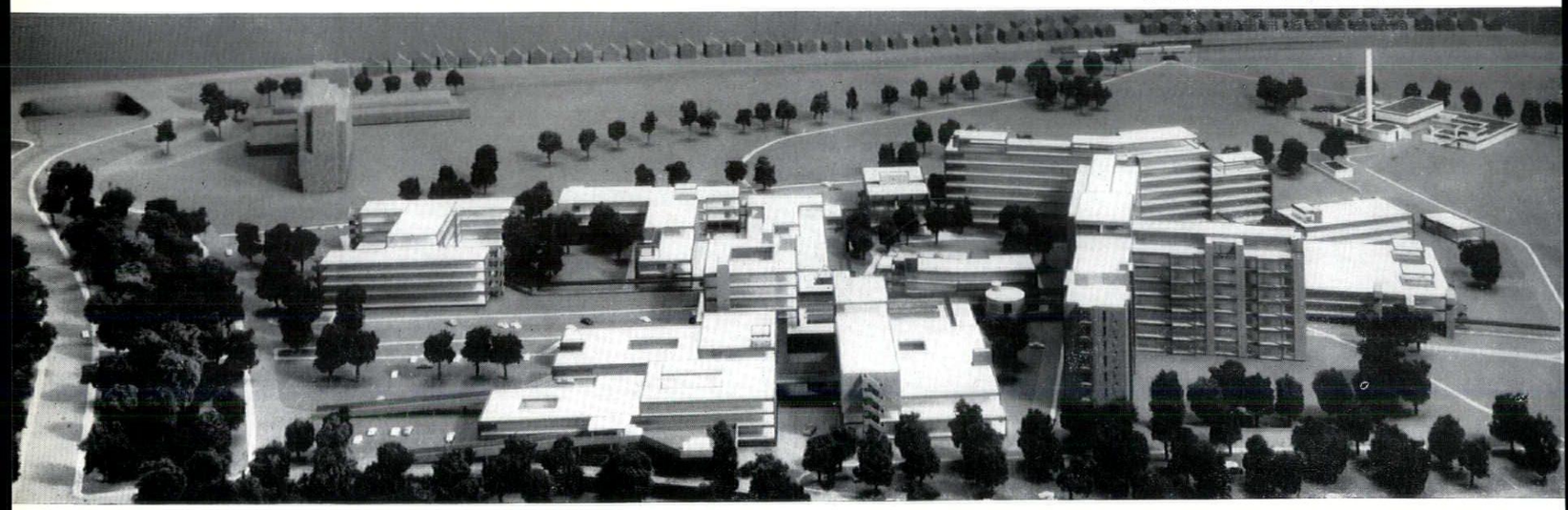
NORTHWICK PARK HOSPITAL

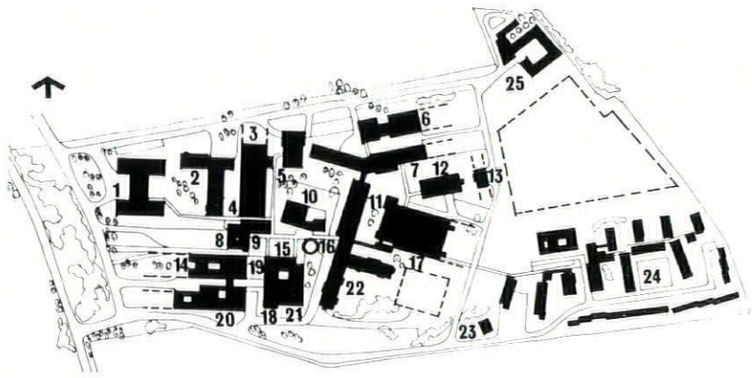
Llewelyn-Davies, Weeks & Partners
Consultant (laboratories): John Musgrove

CLIENT: North-West Metropolitan Regional Hospital Board and Medical Research Council.
SIZE: 800 beds.
DATES: Architects appointed mid-1961. Phase I building period, December 1965 to June 1968.

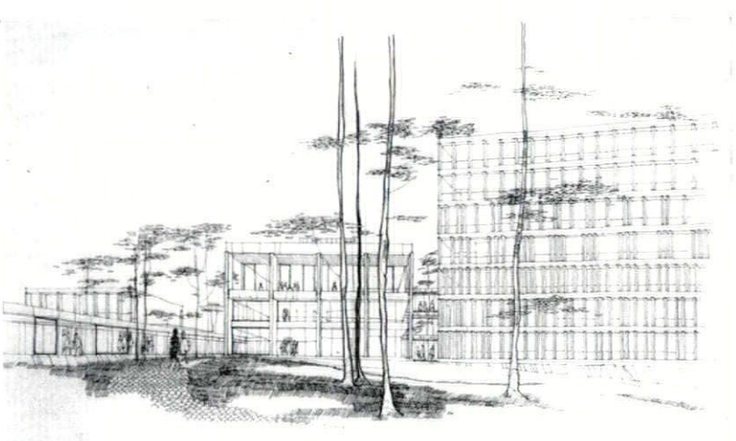
The Northwick Park project consists of a district hospital and a clinical research centre and it was an important part of the architects' brief that these two organizations should not be self-contained but should be integrated within one building complex. This comprises low buildings for specialist treatment and diagnosis linked together and centred on a seven-storey group containing wards and the main research institute. The buildings are linked by two levels of corridors and in many departments laboratories and research facilities are provided within or next to normal hospital

model of Northwick Park hospital from the south

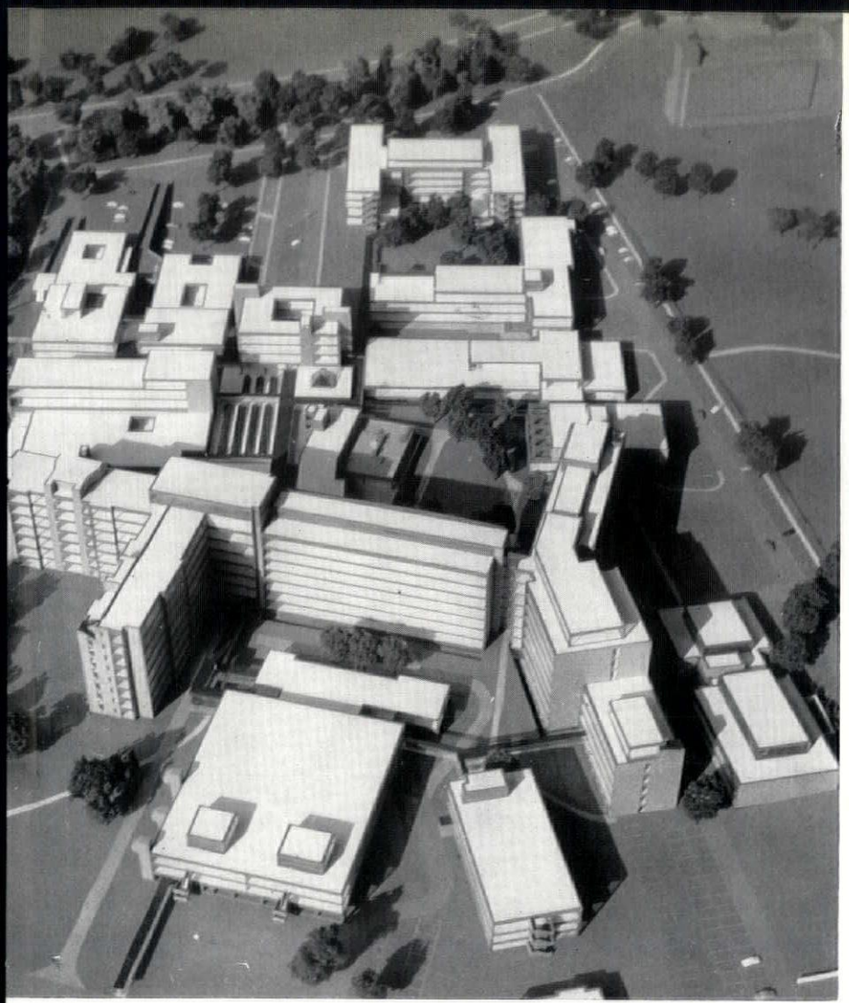




site plan. key:
1. maternity
2. psychiatry
3. physical medicine
4. medical illustration
5. library and lecture hall
6. veterinary
7. research
8. administration
9. shops
10. staff dining and clinical lecture theatre
11. clinical assessment wards
12. infectious diseases
13. radiochemical laboratory
14. out-patients
15. kitchens
16. chapel
17. operating theatres
18. pathology
19. pharmacy
20. accidents
21. X-ray with central supply department under
22. medical and surgical wards
23. matron's house
24. staff residences
25. boilers and maintenance

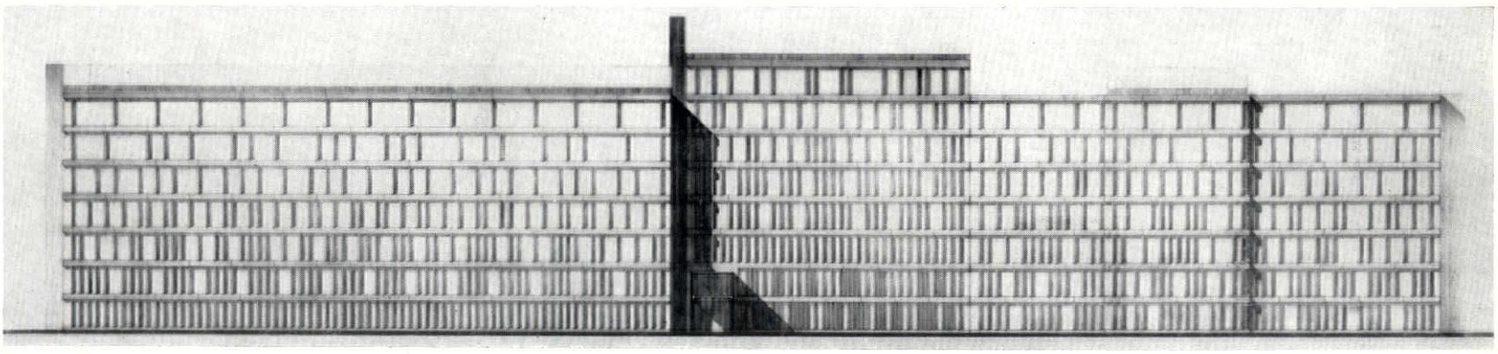


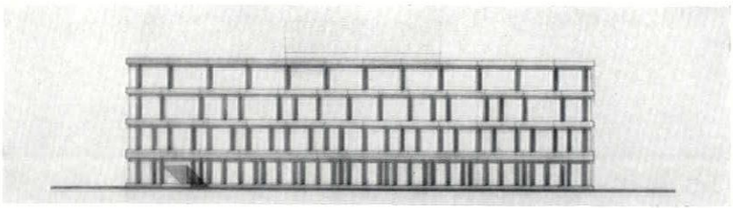
looking north inside the central court

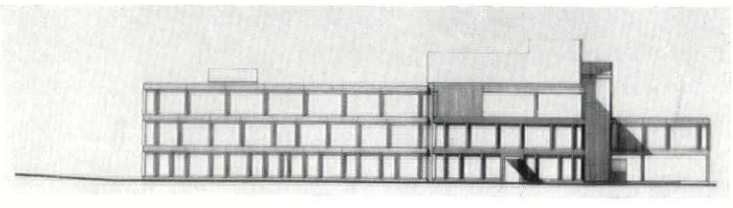


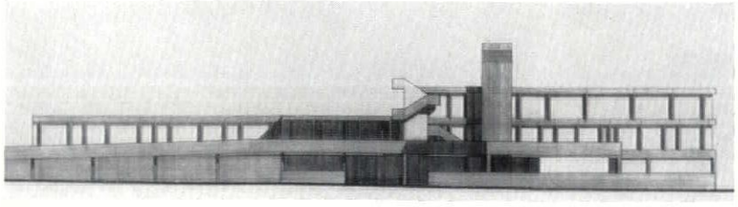
accommodation. The site is a 46-acre former golf course with Harrow School playing fields on two sides.
The combined unit is planned to provide beds for a total of 800 patients. The hospital accommodation includes 100 maternity beds, 50 beds for acute geriatric cases and 75 for the treatment of mental illness. The out-patients' department has been planned with separate waiting rooms for each clinic.
A twenty-four hour accident department contains a pair of operating theatres, a ten-bed observation ward and a special resuscitation room. The main operating theatre suite will contain eight operating theatres. Staff accommodation in the form of bed-sitting rooms, flats and houses will be provided on the site, as well as a nurses' training school and a school of radiography.
The design of the hospital is based on the ideal of staged building, expansion and the continuing possibility of replacing obsolete parts without interfering with the life of the organization. The buildings are planned around an internal 'street' system which is extendible. This originates at the main entrance to the hospital and has a simple form which makes it possible, despite the complexity of the plan, for hospital personnel and visitors to find their way easily about the system. The street system links all the buildings without passing through any department. Each department has its own internal circulation system. The system is glass-sided to make it easier for people to locate themselves within the complex. Not only is the street system capable of extension to give access to additional buildings, but the buildings themselves are, in most cases, open-ended. The lower level of the street system is for service traffic. Supply and disposal trains circulate through this system to all parts of the building.
A repetitive structural system is used throughout. This is based on a coffered reinforced concrete slab on a constant grid, an internal column system with some flexibility and a precast external walling system of beams and structural mullions. The mullions are of constant section and spaced relative only to the superimposed loads. The building is enclosed in a window wall system behind the mullions. There are certain non-modular areas which are of in situ concrete. All plant rooms are enclosed in patent glazing. Foundations are piled or rafted. The service mains are distributed via ducts forming part of the street system. All buildings incorporate large vertical main rising shafts connecting with horizontal distribution voids above false ceilings. Certain areas of the buildings are air-conditioned. The scheme is expected to cost about £12 million and building work is to take approximately eight years. It is at present out to tender.

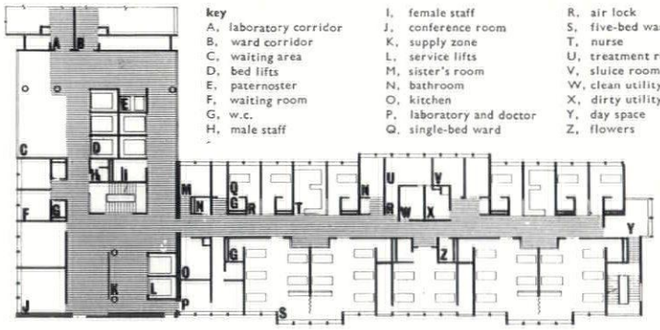
left, the model from the east, with the ward block and operating theatre in the foreground: below, top to bottom: west elevation, district hospital wards and clinical research centre: south elevation, maternity wing: south elevation, psychiatry wing: south elevation, accidents wing



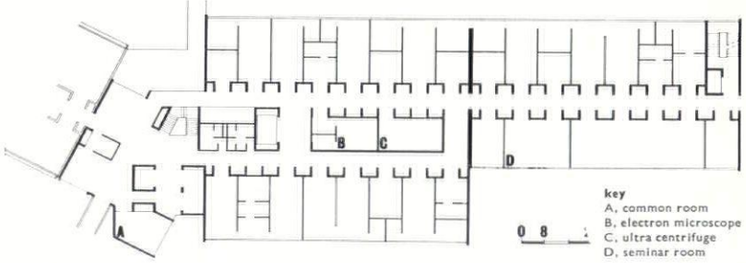








typical ward floor plan, district hospital



typical research laboratory plan

BIRMINGHAM BALANCED HOSPITAL COMMUNITY PROJECT

Hospital Research Project, University College London

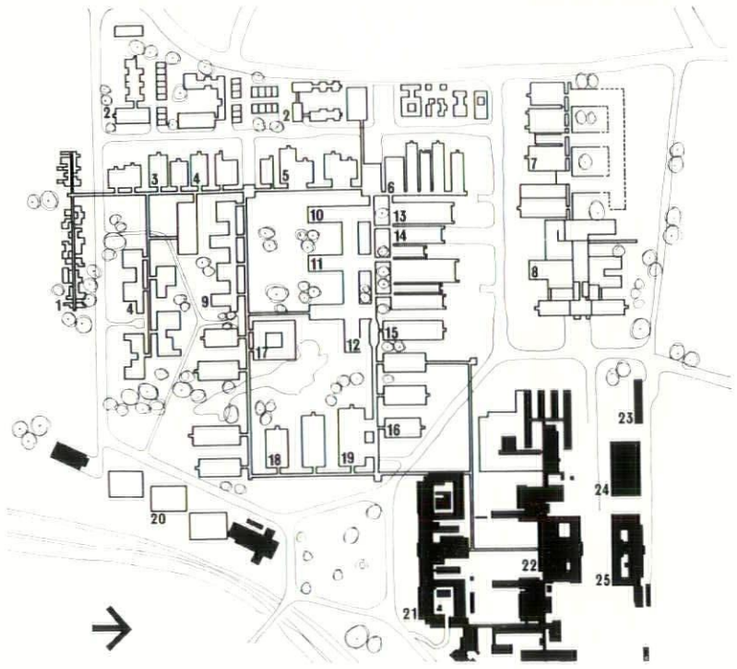
CLIENT : Main grant from Nuffield Provincial Hospitals Trust supplemented by United Birmingham Hospitals.
SIZE : 2,000 beds.
DATES : Research programme started October 1960, completed October 1963.

This is a comprehensive development plan for a site of approximately 80 acres adjoining the existing Queen Elizabeth Teaching Hospital at Birmingham. The layout is based upon certain principles deriving from the work of Professor Thomas McKeown of the Department of Social Medicine at the University of Birmingham. These suggest that all hospital care should be unified on one site. In the case of Birmingham the existing teaching hospital would assume responsibility for much of the new development, but joint administration by the teaching hospital and regional hospital board would direct the general hospital elements to serve the local community.

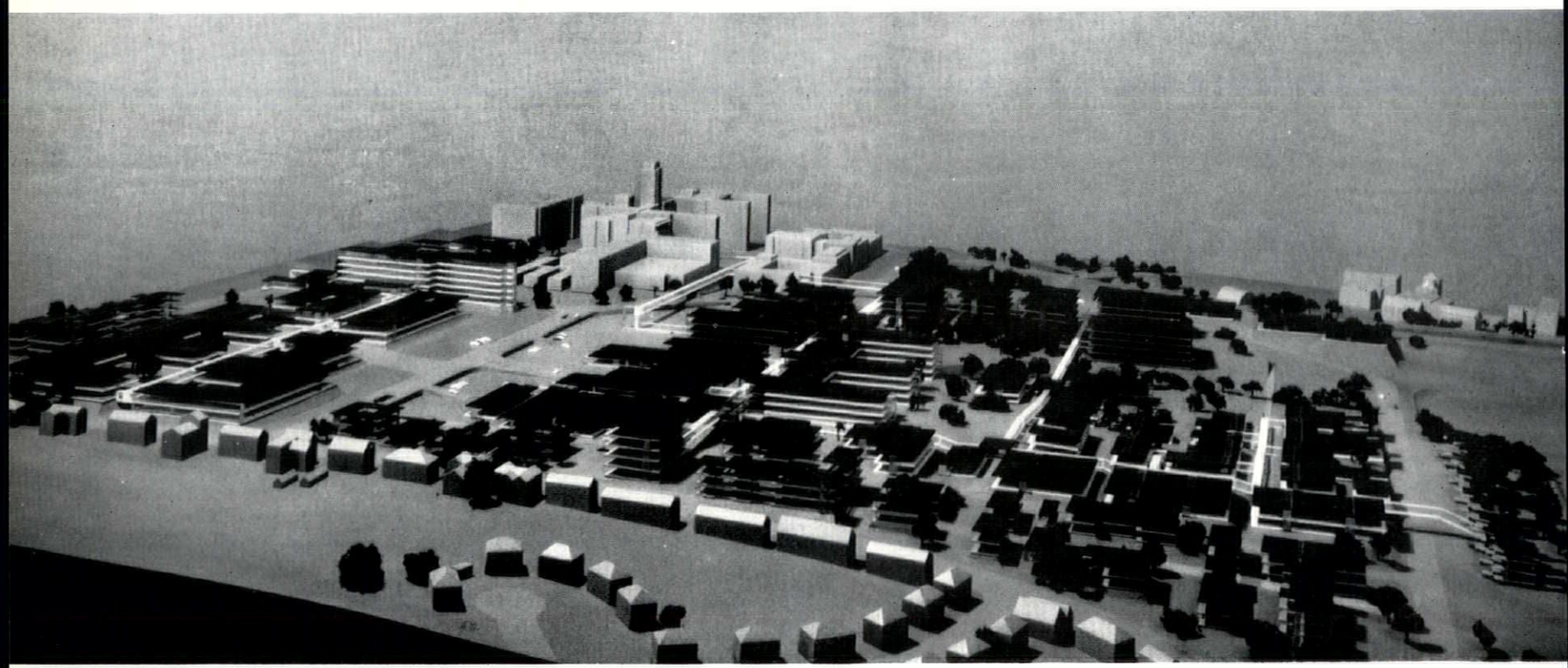
The total of 2,000 beds includes the existing teaching hospital. In addition to elements caring for the acute sick, maternity cases, children, accidents and eye conditions, the scheme contains a large proportion of accommodation for the mentally ill and the chronic sick. A considerable amount of site is given over to community facilities, day hospitals and rehabilitation units. A large research component is included in the scheme.

The aim of the general layout has been to effect a gradual transition of scale between highly concentrated elements to care for the acute sick and the looser, more intimate scale of buildings housing community care. It has been possible to group highly specialized inpatient units and laboratories near the existing hospital and medical school, and to allow community care to blend easily and naturally with the surrounding community.

One of the guiding principles of the design has been to take into account differential growth, change and ageing in various parts of the scheme. To achieve this it has been necessary to spread out the development and to arrange each separate element of the plan as an attachment to a main spinal corridor. The more slowly growing elements, such as wards, have been arranged on the inside of this spinal corridor, while more quickly growing parts, such as outpatients, day hospitals, X-ray departments and the like, are located on the outside edge, where they are free to grow. Laboratory elements are planned as a series of smaller units, which can be added as the scheme develops. This is important as the precise rate of growth of laboratory accommodation is extremely difficult to predict.



site plan (existing buildings black): key
1, hostel
2, housing
3, psychiatry out-patients' department
4, rehabilitation
5, day hospital
6, out-patients
7, pediatric hospital
8, maternity hospital
9, intensive care
10, ophthalmology
11, accident
12, acute
13, X-ray
14, casualty administration
15, pathology
16, research
17, prolonged care
18, pathological sciences
19, staff house
20, services area
21, medical school
22, Queen Elizabeth Hospital
23, residential block
24, nurses' training school
25, Nuffield House



the model seen from the south-west, with existing teaching hospital in background

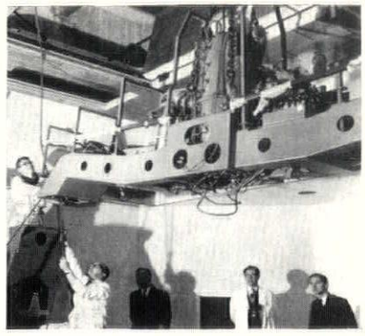
ROYAL MARSDEN HOSPITAL, SURREY BRANCH

Lanchester and Lodge

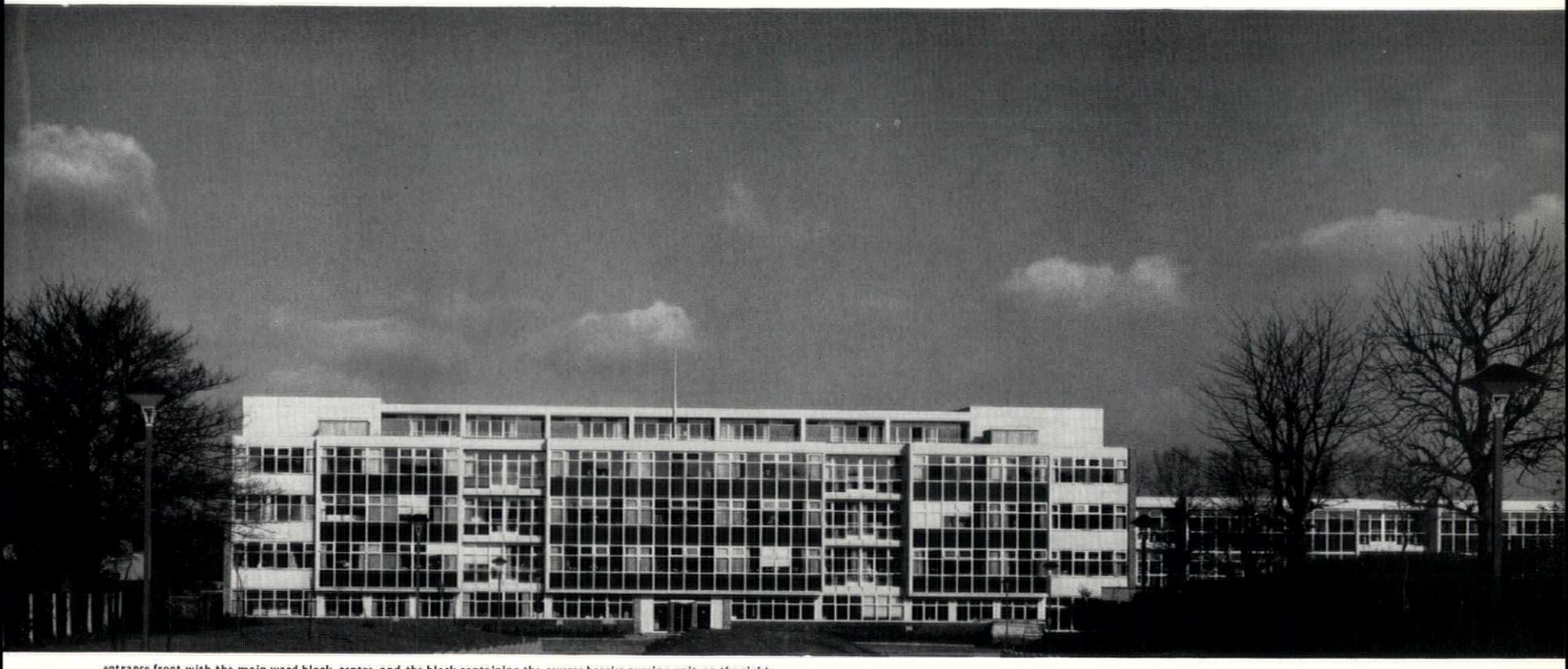
CLIENT : Board of Governors of Royal Marsden Hospital.
SIZE: 92 beds, 75 to be added later.
DATE : Site acquired, 1950 ; building work commenced, 1960 ; first stage completed, 1961 ; total building completed and occupied, December 1962.

This is a specialist hospital dealing with the whole range of ionising radiations and their effect on man. It works closely with the parent branch of the Royal Marsden Hospital and with the Post-graduate Medical Federation of the University of London. The unit comprises clinical facilities and research and therapy facilities in addition to the usual outpatients, administration and services area. The site rises steeply at the east end and this has been used to incorporate the powerful radio-active sources underground. On the top floor is the special unit for reverse barrier nursing in which the nurse having once entered the patient unit does not emerge until the end of her shift.

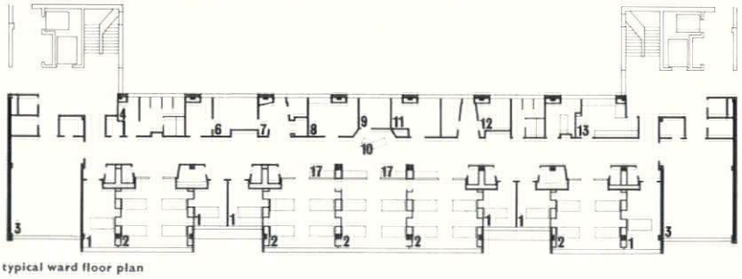




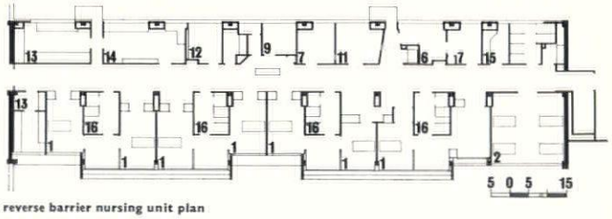
two views of the installation of the high energy treatment machine: the room in which this is used is underground and protected with reinforced concrete—parts of the roof of these rooms are of removable concrete blocks to provide access for the installation or removal of the equipment: the linear accelerators were lowered into position through these holes



entrance front with the main ward block, centre, and the block containing the reverse barrier nursing unit on the right

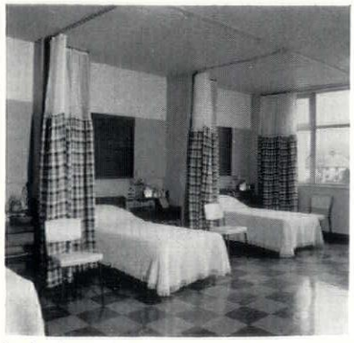


typical ward floor plan



reverse barrier nursing unit plan

key to plans
1. single-bed ward
2. four-bed ward
3. day room
4. clinical lavatory
5. clinical bath
6. sluice room
7. linen room
8. m.o. and interview
9. ward office
10. nurses' station
11. clinical room
12. sisters' room
13. kitchen
14. m.o. and laboratory
15. sample store
16. gowning and scrub-up room
17. waiting room



interior of typical ward



patients' meals served on a conveyor belt



entrance front with porch canopy in foreground

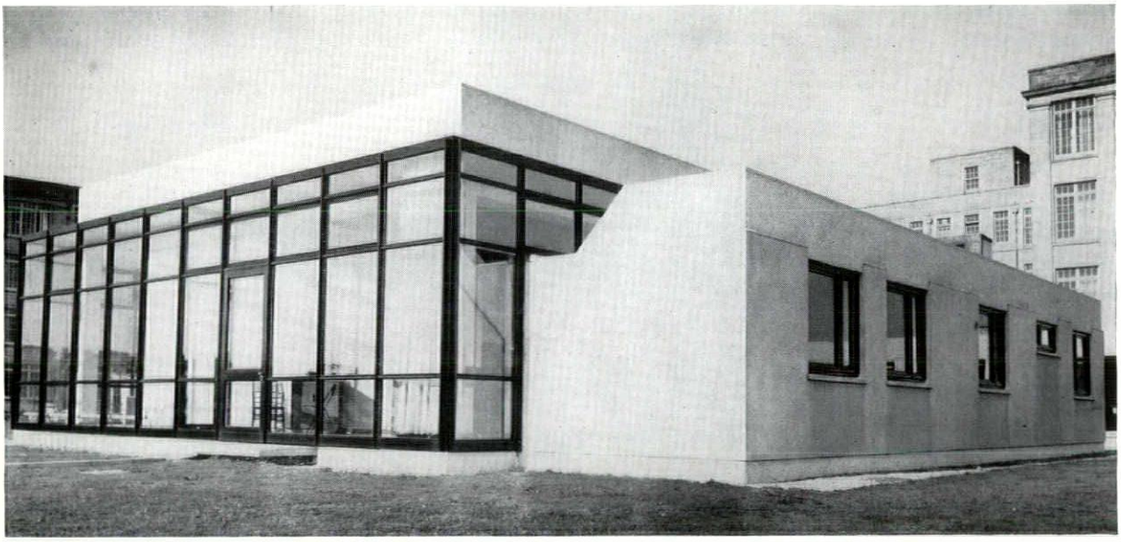
continued from page 451

clinical laboratories. Behind them are the pure research areas. At Dundee also there is separation of student from hospital traffic.

The Royal Victoria Infirmary, Newcastle, is also adjacent to the university and, like Dundee, is mainly on three levels. There is complete separation of hospital and student traffic and the medical school is linked physically to the university by a bridge across one of the boundary roads

One of the aims in the Birmingham research project, briefly illustrated, was to examine the possibility of planning a hospital complex, including teaching and research and day hospital accommodation, for about two thousand inpatients. It has long been thought that such a size would prevent the development of efficient communication systems and would also lead to an 'inhuman' environment. In this scheme most of the buildings are relatively low; only the acute wards and laboratory areas are more than four storeys high and the whole is linked by a road network and interior communication system. Related functional areas are planned in close proximity. There seems no reason why such a development should not be both functionally workable and environmentally satisfactory.

In these three teaching hospitals and also in the Northwick Park Hospital and the Birmingham project, a fundamental aim has been to build into the design potential for growth as well as capability of phased construction. In each case the form of the building organization is dictated by the shape of the primary communication network, which is in turn shaped by the need to maintain potential for extension while not interfering with the essential relationships between patient care areas and teaching and research areas. The Royal Marsden unit is one of the few complete new additions to post-war teaching hospitals, as is, on a smaller scale, the radiotherapy unit at the Aberdeen Royal Infirmary. The radiotherapy unit is embedded amongst the existing infirmary buildings. There are many such developments now proceeding and while they form valuable additions to the treatment facilities of existing hospitals they always, to an extent, prejudice future developments unless exceedingly carefully related to an overall communication network.



ABERDEEN ROYAL INFIRMARY: RADIOTHERAPY UNIT

George, Trew, and Dunn

CLIENT : North-Eastern Regional Hospital Board (Scotland).
DATE : Completed, March 1963.
This unit incorporates two main elements—a treatment wing, comprising three major treatment rooms and ancillary accommodation, and a consultancy wing, providing accommodation for outpatients and laboratory facilities. The whole unit is closely related to the existing Royal Infirmary in order that trolley cases can be brought direct to the treatment rooms from the wards without having to pass through the general waiting area. An interesting feature is that the need for flexibility in this rapidly developing technical discipline has been met by building the treatment rooms out of dry construction, high density concrete blocks, which can be taken down either to alter the shape of the treatment room or so that the whole treatment room area can be demolished and this part of the building put to a different use.



top, treatment wing of the radiotherapy unit: above, central control area

key to plan
1. treatment room
2. central area
3. superficial therapy
4. physicist's office
5. radium room
6. changing cubicles
7. marking-up room
8. isotope office
9. library
10. major consulting room
11. administration and records office
12. waiting area
13. isotope laboratory
14. isotope diagnostic
15. consulting room
16. examination rooms
17. male patients
18. female patients
19. female staff
20. male staff
21. cleaner
22. Aberdeen Royal Infirmary
23. trolley bay
24. switch room

H.L.Smith

THE HOSPITAL BRIEF: A REASSESSMENT

It is accepted that the practice of hospital medicine is continually changing and that new hospital buildings must allow for growth and change; nevertheless, in any development project decisions must be made at various stages, first to allow the basic pattern to be established and later to fix the initial content of each unit. The Ministry of Health has over the past few years made considerable progress in the production and quality of its guidance information. There are, however, many gaps to be filled before a comprehensive and logical sequence of information is available for use in a project. In addition, the information provided, other than the cost limits, is not mandatory, requiring Regional Boards to decide whether the recommendations are acceptable.

One of the main tasks of a Regional Hospital Board, therefore, is to provide a progressive, integrated consultancy service to meet the demands for information at all stages, both for its own and its nominated architects. Although change is inevitable, the process of continuous revision is made far simpler if a basic level of understanding is established and set down.

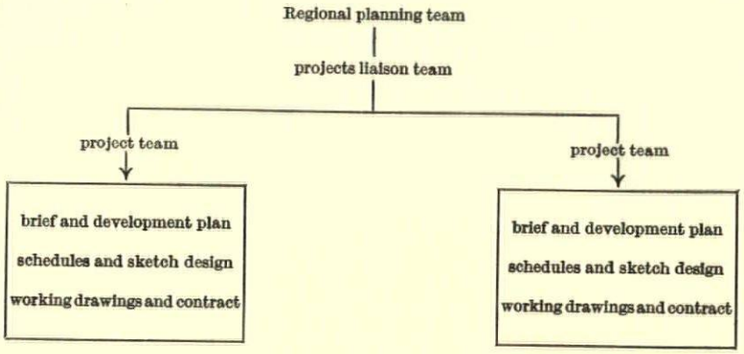
The production of the hospital brief is not necessarily more difficult than that required for an industrial layout. In both, clarity of understanding will produce a smooth work-flow, making maximum use of personnel and materials. Inefficient hospital layouts will still function because of the strong emotional pull instanced by the condition of our present buildings. There is now, however, an increasing need, through lack of trained staff, coupled with a greater emphasis on the patients' status and comfort, to ensure that the right solution should be established for every aspect of the building from overall policies down to the most efficient arrangement of items round a lavatory basin.

This article outlines a Regional Board's approach towards planning its hospitals, and the production of comprehensive development briefs since the initiation of the 10-year programme. Two important points are not discussed, though both form an integral part of any brief: one is the calculation of the norms covering the size of hospital departments, essentially a medico/statistical exercise for which a great deal of further study is required; the other is the cost element. Costs are laid down by the Ministry of Health, and their interpretation is a cost control exercise about which sufficient has already been written.

The South West Metropolitan Regional Hospital Board, as a typical example, covers a triangular area from Marble Arch to Bognor Regis and across to Worthing. It has a programme to provide 35 District Hospitals of 600/850 beds, 95 per cent of which are complete redevelopments of existing hospitals on, generally, very restricted sites. Because of financial restrictions all will be completed in a number of phases. The Board's own Architects' Department initially aimed to carry out 65 per cent of the work, the remainder to be undertaken by nominated consultant architects.

In common with many of its fellow Boards it has suffered bitter disappointments in its planning and programming, not the least of these being the failure of the existing hospital organization as a source of information upon which to base its development briefs.

The structure of the Board's first planning organization is shown in the diagram below:



Each project team, using simple check lists, was responsible for formulating its own policy, reporting to the liaison team only on points of difference between members. At the end of the first two years an assessment was made of the procedures, as follows.

Outline of Functions. Considerable abortive work resulted in the failure of both the Board and the Ministry of Health to define and agree the content of the project before proceeding with the next stage.

Operational Policies. This part of the brief tended in general to be little more than a repeat of the outline of functions and proved inadequate for its purpose, which was to establish basic operational policies for each department, their relationship one to another, and the movement patterns within the development. It must be remembered that few Building Notes were published, and it was here that the project team was at its weakest. Seldom did a project team discover medical or administrative opinion that was progressive or, in some cases, even interested. In many ways this was understandable, hospital personnel had for so long worked in unsatisfactory conditions that the limit of their vision tended to be their present environment. Occasionally a strong personality would emerge who, by sheer force of will, established what amounted to a personal policy. The Board itself, often through inexperience, was not positive in its leadership and had problems in staff changes. The result, after many project team meetings, was inadequate briefs differing in policy one from another and often out of date before completion.

Development Plans. Development plans suffered acutely from the lack of information described above, in particular the relationship and size of departments.

Schedules and Sketch Designs; Contract Drawings. Schedules tended to be compiled either from Building Notes or on local opinion, and together with the sketch plan were restricted by a lack of a thorough understanding of the functioning of the ultimate department and the overall operation of the hospital. A system of recording Room Data, by filling in forms at project team meetings, went a long way to solving this problem but, depending on the quality of the members, tended to be superficial and consumed a vast amount of time. The Ministry of Health Equipment Lists later provided

further co-ordination between projects, but neither gave any indication of the physical relationship of the equipment nor of its services. This, coupled with the fact that most of the Regional Board's planning staff were new to the hospital field, led to some surprising results.

A further problem was the separation of engineering and architectural disciplines into two separate departments, each with an equal chief officer and a tradition of non-integration—now almost resolved in the author's own Board.

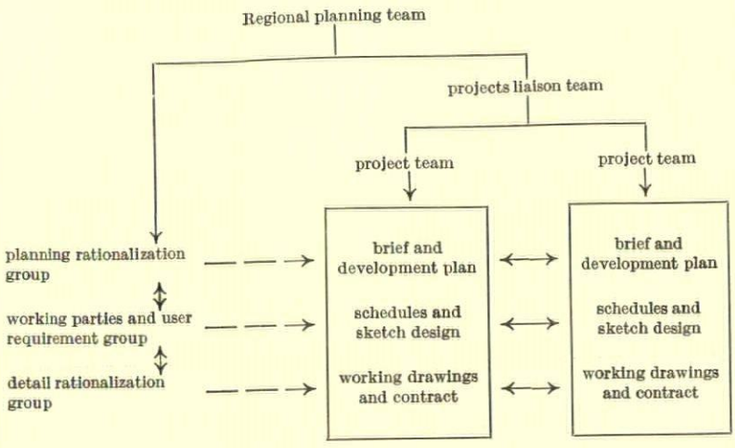
The financial control suffered equally through the estimates upon which the programme was based being astray; this was solely due to the lack of realistic hospital cost information and the knowledge of the real requirements of a modern hospital when the capital programme was being compiled.

Following this appraisal, the Board adjusted its planning organization to undertake a positive leadership and provide a co-ordinated central information service to cover all aspects of the brief, the project team interpreting the information in terms of the local conditions only.

The diagram above right shows the revised structure. Below is a description of the aims and responsibilities of each element:

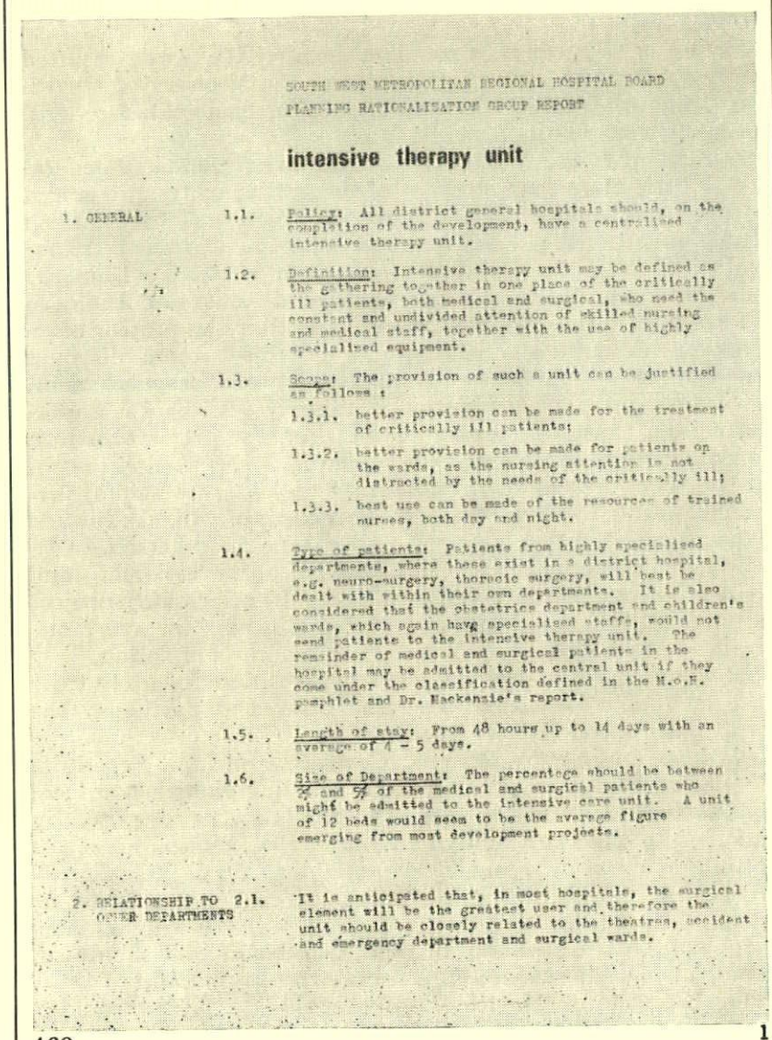
Regional Planning Team. Responsible for the overall control of development and the financial programme, its members are the chief officers and their deputies—medical, architectural, engineering and administrative—together with the Nursing Officer and the Regional Laundries' Adviser.

Planning Rationalization Group. This aims to produce precise policy statements on the operation of each department and its integration into the hospital as a whole. Many of the Building Notes tend to be superficial; each study, therefore, begins by analysing the note, defining its limitations,



feeding-in missing information and adjusting its policies into line with progressive thought and development in that particular field. Statements are also prepared for departments or areas which are not covered by Building Notes, e.g., Intensive Therapy Units. The membership of the Group comprises the principals of each department, including Work Study Officers, and co-opts a cross-section of the more advanced specialist opinion both medical and administrative throughout the Region as necessary. In addition all members are expected to make contact with the Ministry of Health personnel and any other authority or hospitals who are carrying out development work. 1 and 2 show part of the format of the policy statements for an Intensive Therapy Unit:

1 and 2, policy statements for an Intensive Therapy Unit formulated by The South West Metropolitan Regional Hospital Board.



SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD
PLANNING RATIONALISATION GROUP REPORT

intensive therapy unit

1. GENERAL

1.1. Policy: All district general hospitals should, on the completion of the development, have a centralised intensive therapy unit.

1.2. Definition: Intensive therapy unit may be defined as the gathering together in one place of the critically ill patients, both medical and surgical, who need the constant and undivided attention of skilled nursing and medical staff, together with the use of highly specialised equipment.

1.3. Scope: The provision of such a unit can be justified as follows :

1.3.1. better provision can be made for the treatment of critically ill patients;

1.3.2. better provision can be made for patients on the wards, as the nursing attention is not distracted by the needs of the critically ill;

1.3.3. best use can be made of the resources of trained nurses, both day and night.

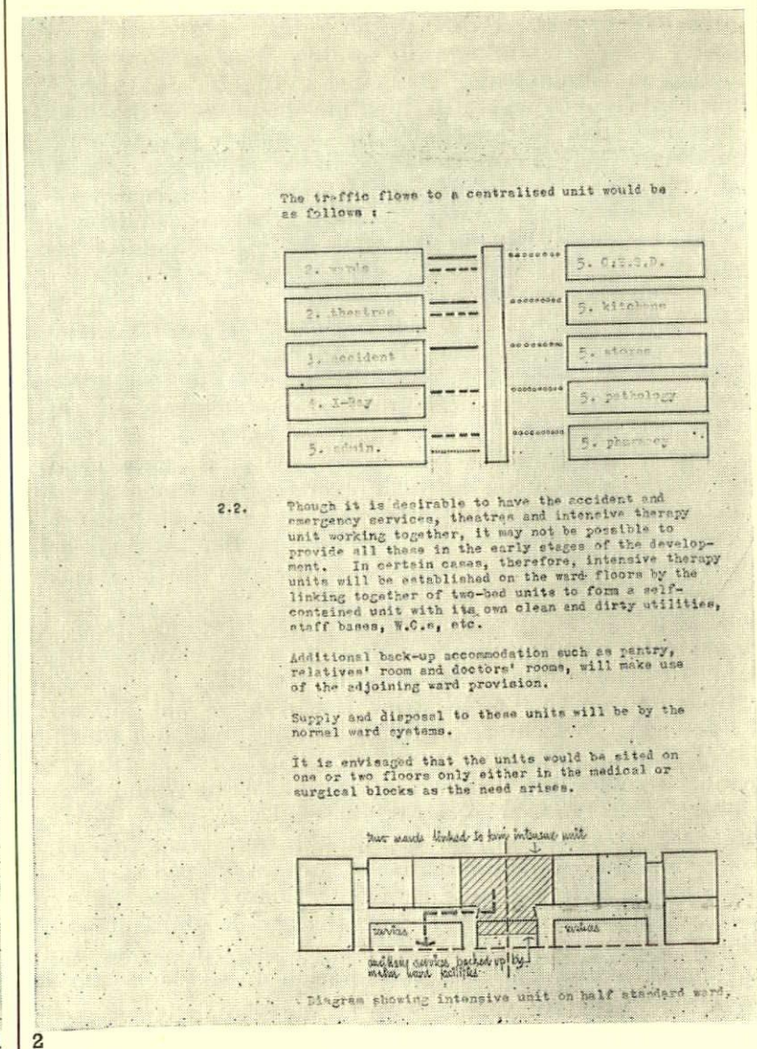
1.4. Type of patients: Patients from highly specialised departments, where these exist in a district hospital, e.g. neuro-surgery, thoracic surgery, will best be dealt with within their own departments. It is also considered that the obstetrics department and children's wards, which again have specialised staffs, would not send patients to the intensive therapy unit. The remainder of medical and surgical patients in the hospital may be admitted to the central unit if they come under the classification defined in the M.o.H. pamphlet and Dr. Mackenzie's report.

1.5. Length of stay: From 48 hours up to 14 days with an average of 4 – 5 days.

1.6. Size of Department: The percentage should be between ½% and 5% of the medical and surgical patients who might be admitted to the intensive care unit. A unit of 12 beds would seem to be the average figure emerging from most development projects.

2. RELATIONSHIP TO OTHER DEPARTMENTS 2.1. It is anticipated that, in most hospitals, the surgical element will be the greatest user and therefore the unit should be closely related to the theatres, accident and emergency department and surgical wards.

1



The traffic flows to a centralised unit would be as follows :-

2.2. Though it is desirable to have the accident and emergency services, theatres and intensive therapy unit working together, it may not be possible to provide all these in the early stages of the development. In certain cases, therefore, intensive therapy units will be established on the ward floors by the linking together of two-bed units to form a self-contained unit with its own clean and dirty utilities, staff bases, W.C.s, etc.

Additional back-up accommodation such as pantry, relatives' room and doctors' rooms, will make use of the adjoining ward provision.

Supply and disposal to these units will be by the normal ward systems.

It is envisaged that the units would be sited on one or two floors only either in the medical or surgical blocks as the need arises.

Diagram showing intensive unit on half standard ward.

2



Regional Board study of operating-theatre layout for groups of four, six and eight theatres.

key
A, operating theatre
B, lay up
C, general store
D, cleaner's store
E, scrub up
F, exit
G, anaesthetic
H, storage
I, disposal chutes
J, disposal hoist
K, disposal
L, specimen examination
M, equipment store
N, central cleaner's store
O, w.c.
P, supply hoist
Q, staff rest room
R, wash, pack and load
S, sterile store
T, plaster room
U, plaster store
V, mobile X-ray
W, changing rooms
rest rooms
transfer bay
recovery room
utility room
sister's office
superintendent's office
porter's room
dark room
X, lift
Y, holding bay
Z, dark room

Certain departments, once the policy is defined, are capable of standardization in layout, not as complete departments but rather as components formed of vital elements, the components being put together as required by the development. This involves a study of the department in greater depth; working parties are therefore set up under the general co-ordination of the main team. Two examples of this work are shown here.

(*a*) THEATRES. Standard theatre components covering from four to eight operating room departments have been developed, 3, 4, 5, The operating room and its ancillary accommodation forms one component, the others, which may be attached in a variety of layouts are: Transfer Zone, Changing Areas, Ancillary Rooms. The supply and disposal system may be below or from the same level. Additions may be made without difficulty as long as the TSSU size is initially known and odd numbers of operating rooms may be provided by simply omitting one from the nearest standard layout.

(*b*) WARDS. The nucleus of this Group was in fact set up prior to the reassessment and has produced a number of type-plans which have now crystallized into one standard plan. All wards, other than possibly maternity, will be located in one block, each floor having 120 beds divided into 4 linking groups. The block is designed to be built in two stages, yet ultimately to provide completely integrated floors. Special ward components which slot into the overall structure have also been designed for the following users: Children, Section 5, Infectious Diseases and Psychiatric. 6 shows a typical floor. The centre linking units will be mainly glazed and can be increased in width if higher blocks are required:

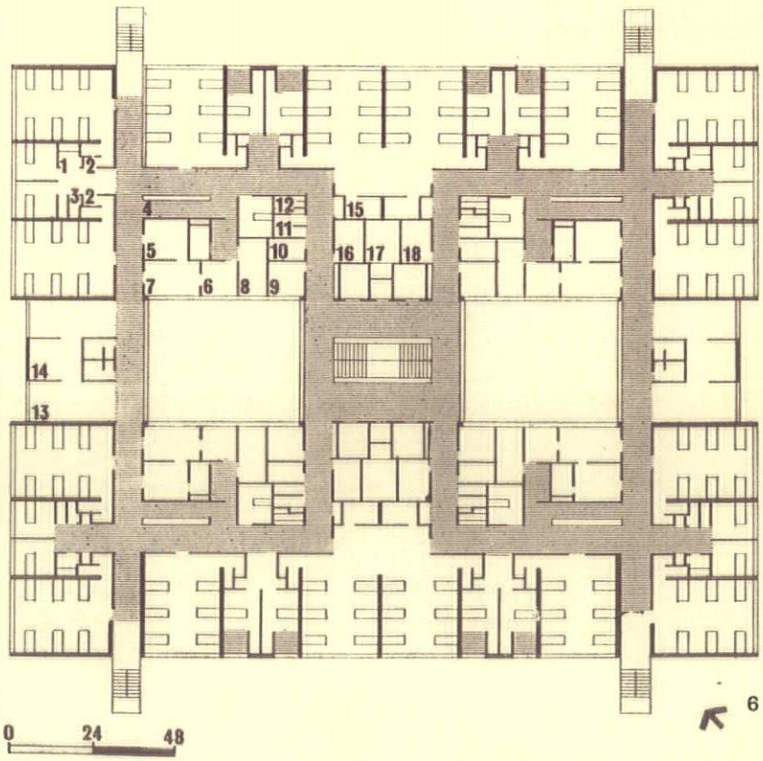
Standard components are also being developed for other departments which allow standardization in this way, e.g., X-Ray Department, Maternity Department.

User Requirement Studies. The User Requirement Study Group, which is now one of the National Inter-Regional Board Groups, originated in the Metropolitan Boards. The author is the chairman and, together with a steering group, devised the present method of providing standard room data following the initial rather ineffectual approach. Although no longer a Board study, a considerable number of the exercises are being carried out by members of the Architects' Department and the results will be integrated into the programme. The terms of reference of the Group are:

(*a*) to study the activities taking place within every area of the hospital to establish the most efficient equipment and layout and to rationalize these into the minimum number of permutations.

(*b*) to co-ordinate the building elements resulting from the Inter-Board Study Groups and from the design rationalization exercises discussed in the next Section.

Analysis of the Building Notes shows that a high proportion of departmental schedules consists of rooms common to many departments, e.g., offices, utilities, etc., all of which may be standardized, the remaining rooms generally being special to one department. The conventional list of rooms was used in the first instance as a convenient method by which to divide the work, accepting that after analysis of the activities taking place the 'room' may merge with others or might even disappear completely. The information for each space is com-



Regional Board study of ward layout.

key
1, bath
2, store
3, shower
4, nurses' station
5, dirty utility
6, clean utility
7, treatment
8, ward kitchen
9, sister
10, cleaner
11, staff
12, flowers
13, day room
14, t.v.
15, utility
16, tutorial
17, main duct
18, doctor

piled by an architect in conjunction with a nurse and/or doctors; these in turn are vetted by the steering group and consist basically of a rationalization of the function and a detailed analysis of the activities taking place within it.

The format of each study is presented in two sections:

Section (1) is intended to be used as a handbook for the architect and planner. It provides information on the function of the room, indicates why each piece of equipment is required and details graphically its physical relationship. It also gives guidance on the total areas required to accommodate all or part of the activities. This will form the basis of a further study to translate all the rooms into a series of common dimensional areas.

Section (2) provides a summary of the equipment and the services and building elements. These form the master copies of the Room Index from which departmental sets may be made up for use by project teams, the project team vetting and amending the printed sheets where necessary.

The design of any room or space must be affected by the basic operational policies of the hospital of which it forms part. A series of basic policy decisions were therefore made prior to the start, upon which all the studies are based. A user of the studies who differs in any policy may then readily adjust the information as necessary. 7 and 8 show part of the final format of a Dirty Utility Room.

Detail Rationalization Group. This Group was started by the Board's architects and engineers to complete the final stage of the briefing information, the selection of the actual pieces of equipment, its method of installation within the building, its co-ordination with its services and its rationalization into an assembly.

Aspects of the studies inevitably ran parallel with the Ministry of Health Study Groups. A second programme of work is now about to be started to eliminate duplication with Ministry of Health Reports and to finalize the first drafts, at the same time completing the remaining assemblies. Each assembly is processed within the following discipline:

(*a*) policy and design specification established by the Group.

(*b*) selection of available components meeting the required specification, assembly drawings and cost, prepared by pairs of architects and engineers with medical and nursing advice.

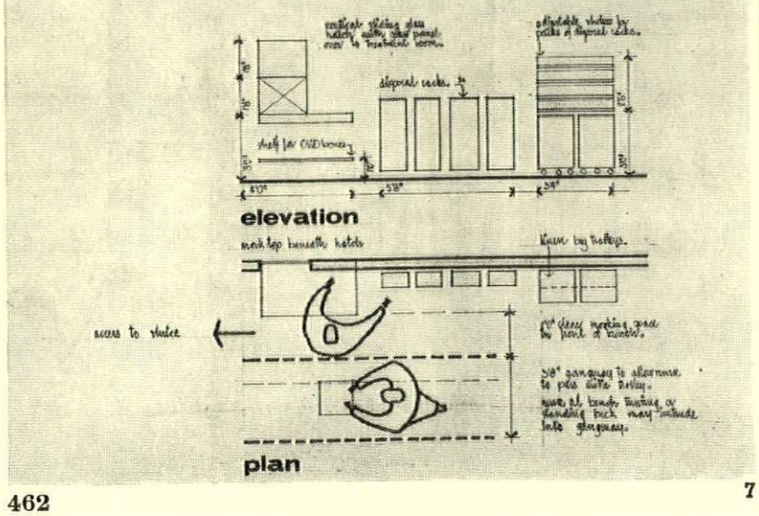
(*c*) approval by the Group.

The result will be a catalogue of assemblies covering all Group 1 and 2A equipment; each will have a code which may then be used on the equipment sheets and for reference at all stages of the project team and contract work, and will ultimately lead to prefabrication. Parallel with this, a similar catalogue is about to be commenced of acceptable products to cover Groups 2B and 3 items, divided into Loose Furniture, Related Items and Medical Equipment. 9 and 10 (facing page) show an assembly drawing and its working details for a Medical Basin Assembly.

All the Groups are fully operative, and a large amount of information is available for feeding directly into project teams; nevertheless the magnitude of the task should not be underestimated and it will be a considerable time before the whole of the work is complete. It is open to doubt whether the Regional Boards, with the inevitable duplication of information and their difficulties in getting staff, are the right places to be carrying out work of this nature, but at this point in time, even with a greatly postponed programme, it is essential that it should be carried out.

7 and 8, specimens of the Regional Board's summary of services and equipment required in a Dirty Utility Room.

2.3.3.	Holding area for mobile linen collection stands; one for dirty linen, one for foul and infected linen. Wheeling in and out of the room.	;Two mobile linen stands and sacks - 34" x 17" x 19", to stand adjacent to door.
2.3.4.	Clearing trays or trolleys brought into or passed into the room from adjacent treatment rooms or areas. The trays will be placed on a bench below the hatch, or if a trolley, adjacent to bench, and various items of linen, soiled and clean dressings, general waste, all previously begged, will be sorted into disposal sacks. Items for return to C.S.S.D. will be placed in their appropriate return boxes or paper sacks.	;Worktop minimum 18" long. ;Shelf below worktop to hold 4 No. C.S.S.D. boxes (check sizes & system). ;Wall frames for 4 disposal sacks (39" x 14") (linen, dressings and waste, salvage dressings and indestructible items). ;Return drainage and suction bottles, average 8, held in area adjacent to hoist.
2.3.5.	Liquids from bowls will be poured down sluice, some heavily stained items may be rinsed before being placed in C.S.S.D. containers.	;Access to sluice and drainer.



ROOM DATA SHEET		EQUIPMENT ROOM: Dirty Utility. DEPARTMENT: X Wards, Y Intensive Therapy, Z			
GROUP	CODE	REFERENCE		NO.	COST. EACH / TOTAL
		para. 2.3.			
1.		4;19.	Worktop, plastic laminate, 4'0" x 2'0".	2	
		23. 11;17. 4. 13. 6.	Shelves, storage. plastic laminate, 16" x 8". 36" x 12". 48" x 12". 66" x 24" (disposer layout only). 40" x 12".	1 2 1 2 4	
		19.	Cupboards, storage. 5.6.3. unit; D.5.6.0. doors; shelves fitted for clini-test equipment.	1	
		20.	5.6.3. unit; D.5.6.0. doors with vent; 2 No. S.0.5.3. shelves, plastic laminate finish.	1	
		20.	6.12.5. unit; D.5.6.0. doors with vent; 2 No. S.0.5.5. shelf, plastic laminate finish.	1	
		5;11;12.	Sink, sluice approx. 24" x 18"; high level w.w.p.; elbow-action taps cantilevered drainer approx. 24" x 18" to discharge over sluice.	1	
		5;16;17.	or/ combined sluice and sink 46" x 21"; high level w.w.p.; elbow-action taps with swivel nozzle to discharge over sink and sluice; cantilevered drainer 24" x 18" to discharge over sluice (disposable bed pan layout only).	1	
		21.	General, approx. 10" x 24" x 18". Elbow-action taps; cantilevered drainer 24" x 18" to discharge over sink.	1	
		19.	Laboratory, approx. 9" x 14" x 14" set in worktop. Laboratory taps, swan neck, with wrist action.	1	
		9.	Bed pan equipment, Traditional type. Automatic bed pan-washer/disinfectant with low pressure steam	1	
		N.H.S. COST GUIDE			2a

9 and 10, Regional Board's assembly drawing and working details for a Medical Basin Assembly.

SWMRHB May 64

medical basin

Smb.1 general use
Smb.2 wards

S mb 1

Group 1

A	24" x 20" lavatory basin	}
B	Trap, wall extension and flange	} See detail 2.
C	Elbow taps	}
D	Combined towel and soap dispenser	trice screwed to panel or plugged and screwed to wall.
E	Panel assembly	}
F	Access panel	} See detail 2.

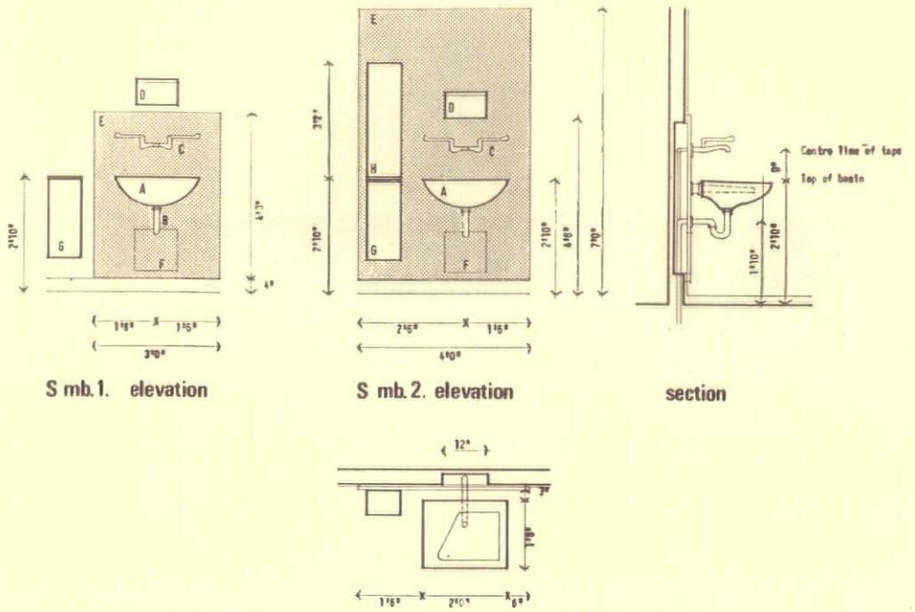
Group 2a

G	Frame for disposal sack	trice screwed to panel or plugged and screwed to wall.

S mb 2

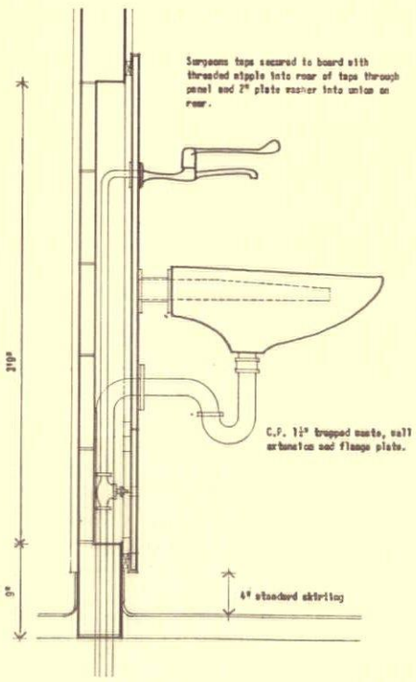
All as S/mb — 1 plus the following

H	24"x30" x 30" mirror	Screwed to panel four times with C.P. dome head screws.



9

prefabricated medical basin assemblies — detail. 2



section thro' panel and wall

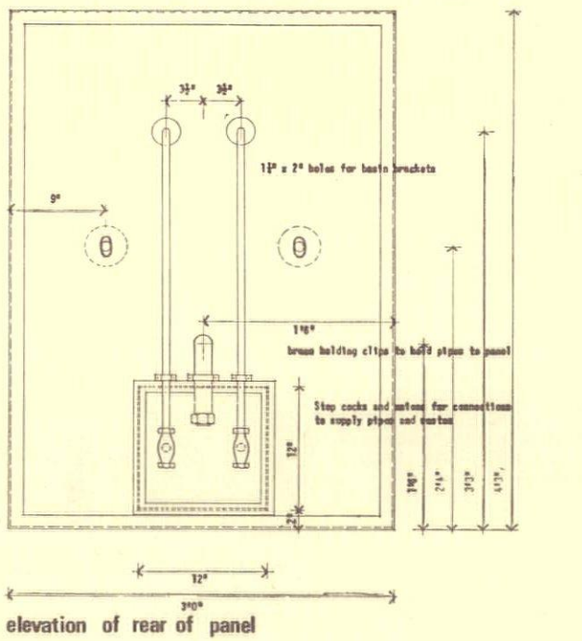
Supply pipes and waste taken from main runs below and located through base block, see detail 3, and cap off. Tolerance should be allowed in length for inaccuracies in setting out panel. After panel is assembled connections are made to stop cock or board through access panel.

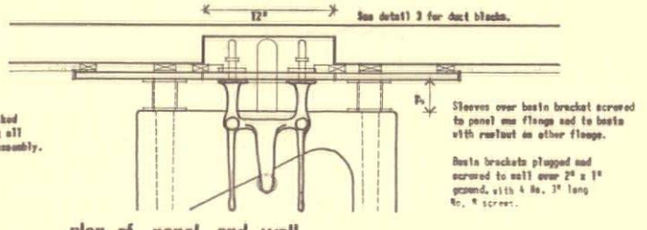
Assembly mounted on ¾" chipboard veneered on face with white melamine finish, with balance sheet on rear.

Edge frame formed with Metal aluminium section L 14081 with mitred welded corners screwed to grounds at 8" centres.

Panel when ready for mounting is passed over basin brackets and secured by 1½" Phillips No. 6 flat head countersunk screws at 8" centres, through aluminium frame into edge of panel.

Access panel formed in board 12" x 12" with an 2" x 1" frame screwed to rear of main panel: 2 No. 2½" x ⅜" magnetic catches hold panel in position, which may be removed with suction disc when necessary.





2" wide timber grounds spiked to walls before plastering all round perimeter of panel assembly.

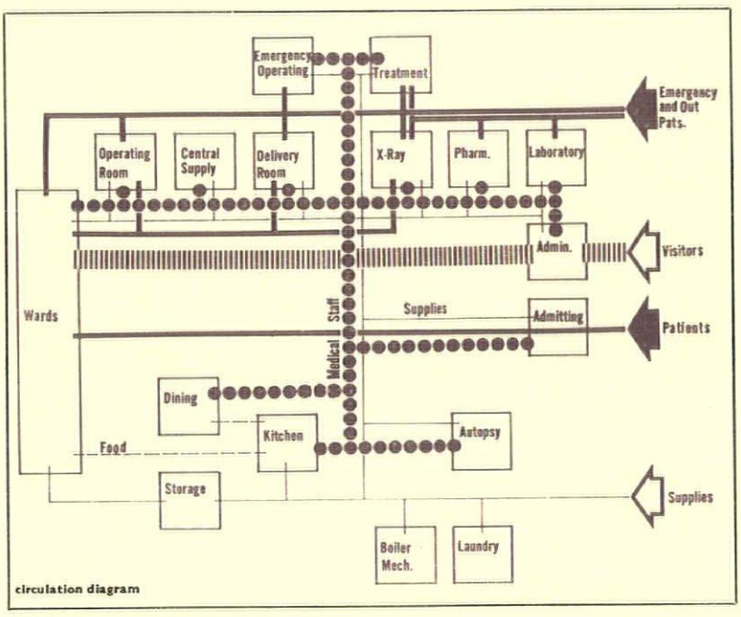
10

4 AMERICAN HOSPITALS

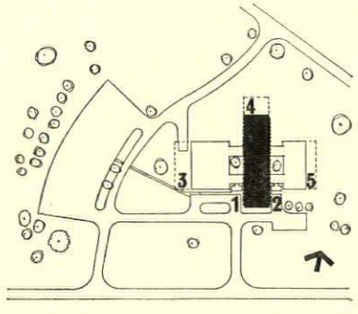
WEST HALDIMAND HOSPITAL, HAGERSVILLE, ONTARIO

Shore and Moffat and Partners

SIZE : 56 beds.
DATES : Construction began, March 1963 : occupied, March 1964.
The nursing unit is located on the first floor of the two-storey wing and is divided into two-bed and four-bed rooms, the nurses' station is centrally located and the use of the central core loop corridor provides a minimum travel distance to all bedroom units. Service and utility areas are also located in the central service shaft.
The sawtooth design was adopted so that every nursing unit was oriented in the optimum direction—south-east or south-west—and every bed was adjacent to an exterior window. This concept permitted the reduction of window sizes and, in turn, reduction of the cost of window construction, curtains and heat loss. This saving equalized the increased structural cost of the sawtooth design.

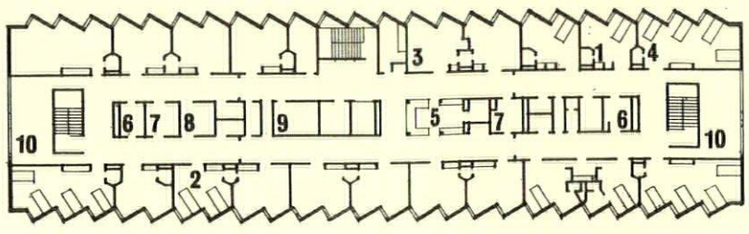


circulation diagram



left: site plan
key
1, main entrance
2, emergency entrance
3, future expansion service wing
4, future expansion nursing wing
5, future expansion obstetrical and surgical wing

below: first floor plan
key
1, 1-bed room
2, 2-bed room
3, 3-bed room
4, 4-bed room
5, nurses' station
6, soiled utility
7, clean utility
8, bath
9, mechanical room
10, day room



COMMENT: *Hospital building on any scale in Britain after the war did not start effectively until after 1955, and even then it was many years before the first hospitals were finished. In neutral Europe and in America hospital building continued during the war and after the war many countries in Europe began to build sooner than Britain. Significant post-war development occurred first in the United States. Perhaps the seminal buildings were the chain of ten hospitals built for the United Mineworkers of America Welfare and Retirement Fund and completed in 1956, in the eastern States. Several of these were designed by Isadore Rosenfield (one of whose recent hospitals in Connecticut is illustrated opposite) and for these hospitals the Canadian hospital consultant Gordon Friesen developed his famous rationalized mechanical service distribution and collection system. These have been well illustrated and commented upon and many British hospitals designed after 1955 are influenced by them. In Europe the hospital planning tradition stemming from the great hospitals of Sweden and Switzerland has been the continuing influence on hospital planning until very recently.*

Most of these have been illustrated elsewhere, and this section, therefore, illustrates four recently built hospitals in Canada and the United States of a type which has not received much publicity — the small community hospital. In contrast to Britain, many hospitals in North America are small and have very close connections with a community, their equipment and furnishing often being provided and

continued on page 466





West Haldimand hospital:
left, ward block with surgical wing on left: above, typical two-bed ward



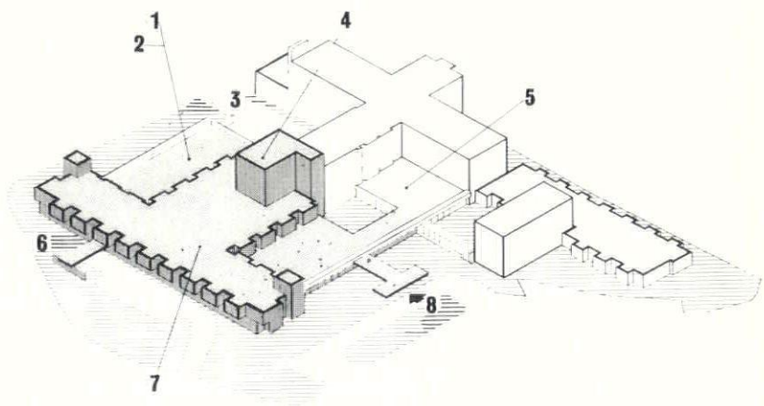
perspective of extension with existing hospital in background

GRIFFIN HOSPITAL, DERBY, CONNECTICUT

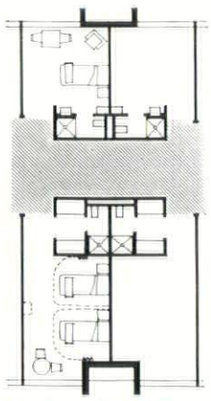
Isadore & Zachary Rosenfield

This 250-bed extension is one of many designed by this firm for small towns in the United States where an existing hospital has to be brought up to date. The nursing unit employed here was first designed by the architects for Beckley Hospital, West Virginia. Each new nursing 'T' consists of two nursing units sharing common nursing services bracketed between two corridors in the stem. The head of the nursing 'T' has a single corridor. The principal advantage of this plan is the compact grouping of services, as against an entirely double-corridor system where the services are strung out the

key
1. new ground floor: administration, lobby, admitting, out-patients' department, laboratories, emergency, radiology
2. new basement: laundry, sterilizing, stores, morgue, mechanical
3. service entry
4. new central lift
5. new cafeteria and meeting rooms
6. emergency
7. new first floor: 55 medical-surgical beds, 16 paediatric beds
8. main entrance



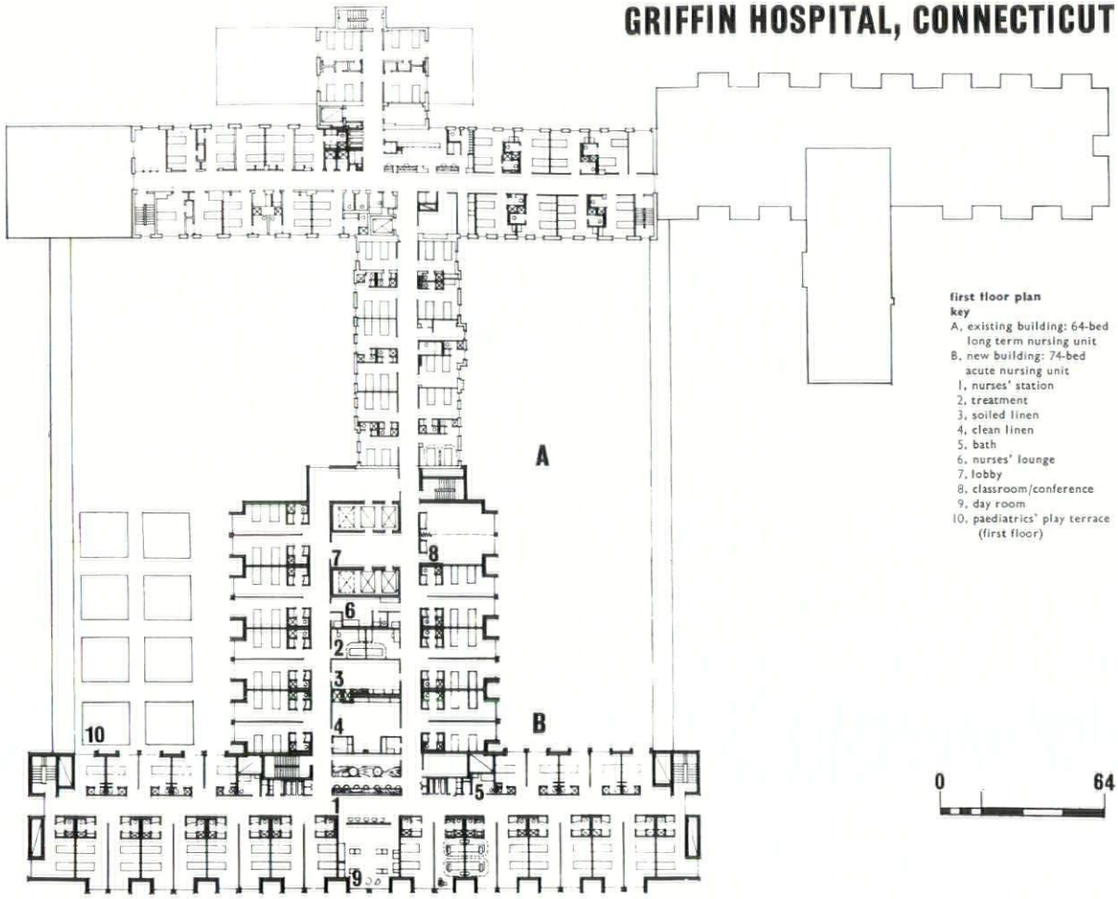
axonometric drawing with extension tinted



plan, single and double rooms

full length of the nursing unit with frequent cross corridors for intercommunication. Each of the paired nursing units has 37 beds. Each typical unit has five single rooms with private toilet and shower. The rest of the rooms are doubles with toilet, shower and dressing room, and closets. Future expansion up to 600 beds is planned for the entire hospital. The stack of new nursing units is preplanned for vertical expansion up to six storeys. There are blanks for future additional lifts and there are no mechanical equipment penthouses to interfere. Each of the service facilities on the lowest floor and each of the administrative and medical facilities on the main floor is arranged to expand horizontally without disruption.

GRIFFIN HOSPITAL, CONNECTICUT



first floor plan
key
A, existing building: 64-bed long term nursing unit
B, new building: 74-bed acute nursing unit
1, nurses' station
2, treatment
3, soiled linen
4, clean linen
5, bath
6, nurses' lounge
7, lobby
8, classroom/conference
9, day room
10, paediatrics' play terrace (first floor)

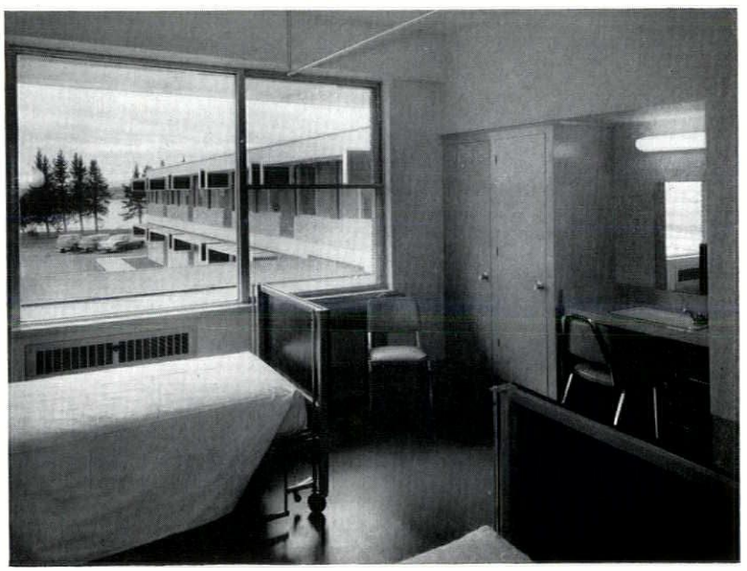
4 *American hospitals*

continued from page 464

renewed by funds raised locally. The Glenmore Park Hospital in Alberta is for chronic cases where very little active nursing is provided and the charming private hospital in Berkeley is exceptional because it caters exclusively for private patients and, although its costs are not known, it is clearly very much more expensive than the normal community hospitals in the States, in Canada or, of course, any hospitals in this country.

The planning of the West Haldimand Hospital in Ontario, like many North American Hospitals, shows a fluency which is not often found in British hospital planning. The planning looks effortless and the architects were able to deliver the building on time (planned and built in eighteen months) and for the price, and it works very well. It is a pity that the architects felt constrained to try to produce a unique solution to this relatively simple problem. The rather banal saw-toothed exterior arises from an orientation requirement but it is doubtful if the arrangement of beds which gives rise to it improves the lot of the patients in any significant way. In some other hospitals circular wards and wards

continued on page 468



interior of typical ward

GLENMORE PARK AUXILIARY HOSPITAL, ALBERTA

J.A.Cawston & Associates

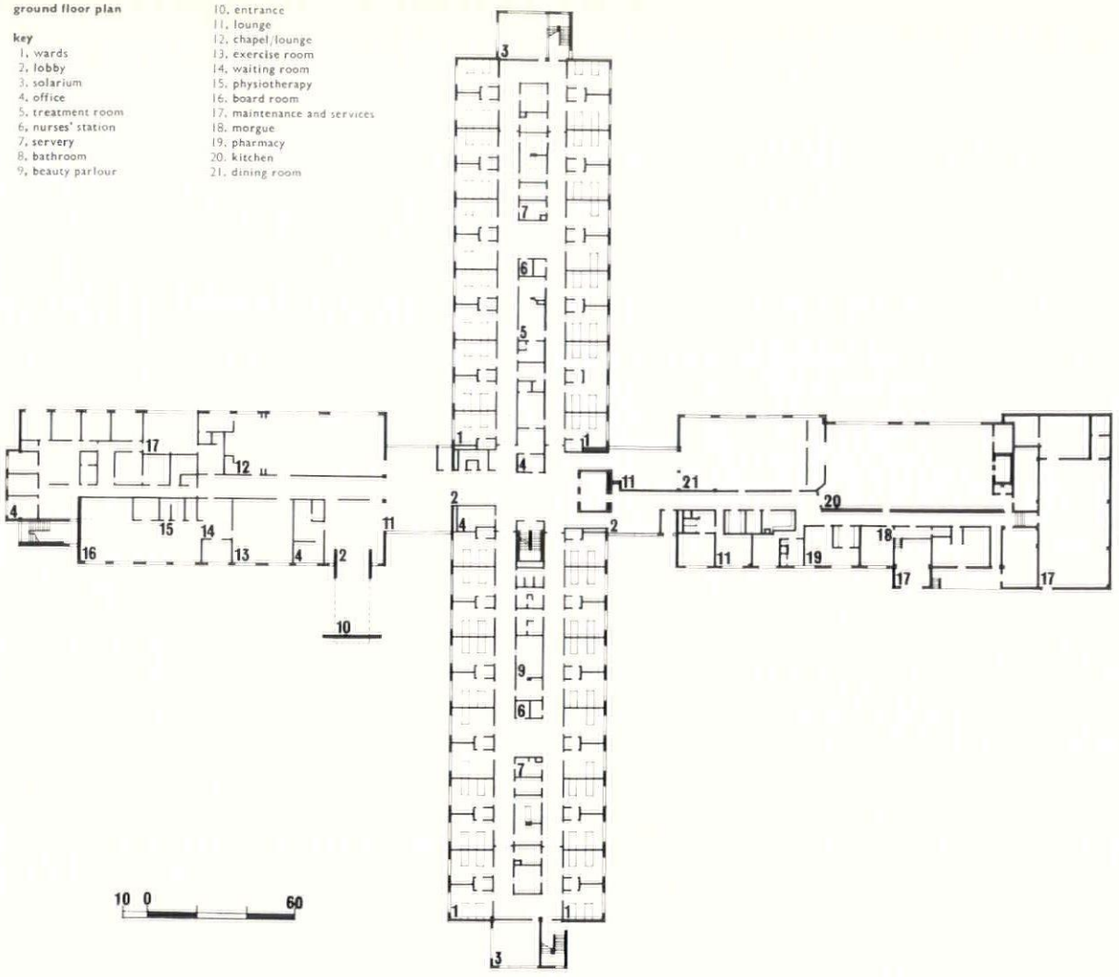
SIZE: 200 beds.

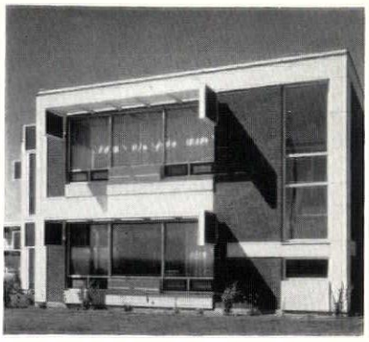
This is a non-active treatment hospital. In addition to the two hundred beds and administrative offices, the main functions include patient solariums, lounges, dining and kitchen facilities, physiotherapy and an inter-denominational chapel. The hospital is on a hilltop site overlooking Glenmore Lake, with mountains in the background and no building development in close proximity. In order to provide maximum view and retain minimum circulation distances, a three-wing double corridor linear core concept was chosen. The structure is of steel frame

ground floor plan

key

1. wards
2. lobby
3. solarium
4. office
5. treatment room
6. nurses' station
7. servery
8. bathroom
9. beauty parlour
10. entrance
11. lounge
12. chapel/lounge
13. exercise room
14. waiting room
15. physiotherapy
16. board room
17. maintenance and services
18. morgue
19. pharmacy
20. kitchen
21. dining room

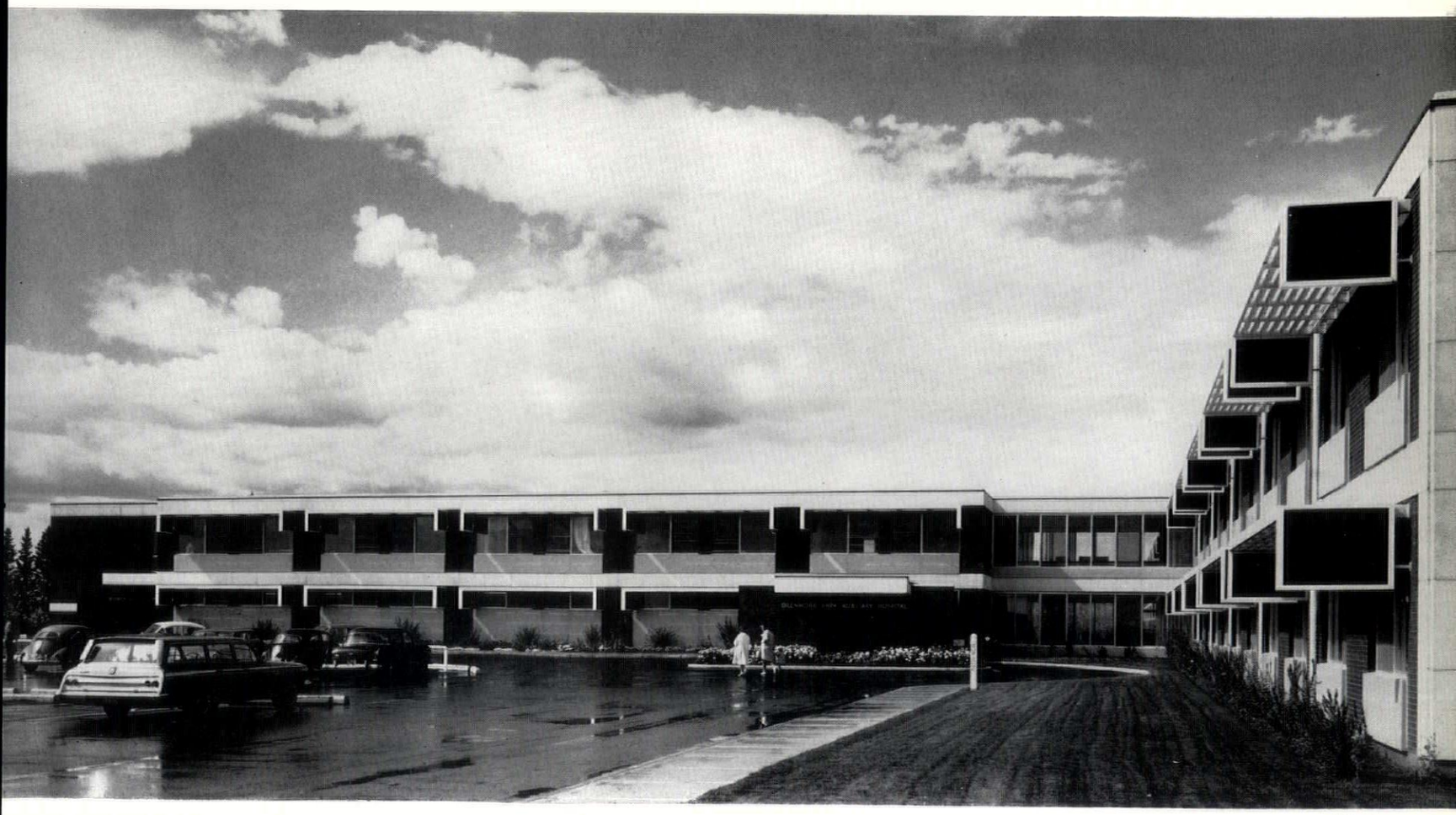




end of ward block with staircase on right and solarium on left

GLENMORE PARK AUXILIARY HOSPITAL, ALBERTA

with 2½in. reinforced concrete slabs on long span joists. Exterior walls are of dark chocolate brown brick and ivory coloured porcelain on steel panels below the windows. Structural columns and beams are clad with white exposed aggregate precast concrete. Individual room sunshades consist of steel louvres and porcelain on steel side panels. Window sections are split-frame anodized aluminium, all venting units and exterior doors having a black anodized aluminium finish.



administration block and main entrance, with ward block on right

continued from page 466

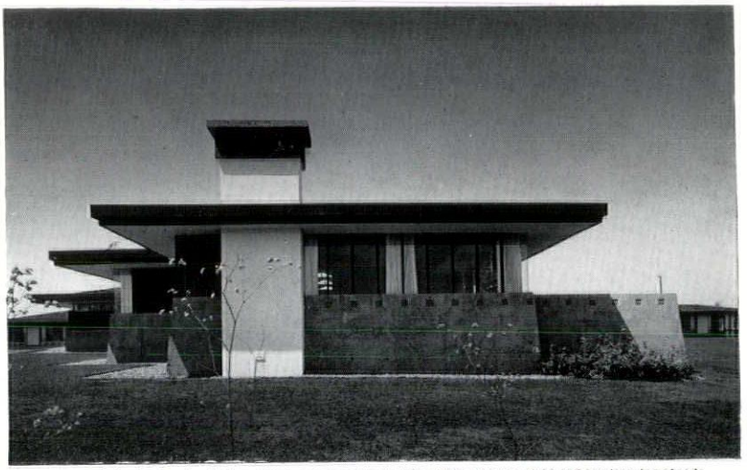
planned on finite geometric shapes are sometimes used. They represent, of course, a striving after a unique 'hospital' image, and can be contrasted with the work of the Rosenfields. Patients in their hospital, for instance, are given the alternative of protection from strong glare when in bed, or sitting in a window when they are well enough to get up — two essential characteristics in patients' rooms. The Rosenfields' hospital in Connecticut is a solution to a problem which is very common in this country as well as in the States. The problem is to renew an existing hospital, on a site already crowded, in such a way that additional beds and additional facilities are provided without interfering with the work of the existing hospital. The development is phased, and in the end the whole of the old building will have been replaced by new ward units, treatment and administration areas. Isadore Rosenfield's long experience in hospital design enables him to deal effortlessly with hospital problems, and this example is typical of the Rosenfields' work in its lack of doctrinaire planning. For example the ward is designed in part on a double corridor system and in part on a single corridor system, each system being used in a way that is most appropriate to the function of that part of the ward. The patient's room is designed with the greatest care. This scheme is a rarity in that it is planned for vertical expansion of the ward building.

American hospital planning has reached a very high standard. The publications of the United States Public Health Service in the late 'forties must have contributed greatly to this.

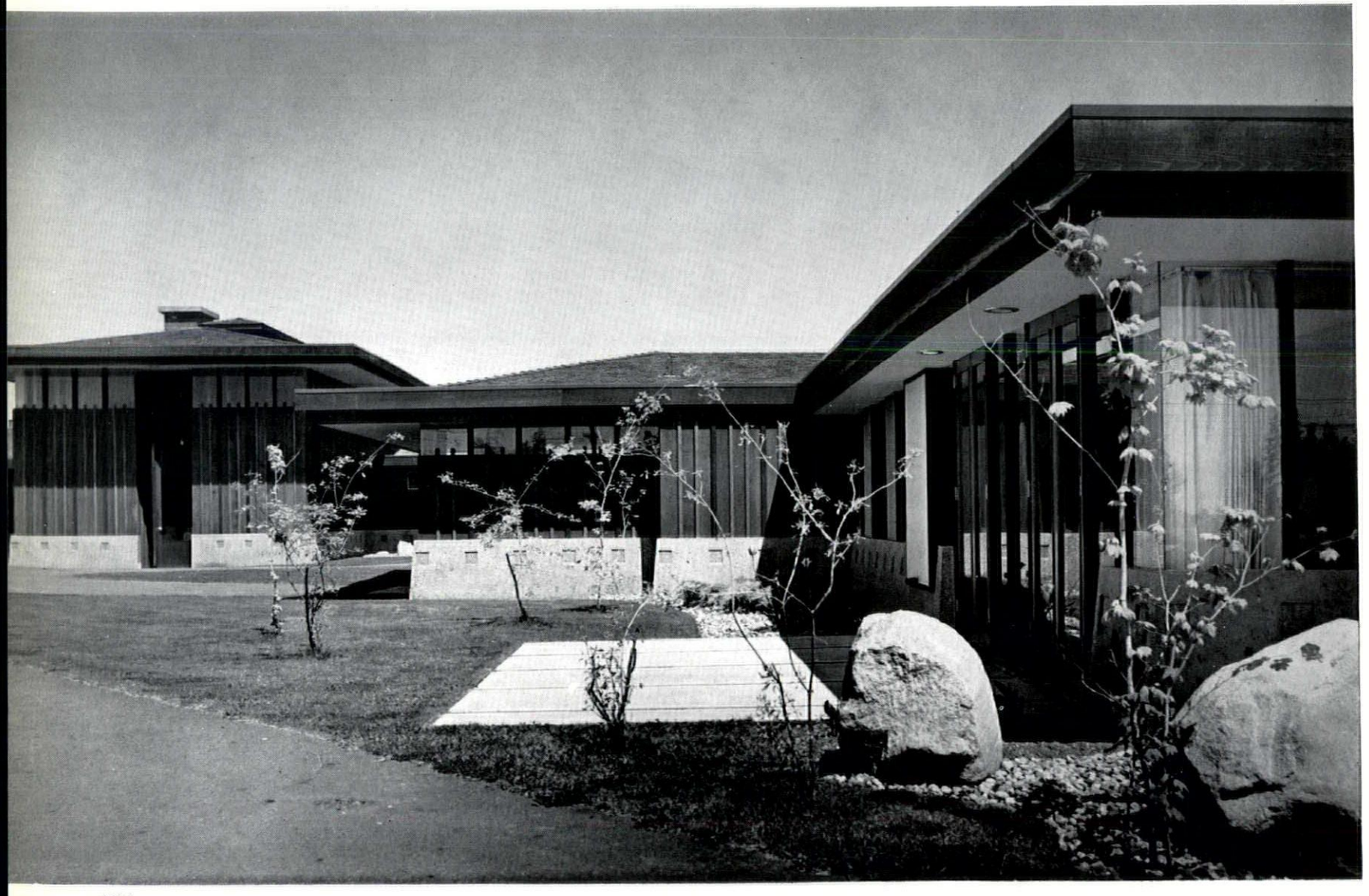
PRIVATE HOSPITAL, BERKELEY, BRITISH COLUMBIA

Fred Thornton Hollingsworth

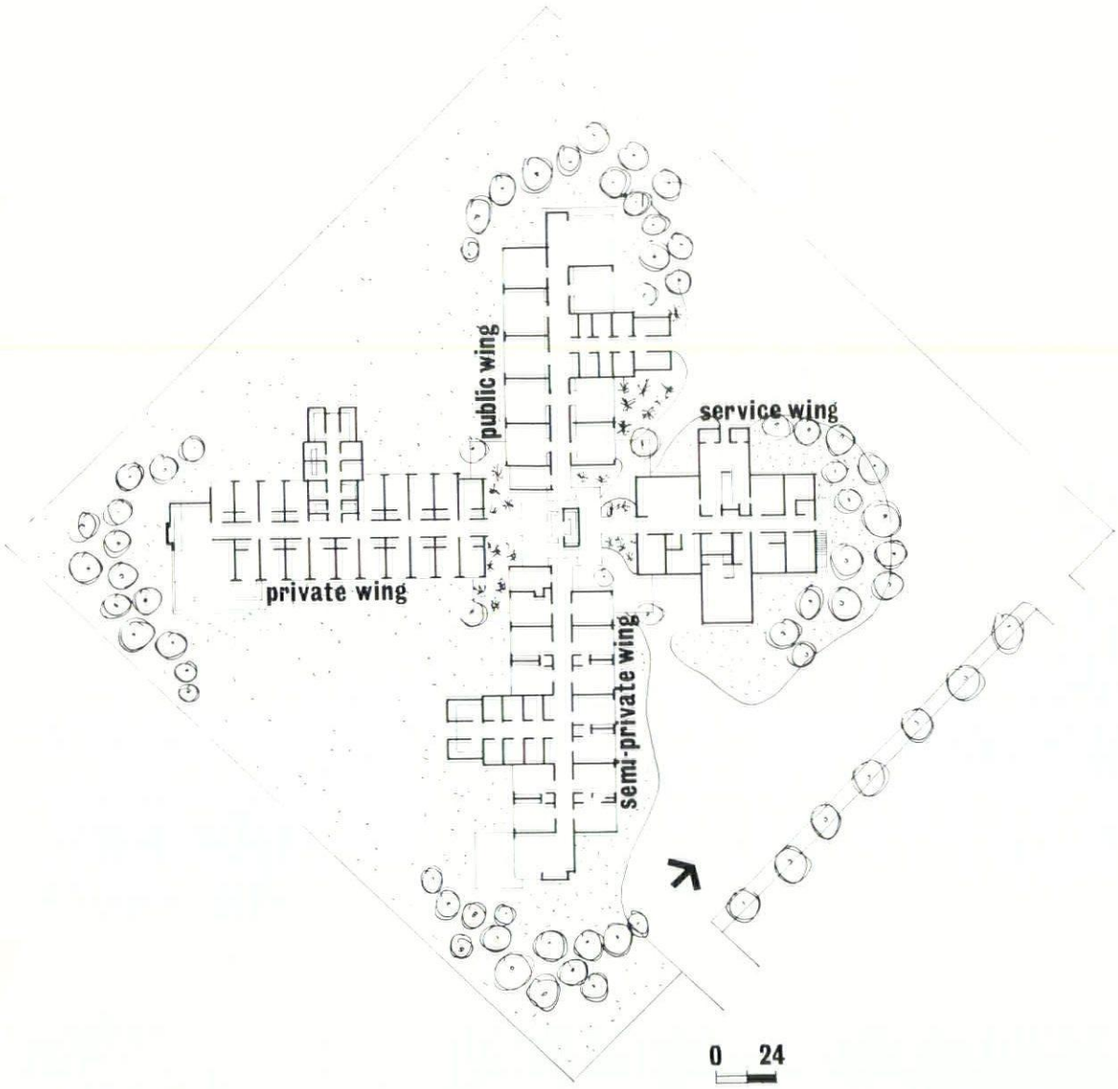
This small private nursing home, while conventional in function and layout, is an exceptionally attractive illustration of the more intimate, humane approach to the patient's environment which has accompanied the more complicated products of hospital research described elsewhere in this issue. The influence of Frank Lloyd Wright in the detailing of this hospital is peculiar to North America, but the warm textures and small scale are of general application, in contrast to the vast institutions handed down from the last century and too often repeated since.

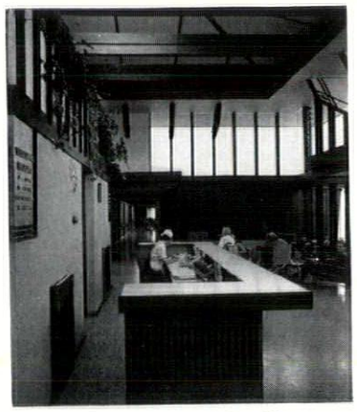


above, west end of private wing: below, view towards entrance with public wing on right and service wing ahead: opposite page, central waiting area and garden

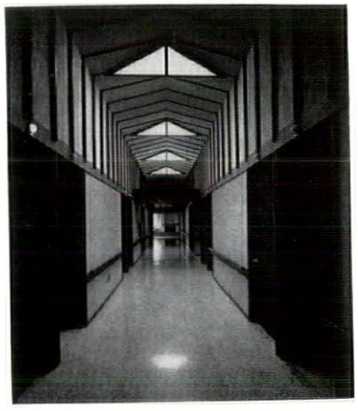




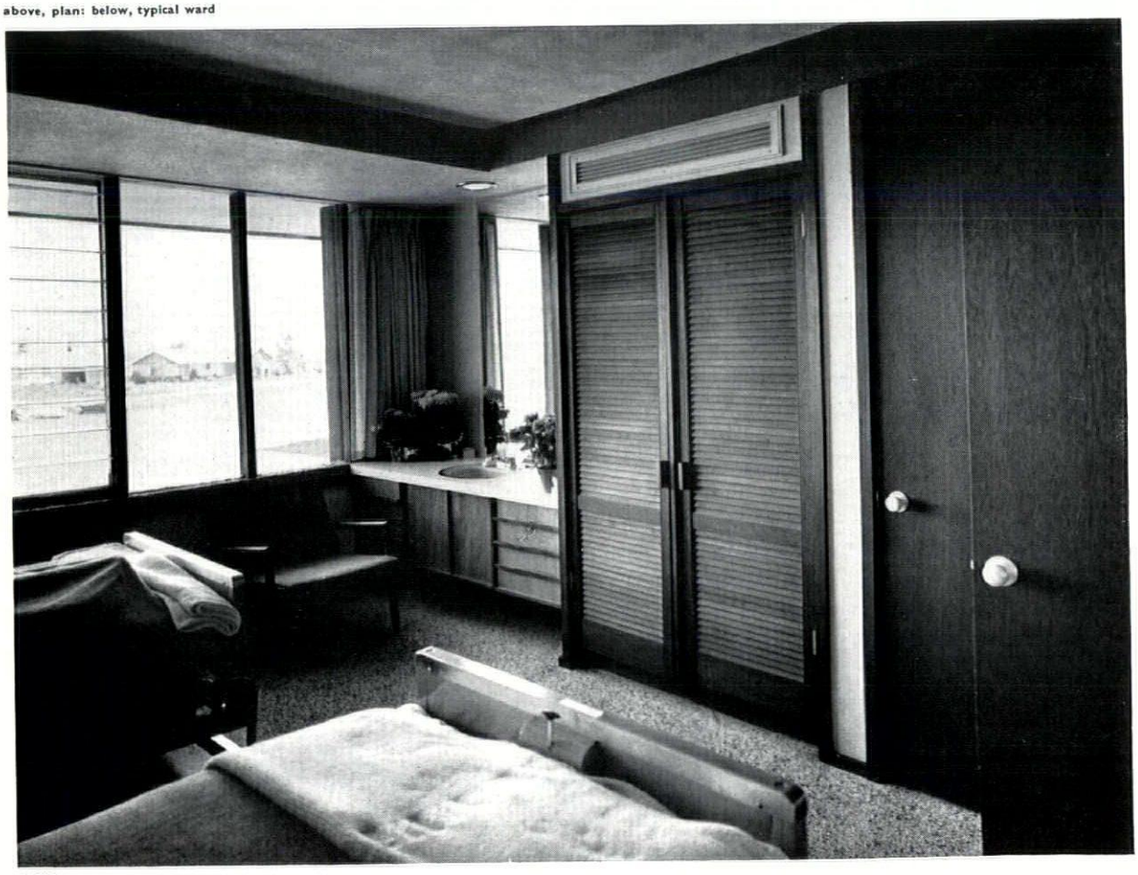




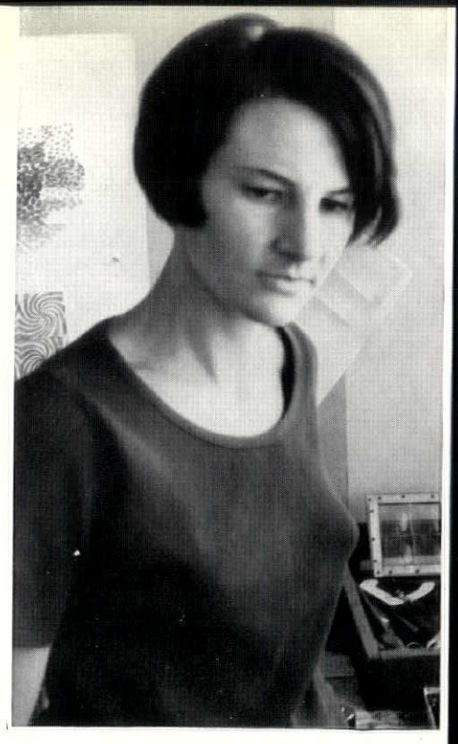
above, entrance hall: below, typical corridor



above, plan: below, typical ward



PRIVATE HOSPITAL, BERKELEY, BRITISH COLUMBIA



The unending ornamental designs of the Moors

From an interpretation by Shelagh Wakely

"I usually work out a design to fulfil an idea. This was the reverse. It resulted from a study of Moorish laceria patterns. These were ornamental mouldings of square or semi-circular design, consisting of a series of rings, with a rosebud in the centre, joined together to form an unending decorative motif. The design could be cut almost anywhere without being spoiled. Retaining the features of this repeat pattern idea, I tried to create an interesting background design that would in turn create more new variations as the cloth was draped."

Malaga. Cotton and spun rayon jacquard. 48″ wide. Twelve colourways.

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MEDICINE IN THE COMMUNITY

The years since 1948 when the Health Service was established have seen the rise of the hospital to a position of dominance in medical care and the decline of medicine in the community outside the hospital. Capital investment has gone almost entirely to the hospitals. They have commanded the best medical skills; only for hospital doctors is it essential to provide specialist training. Our institutes of postgraduate education serve no other purpose. The glamour of science is reflected in the hospitals; the impetus of progress continues to carry them forward. The result is an imbalance in our system of medical care and already we have begun to suffer the consequences.

The planners of the Health Service never intended this development. They had envisaged the service as revolving round the general practitioner, who would use its various parts according to the needs of his patient and play the leading role like the conductor of an orchestra. But the advance of medicine had already overtaken these ideas. In retrospect one can understand how natural it was in the midst of war to plan, almost nostalgically, for the society that existed before 1939 in terms of the kind of medicine we knew in that period. After all, few of the great discoveries that changed the face of medicine had been made—insulin (1921) and the sulpha drugs (1933) were known, but penicillin had not exerted its full impact and streptomycin and cortisone were in the future. The remarkable technical advances in surgery had hardly begun. But by the time the Health Service got under way in 1948 the explosion in scientific medicine was reverberating throughout the world, leaving in its wake an upsurge of therapeutic exuberance. The general practitioner had nothing to put against the headlines of success that celebrated the fame of the medical scientist and the hospital. The setting up of health centres which might have made possible an organic development in general practice had been put off for lack of money. What the Health Service had accomplished was the replacement of low-cost hospital care by high-cost hospital care.

THE FUNCTION OF MEDICINE

If the time-honoured function of medicine is a very simple one, to cure, prevent and mitigate ill-health, the manner in which it is realized is more complex, depending on the knowledge we possess and the ways in which it is applied. And these depend, in turn, on the extent to which the needs of society are recognized and understood and on the suitability of the institutions and forms of organization that are provided through which to fulfil them. In other words, a medical care system is the result of the interplay of medical and social forces, and if either set of forces is not fully effective the system is in danger of failure.

In the past, medicine had only a very limited capacity to benefit the community, and the problem of its relationship to society was not urgent. Through the latter half of the last and the early years of this century it was flexing its muscles and preparing for the tremendous advances that characterize our own times. In recent years rapid and radical social changes also have been taking place. Medicine, now capable of bestowing great benefits, has failed to recognize and understand them. It is not as closely in touch with reality as it ought to be—in certain countries, notably the United States and some of the developing countries, the separation from reality is dangerously wide. Ideas and intellect are invested in the future, as research, and only to a limited extent in the present, although discovery cannot achieve full significance until its benefits are delivered effectively. All over the world there is an urgent necessity to think out afresh the relationships of medicine and the medical profession to society.

THE ROLE OF THE HOSPITAL

The pattern of change that has led to the new situation is easy enough to discern. Death and disability are becoming more uncommon in childhood, adolescence and early adult life with the passing of the diseases of poverty and ignorance — malnutrition, tuberculosis, the great epidemic infections. Only in middle life does man begin to take up the heavy burden of disease. The role of the hospital is changing yet again. No longer has it to deal with mass disease on the scale that it did with tuberculosis, diphtheria or pneumonia. It can be more selective in its patients as technical resources increase and the incidence of disease alters in the community. It is more concerned with the aberrations of individual physiology, covering ever diminishing segments of the population, and exciting new specialties are becoming more important — replacement and reconstructive surgery, the medicine of biochemical and genetic defect. For the present, however, little can be done to cope directly with the degenerative diseases that begin in middle life; these have to be approached in a different way. It may be an exaggeration to suggest, as one American commentator has done recently, that in future only the failures of medical care will reach the hospital, although this would be true already of a case of diphtheria, of tuberculosis, of poliomyelitis and ought to be true of other diseases.

In the community, conditions of life have altered for the mass of people who used to produce the great hospital diseases of the past. Medicine is failing to meet their needs and in the new context of life has been unable to understand what ought to be its social responsibilities. People are living longer; they earn more and have higher standards; work is easier; leisure is greater. More people are marrying early and are having fewer children per family. Contraception is more certain and childbearing is completed sooner. Many middle-aged couples will be free of family responsibilities, many more mothers will be able to return to work later. Attitudes to disease have altered. Those whose experience of disease in childhood and early life has been confined for the most part to minor illness are less resigned to the possibility of ill-health and are more eager in anticipation of continuing health.

What people are looking for more than ever before is an enhancement of the quality of life. In greater measure this is what they ask from medicine. This is what medicine has not learned to give them except at a scientific and technical level through the hospital.

THE DOCTOR AND THE INDIVIDUAL

The patients of the new affluent society may suffer more from the consequences of social change than from disease in its old meaning. The altered age structure, the dissolution of the extended family, the shorter working week with its increased leisure, the greater tendency for people to move about as old industries die and new ones spring up—all have led to an increase in social isolation that has brought new stresses.

Medicine has held aloof from these changes. Basically, the doctor is still trained to deal with acute disease and with the acute phases of chronic disease. He is brought up in a concept of disease that has hardly altered for centuries. In the community, most of the patients seen by the general practitioner come with self-limiting or other minor acute illness or with neurotic and emotional problems. What passes for illness today in many people would not have counted for much in pre-war Britain with its heritage of nineteenth-century poverty mirrored in grim reality. Now, more often, people are seeking from medicine what they *want*, not merely what it is prepared to give. They are quick to learn; they know that hospitals can be more humane; they know that some diseases can be prevented by diagnostic measures applied very early; they are beginning to know that general practice or family medicine can be made more relevant to themselves. The middle class habit of finding out what is, or should be, available and making sure that one gets it eventually is already exerting pressure on the Health Service and on medicine.

Medical care is a social concept, 'medicine' is not. Our doctors are still taught to practise 'medicine.' This is the reason, fundamentally, why medical education is still inappropriate to society's needs and why those who should be providing leadership have been so slow to adapt the potentialities of medicine to new patterns of care. The doctor who is trained only to deal with traditional disease and to dispense traditional curative medicine is confronted with a patient who in many respects is a foreign being with attitudes, desires and motivations that have never been included between the covers of a medical textbook or on the sheets of a hospital case record. It is no wonder that doctors have begun to complain of the patients that attend with 'trivial' illness. Very often patient and doctor seem to be speaking different languages, and the doctor

finds himself in situations that are beyond him. To his dismay, he is dealing increasingly with patients who in the traditional medical sense are healthy.

The paradox is this—that in hospital one must practise the medicine of disease; in the community one has to practise as well the medicine of health, yet the doctor who works in the community has been trained only in the medicine of disease in a teaching hospital where, very often, research takes precedence over patient care and family and community medicine are hardly mentioned. This represents the failure of the medical school to meet its social responsibilities. If teachers of medicine and the leaders of its organizations are unable or unwilling to take note of the changes in the community and to make the necessary adjustments in teaching, undergraduate and postgraduate, and in patterns of care, they reduce the status of medicine to that of a purely technical service. It is no wonder that in the United States, where the alienation of medicine from social realities is even more marked, people are turning to various types of 'fringe' medicine and medical cults.

We speak of the general practitioner as 'the personal doctor,' 'the family doctor,' 'the community doctor' and as 'the specialist in family medicine'—alternative labels without significance. The personal doctor is one who provides continuing care over a long period. This is another myth, for continuing care is given only during episodes of illness; there is no attempt to establish continuity of care by concern for the patient when he is apparently well by anticipating the possibility of illness. The family doctor is one who should understand the subtle, dynamic relationships between members of a family—husband and wife, children and parents—and the problems peculiar to family life; but the GP gets no training in psychology, nor in the sociology of the family, and most are unable to cope with a problem like contraception.

The community doctor in the context of current general practice is an even more pretentious notion. No general practitioner looks after more than 3,500 patients scattered through the community. Nor is he taught anything about the relationships of people in this broad social complex, nor about occupational health, nor about the stresses peculiar to communities in a rapidly changing world — problems, for example, of immigration, of delinquency, of redundancy. The general practitioner who exists behind the facade of modernity supplied by these important-sounding titles practises disease-centred medicine as taught in the medical school and provides episodic care just as the hospital does. He takes up no positive attitudes of health promotion towards individual, family or community. He has not been trained to provide a modern comprehensive service of medical care. He spends little or no time on health education or preventive care. He may find it difficult to help people with the personal problems that arise out of illness and he does not take sufficient note of the emotional and social aspects of ill-health. He has little training in the acute phase of mental illness nor in the presymptomatic and chronic phases of mental and physical illness.

Modern ideas of preventive care offer the general practitioner the opportunity to broaden and deepen his practice of medicine to the benefit of his patients. For many conditions in which the possibility of cure is remote the only approach is early recognition by practising presymptomatic diagnosis to detect disease before symptoms are experienced. It may be possible to retard progress and forestall consequences by early treatment. Treatment *is* prevention if given early enough.

It follows that a main preoccupation of medicine must be with the potential patient. Modern epidemiology points to vulnerable groups who are particularly exposed to a risk. Age, occupation, environment, habits of living, familial tendency may alert the doctor in different patients to the possibility of future illness. The field of presymptomatic diagnosis belongs to the GP. He is the only doctor who deals constantly with the potential patient; he has a captive population in his hands. But he must know his patients—their lives, their work and family situations, the various stresses to which they are exposed. When early abnormality is uncovered no definite treatment may be available and the doctor must be health educator and adviser in an attempt to alter his patient's environment and way of life so as to control the disease.

GROUP PRACTICE

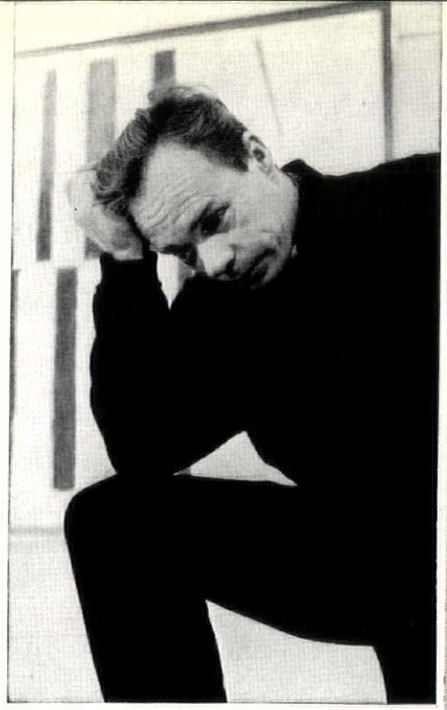
This is the medicine of health not of disease; one is attempting to push back the frontiers of disability. It points to a more comprehensive and more intensive practice of medicine by the general practitioner, a broadened responsibility that must enhance his status and help him to meet the needs of the community.

If the general practitioner is unfitted by his medical education to provide a new system of community care he is also inhibited by the organization in which he works. The basis is the single-handed practitioner — the partnerships that are more common now really do not alter this. The GP cannot cope with new medical responsibilities nor efficiently deploy the wide range of social and welfare facilities unless he is prepared to associate in new forms of organization. Furthermore, the shortage of doctors, which can never be fully met in view of the many competing demands for manpower, requires that his skills and knowledge be used more efficiently. The only feasible scheme is group practice, combining six or more doctors in specially designed premises and extending its operations as a health team through a full complement of ancillary workers—health visitor, nurse, district midwife and social worker. A group practice of this kind might look after 12,000-20,000 people, mostly as families. It could provide personal, family and community care continuously because of its orientation towards health. It could provide curative, preventive and rehabilitative care at a level higher than ever before. It seems obvious that medicine practised in this setting would be far more satisfying to doctors as well as patients. The general practitioner would be transformed into a doctor of specialist status. He would no longer be a 'general practitioner'; a halter that has tied him to the past would be cut and he could grow and develop in a new environment. Medicine would have begun to fulfil its social responsibilities more adequately.

Group practice presents many possibilities of new relationships and a new division of responsibility within the Health Service. If one were drawing up an experimental plan for testing its potentialities, one would like to discover what new balance could be achieved with the local authority, since so many people now working under the direct control of the medical officer of health would be deployed through the group practice. What changes might be brought about in the role of the MOH? If a town were covered by a cluster of group practices, might he not become responsible for the overall strategic direction of community services with an efficient monitoring system to assess social change and levels of health?

Relationships with the hospitals, too, could become more valuable. Members of a group practice could work sessions, in turn, in the hospital; hospital consultants could work sessions in the group practice. The movement of ideas and information should be in both directions. Members of the group practice might cultivate specialist skills — dermatology, paediatrics, obstetrics—of benefit to all the patients.

Although this development must come about if medicine in the community is to survive other than as a kind of public utility, it is doubtful if trends are pointing in the right direction. The chronic discontent in general practice which might have generated an urge for change seems to have encouraged the demagogue rather than the true revolutionary. General practice is more introspective than ever, cherishing its grievances, willing to barter them only for measures of relief that strengthen reaction and isolate it even more effectively from reality. The time may be ripe for the creation of a 'third force' in medicine—the patients. One of the conspicuous defects of the Health Service has been its failure to take sufficient account of the patients' needs and desires. It is surprising that the burgeoning consumers' movement, before now, has not spread into the field of medicine where public pressure judiciously applied could remind both Ministry of Health and the medical profession of the essential purpose of the Health Service.



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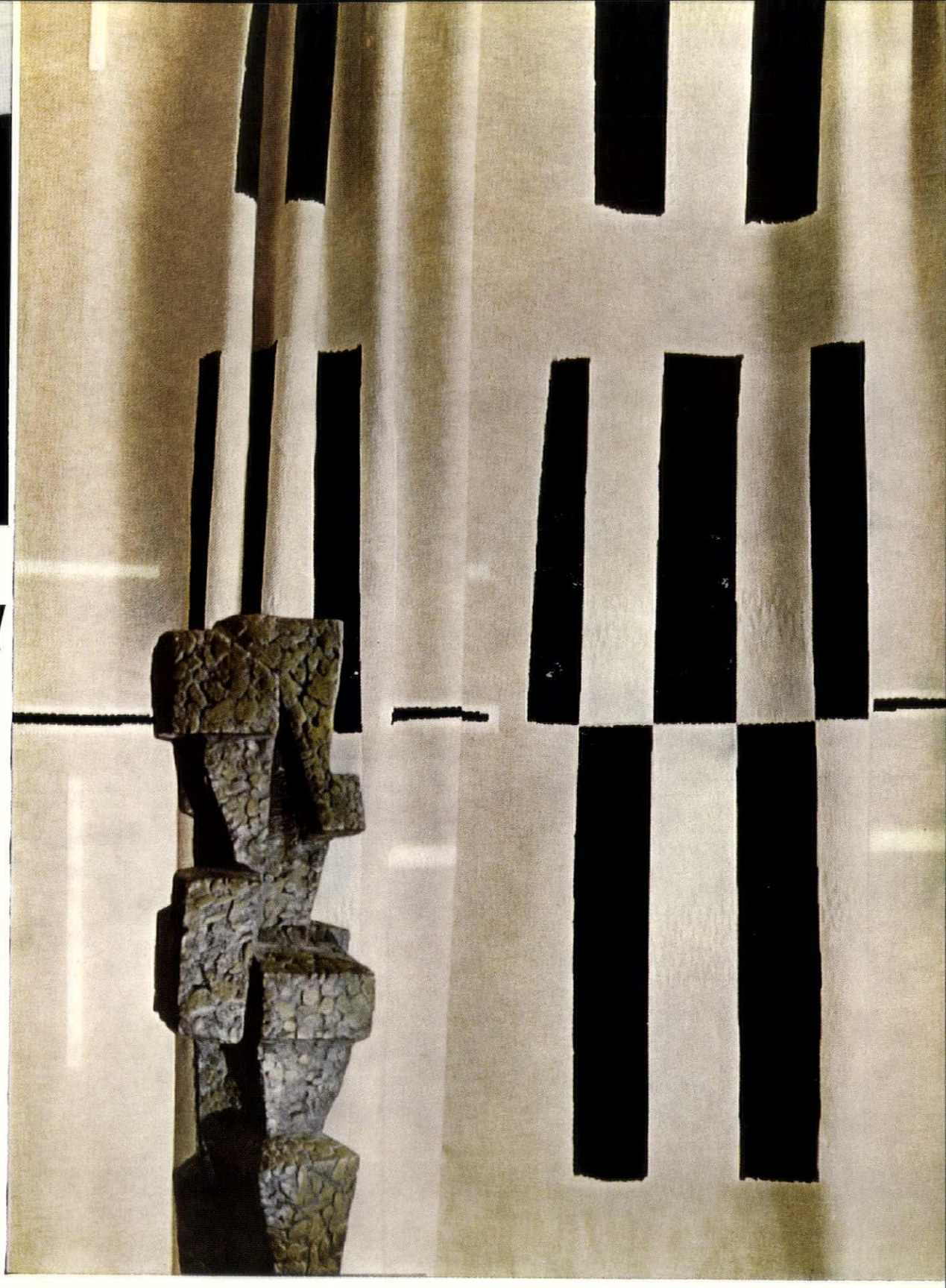

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HEALTH SERVICES IN THE YEAR 2000

Being asked to speculate in 1965 about the shape of the Health Services in the year 2000 one is immediately jolted into the uncomfortable recognition of how wrong one's first subconscious notion of 'far-offness' really is. 2000 is only 35 years from now, well within the normal life expectancy of those under 35 today, that is about half our present population of 47 million. Equally many of those between the ages of 17 and 35 at present employed in one of the health services will still be working by then. Looking backward one receives a second rude shock: 1965 is already 17 years since the introduction of the National Health Service in 1948—we can already look back about half of the time for which we want to project our imagination forward. Thus what seem *prima facie* wild speculations turn out on closer inspection to be an exercise in forecasting largely from trends which, while unpredictable in detail, are already discernible in outline. It would be fascinating to read what someone had attempted to forecast in 1930 about the state of the Health Service in 1965 and assess the accuracy with which this was achieved.

HEALTH SERVICES 1965–2000

In looking to the future and trying to identify those social, economic and administrative changes which might have the greatest impact on the tasks facing architects, it might be best to concentrate on those questions of paramount importance to all planners: what functions will the building which they are to design be expected to perform; i.e. in a health building who will be the patients; how will they be treated; what staffing will be involved and, of equal importance, who will be the clients from whom they will receive their orders and directions? For what organizations will the architect by 2000 find himself working; what will be their powers and the scope of their authority?

HOW MANY PATIENTS?

In 1949, the first full year of the National Health Service, the number of patients going through hospitals in England and Wales was less than 3 m. In 1959—ten years later—it reached 4 m. and by 1963 it was more than 4½ m., that is an increase of more than 50 per cent in 14 years, or approximately 4 per cent per annum, far in excess of the growth of the total population over the same period (Table I). As the number of beds barely changed over the same period, this big increase in the turnover of patients could only be achieved by the more intensive use of beds and by a steady reduction in the length of stay of individual patients.

Table I: Hospital trend indicators

	1949	1963
Beds	475,400	472,100
Average occupancy	397,600	404,000
In-patients	2,937,000	4,576,000
Out-patient and casualty attendances	36 millions	43 millions

Source: Reference [15]

What were the underlying causes of this trend? How far can their continuation or change be predicted from present events? How far could the experiences of other countries be a guide?

1. The latest reports of the so-called *Hospital In-Patient Enquiry* (1961)[1] reveal that in that year—excluding patients in psychiatric hospitals and convalescent homes—848 patients per 10,000 of the population were admitted to hospitals in England and Wales. Nevertheless even this latest admission ratio of 848 is still very much below equivalent ratios in Sweden (1,290) and the United States (1,360).[2] Whether the causes for the lower admission figures in this country are hidden health needs not yet diagnosed or expressed in overt demand for hospital care or whether the higher figures could be interpreted as demands for hospitalization aroused by an affluent society, there is no reason to assume that the already pronounced trend for higher hospital admission rates in England and Wales will not persist in the years to come.

2. Moreover changes are occurring in our population as regards its size and its composition which will have a far-reaching effect on the potential demand for hospital care. The population in England and Wales had reached about 40 m. by 1931 but was then expected to decline owing to a low birth-rate (14 per 1,000). Contrary to this pre-war forecast, however, it had expanded by 1963 to over 47 m.[3] and is now predicted, on the basis of a birth-rate between 18–19 per 1,000, to reach nearly 65 m. by the year 2000.[4] Applying to this population total only a modest increase in hospital admissions from the present 848 per 10,000 to about 1,000 per 10,000, this would mean, again excluding pscyhiatric patients, that about 6½ m. potential patients will demand, by the year 2000, annual admission to our hospital beds.

3. In 1963, 516,000 out of a total of 856,000 live births occurred in hospitals,[5] that is a hospitalization rate of 60 per cent. This is 10 per cent below the optimum figure of 70 per cent suggested by the committee on maternity services (Cranbrook Report) in 1959. Nevertheless our maternity services experience already severe strains. The maternity policy for the future has to be settled, however, within the projected births data provided by the Registrar-General.

Table II: Estimated live births in England and Wales

1970	886,000
1980	925,000
1990	1,065,000
2000	1,147,000

Source: Reference [4]

Assuming that the lying-in period for mothers could be, in a clinically and socially acceptable way, drastically reduced from its present average of 10 days, there is surely plenty in this data to make our planners and architects think and worry about?

4. But the increase in the birth-rate does not create the only problem. It is by now fully appreciated by health authorities all over the world that the demands for health and hospital care vary over the life cycle of the individual. They are higher in early youth then the average rate drops to a low between 15 and 45 after which they begin to rise and reach a maximum after the age of 65. Moreover this phenomenon is even more prominent in men than in women. The latest information from the 'Hospital In-Patient Enquiry' fully illustrates this pattern (Table III).

As far as one can predict, this characteristic relationship of age and hospital admission, which is correlated with changing morbidity risks over the life cycle, will continue over the next 35 years. Planners will have, therefore, to pay particular attention to three main sets of facts revealed by the population projections[4] to the end of this century:

(*a*) The number of under fives who amounted to 3.9 m. in 1963 will increase to 5.7 m.

(*b*) The number of over sixty-fives now 5.6 m. will rise to 7.7 m. that is by 2 m. or over 30 per cent.

(*c*) The surplus of women, a characteristic feature of the population since the first census in 1801 and now about 1¼ m., will have practically disappeared by 2000 and created a completely new phenomena in British demographic history (Table IV).

5. To express the foregoing data in a more concrete form: the hospital plan launched in 1962 foresaw by 1975—in relation to an estimated population of about 49½ m.—a total number of 420,000 beds in England and Wales, that is a reduction of approximately 55,000 from the present bed complement of 475,000. If only the same bed ratios on which this plan is based—and there are indications that they have been underestimated—are being applied to the population of 64.8 m. predicted for the year 2000 a total bed complement of about 550,000 would be required (Table IV).

It becomes clear that between 1975 and 2000 an additional 130,000 beds will have to be provided to catch up with the population increase. In addition, how-

Table III: Admission rates (1961) per 10,000 by age groups

Sex	0	5	15	45	65	all ages
Male	973	646	467	796	1,451	715
Female (excluding obstetrics)	677	517	568	703	1,095	679

Source: Reference [1]

Table IV: Hospital beds

Type of beds	Bed population ratio	Bed Totals 1975 (in 1,000)	Totals Forecast 2000 (in 1,000)	Increase
Acute	3.4	168	220	52
Geriatric	1.3	66	83	17
Maternity	0.55	27	35	8
Mental illness	1.9	92	125	33
Mentally sub-normal	1.3	64	83	19
Others	—	3	4	1
		420	550	130

Source: Reference [21]

ever, one has to visualize that by the year 2000 a large part of the 420,000 beds of the current plan will be in buildings fifty years old or more. At least half of this total, that is about 210,000 beds, will, therefore, have to be replaced by the turn of the century to avoid repetition of the present state of affairs where we can only make-do with obsolete and obsolescent hospitals. In short, to make sure that '21st century medicine can be practised in 21st century hospitals' it will be necessary to construct, between 1975 and 2000, about 340,000 new beds—210,000 as a replacement and 130,000 additional ones.

THE PROBLEM OF STAFFING

During the discussions about the National Health Service in the 1920's and 1930's it was believed by many that such a free service—after an initial rush to cope with pent-up demand—would quickly settle down and become economically self-supporting by helping to increase the nation's productivity. The pattern of events since 1948 has disproved this assumption and we would all now broadly agree with the statement of the former Minister of Health, Mr. Powell, that 'it is not health services which produce wealth but wealth which makes possible expenditure upon health services.'[6] There is seemingly—and fortunately—no end in sight to the possible achievements of medical science and technology for suffering humanity. The deadly disease, the incurable affliction of one age, is reduced in the next decade to a routine operation and subject to successful cure. The layman can only speculate in wonder about further progress which will stem from the discoveries yet to be made in the next 30 years in cellular biology, immunology and their application with the help of bio-physics and bio-engineering. What is clear, however, is that all discoveries are bound to change existing patterns of care and to demand more complex and costly diagnostic and therapeutic equipment needing even more highly trained staffs.

In 1949 the total hospital staffs were 347,800. By 1964 this figure increased to 492,000 or by about 42 per cent. Even more significant are perhaps the trends within the major staff groups (Table V).

If this trend persists then the need for hospital staff will go on increasing over the next three decades and, basing a forecast on an assumed increase of patients to about 6½ m. per annum, it is perhaps not too wild a guess to predict equally a need for about 650,000 to 700,000 hospital staffs of all grades. Similarly the development plan in community care foresaw, in 1963, that the staffs of local health and welfare authorities, which were then estimated at 85,000 would by 1972, that is in nine years, have to increase to nearly 120,000 or about 40 per cent[7] to implement the plans properly.

How far is it a realistic assumption that these staffs for the health and hospital services will be forthcoming? In particular one cannot overlook the economic implications: and one has to bear in mind that—with present methods of running our hospitals—staff costs (wages and salaries) absorb about 60 per cent of all current expenditure. A brief analysis will indicate some of the problems which have to be faced. Health and hospital services, as indeed most public services, were the first to feel the impact of full employment. Hospital employment in the pre-war days of large scale national unemployment was, owing to the security it offered—attractive enough to outweigh all other disadvantages such as low wages, awkward working hours, etc. Now all this has changed, and in spite of considerably higher remunerations health services experience great staffing difficulties resulting in closed wards and overcrowded clinics. Many only keep going by relying heavily on immigrant labour.

The maintenance of full employment remains a cardinal policy of all governments irrespective of party. The hoped-for growth of our national economy will result, according to official forecasts, in very tightly stretched manpower resources at least up to 1980.[8 9] What might be the manpower situation beyond the 1980's for the rest of the century is, at present, much more difficult to foresee. If events in Britain follow the pattern which has emerged in the United States in recent years where, in spite of a booming economy, about 4 m. people are persistently unemployed (approximately 6 per cent of the labour force) largely as a consequence of automation in industry, then perhaps the health services could expect to become again an attractive, expanding sector of employment. As far as doctors and nurses are concerned, however, even such a complete turn in events offers little hope of substantial improvement.

In the early 1950's the Government of the day appointed a committee, under the chairmanship of Sir Henry Willink, to consider the number of medical practitioners necessary for the provision of adequate medical care in this country. Based on the population trends of the post-war years up to 1955 (the Committee reported in 1957) when the immediate post-war bulge looked like disappearing, it recommended a reduction of 10 per cent in the intake of students to medical schools.[10] This is only now being restored when the implications of the subsequent population 'explosion' have become more clearly appreciated. As it takes about 15 years to produce a fully qualified medical specialist and the medical schools themselves may not find it easy either to attract a larger number of students or to expand their teaching staffs, a shortage of doctors seems inevitable for some time to come, taking as a norm current doctor-population ratios. This shortage will probably be intensified by the recent expansion of hospital medical staffing structure based on the Platt Working Party[11 12] and by the possible reduction of the number of patients registered with general practitioners resulting from re-negotiations of their contracts.

An equally long-range shortage of nurses seems unavoidable. From the latest population census a trend significant for this problem emerges—the steady decline of single women in the relevant age groups from 20–34 (Table VI).

The spinster, the backbone of the nursing service in the past, is a fast disappearing phenomenon at a time when the health and social services have to compete for their diminishing numbers with other sectors of the economy.[13] Official forecasts of the British working population predict by the 1980's a further reduction of the present total of single women from about 4 m. to 3½ m.[14] Major changes in the nurse staffing structure of the Health Service seem, therefore, unavoidable. Considerable thought will have to be given to the creation of additional sources of supply particularly through the recruitment of more part-time staff, that is married women (in 1963 nearly 60,000 part-time nurses were already employed).[15] This, in turn, will require that far more attention is given to personnel management and problems of organization. More day hospitals, more night hospitals and perhaps '5-day hospitals' might provide some of the answers. It will also be necessary to ascertain whether more men could be induced to join the nursing profession—being less subject to wastage by marriage. Of equal importance will, however, be efforts to decrease demands for nurses arising from tradition and current practices. Work study, operations research, more automation may help, but planners will have to pay particular attention to the staffing problems by improved layouts and equipment in the new health and hospital buildings.

THE CLIENTS OF THE FUTURE—THE ORGANIZATION OF THE HEALTH SERVICE

Three questions seem of outstanding importance: what will the internal organization of the new District General Hospital look like? What will be the future of Regional Hospital Boards in the new era and—perhaps most significant—in which ways will the rise of community medicine affect the over-all structure of the health services—must these remain divided?

As to the first, can there really be any doubt that the internal organization of a modern General Hospital, with about 1,000 beds absorbing national capital resources of some £10m., with a staff of about 1,200 and probably costing annually £2-3m., has to be

Table V: Hospital staff trends

Class	Numbers 1949	1964	Increase	%
Medical	11,900	20,200	8,300	70
Professional and technical	16,700	29,500	12,800	76
Nurses and midwives	137,000	210,900	73,900	54
Administrative and clerical	25,600	38,000	12,400	50
Ancillary	156,600	193,400	36,800	23
Total	347,800	492,000	144,200	42

Source: References [21] and [22]

Table VI: Proportion of single women per 1,000 in each age group in four census years

Age groups	1921	1931	1951	1961
20–24	726	742	518	420
25–29	410	406	217	157
30–34	260	249	146	109

Source: Reference [23]



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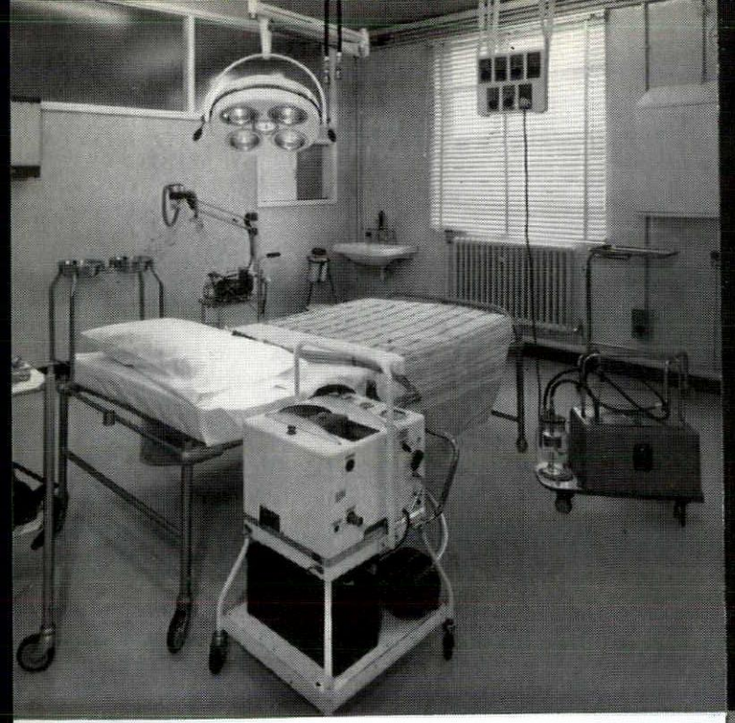

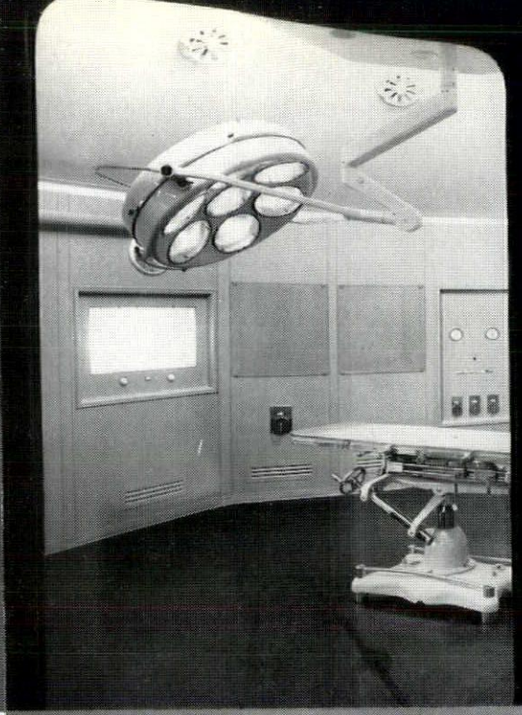

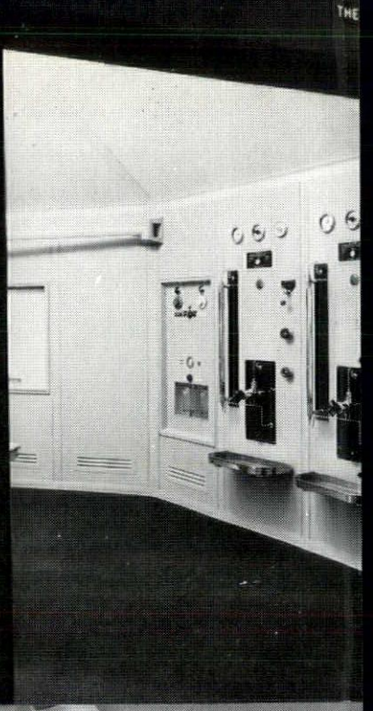

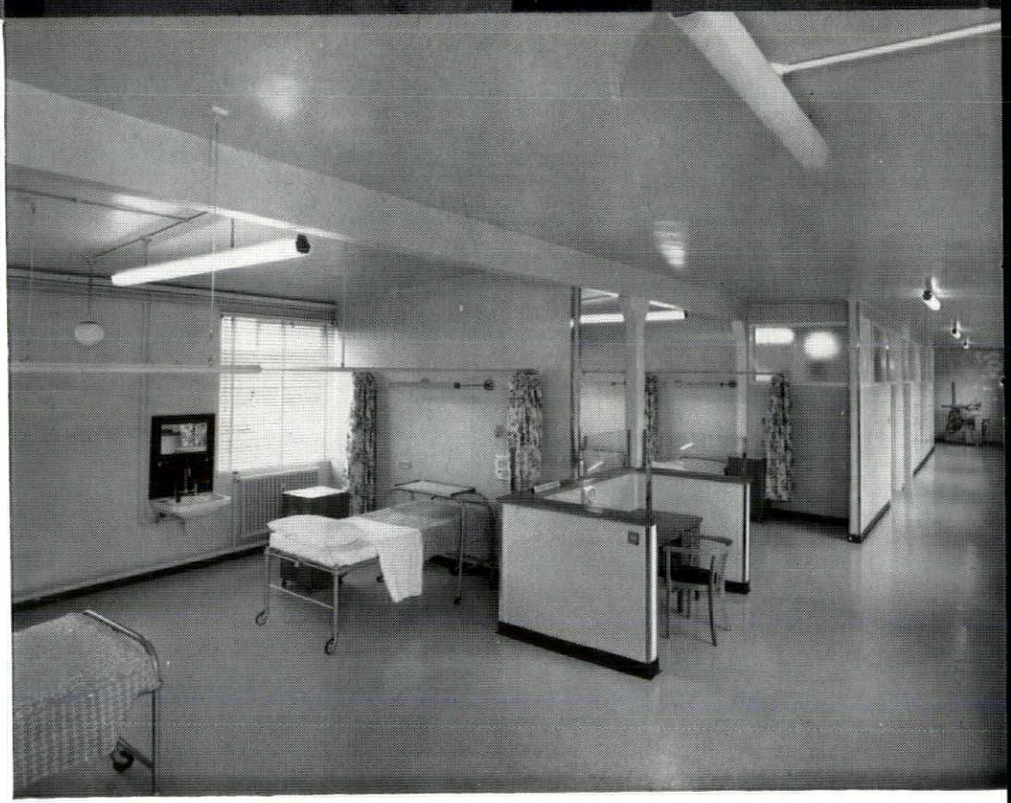

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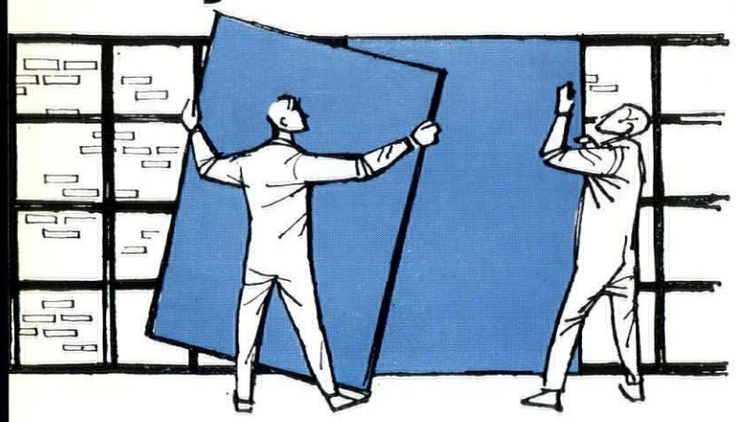

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radically transformed? The deficiencies of the present 'tripartite system' of administration inherited from the voluntary hospitals and relying on the voluntary co-operation of the three main service heads—medical, nursing and lay[15]—are becoming more and more obvious. Without a strong central direction, which the existing boards and committees of voluntary part-time members could not provide, there is bound to be delay, overlapping and wastage, all leading to inefficient use of scarce national resources. Such a focal point of over-all control has long been found indispensible in many modern large American hospitals. It is a pity that a controversy persists in this country over who should fill this post. Should it be a layman or has it to be a professional, in particular a medical man? This controversy seems irrelevant, as it overlooks the essential factor in the situation, that such a person, irrespective of his or her background, must be a fully trained and qualified administrator who alone could be entrusted with the task of managing the modern hospital in all its complexity[17], whereby he should be supported by a qualified team of specialist advisers at present conspicuously lacking.

In reviewing the future internal organization of our hospitals equally great attention will have to be given to the division of the big District General Hospital into manageable and visibly distinct sub-units with considerable internal autonomy. In this way it should prove possible to combine the advantages in technology and economics of the large hospital with the preferences of individual patients and staff for smaller and to them more congenial surroundings.

Will Regional Hospital Boards survive? To venture a prediction one has first to recall why the present fifteen Regional Hospital Boards in England and Wales were originally set up. It was considered at that time that the planning, the organization and the effective organization of hospital services demanded areas far larger than the average local authority. It was assumed that the optimum area should be one containing a population of approximately 3 to 4 m.[18] To carry out this task new organizations had to be constructed as it could not be performed by the 146 local health authorities. The recent attention given to regional economic planning[19] and the appointment of Regional Councils and Boards in the Spring of 1965 indicates clearly that the regionalization of the hospital services in the 1940's was by no means a temporary aberration in administrative history but a trend setter. It is by now fully recognized that certain functions could only be effectively performed over larger areas beyond the scope of the traditional local authorities.

One could, however, imagine that once the new Regional Economic Planning bodies have settled down they should be able to take over functions in other fields.[20] This could mean, in due course, that hospital and health planning functions would also be transferred to them and concentrated in the new organizations. Before this could be done it might, however, be necessary to clear up the overlapping of areas: the territorial coverage of the 15 Regional Hospital Boards does not coincide with that of the 10 Government standard regions for which Economic Planning bodies have been appointed.

Such a development could represent a two-fold achievement. First of all, it would bring about a streamlining of the present complex pattern of overlapping 'single function' regions; there are now different regions not only for planning bodies and Regional Hospital Boards but quite different ones again for the Post Office and Electricity Boards[21]. Secondly Regional Boards would then become responsible not only for hospital planning but also for community care and general medical service. These new 'all purpose' regions could thus in effect become Regional Health Boards, desired by many so often in the last seventeen years but proving so elusive in practice.

CONCLUSIONS

Fundamentally, future changes to our health services are depending on the development of medical science and the related technologies. Nobody can exactly forecast when and what new discoveries will be made, but one thing is certain—medical science and its supporting disciplines won't stand still—thus changes are inevitable and have to be anticipated in any plan. The preceding analysis postulates broad trends in the social, economic and administrative background against which the future service has to be planned.

REFERENCES

1 *Report on Hospital In-Patient Enquiry* for the year 1961. Ministry of Health and General Register Office, Part I (1963) and Part II (1964). HMSO.

2 *Problems and Progress in Medical Care—Essays on Current Research.* For Nuffield Provincial Hospital Trust by Oxford University Press. 1964.

3 *Annual Abstract of Statistics* No. 101. Central Statistics Office. HMSO, 1964.

4 The Registrar-General's Quarterly Return for England and Wales 4th Quarter, 1963. No. 460. HMSO, 1964.

5 The Registrar-General's Quarterly Return for England and Wales 3rd Quarter, 1964. No. 463. HMSO, 1965.

6 J. Enoch Powell: *Health and Welfare.* Proceedings of the Royal Society of Medicine, Vol. 55. January, 1962.

7 *Health and Welfare: the development of community care.* Plans for the Health and Welfare Services of the local authorities in England and Wales. HMSO, 1963.

8 Manpower Studies, No. 1: *The pattern of the Future.* Ministry of Labour. HMSO, 1964.

9 *Estimate of the future Working Population.* Economic Trends No. 107. HMSO, 1962.

10 Report of the Committee to consider the Future of Medical Practitioners and the Appropriate Intake of Medical Students. HMSO, 1957.

11 Medical Staffing Structure in the Hospital Services. Report of the Joint Working Party. HMSO, 1961.

12 Medical Staffing Structure in the Hospital Service. Ministry of Health Circular HM (64) 94.

13 T. E. Chester: *Growth, Productivity and Womanpower.* District Bank Review, September, 1962.

14 *Forecast of the Future Working Population:* 1964–1980. Ministry of Labour Gazette, January, 1965.

15 *The Health and Welfare Services.* Report of the Ministry for the year ended 31.12.1963. HMSO, Cmnd 2389.

16 Report of the Committee on the Internal Administration of Hospitals. HMSO, 1954.

17 Rosemary Stevens: *Hospital Administration—The Status Quo.* Medical Care, Vol. II, No. 4. Autumn, 1964.

18 *Background and Blueprint* (Hospitals and the State, No. 1). Acton Society Trust, 1955.

19 T. E. Chester: *The Challenge of Regional Planning.* District Bank Review, June, 1964.

20 T. E. Chester: *Is Economic Planning Enough?* District Bank Review, March, 1965.

21 Civil Estimates 1964–65, Class VI. House of Commons paper 101-VI. HMSO.

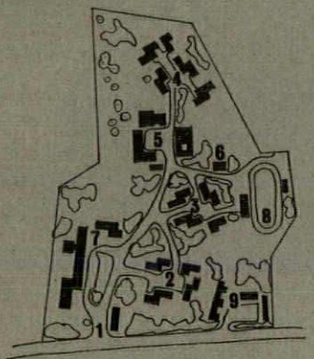
22 A Hospital Plan for England and Wales, HMSO, Cmnd 1604.

23 Census 1961 (England and Wales): Age, Marital Conditions and General Tables. General Register Office. HMSO, 1964.

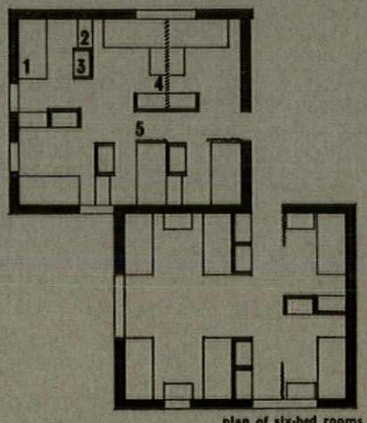
PSYCHIATRIC HOSPITALS

WORLD HEALTH ORGANIZATION: PSYCHIATRIC UNIT PROJECT

In 1959 a World Health Organization book *Psychiatric Services and Architecture* was published. The authors, A. Baker, R. Llewelyn Davies and P. Sivadon, put forward proposals for housing acute psychiatric patients in village-like communities in which clusters of buildings, each related to small therapeutic units of fourteen patients, were grouped around a social centre, the whole being analogous with a normal community. These plans have had considerable influence on the development of psychiatric hospital planning. The two schemes which follow demonstrate this.

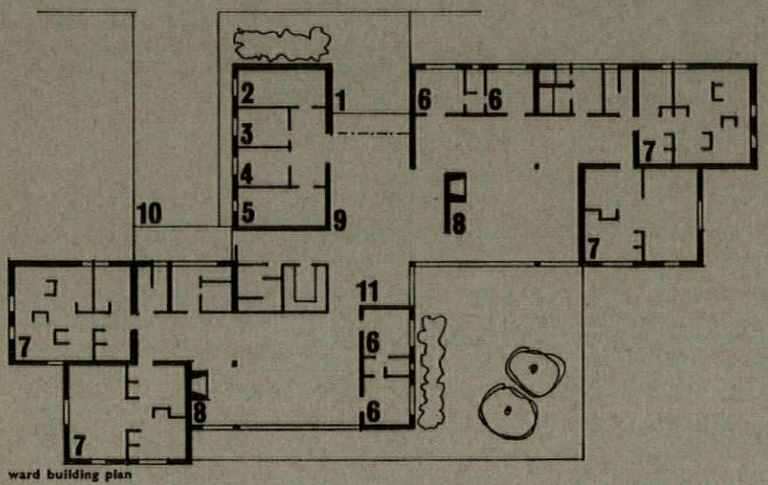


site plan
key
1, entrance
2, 3, 4, villages
5, social centre
6, boiler house
7, medical centre
8, sports area
9, staff housing



key
1, bed
2, desk
3, cupboard
4, movable screen
5, curtain

plan of six-bed rooms



key
1, entrance
2, treatment
3, doctor
4, interview
5, sister
6, 1-bed rooms
7, 6-bed rooms
8, day space
9, sitting
10 deliveries
11, dining (kitchen on left)

ward building plan

COMMENT: *Of all specialist hospital building types it is probable that there are fewest new buildings for psychiatric medicine and, while there is increasing agreement amongst specialists as to the kind of building which is suitable, there is no branch where this differs so much from the buildings which have been inherited from the past and in which most patients are presently treated. Traditionally in Britain and in most parts of the world patients in need of psychiatric treatment have been housed in very large groups in buildings designed primarily for custodial care. These are usually remote from the communities they serve and deliberately isolated from them by large grounds. It is becoming increasingly difficult to recruit staff for these institutions due not only to the obsolete equipment in the buildings and their generally depressing nature, but also because their very remoteness isolates staff from normal community activity. In past years psychiatry has become an active branch of medicine. Custodial care is now replaced by active therapy and the stay of patients in psychiatric hospitals has been greatly reduced in length. The physical remoteness from communities is now recognised as being anti-therapeutic and there have been considerable developments in the use of group therapy which is aided by buildings designed to encourage the formation of family sized groups. Some specialists believe that mental illness can, in its acute phase, be dealt with within the environment of a general hospital and often in wards that are similar in every respect to those for the treatment of other medical and surgical conditions. Also increasing is the need for out-*

continued on page 477



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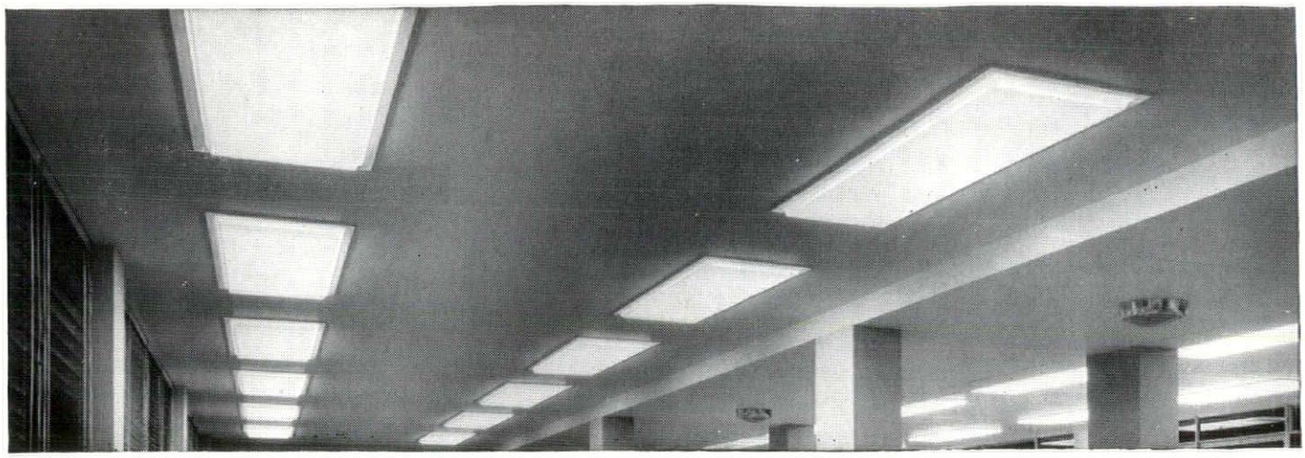

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continued from page 476

patient facilities and day hospitals for patients who are leading otherwise normal lives to receive treatment for part of the day. There are some who believe that the future of psychiatric medicine lies mainly in the provision of day hospitals and treatment centres.

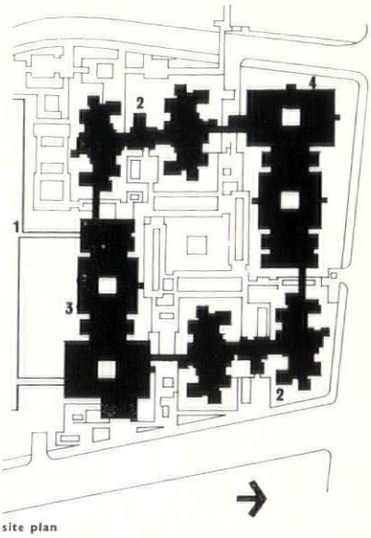
A small committee convened under the auspices of the World Health Organization in 1959 brought together many of the new tendencies in psychiatric medicine and made proposals for buildings suitable for the practice of active therapy. The basic unit in this plan is an informally arranged six-bed group in which all the furniture can be moved so that different sized social units may be formed readily. Two such groups share a day space and a pair of groups are combined in a single, domestic-sized building sharing a large day space. Various group sizes can thus be easily formed. A possible criticism of the architectural implications of the plans is that they are inclined towards the village as an ideal community. There seems no reason why patients accustomed to urban communities, with their commun-

continued on page 479

WASHINGTON HEIGHTS MENTAL HEALTH CENTRE

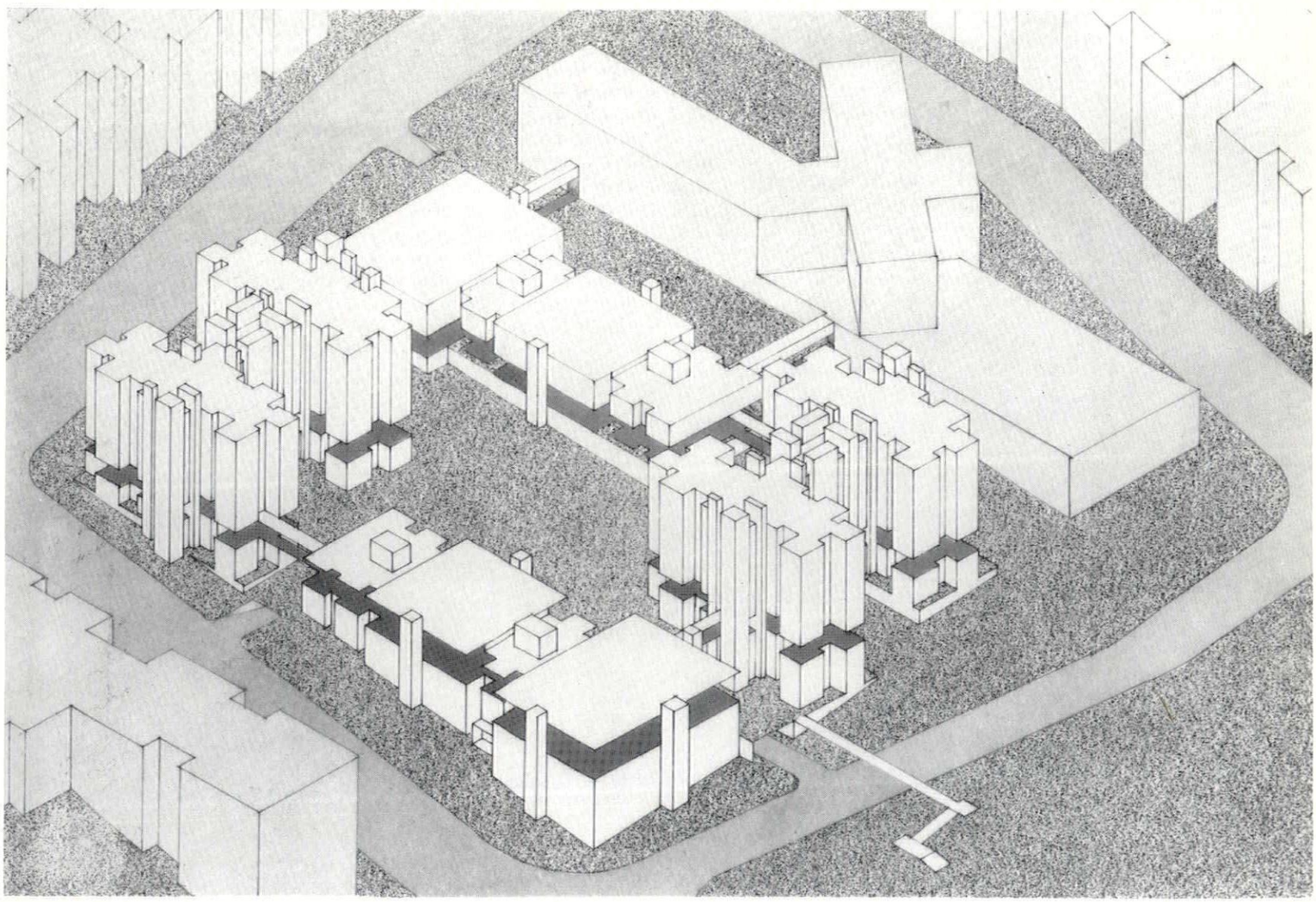
James Falick

This project was designed during studies at the Columbia University Graduate School of Architecture. The estimated average use is: 450 in-patients, 450 out-patients and 50 day-hospital patients. There are four elements for the diagnostic and treatment centre: administration, living, interview and therapy. The site is next to a general hospital. The design arranges four building units on the outer border of a new public park, planned as a series of ramp-connected terraces and covering a parking garage for 1,500 vehicles. Several buildings are multi-storey and contain living units with adult interview areas at their lowest level, connecting to the main horizontal circulation and other units. The living unit floors are serviced in such a way that the internal spaces may be altered, as treatment methods develop, into treatment areas or old age residences, student dormitories or, if development goes in another direction, private apartments.

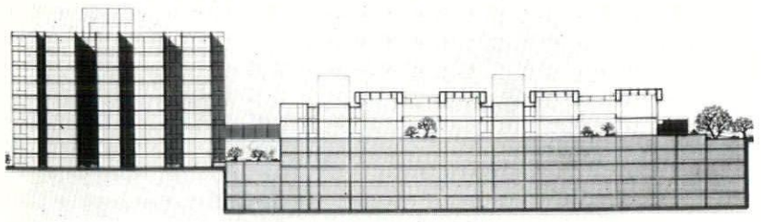


site plan

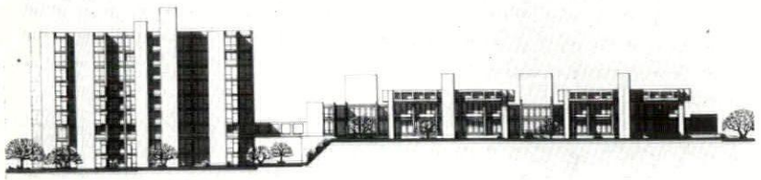
key
1, existing general hospital
2, living units
3, administration, patient services, child out-patients
4, communal block



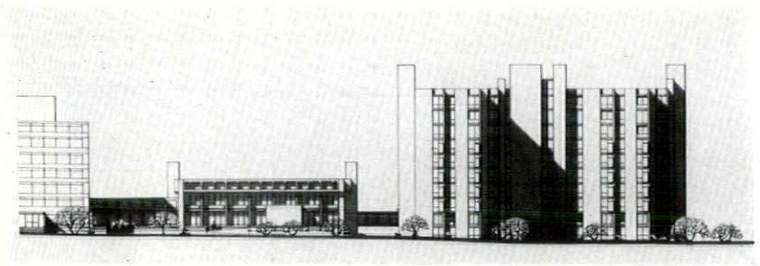
axonometric indicating principal circulation level



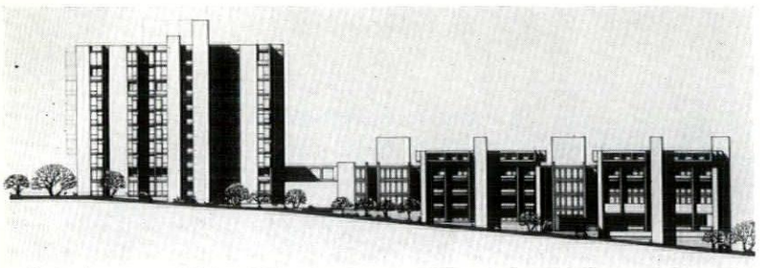
section through site, showing public car park



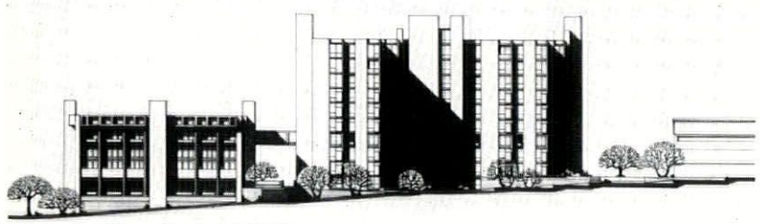
south elevation, administration and living unit



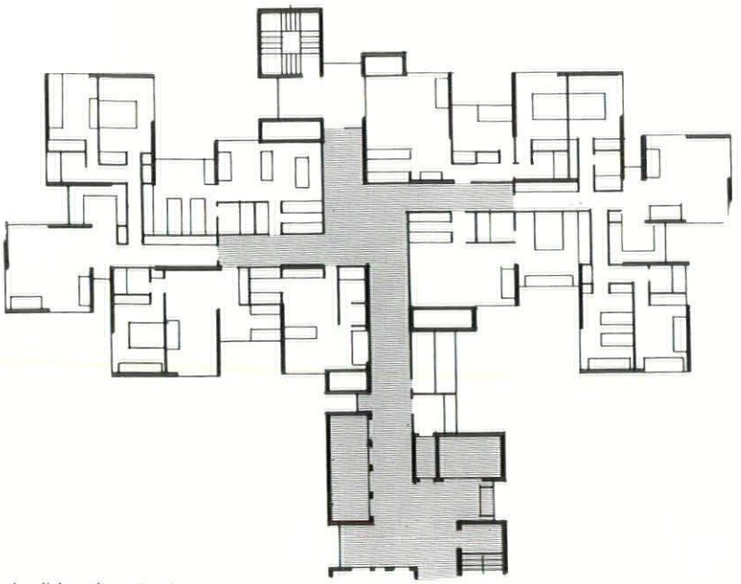
east elevation, living unit and communal block



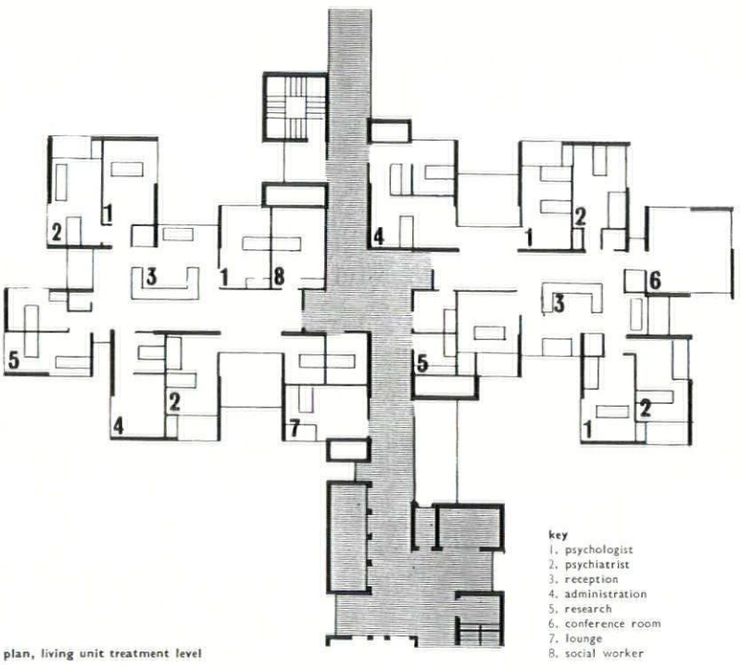
north elevation, communal block and living unit



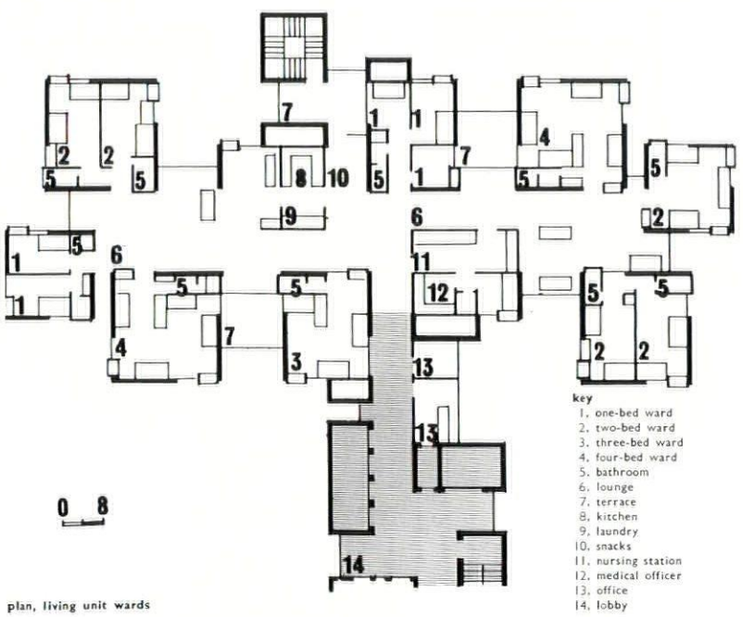
west elevation, living unit and administration



plan, living unit apartments



plan, living unit treatment level



plan, living unit wards

WASHINGTON HEIGHTS MENTAL HEALTH CENTRE

Living units consist of one- to four-patient bedrooms arranged around lounges and home-activity areas—a boarding house with nursing services. Identifiable 'cottages' on the circulation 'street' house the professional interview and therapy teams. Child interview facilities are grouped around a glass-roofed play court in the main administrative building. The flexibility of the living units, the incorporation of a community centre, the provision for non-patient living floors, the central park and garage are means of weaving the mental health centre into the fabric of the community.

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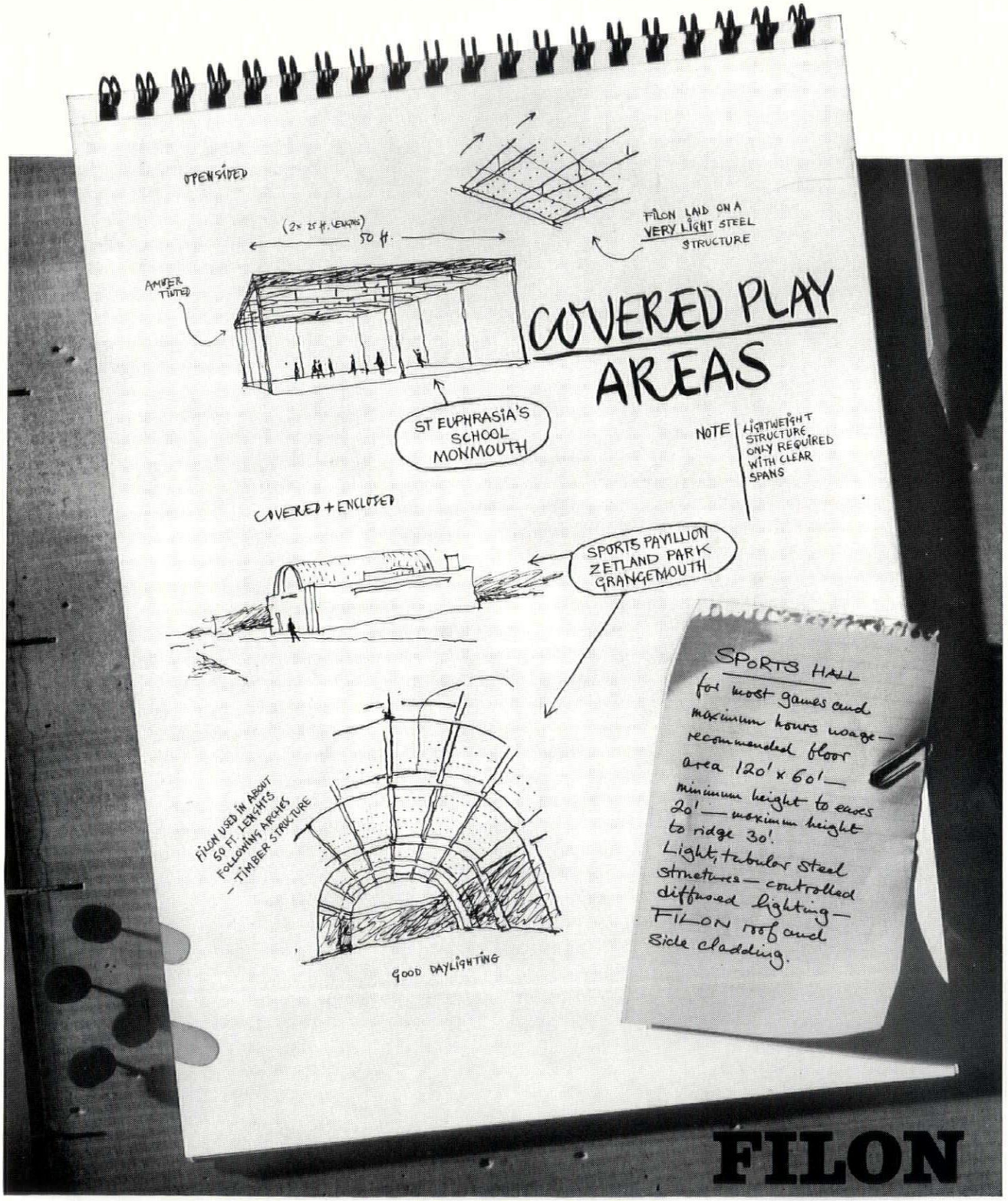

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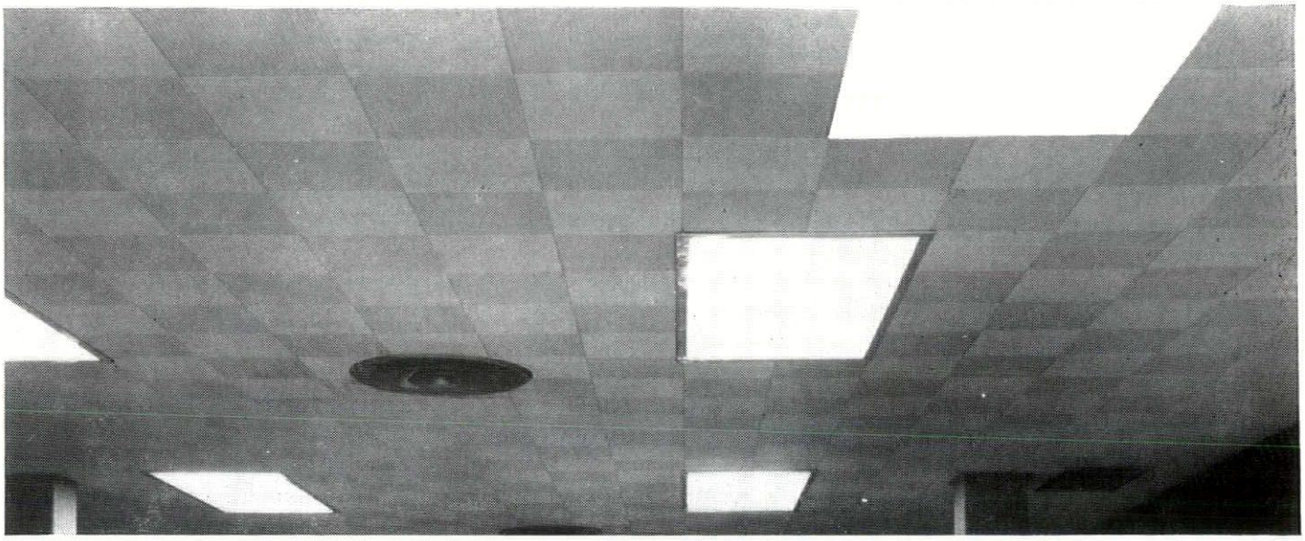

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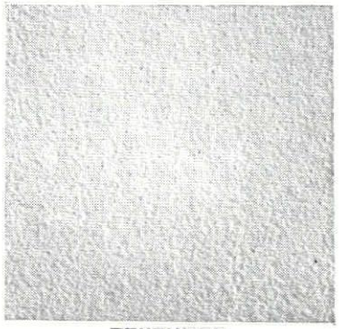
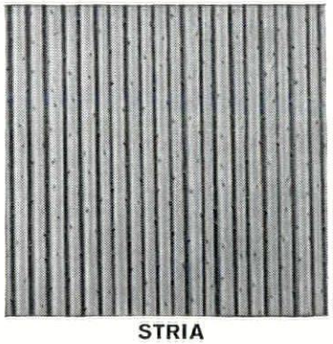
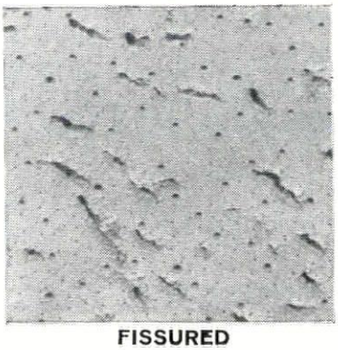


TEXTURED



STRIA



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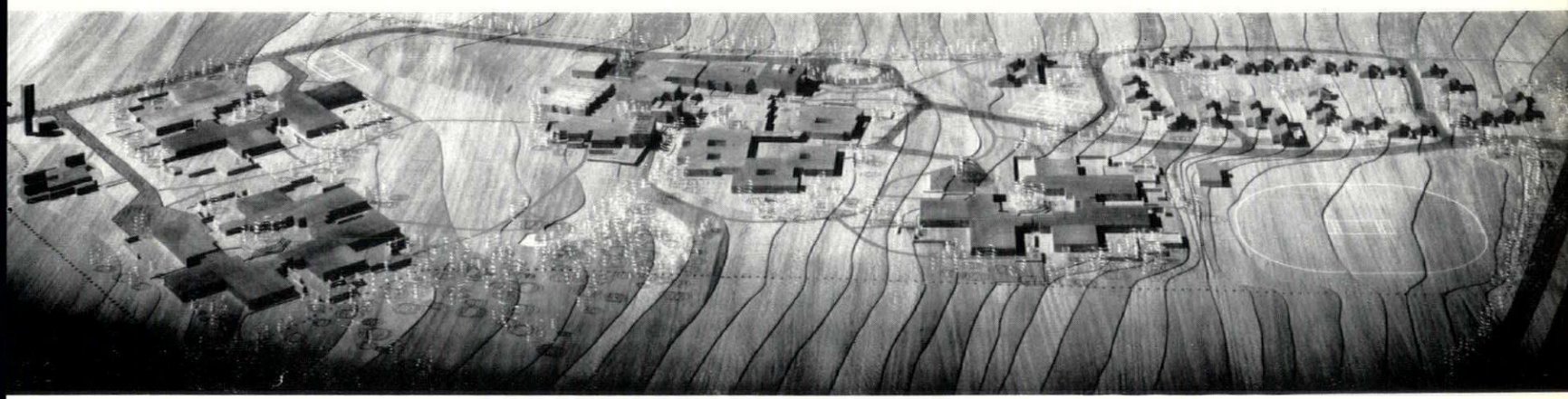
continued from page 477

ity patterns related to streets and blocks of flats, should not benefit from treatment buildings similar to the environments from which they come.

James Falick's project in Washington has ward patterns very similar to those proposed by the World Health Organization Committee, but the whole environment is urban in scale and shape and, additionally, includes facilities which are shared with the adjacent general hospital and also the public, such as a public park, car park and garage. Another interesting characteristic of this scheme is that the patient areas are designed in such a way that they may be altered easily as treatment methods develop for other age groups or even as private rental apartments. All the buildings are linked by an internal street system and community facilities are also accessible from this.

The Stillman & Eastwick-Field project at Upton shares many of these characteristics but is designed for a rural setting. It is notable in this development that the new buildings are placed much closer to the existing small town than the old buildings. Some of the patients indeed live outside the hospital and attend it daily.

These last two projects are based on developing therapeutic methods. In psychiatric medicine the form and character of the buildings probably have a more direct bearing on the possibilities of cure than in most other specialities. This is not to deny that, here as everywhere else, the first requirement is adequate staffing. Unsuitable physical environment cannot usually interfere in a crucial way.



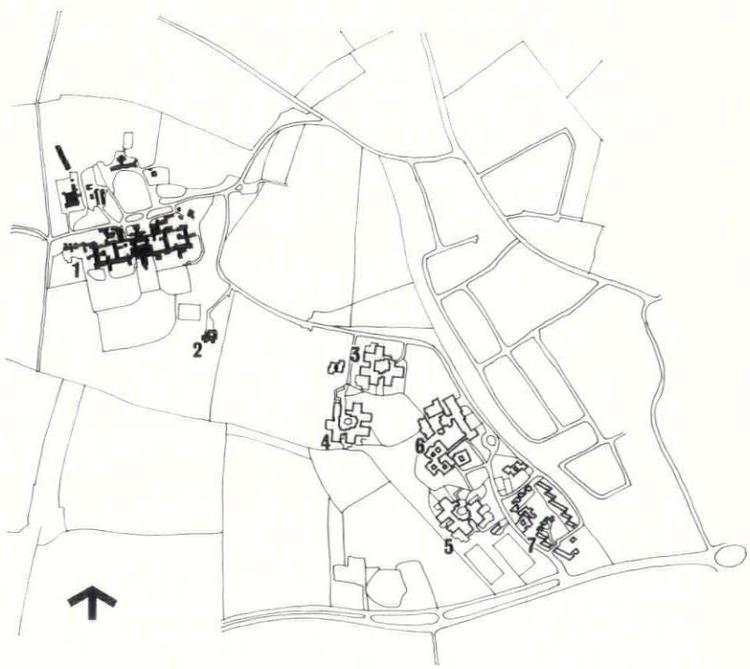
general view of model from the west, with community centre between male and female clusters: see also the frontispiece to this issue, page 410.

UPTON HOSPITAL, NORTHAMPTONSHIRE

Stillman & Eastwick-Field

CLIENT: Oxford Regional Hospital Board.
SIZE: 500 beds.
DATES: Architects appointed 1961—ready to go out to tender in the very near future.

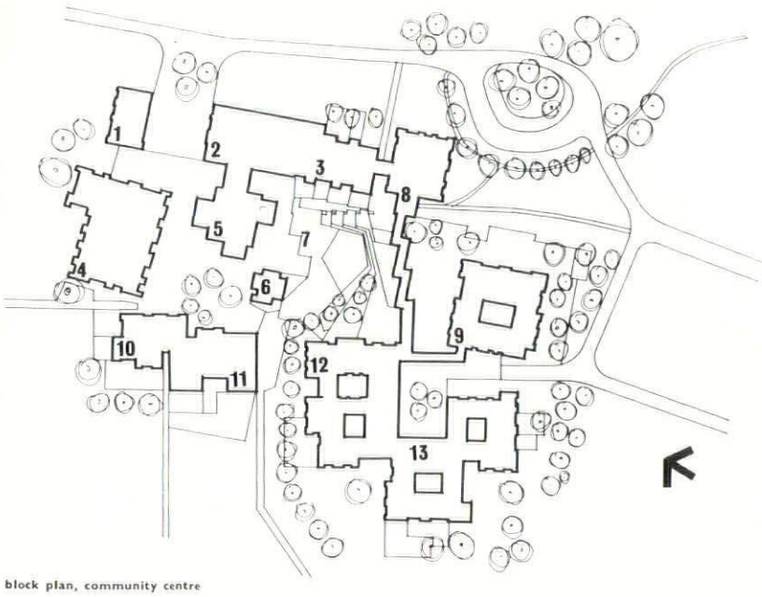
This will be the first new hospital specifically designed for subnormal psychiatric patients in this country. There are three grades of patient with varying needs for nursing care and capability of receiving training. At one end of the scale, patients are entirely non-ambulant and incapable of communication, and at the other end of the scale are patients who, as a result of nursing care and training, can lead a normal life within the limits of their



site plan
key
1. St. Crispin hospital
2. nurses' training school
3. female patients' school
4. child patients' cluster
5. male patients' cluster

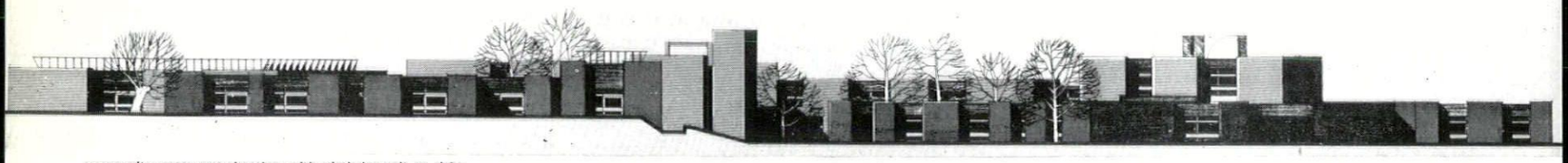
capabilities. Some live in normal hostel accommodation within the hospital from where they go to work in the town.
The site plan shows how the buildings are related to an existing hospital on an adjacent site and are close to the local community. The method of planning adopted is intended to isolate the various grades and types of patients and at the same time give patients a close identity with the buildings in which they live. The buildings are of brick and are arranged to enclose specific areas and give shelter on an otherwise very open site. Each cluster of buildings is grouped around a service and visitors' entrance court. There is a community centre, which forms a village nucleus on the site and provides for the patients' social and working life.

UPTON HOSPITAL, NORTHAMPTONSHIRE

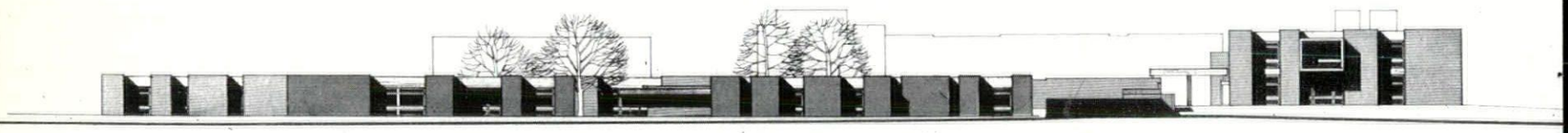


block plan, community centre

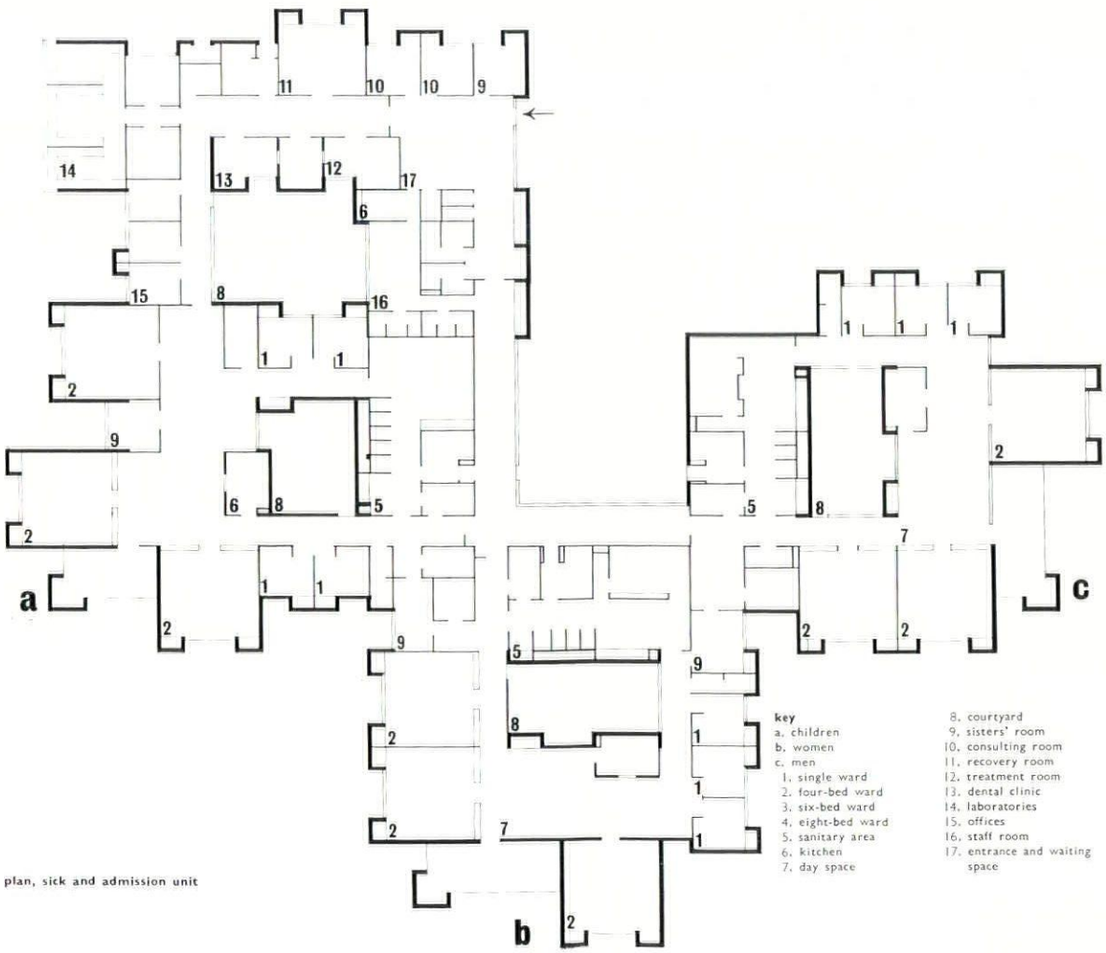
key
1. service block
2. kitchen
3. staff rooms
4. workshop
5. hall
6. chapel
7. shops
8. administration
9. isolation
10. school
11. gymnasium
12. research and treatment centre
13. sick and admission unit



community centre west elevation, with admission unit on right



community centre south elevation, with admission unit on left

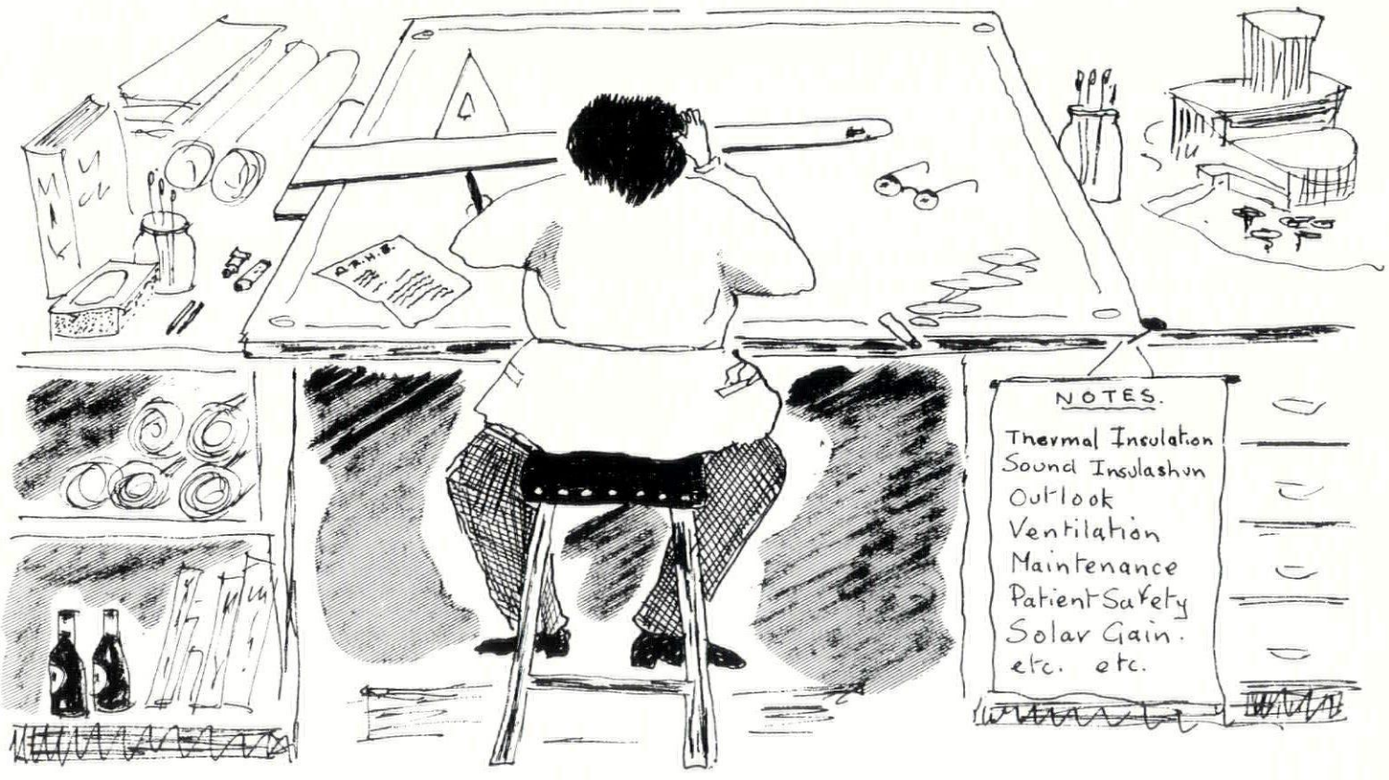


key
a. children
b. women
c. men
1. single ward
2. four-bed ward
3. six-bed ward
4. eight-bed ward
5. sanitary area
6. kitchen
7. day space
8. courtyard
9. sisters' room
10. consulting room
11. recovery room
12. treatment room
13. dental clinic
14. laboratories
15. offices
16. staff room
17. entrance and waiting space

plan, sick and admission unit

Solved that problem yet?





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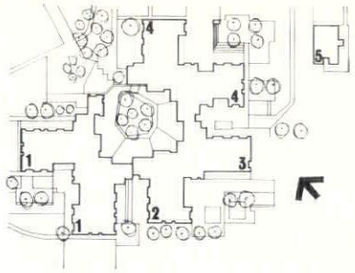


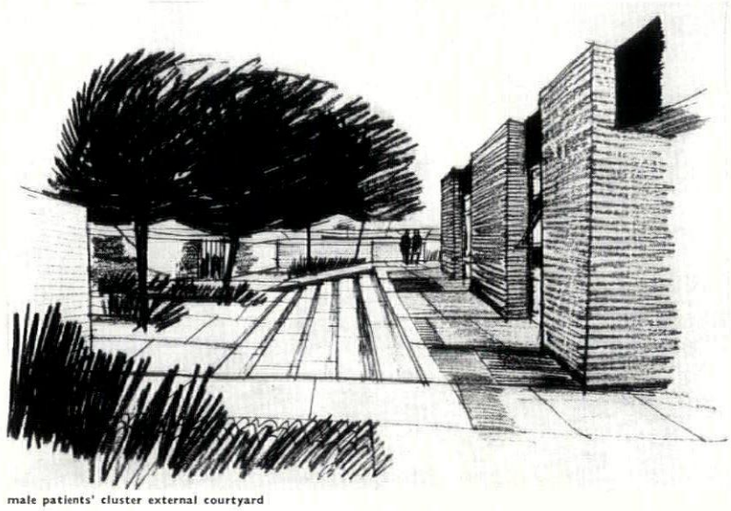
block plan, male patients' cluster

key
1. medium-high grade (25 beds)
2. low grade infirm (20 beds)
3. cot and chair grade (20 beds)
4. semi-low grade (20 beds)
5. sports pavilion

UPTON HOSPITAL, NORTHAMPTONSHIRE

plan, male patients' medium-high grade block

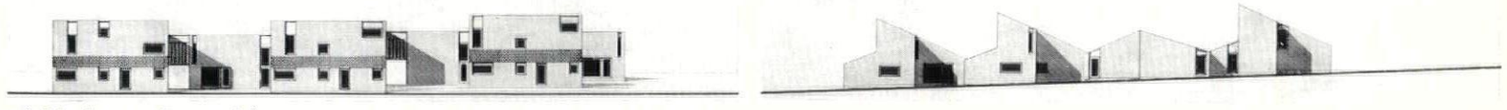
key
1. single ward
2. four-bed ward
3. six-bed ward
4. eight-bed ward
5. sanitary area
6. kitchen
7. day space



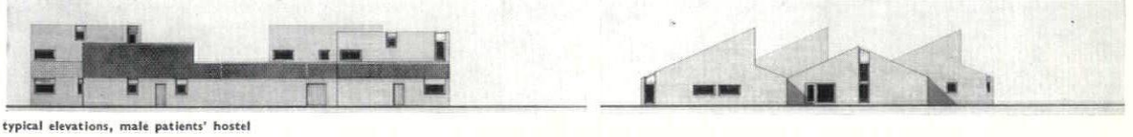
male patients' cluster external courtyard



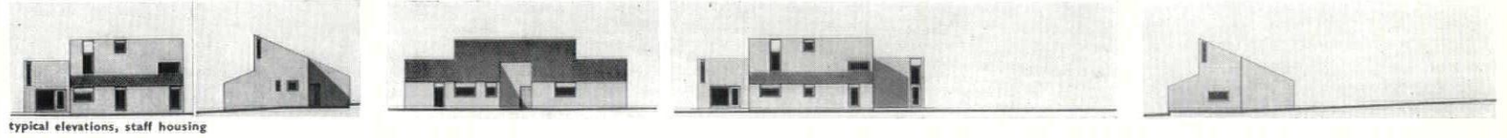
male patients' cluster, north sectional elevation



typical elevations, nurses' accommodation



typical elevations, male patients' hostel



typical elevations, staff housing

Cleeve Barr and Geoffrey Trimble

PRODUCTIVITY IN HOSPITAL BUILDING

In this article the word 'productivity' is used in the overall sense of how much satisfactory hospital building can be produced from our current national resources of finance, decision-makers and constructional facilities. We use the operational engineers' phrase 'decision-makers' deliberately. The architect has many roles but, in relation to productivity in building, none is more significant than that of his capacity to make decisions at all stages of the work and to make them well. The term also includes administrators, specialists and other professional staff in the Ministry of Health and the Hospital Boards, and private firms and consultants of all kinds. Next to finance, these surely constitute one of the scarcest and the most crucial resources affecting productivity in hospital building.

FINANCE AND DECISION-MAKING

The total number of bed spaces in hospitals in Great Britain is around 535,000. Replacement every 60 years would require 8,900 new bed spaces every year. At the current cost of £7,000 per bed the amount needed for replacement at this rate would be £62½ millions per year. Even a very modest allowance for minor improvements of existing hospitals—say ½ per cent per year on replacement value—would add another £18¾ millions, bringing the total requirement to £81¼ millions. Thus the current expenditure of £78 millions is insufficient even for this rate of replacement, without taking into account either the increasing population or the substantial backlog of work from the war and early post-war years.

But need the cost per bed space be as high as £7,000? Costs in fact vary enormously from just over £3,000 to over £15,000 per bed space, but this index can only be taken as the roughest kind of guide to hospital building costs. There are those who think that an average figure between £4,000 and £5,000 is achievable without serious loss of amenity. If this were so, an average figure of, say, £4,500 could produce a surplus of £26 millions a year, which could deal with the backlog at the rate of 5,800 bed spaces a year. The incentive to achieve increased productivity is therefore considerable. One can in fact say that, without an increase either in the sum available or in the achieved value for money, the available hospital facilities in this country will continue to decline.

If the slice of the national cake available for hospital building is limited—and successive governments at least seem to agree upon this point—then surely it is for the decision-makers, technical and administrative, at national and local levels to make known the sum of money available for each project—in advance of its being designed—and for all concerned ruthlessly and rigorously to use every technique of cost-planning and project control to work within the budget and to show just what can be achieved for the money.

Fortunately there is every indication that this lesson has now been learned at the Ministry. A method of budgetary control is being tried out in relation to certain major projects, which will give the architect, and all his specialist collaborators, clear notice of the amount of money available, and the kind of solution on which the cost target is based. This should avoid the agonizing reappraisal at the end of the design stage, and the delays and the abortive work so often involved. Such a method remains, however, to be applied on a national scale and to be applied to projects in detail, in advance of design solutions, for annual programmes of work within each Regional Board.

COMPLEXITY AND FLEXIBILITY

While it is easy to criticize the present position, one must realize that the problems of design and of budgetary control in hospital building are extremely complicated. They are of diverse kinds and involve many professions and skills. In addition to the professions of the building industry and its ancillary services, they involve doctors and nurses and medical specialists, hospital administrators, experts in mechanical handling and in work study, and technologists of all kinds in hospital equipment.

As though this were not complicated enough, bearing in mind the day-to-day pressures under which the medical services are working, there is the further major consideration that medical problems themselves are undergoing major change. The following table, for example, illustrates the diminution in the death rate for young people and the fact that the rate per thousand live births for people over 45 has nearly trebled in the last century.

Deaths per thousand live births

Age at death	1870	1963
0— 4	249	25
5—14	41	3
15—44	123	28
45 and over	219	605
All ages	632	661

Medical science too is changing—an example being the increasing attention given to out-patient work and the reduction in the prescribed stay in hospital for in-patients.

What all this amounts to is a need for efficient methods of exchanging and disseminating information, which the Ministry, the Hospital Centre and others have now begun to supply, and secondly a need for great flexibility in design and contractual arrangements.

In many projects, the financing and construction of which are to be phased over many years, the architect cannot know what the final building needs will be at the time construction starts. John Weeks has elsewhere described his 'indeterminate architecture' approach to this problem. He would be the first to agree that his design solution is not the only one. It is, however, the philosophy behind his approach which is so important. One can describe it briefly as the use of extendable systems for communications, structure and services, with plan forms which allow convenient gutting, extension or revision of layout when medical requirements change. To achieve this he says 'the architect must design methods of enclosure which require many fewer decisions per square foot.' This, to our minds, is fundamental to solving the problem of productivity.

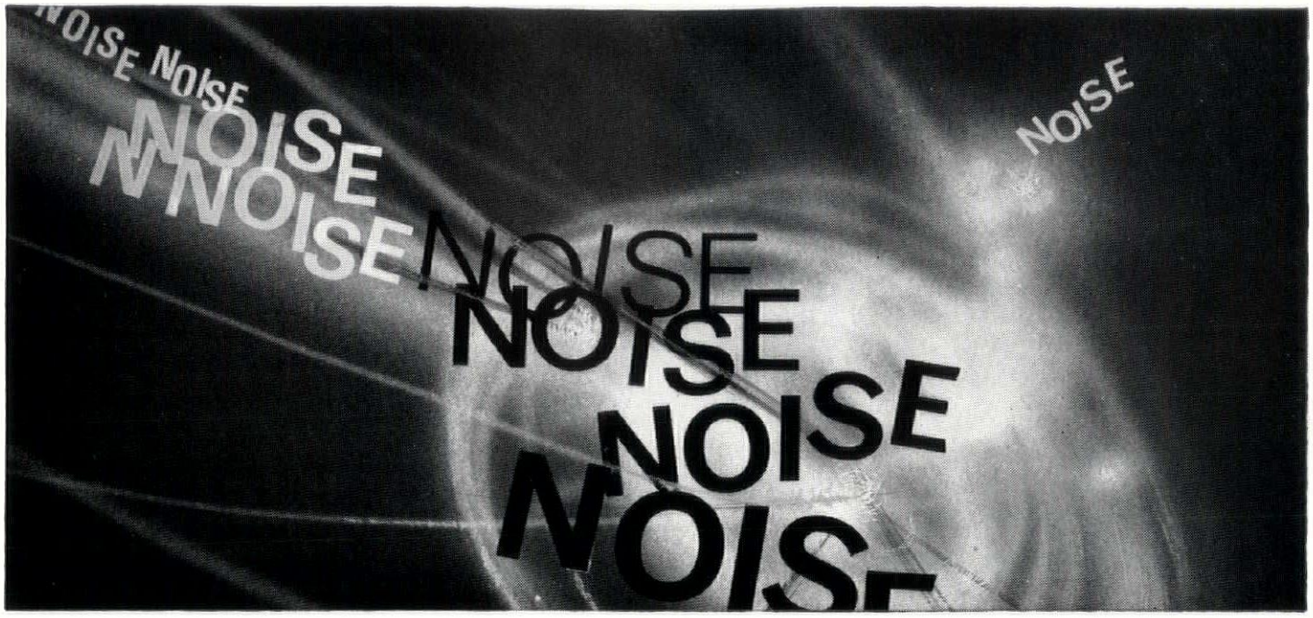
In these circumstances excessively traditional contract procedures only inhibit and irritate the participants. In particular, the contractor, and also the major sub-contractors and component suppliers, need to be brought in during the design stage so that account can be taken of available manufacturing and assembly facilities, so that repetitive processes can be exploited and productivity in production increased. Although the element of competition is reduced, techniques of cost control within a given budget, and value analysis, can ensure that a client receives value for money. The fact that a contract is signed at a substantially earlier date can also save a client money in a period of significant inflation.

In programming hospital building contracts, critical path techniques can also greatly contribute to the flexibility of overall control. The complete programme including the development of the brief, the design, the contract procedure, construction and commissioning can all be integrated in one network. The changes in the situation can be taken into account as they occur and a new and valid programme calculated in a matter of days. There is no longer the need to rely on bar charts which are out of date within months, if not weeks, of preparation. Instead we have flexible dynamic control of a kind that matches the fluidity of the real situation. In case this gives the impression that the techniques might even encourage a fluid situation, it should be noted that it equally enables a carefully prescribed degree of rigidity to be injected. Pioneering work in applying critical path techniques to hospital building was undertaken in the Teaching Hospital and Medical School at Leeds. Building Design Partnership worked closely with the planning team in this application and the P. E. Consulting Group provided the expertise on the techniques. Courses on critical path techniques in hospital building are being provided through the Hospital Centre, and advice can also be obtained through the National Building Agency.

STANDARDIZATION

Over the past few years, perhaps inevitably, the design of each hospital has been treated by individual firms as an original and individual piece of research, leading to the unique solution. We would guess that the time has now come when it should be possible to agree a series of common design briefs, perhaps on a regional basis, leading to a series of standard solutions of detailed planning problems and standard constructional components.

The Ministry's Building Notes have been a useful step in the direction of disseminating basic information. Factors which affect



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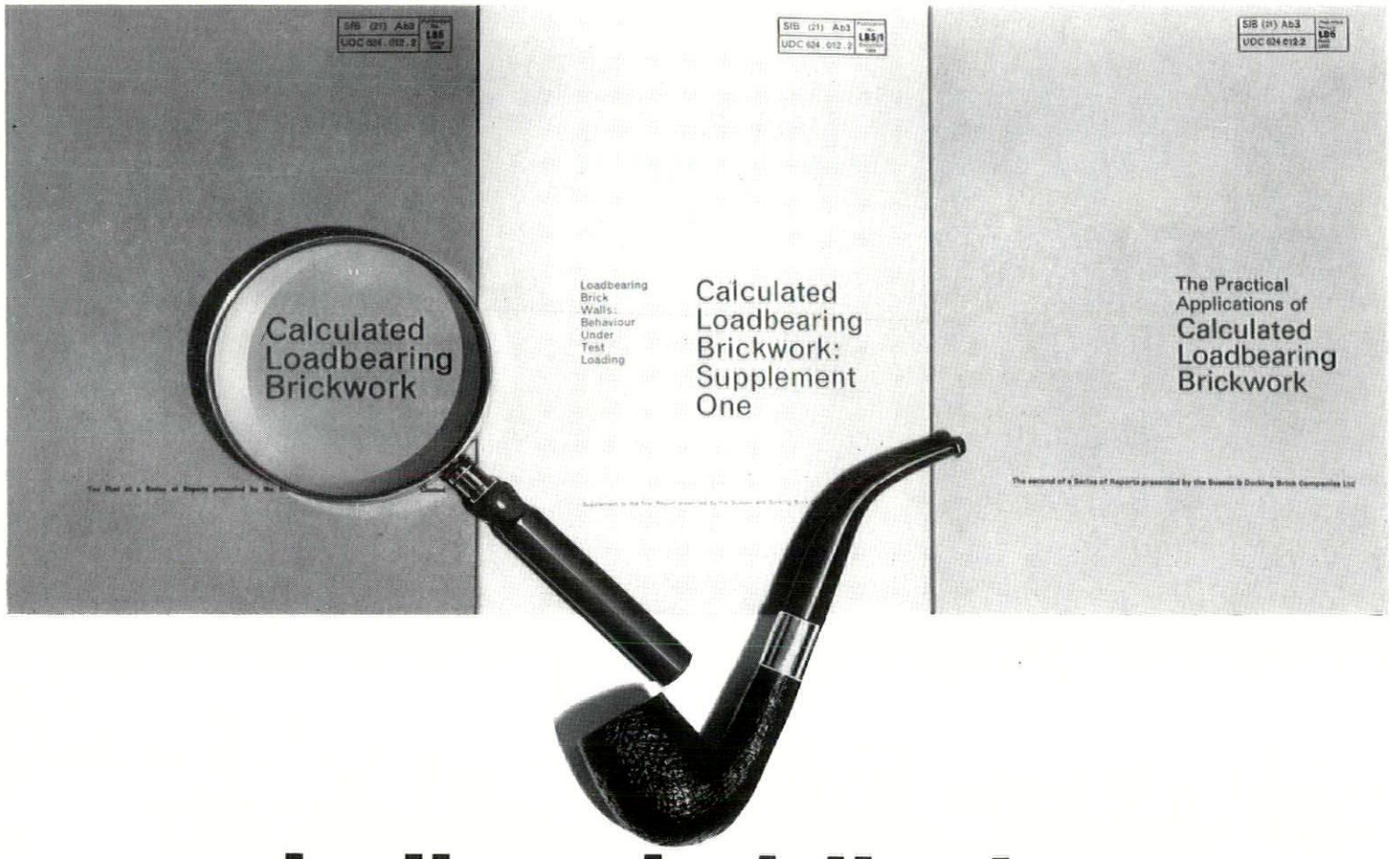

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such issues as central sterilization, length of stay, and dispersal of storage are also being studied centrally and the dissemination of further information will assist in formulating standards. The Ministry-sponsored Study Groups, staffed by architects from the Regional Boards and in some cases from private practice, have also studied the problems of standardizing particular components, partitions, doors, sanitary fittings and so on, and are circulating information about them.

The degree to which standardized design solutions should ever be laid down and imposed by a central authority, particularly in a field where the rate of development and change is so fluid, is, however, much open to question. Our view is that the grouping of Boards on a regional pattern, in the same way that authorities have for years 'consorted' in the educational world, and are now doing in housing, would be a more profitable basis. Standardization of ward units, of operating theatres, of kitchens and so on (that is, detailed planning solutions) could well progress faster if it were agreed upon by a working group locally in relation to a series of contracts that were to be linked together to take advantage either of bulk buying from suppliers and sub-contractors, or of serial contracting with one or more major contractors. Information from central sources would, of course, be used in the establishment of these common briefs and design standards. Outstandingly successful examples, in terms of plan solutions or of component designs, could well be taken up by others and become national standards later. The object of the whole exercise, or rather series of exercises, would be, of course, to eliminate duplication of work and unproductive effort, to save time and money at the design stage and to make better use of site labour and materials by repetitive operations—in short, greater productivity.

The dangers of over-standardization, of losing the human touch or of rigid bureaucracy can be avoided if the project architects themselves participate in the decision-making leading to large orders, to serial contracting and bulk-buying. It should be clearly understood, however, that the basic terms of reference for such a group should include a determination to make the thing work, and to programme the overall briefing, design, approval and construction of a series of projects, over two or three years, by critical path techniques, with known completion dates and rigorous cost control.

INDUSTRIALIZATION

We have said little about the capacity of the building industry in general terms, because this has been so well aired recently in other places. The annual programme of hospital buildings is, however, quite a substantial one—about twice the volume of university building and not far short of the schools programme. It can hardly escape the general pressure on resources to which all are subject, except by paying over the odds, which would only limit the number of bed spaces provided even more.

The NEDC plan amounts to a cumulative annual increase in the volume of new building of six per cent each year, with next to no increase in the total number of building operatives employed—and every department of government is putting in demands for expansion of its services which threaten to take the volume of new building well above the NEDC figures.

The trends in the industry towards industrialization are inescapable. They imply less labour on site; greater use of mechanical equipment and power tools; standardization of details; more factory-made and finished components; rationalized and repetitive site operations; larger contracts; continuity of ordering; new contract procedures; and far better integration and over-all management of building operations, right through from the briefing, cost planning and design stages to the completion of the works.

In spite of its complexity, there is a great deal in the hospital building programme which makes it particularly suitable for advanced techniques of industrialized building. A flexible architectural approach is required, making full use of negotiated contracts, cost planning and critical path techniques. If these are correctly used with a sufficient determination, the task of renewing and augmenting our stock of hospitals, within the finance available, though difficult, is not impossible.

Vernon Lee

HOSPITAL CATERING: NEW TECHNIQUES & PLANNING IMPLICATIONS

It is apparent from the present financial climate in the Ministry that the £800m. hospital building programme which was launched in 1962 was underestimated. Schemes now in the planning pipeline have undergone many vicissitudes, and whereas medical need was rightly the main factor in assessing the planning problem, it is now a question of what can be done with the limited pieces of the Treasury cake. Tight budgeting in any form of programme building can be a virtue provided that it is based on the most economical user requirements. It is likely therefore that whether we like it or not the next period of hospital building will be dictated by a much smaller purse than was originally envisaged. Financial stringencies will call for methods of designing and running hospitals which at this point in time might seem too revolutionary to be readily acceptable by the users.

Almost all operational policies in the brief of any hospital can have a marked effect on the subsequent planning and running of the hospital, so that it is important to resolve those policies in such a way that they will ultimately result in savings in manpower, time and goods. All too often in the past, savings have been made in capital costs at the expense of high revenue costs, uneconomic deployment of staff and general wastage. Such mistakes should not be perpetuated in future, even allowing for the tight budget in hospital building.

One aspect of running a hospital which can have a radical effect on planning, organization, staffing and the patient may be found in the catering policies adopted by the client. Closely allied to nursing, and a vital aspect of the patient's care, is the provision of the patient's food. Catering on a large scale involves a series of highly skilled and important processes including choosing, purchasing and preparing various types of food, cooking the food where necessary and its eventual distribution to those who are going to eat it. Thereafter subsidiary, but equally important, processes are involved—dishwashing (or disposal) and waste disposal. For all main mealtimes, successful hospital catering depends not only on the quality of food, its cooking and distribution but on the satisfactory timing of the procedures to ensure that the patient gets the food suitable for his condition and in a form enjoyable to eat. It is, after all, part of the patient's treatment whilst in hospital. At the present time hospital catering is one of the biggest catering services in the country, serving anything up to two million meals a day.

With allowance for growth and change in the design of new hospitals, there must be provision for radical developments in hospital catering, which will involve automation and industrial processes. Policy decisions made now may be completely out of date by the time most large hospitals are completed and commissioned. It is imperative therefore that hospital architects advise their respective client bodies at the briefing stage of any proposed policies which appear to be inflexible and are liable to inhibit future growth and change. It is foreseeable that the main hospital kitchen in its present form may be abolished. The large hospital kitchen is in effect a small food factory, and these might be combined and centralized to form efficient factories serving large numbers of hospitals. The industrial activity of the catering department is out of place in hospitals, but with the existing organisation, provision must be made for catering to take place within easy reach of the wards. Many present defects are imposed on large hospitals by the inescapable rigidity and lack of comprehensive planning of old hospitals.

In the future, hospitals could be served from efficient hygienic food factories to cold preparation centres, with the final stage of

heating and serving meals taking place at ward floor level, where no more than say 60 patients might be fed under the supervision of the sister. Modern techniques, such as are used in the production of quick frozen foods or of accelerated freeze-dried food, can conserve the nutritional value and palatability of prepared foods or cooked meals until they are ready for final preparation where they are to be eaten. Each compact ward unit would contain a small service kitchen with cold storage and equipment for the reconstitution, final heating and serving of meals. Bulk refrigerated storage would be kept at a convenient depot. In these ward units the widest variety of available products could be used without restriction to any one method of food preparation.

The final preparation and serving of the food in the ward to the patients should be in the hands of a 'ward caterer.' The caterer or dietician would run the smaller catering unit, pay personal attention to patients' needs and tastes and organize the personal service in co-operation with, and under the supervision of, nursing and medical staffs. Using factory prepared, pre-cooked foods that are already available, it is possible to store and have ready for immediate use a variety of different dishes that can be quickly reheated either by using hot air convector ovens or the highly efficient microwave ovens which will heat different dishes in a few seconds.

There have been extremely interesting developments in this field in The Kaiser Foundation hospitals in America, under their food service adviser. After nine years of research and experimentation, there is greater patient satisfaction and flexibility in hospital feeding in six new Foundation hospitals which incorporate microwave ovens in all or part of their food service. In one of these hospitals, at Santa Clara, California, the nurses' station becomes the point where patients' trays, set up from a selective menu service, are delivered in refrigerated trolleys. Prepared dishes are heated in microwave ovens, and final assembly of meals is made before their delivery to patients. In addition to the microwave ovens, toasters, tea and coffee makers, and hot water dispensers are provided for all hot meals. There are obvious advantages in having the heating process closer to the point of service and permitting greater flexibility of mealtimes. Hot foods can be served hot and trays for individual patients can be served at times other than the regular mealtime if this is considered necessary.

The hub of the revolutionary food system in the six Kaiser Foundation Hospitals is the microwave oven, similar in size and appearance to a conventional wall-type domestic oven, but with a single or double magnetron tube that emits high frequency radio microwaves at 2,400 megacycles. The microwave, 2½ in. long, is absorbed by the food. The molecules in the food set up a resistance to the absorption, which is converted to heat. In microwave cookery, because of the principle of the absorbed microwave, browning does not take place, but neither does reheating result in a stale, generally unappetizing taste, which is often the case when conventional reheating is used. Reheating by microwave gives much better results, vegetables for example retaining their colour perfectly. Where browning is required this can be induced prior to a normal reheat. Microwave cooking and reheating does not create odour or dirt and the oven is simple to operate. Current models can be easily wheeled on a strong trolley and plugged in at any distribution centre or adjacent to a nurses' station or a small ward servery. The Kaiser Foundation hospital at Panorama City, California, was the first designed for service with all foods brought in already prepared, and only the portioning and assembly of food on plates is done by the kitchen workers.

As catering systems utilizing frozen prepared dishes and microwave ovens are perfected and refined, fewer kitchen workers will be required to give maximum service. At Panorama City hospital the reheating actually takes place in the old central kitchen. The trays, ingeniously designed with an insulated dividing ridge, are then placed in trolleys with a heated and refrigerated compartment, one half of the tray in the heated portion, the other in the cold. This however does not really take full advantage of the microwave cookery. In the new system at Santa Clara, the reheating of the food at ward level is exploited to the full. All dishes, cups and plates are disposable—these are aesthetically acceptable to patients, in glazed styrene plastic and are reasonably inexpensive. Disposable dishes and plates with a glazed finish are now made in this country. After the assembling of patients' trays in the central preparation area of the hospital, these are placed in a refrigerated trolley. Ice cream and other frozen desserts are placed in the freezer compartment. A card on the tray advises which trays are to include an item from the freezer. The assembly takes two kitchen workers approximately one and a half hours per 200 trays. The trolleys then go to the nurses' stations on the ward from where they await mealtime. As long as the trolleys are kept refrigerated, a time lapse of hours may occur before the food is served. Breakfast can even be delivered the night before.

At mealtime a member of the ward dietary service, under nursing supervision, takes the trays out of the trolley and places them on a work surface adjacent to the microwave oven. Foods that must be heated are labelled appropriately for length of time needed for processing. The common times are colour coded. These colours coincide with coloured push buttons for different timings on the microwave oven. Delivery to the patient is made immediately the tray leaves the oven. In this way a ward unit of 25-30 beds takes on average half an hour for the entire assembly, preparation and delivery of breakfast. The time schedule for lunch and dinner at the Santa Clara hospital is as flexible as that for the breakfast service. The entrée and soups are microwaved simultaneously, and salad, dessert and other cold items are on the tray. Two trolleys are in continuous use for the service of three meals. One trolley returns to the central preparation area dish room with dirty trays, whilst the second trolley is being assembled with foods for the next meal. This permits maximum utilization of every man hour in the kitchen.

With marked savings in labour, food, utility and maintenance costs, improved food quality and better portion control, there are obvious advantages in all that goes with microwave catering. By eliminating the kitchen it is obvious that the electronic food service system results in considerable space-saving, possibly in the order of 40 per cent over the space required for a conventional kitchen. Savings in space must obviously be reflected on mechanical and engineering requirements in the kitchen, although to offset these savings must be added the two-year average time for replacement of the microwave cooker's magnetron tube. This at the present time costs on average £120 per oven, which over a two-year period amounts to a weekly utility maintenance cost of a little over £1 per oven. With wider and greater use of these ovens there must presumably be a reduction on tube costs.

Mention must be made of staff catering in the hospital. Exactly the same principles of preparation and reheating can be used as for the patient's catering, except that small kitchens with microwave ranges can be planned in association with cafeteria spaces. A twenty-four hour help-yourself service can be provided with the flexibility of reheating prepared frozen meals in microwave cookers. In due time it might even be possible for fully ambulant patients to use a centralized cafeteria system of dining which would greatly reduce the demand for a ward food service and reduce the all-important revenue costs in hospitals.

It is quite certain that the electronic oven opens the door to a highly efficient system of food preparation and service and that hospitals now being designed should take cognisance of these relatively new techniques in hospital catering with their implications on planning.

REFERENCES

B. S. Platt, T. R. Eddy, P. L. Pellett: *Food in Hospitals. A study of feeding arrangements and the nutritional value of meals in hospitals.* Part IV. Published for the Nuffield Provincial Hospitals Trust by the Oxford University Press, 1963.

Helen W. Flynn: 'Convenience foods in the hospital.' *The Cornell Hotel and Restaurant Administration Quarterly.* Vol. V, No. 1, May, 1964.

Helen W. Flynn: 'Food delivered cold, served hot from nurses' stations.' *Hospitals.* Journal of the American Hospital Association. Vol. 37. December 16, 1963.

Jane Barton: Food and food service (conducted by Jane Hartman). *The Modern Hospital.* November, 1962. Published by the Modern Hospital Publishing Co. Incorporated, Chicago.

Denis Williams (Catering Officer, Napsbury Hospital, St. Albans). 'Automation in large scale catering.' *The International Hospital Caterer.* Vol. V, Nos. 6 and 7, January and July, 1964. Published by Associated Publications Ltd.

Hospital Abstracts. A monthly survey of world literature prepared by the Ministry of Health. Vol. 4, Nos. 1 to 12, January to December, 1964. Published by HMSO, London.







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L.Bruce Archer

EQUIPMENT: SPECIFICATION & SELECTION

It is not practical to think of the design of hospital equipment and the design of hospital buildings as being separate problems. More than in most types of building, equipment is conditioned by the architecture and the architecture is conditioned by the equipment. For example, if a new hospital building is conceived on the principle of grouping special facilities, in conjunction with (say) a mobile bed system, then the beds must not only have good wheels—they must have anti-static properties (since they may be taken into anaesthetic rooms). At the same time, doors and corridors have to be wider, walls protected, floors made anti-static, and so on.

Again, if a hospital is planned to employ disposables, such as paper towels, disposable bedpans or throw-away syringes, then the volume of supplies traffic (clean and dirty) is so enormously increased that commodity handling dominates design. The conceptual and detailed design of hospital equipment, hospital buildings and hospital organizational systems are inextricably bound up with one another. Some of the most disastrous hospital planning failures are directly attributable to the practice of leaving the final selection of equipment until the building design has been completed in all essential details.

The equipment designer in the hospital field is in a difficult position. Too often there *is* no designer. Either the manufacturer cannot afford the luxury of design or he cannot persuade hospital staffs to accept his recommendations. Habitually, each hospital demands its own variant on manufacturers' catalogue designs. These designs, as often as not, originated as catalogue variants themselves, and are named after the doctor or hospital who last demanded an alteration. Many manufacturers recognize the futility of this procedure. However, the quantities ordered are so small and money is so tight that all the poor manufacturer can do is go down into the workshop and tell the foreman to make the changes the doctor asked for—as nearly as possible within the price. Occasionally, the opportunity to conduct a formal design effort presents itself. Then, the greatest difficulty encountered is sheer lack of information. Almost no controlled research on equipment is carried out in hospitals. When a manufacturer offers a product for test it is often received in the hospital with the greatest goodwill, but with little or no attempt at controlled experiment. Of course, since patients are real people and not guinea-pigs, there is a limit to the use of controlled experiment anyway. In reality, what often happens is that, at some vital moment, the experimental equipment proves to be a nuisance in some particular, and is summarily banished to the basement. When the manufacturer's representative calls to ask how the trials are proceeding, as like as not, no one can recall exactly what happened. Thus, even when a design effort has been made, it is frequently impossible to distinguish those failures which were due to some basic shortcoming in the design concept, from those due to a superficial defect in the means employed.

In the absence of data, opinion is all. If there is no reliable evidence to go on, it is not only the doctor's privilege, but also his duty, to make up his own mind and pronounce on the matter. One can hope that on a given issue great minds will think alike and that a consensus of opinion will arise. On equipment matters, the opportunities for hospitals to exchange opinion have usually been too infrequent or too informal for any such consensus to be apparent. The architect or equipment designer is forced to seek as many opinions as seem appropriate. His normal course is either to rely on the judgment of the particular doctor or nurse who has been deputed to advise him, or to seek opinion from 'an authoritative source.' Admittedly, *any* doctor or *any* nurse can give quick and reasonably accurate answers to questions concerning normal professional practices. There are a golden few doctors and nurses, trained and experienced in hardware or methods research, who can go out and determine the statistically most common or theoretically most efficient practices and products. All too many of the authoritative advisers consulted, however, are too remote from the day-to-day handling of equipment to give direct answers in the specification of hardware.

The handling of data arising from opinion requires a great deal of skill. On the whole, it can be argued, doctors and nurses should be treated as 'patients' so far as non-medical matters are concerned. That is to say, their remarks should be treated as symptomatic of what they need rather than definitive of it. A real patient, visiting his doctor, may say, 'I have a headache—please take my headache away.' However, the doctor will very likely refrain fom giving him a headache pain-killer right away, treating this as a symptom which should not be too readily suppressed but is indicative of some deeper ill. In the same way the architect or equipment designer should regard the doctor's demand for this or that amenity as very likely symptomatic of a subtler need. In this way, apparently conflicting opinion from the client's side can sometimes be seen as indicative of a single need. Unfortunately, most architects and designers are just not competent to see this.

Of course, equipment specifications are not entirely dependent on opinion. There are many aspects of equipment design and selection which relate to measurable data. Properly organised research, with appropriate information handling facilities (not necessarily expensive) can settle a surprisingly large number of equipment questions. The pity is that both equipment designers and architects lag behind their opposite numbers in the professions of law and medicine in recording and publishing their observations. Even in areas of subtle and complex problems, a properly recorded and indexed volume of case-law will produce workable empirical answers. Too many designers start from scratch when a question has been tackled many times before. Will no school of architecture or design start collecting, indexing and publishing case-studies?

In the meanwhile, something should be done about the practice of dealing with equipment specifications after the building has been designed. Perhaps the notion of separate handling of 'fixed' and 'movable' equipment should be abandoned. If the drawing up of equipment specifications at the same time as the room schedules means that equipment specifications are 'frozen' years before delivery is required, so much the better. The manufacturer can spend the interim testing and polishing his designs and planning his production in a rather more sophisticated way than he does at present. 'But,' someone will say, 'this means that everything in the hospital will already be years out of date by the time the hospital is opened.' So what? Exactly the same must be said of battleships, motor-cars, aeroplanes and anything else that needs careful planning. Other people learn to live with this time-lag; so must hospitals. Better a hospital which is an integrated whole and seven years behind the fashion, than one which contains the very latest disposable gear bursting the seams of a traffic system that was never designed for it.

Compiled by J.R.B.Green and E.D.Hazell

HEALTH AND WELFARE BUILDINGS BIBLIOGRAPHY

This bibliography is aimed at the architect concerned in planning and designing buildings for health and welfare generally but hospitals in particular. It has been restricted to publications of mainly UK origin which it would be useful to have in the architect's office or which provide a good background to the subject. Some buildings to visit have been included at the end of each section. Inclusion in this list does not mean that the building is necessarily better than another which has been excluded. Where possible reference is made to a periodical article in which the building has been illustrated. A more comprehensive list of buildings to visit is available on request to the Ministry of Health Architects' Library.

Abbreviations

AHA	American Hospital Association.
AJ	*Architect's Journal.*
BHSSJ	*British Hospital and Social Service Journal.*
BMJ	*British Medical Journal.*
BRS	Building Research Station.
BSI	British Standards Institution.
CHSC	Central Health Services Council.
H	*The Hospital.*
HHM	*Hospital and Health Management.*
HMC	Hospital Management Committee.
HMPE	*Hospital Management, Planning and Equipment* (formerly HHM).
HMSO	Her Majesty's Stationery Office.
KEHF	King Edward's Hospital Fund.
L	*The Lancet.*
MOH	Ministry of Health.
MOHLG	Ministry of Housing and Local Government.
MRC	Medical Research Council.
NPHT	Nuffield Provincial Hospitals Trust.
NT	*Nursing Times.*
RIBA	Royal Institute of British Architects.
SHHD	Scottish Home and Health Department.
USGPO	United States Government Printing Office.

Reference books, abstracts, periodicals, etc.

American Hospital Assoc. *Hospital literature index.* Qtly. Chicago, AHA.

HSO Sectional Lists. No. 66 *Scottish Home & Health Dept.* No. 11. *Ministry of Health.*

Hospitals Yearbook. Annual. Institute of Hospital Administrators.

Ministry of Health. *Hospital abstracts.* Monthly. HMSO.

RIBA. *Hospitals, 1960–1964. A bibliography.*

United States. Public Health Service. *Public Health numbered publications: a catalog, 1950–1962.* Washington, USGPO.

PERIODICALS

British Hospital and Social Service Journal. Wkly.

The Hospital. Monthly.

Hospital Management, Planning & Equipment (formerly *Hospital & Health Management*). Monthly.

LIBRARIES

King Edward's Hospital Fund. The Hospital Centre, 24 Nutford Place, W.1. (Also hold courses and exhibitions).

Ministry of Health. Library. Alexander Fleming House, Elephant and Castle, SE1.

Health and welfare: general background

CHSC. *Field of work of the family doctor (Gillie report).* HMSO, 1963.

Edwards, A. E. *The mental health services.* Shaw & Sons, 1961.

Farndale, J. ed. *Trends in the National Health Service.* Pergamon Press, 1964.

Freeman, H., and Farndale, J., eds. *Trends in the mental health services.* Pergamon Press, 1963.

Medical Services Review Committee. *Review of the medical services in Great Britain.* Social Assay, 1962.

MOH. *Annual report. Part 1. Health and welfare services. Part 2. On the state of the public health.* HMSO.

NPHT. *The burden on the community; the epidemiology of mental illness.* J. D. N. Hill, 1962.

NPHT. *The demand for medical care; a study of the case-load in the Barrow and Furness Group of hospitals.* G. Forsyth and R. F. L. Logan. 1960.

NPHT. *Problems and progress in medical care.* G. MacLachlan. 1964.

NPHT. *Towards a measure of medical care, operational research in the health services.* J. O. F. Davies. 1962.

Hospitals: general background

Abel-Smith, B. *The hospitals, 1800–1948.* Heinemann, 1964.

Brotherston. Use of the hospital, a review of research in the United Kingdom. In *Medical Care,* 1963, July/Sept. and Oct./Dec.

Cartwright, A. *Human relations and hospital care.* Routledge, 1964.

Cohen, G. L. *What's wrong with hospitals?* Penguin, 1964.

Llewelyn-Davies. Hospitals and the community. In *Architectural Association Journal.* 4/64.

MOH. *Hospital plan for England and Wales.* HMSO, 1962.

MOH. HM(64) 13 *National Health Service List of hospital studies.* MOH.

NPHT. *Further studies in hospital and community.* M. Mackenzie. 1962.

NPHT. *Hospital and community.* T. Ferguson and A. N. MacPhail. 1954.

NPHT. *Standards for morale; cause and effect in hospitals.* R. W. Revans. 1964.

Poynter, F. N. L. *Evolution of hospitals in Britain.* Pitman Medical, 1964.

Vines, H. W. *Background to hospital planning.* Faber, 1952.

Weston, J. C. *Building research for the hospital service.* BRS (current papers).

Hospitals: management, staffing, economics

CHSC. *Communications between doctors, nurses and patients.* HMSO, 1963.

Goddard, H. A. *Principles of administration applied to nursing service.* World Health Organisation, 1958.

KEHF. *Communications and relationships between general practitioners and hospital medical staff.* 1963.

Leeds RHB. *Work measurement as a basis for calculating nursing establishments.* 1963.

MOH. *Abstracts of efficiency studies.* Nos. 1–75 (in progress). HMSO.

MOH. Hospital O and M Service Reports. HMSO. No. 4 *Organisation and management of domestic work in hospitals.* No. 5 *Filing of management papers.* No. 7 *Planning and control of hospital external transport.*

MOH. Hospital Technical Memoranda. HMSO. No. 12 *Maintenance of buildings, plant and equipment.* No. 13 *Planned preventive maintenance* (in the press).

MOH. *Hospital costing returns.* Annual. HMSO.

MOH. *Hospital costing, report of the Working Party.* HMSO, 1955.

MOH. *Medical staffing structure in the hospital service.* (Platt report). HMSO, 1960.

NPHT *Costing and efficiency in hospitals.* C. Montacute. 1962.

NPHT. *Work of nurses in hospital wards, report of a job analysis.* 1953.

Stone, P. A. Administration and costs of hospital maintenance. In *The Hospital* 7/64, 8/64.

Function and design: general

Architects Journal. 7/7/60. The hospital brief.

Atkinson, G. A. and Phillips, R. J. Hospital design; factors influencing the choice of shape. In AJ 15/4/64.

Bartlett School of Architecture. *Hospital design.* 1964. (Course summary).

BRS. *The disabled.* 1964. (Library bibliography No. 191).

Goldsmith, S. *Designing for the disabled.* RIBA, 1963.

The Lancet. From words to wards; a series of articles on the doctor's contribution to hospital planning. 1962.

MOH. Hospital Building Notes. HMSO. No. 1 *Buildings for the hospital service.* No. 2 *Cost of hospital buildings.* No. 3 *The District General Hospital.*

MOH. Hospital Building Bulletins. HMSO. No. 3 *Traffic and organization survey for hospital redevelopment.*

Nuffield Foundation and NPHT. *Summary of lectures on hospitals given at Worcester College, Oxford,* 1960.

NPHT. *Studies in the function and design of hospitals.* Oxford UP, 1955.

RIBA. *Hospitals course handbook,* 1960.

Souder, J. J. *Estimating space needs and costs in general hospital construction.* Chicago, AHA, 1963.

Souder, J. J. *Planning for hospitals: a systems approach using computer-aided techniques.* Chicago, AHA, 1964.

Stone, P. A. *Design evaluation for hospital building.* BRS (Current Papers).

United States. Public Health Service. *Yale studies of hospital function and design.* n.d.

Van Ments, M. *Internal traffic in the general hospital.* BRS (Current Papers).

Building and construction

Eden, J. F. and Green, J. *Integration of building and engineering design in hospital building.* BRS (Current Papers).

MOH. Hospital Design Notes. HMSO. No. 1 *Dimensional co-ordination and industrialized building.*

MOH. Hospital Technical Memoranda. HMSO. No. 9 *Pneumatic tube communication systems.*

Sheffield RHB. *Thermal insulation,* 1964. (Design manual No. 16).

Engineering services: general

Hospital Engineering Research Unit. 3 Lilybank Gardens, Glasgow, W.2. List of papers and reports.

MOH. Hospital Technical Memoranda. HMSO. No. 4 *Colour code of flexible cables and cords.* No. 5 *Steam boiler plant instrumentation.* No. 6 *Protection of condensate systems: filming amines.* No. 7 *Electrical services—supply and distribution.* No. 11 *Emergency electrical services.*

Sheffield RHB. *Water services.* 1964. (Design manual No. 18).

LIGHTING

British Lighting Council. *Lighting in hospitals.* 1964.

Hopkinson, R. G., ed. *Hospital lighting.* Heinemann, 1964.

Joint Committee on Lighting and Vision. *Recommendations for the artificial lighting of hospital wards and single bedded rooms.* BRS, 1963.

NOISE CONTROL

CHSC. *Control of noise in hospitals.* HMSO, 1961.

KEHF. *Noise control in hospitals.* 1958. *Noise control in hospitals, report of a follow-up enquiry.* 1960.

United States. Public Health Service. *Noise in hospitals.* Washington, USGPO, 1963.

Safety, protection against fire, drugs, radiation

CHSC. *Control of dangerous drugs and poisons in hospitals.* (Aitken report) HMSO, 1958.

MOH. *Anaesthetic explosions, including safety code for equipment and installations.* (Stead report) HMSO, 1956.

MOH. HM (61) 50. *Ward dangerous drugs order and record books.* 1961.

MOH. Hospital Technical Memoranda. HMSO. No. 1 *Anti-static precautions: rubber, plastics and fabrics.* No. 2 *Anti-static precautions; flooring in anaesthetising areas.* No. 3 *Fire precautions: fish fryers.* No. 8 *Safety code for electro-medical apparatus.*

Radioactive Substances Advisory Committee. *Code of practice for the protection of persons against ionising radiations arising from medical and dental use.* HMSO, 1964.

Radioactive Substances Advisory Committee. *Code of practice for the protection of persons exposed to ionising radiations in research and teaching.* HMSO, 1964.

Hygiene, control of infection

CHSC. *Staphylococcal infections in hospitals.* HMSO, 1959.

KEHF. *Sterilization and disinfection techniques.* 1964.

KEHF. *Influence of ward ventilation on hospital cross infection.* 1964.

MRC. *Control of cross infection in hospitals.* HMSO, 1951, rp. 1956.

MRC. *Prevention of 'hospital infection' of wounds.* HMSO, 1941, rp. 1956.

Williams, R. E. O., and others. *Hospital infection, causes and prevention.* Lloyd-Luke, 1960.

Commissioning and evaluation in use

KEHF. *An evaluation of New Guys House.* 1963.

Newcastle RHB. *Report on the planning, construction and commissioning of the West Cumberland Hospital.* 1962.

Nuffield Foundation. *Case history of a new hospital building; Musgrave Park, Belfast.* Oxford UP, 1962.

Oxford RHB. *Commissioning a new hospital, Princess Margaret, Swindon.* 1961.

SHHD. *Vale of Leven hospital.* HMSO, 1963.

United Cambridge Hospitals. *Report of the planning team on the further development of the Hills Road site, with special reference to Stage 2 Addenbrooke's.* 1962.

Visit also:

Crawley Hospital. (AJ 19/9/62).
Londonderry, Altnagelvin Hospital. (AJ 26/5/60).
Welwyn, Queen Elizabeth II. (H 9/63).
St. Lo Hospital (France). (H 6/51).

Function and design—hospital types

TEACHING HOSPITALS

Eastern RHB and St. Andrews University. *New teaching hospital and medical school at Ninewells, Dundee.* Detailed design report. 1962.

Hospital and medical school design; international symposium held at Queens College, Dundee, July 1961. Ed. G. H. Bell. Livingstone, 1962.

United States. Public Health Service. *Medical education facilities.* USGPO, 1964.

SPECIAL HOSPITALS AND UNITS

Aldis, G. *Planning requirements for the hospital for the mentally subnormal.* Pitman, 1961.

American Psychiatric Association. *Psychiatric architecture.* Washington, APA, 1959.

Baker, A., and others. *Psychiatric services and architecture.* World Health Org., 1959.

MOH. Hospital Building Notes. HMSO. No. 30 *Accommodation for psychiatric patients.* No. 31. *Psychiatric ward type* 1. No. 32. *Psychiatric ward type* 2 *and Pre-discharge (hostel) type ward.*

Visit:

Psychiatric admission units
Aylesbury. Stone Hospital. (AJ 15/10/59).
Cambridge. Fulbourn Hospital. (HHM 2/63).
Wallingford. Fairmile Hospital (AJ 19/4/56).
Therapy Centre
Sutton. Belmont Hospital (H 4/64).
Neurological Centres
Edinburgh. Western General Hospital (H 8/60).
Newcastle General Hospital (HHM 1/63).

Function and design—departmental divisions

ADMINISTRATION

MOH. Hospital Building Notes. HMSO. No. 18. *Administrative Department.*

MOH. Hospital O & M Service Reports. HMSO. No. 2. *Medical records and secretarial services.*

Visit:

Welwyn. Queen Elizabeth II. (*Medical Record* 5/64).

IN-PATIENT CARE, WARDS: GENERAL

CHSC. *Pattern of the in-patients day.* (Powell report) HMSO, 1961.

CHSC. *Reception and welfare of in-patients in hospitals.* HMSO, 1953.

THE ROOM



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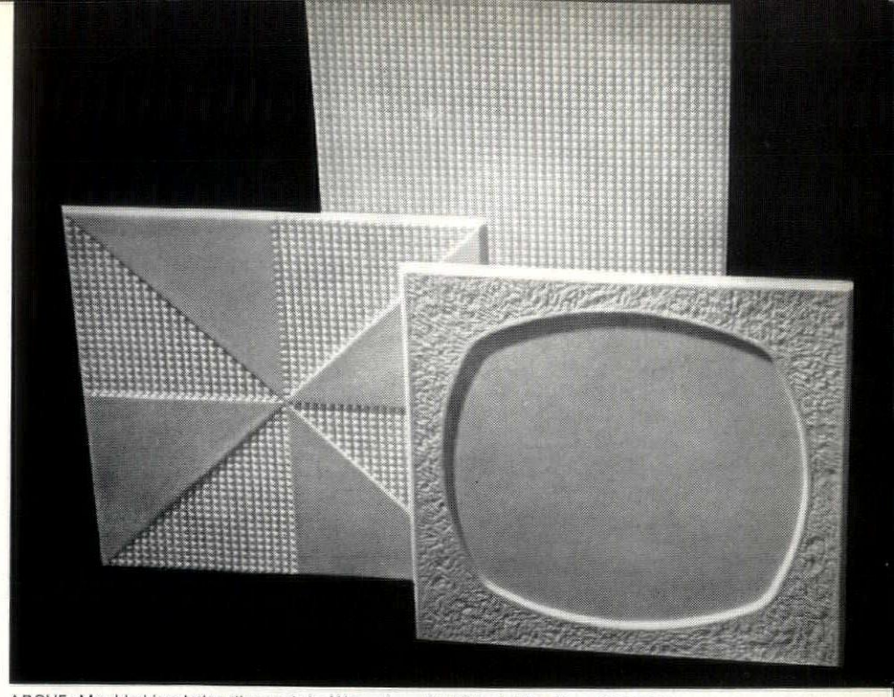
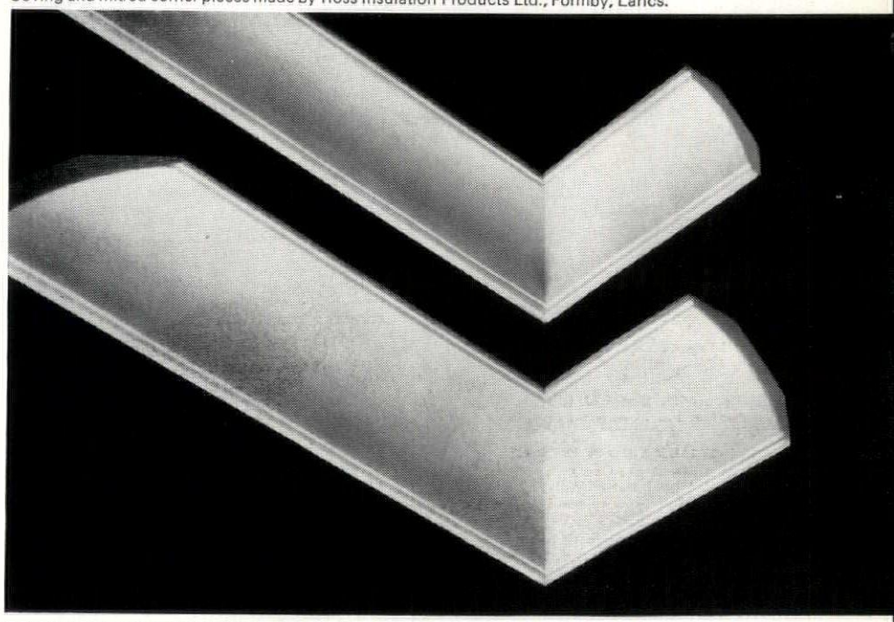


ABOVE: Moulded insulation tiles made by Warmafoam Ltd., Edenbridge, Kent. CENTRE: Coving and mitred corner pieces made by Ross Insulation Products Ltd., Formby, Lancs.



BELOW: Fixing 'Venesta' wall lining boards. These are a laminate of plasterboard and 'Vencel' expanded polystyrene made by Venesta Manufacturing Ltd., Erith, Kent.



MOH. Hospital Building Notes. HMSO. No. 4. *Ward units.* No. 17. *Deep plan (race-track) ward units.*

Raven, R. W. Progressive patient care. In BMJ 6/1/62.

SHHD. *Ward design.* HMSO, 1963.

Visit:

Blackpool. Victoria Hospital (HHM 12/63).
Huddersfield. St. Luke's.
London. Guy's Hospital.
London Hospital.
Poole. General Hospital (HHM 8/63).

Special care wards, children, geriatrics

INTENSIVE CARE UNITS

Gardner, E. K., and Rochford, J. D. Anaesthetists domain, the recovery ward and intensive therapy unit. In *The Hospital*, 11/61.

Howland, D. *Hospital patient monitoring.* New York, American Society of Mechanical Engineers, 1963.

W. K. Kellogg Foundation. *Planning and operation of an intensive care unit.* 1961.

Lancet, 28/11/64. Organization and record keeping on intensive care wards.

Mitchell, M. Le Q., and Thomas, E. B. J. *Intensive care units, post-operative recovery wards and resuscitation rooms in accident centres (in Germany, Sweden, Denmark).* Council of Europe Medical Fellowship, 1964.

Royal Society of Medicine Proceedings, 3/63. Intensive therapy wards and the ten year plan.

Visit:

Leeds. General Infirmary.
Leicester. Royal Infirmary. (NT 24/4/64).
London. Hammersmith Hospital.
Prescot, Lancs. Whiston Hospital. (L 21/3/64).

CHILDREN'S WARDS

CHSC. *Welfare of children in hospital* (Platt report). HMSO., 1958, rp. 1962.

MOH. Hospital Building Notes. HMSO. No. 23. *Children's ward.*

Nuffield Foundation. *Children in hospital.* Oxford UP, 1963.

Visit:

Amersham. General Hospital (L 24/3/62).
Brighton. Royal Alexander Hospital.
Edinburgh. Astley Ainslie Hospital (H 2/63).
Sheffield. Children's Hospital.

GERIATRICS

NPHT. *Geriatric nursing, a study of the work of geriatric ward staff.* G. F. Adams and P. L. McIlwraith. 1963.

Norton, D., and others. *An investigation of geriatric nursing problems in hospitals.* National Corporation for the Care of Old People, 1962.

Visit:

West Bromwich Hospital. (AJ 14/8/63).
Windygates, Fife. Cameron Hospital. (H 8/63).

OTHER SPECIAL WARDS OF INTEREST

Isolation units at St. George's Hospital, London, and East Grinstead (H 10/63).
Sterile barrier unit at Fulham. (BMJ 3/10/64).

MATERNITY

CHSC. *Human relations in obstetrics.* HMSO, 1961.

CHSC. *Prevention of pre-maturity and the care of premature infants* (Claye report). HMSO, 1961.

MOH. Hospital Building Notes. HMSO. No. 21. *Maternity Department.*

MOH. *Report of the maternity services committee.* (Cranbrook report). HMSO, 1959.

National Birthday Trust Fund. *Report of the maternity services emergency informal committee*, 1963.

Royal College of Obstetricians and Gynaecologists. *Recommendations on the principles and organization of general practitioner maternity units and their relation to special maternity units.*

Visit:

Crawley Hospital.
Glasgow. Bellshill Maternity Hospital. (H 8/62).
Glasgow. Queen Mother's Hospital. (H 1/65).
Hillingdon Hospital. (H 10/60).
Nuneaton. George Eliot Hospital. (HHM 8/63).

Diagnostic and treatment

OPERATING SUITES

Gray, T. C., and Nunn, J. *Symposium on operating theatres and ancillary rooms.* Sherratt, 1964.

Heating and Ventilating Research Association. *Cooling loads for operating theatres.* E. Stanley, 1963.

Heating and Ventilating Research Association. *Laboratory study of the downward displacement system of ventilation in operating theatres.* E. Stanley, 1964.

Jacobs, R. H. Architect's guide to surgical infection. *American Institute of Architects Journal.* 8/62.

Jacobs, R. H. The surgical center. *American Institute of Architects Journal.* 11/62.

Jacobs, R. H. Surgical suite locker room design and procedure. *American Institute of Architects Journal.* 9/62.

MOH. Hospital Building Bulletins. HMSO. No. 1. *Operating theatre suites.*

Newcastle RHB. *Finishes and fittings in operating suites.* (A series of reports).

Newcastle RHB. *General principles regarding requirements in operating suites.* 1964.

Perkins, E. W. *Aseptic technique for operating room personnel.* 2nd ed. Saunders, 1964.

Royal College of Surgeons. *Annals* 4/64. Report of a committee on the design of operating theatre suites.

Royal Society of Medicine. *Proceedings* 3/63. Planning of operating theatres.

Smith, W. *Planning the surgical suite.* New York, Dodge, 1960.

Visit:

Birmingham. Selly Oak Hospital (HHM 11/62).
Blackpool. Victoria Infirmary (H 4/62).
Chertsey. St. Peters Hospital (HMPE 12/64).
Liverpool. Royal Infirmary (H 4/63).
London. Guy's Hospital (*Heating & Air Conditioning* 9/61).
London. Hammersmith Hospital (*Hospital Engineer* 8/62).

PHYSICAL MEDICINE: PHYSIOTHERAPY

Chartered Society of Physiotherapists. *Guide to the planning of a hospital physiotherapy department.* 1960. (Typescript).

MOH. Hospital Building Notes. HMSO. No. 8. *Physiotherapy Department.* No. 9. *Occupational therapy department.*

Visit:

London. Middlesex Hospital (HMPE 12/64).
London. St. Benedict's Hospital, Balham.
Middlesbrough General Hospital (H 2/63).
Orpington Hospital.
Swindon. Princess Margaret Hospital.

RADIOTHERAPY

MOH. HM (62) 19. *Organization of radiotherapy services for the treatment of cancer.*

Royal Society of Medicine. *Proceedings* 5/64. Planning of radiotherapy departments.

Visit:

Brighton. Royal Sussex County Hospital. (HHM 10/60).
Colchester Hospital (*Radiography* 10/64).
Edinburgh. Western General Hospital (*Radiography* 2/63).
Northampton General Hospital (H 7/63).
Portsmouth. St. Mary's Hospital (*Radiography* 8/60).
Sutton. Royal Marsden Hospital (*Radiography* 9/63).

RADIODIAGNOSIS, X-RAY

American College of Radiology. *Planning guide for radiologic installations.* Chicago, Year Book Publishers, 1953.

MOH. Hospital Building Notes. HMSO. No. 6. *Diagnostic x-ray department.*

NPHT. *Towards a clearer view, the organization of diagnostic x-ray departments.* 1962.

Radiography. 7/64. Thoughts on the function and design of diagnostic departments.

Royal Society of Medicine. *Proceedings* 5/64. Planning of x-ray departments.

PATHOLOGY, LABORATORIES, MORTUARY (see also Teaching and research)

MOH. Hospital Building Notes. HMSO. No. 15. *Pathology department.* No. 20. *Mortuary and post-mortem room.*

MOH. Hospital O and M Service Reports. HMSO. No. 6. *Pathology, measurement of work in units.*

Visit:

Edinburgh. Western General Hospital (H 11/61).
Glasgow. Victoria Infirmary (H 4/62).
Orpington Hospital.
Dorchester. Dorset County Hospital Mortuary. (H 8/63).

Medical photography and illustration

MOH. Hospital Building Notes. HMSO. No. 19. *Department of medical photography and medical illustration.*

Out-patient services

AHA. *The emergency department in the hospital, a guide to management and organization.* AHA, 1962.

CHSC. *Accident and emergency services.* (Platt report). HMSO, 1962.

MOH. Hospital Building Notes. HMSO. No. 4. *Waiting space and circulation in out-patient departments.*

MOH. Hospital O and M Service Reports. HMSO. No. 3. *Chest clinics.* No. 1. *Out-patient waiting time.* No. 8. *Out-patient departments and the ambulance service.*

MOH. *Study of some management problems in the out-patient department.* (Enclosure to HM (64) 102).

NPHT. *Casualty services and their setting; a study of medical care.* 1960.

SHHD. *Provision and design of casualty and accident departments.* HMSO, 1961.

Visit:

Out-patient departments at:
Birmingham. Selly Oak Hospital (H 11/63).
London. Royal Marsden Hospital (HHM 6/63).
London. Royal Northern Hospital (*Builder* 31/5/63).

Accident centres at:
Chertsey. St. Peters Hospital (H 5/64).
Luton and Dunstable Hospital (L 9/11/63).
Newcastle General Hospital (H 3/63).

Supply and storage: general

Architectural Design 1/61. Mechanization and hospital design. (Articles by J. Weeks, W. J. Jobson, G. A. Friesen).

CHSC. *Final report on hospital supplies.* (Messer report). HMSO, 1958.

KEHF. *Disposables in hospitals.* 1964.

HHM. 7/64. Disposable products symposium.

Visit:

London. Lambeth Hospital. (H 7/63. New stores).
Swindon. Princess Margaret Hospital. (Stores).

CATERING

Burton-on-Trent HMC. *Report on an investigation into the application of large scale industrial catering to new and existing hospitals.* S. D. Evans and D. M. Tourt. 1963.

KEHF. *Catering circular, layout and design.*

Kotschevar, L. H., and Terrell, M. E. *Food service planning, layout and equipment.* Wiley, 1961.

MOH. *Clean catering.* HMSO, 1963.

MOH. Hospital Building Notes. HMSO. No. 10. *Kitchens.*

MOH. *Hospital catering.* HMSO, 1962.

NPHT. *Food in hospitals.* B. S. Platt. 1963.

SHHD. *Hospital catering.* (Gumley report). HMSO, 1961.

Visit:

London. Bethnal Green Hospital (H 4/64).

PHARMACY

CHSC. *Hospital pharmaceutical service.* (Linstead report). HMSO, 1955.

Guild of Public Pharmacists. *Hospital pharmacy planning.* 2nd ed. 1961.

Journal of Hospital Pharmacy. 6/64. Planning the pharmacy department in a general hospital of 900 beds or more.

Visit:

Glasgow. Stobhill Hospital. (*Pharmaceutical Journal*, 20/4/63).
Leicester. Royal Infirmary. (*Pharmaceutical Journal*, 20/4/63).
Welwyn. Queen Elizabeth II Hospital. (*Pharmaceutical Journal*, 31/10/64).

STERILE SUPPLIES

Liverpool RHB. *Sterilizing practice in hospitals, report of a conference.* 1959.

MRC. *Sterilization, use and care of syringes.* HMSO, 1962.

MOH. Hospital Building Notes. HMSO. No. 13. *Central sterile supply department.*

NPHT. *Central sterile supply, principles and practice.* 1963.

NPHT. *Planning and organization of central syringe services.* 1957.

NPHT. *Present sterilizing practice in six hospitals.* 1958.

Nursing Times. CSS(D). Ed. B. Watkin. Macmillan, 1961.

Pharmaceutical Society. *Recent developments in the sterilization of surgical materials.* Pharmaceutical P., 1961.

SHHD. *Planning of central sterile supply departments.* HMSO, 1962.

Visit:

Banbury. Horton Hospital (NT 21/9/62).
Belfast. Musgrave Park Hospital (BMJ 10/9/60).
Cambridge. Addenbrooke's Hospital (NT 6/1/61).
London. Guy's Hospital (H 7/64).
London. St. James's Hospital, Balham.

LAUNDRIES

Architects' Journal 14/8/63. Hospital laundries, key factors in design.

CHSC. *Hospital laundry arrangements.* (Cunliffe report). HMSO, 1960.

MOH. Hospital Building Notes. HMSO. No. 25. *Laundry.*

Sheffield RHB. *Hospital laundry.* 1964. (Design manual No. 11).

Visit:

Aberdeen. Foresterhill site. (HHM 9/64).
Kidderminster. Lea Castle Hospital (H 9/64).
Sunderland Hospital. (HMPE 1/65).

Teaching and research

STAFF TRAINING

MOH. Hospital Building Notes. HMSO. No. 14. *Training school for nurses.*

Visit:

Edinburgh. Western General Hospital (AJ 18/9/58).
London. Middlesex Hospital.
London. Westminster Hospital.
Middlesbrough. West Lane Hospital. (HHM 9/64).

RESEARCH LABORATORIES

KEHF. *Planning of hospital laboratories.* 1962.

Munce, J. F. *Laboratory planning.* Butterworth, 1962.

Nuffield Foundation. *Design of research laboratories.* Oxford UP, 1961.

RIBA. *Laboratories 2, a symposium.* 1959.

Works and engineering

MOH. Hospital Building Notes. HMSO. No. 16. *Boiler house and steam boiler plant.*

Sheffield RHB. *Mechanical, electrical and civil engineering workshops, stores and associated facilities.* 1964. (Design manual No. 19).

Visit:

Billericay. St. Andrews Hospital (H 5/64. Boiler house).
Newcastle General Hospital (H 1/64. Boiler house).

Staff accommodation

MOH. Hospital Building Bulletins. HMSO. No. 2. *Accommodation for nursing staff.*

MOH. Hospital Building Notes. HMSO. No. 11. *Dining room.* No. 24. *Residential accommodation for staff.*

Visit:

Barnet General Hospital (AJ 16/10/63).
Edgware General Hospital (*Builder* 22/11/63).
Glasgow. Bellshill Hospital (AJ 27/10/60).
London Hospital (BHSSJ 7/2/64).

Other health and welfare services

MOH. Local Authority Building Notes. HMSO. No. 1. *Costing and building procedures.* No. 4. *Junior training centres.* No. 5. *Adult training centres.* No. 7. *Ambulance stations.*

MOH. *Health and welfare, the development of community care.* HMSO, 1964.

HOMES FOR THE AGED

MOH. Local Authority Building Notes. HMSO. No. 2. *Residential accommodation for elderly people.* MOHLG. Design bulletins. HMSO.

No. 1. *Some aspects of designing for old people.* No. 2. *Grouped flatlets for old people.*

GP CLINICS, SURGERIES

Thomson, W. A. R. Ed. *The doctor's surgery, a practical guide to the planning of general practice. Practitioner*, 1964.

Visit:

Brentwood. Group practice surgery (AJ 20/3/58).
London. Surgery, SE2. (AJ 9/8/61).
Poole. Central Clinic. (AJ 20/11/63).
Welwyn. Gooseacre Health Centre (AJ 2/2/56).

Equipment

BSI. *Hospital supplies officers guide.* (Sectional list of hospital equipment standards).

Building Centre, London. Exhibition etc. of hospital equipment.

Leeds RHB. *Equipment and furnishings for hospitals.* 1964.

MOH. Hospital Equipment Notes. HMSO. The numbers and titles correspond to those of the Hospital Building Notes.

MOH. Hospital Technical Memoranda. HMSO. No. 10. *Pressure steam sterilizers.*

National Fund for Research into Poliomyelitis and other Crippling Diseases. *Equipment for the disabled.* 1960.

CONTRACTORS, etc

Princess Margaret Hospital, Swindon. *Architects:* Powell & Moya. *General contractor* (PHASE 2): J. Gerrard & Sons Ltd. *Sub-contractors: Metal windows:* The Crittall Manufacturing Co. *Flush doors:* Venesta Plywood Ltd. *Medical gases:* British Oxygen Co. *Lifts:* Express Lift Co. *Mechanical services:* G. N. Haden & Sons Ltd. *Window frames and pressed steel door frames:* Henry Hope & Sons Ltd. *Aluminium sliding windows:* Quicktho Engineering Ltd. *Plastic spray wall and ceiling finish:* R. A. Brand & Co. *Metal work:* Albion Iron & Wire Works Co. *Central vacuum cleaning system and pneumatic tube system:* Lamson Engineering Co. *Kitchen equipment:* Allied Ironfounders Ltd. *Roof lights:* Williaam J. Cox (Sales) Ltd. *Sanitary suppliers:* Dent & Hellyer Ltd. *Specialist joinery work:* H. J. Cuss & Sons, Wiltshire Joinery Co. *Flooring:* Stevens & Adams Ltd., GC Flooring Ltd. *Sterilizers:* Sierex Ltd., Drayton Castle Ltd. *Door gear:* E. Hill Aldam Ltd. *Disposal hoists:* Aldous Campbell Hypower Ltd.

High Wycombe War Memorial Hospital. *Architects:* Powell & Moya. PHASE 1A: *General contractor:* H. J. & A. Wright Ltd. *Sub-contractors: Heating:* F. G. Alden (Heating) Ltd. *Electrical:* T. Clarke & Co. *Glazed screens:* The Crittall Manufacturing

Henderson

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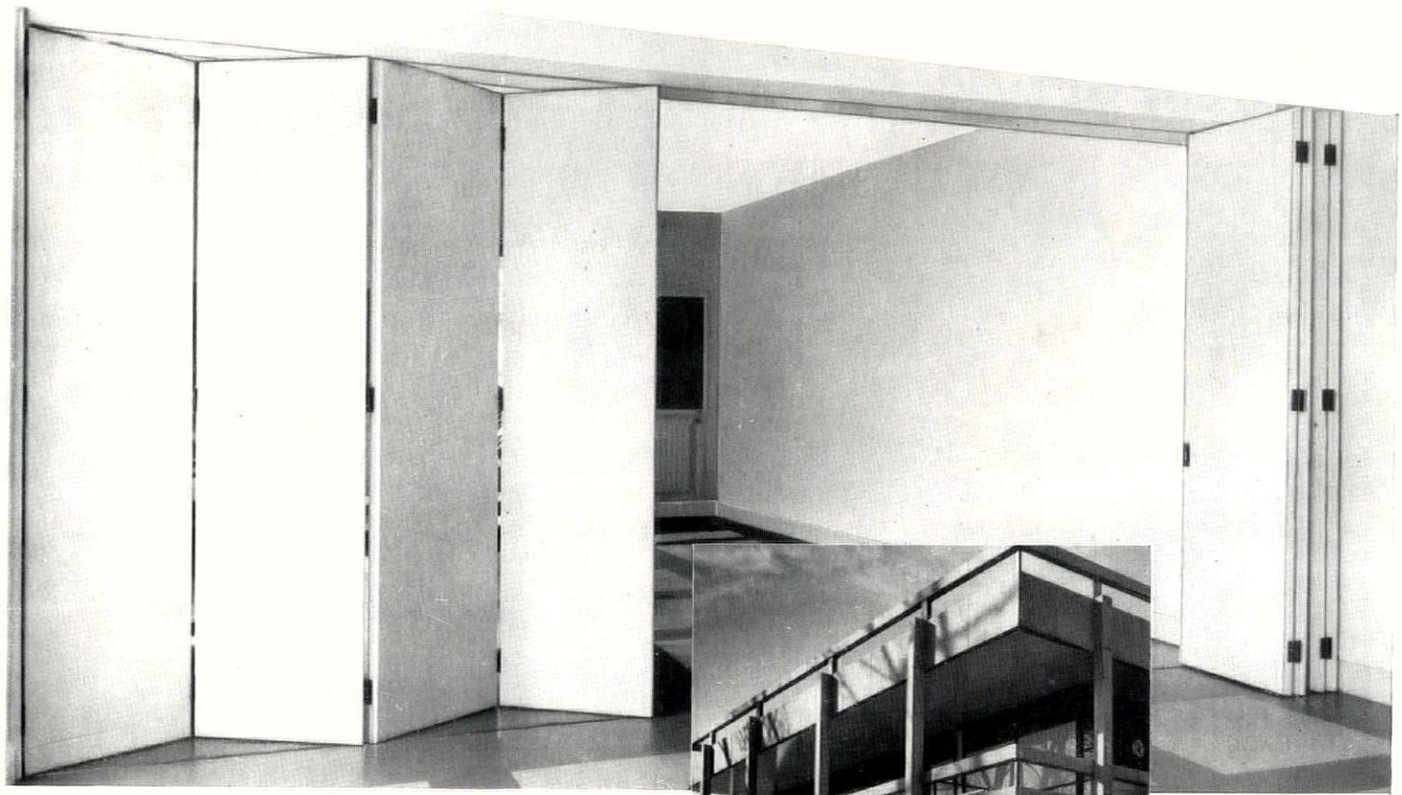

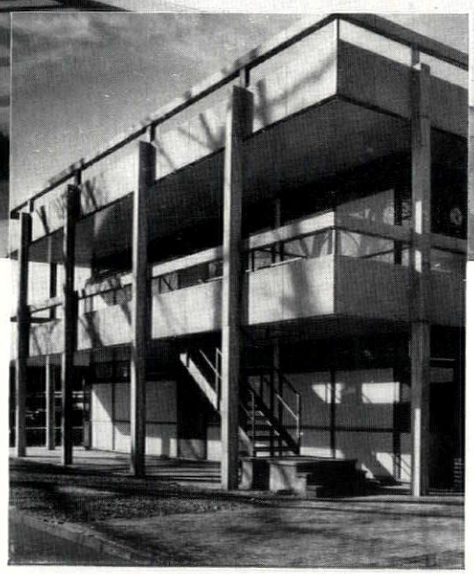

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Huddersfield General Hospital. *Architects:* George, Trew & Dunn. *General contractor:* Tersons Ltd. *Sub-contractors: Mechanical services:* Matthew Hall Mechanical Services Ltd. *Electrical installation:* James Kilpatrick & Son Ltd. *Timber windows, venetian blinds:* J. Gerrard & Sons Ltd. *Ironmongery:* James Gibbons Ltd. *Brassware:* J. H. Sankey & Son Ltd., Barking Brassware Co., J. S. & F. Folkard Ltd. *Operating theatre windows, louvres, metal windows:* Henry Hope & Sons Ltd. *Theatre lights, cassette conveyor:* Sierex Ltd. *CSSD benching:* Baird & Tatlock (London) Ltd. *Fireproof doors:* Fireproof Shutter & Door Co. *Heated towel rails:* Dent & Hellyer Ltd. *Acoustic panelling:* Planiflex Ltd. *Main entrance doors, screens:* Birmingham Guild Ltd. *Doors:* Leaderflush (Doors) Ltd. *Lifts:* Otis Elevator Co. *Mackintosh sheet conveyor:* F. A. Norris & Co. *Roller shutters:* Roller Shutters Ltd. *Flooring (cork):* Rowan & Boden Ltd. (*linoleum, asphalt*): Limmer & Trinidad Lake Asphalt Co. (*quarry tile, Ferrolite tile*): Wiggins-Sankey Ltd. *Glazing mastics:* Adshead Ratcliffe & Co. *Heater panels:* Comyn Ching & Co. (London) Ltd. *Roof lights:* Lenscrete Ltd. *Partitioning:* Holoplast Ltd. *Cubicle and ordinary curtain track:* Silent Gliss Ltd. *Double glazed units:* Plyglass Ltd. *Lead lined doors:* Venesta Plywood Ltd. *Travelling roof cradle:* Palmers Travelling Cradle & Scaffold Co. *Speaking units:* Hygiaphone (England) Ltd. *Glazed balustrade:* Bigwood Bros. (Birmingham) Ltd. *Roofing:* D. Anderson & Son Ltd. *Travertone tile ceiling, supacoust ceiling:* Campbell Denis Ltd. *Illuminated ceiling:* GEC Ltd. *Dark room equipment:* Kodak Ltd., Exal Ltd. *Telephone kiosks:* Charles Bryant & Sons Ltd. *Stainless steel sinks:* Associated Metal Works (Glasgow) Ltd. *Slate cills, copings:* Bow Slate & Enamel Co. *Portland stonework:* J. Oldham & Co. (Stonemasons) Ltd. *Sanitary fittings:* Adamsez Ltd., Dent & Hellyer Ltd., John Knowles & Co., Armitage Excelsior Ltd. *Vacuum plant room door:* Sound Control Ltd. *Automatic doors:* G. D. Peters & Co., Tonks-Rowley (Birmingham) Ltd. *Light fittings:* Frederick Thomas & Co., Atlas Lighting Co., Troughton & Young Ltd. C. M. Churchouse Ltd., J. & G. Coughtrie Ltd., Rotaflex Ltd., Tucker & Edgar Ltd., Merchant Adventurers Ltd., Ekco Ensign & Electric Ltd., SLR Electric Ltd., M. J. Glover & Co., Allom Heffer & Co. *Facing bricks:* Blockleys Ltd.

Ulster Hospital, Belfast. *Architect:* Frederick Gibberd. *General contractor:* Stewart & Partners. *Sub-contractors: Heating, ventilation and special services, kitchen and laundry equipment:* Ashwell & Nesbit Ltd. *Mosaic tiling:* Apuana Marble Industries. *Blinds and fabrics:* James Anderson Ltd. *Structural aluminium, ventilators and aluminium doors:* Aluminium Alloy Fabrications Ltd. *Aluminium roof decking:* William Briggs & Sons Ltd. *Cellular concrete insulation:* Celcon Ltd. *Purpose-made metal windows, patent opening gear:* Crittall-McKinney Metal Window Co. *Special joinery:* Cygnet Joinery Ltd. *Ironmongery:* H. & C. Davis & Co. *Fire-proof doors:* Dreadnought Fireproof Doors Ltd. *Waterproof roof finishes:* Evode Ltd. *Space heating:* Frenger Ceilings Ltd. *Aluminium dome lights, louvres and bird guards:* Greenwoods & Airvac Ventilating Co. *Stainless steel benching:* Grundy Equipment Ltd. *Duct hoods:* G. A. Harvey & Co. (London) Ltd. *Lino and pvc floor tiling:* Korkoid Decorative Floors Ltd. *Balustrading, steel staircases and cat ladders:* Light Steelwork (1925) Ltd. *Electrical services and lightning conductors, cold room installation:* G. McCartney & Co. *Patent glazing:* Mellowes & Co. *Metal folding doors:* Potter Rax Ltd. *Tip-up seating and tiered seating:* Race Furniture Ltd. *Roof paving:* Ruberoid Co. *Window control gear:* Teleflex Products Ltd. *Suspended ceilings:* Tentest Fibre Board Co. *Terrazzo paving and partitions, ceramic tiling, marble flooring, slate surrounds:* Toffolo Jackson & Co. *Tanking:* Val De Travers Asphalte. *Felt roofing:* Vulcanite Ltd. *Aluminium windows and screens:* Williams & Williams Ltd. *Sliding folding timber doors:* D. Burkle & Son Ltd. *Decorative ceilings:* Pyrok Contractors Ltd. *Draught balance unit and explosion door:* Power Utilities Ltd. *Thermoplastic tiles:* Marley Tile Co.

Western General Hospital, Hull. *Architects:* Yorke, Rosenberg and Mardall. *General contractors:* Trollope & Colls. *Sub-contractors: Precast floor beams:* Costain Concrete Co. *Expanded metal ceilings:* Steel Bracketing & Lathing Ltd. *Armour plate glass:* Aygee Glass Co. *Painting and cellulose:* Lightowler & Co. *Terrazzo:* Marriott & Price. *Slate sills and copings:* Bow Slate & Enamel Co. *Acoustic ceilings:* Ionlite Ltd. *Lifts:* Otis Elevator Co.

Slough General Hospital. *Architects:* Powell & Moya. *General contractor:* Humphreys Ltd. *Sub-contractors: Mechanical engineering:* Z. D. Berry & Sons Ltd. *Electrical engineering:* Troughton & Young Ltd. *Structural steelwork:* Modern Engineering (Bristol) Ltd. *Concrete chimney:* Tileman & Co. *Piling:* GKN Foundations Ltd. *Lifts and hoists:* W. J. Furse & Co. *Built-up felt roofing:* Amalgamated Asphalte Co., The Ruberoid Co. *Fibrous plaster ceilings:* Plaster Decoration Co. *Suspended ceilings:* The Expanded Metal Co. *Solid plastering:* J. H. Jenner (Plasterers) Ltd. *Flooring:* Hollis Bros. Ltd. *Glazing and vitrolite wall linings:* Faulkner Greene & Co. *Terrazzo and mosaic work:* Marriott & Price Ltd., Art Pavements & Decorations Ltd. *Steel windows:* The Crittall Manufacturing Co. *Aluminium sliding windows:* Quicktho Engineering Ltd. *Miscellaneous metalwork:* H. & C. Davis & Co. *Laboratory bench fittings:* Spencers Joinery Ltd. *Plumbing* Ellis (Kensington) Ltd. *Blackout, venetian and sun blinds:* Accordo Blinds Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Flush doors:* Veneercraft Ltd. *Floor finishes:* Nairn-Williamson Ltd., Armstrong Cork Co. *Perspex roof lights:* Williaam J. Cox (Sales) Ltd. *Double glazing:* Hollow Seal Glass Co. *External render:* ECC Quarries Ltd. *Slate thresholds:* Bow Slate & Enamel Co. *Cubicle curtain tracks:* Silent Glass Ltd. *Sliding door gear:* P. C. Henderson Ltd., E. Hill Aldam & Co. *Precast concrete paving:* No-elite Ltd.

St. Stephens Hospital, Chelsea: Outpatients' Dept. *Architect:* Richard Mellor (Architect, South-West Metropolitan Regional Hospital Board). *General contractor:* G. E. Wallis & Sons Ltd. *Sub-contractors: Lift installation:* Marryat & Scott Ltd. *Telephone installation:* Telephone Rentals Ltd. *Windows:* The Morris Singer Co. *Mosaic cladding:* Marriott & Price Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Ironmongery:* Denis Waring & Co. *Floor covering:* The Marley Tile Co. *Suspended ceilings:* Compactom Ltd.

Townlands Hospital, Henley-on-Thames: Maternity Unit. *Architect:* W. J. Jobson. *General contractor:* J. Honour & Son Ltd. *Sub-contractors and suppliers: Mechanical engineering installation:* H. & E. Engineers Ltd. *Electrical installation:* H. J. Cash & Co. *Structural steelwork:* Hotchkiss (Engineers) Ltd. *Roofing:* United Roofing Companies. *External doors and windows:* Crittall Manufacturing Co. *Internal wall finishes:* R. A. Brand & Co. *Asphalt screed:* Excel Asphalt Co. *Wall and roof cladding to boiler house:* Robertson Thain Ltd. *Landscaping:* J. Walterer, Sons & Crisp Ltd. *Internal partitions:* Shearwater Ltd. *Modular cupboard units:* Charles Bryant & Sons Ltd. *Aluminium cladding fascia and trim:* Marsland & Co. *Vinyl flooring:* James Halstead Ltd. *Internal aluminium modular door frames:* Holoplast Ltd. *Doors:* Bryce White Ltd. *Sanitary fittings:* Twyfords Ltd. *Ironmongery:* Wilkes Berger Engineering Co. and Dryad Metal Works Ltd. *Internal lettering:* Drakard & Humble Ltd. *External signs:* Hills (Patents) Ltd. *Rooflighting and remote control gear:* Lenscrete Ltd. *Curtain tracks:* Silent Gliss Ltd. *Window ventilators:* E. D. Hinchliffe & Sons Ltd. *Lighting fittings:* Falks Ltd. *Flushing valves:* Southern Engineering Group Ltd. *Bedhead control units:* Westrex Ltd.

Wythenshawe Hospital, Lancashire. *Architects:* Powell and Moya. *General contractor* (PHASE 1): Tersons Ltd. *Sub-contractors: Plumbing:* Matthew Hall Ltd. *Metal windows:* Williams & Watson Ltd., P. C. Allday & Co., Quicktho Engineering Ltd. *Door blinds:* Accordo Blinds Ltd. *Roof lights:* Faulkner Greene & Co. *Wall tiling:* H. & R. Johnson Ltd. *Frostproof tiling:* Langley London Ltd. *Sanitary fittings:* Dent and Hollyer Ltd. *Sliding door gear:* P. C. Henderson Ltd. *Metal cupboards:* H. & C. Davis & Co. *Suspended ceilings:* Steel Bracketing & Lathing Ltd. *Lifts and hoist:* J. and E. Hall Ltd. *Facing bricks:* Ibstock Brick & Tile Co. *Rolling shutters:* Hardy and Stewart Ltd. *Fire shutter:* Mather and Platt Ltd. *Precast concrete beams:* Girling's Ferro-Concrete Co. *Precast roof slabs:* Thermalite Ytong Ltd. *Asphalt:* Permanite Ltd.

Astley Ainslie Hospital, Edinburgh: Children's Unit. *Architect:* Michael Laird. *General contractor:* Holland & Hannen & Cubitts. *Sub-contractors: Heating:* Brightside Engineering. *Electrical:* Eastern Electrical Services. *Glazing:* Wm. Lindsay & Co. *Plumber:* Hugh Twaddle & Co. *Floor finish:* Dunlop Semtex. *Furniture:* Scandinavian Furnishings Ltd.

Cameron Hospital, Windygates, Fife: Geriatric Unit. *Architect:* John Holt (Regional Architect, South Eastern Regional Hospital Board, Scotland). *General contractor:* W. & J. R. Watson Ltd. *Sub-contractors: Bituminous felt roofing:* Wm. Briggs & Sons Ltd. *Steel windows:* F. Braby & Co. *Tile and terrazzo:* Toffolo Jackson & Co. *Floor finishes:* Marley Tile Co. *Heating and hot water:* Brightside Heating & Engineering. Co. *Road surfacing:* Limmer & Trinidad Lake Asphalt Co. *Open web steel roof beams:* Metal Sections Ltd. '*Eternit*' *panels:* G. R. Speaker & Co.

Randolph Wemyss Memorial Hospital, Buckhaven, Fife: Geriatric Unit. *Architect:* John Holt (Regional Architect, South Western Regional Hospital Board, Scotland). *General contractor:* Wight Construction Ltd. *Sub-contractors: Metal windows:* Fredk. Braby & Co. *Floor finishes:* Limmer & Trinidad Co. *Venetian blinds:* Scottish Aluminium Ware Ltd. *Bituminous felt roofing:* Wm. Briggs & Sons Ltd. *Lift:* Etchells, Congdon & Muir Ltd. '*Eternit*' *panels:* G. R. Speaker & Co. *Paint:* Goodlass Wall Co. *Sanitary fittings:* Shanks & Co., Adamsez Ltd. *Vinyl tiles:* Michael Nairn & Co. *Ceramic tiles:* Langley London Ltd.

Aberdeen Royal Infirmary, Radiotherapy Unit. *Architects:* George, Trew & Dunn. *General contractor:* Donald C. Stewart & Co. *Sub-contractors: Mechanical services:* G. N. Haden & Sons Ltd. *Protective demountable walling:* Unibrix Radiation Shieldings Ltd. *Observation windows:* Chance-Pilkington Optical Works. *Curtain walling to treatment wing:* Henry Hope & Sons Ltd. *Ironmongery:* N. F. Ramsay & Co., James Gibbons Ltd. *Sliding, folding door:* Horsely, Smith & Co. (Hayes) Ltd. *Taps:* J. S. & F. Folkard. *Garage doors:* C. Brady & Co. *Cycle racks:* Le Bas Tube. *Library shelving:* Roneo Ltd. *Acoustic tiling:* The Armstrong Cork Co. *Roofing:* Willm. Briggs & Sons Ltd. *Flooring:* Toffolo Jackson Ltd. *Access to ceiling void:* Loft Ladders Ltd. *Structure:* The Cementation Co. *Heating:* Hartley & Sugden, Rhodes, Brydon & Youatt. *Ventilation:* Matthew & Yates Ltd., Spiral Tube & Components Co., Woods of Colchester Ltd., Air Control Installations. *Lighting installation:* Wandsworth Electrical Mnfg. Co. *Fire alarm installation:* Gent & Co. *Clock installation:* Keizle Ltd. (B. H. Rees Ltd.). *Light fittings and lamps:* Allom Heffer & Co. *Electrical installations:* AEI Ltd., GEC Co., Simplex Electrical Co. *Ventilation:* Air Control Installations, CMC, Honeywell Controls Ltd.

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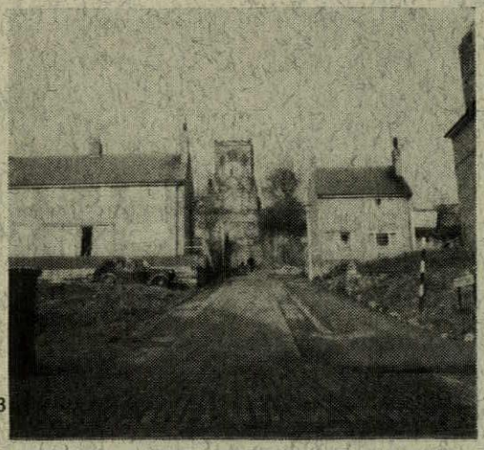
Ian Nairn

STOP PRESS

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

OUTRAGE

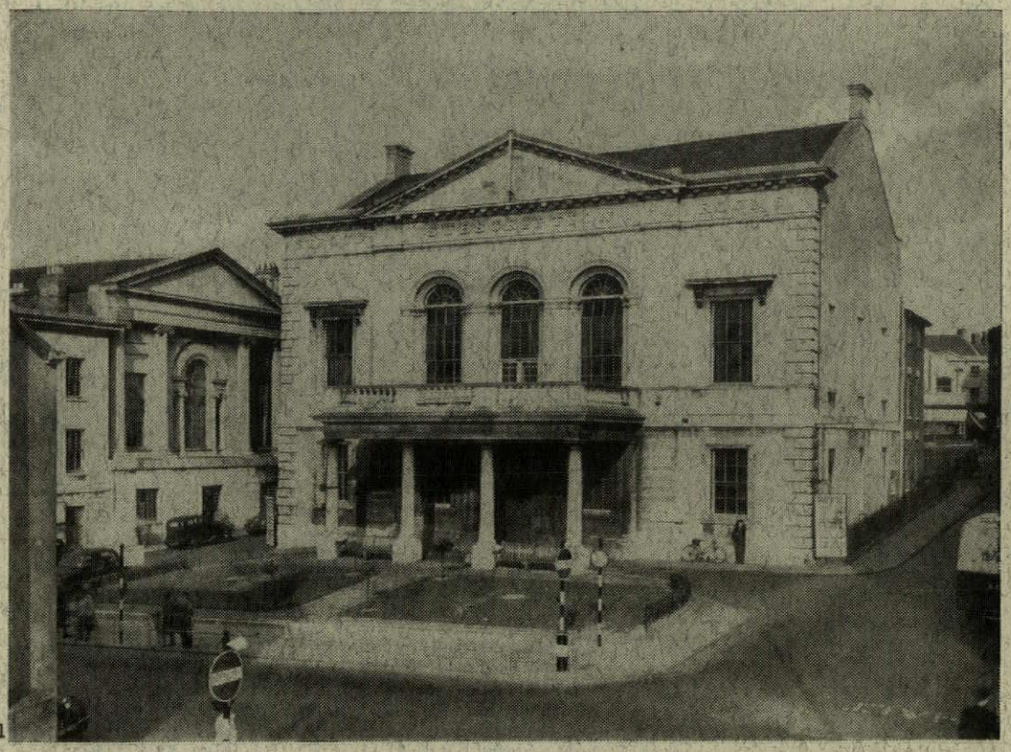
STROUD, GLOUCESTERSHIRE
Plus ça change department, in front of the Subscription Rooms. Old style and scrubby, 1; new style and fussy, 2. In neither is there any apprehension of the total needs of quite a complicated site; and this is what townscape means.



3

SCARBOROUGH
The standard of rebuilding after slum-clearance which is considered adequate for one of the best streets in one of the best coastal sites in Britain, 3.

RICKMANSWORTH, HERTS
Astonishing treatment of an avenue of trees in open country, 4. It is all the more



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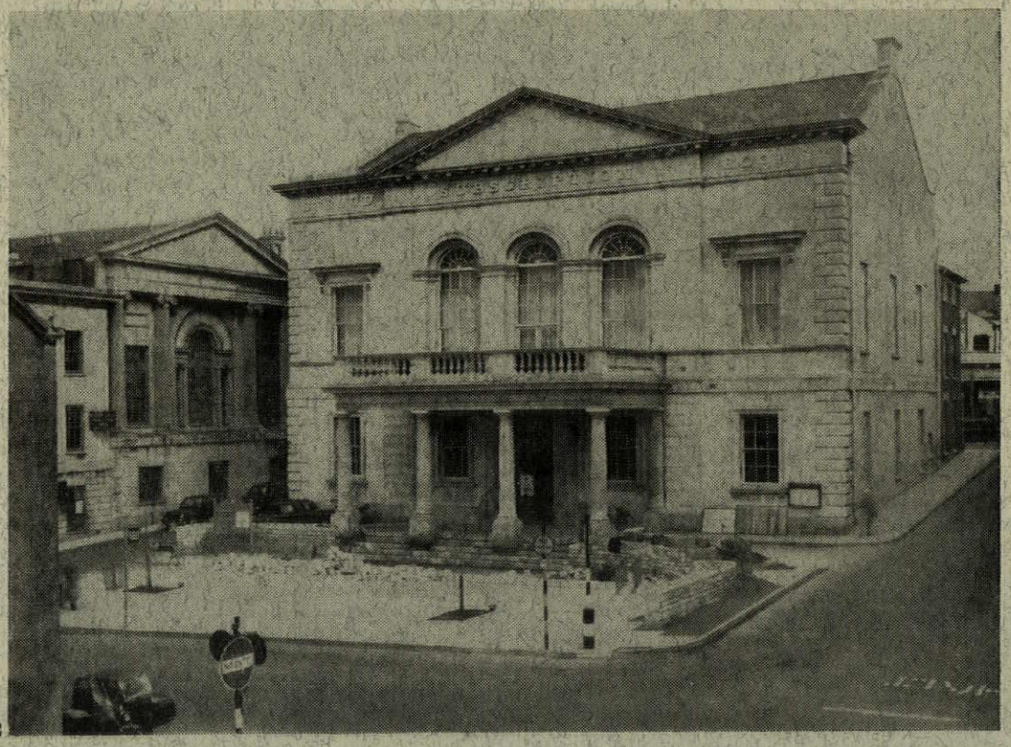


2

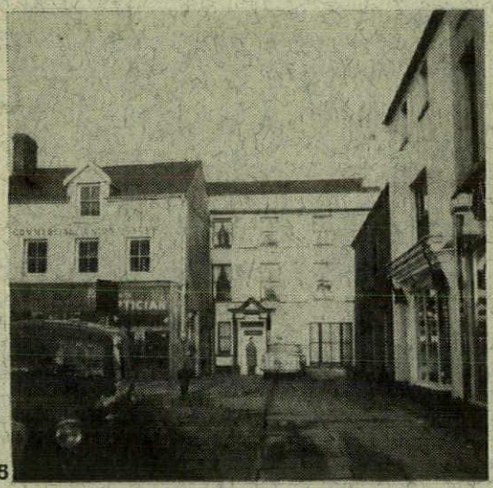


4

odd because they seem to be in the grounds of the Merchant Taylors' Girls' School.

CREDIT

CARMARTHEN AND BRIDGEND
Two Welsh examples of the same townscape trick—having an entrance narrower than the width of the building which both syncopates the view and holds something back, until the last



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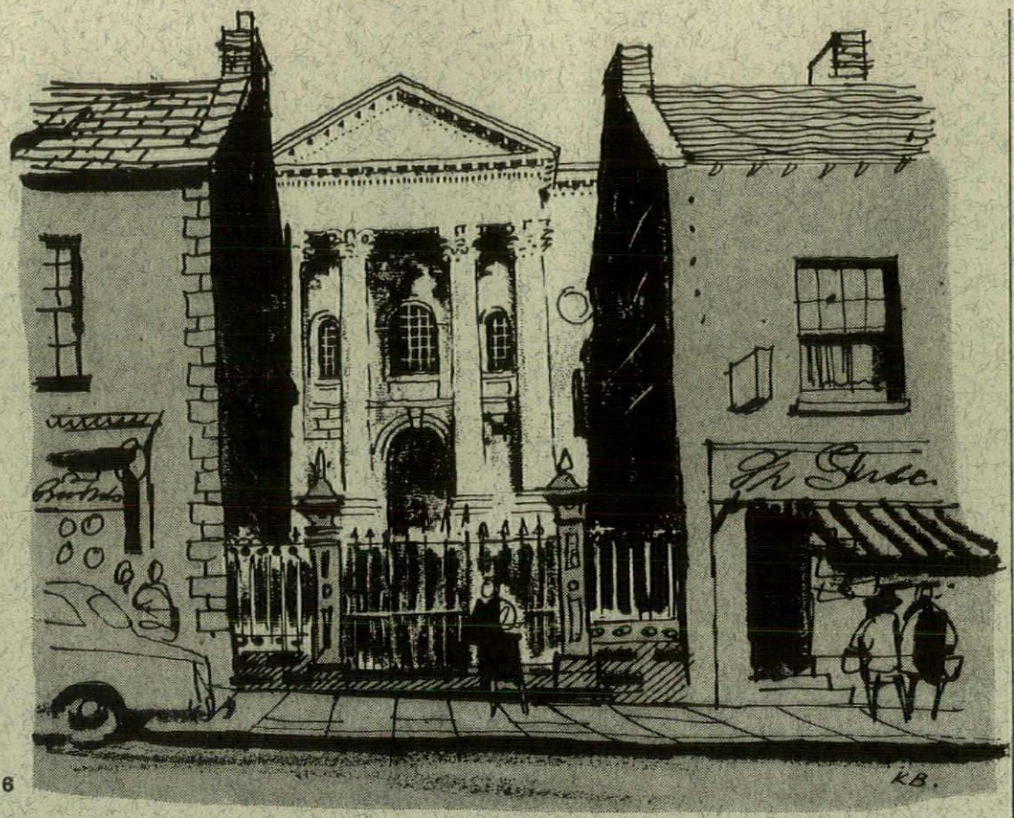
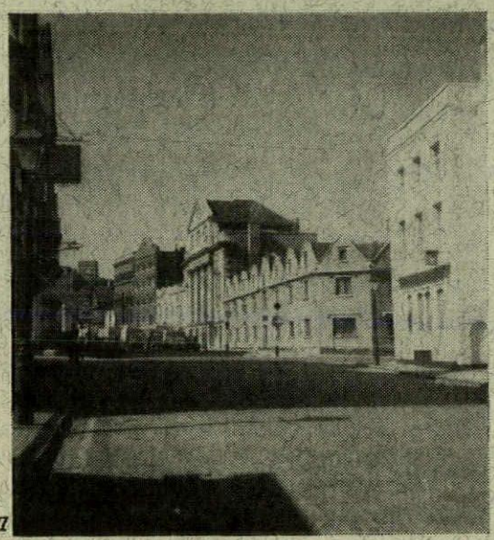


6

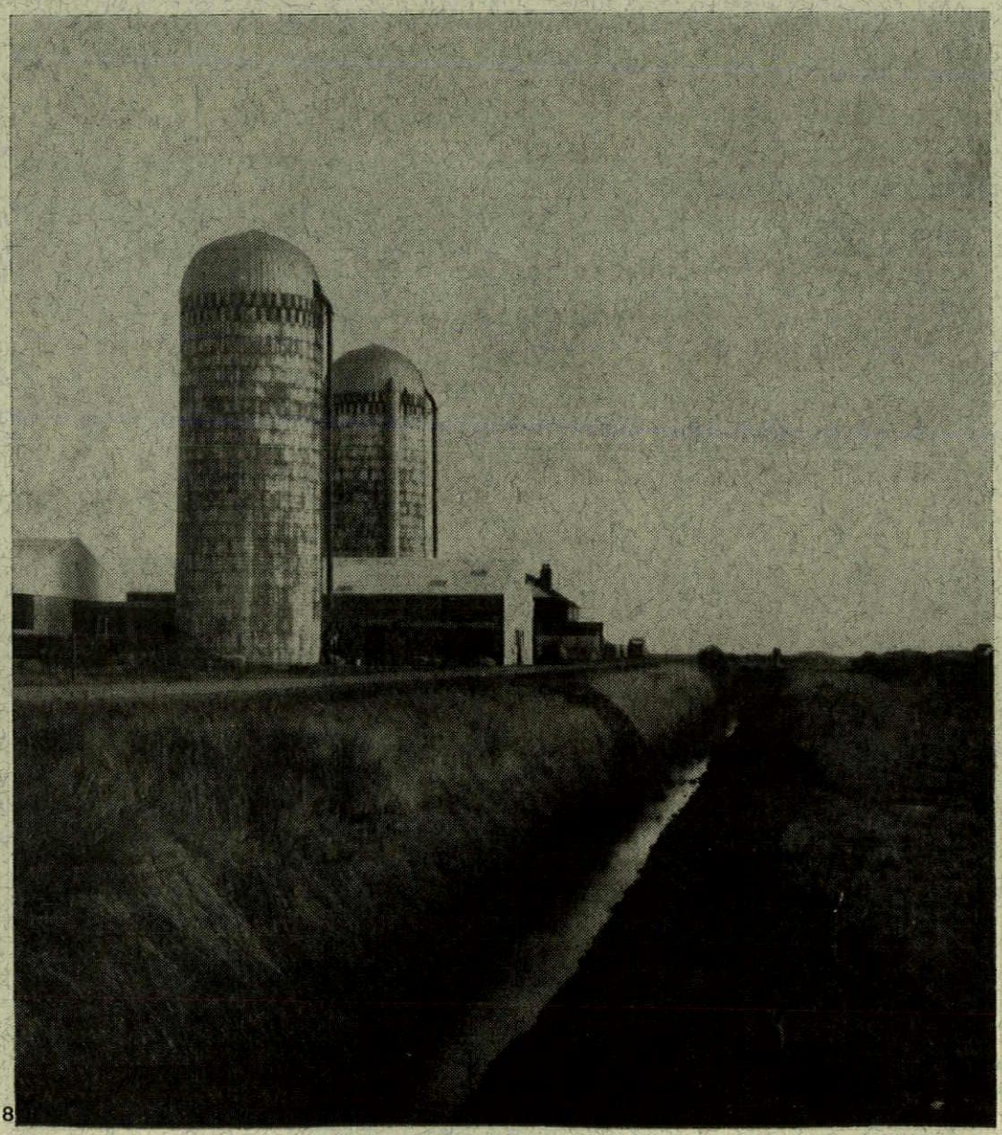
minute. This works whether the half-revealed elevation is plain (Bridgend, 5) or fancy (Carmarthen, 6). Most modern schemes show the facade all at once, and with a lot of air all round it for good measure.



7

KING STREET, BRISTOL
A splendid street near Bristol docks, 7, that after a lean post-war period is now picking up, helped by the newly revived spirit of Bristol's planning. The old mixture of uses is still maintained: in order, the first five buildings on the right-hand side are pub, almshouse, public building (Cooper's Hall), Theatre Royal and warehouse.

DENGIE MARSHES, ESSEX
The concrete grain silos are a genuine modern shape in the countryside, 8—by courtesy not of architects but of Eastern Tractors Ltd., of Chelmsford. Good luck to them.



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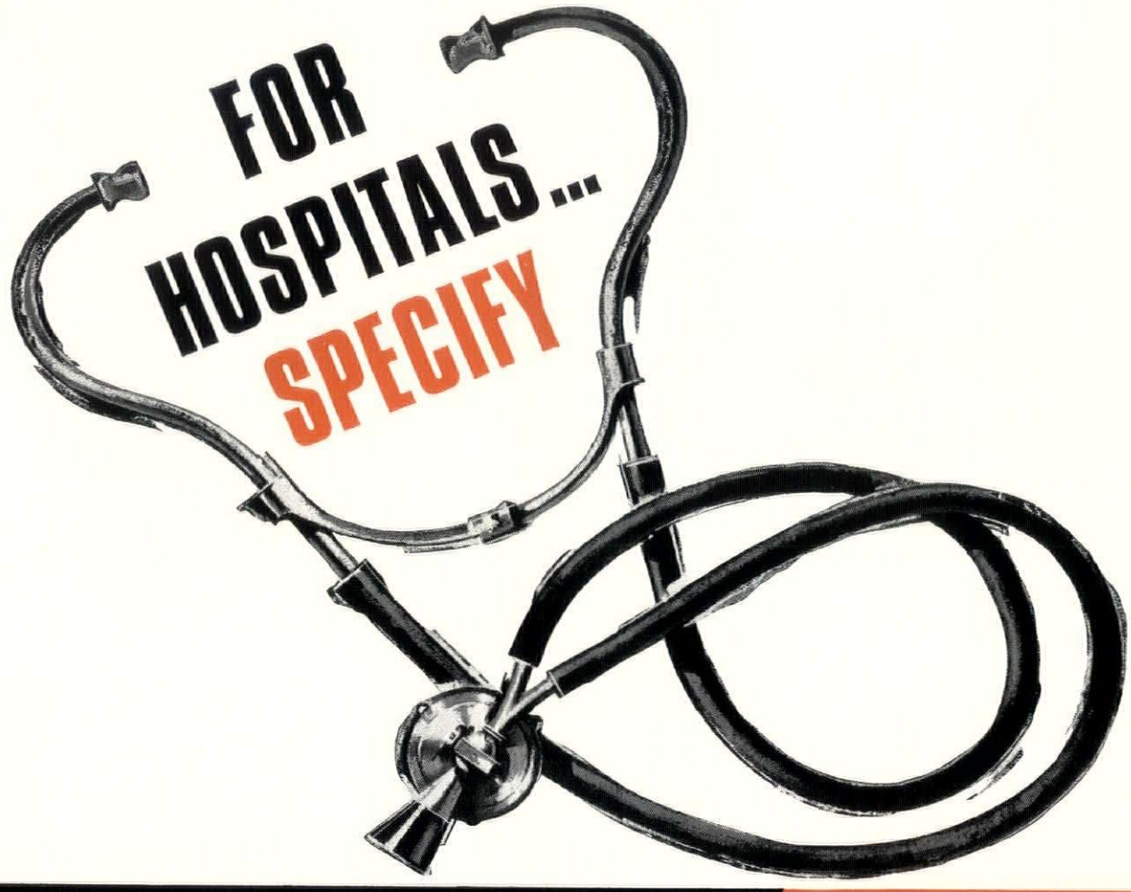

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