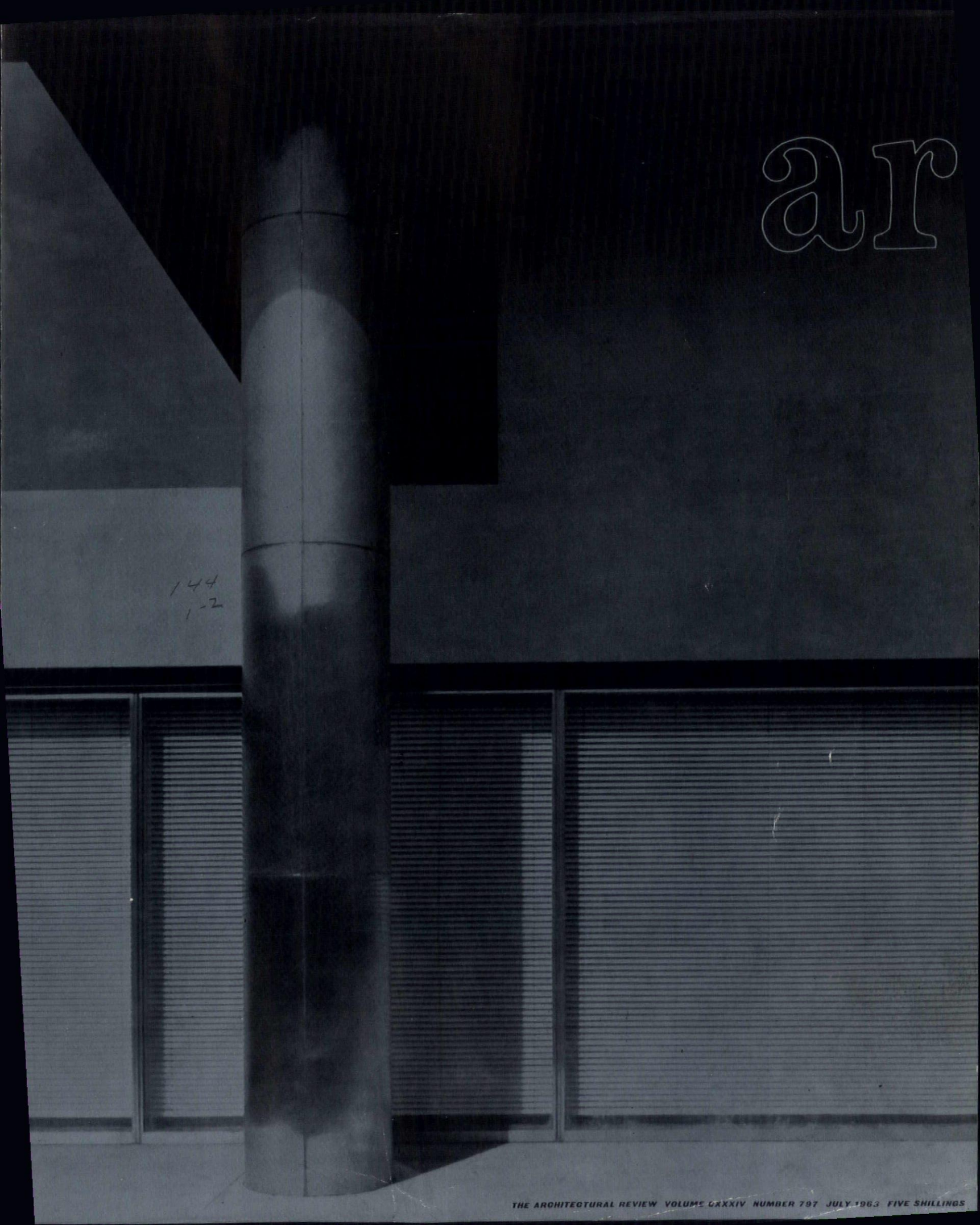


ar

144
1-2

THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 797 JULY 1963 FIVE SHILLINGS

A VERY EXPENSIVE DESK



You could actually use this modern water chiller as a desk. It's attractively styled, really quiet and free from vibration. Of course, it would be a very expensive desk. But it's a real bargain as a water chiller. And it does a man-size job—it has a capacity equivalent to the cooling obtained by melting 30 TONS of ice per day.

This chiller is only one item from a complete range of modern components which enable Thermotank Limited to provide up-to-date and economical air conditioning systems for *any* building. For instance, recent Thermotank installations include office blocks, hospital operating theatres, computer rooms, bowling alleys, supermarkets. Thermotank has more than sixty years' experience of air conditioning. They will be glad to put their skills to work for you.

Thermotank

CLIMATE MADE TO MEASURE

A Member of the Hall-Thermotank Group

LAND AND PRODUCTS DIVISION 60 ROCHESTER ROW, LONDON S W 1

Telephone VICtoria 5762 Telex 24904

GLASGOW · LIVERPOOL · NEWCASTLE · AUSTRALIA · SOUTH AFRICA · U S A · GERMANY · HOLLAND · PERSIAN GULF · SCANDINAVIA

556

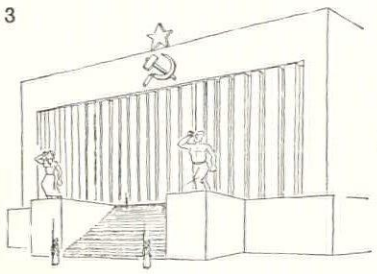
YOUTH THEATRE



1

The exterior of the new Youth Theatre in Leningrad, 1, designed by A. V. Jouk (and an all-woman team of assistants and engineers) expresses all too well the puzzling image that Russian architecture currently presents to outside observers. The entrance facade is almost exactly like one of Osbert Lancaster's pre-war lampoons on the Hero-of-Labour style, 3, but the side elevation, seen again in 2,

3



seems to belong to a different age, as the interior of the stepped foyer confirms, 4. Indeed, the interiors generally, including that of the semi-circular auditorium round the apron stage, 5,

4



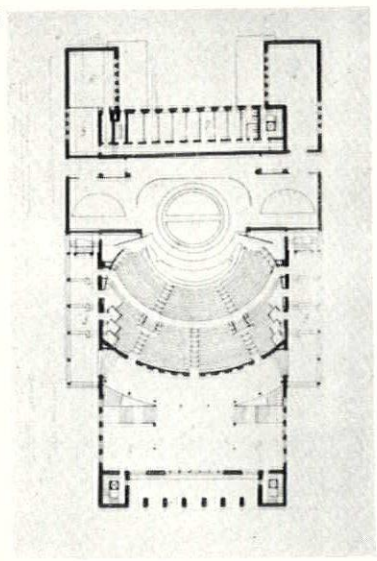
answer pretty well to what the West regards as functionalist norms.

However one interprets the term 'function' there is no doubt that the youth theatre represents a fascinating, and satisfactory, functional proposition. The idea of a permanent repertory company in a theatre catering exclusively to a school-age audience would provoke envy enough in Britain; but that it should be housed in a generously planned building with adequate foyers and circulation space, 6, rather than a converted or multi-purpose hall, and all adequately serviced (sealed double-glazing and air-conditioning) drives envy to the point of recognizing that someone in Leningrad must really believe in the idea of a theatre for children, and be in a position to make it real. But if this is felt so effectively that it can be built, why the uncertain architectural tone in addressing the young audience —it cannot now be written-off as the effect of the party line, because recent Soviet work for the young elsewhere, such as the Pioneers' centre in Moscow, lies fully within the Kruschev-Functionalist idiom.

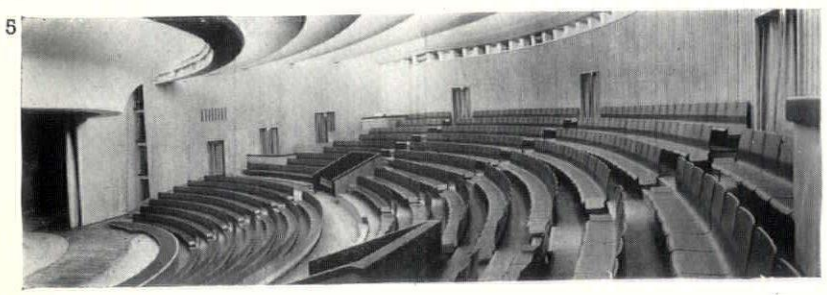


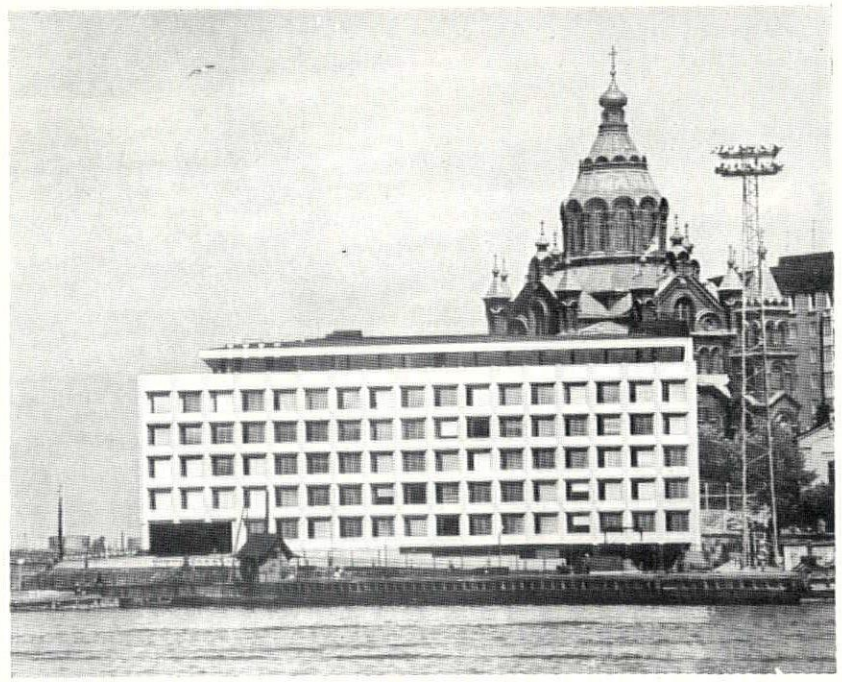
2

6



5





7

ENSO-GUTZEIT

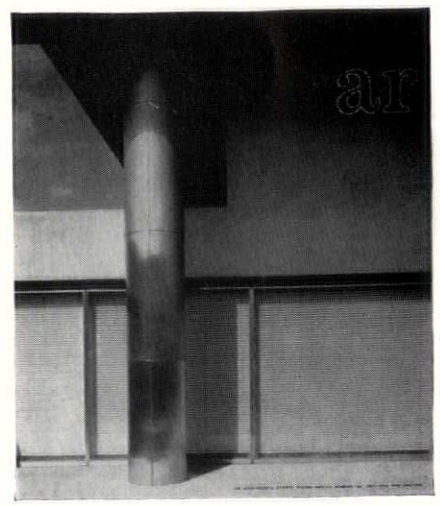
Aalto's New Office-Block

Among the most distinguished buildings to grace the pages of the international magazines in recent months, is Aalto's Enso-Gutzeit office block in Helsinki, 7, most lavishly treated (as is often the case nowadays with his work) in *Casabella* (February, 1963) with supporting studies by Leonardo Mosso. The site, in front of the Gornostaiev church is not only one of the finest waterfront locations left in Helsinki, but the Orthodox-Revival forms of the church could hardly be bettered as a foil for the outward expression that Aalto has given the almost perfectly cubic grid (3.06 by 3.06 by 3.20 metres) on which the design is based—a perfect Cartesian lattice, Mosso calls it.

However, it is not the abstract stereometry of the building that has attracted attention, so much as the exterior cladding. Assymetrically glazed windows, more or less in the manner of his earlier Rautatalo block (AR, April 1957), are set in a grid of

ACKNOWLEDGMENTS

COVER: Henk Snoek. WORLD, pages 1–4: 7–11, *Casabella*; 17–19, Museum of Modern Art, Buenos Aires; 20–24, *Arkkitehti-Arkitekten*; 31–36, *L'Architettura*. FRONTISPIECE, page 8: Henk Snoek. FLATS AT BLUES POINT, SYDNEY, pages 12–15: Max Dupain. HOUSE AT HUNTER'S HILL, SYDNEY, pages 16–17: David Moore. HOUSE AND FLAT IN MELBOURNE, pages 18–19: Mark Strizic. TEATRO AMAZONAS: TEATRO JOSE DE ALENCAR, pages 20–27: 1–9, 12, 13, 15, 17–20, Hans Mann; 10, 11, 14, 16, L. P. Salgado. NEW ZEALAND HOUSE, LONDON, pages 34–40: 1, 2, 5, 7–10, 12, Galwey Arphot; 3, 4, 6, 11, 13–15, Henk Snoek. INTERIOR DESIGN, pages 43–47: 1, 4, 6, 8–10, 13, John Donat; 2, 3, 5, 7, 11, 12, 14, John Maltby. DESIGN REVIEW, pages 47–48: 1–3, Banham Arphot. LOOK OUT, pages 49–50: 3, 4, 7–10, Nairn Arphot. FARM AT FULMER, BUCKS, pages 51–54: Eric de Maré. MISCELLANY, pages 57–64: Exhibitions, 3, 4, 6, Brompton Studio; Shrubs, J. E. Downward; History, Elisabeth Beazley. SKILL, pages 65–72: 1, 2, Sydney W. Newbery.



This month's cover *illustrates, by means of a close-up photograph taken on the third-floor roof-terrace, the geometrical forcefulness and the precision of finish that are the outstanding qualities of New Zealand House, London (architects, Robert Matthew, Johnson-Marshall & Partners). The building is the subject of a critical article beginning on page 34.*

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

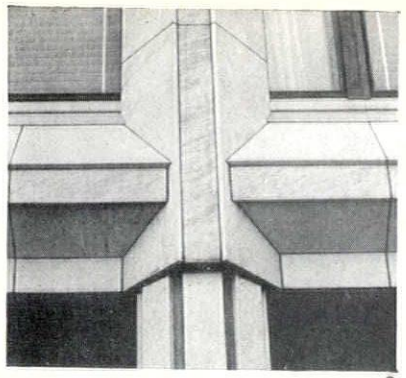
VOLUME 134 NUMBER 797
JULY 1963

SUBSCRIPTION RATE:—*The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada $10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto, via V. di Modrone 18, Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of 27s. 6d. Postage 2s. 9d. extra on the completed volume.*

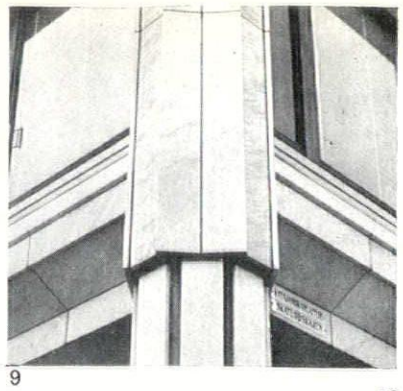
Directing Editors	*J. M. Richards, Nikolaus Pevsner, H. de C. Hastings, Hugh Casson*
Executive Editor	*J. M. Richards*
Assistant Executive Editor	*Reyner Banham*
Assistant Editor (Production)	*William Slack*
Features Editor	*Kenneth Browne*
Technical Editor	*Lance Wright*
Assistant Editor (Counter Attack)	*Ian Nairn*
Staff Photographers	*De Burgh Galwey, W. J. Toomey*
Advertisement Manager	*George Dunn*

CONTENTS

1 **World**
5 **Views and Reviews**
8 **Frontispiece**
9 **Doing Without Utopia:** *Lionel Brett*
12 **Flats at Blues Point, Sydney:** *Architect, Harry Seidler*
16 **House at Hunter's Hill, Sydney:** *Architects, Clarke, Gazzard and Yeomans*
18 **House and Flat in Melbourne:** *Architects, Grounds, Romberg and Boyd*
20 **Teatro Amazonas: Teatro Jose de Alencar:** *Leopold Arnaud*
28 **The Old Town of Jaffa:** *A study in urban renewal by J. Jahr and Saddja Mandl*
34 **Criticism:**
New Zealand House, London: *Architects, Robert Matthew, Johnson-Marshall & Partners*
43 **Interior Design:**
Three Restaurants in London: *Architect, Lucas Mellinger*
47 **Design Review:**
New Seating
49 **Look Out**
51 **Farm at Fulmer, Bucks:** *Architects, David Dry, K. Halasz and Associates*
55 **Criticism Supplement**
Miscellany
57 **Exhibitions**
59 **Architecture**
61 **Shrubs**
62 **History**
65 **Skill**
Shuttering: 2, Formwork in Practice: *Graham Lewis*
72 **The Industry**
74 **Contractors, etc.**



8

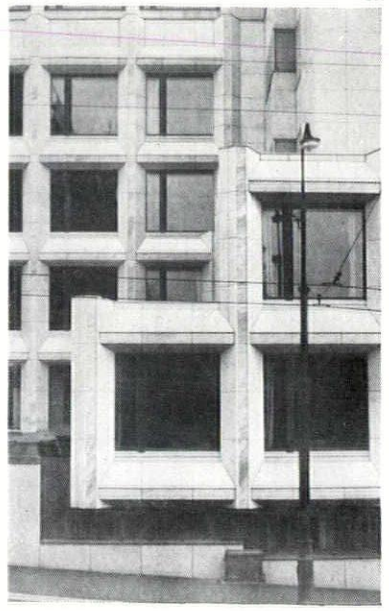


9

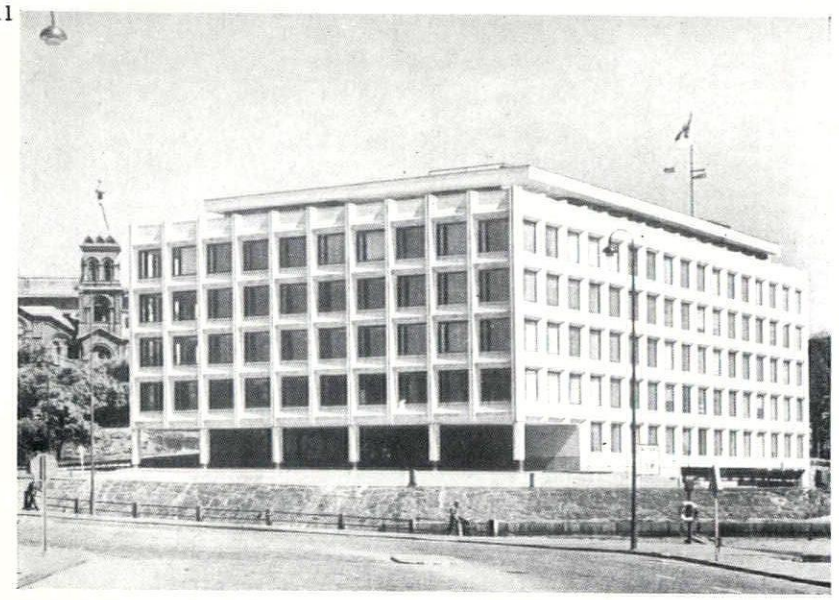
10

Aalto

deep reveals, faced in Carrara and Bardiglio marble, for which a whole language of suitable details, 8 and 9, has been worked out with characteristic Aalto sobriety and style. But the effect, of course, is far less sober than is customary with Aalto, and he seems to be going a long way toward the sort of 'more plastic' facade treatment that has taken over in the US and is promised for the Smithsons' *Economist* building in London. The plasticity is far from exaggerated by world standards, however, 11, though the management of some passages at the back of the building, where the facade stops short of the full height, has the take-it-or-leave-it quality of an unfinished erector toy, 10, and brings into the scheme a touch of that slightly brutal quality that is so often found in Aalto, though lacking in the more formal facades of this block.

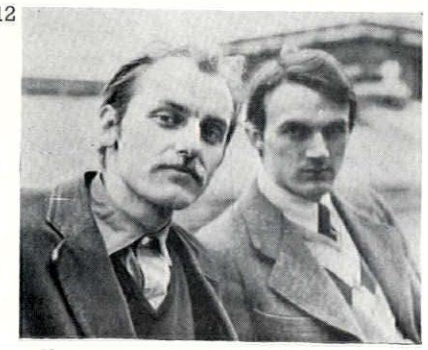


11



HOLLEIN & PICHLER

12



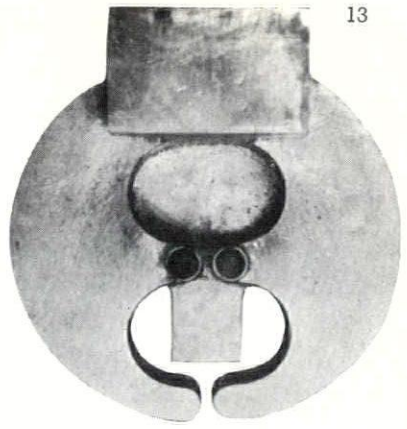
2

EXERCISES IN TECHNOLOGICAL FORM

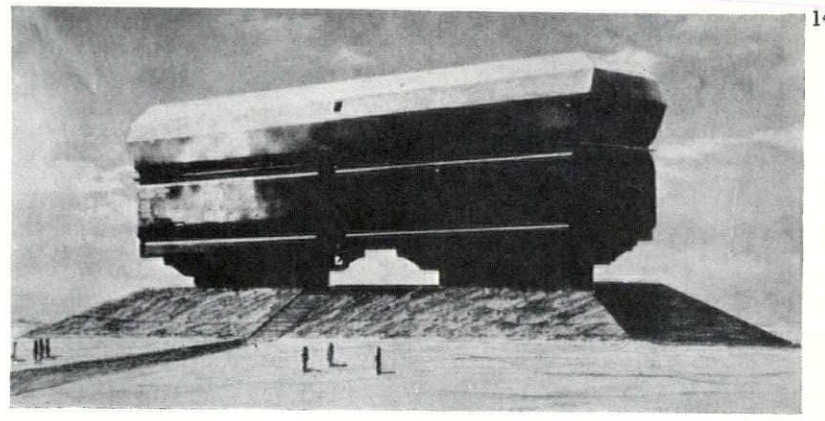
New Frontiersmen of architectonic form are liable to appear anywhere in the world in the present state of almost instantaneous communications—Pancho Guedes in Lourenco Marques, Jason Pickford in Melbourne, and now, in Vienna, the two-man team of Hans Hollein and Walter Pichler, 12, who appear under the slightly startling aegis of Joseph Eshorick of San Francisco, who contributes an introduction to their manifesto/catalogue. The crucial passage of this introduction reads '. . . the nearest thing to a genuine architecture of our day exists in the anonymous buildings and structures of these whose vital intent and consequent spirituality makes their work transcend apparently mundane purpose. This we can see not only in great bridges and dams, in giant machines and factories, but also . . . inside computers, in delicate surgical instruments, in all manner of tools and equipment. . . .'

In line with this proposition, Hollein and Pichler offer an architecture of technological analogy, projects resembling blown up details from Wachsmann, 13: monumental re-workings of

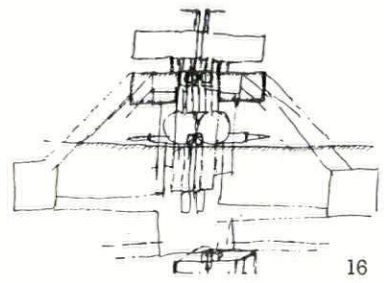
13



14



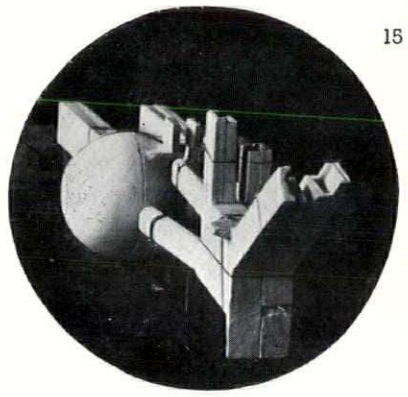
silo-wagons from US railroads, 14; underground cities developed from 'hardened' *Minuteman* launchers, 15, and contrivances resembling the jig-work for transfer machines, 16. Occasionally an analogy is struck that produces an image, that resembles architecture as we know it—but could it not be that the whole thing resembles



16

architecture as we know it so closely that it is simply the architecture that had to be rejected before the Modern Movement could get going? Hollein insists 'Architektur ist zwecklos,' and Eshorick underlines this 'The terms, the language of their work is not limited by purposes or uses, but is absolute. Purposes and uses can come later, they are the easiest part.' With respect to Professor Eshorick, one must submit that what causes 'all manner of tools and equipment' to be the 'nearest thing to a genuine architecture of our day' is that in them purpose and use come first, manifestations of 'vital intent', and that to suppose that function is the easiest part is to fall into an old Academic trap from which architecture has been slowly extricating itself since Frank Lloyd Wright started to straighten out the message early in this century. Cribbing shapes from the Patent Office files is no better nor worse than cribbing them from Normand's *Parallèle*, but it still isn't architecture.

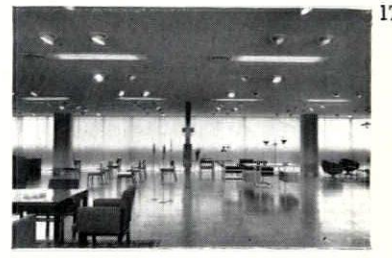
15



ARGENTINE VERSATILITY

Chances to be widely adaptable in the fields of creativity seem to come less and less easily in the highly specialized communities of Europe and North America, and there must be many who envy José Rey Paster, who is in 'real life' a publisher in Buenos Aires, the opportunity to stage an exhibition of furniture, 17, designed by himself and his associate Leonardo Aizenberg, in the Museum of Modern

17



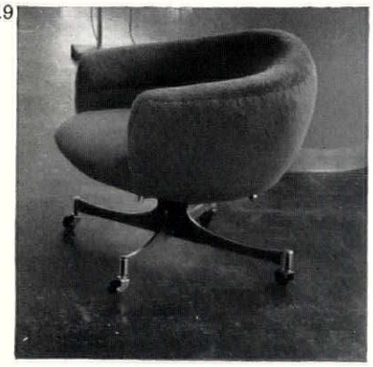
ARGENTINE



18

Art there. Equally adaptable, it appears, is the stylistic approach of the two designers, varying from the trimly formal, 18, to the exuberantly upholstered, 19. For us, outside the Argentine, the interest lies in the versatility, but locally the fact that this was the first show of its kind ever held there was regarded as something of a portent, and seen by men of goodwill as a landmark in the slow progress of awakening and nurturing design sensibility among an educated class who—in this respect, at least—are badly in need of further education.

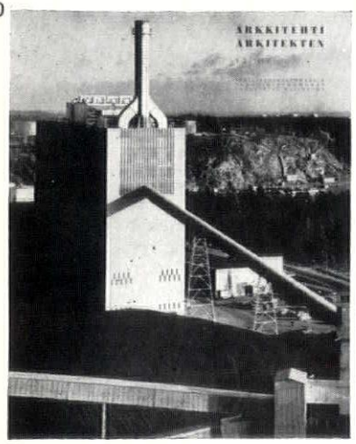
19



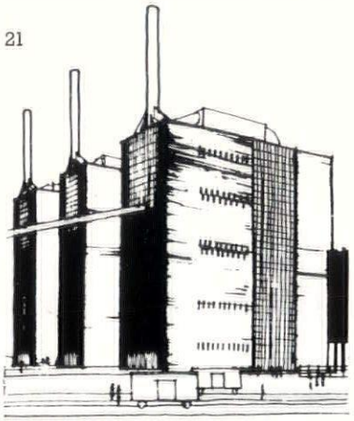
STEAM-POWER

Arkkitehti-Arkitekten opened 1963 with a sparkling special issue on recent industrial buildings in Finland, beginning with one of the most striking cover-pictures it has sported for some time, 20. Its subject is the new steam-powered generating station at Naantali, designed by Aarne Ervi, of which this is the first unit of a design conceived by the architect as being capable of trebled capacity, 21, when required.

20

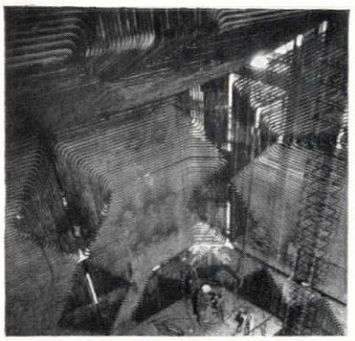


21



At a time when the public image of advanced generating plant is making its great leap forward from hydro-electric to nuclear power, the appearance of a massive steam installation must seem something of a technological sport, and it appears from *A-A* that this is indeed an unusual power-plant—certainly the intubation of the boiler, 22, will appear unfamiliar to most English eyes with a smattering acquaintance with steam-raising. At the non-technical level the plant and its ancillary buildings lie well within the known compass of Ervi's most professional style—23 is the canteen block—but the neat satellite village for the staff, 24, is worth noting as a piece of intelligent social architecture.

22



23



24





25

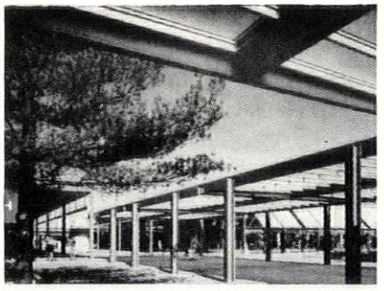
INSIDE AND OUT

civic design in the US shopping centre

Publishers and writers of 'real books about architecture' are inclined to look askance at the tendency of clutches of old *Architectural Record* articles to appear on the market from time to time in hard covers and looking vaguely like standard works on churches, or parking-garages, or some such subject. But cynicism can be misplaced—even without a unifying editorial introduction, such gatherings can sometimes add up to salutary studies that would not otherwise be made (and certainly not so well illustrated) in the present state of the book industry. For example, the most recent of these books, *Stores and Shopping Centres*, edited by James Hornbeck (McGraw-Hill 83s. 6d.) not only gives a competent (if not exhaustive) survey of retail outlets covering everything from Japanese handicrafts to light aeroplanes, but its second half, devoted to shopping centres, should give pause to a number of Europeans who are accustomed to pour scorn on US attempts to control the outdoor environment.

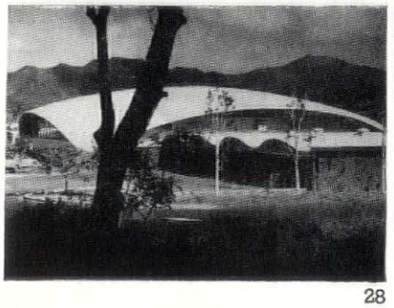
While it is true that the external parking spaces still leave practically everything to be desired, even when the designers have tried their hardest—Cherry Hill, in New Jersey, 25, is only one among many examples illustrated—the spaces between the buildings are often well ahead of European (and especially British) attempts to create shopping environments. In some of the largest examples, such as I. M. Pei's Roosevelt Field, 26, the general quality of the spaces is well up to Lijnbaan standards, while lettering and graphics often achieve an exemplary level.

26



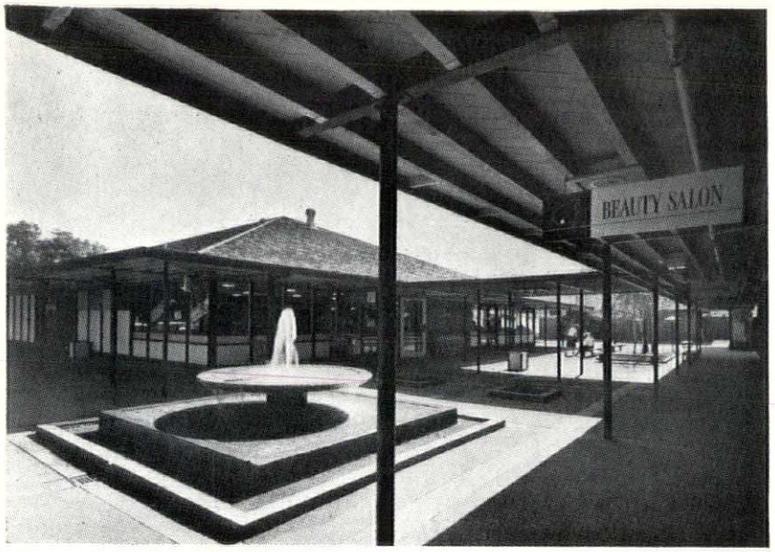


27



28

What is most striking, however, is the environmental quality of some of the smaller installations, and especially those in areas of special landscape or community interest. Wimberly and Cooke's wavy roof-shells at Kaneohe, Hawaii, 27, grouped around the double-torus-section vault (engineer, Richard Bradshaw) that shelters the main market, 28, strike exactly the right note for an environment where even the most prosaic American contrives to feel exotic without ceasing to

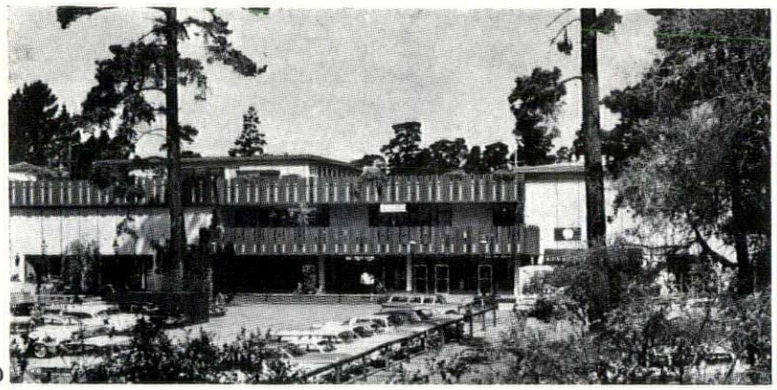


29

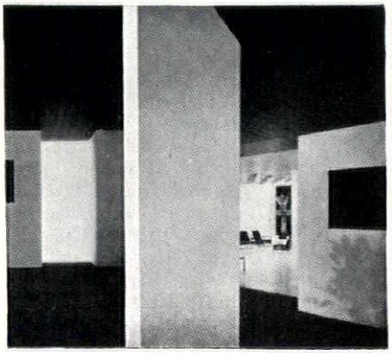
SHOPPING CENTRES

be American. John Carl Wernecke responds to Palo Alto in California with an architecture of easy, sun-shaded simplicity, 29, while Olof Dahlstrand's multi-level solution for Carmel (also California) goes craftily beyond merely keeping in keeping, 30, with a unique seaside town on the wooded coast south of Monterey.

Behind all this lies what? The proliferation of generalized and relatively under-used circulation space on a grand scale, equipped with seats, covered walks, trees, planting and fountains beyond the dreams of the many public-spirited planners of town centres in Europe, accords ill at first sight with the high pressure salesmanship normally associated with US merchandizing techniques. What seems most likely to underlie this surprising alliance between business and civic design is the discovery by the motivation researchers that a relaxed shopper is a free-spending shopper, and also tends to stay on the premises longer, thus increasing the likelihood of impulse purchases. European architects might well find an interesting moral problem in this.

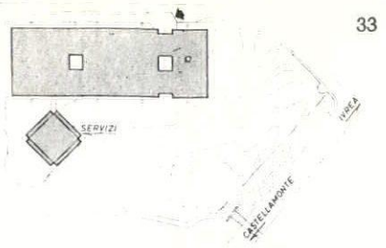

30


31

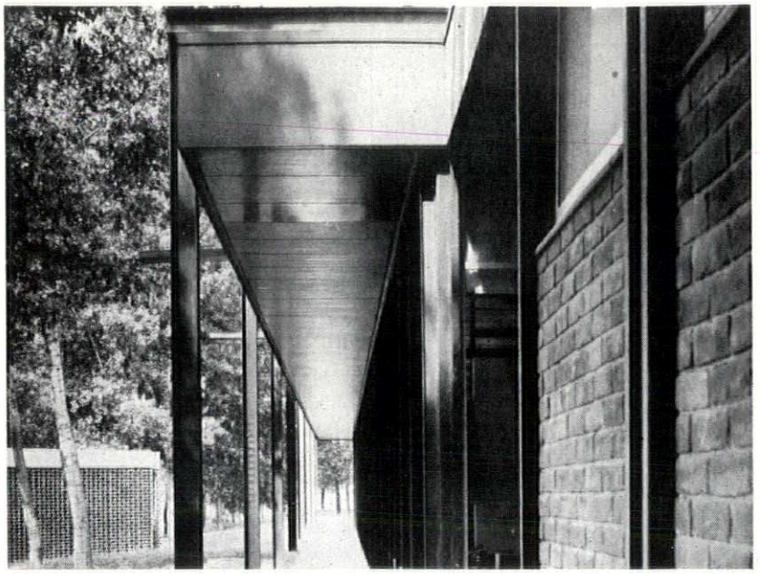

32

ITALIAN EXTREMES

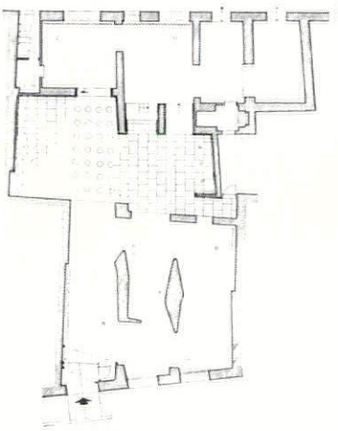
A recent issue of *L'Architettura* produced two nicely contrasted buildings (one with its own internal contradictions) to illustrate (unwittingly, no doubt) the extremities of current Italian design. On the one hand, there was Carlo Viligiardi's unmistakably Miesian factory, 31, for *Argenteria del Canavese*; on the other was Ugo Lucicchenti's new Rome showroom, 32, for Arflex. Both will bear further investigation because there is more to them than meets the superficial eye. Even without the off-lying pavilion set diamond-wise to the main block (see plan, 33) the Argenteria would confound a Miesian interpretation when analysed more closely, for any close-up, 34, shows at once that neither the scale nor the intentions are any more monumental than, say, a CLASP school, however neat the detailing, and that without that monumental feeling the comparison with the Mannheim theatre project or Crown Hall will not stand up.

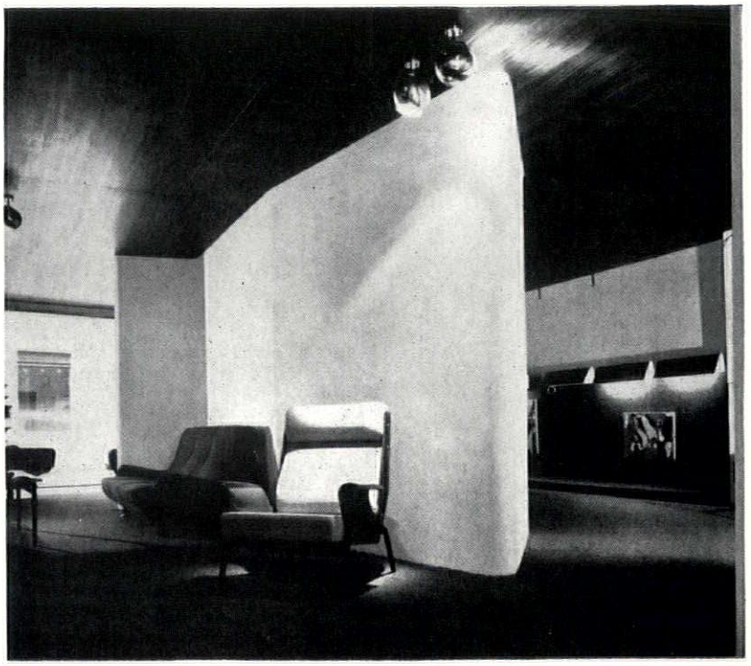


33


34

Arflex, on inspection, proves less wilful than the immediate impression of two large and inexplicable sculptural shapes standing in a dark interior space might suggest. The showroom is in a converted house in the via del Babuina, and any view which shows both shapes at once will show their largely parallel disposition, and thus suggest that they are in, effect, the structural ghosts of vanished party walls, which the plan, 35, confirms. The choice of form for these two sculpture-walls, arbitrary as it seems, still contrives to respect the structural necessities of the interior volume, and yet to transform that volume, 36, out of all recognition.


35


36

views and reviews

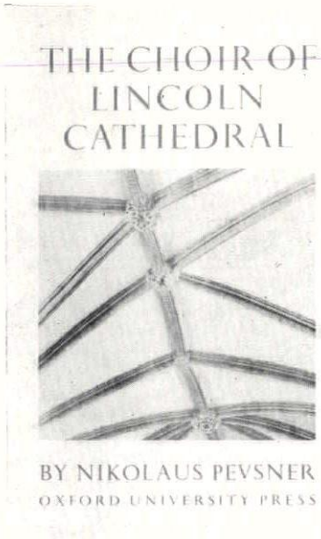
MARGINALIA

SUMMERSON'S TRUE LATIN

In spite of the BBC's respectable record in the popularization of architecture, and the availability of Network Three for serious teaching, Sir John Summerson's six lectures on *The Classical Language of Architecture* are the first real attempt by the BBC at formal instruction in the field. Taking as his text Sir Christopher Wren's reference to 'true Latin' when speaking of the Classical styles, Sir John treated his subject as a language that could be learned, even if it was, like Latin, now nominally a dead tongue, and discussed it under such headings as 'grammar,' 'rhetoric' and even 'linguistics.' One of the most helpful aspects of the whole course of lectures, however, was the supporting booklet put out by the BBC for the modest sum of five shillings—introductory notes, bibliography, glossary of terms (including naming all the parts of an Order in detail) and a corpus of illustrations that ran from Serlio to Auguste Perret. Taken together with the reprints of the talks in the *Listener*, it could make an admirable primer for a new kind of sophisticated lay interest in classical architecture, comparable to that which has been created for literature by the paperback revolution.

PEVSNER'S LINCOLN

The Charlton Memorial lectures at King's College, Newcastle, are each devoted to a single major work of art, and their republication in booklet form has already added eight distinguished monographs to the bibliography of art and architecture. The most recent is Nikolaus Pevsner on the choir of Lincoln Cathedral, a close study of one of the most extraordinary and important exercises in early Gothic architecture in Britain—important because of its key place in the development of the English type of ribbed vault, extraordinary because of the actual form of vaulting used, with its syncopated (Pevsner's word) distribution of the ribs. But what is even more extraordinary, in view of the subject of this particular lecture and of the primary interest of the whole series in the visual arts, is the format and typography with which the OUP has seen fit to commit Pevsner to the permanence of print. The cover, 2, looks like the dimmer type of parish-church guide, the type-



2

setting is passable, if uninspired, but the layout of the half-tone illustrations in the central spread is as untidy as it is unimaginative. Most mean sensual amateurs of Gothic architecture would probably pass it over in a book-shop or cathedral bookstall if the author's name were not visible, and never guess that it was one of the liveliest works of one of the livelier and most loving interpreters of English Gothic.

PROFESSOR PLISCHKE

Both Adolf Loos and Kokoschka have always been very uncomplimentary about the Viennese and their treatment of their best architects and artists. Here is proof to the contrary. Ernst Plischke, born in 1903, pupil of Peter Behrens, assistant of Josef Frank, and later of Kahn in Detroit, winner of the Grand Prix of the Austrian State in 1935 and emigrant to New Zealand, has been called back to Vienna and given the chair of architecture. He amply deserves it, and Vienna must be congratulated on their choice. His Labour Exchange at Liesing of 1930 is an outstandingly fine building, as fresh today as thirty years ago, and his buildings at Wellington, illustrated in THE ARCHITECTURAL REVIEW in 1959, are amongst the best in New Zealand. It is interesting that in spite of all the pressure that must exist in Austria, an architect could get so coveted a job who lived on the other side of the globe. Austrians must feel that international experience is the most valuable of all assets to a teacher.

LANDSCAPE AND ENGINEERING

In a handsomely compact slim volume, the British Roads Federation have published the main papers and contributions to the subsequent discussions at their symposium on the *Landscaping of Motorways*, which took place at the Institution of Civil Engineers last year. The meeting was an important one, because it brought together highway engineers, landscape architects, administrators and other interested parties (including nurserymen) from all over the world. From a great number of distinguished contributions, the one which now stands out because of its combination of enlightenment and practicality, is that of R. W. Rose, the County Surveyor and Planning Officer of the Isle of Wight. He insisted on the need to talk of *landscape engineering*, rather than landscape architecture, because 'I think too much use of the term "landscape architect" can imply that the landscaping of the road is not the job of the engineer . . . the public quite wrongly thinks of the landscape architect as one who is perhaps more interested in trees and shrubs than in engineering design.'

Landscape engineering, as Mr. Rose expounded it, consists very largely of intelligent and sensitive attention to detail in the basic layout and engineering of the road—the art of earth-moving, in fact. His exposition was not a high-flown excursion into aesthetics, however, but dealt very much with particulars of alignment, intelligent use of slopes, avoidance of badly placed straights and over-emphatic parallel lines—all literally down-to-earth stuff that suggests that somewhere in Britain at the moment (though not, alas, anywhere near the M1) there exists a body of opinion that could bring the practical sensitivity and aesthetic pragmatism of the great eighteenth-century improvers to the problems of the motor age. Anyone wishing to read this heartening, yet modest, document, can purchase *Landscaping of Motorways* from the BRF at 26 Manchester Square, London, W.1, for 10s. 6d.



1, *Paxton's Tower, Llanarthney, Carmarthenshire, built in* 1805—*one of Paul Sharp's illustration in* Follies, *a National Benzole Guide (in emulation, no doubt, of the famous Shell Guides), in a new series edited by Sir Hugh Casson and written by Ella Hatt. Other titles cover* Bridges *and* Monuments, *and each illustrates and describes the outstanding British examples of the genre under discussion, complete with a county by county descriptive gazetteer, National Grid map-references and outline maps to give the tourist his general bearings. At six shillings, a very welcome series.*

OBITUARY

SIR HOWARD ROBERTSON: 1889-1963

Howard Robertson's death in May at the age of 74 is an occasion for recalling the undoubted services he rendered to architecture as well as the disappointing buildings that caused his reputation, in the later years of his life, to drop far below that which his admirers in the 1920's must have anticipated.

These services, for which even those who have disliked his architecture must be grateful, he rendered in two capacities: that of Principal of the AA School from 1920 to 1935 and that of a hard-working President of the RIBA from 1952 to 1954. In his AA days he was a real pioneer. Britain was in a state of extraordinary architectural isolation, and it was Robertson, energetically backed up by F. R. Yerbury, who began the process of familiarizing British architects with the new developments taking place on the Continent of Europe—developments which eventually led to the freedom of action and experiment architects enjoy today.

Articles by Robertson in the architectural journals in the 1920's were among the first to discuss the new architecture then arising in Holland, France, Germany and Scandinavia, and in 1927, the year in which Le Corbusier's *Vers une Architecture* was published in English, he contributed an article to the REVIEW which was

probably the first critical study in English of Le Corbusier's early houses. As a teacher and school principal, too, he was forward-looking. He created the climate of opinion at the AA from which the first generation of English modernists emerged, to stand alongside those who emerged from the similar climate created by Reilly at Liverpool.

Robertson's own training was more conservative; it included the Ecole des Beaux Arts in Paris, and this is reflected in his books on architectural composition and in nearly all his buildings. As a practising architect, in fact, he was a traditionalist. He was also a realist, keenly aware (which was why he made such a successful RIBA president) of the architect's role as a professional man with his first duty the efficient translation of his clients' needs into bricks and mortar, and he got more and more out of step with what was liveliest and most idealistic in modern architecture. The result was that a long career which began with such relatively fresh and interesting designs as those (made with his partner Murray Easton) for the Horticultural Hall at Westminster, in 1928, and for the British pavilion at the Paris exhibition of 1925, ended with designs which earned much criticism, and this in its turn brought much unhappiness to him. The most notable examples were the Shell buildings on the South Bank (the faults of which must also partly be blamed on the LCC), the BBC extension which destroyed the view up Regent Street of All Souls', Langham Place, and many commercial buildings in London and the provinces which showed neither lightness of touch, sophistication of form nor imagination in their conception. He bore the criticism with dignity, but must have been sadly aware that to the rising generation of architects, and in the eyes of the intolerant young, he was no longer one of us but one of them.

CORRESPONDENCE

GROPIUS AND VAN DE VELDE

To the Editors.

SIRS,—With great interest I have read Dr. Pevsner's piece in the March issue of the REVIEW, 'Gropius and van de Velde.' As it opens up some questions which must be puzzling to your readers, I have got together some detailed answers.

1. At the *Werkbund* meeting in Köln, 1914, I have been siding with van de Velde, and I still have a correspondence with Karl Ernst Osthaus about what was going on. The reasons of the fight were more against the person of Muthesius than the content of his thesis. He was an unpleasant man who used tricky methods to get into the lead. His mind was also much too rigid and 'unartistic.' I was the youngest Board member in the *Werkbund* and acted as *enfant terrible* to bring Muthesius's methods into the open. But you are quite right; when one looks at the substance of that fight, one wonders about the strange distribution of participants on both sides.

2. Re the Bauhaus Archiv. Since 1919 I have kept all the clippings, etc., whether they were pro or con the Bauhaus or me personally. This proved to be a good thing for the attempt of an objective, documentary appraisal as first undertaken by Wingler.

3. My first memorandum for Weimar, 1916. I was given the specific question whether I was willing to accept a *Beratungstelle* (see Wingler, page 29). There was a trend among the authorities against workshops which is evident from a correspondence still in my hands with Mackensen, who was Director of the Academy in Weimar. I gave copies to Curjel.

4. I was not appointed in 1915, but I had an audience with the Archduke in Weimar, coming as an officer in Hussar uniform from the Front to Weimar. My appointment took place early in 1919 by the 'Provisional Government.' At the beginning of the War, van de Velde had recommended Endell, Obrist and me to the Archduke to choose from.

5. Widening of my task. I was asked first only to become Director of the Applied Arts School of van de Velde, not of the Academy next door which also was built by van de Velde. But I wanted both, suggested that to the Provisional Government, and got the assignment as Director of both Institutes. The buildings were empty; all the inventory of the workshops was gone since the buildings had been used as hospitals.

6. Feininger. Feininger was always somewhat at the margin. He was more of an ivory tower artist than the others, but he has always been most loyal to me. Everyone except Moholy-Nagy was at one time or the other in opposition to me, but they all stayed on. Feininger's friendship to me, you may see from his letter of May, 1933, of which I sent you a copy the other day.

7. My memorandum on mass-produced housing in 1910. Wingler mentions this on page 136. I want to emphasize that I deliberately wanted to let the students' work grow from themselves without interference. Consciously I let them make detours. The Bauhaus philosophy was not to be preconceived, only a general trend was to be consolidated step by step. Change in the attitude of the students and their work was to come by insight and better understanding, not by imposing from outside. I favoured to *in*clude, not to *ex*clude, all attempts. The clarification between the romantic and the constructive thought was not so obvious as it is today. Clarification came step by step by the increasing insight of the students.

8. In the Fagus Building, 1910, and in the *Werkbund* Office Building, 1914, I tried consistently to bring in sculptors (wall reliefs) and painters. The Werkbund Building had stone reliefs at the entrances, murals in the various rooms and on the roof garden.

9. Sommerfeld log house. The house was built at the most dismal post-war time. Bricks were *not* available. Sommerfeld bought an old warship and took the teakwood lining out in order to have his house built. This was the first opportunity to give the students in the workshops possibility to show their hand in coloured glass windows, sculptural reliefs in wood, metal screens and lighting fixtures. I let them go in order not to interfere with their enthusiasm. My own approach without decorative elements as in the Sommerfeld house is apparent from the Jena Theatre which I designed almost simultaneously.

10. Van de Velde hardly ever had relations with industry. His field was the *Kunsthandwerker*—furniture maker, silversmith, book binder. The judgment of Mackensen, in a letter to me, you find in Wingler's book, page 28.

11. Van Doesburg. Doesburg was rejected only personally. He was an arrogant and narrow man. He would have wrought havoc in the Bauhaus, so I did not want to have him as a teacher although his philosophy interested me and many others in the Bauhaus.

12. Hannes Meyer was a treacherous character, which I did not recognize early enough. I believe that Hannes Meyer's inner downfall was his denying art as such. It narrows the field, if the rational point of view is made the only factor. Drawing deliberate limitations always leads to a strait-jacket.

By the way, I believe the architectural department was in my mind from the beginning, but it was the last one to be up after the other departments had trained sufficient people for it in the workshops. When I went to Dessau, I made a strong attempt to build up that department, but the very small appropriation from the City was not sufficient unless we would have thrown out several workshops.

Please take these remarks as what they may be worth. This shows how interested I have been in reading Dr. Pevsner's article, and I try to contribute what I can to clarify more and more.

Yours, etc.,
WALTER GROPIUS.

Cambridge, Mass,

WIRES UNDERGROUND

To the Editors.

SIRS,—Having read your magazine for a period of years, it is no surprise to read your recent article on overhead H.T. cables. Your policy is quite clear: 'apply general aesthetic principles not just to the building or doorknob design, but to the whole fabric of our town and country. However, glad as I am that there is someone who cares about the wholesale desecration of a once lovely island, I find this present article and others like it a little disturbing for this reason.

What the REVIEW is protesting against now is no different from the widespread criticism that heralded the first industrial revolution; and yet the REVIEW has long ago canonized the early mills, it has long venerated the railway viaducts in many a de Maré photograph, and the canals have received similar treatment. All of these received endless criticism in their day, and this criticism is surely no different from the type of criticism that you produced in your last issue.

Is it difficult to imagine the REVIEW in about a hundred years' time fighting a battle for the preservation of the H.T. pylons—monuments to the second industrial revolution? Let us stop imagining we live in arcadia.

Yours, etc.,
IAN R. DAVIS.

Edgware.

BOOK REVIEWS

THEATRES OF RELIGION

THE CHURCHES OF MEXICO 1530–1810 *By Joseph Armstrong Baird, Jr., with photographs by Hugo Rudinger.* 127 *pages text,* 36 *figures and* 163 *plates* (8 *in colour*). 1962. *The University of California Press and Cambridge University Press.* 100s.

Mexican colonial churches need to be seen in their setting, as part of the cactus-spiked landscape. They are a promised heaven of gilt and gesso glimpsed here on earth by the peasants who would otherwise live in almost unmitigated drabness. They need to be seen as theatres for the year-long passion play, and perhaps for surviving pagan rituals too. Without the life around them they lose a dimension and look either starker than the reality, or so over-decorated as to be in sheer bad taste. The point is that their structure and ornamentation and colouring are all functional, if emotion is taken to be included in that much abused concept. The architects who built them thought in terms of the daily lives of the friars, but also in terms of a new population awaiting conversion or hungering for colour, drama and awe.

This book, impeccable in its scholarship and painstakingly fair to all styles and periods, gives little idea of how these churches are linked with the vegetation and the people. There is a hint here and there in the photographs, but very little in the text except for brief mention of the variety of local stones.

It may seem unfair to carp about a book obviously assembled with love. The author describes how local talent adapted the various styles imported from Spain to create 'new combinations and effects that had few direct parallels in the Old World,' for 'Mexico's artistic development . . . was anything but a servile imitation of a master type created for export to the colonies.'

There is a most helpful chapter on the Spanish background with discussion of the meaning of such terms as Plateresque and Churrigueresque—often too loosely used. The building styles of the Franciscan, Dominican and Augustinian Orders are differentiated. There are clear line drawings of typical façades, columns and ornamental motifs; and useful chronological tables for both Spanish and colonial Mexican architecture and art. There are thumbnail biographies of such key architects as Gerónimo Balbás, responsible for the retable in Mexico City Cathedral; Rodríguez Lorenzo who popularized the retable-façade and developed it as a peculiarly Mexican style; Manuel Tolsá, for long director of sculpture at the still functioning Academy of San Carlos in Mexico City; and Francisco Eduardo de Tresguerras who advanced Tolsá's Baroque-neoclassical manner into a true neoclassicism, especially in his native town of Celaya. The selective bibliography includes many works of importance by such Mexican authorities as Justino Fernández and Manuel Toussaint. The plates carry careful descriptions assisting the study of details.

All this is excellent, and criticism is only that the book could have been taken further. As it is, this luxuriant

period of Mexican architecture is made to look very much less exciting than it is.

Irene Nicholson

THE STARTING PLACE OF SPRAWL

STREET CAR SUBURBS. *By Sam B. Warner' Jr. MIT Press. No English price given.*

Like Kevin Lynch's *Image of the City*, to cite only the best known example, this study of suburban mechanization is a product of the Harvard/MIT Joint Centre for Urban Studies, sometimes described as 'The Presidential Seminar' because of its various connections with the Kennedy administration's interest in urban renewal. *Street Car Suburbs*, however, needs to be read in connection with two other publications of the Centre, Lloyd Rodwin's *Housing and Economic Progress*, because it also deals with Boston, and the Whites' *Intellectual versus the City*, which provides the motivational background for the flight to the suburbs that Boston's street-car lines made possible.

All four books are examples of a new (and humane) scholarly invasion of the field of town-planning studies in the US, but in any ways *Street Car Suburbs* is the one that strikes hardest. It establishes Greater Boston as the place where conurban/exurban sprawl was pioneered, it fills in the building history of selected, symptomatic areas of that sprawl, and it lays in with unmistakable precision the part played in such expansions by the spread of mains services and, above all, by the availability of transport. Mr. Warner establishes almost mathematical correlations between the frequency of the tram services and the rate of house-building, between the extensions of the lines that radiated from central Boston and the subdivision of building land in the remoter suburbs. His street-car saga—horse-drawn from 1852 till 1889, electrified thereafter—is the story of the physical furnishing and mechanical animation of the great suburban dream, a story that begins with a pair of steel rails down a country lane and finishes with houses standing cheek by jowl along either side of it.

What sort of houses embodied the suburban dream? The book contains a revealing anthology of wooden cottages, 3, and stone mansions with mansard roofs, 4, minimum price singles, 5, and Newport-style houses on a more lavish scale, 6. The classic three-decker is everywhere, in all styles and price brackets, 7, including some very substantial examples, and there is at least one 'neighbourhood dwelling and store unit,' 8, that looks like an attempt to create a nucleus of urbanity at an intersection. But such an attempt is a rarity, a hang-over from a Georgian past (or a long range pre-vision of a Jane Jacobs future); the suburban morality (as Mr. Warner calls it) was better expressed by a single house on a narrow strip of a site, surrounded by a few surviving or replanted trees, and within easy distance of the street-cars. The style of these houses might vary widely in their detailing, but only three or four basic house-types are involved in the whole half-century the book covers, and the general uniformity of the scene is striking. The pattern of life and building that is revealed is, very clearly, a prototype of the later automotive sprawl into the uniformity and conformity of Levittown.

Reyner Banham



3



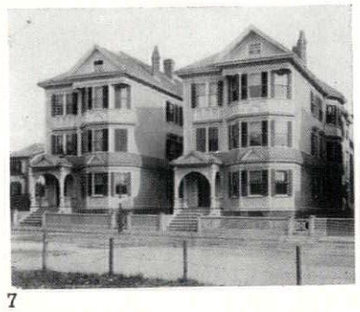
4



5



6



7



8

TRADITIONAL TREATISE

THE PATTERN OF ENGLISH BUILDING. *By Alec Clifton-Taylor. B. T. Batsford.* 105s.

This book is a remarkable achievement. If at first glance the price seems equally remarkable, reading will dispel any doubt that it is justified. As a piece of book publishing, this is the Batsford tradition at its best, combining the solid scholarship of Batsford's of half a century ago with the topographical bias which appeared more recently. The fault of a somewhat misleading title may perhaps be laid at the publisher's door; it should have read *The Use of Building Materials in the English Vernacular Tradition*.

The author pursues his long course with unflagging style, through a systematic treatment of timber, stones of every kind, brick and tiles, unbaked earths, thatch, plaster and other surface materials, even metals and glass. His chosen field does not include interiors; nor does it include recent building in materials such as steel or plastics which have no specifically national, let alone local, character. As a comprehensive account of the enormous variety of materials used in England, with a solid and accurate historical basis, an extraordinary range of examples, an informed appreciation of the technical aspects and a lively sense of the visual qualities of building, no such book has been attempted before. It will certainly have a long and useful life.

At a time when a great deal of research is being done into early timber building, both as standing structures and as the post-holes found by excavators, the opening chapter on wood may eventually need modification. The relation between walling materials and framework (including the roof) in the early middle ages has yet to be elucidated. It is becoming apparent that there was a revolutionary change, at about the time of the Norman conquest, from timber-framed construction which started with large posts solidly embedded in the ground (5 ft. in the case of a late Saxon hall at Cheddar, as Mr. P. A. Rahtz recently discovered) to one which was to some extent prefabricated and which was so braced and jointed that it could sit on the ground. Archaeologists have so far found no post-holes into which a cruck type of construction would fit, and it seems likely that the long controversy about the origin of crucks may soon be ended with an acceptance of a date between 1066 and the thirteenth century for this professional carpenter's version of the simple peasant shack.

The chapters on building stones seem, to this reviewer, almost faultless. The author has taken a great deal of trouble to visit quarries, talk to masons and procure detailed descriptions of stones. He is perhaps a little unfair to lias limestone, though it must be admitted that in Newark Castle, where it was used in the twelfth century, the face of the walling has decayed away some 2 in. or more compared with the oolite dressings. The fine sandstones of the Triassic in Nottinghamshire might perhaps have had ampler mention—there are quarries at Tuxford which he does not include—but it would be unfair to blame the author for not knowing every county as well as the reviewer thinks he knows a single one. Nevertheless, it is probably true everywhere that the variety of materials and treatment was even wider than the book states. Timber-framing could be filled with boulders from the Boulder Clay and with pebbles from the Pebble Beds of the Triassic. White bricks were made on the Yorkshire side of the Humber in the early nineteenth century and found their way (by water) to Newark.

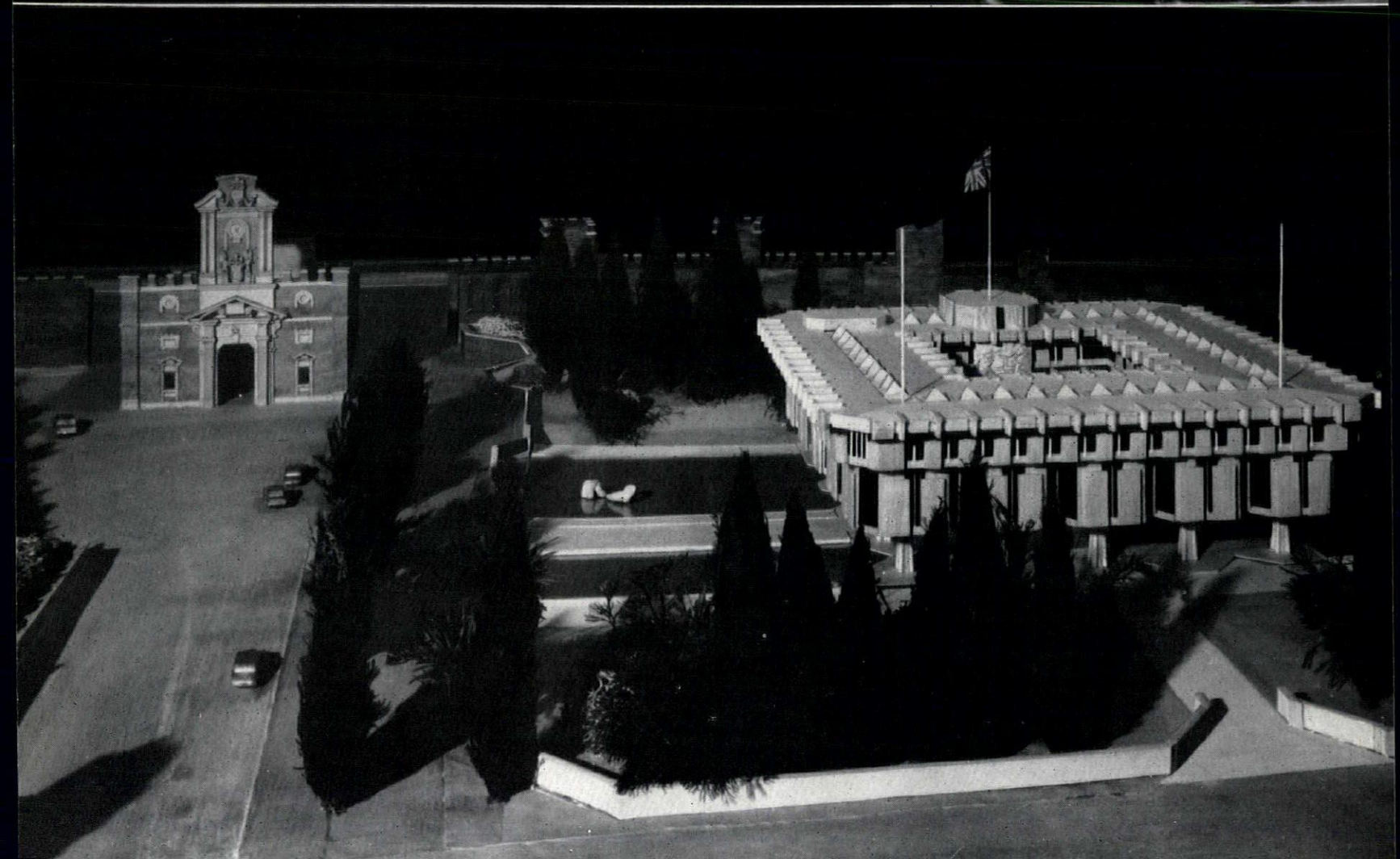
Some of the building practices are older, and were dispersed even earlier, than Clifton-Taylor states. Walls of unfired brick, or clay lump, have been found by excavation in Roman Leicester. Nibbed roofing tiles were certainly made in the fourteenth century; they have been found in the kilns of that date recently excavated at Boston. The bricks for Thornton Abbey were pretty certainly made on this site, not at Hull. It is evident that the brick and tile industry was well established on and near the east coast by that time. One archaeologist claims that cylindrical clay chimney pots were in widespread use in the south-east in the fourteenth century, though another says the objects in question are caps for pinnacles crowned with ornamental vanes. Whatever the truth in this controversy, there is no doubt that what Clifton-Taylor calls the 'fussy cresting' of Victorian roofs is a revival (or survival in some regions) of a medieval tradition.

The serious student of vernacular building will learn a very great deal from Clifton-Taylor. He will now find it easier to describe accurately what he sees, and to explain the hitherto inexplicable. It cannot be by chance that pantiles, which are merely single-lapped and so lighter than plain tiles (necessarily double-lapped), should have become particularly popular in some eastern counties where the timber shortage was acute. As far as this reviewer is aware, the explanations of colour variations in old brickwork are much the best so far attempted—though again there are still variants that Clifton-Taylor does not mention.

The photographs, either selected with particular skill or specially taken, make their points about texture, pattern and the like with success. The end paper maps do not serve the author quite as well as he deserves. Since they plot only the solid geology and not the drift, they show for much of the south-eastern half of England formations which have little or no relevance, especially to brick making. This is really the fault of the Geological Survey for not having produced a full series of drift maps. The blurb states that this is Clifton-Taylor's first and last book. No one—except perhaps a publisher, anxious to have a second book of such lasting quality on his list—would wish it otherwise. A formidable task has been skilfully and imaginatively completed, and made as light as possible for the reader by an unflagging affection for the visual pleasures of English building.

Maurice Barley





Sir Basil Spence's design for the new British Embassy in Rome is not only an accomplished addition to the handful of distinguished embassy buildings erected since the War, but it also occupies the most taxing site of any of them. As the model-photographs show, opposite the Embassy will stand close to the Aurelian wall at the Porta Pia, with Michelangelo's famous gateway closing the view up the via XX Settembre. The design must therefore consort with Roman Functionalism and Late Renaissance Mannerism, even while serving the highly specialized needs of a modern embassy. The functional adequacy can be shown by use alone; but the aesthetic adequacy of the design is manifest from the model.

Lionel Brett

DOING WITHOUT UTOPIA

'He who would do good to another must do it in minute particulars. General good is the plea of the scoundrel, hypocrite and flatterer'.

BLAKE

To work on it or to scrap it—hardest of all decisions, whether it concerns a bit of brickwork, a marriage, a stand-off bomb or a city. Ours is, on the whole, an acquiescent, pennywise generation, unlike the people of the 'twenties, who had had only one war and thought that a fresh start might be possible. This alone could account for the current swing of the pendulum against what Jane Jacobs brutally brackets as Radiant Garden City Beautiful. But, of course, there is more to it than that, and it may be worth looking rather harder at this swing, to see whether a useful dialectic is discernible.

The first thing to remember is that popular revolts are generally against a debased version of a thing, rather than the thing itself. Very rough justice ensues, of all degrees from tyrannicide to genocide. As an example here is Le Corbusier on the human scale:

'When man finds himself alone in vast empty spaces he grows disheartened. We must learn how to tighten up the urban landscape and discover units of measurement to our own scale. . . . The tree modifies a scene that is too vast. . . . It would seem that the tree is an element essential to our comfort, and its presence in the city is a sort of caress, a kindly thing in the midst of our severe creations.'

Thus the genuine original; but then one thinks of Chandigarh, and then of Brasilia, and perhaps after that of our local *Ville Radieuse* along London Wall, from all of which either climate or topography or commerce have permanently ruled out, as far as one can see, the possibility of the romantic Parc Monceau that in the City of Tomorrow was to have wrapped itself around the feet of the skyscrapers. Fallible humans, one feels, achieve a scaled-down travesty of their idea and live to see it shot to bits. Bad luck. But the truth is that the City in a Park was a fallacy anyway, because (for one thing) it takes a tree two generations to grow tall and graceful enough to do the job Le Corbusier wanted, and by then the buildings themselves will have been written-off. This was an idea which was serviceable in an age of revolution, but is now due to be refined out of recognition.

So the Cartesian, continental, abstract element predominates in the debased version of Le Corbusier, and the 'immense but radiant prisms' that sit back from our street frontages and let in light and air, have been seen on the whole as instruments of oppression rather than liberation.

The reasons are plain. Le Corbusier's liberating element was *le grandeur de l'éspace*, and this is financially out of reach except in a brand-new city. At the other end of the spectrum, favourite short-cuts and snuggeries are ironed out on redevelopment by daylight factors, bye-laws, traffic needs, etc. What we get is the in-between utility version such as discredited the *jardin anglais* in the last century—buildings large enough to be monstrous but not tall enough to be exciting, spaces wide enough to kill the street but not generous enough to be worth giving a name to. In Britain we have characteristically contrived for ourselves the regime of the Plot Ratio, the latest of the dreary succession of mechanisms through which 'the art of civic design has become the science of town-planning.' Plot Ratio plus Daylight Protractor plus Curtain Wall from Catalogue equals modern London, and the public knows it. Note the obstinacy with which Evelyn Hofer, in her marvellous photographs

for *London Perceived*, turns her back on anything new and takes every reliable old retainer type and scene of Victorian gloom she can locate.

This antipathy now extends to the whole apparatus and phraseology of urban redevelopment. I quote:

'Skyscraper flats, spacious shopping malls and a drive-in bank are among the features proposed by the Developers. New retail premises will line a landscaped pedestrian piazza and motorists will find ample accommodation in multi-storey garages adjacent to the Inner Ring Road. Conveniently grouped with the Civic Hall and Public Library, the new Council Offices will take the form of an 11-storey tower block rising from a podium. The historic Chequers Inn, part of which dates back to the fifteenth century, will be preserved and incorporated in the new development.'

The heart sinks, even though this is what we asked for, more or less. Looking through eighteenth and nineteenth century memoirs, one finds laments at unspoilt villages being engulfed by suburbia and rural England violated by railways and factories, but never this. The 'improvement' of old towns and cities was thought to be, quite simply, an improvement. Now the word is never used except technically to describe road-widening, when visually it means the opposite.

The objection is not merely or mainly to the developers or to their architecture, which is no better than it should be, but no worse than the commercial architecture of the last century. The objection is to the cocky tone, to the blind eye, to the vulgar mind behind them. Now this is interesting, because of course these are the traditional characteristics of commercial developers. The black hearts of our northern cities and most people's favourite London landmarks are the complete expression of these characteristics. They got by, perhaps because in their time new buildings thickened up and enriched a rather flat and monotonous urban texture, instead of, as now, watering down a rich one. For people who have travelled and used their eyes, stock solutions, even if they unquestionably derive from the masters of the modern movement, and whether they are enunciated by faceless development companies or by gormless planning officers, are no longer acceptable. We prefer the slums.

Another clear cause of disillusion is the failure to define and achieve liveability in our new housing projects. We are only beginning to see how elusive this quality is. Density is certainly no guarantee, for in the huge density bracket between Crawley and Hong Kong, inclusive of both and of everything in between, you will find examples of total failure and success at identical densities. Space-between-buildings may be nearer the mark, but between loneliness/privacy and congestion/cosiness the happy mean seems to be a matter of taste: probably the size of space at which neighbours become more of a bore than a support is indefinable. It is arguable that the mere *extent* of our operations ensures their dullness: inspiration has to be spread too thin. Certainly there seems more chance of success with the complex programmes of urban renewal. Straight staves of CLASP-type mass housing carrying arpeggios of reconditioned Victoriana and a few grace notes of concrete mannerism seem a pretty safe bet.

An alarming thing about our architecture is how much it *needs* the Victorian foil. It possesses, to misquote Keats, a quite exceptional 'negative capability,' and for this planning controls are often blamed. The fact that it seemed necessary in some cases to prescribe a government uniform of glass and steel could be blamed on the authorities, but could equally be blamed on the vulgarity of the dress affected by architects of the last few generations. Whatever went wrong in the past, the present prospect is of faceless mediocrity on an unprecedented scale. Again, we prefer the slums.

* * *

A Luddite orgy of machine-bashing is hardly ever the answer, and I am sure it is not in this case. Where skill and understanding fail, we shall not get out of our trouble by luck or ignorance, but by sharpening our skill and deepening our understanding. We need to be more professional, not less.

'Town planning in Britain,' Sir William Holford has recently reminded us, 'may be said to have grown out of a gradual liaison between social welfare and architecture. On the one hand there were the nineteenth century Public Health Acts leading, in this country, to Housing Acts and then to Housing and Town Planning, etc. Acts, and then to Town and Country Planning Acts. On the other hand there was the extension of the design process to cover first estates and parks, model factories and villages, garden cities, civic centres and, eventually, New Towns.'

This liaison has never been a marriage. It is still customary to speak of the regulatory aspects of planning as donkey work, whereas the operational aspects are said to be creative—an unconscious throwback, maybe, to wartime Ops versus Admin snobbery. The first need is to get rid of the distinction altogether. The only valid distinction in planning is between regional and local: here undoubtedly, as in the new London set-up, it will be necessary first to demarcate boundaries and then to work out methods of communication. But at the local level town planning is indivisible: a discipline out on its own, needing its own cast of mind, its own academic discipline, and its own techniques.

The outlines of the planner's cast of mind are beginning to emerge pretty clearly. His first sense, and here the conventional wisdom since Patrick Geddes will help him, must be a sense of growth, of the environment not as a scene but as a social/economic process. This will shade without much difficulty into a sense of people, with which he will burrow like an architect into the truth of how they live and move and interdepend. Less easy to combine with these scientific attitudes will be the value judgments of aesthetics, without which he might subject old buildings and young designers to all sorts of indignities. Among moral qualities, he needs from the start an extreme flexibility of mind, and here all utopias can only be a handicap; but he will need as time goes on an equivalent firmness, if he is to distinguish between organic change and mindless or malevolent whittling away, and react appropriately. Lastly he will need the patience to sit back and watch time do his work for him.

To me these qualities are most likely to exist in a

certain kind of architect, because generally only architects are likely to *care* enough about the urban fabric to deploy all this effort and self-control. But he will be a special kind of architect, because such painstaking analysis, sense of growth, respect for the awkward fact and above all patience are not often found in a designer. It is in some sense the difference between the surgeon with his spectacular drama, and the G.P. whose background existence is only shown in the fact that people are well.

His means will be the interprofessional planning team, without which not even a start can be made, and public consultation and goodwill, without which nothing will be brought to fruition. But the end is indefinable, and it is precisely in their vocational concern with end-products rather than with processes that so many architect-planners have run into trouble. Trained to formulate and to fix their minds on an inflexible theme, they find it hard to accept the variations. The question at issue is what we mean by a Theory of town planning and whether there is any need for one. If we mean a Vision, whether Ancient Rome or Garden City or *Ville Radieuse*, without which people are said to perish, then it is becoming pretty clear that we are better off without one. The last architect-planner whose Vision worked was Wood of Bath, because he was building a special kind of city for a restricted clientele with elementary functional requirements. With John Nash the Vision was already beginning to fail functionally (random underlighting, random sunlighting, shoddy backs) even though the stage-set, viewed from the stalls, was magnificent. Subsequent Visions invariably missed out on some vital factor or other, the more conspicuously as functional needs became more diversified and defined.

We shall get closer to an idea of what is needed in planning theory if we think of psychoanalysis, a practice based on a theory of the origins and development of the human personality. Its essence is the emphasis on analysis, and on self-knowledge as the source of action. No vision of what a person ought to be (hero, saint, gentleman) distorts its concentration on the uniqueness of the individual as he is. This is the approach (totally alien to the artist's) that the planner has to cultivate, and just as the best psychiatry is built on a training in medicine, so the best planning must be based on a training in architecture.

The uniqueness of the individual equals, of course, our old friend the *genius loci*, which is always under threat from stock solutions, not only aesthetic but technical. Typical of the latter are the daylighting codes, which have had a good innings as the shapers of cities but are now in need of reappraisal in the light of PSALI* and air-conditioning. Complex economic and environmental factors are at issue here, not all of which can be defined and related, but it seems clear that we are now in a position to build low and snug without loss of density or amenity, with short intimate views instead of sky glare, in cases where it suits the place. A newer stock solution in need of re-examination is pedestrian segregation from vehicles. This, too, could be carried to dictatorial extremes, killing the goose of urban liveliness. We should then look silly if we were able to build noiseless and smell-less urban vehicles and tame them to safe speeds.

To some people, doing without Utopia would be like Hamlet without the Prince. If we are to accept Jane Jacobs' dictum that 'the City cannot be a work of art,' what, they will ask, is to be the end-product of the planning process; and they will no doubt quote some of the great Baroque set-pieces to prove their point. I do not think there is anything to fight about here. The essence of urban rebuilding is piecemeal architecture within a planning grid, and whether the pieces are as big as Regents Park or as small as a shop sign is immaterial. The case for comprehensive redevelopment is strictly functional and need not include a derogatory use of the word 'piecemeal.'

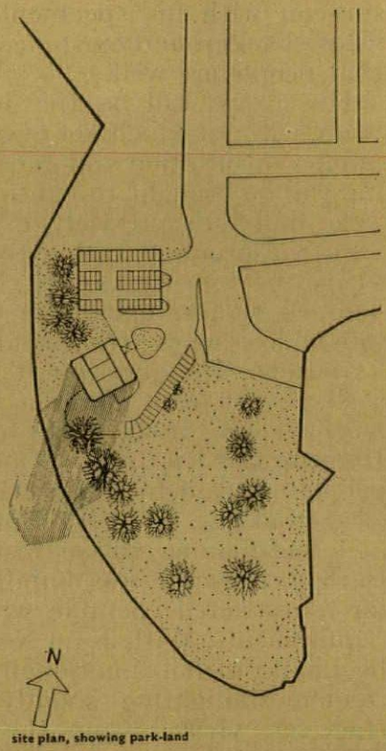
The hard thing for the planner is to visualize anything as abstract and self-effacing as the 'grid.' Somebody described it as the Christmas tree waiting for its decorations; but it may in practice be anything from the conventional block model to the vivid and inexpressible sense in the mind of one person of what a place is and what it can take and what it cannot. Moreover it will be subject to the normal stresses of evolution and must have the flexibility without which it will either distort the future or be itself destroyed. Thus like so many phenomena the more closely you look into it the more it seems to disappear.

It is in these techniques of analysis, visualization and control that we all need help, and urban planning as a profession needs to build up a truly professional discipline. This can mature only within the universities. Whether the answer will be a faculty of Civics, bringing together local government, economics and physical planning, or a faculty of Environmental Design, bringing together only the component skills of the physical planning team, can safely be left to local decision. It would be valuable to have both, for both will be needed to open up the territory that lies between a Utopia that is necessarily imprecise and an empiricism that has no general relevance.

But we shall get nowhere if we imagine that we can ever recapture the innocence of Economic Man, or re-create the fantastically complex and minuscule urban texture his multifarious activities resulted in. The recent attack on the planner's Utopia has been pretty effective because it brought together the Edwardians and the Teds for the brief moment before the former died and the latter married. The middle-aged squares with their materialism and socialism made a good target, and the film producers made a good spearhead. But the curse of Adam persists, not to be exorcized by Zen or jazz or peeling buildings or pub interiors. In the end we have to find our way through to the far side of our inadequacies.

* Permanent Supplemenary Artificial Lighting of Interiors.

AUSTRALIAN DOMESTIC



site plan, showing park-land

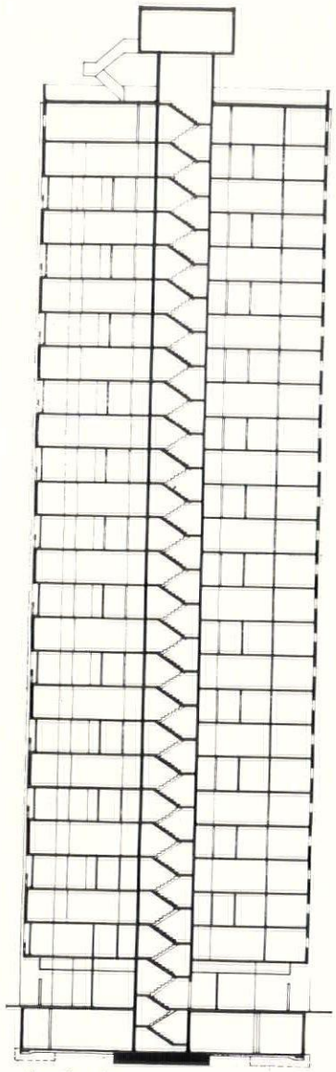
FLATS AT BLUES POINT, SYDNEY

ARCHITECT | ***HARRY SEIDLER***

One of the most notable features of the block is its site, overlooking magnificent views of Sydney Harbour from the base of a small promontory which is protected park-land and not available for development. The shores of the promontory are steep and rocky while the fall of the site to landward makes it possible to provide two-level parking, half of it under cover.

One hundred and sixty-eight flats are accommodated on twenty-four floors, with shops and entrance at ground level, service rooms in the basement, a floor of laundries with screened drying yards at the top of the block and an observation platform above them. The structure is basically slab-and-cross-wall, in reinforced concrete, but the vertical boxes accommodating the lifts and the two staircases (giving alternate means of escape from every flat) are also continuous poured concrete structures. External concrete is exposed, off the form; external infill cavity walls are off-white creamy brick; balcony rails are pre-cast concrete; internal non-structural walls of common brick, laid on edge.

The twenty-four habitable floors are laid out on two alternative plans, each giving seven flats of various sizes per floor, with their own characteristic pattern of fenestration. These two alternating plans are accommodated within clearly defined limits—the ring corridor that serves the two staircases and encircles the lift-shaft; the regular pattern of structural cross-walls, which is the same on every floor; and the four vertical service ducts, on to which all bathrooms, kitchens and kitchenette units have been backed up to keep piping to a minimum. The seven flats on each floor comprise four two-bedroom units with living-rooms on the corners of the block, one single-bedroom unit, with its living-room in the middle of one side, and two bed-sitters in the matching position on the other side of the block. Bedrooms have strip windows in sliding aluminium frames, while living-rooms have floor-to-ceiling sliding windows set back behind a shallow recessed balcony, and the alternation of the plans ensures that there is always a full storey-height of blank wall between one of these large windows and the next above, thus satisfying the fire regulations.

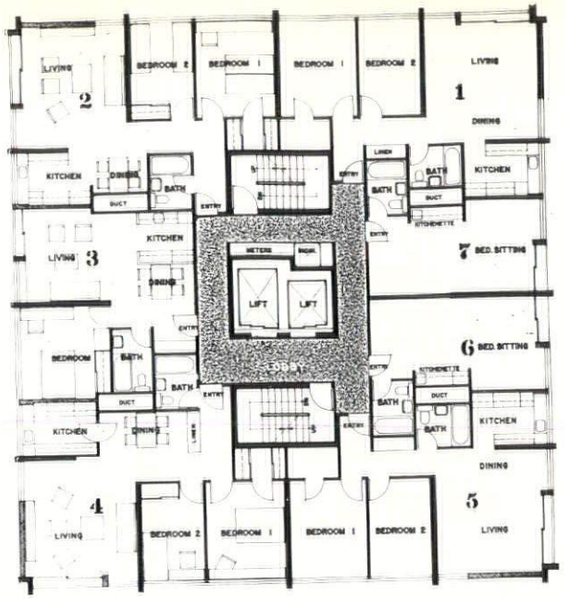


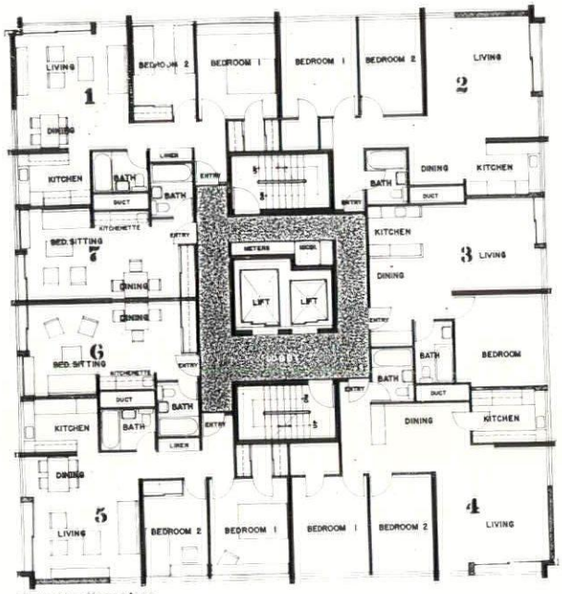
north-south section

1, the block from the west, with Sydney Harbour Bridge in the background.



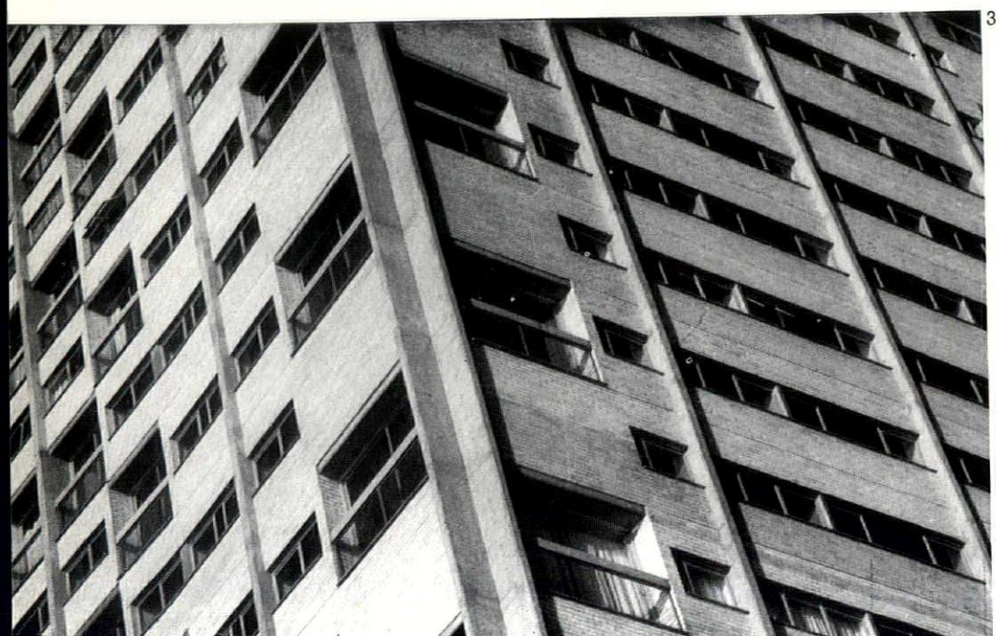
2





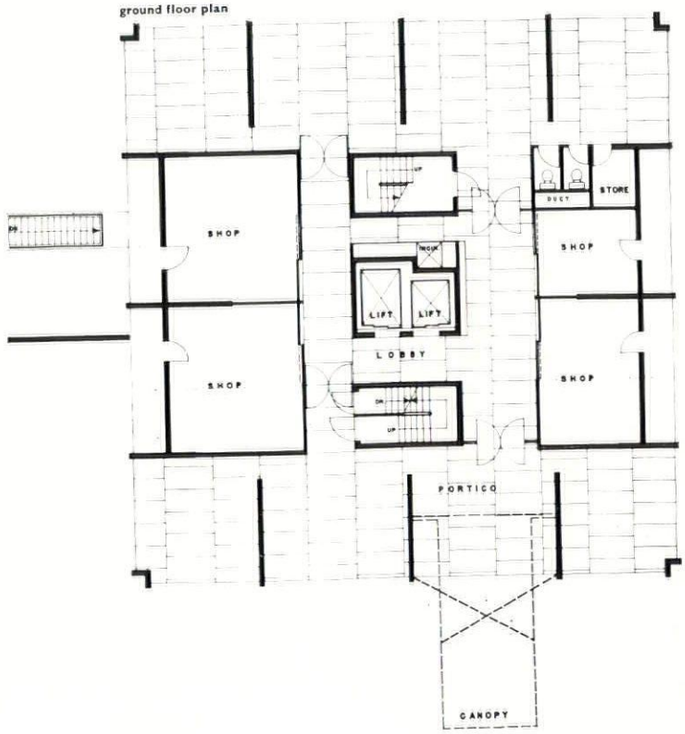
alternating floor plans

2, the east facade, showing the suspended canopy over the entrance, slung between two structural walls.
3, looking up one corner of the block, with the alternating living-room windows.



3

ground floor plan



4

4, the northern corner, at entrance level, with the rear wall and entrance to one of the shops, right.
5, interior of a living-room, looking toward the main window at the corner of the block.
6, staircase to viewing platform over the lift-tower.

FLATS AT BLUES POINT, SYDNEY

5



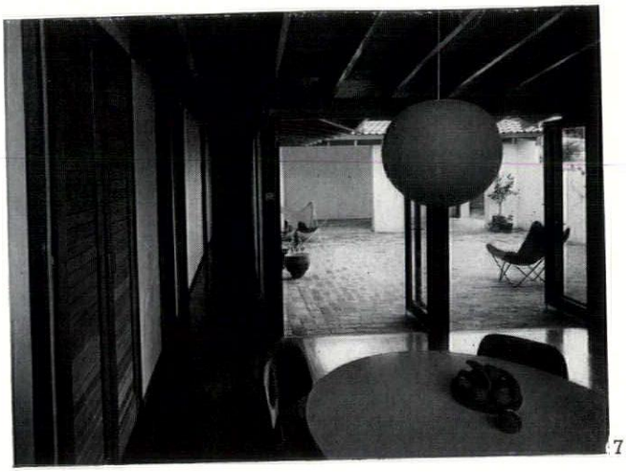
6



AUSTRALIAN DOMESTIC

HOUSE AT HUNTER'S HILL, SYDNEY

ARCHITECTS | **CLARKE, GAZZARD & YEOMANS**



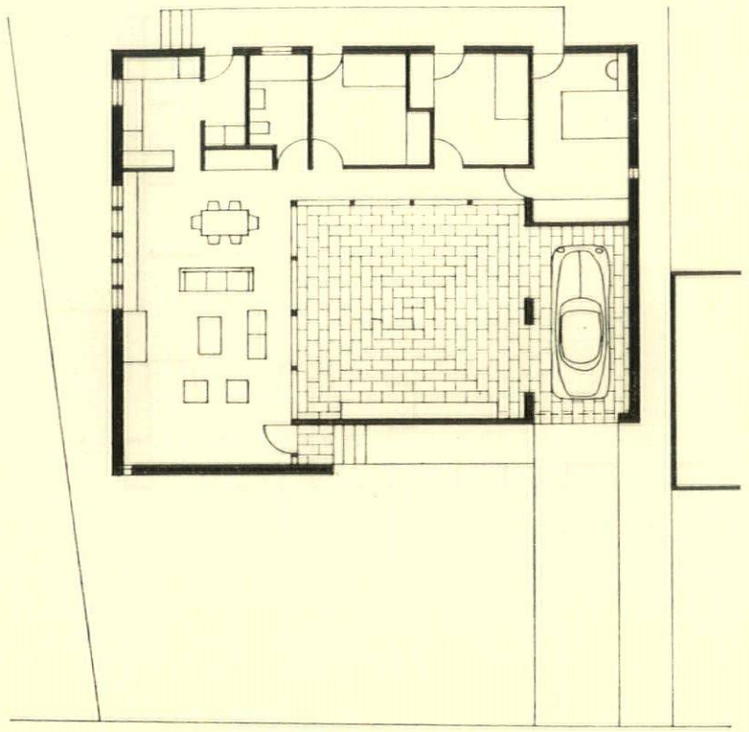
7

7, view down the bedroom corridor and into the patio.
8, looking in the opposite direction, from the car-port into the living-room.

8

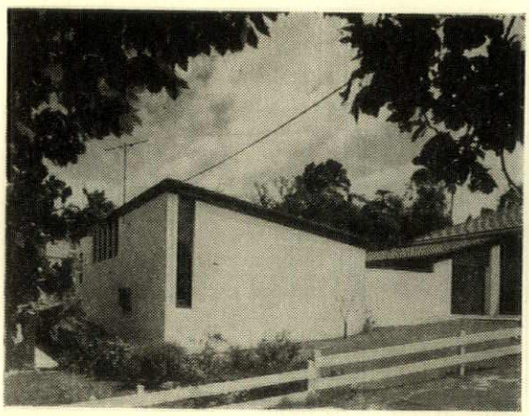
Built according to the standard Australian techniques of cavity brick walling, internal partitions of plaster-board on studding, and a roof of wooden joists at two-foot spacing that gives the module for positioning doors, windows and partitions. Where the house departs from standard practice is in using its materials as found (white-washed brick, Pacific maple joinery left natural finish)—a decision that has resulted in an economy of some ten to fifteen per cent on current prices for houses of this sort.

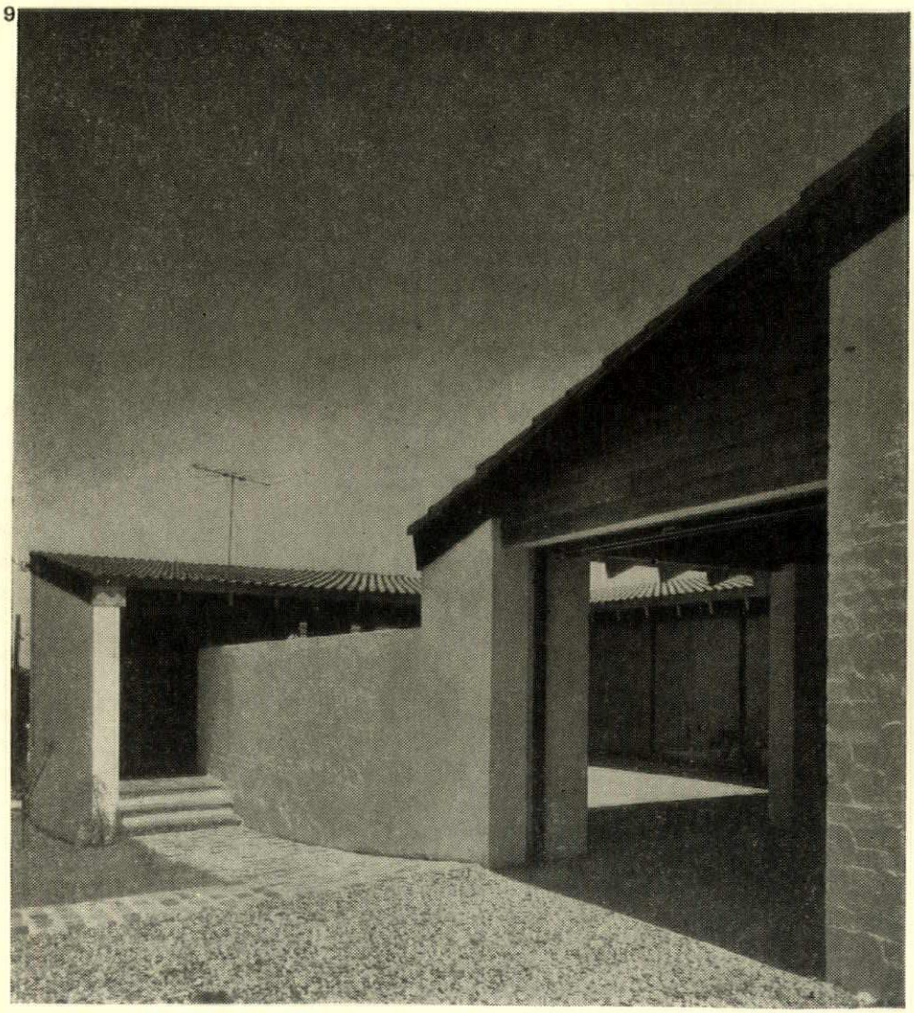
The patio planning, with all rooms looking chiefly into the internal courtyard, is part of a general programme of careful attention to the climatic problems of the humid Sydney summer. Louvred fanlights over doors also contribute to the necessary ventilation, and the comparatively great ceiling heights achieved by means of the sloping roof (rising to eleven feet at the external wall) also help the psychology as well as the physics of feeling cool. The patio, which is partly sheltered by the downward extensions of the roof to form verandahs, also provides private play-space for the client's children—a necessary provision on a site that is closely flanked by other houses on both sides.

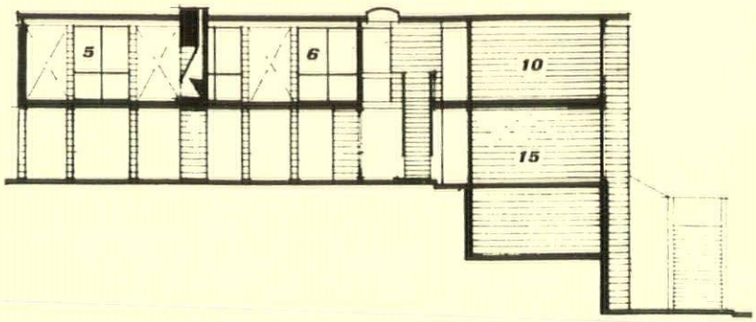


site and house plan

9. street side, with car-port at right and entrance to house at end of patio wall.
10, another view from the street.

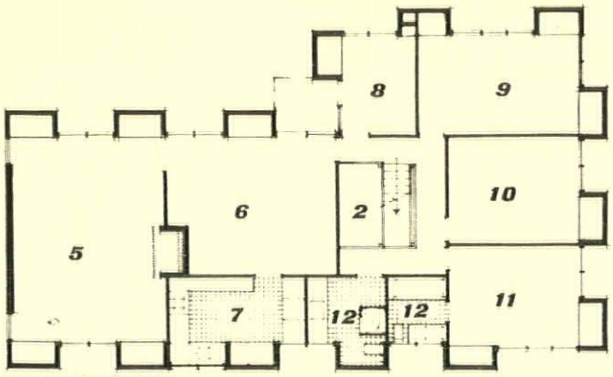

10


9

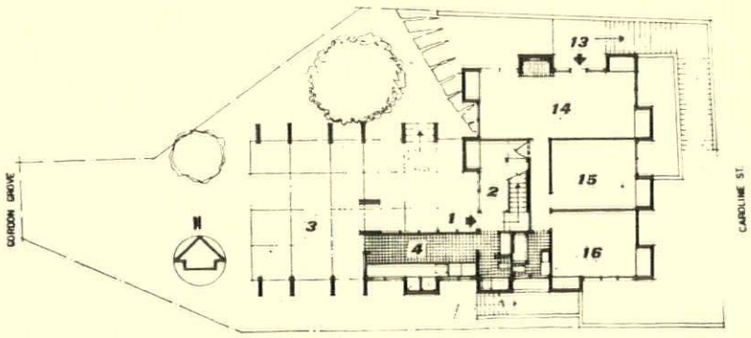


key

1, entrance
2, hallway
3, covered car-port
4, laundry
5, living room (house)
6, dining room (house)
7, kitchen (house)
8, study
9, master bedroom
10, 11, bedrooms
12, bathrooms
13, entrance (flat)
14, living room (flat)
15, 16, bedrooms



section and first floor plan

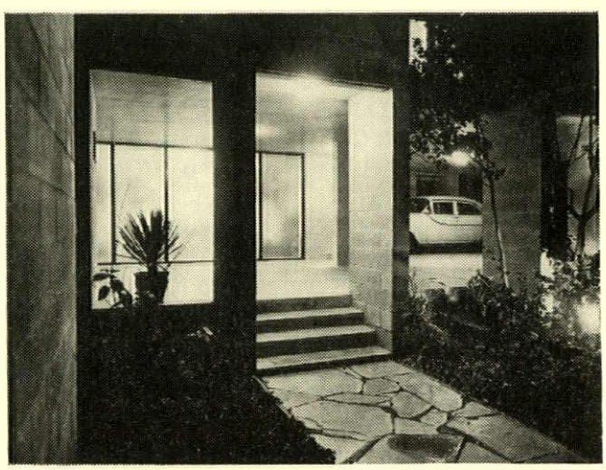


site and ground floor plan

AUSTRALIAN DOMESTIC

HOUSE AND FLAT IN MELBOURNE

ARCHITECTS | **GROUNDS, ROMBERG & BOYD**



11

11, garden steps up to covered car-port and entrance.

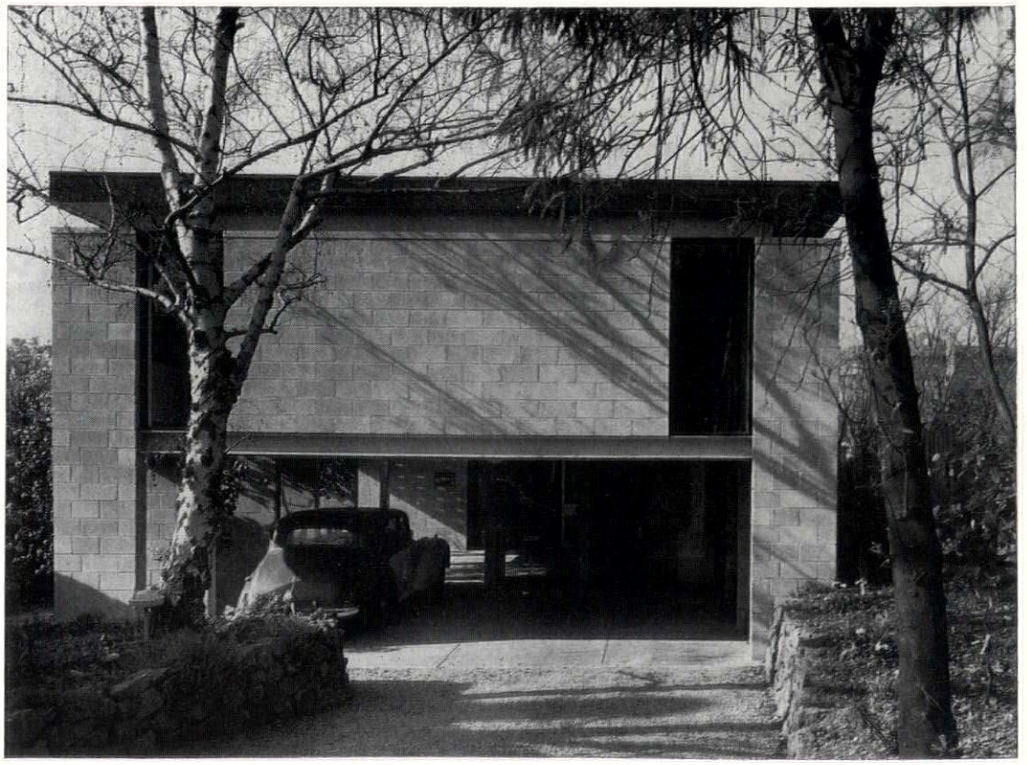
A straightforward concrete-block structure has been imaginatively used to provide a sizeable house with a flat beneath. The fall of the site, which is part of a well-established garden in the suburb of South Yarra, and lies between two streets, made it possible to give access to the house from the higher street and to the flat from the lower one—though in both cases one has to ascend a flight of internal or external steps to do so. Since the flat is at present occupied by younger members of the family, access is provided from it to the main house through a communicating door in the entrance hall.

The recessed and folded form adopted for the structural walling is aimed primarily at improving the stability of this simple construction on footings in unstable rocky ground, but it has been exploited in the plan to provide cupboards, fireplaces and duct-spaces internally, while externally the projections help to shade the windows from the sun.

12

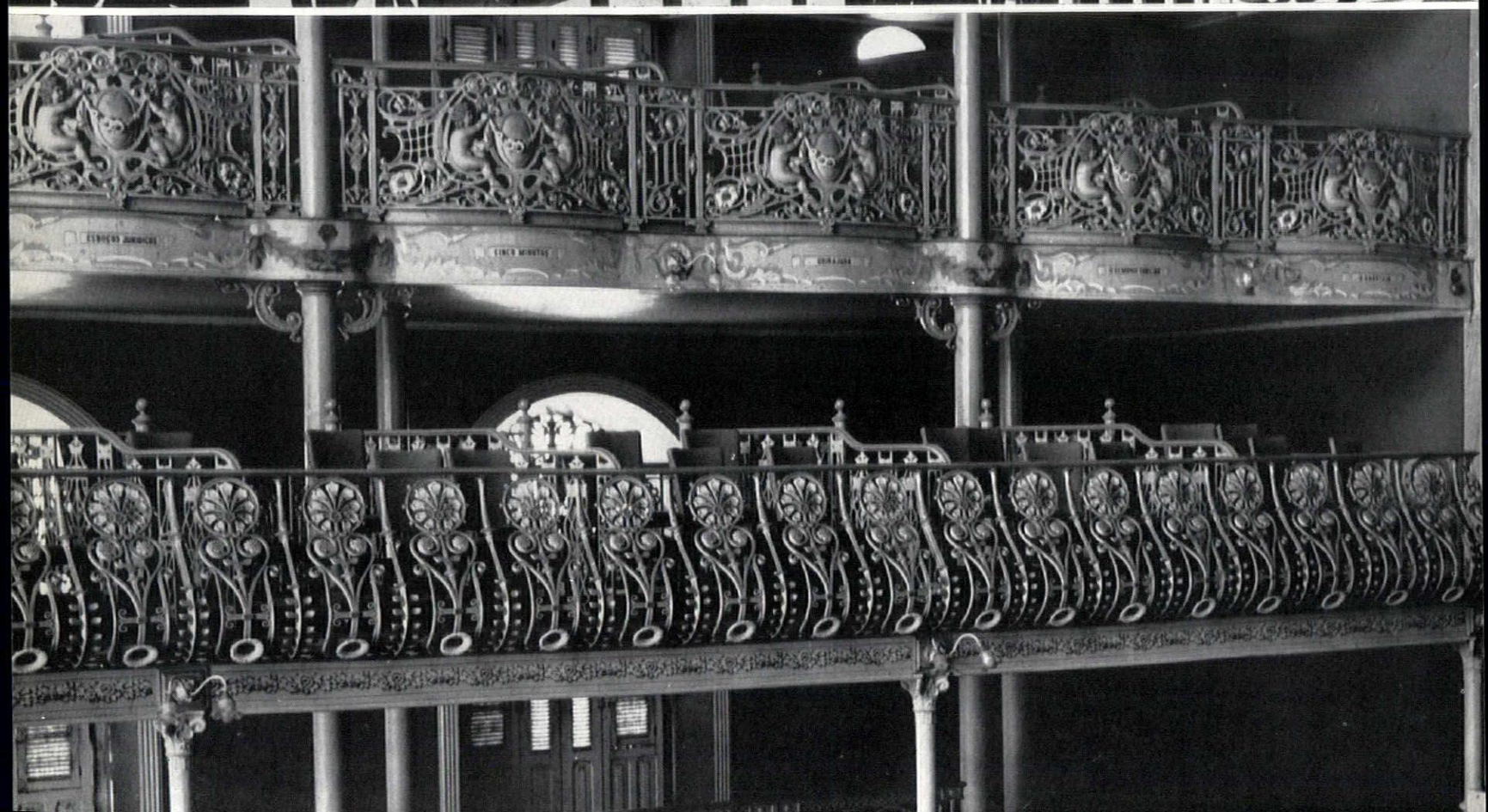


13



12, elevation to Caroline Street, with steps up to flat entrance at right.
13, the approach from Gordon Grove, with the end wall of the living-room of the main house and the car-port below.





TEATRO AMAZONAS

Leopold Arnaud

TEATRO JOSÉ DE ALENCAR

An account of two remarkable theatre buildings of fifty-five and seventy years ago which survive in the once prosperous tropical regions of Brazil, at Fortaleza (State of Ceará) and at Manaus (State of Amazonia), one constructed wholly, and the other partly, of iron. On the facing page ☜ *are two views of the ironwork of the Teatro José de Alencar at Fortaleza:* 1 *(top) the rear pavilion, showing the balconies to the front pavilion and courtyard;* 2 *(bottom), interior of auditorium showing the two balconies containing boxes.*

Fortaleza, today a city of 150,000 inhabitants, is one of Brazil's leading ports, but curiously the city has no harbour. Ships must anchor about a quarter of a mile off shore, and passengers and freight come in by lighter. The town itself is pleasant and is known for several specialities: it is one of the few places where tortoise-shell is still worked, and bracelets, brooches and small boxes in tortoise-shell are all to be found in the market; it is the centre of an active lace and embroidery industry, and it is the home of the sleeping hammock. This last was found in Brazil by the Europeans when they reached these shores, and from here it spread abroad. The hammock is still the most usual bed in this part of the world.

A rather quiet provincial town in spite of its active port, Fortaleza has occupied, and still occupies, a strategic position on the Brazilian coast. In 1603, one hundred and three years after Pedro Alvarez Cabral's chance discovery of Brazil, the young Portuguese captain Pero Coelho de Sousa established a small fort at the mouth of the Ceará river. The fort was abandoned in 1631. Five years later a Dutch expedition led by George Garsman and Hendricj Huss took possession of the site and rebuilt the fort. This venture lasted only seven years and was wiped out by the Indians. In 1649 the Dutch returned under Matias Beck and established Fort Schoonemborch on the site of the present city. But the Dutch occupation was a short one, for in 1654 Matias Beck surrendered the place to the Portuguese captain Alvaro de Azevedo Barreto and its name was changed to Forte de Nossa Senhora de Assunção.

Seventy-two years later, because of the growth of the population and the increasing importance of the location, Captain Alvaro's wooden fort was rebuilt in stone and the name of the town was changed to Fortaleza de Nossa Senhora de Assunção, which name it carries to this day. By the nineteenth century the town numbered about 50,000 inhabitants, and in 1830 it opened its first theatre.

A primitive structure, known locally as the 'opera house,' this theatre was short-lived, and is remembered today only through occasional literary references. In 1842 the Teatro Taliense opened its doors and remained in business until 1872, but it led a precarious financial existence, and for most of its thirty years appears to have been used as a dance hall, offering occasional band concerts rather than theatrical performances. Then, with increased prosperity in the north, with the development of the rubber exports and the lumber industry, Fortaleza also prospered. In 1877 the Teatro São José was built, followed almost immediately by the Teatro das Variedades, and in 1880 the Teatro São Luis. But all of these houses were short-lived as the town could not support a regular playhouse. Nevertheless, many companies coming up from southern Brazil to play in the rubber boom towns of Belém-do-Pará and Manaus stopped off for a short visit to Fortaleza and gave their performances in the Teatro São Luis. By the early twentieth century Fortaleza had grown and prospered and in 1904 the State Assembly voted to erect a theatre 'suitable for the capital city of the State of Ceará.' In 1908 the construction of the present building began.

Designs for the new theatre were drawn up by the military engineer, Lieutenant Bernardo José de Melo, and the structure was erected on a site facing the Praça José de Alencar, from which it takes its name. The building is composed of two pavilions one behind the other and is referred to (locally at least) as a 'garden theatre.' The first pavilion, facing the square, has a cast-iron frame hidden under a common brick fill. The entire façade is covered with 'reboco,' the traditional cement stucco of the Latin countries. This stucco is given a surface treatment, modelled when desired, run as mouldings or simply given a texture; it is then painted. In this case the 'field' is painted a light tan, and the 'architectural' motives (i.e. quoins, cornice, window frames and the like) are painted white. The pavilion is used for concerts, lectures and literary gatherings. Each floor contains several rooms and various services.

Of much greater interest to the architect is the rear pavilion, separated from the front pavilion by an open court and attached to it by open iron balconies. This rear pavilion contains the theatre proper; a house with 1,000 seats in three tiers—orchestra and two balconies of boxes. The structure is all of cast-iron executed by the Saracen Foundry, Walter MacFarlane & Co., of Glasgow. This company was proud enough of its work to sign the columns conspicuously.

In design there is such a great discrepancy in scale and character between the front pavilion and the theatre proper that it is quite possible that the Saracen Foundry had a fairly free hand in the design of its ornamental ironwork as well as in its execution. The flowing lines of the Art Nouveau or the Liberty style of Europe in 1900 are presented here in a provincial expression, nevertheless in a straightforward and rather impressive design. It is especially interesting to see how English influence was felt in this out of the way locality, an offshoot of the real boom town of Manaus.

Manaus on the Amazon is a somewhat newer city than Fortaleza. By legend Pedro Teixeira was the first explorer to enter the region. He is said to have founded a post here in 1637. However, history says that Corporal Bento Macial Parento established the first post in 1657. By 1774 the settlement numbered 220 souls. In 1848 it was dignified by being elevated to the rank of 'city.' Its official name then was Barra do Rio Negro. With the establishment of the Amazon Territory, in 1850, by the Brazilian Emperor Pedro II, Barra do Rio Negro became the provincial capital. Six years later its name was changed to Manaus which is the name of an aboriginal tribe which lived in the vicinity.

Manaus is set in the wilderness, completely surrounded by almost impenetrable jungle and separated from the coast by a thousand miles of Amazon valley commonly called 'The Green Hell.' Manaus the boom town was certainly remote, yet

it maintained definite ties with Europe and North America. Until just a few years ago, a trip from Manaus to Rio de Janeiro required twenty-six days of travel, while London, Lisbon or New York were only twelve days away. It is not surprising therefore that European and North American influence should be great in the Amazon valley.

The 'Green Hell' which surrounds Manaus is so named because it is inimical for the habitation of man. The river itself is a monster, its waters hazardous in tempest and in flood; its banks constantly breaking away in great pieces and reforming elsewhere; islands appearing and disappearing. It is a vast inland sea, constantly forming, disintegrating and reforming; a region that could never become familiar. The Amazon basin is covered with an almost trackless jungle and is infested with mosquitoes and poisonous snakes and insects. The air is not only torrid but also heavy with humidity. Yet this jungle holds the treasure that made the riches of Manaus—woods of great variety: the 'bitter oil tree' whose wood, sap and bark have high commercial value; the 'angelum' whose wood is used in shipbuilding; the Castanha do Pará or 'Brazil nut' tree which gives the 'nigger-toe' nuts; the ceiba, a giant tree which produces kapok, to name only a few varieties of the dozens which grow in the region.

Of all the Amazonian products the rubber tree, or 'seringueira' from which latex is gathered, is perhaps the most important. It is the 'seringueira' and its exploitation which brought the boom to the valley. Rubber was first shipped out of Brazil in 1827. However, it was not until 1839, when Charles Goodyear discovered that sulphur added to the rubber would produce a product which could resist both high and low temperatures, and 1842 when Hancock developed the vulcanization process, that the commercial possibilities of rubber were realized. Then the Amazon valley, the only spot where the seringueira grew, had its great boom period. This period of prosperity was to last until the more scientifically exploited rubber plantations in Malaya and Ceylon produced a better product at lower cost.

The extraction of latex in Brazil was never an organized industry, it was in the hands of two types of individuals, both essentially simple, the *seringueiros* who led a solitary life in the jungle gathering latex, and the *seringalistas*, owners of tracts of land who collected the rubber product from the *seringueiros* and brought it to market. Once a year the *seringalista* came to town to sell his crop and to 'live it up' in bars, cafés, hotels and houses of the 'happy life.' With wealth came the desire to beautify the city and to erect civic monuments. Present-day Manaus shows some results of this pride: a well laid out, orderly town plan; planted avenues; topiaried trees; several well designed squares with impressive fountains (some imported from England)—and finally the grand Teatro Amazonas.

In 1890 a competition was held for an opera house. The design submitted by Bernardo Antonio Oliveira Braga was premiated, and building began in 1891. Several contractors worked on the project: Rossi and Brothers; Manuel Coelho de Castro, and others. All seem to have failed financially. The building was eventually completed by the municipal authorities and inaugurated on December 31, 1896. Every effort was made to create as fine a theatre as possible—no expense was too great. Stone was brought from Portugal; marble from Italy; gold mined in Brazil was sent to England to be laminated into gold leaf and then returned to be used in the opera house. Rare woods were not only sought in the forest but were also brought from abroad to be used for interior panelling, floors, wainscots and the like. The cast-iron work came from France, manufactured in Paris by Kuhn et Frères who also made the dome. Three Italian painters, De Angelis, Capraneri and Silvio Centofani were the decorators.

Although the building was restored and repainted in 1929 and again in 1960, the original appearance and atmosphere have been preserved. Many of the details are surprisingly modern for their time. The exterior walls are of stone to a height of five or six feet above grade, and then are of rubble, stuccoed. Both stucco and stone are painted salmon pink with white trim. The iron dome, slate covered, is painted blue, green and yellow, the Brazilian national colours, with designs taken from the national flag.

The building, sited at the top of a low hill, can be seen advantageously. The structure is surrounded by a terrace with an ample atrium paved in the Portuguese manner with small irregular stones of light tannish grey with a bold pattern in black stones. The result is impressive. No expense was spared, but the lack of coordination in direction is apparent. As a result there is less unity of scale and design here than in the theatre at Fortaleza; also the taste is less sure. Nevertheless, during the great rubber boom days the famous opera companies of Europe, chiefly those from Italy, made the journey to Manaus and to the Teatro Amazonas. Even today the town, living on, keeps the memories of its glamorous past.

Facing page: **3**, *looking from the cast-iron balcony of the rear pavilion of the Teatro José de Alencar at Fortaleza towards the stucco-faced front pavilion.* **4**, *detail of one of the second tier of boxes; the balcony front is of painted cast-iron and the wooden fascia has painted decorations.* **5**, *crests on top of the rear pavilion.*

TEATRO JOSE DE ALENCAR



6

6, *base of one of the cast-iron columns of the rear pavilion, just above the fluted drum, showing the name of the foundry—'W. MacFarlane & Co., Glasgow.'*

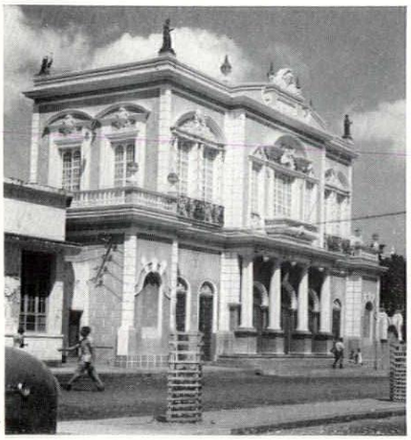
3



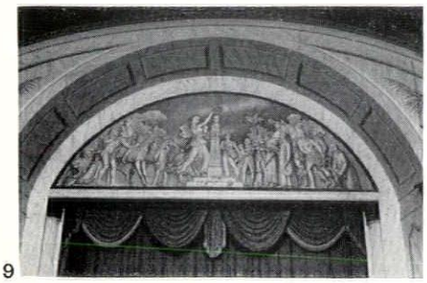
4,5







7



9

8



TEATRO JOSE DE ALENCAR

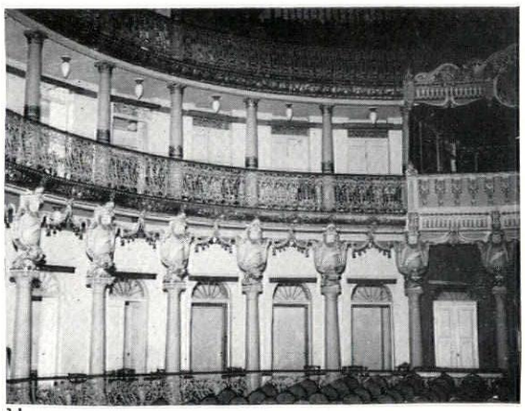
7, *the main pavilion, or front, of the Teatro José de Alencar.* 8, *detail of the upper part of the front pavilion; the stucco is painted tan and white.* 9, *the proscenium arch which is also of painted stucco.*

TEATRO AMAZONAS

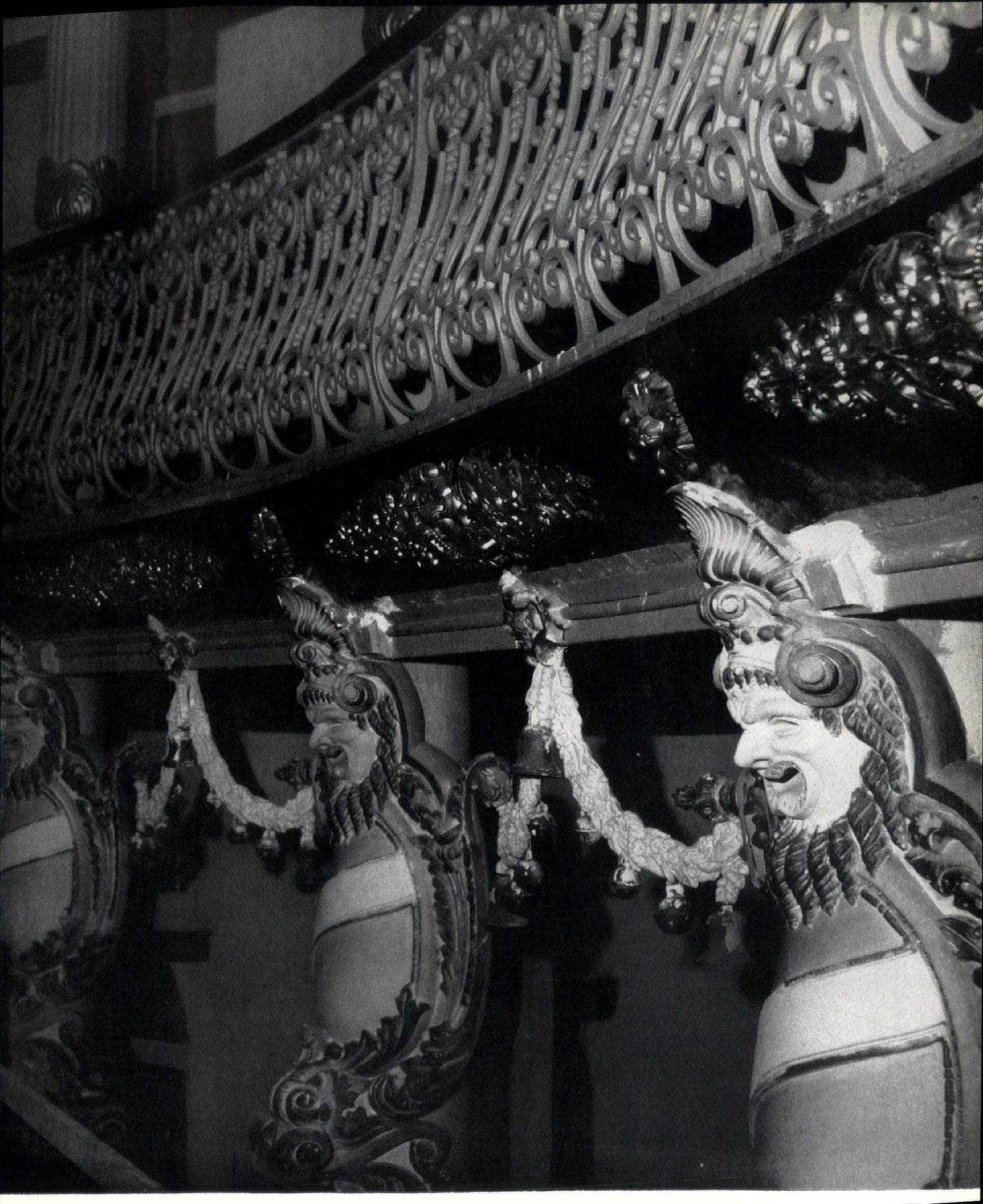
10, *the Teatro Amazonas at Manaus; the lower walls are of stone, the upper ones stucco, and are painted in salmon pink and white; some of the small tiles are also painted—in Brazil's national colours, blue, yellow and green.* 11, *the auditorium, with the President's box on the right.* 12 (*facing page*), *close-up of the carved figures on the columns supporting the balcony.*

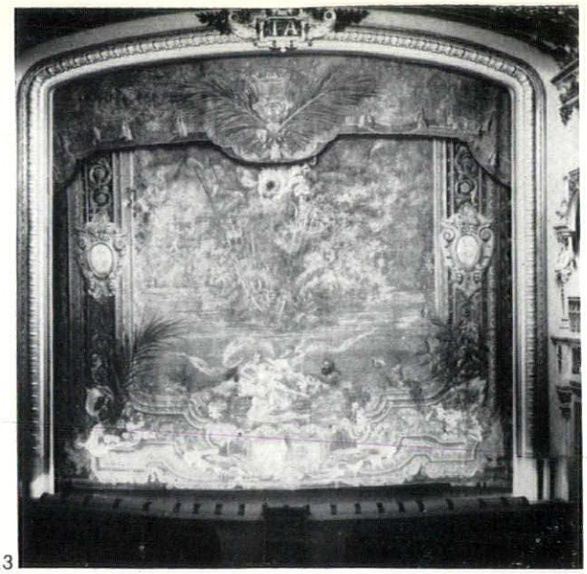


10



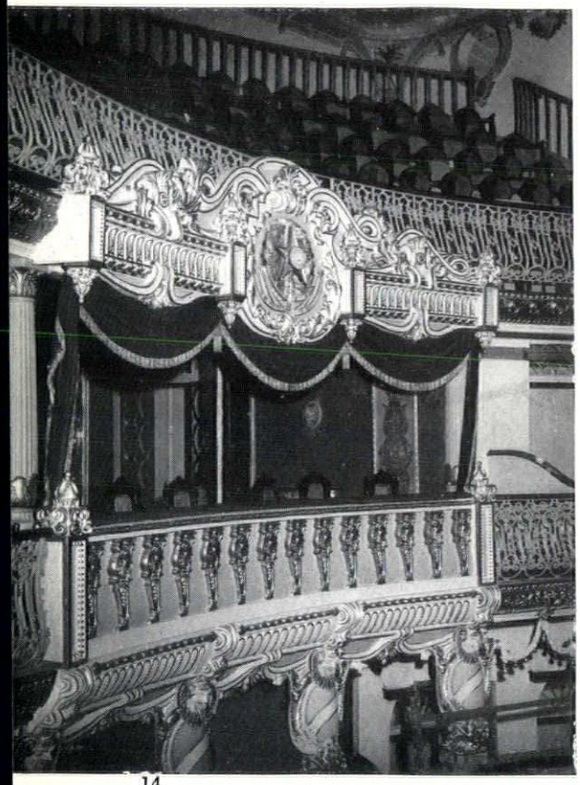
11





13

13, the proscenium and curtain of the Teatro Amazonas. 14, *the President's box; the interior is of cast-iron painted white and gold. The caned seats are of rosewood.* 15, *the entrance lobby: the doors are of carved walnut and the ceiling is of hand-modelled plaster. Facing page:* 16, *the reception hall over the entrance lobby.* 17, *the cast-iron stair leading from the entrance lobby to the upper galleries.*

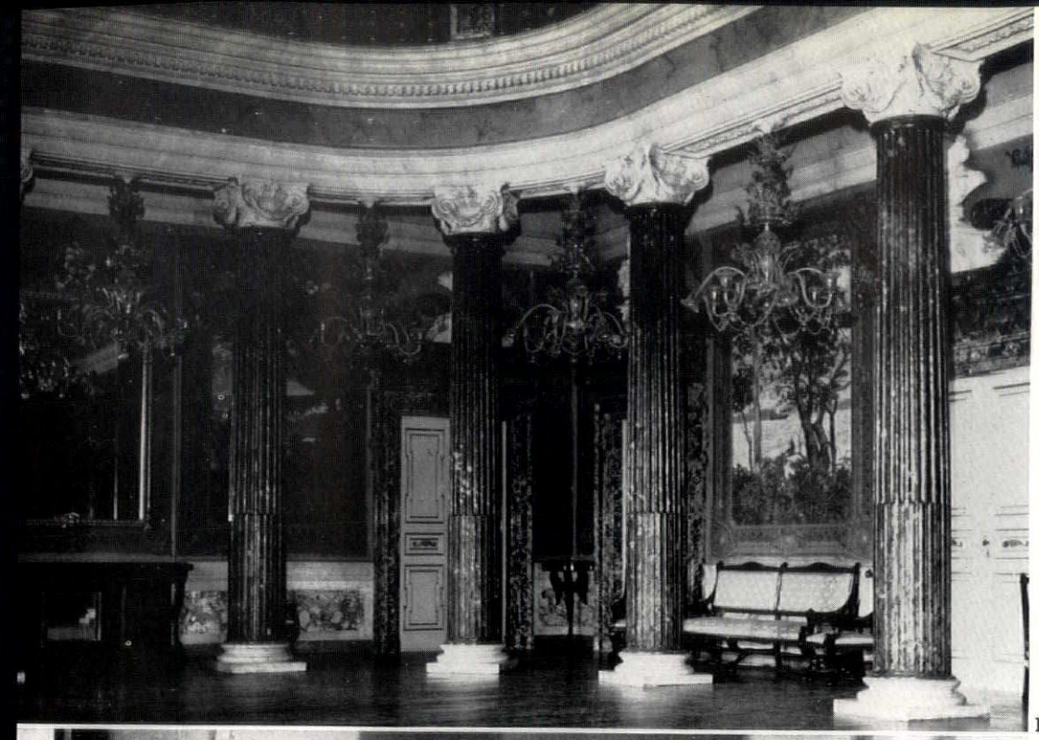


14

TEATRO AMAZONAS



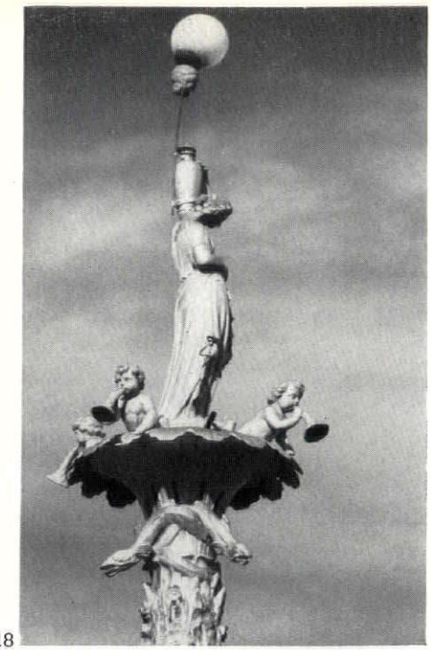
15



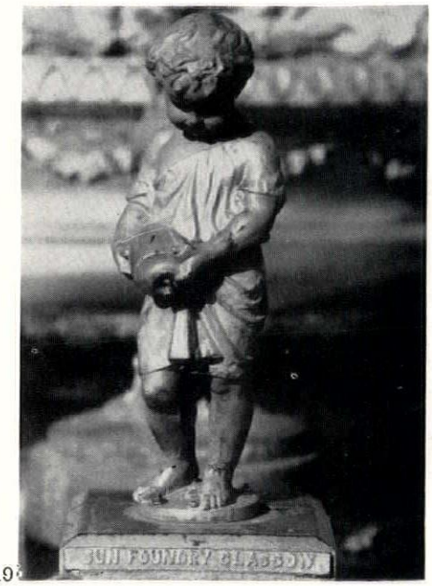
16



17

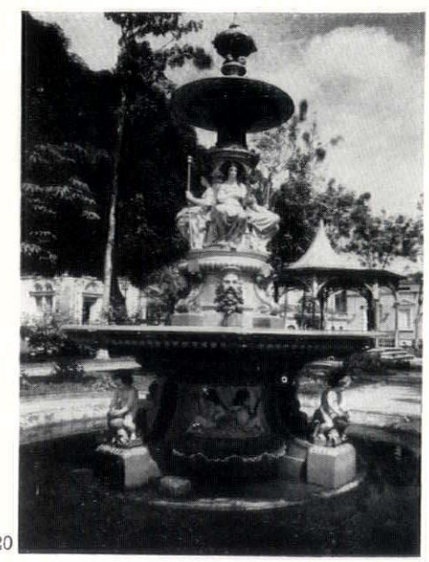


18



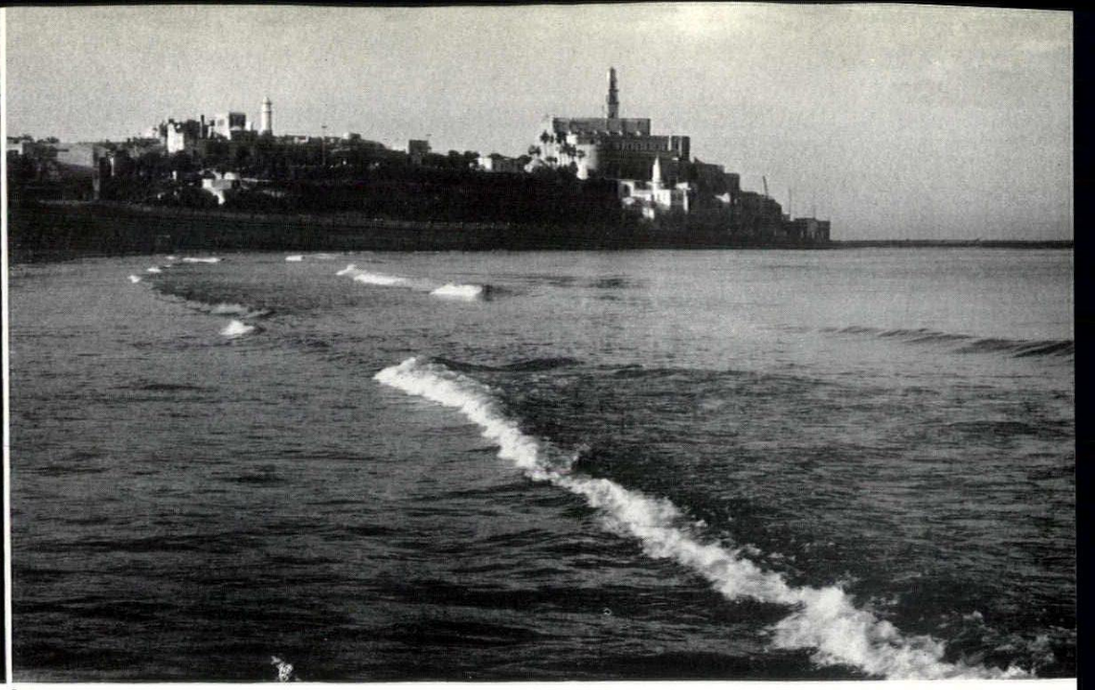
19

18, 19, 20, *crudely polychromed fountains in the city of Manaus, made by the Sun Foundry of Glasgow.*



20

Two views of the Mediterranean port of Jaffa, an ancient town now embedded in Tel-Aviv. A proposal for the redevelopment of the old town is described on the following pages. 1, looking southwards from the beach of Tel-Aviv. The tower is that of the French monastery fronting the open space in the centre of the old town. The harbour entrance is on the right. 2, group of old houses, as existing, seen from the west.



1

2

THE OLD TOWN OF JAFFA

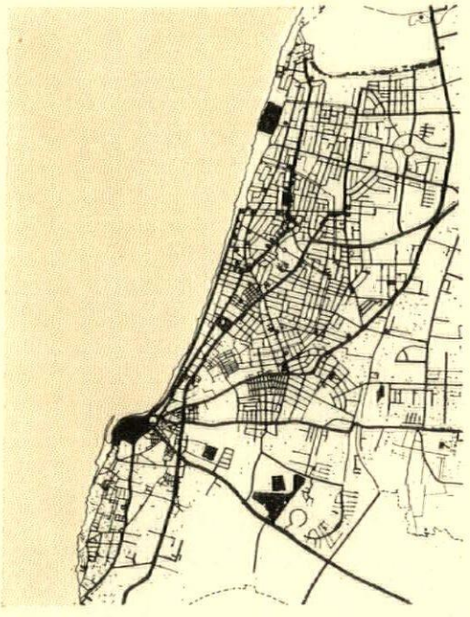
a study in urban renewal by J. Jahr and Saadja Mandl

Jaffa is one of the oldest ports on the eastern coast of the Mediterranean, inhabited from biblical times to the present day. It was never abandoned in spite of heavy destruction during many wars, including the Israeli war of independence. The modern city of Tel-Aviv, which has grown in only forty years to be a city of half a million inhabitants, surrounds the old town of Jaffa, which is built on a hill overlooking the harbour. The old town remains the centre of the urban nucleus of Tel-Aviv and the focus of its main road network.

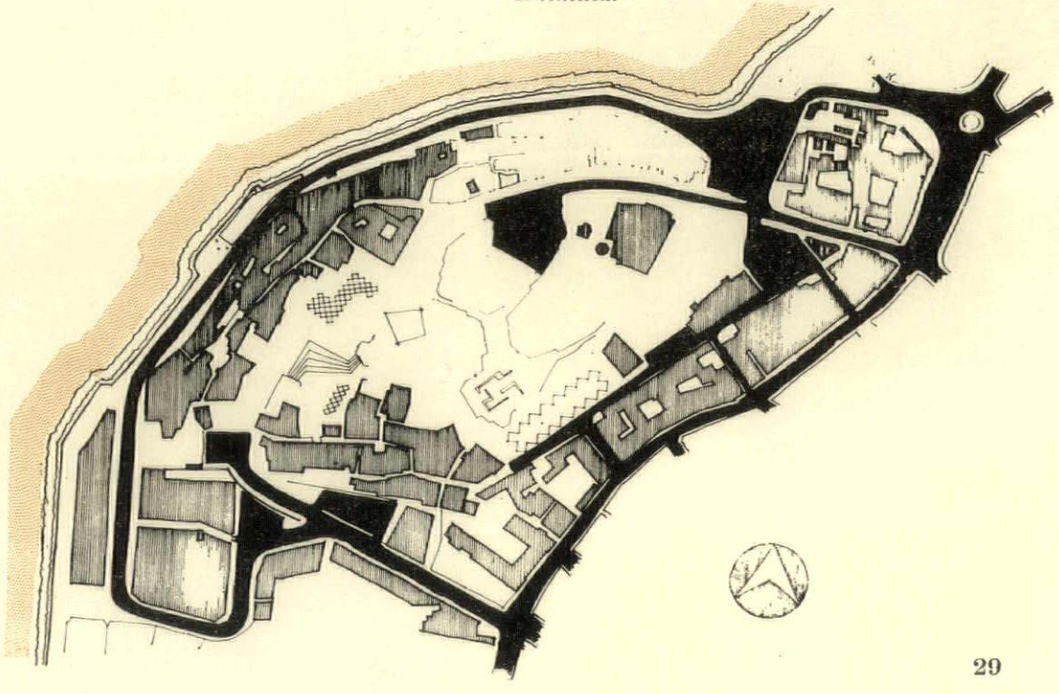
The architects whose redevelopment scheme is illustrated here, Messrs. Jahr and Mandl, were commissioned by the municipality and the tourist office to suggest how the partly decayed old town could best be dealt with. In view of its urban significance, they felt it would be most suitably redeveloped as a self-supporting cultural centre, contributing interest and activities at all hours of the day and night. Enterprises they proposed should be incorporated in it include art galleries, small workshops and studios for arts and crafts, cafes, restaurants, nightclubs, a small theatre and a cinema club. Some thirty per cent of the accommodation they allocate, however, to residential use.

The existing buildings in old Jaffa date mainly from the early nineteenth century and are a mixture of Italian and Arab in style, having been largely built by Italian craftsmen. The majority will have their interiors replanned to suit their new functions. Facades will be cleaned and, where necessary, replastered and whitewashed. Any necessary new buildings will be in harmonious contrast rather than in imitation of the old styles.

The redevelopment plan aims to adapt the site of the old town to its new function, catering for the requirements of motor-traffic, sanitation, electricity, and so on, while preserving the old atmosphere and character. The inner area remains exclusively pedestrian, all motorized circulation remaining on the periphery, where it is well provided with parking facilities at all entries. Service vehicles will be allowed to enter at certain fixed hours. Pedestrians will move from the central square into smaller piazzas, linked by narrow streets at various levels.



3



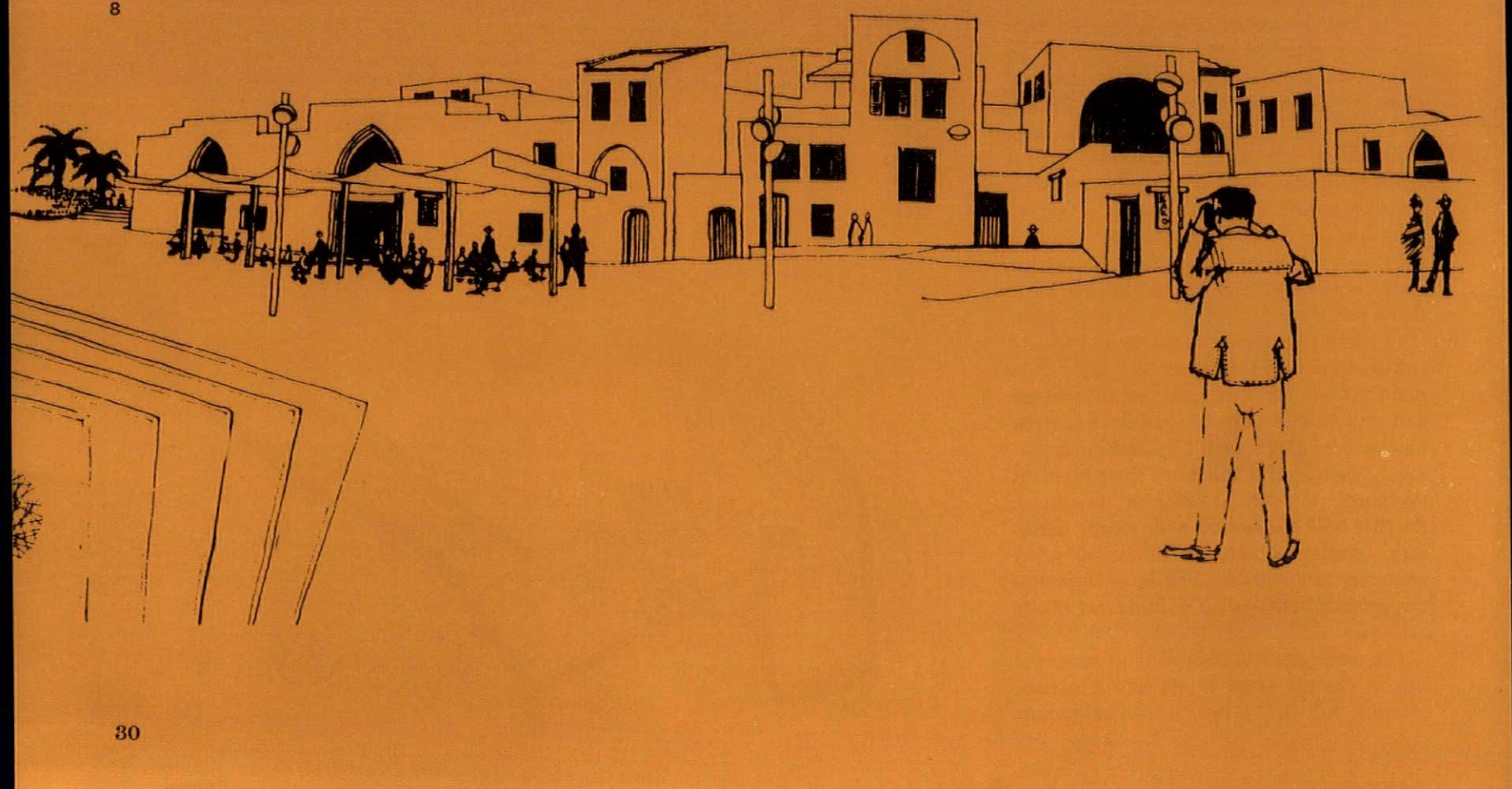
4

3, Jaffa and Tel-Aviv. The black area is the old town of Jaffa, standing high above the sea. The modern Tel-Aviv surrounds it, having grown principally to the north and east, but the main road network still radiates from the old town.
4, redevelopment plan of the old town as a residential and cultural centre. Motor roads (shown black) are restricted to the perimeter. The internal circulation, round the central space which is a park containing archaeological excavations, is by means of a sequence of small squares linked by narrow streets between the old houses, restored or renewed.



5

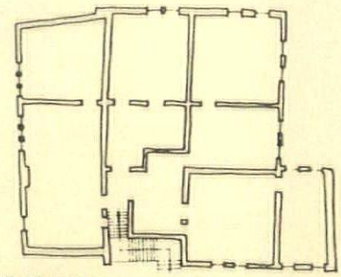
8



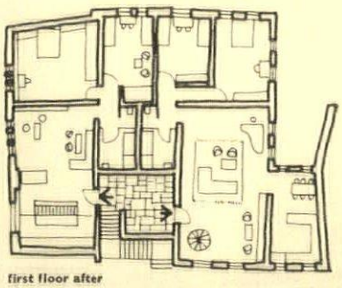
5 (*opposite page, top*), *one side of the central space, as it will look when redeveloped. On the right is the French monastery of St. Pierre. Beyond the buildings the land drops steeply to the Mediterranean, seen in the background.*

6 (*below*), *the same area at present.*

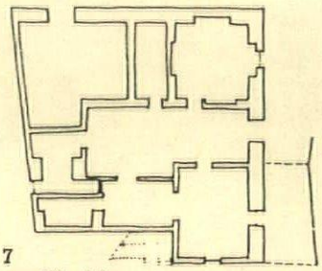
7, *plans of a typical old house in one of the narrow streets of the town, and of the proposed remodelling to convert the ground floor into two artists' workshops and the first floor into two flats. The latter will be entered from a small open court, reached by the existing outside stair.*



first floor before

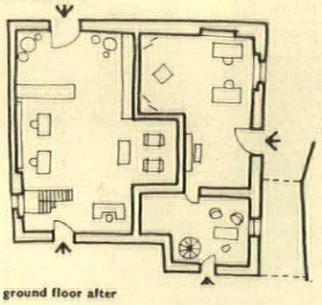


first floor after



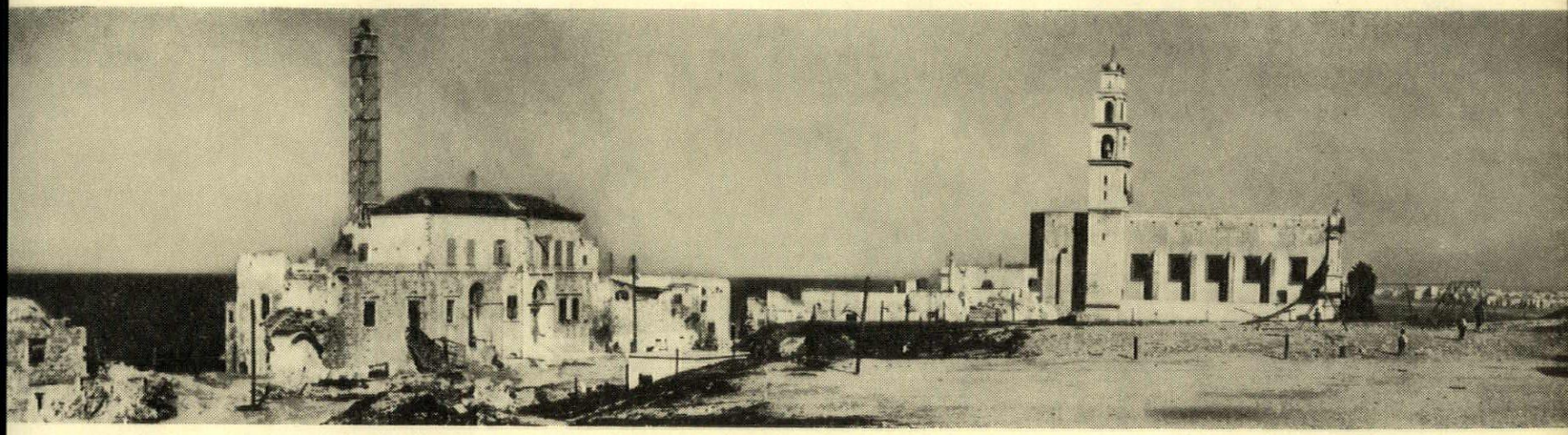
7

ground floor before



ground floor after

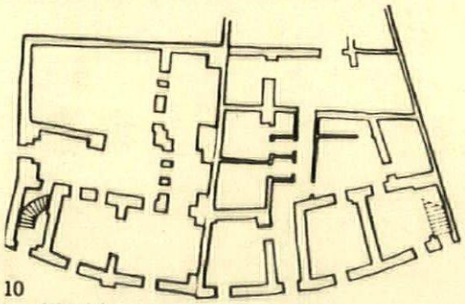
6



8 (*opposite page, bottom*), *a typical square, after restoration.*

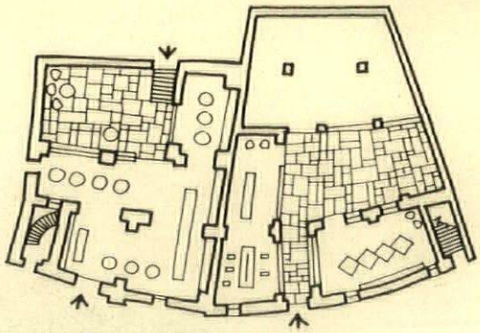
9, *the same square, before restoration.*

10, *plans of a pair of old houses converted into shops. The shop-windows face into interior courts so as to avoid breaking into old street facades.*



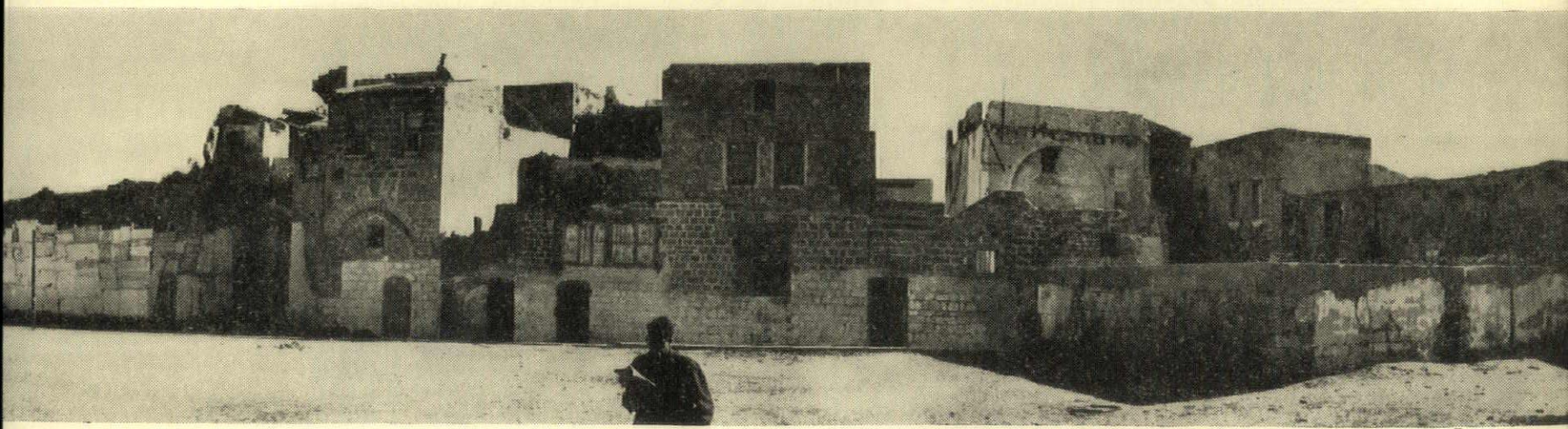
10

ground floor before



ground floor after

9





11

13





12

11 (*opposite page, top*), *another small square, created at the intersection of several of the steep narrow streets as it will be when restored.*

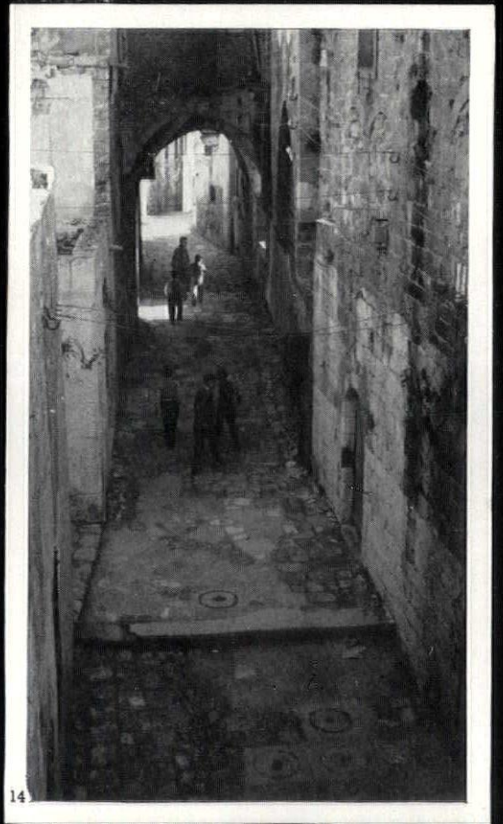
12, *the same square today.*

13 (*opposite page, bottom*), *the descent from the harbour, showing squares and roadways at different levels, linked by narrow streets and flights of steps between the houses—again as restored.*

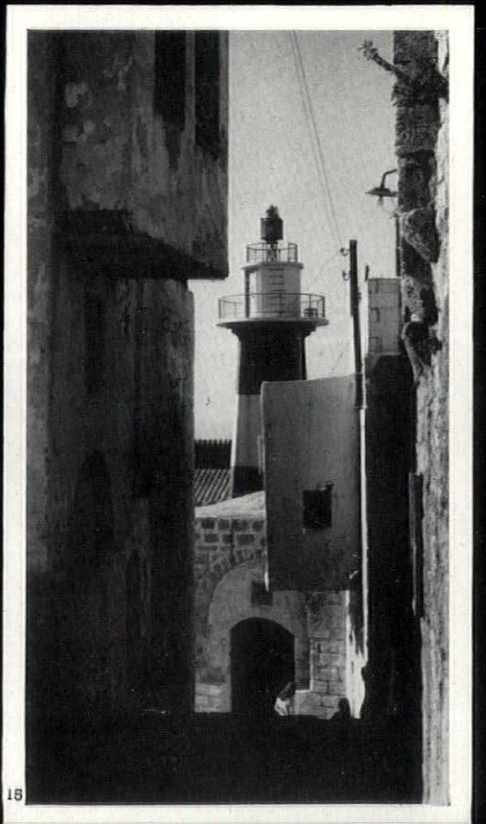
14, 15, 16, *typical narrow streets and houses in the existing old town.* 17, *arcaded street supporting projecting upper floor.*

(Material for this feature supplied by Barbara Osters)

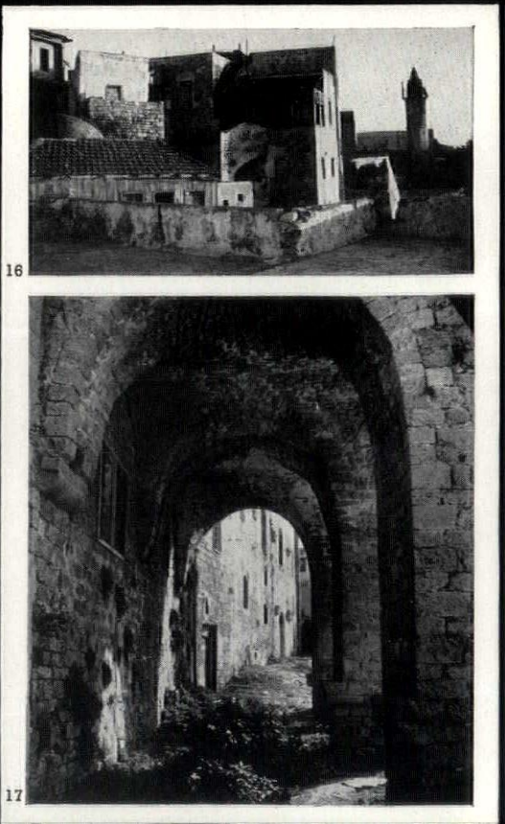
THE OLD TOWN OF JAFFA



14



15



16

17

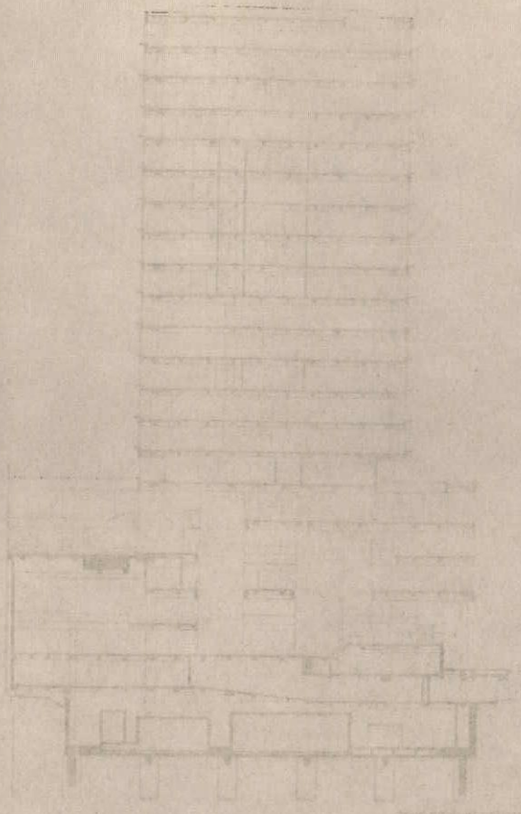

NO ENTRY
STARWAYS

criticism

J M Richards

Architects, Robert Matthew, Johnson-Marshall & Partners

New Zealand House, London



Facing page: 1, *New Zealand House from Waterloo Place, with its air-conditioned tower rising to eighteen storeys. From left to right: typical Edwardian baroque architecture of Pall Mall, with whose cornice levels the new building has been made to line up; the entrance arch leading into the Royal Opera Arcade, which the New Zealand government acquired with the site and is restoring; the Pall Mall front of the new building, with opening in the podium at ground-floor level leading down to the service entrances and the basement car-park; the corner of Haymarket; the corner (foreground) of the United Services Club.*

New Zealand House, as built, instructively reflects a number of the burdens that the conditions in which big city buildings have to be designed place on the architect. One such burden is imposed (not in all cases unjustly) by the planning authority's views on the continuity of the street; the architects of New Zealand House, for example, were required to line up the horizontal elements of their facades with existing cornice lines, and this is responsible both for the somewhat unsatisfactory proportions of the Pall Mall façade and for the existence of the free-standing slab above the second-floor terrace, which looks clumsier from inside the building than from outside.

Pall Mall is a street with a particular built-up character, and it is undoubtedly one of the responsibilities of the planning authority to ensure what homogeneity it can when building takes place in such areas, preventing new buildings from having too destructive an effect on their setting. The questions here are whether the buildings neighbouring New Zealand House are not themselves likely to be replaced in the next few years, whether it was not therefore more important to establish the right scale and proportions for this street frontage in the future than worry about precise lining-up of cornices and whether in any case, as long as the continuity of the street is maintained at the pedestrian's eye level, there is much advantage in an even-height façade higher up.

On the other hand, in recent years a reaction against the corridor street, urban planning fashions and the operation of the plot-ratio have all combined to destroy the street as an architectural entity; and although the previous fashion for building up round the perimeter of sites, leaving deep light-wells in the centre, only preserved the street at the expense of good lighting and noise prevention and of the proportions they were designed for, the planning authority has perhaps some obligations, in an area with an established character like that surrounding Pall Mall and Waterloo Place, to exercise its control in terms of the existing pattern pending the evolution of a new one. The tragedy is that no coherent new pattern is likely to emerge out of our present system of piecemeal land exploitation and our negative attitude to town-planning.

Less defensible than the restrictions on the street elevations were the restrictions imposed on the height of the main tower block of New Zealand House. This was again the work of the planning authority (London County Council*), abetted by the Royal Fine Art Commission and, more positively, by the Ministry of Works, which the planning authority is obliged to consult when a building project affects views from one of the Royal Parks or Royal Palaces. The tower could with benefit have been several storeys higher, and stands now as an illustration of the fact that all compromises tend to get the worst of both worlds. If it was going to be seen rising above the roofs of Carlton House Terrace from the middle of St.

* The building in fact never received LCC approval. The LCC preferred to leave it to the Fine Art Commission, and when the latter found themselves unable to approve it, it went straight to the Cabinet who gave sanction to proceed over the LCC's head.

James's Park, it might at least have been given the chance of appearing elegantly proportioned. The logical alternative was to go to the other extreme and forbid a tower at all, imposing on the site an old-fashioned perimeter development, which would have meant clamping down on changes demanded by the spirit (and the land-use practices) of the times. Such an extreme a mere conservative preference for the *status quo* is hardly enough to justify.

New Zealand House suffered from being one of the first tower projects in the West End of London to come before the authorities. Looking back some time afterwards, we can see how meaningless the restrictions on its height have become since permission was given to build high in two other cases with results far more damaging to surrounding London—the Hilton Hotel in Park Lane and Portland House near Victoria Station, permission in these instances being given moreover to architects of far less distinction than those responsible for New Zealand House.

It should be added, in fairness to the authorities already mentioned, that both Portland House and the Hilton were built high in spite of objections by the Royal Fine Art Commission and the Ministry of Works, and that the Hilton was also objected to by the LCC who were overruled by the Ministry of Housing and Local Government, itself (it was rumoured at the time) under pressure from the Board of Trade not to stand in the way of a project that would earn dollar exchange.

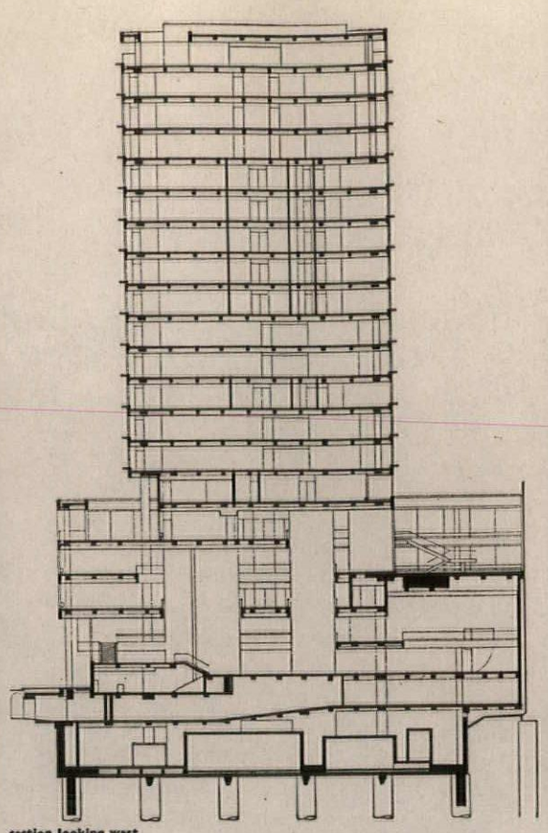
On such grounds are the future shape of London and the amenities of its citizens determined. But to return to New Zealand House: what I have said makes it clear that certain deficiencies of the building's proportions were due to influences outside the architects' control; but the main defect of its exterior was not. This is a failure fully to express and articulate the elements of which it is composed. In a building like this the relationship of the tower to the podium or base is vital, and it can be taken as a rule that a satisfactory relationship can only be established if at least one face, or one angle, of the tower can be followed by the eye right down to the ground. This gives it the necessary structural logic—that of one geometrical form growing through another, rather than that of two geometrical forms perched on top of one another*; it is the fully articulated tower that makes sense of Lever House, New York, at least from within the ground floor courtyard that is opened up to the street, whereas however intently one peers through the plate glass walls of the New Zealand House podium, one has no sense of the vertical lines of the tower passing downwards within it.

It therefore neither provides, to a full enough degree, the plastic excitement of a tower growing through the middle of a building nor does it furnish the street with the drama of a tower rising sheer from the pavement, which latter is the one way in which buildings of this form can restore to the townscape quality of the street some of the attributes that they deprived it of when they abandoned the built-up façade—see my remarks about street architecture above.

Its transparency nevertheless gives New Zealand House a great deal of the architectural quality which, in spite of the criticisms I have just made, it undoubtedly possesses. When it is seen close-to, for example from the surrounding pavements, it can be apprehended in depth as a frame building enclosing and defining an interesting sequence of spaces. The main ground-floor spaces, moreover, develop impressively before the visitor's eyes as he passes through the Haymarket entrance beneath the dramatically counterbalanced steel-clad canopy—an unusually good example of its kind. How much more satisfactory is the effect on entering here than in another recent prestige building, Saarinen's US Embassy in Grosvenor Square, which leads the eye to expect the main entrance, after the emphasis given to it by the strongly symmetrical front, to lead straight into a sequence of impressive spaces but in fact lands the visitor up against a blank wall.

When the tower of New Zealand House is seen from farther away, its transparency is again its special asset. It endows it with a sense of structural muscularity which the conventional glass-enclosed box does not possess. The detailing of the tower is unusual and idiosyncratic, giving the building a marked personality of its own, although the rather heavy profile of horizontal stone bands between floors (which project, it may be noted, at low *cill* level) and the unbroken expanse of plate-glass between, are together responsible for making it look in some lights more like a model of the building than the building itself.

This is partly an effect of scale, and although the scale is unorthodox it is possible that it represents the sort of scale that the central city building of the future will compel us to accustom ourselves to. It is the scale created by landscape rather than architecture; we are surely approaching the time when the scale, determined by structure, of a building's upper works is no longer expected to be consistent with the human scale at street level. Many buildings exhibit a sense of strain as a result of architects feeling required to impose a human scale, however unfunctionally, on the remotest of their superstructures.



section looking west

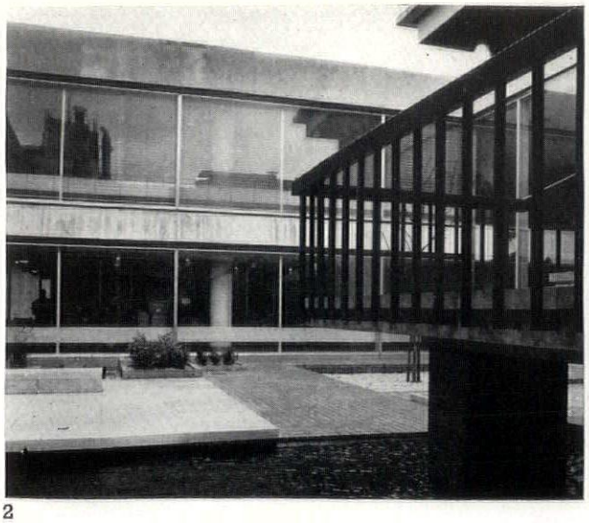
The unprecedentedly large areas of plate glass with which New Zealand House is clothed were made possible by the whole building being air-conditioned. They create the problem of exposing to public view the desk-top litter inseparable from office interiors (though so far, it must be said, this has proved surprisingly unobtrusive). The windows are not curtained, thereby gaining the maximum effect of the transparency just referred to; the venetian blinds are only for use against sun-glare, though when pulled down they provide interesting variations of the façade pattern and by creating solids intensify the voids.

One other problem, incidentally, that large plate-glass windows coming down almost to floor level often create has here been satisfactorily solved. Standing just inside the windows there is no feeling of vertigo owing to the breadth of the stone cill outside.

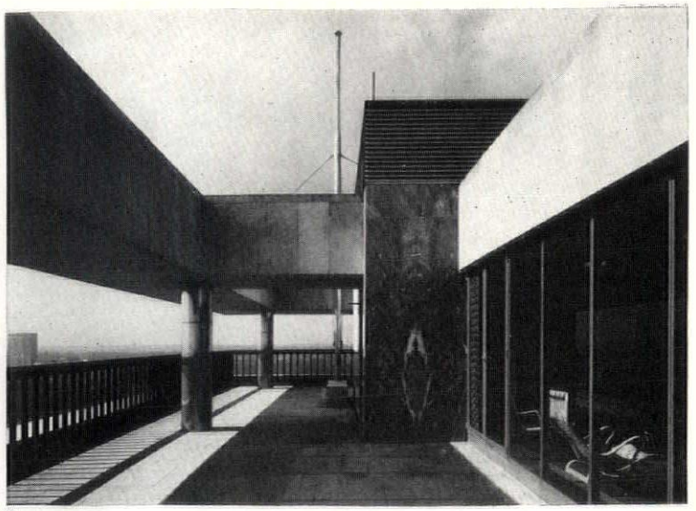
Another and a neglected aspect of urban design illustrated by this building is the need, in the interest of townscape, for some foil or contrast to set off the smooth rectilinear forms into which modern architecture most naturally resolves itself. One of the most successful views of New Zealand House is that from part way up the Haymarket, in which the baroque silhouette of Her Majesty's Theatre, with its copper-covered dome, shows up blackly

[*continued on page* 41]

* Ironically enough, this visually rather unsatisfactory position of the tower was made possible by an important break-through from the point of view of building regulations. This is the first building in which the London Fire Brigade agreed to regard the upper terrace levels as the equivalent of the street for fire-fighting operations. In other respects the building does not fully meet LCC fire regulations and was only permitted after the New Zealand government had offered to take full responsibility.



2



3



4



5

2, the garden at second-floor level which separates the tall central portion of the building from the adjoining Her Majesty's Theatre. The view is from the third-floor library; in the foreground, pools and paving; beyond, circulation space below and one of the main office floors above; on the right, part of the outside stair.
3, roof-terrace and penthouse, facing south-west.
4, third-floor terrace, outside the High Commissioner's offices, looking eastwards towards the Haymarket. Here and elsewhere the columns are sheathed in stainless steel and stone facings are Portland stone. The soffit of the tower is faced with timber slats.
5, exterior from Cockspur Street.

New Zealand House

exterior perspectives

New Zealand House

interior perspectives

6, *looking across the main entrance hall (entrance beneath black steel canopy between the two columns on the right), showing the open access galleries that surround the hall. The view is from the visitors' reception area at lower mezzanine level. The grey marble walling on the left marks the box-columns, containing the lifts, that rise the full height of the building in the centre.*

7, *entrance lobby, beneath the black steel canopy. On left, doors to Haymarket with canopy cantilevered over the pavement. Ahead, the mezzanine reception area with Pall Mall beyond—all these photographs reveal the transparency that enables the various internal spaces to be visually linked with each other and with the outside.*

8, *looking into a typical lift-lobby in the centre of the building. Beyond is the small glazed-in garden at third-floor level. It contains, right, an abstract ceramic sculpture by William Gordon.*

9 (*facing page*), *looking into the second-floor garden from one of the circulation galleries. The back wall, faced with pale buff brick, is that of Her Majesty's Theatre.*

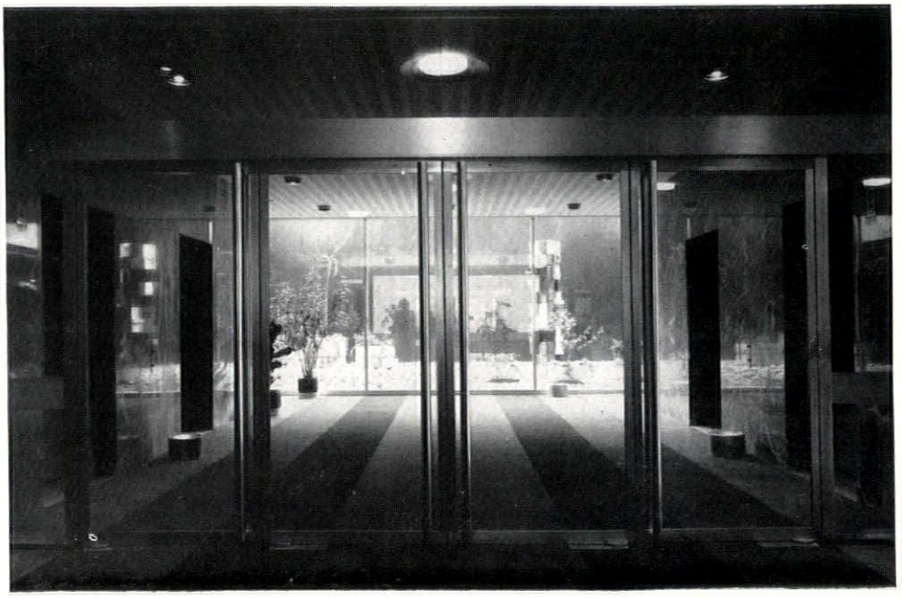


6

7



8

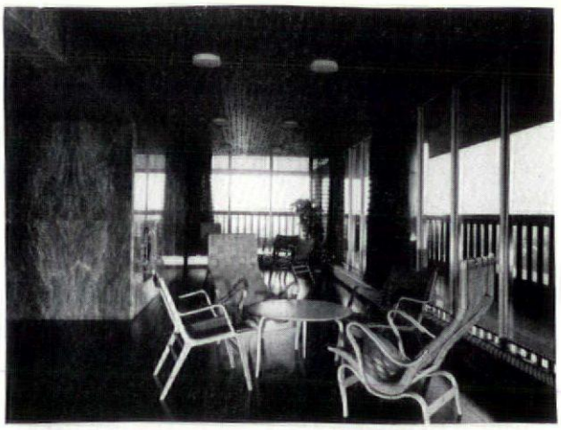




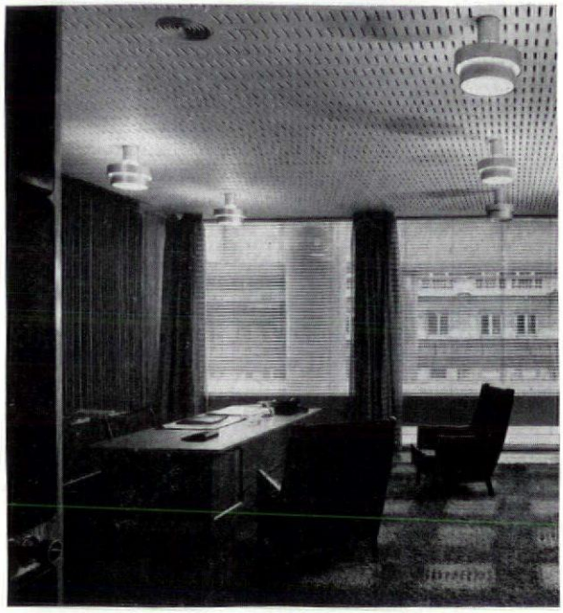
9



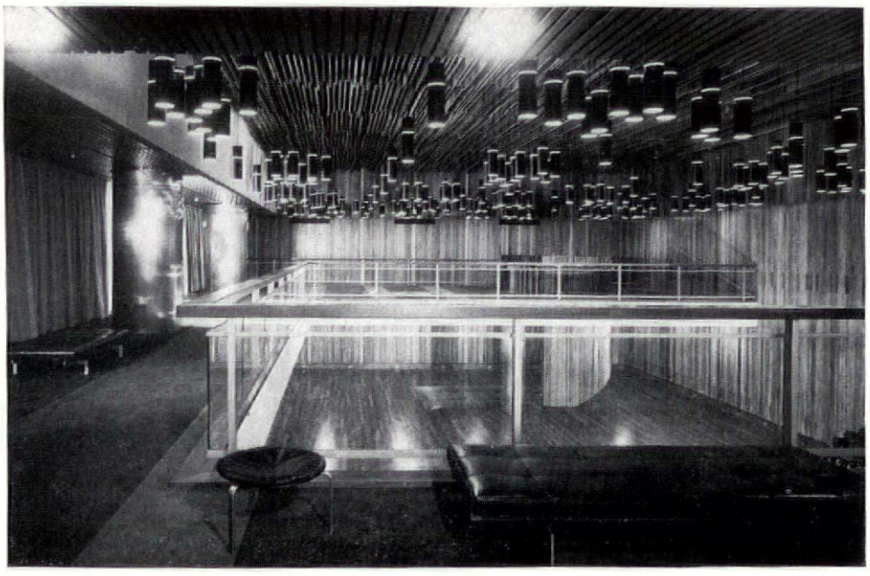
10



12



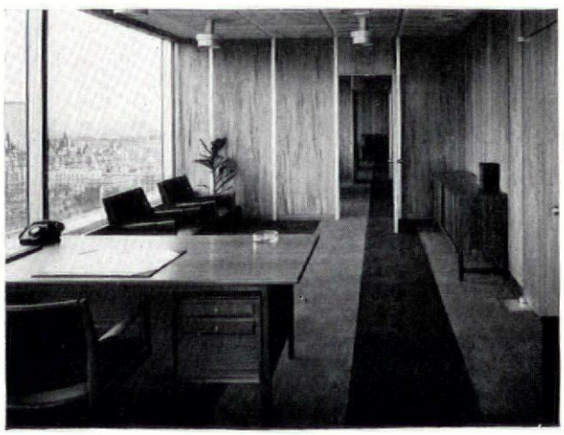
13



11



14



15

10, *in the library; map cabinet and other furniture designed by the architects, mostly in New Zealand timbers; suspended ceiling in fibrous plaster.*
11, *looking into the ground-floor reception hall from its balcony, entered from the mezzanine; acoustic timber ceiling.*
12, *penthouse lounge: marble walls; timber ceiling; Swedish and Danish furniture.*
13, *High Commissioner's office on the third floor.*
14, *typical tower office for senior staff, showing cill-level heating and air-conditioning unit.*
15, *part of a suite of offices for visiting officials, showing standard partitioning system and ceiling pattern designed to fit it; also carpeting in standard widths used throughout the building.*

Partners in charge, Sir Robert Matthew and Maurice Lee. Job architect, K. G. A. Feakes. Structural consultants, Scott and Wilson, Kirkpatrick & Partners. Services consultants, J. Roger Preston & Partners. Quantity surveyors, Franklin & Andrews.

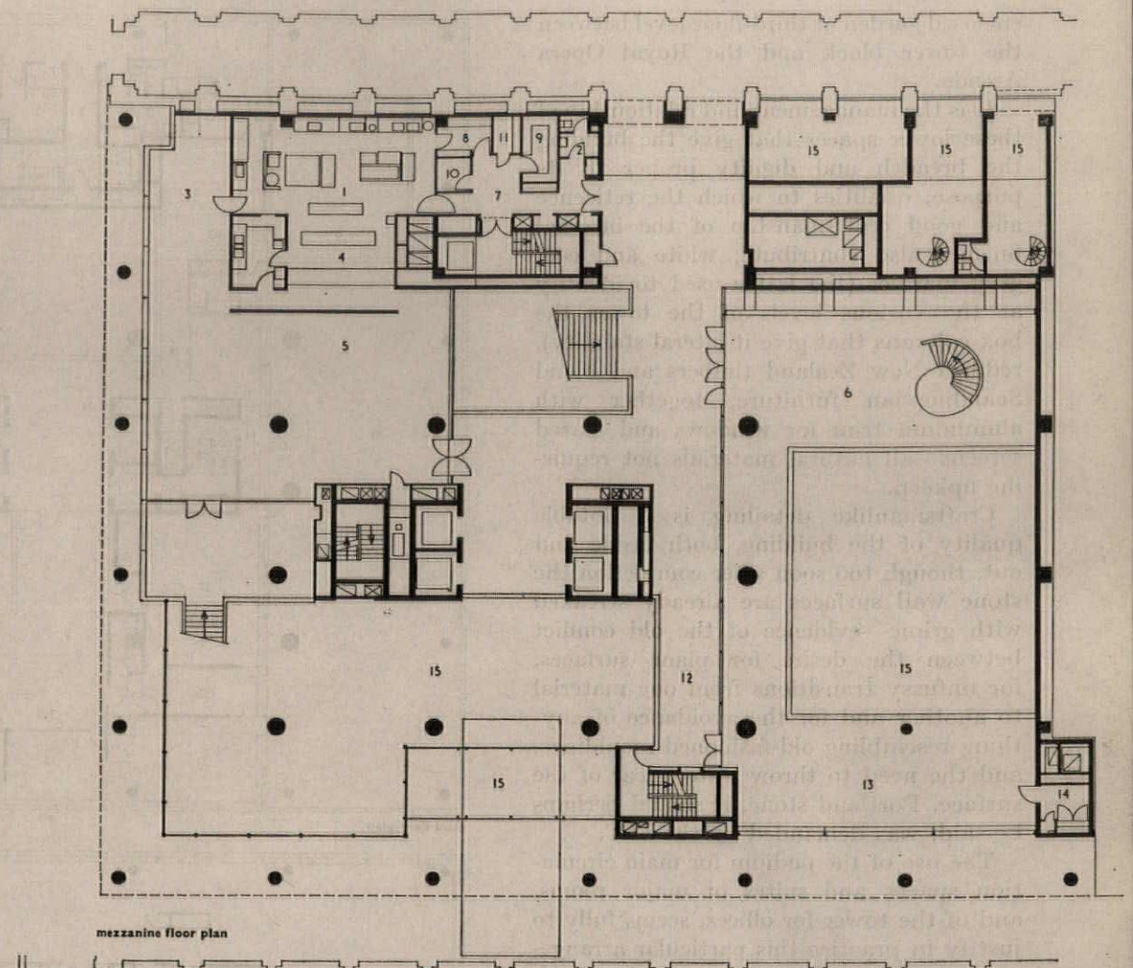
New Zealand House: some room interiors

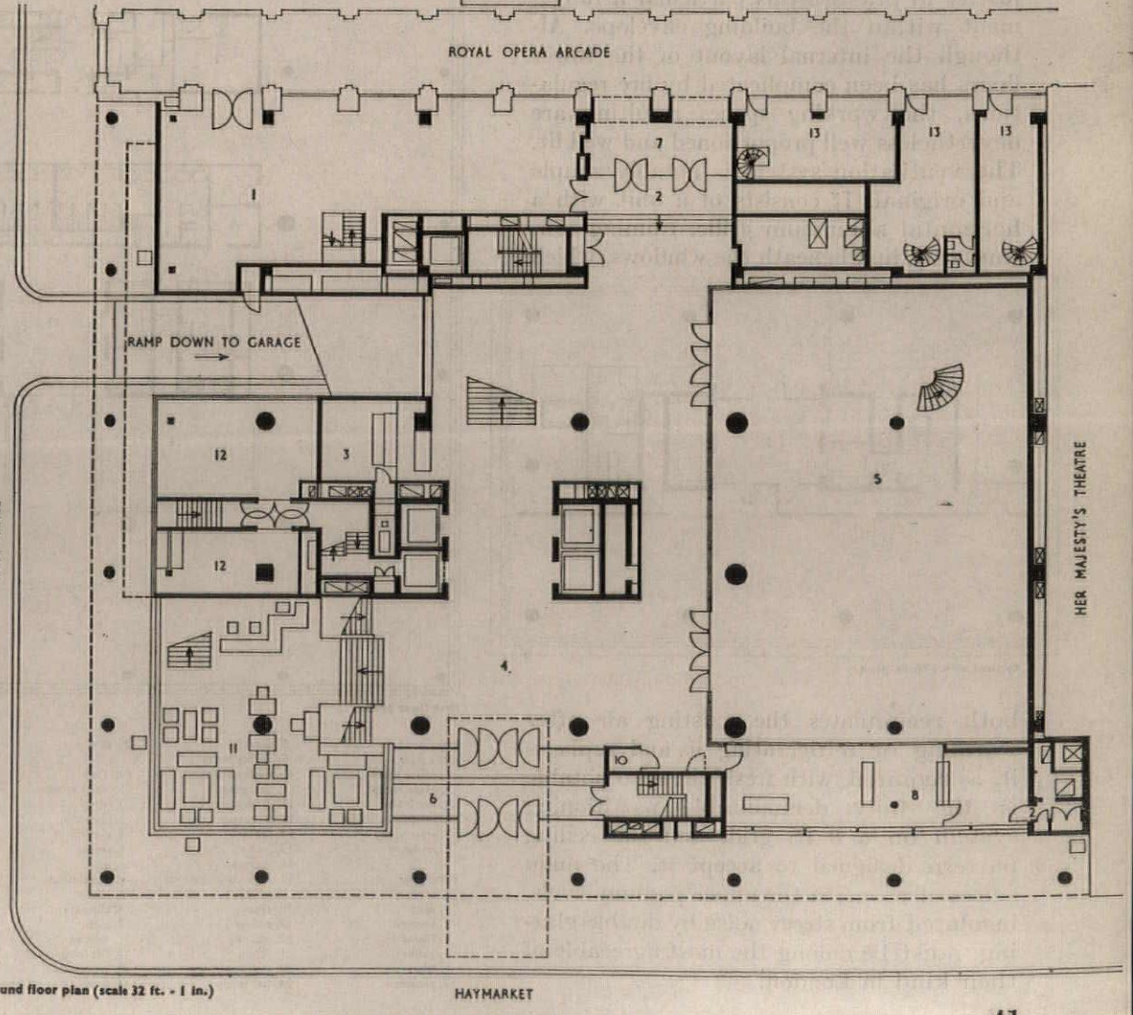
continued from page 36

against the tower. The ultimate intention is to extend New Zealand House northwards, which will mean demolishing the theatre when the lease of the latter falls in after 1970, and this particular view will then be lost. There will still be the opportunity of creating other similar views, an opportunity that should be looked for because cities need such contrasts of character, outline and tone, and it is noteworthy that buildings which by strict intrinsic standards are 'bad architecture' provide them as effectively as any. It is a question of the raw materials that accidents of history have given the visual planner to play with. Towns wholly composed of modern buildings, besides losing any sense of the continuity of human occupation, would be the duller for it irrespective of the quality of the new architecture.

Continuity with the established environment on which New Zealand House has imposed itself has been attained in another sense by the intelligent treatment of the Royal Opera Arcade. This arcade was acquired by the New Zealand government as part of their site, whose western boundary it forms, and is being restored. Its incorporation had the advantage, from the planning and daylighting point of view, of making the site virtually an island one. The Royal Opera Arcade is a charming and elegant example of the Regency shopping arcade, the first to be built in London—in 1816—but it had been allowed to become sadly dilapidated and its liveliness as well as its economic viability impaired by having one side reduced to a blank wall. Its eastern side, facing the shops which survive along its western side, has now been opened up either into the ground-floor spaces of New Zealand House or into banks or shops within the new building's site. This not only improves the arcade as such but adds interesting and surprising terminations to several of the internal views.

These internal views, across the sequence of ground-floor spaces and down into them from the higher levels of the galleries surrounding the entrance hall, are among the building's great successes. They terminate as one looks northwards in a large garden court at second-floor level, above the reception hall (which will be larger still when the extension has been built), and they take in also a smaller glass-





ground floor plan (scale 32 ft. = 1 in.)

key

ground floor
1, bank
2, lobby
3, mail room
4, entrance hall
5, reception hall
6, lobby
7, arcade entrance
8, tourist office
9, store
10, fire office
11, sitting area
12, plant room
13, shop

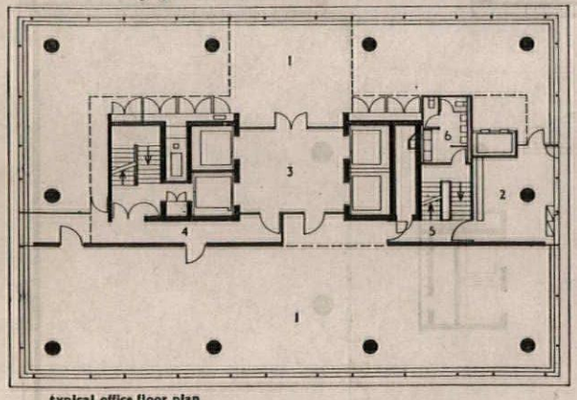
mezzanine floor
1, kitchen
2, cloaks
3, dining room
4, servery
5, cafeteria
6, gallery
7, lobby
8, vegetable store
9, dry store
10, office
11, cold store
12, circulation space
13, balcony
14, store
15, void

enclosed garden at third-floor level between the tower block and the Royal Opera Arcade.

It is the management and relationship of these lower spaces that give the building the breadth and dignity proper to its purpose, qualities to which the reticence and good craftsmanship of the internal finishes also contribute; white and cool grey marbles (the latter used to identify at the various levels of the tower the box columns that give it lateral stability), reddish New Zealand timbers and blond Scandinavian furniture, together with aluminium trim for windows and glazed screens—all natural materials not requiring upkeep.

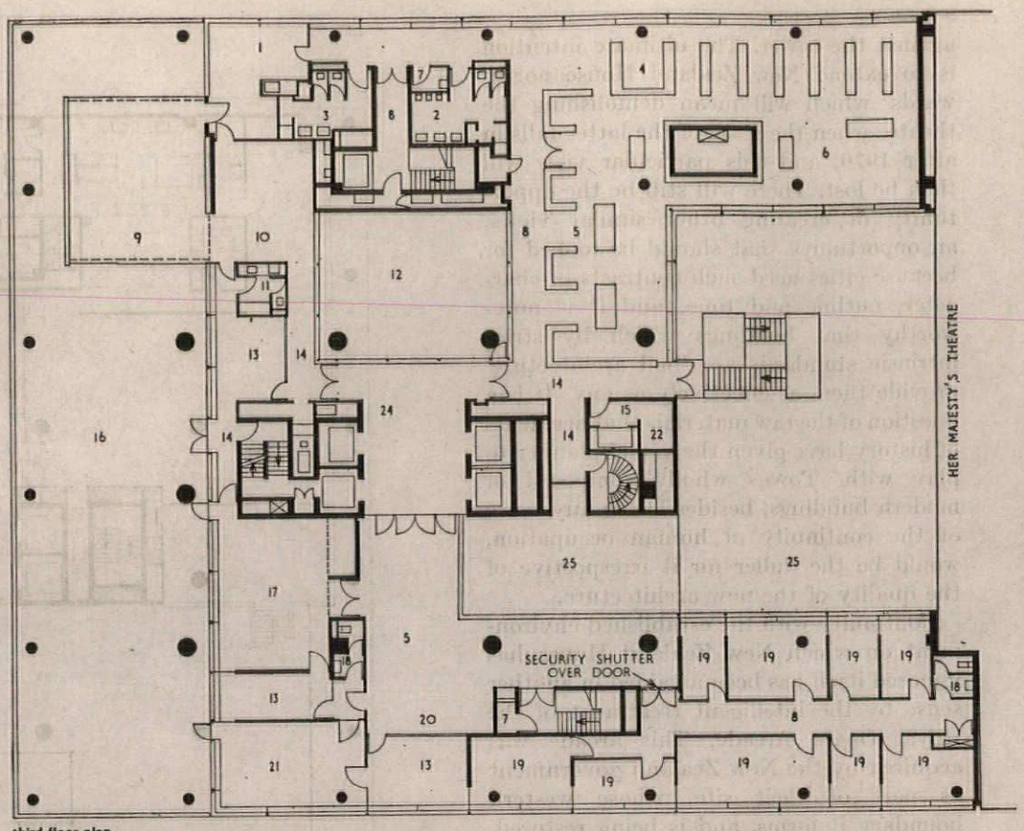
Craftsmanlike detailing is a notable quality of the building, both inside and out, though too soon after completion the stone wall surfaces are already streaked with grime—evidence of the old conflict between the desire for plane surfaces, for unfussy transitions from one material to another and for the avoidance of anything resembling old-fashioned mouldings, and the need to throw water clear of the surface. Portland stone, it should perhaps be said, was demanded by the LCC.

The use of the podium for main circulation spaces and suites of major rooms, and of the tower for offices, seems fully to justify in practice this particular arrangement within the building envelope. Although the internal layout of the tower floors has been complicated by fire regulations, the working spaces resulting are nevertheless well proportioned and well lit. The ventilation system is notably simple and original. It consists of a unit with a horizontal aluminium grille, running continuously just beneath the windows, which

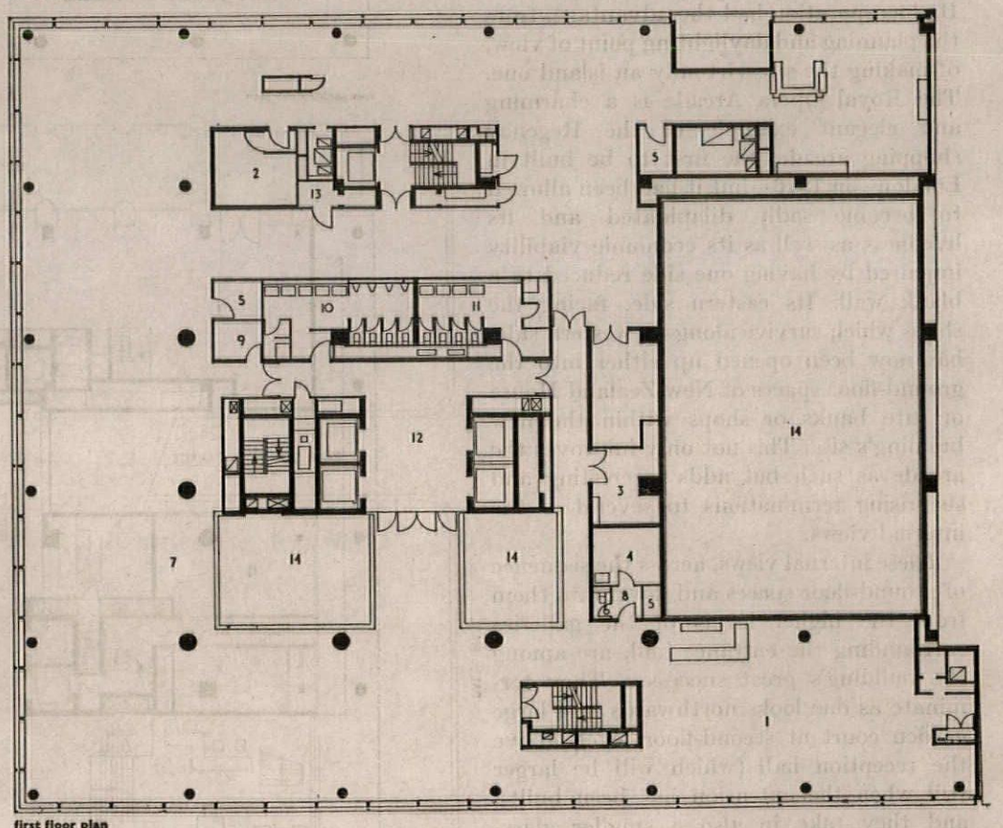


typical office floor plan

both recirculates the existing air after warming or refrigerating it and replaces it, as required, with fresh air. Also notable is the fully demountable partitioning system on a 3 ft. grid, and the ceiling pattern designed to accept it. The main suites of rooms in the upper podium levels, insulated from street noise by double glazing, must be among the most agreeable of their kind in London.



third floor plan



first floor plan

key

office floor
1, office space
2, plant room
3, lift lobby
4, ventilated lobby
5, stair lobby
6, lavatory

third floor
1, servery
2, men
3, women
4, librarian
5, gallery
6, library
7, cleaners
8, corridor
9, dining room
10, sitting area
11, changing
12, garden court
13, secretary
14, lobby
15, store
16, terrace
17, high commissioner's office
18, cloaks
19, office
20, waiting
21, office
22, store
24, lift lobby
25, void

first floor
1, office space
2, filing
3, fan room
4, rest room
5, store
6, wc
7, circulation
8, lobby
9, cleaners
10, men
11, women
12, lift lobby
13, incinerator
14, void

The second floor is similar to the first, with the central area partly occupied by a cinema and conference room. The fourth floor (the first above the podium) chiefly contains plant. The fifth to the sixteenth are as shown on the left. The seventeenth and eighteenth contain lounges and conference rooms.

ID

a monthly review of interior design

Three restaurants in London

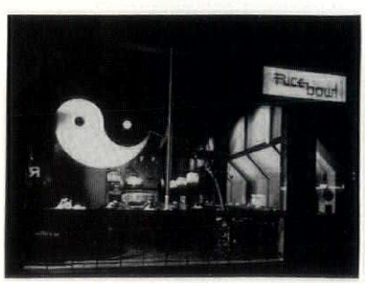
architect: Lucas Mellinger



1, the Sands.

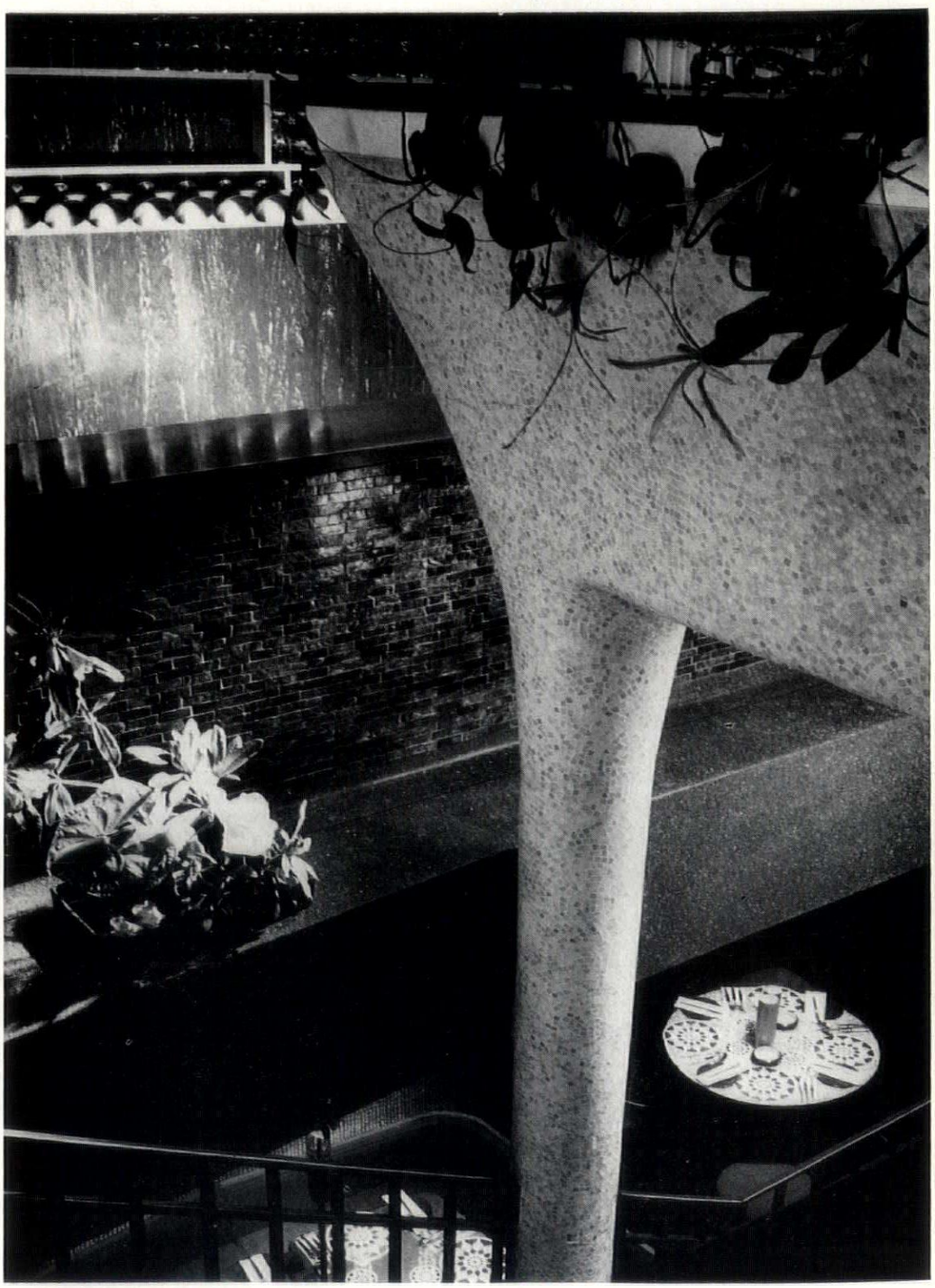


2, the Wayang.

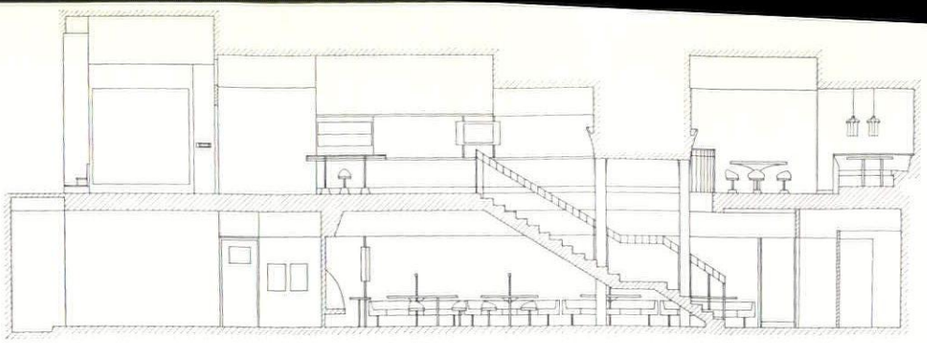


3, the Rice Bowl.

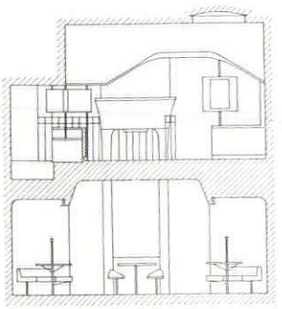
4, the Sands, New Bond Street, looking down through the staircase, with bar beyond.



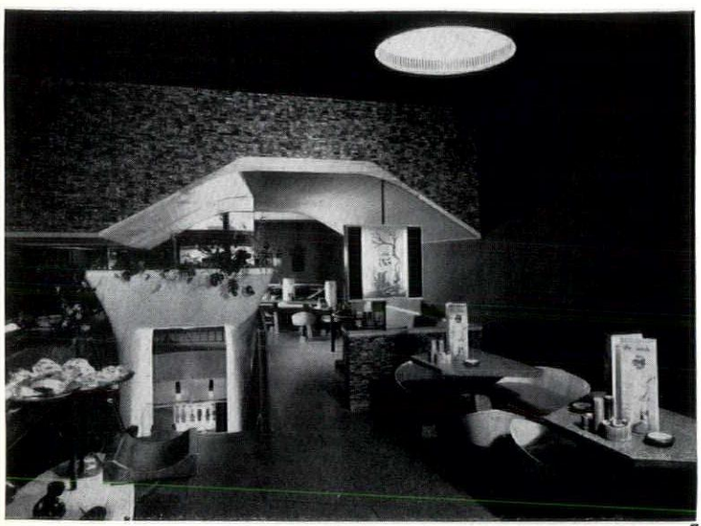
The usable restaurant spaces had to be fitted into a structure blocked centrally by four columns supporting the bottom of a lift-shaft which rises from mezzanine level. The resultant problems were resolved, firstly, by taking the stairway to the lower floor down through the four columns, secondly, by lowering the floor behind the bar to the point where it gave sufficient head-clearance under the mezzanine, thirdly, by matching the slope of the soffite of the stairs up from the mezzanine with an equal slope on the other side of the restaurant, creating a simulated arch, and fourthly, by treating the four columns as if they were the supports of a large and elaborate plant-table.



The Sands, New Bond Street



longitudinal section of the Sands restaurant above, with New Bond Street left; transverse section below, looking towards back of restaurant.



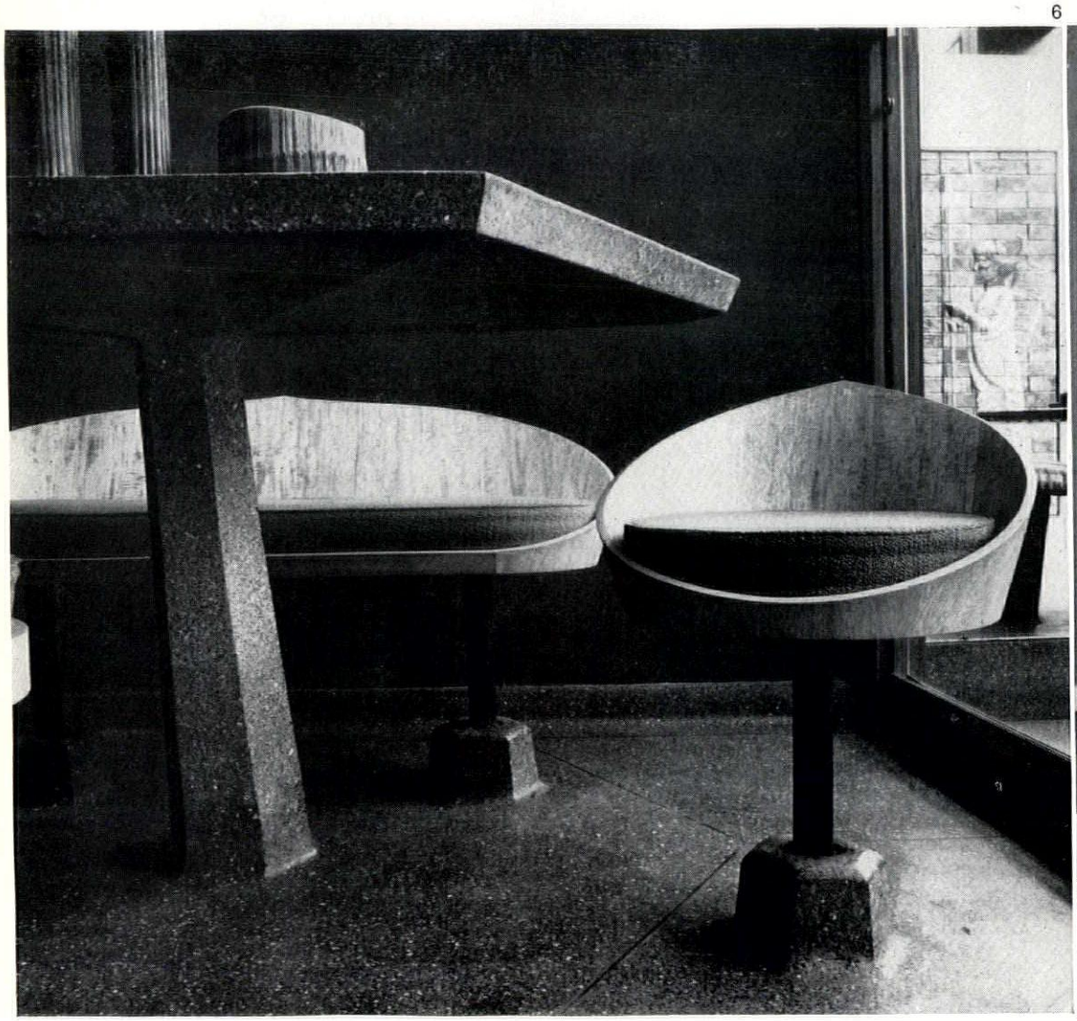
5

5, the interior, looking inwards from the entrance; the simulated arch spans the public space from side to side, with the stairs descending on the left. Because of the floodlighting for photographic purposes, the mirror cladding of the foot of the lift shaft is more conspicuous than is normally the case. Under normal lighting it renders the lift shaft almost invisible.

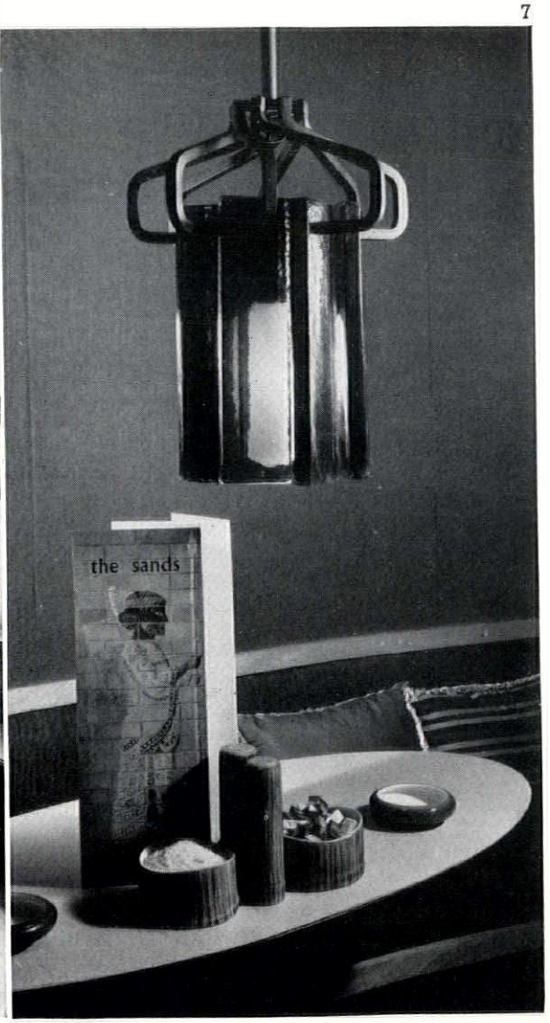
6, fixed seating in the ground floor coffee-bar (visible also in 5, left). The smaller seats can be swivelled on their bases.

7, lampshade in the rear part of the ground floor, designed by architect, who is also responsible for the design, choice or supervision of all the graphics and equipment throughout the Sands (and also the Wayang, which is under the same management).

6



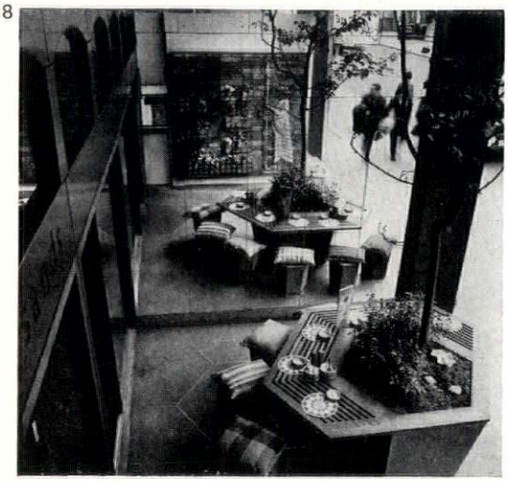
7



Three restaurants in London

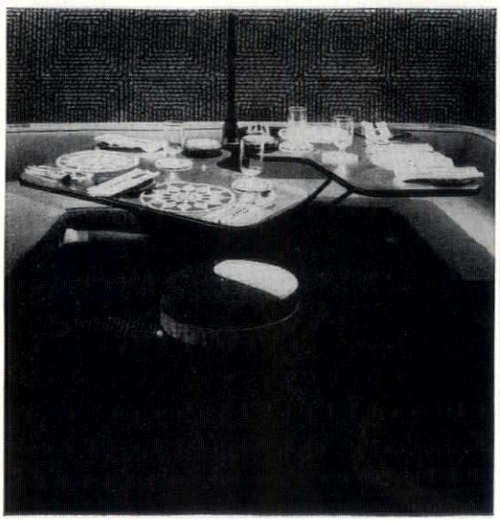
8, the coffee table in the covered forecourt of the Sands—materials, geometry and general idiom follow that of the interior at ground-floor level, though with modifications to combat weathering.

8



9, one of the table units in the basement restaurant, showing how either half can be swung out of the way to facilitate entry and exit from the fixed banquette seating. A specially designed trolley can be brought in between the halves for serving purposes. 10, looking along one row of tables in the basement ; an identically patterned carpeting covers floors, walls and part of the ceiling, but these last are of a less hard wearing grade for obvious reasons.

9



10

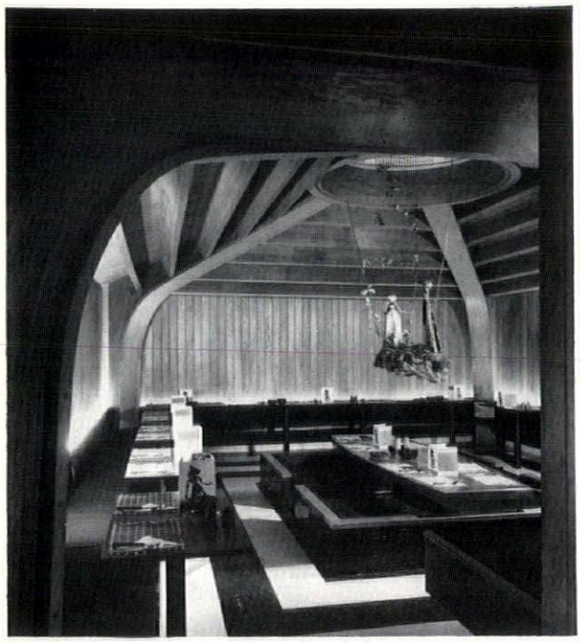


The Wayang, Earl's Court

11



12



This dining area is an extension to a celebrated coffee-bar (also designed by Lucas Mellinger) which takes its name, and theme, from Javanese *wayang* shadow-puppets. The extension is built in the back-yard, and had to leave the surrounding walls untouched—it is, in fact, a completely independent structure of laminated wooden portal frames crossing in the centre.

11, the original coffee-bar, with projections of puppets, as seen from the entrance to the extension.

12, general view of the new dining room, with the sunken seating and lowered table in the centre.

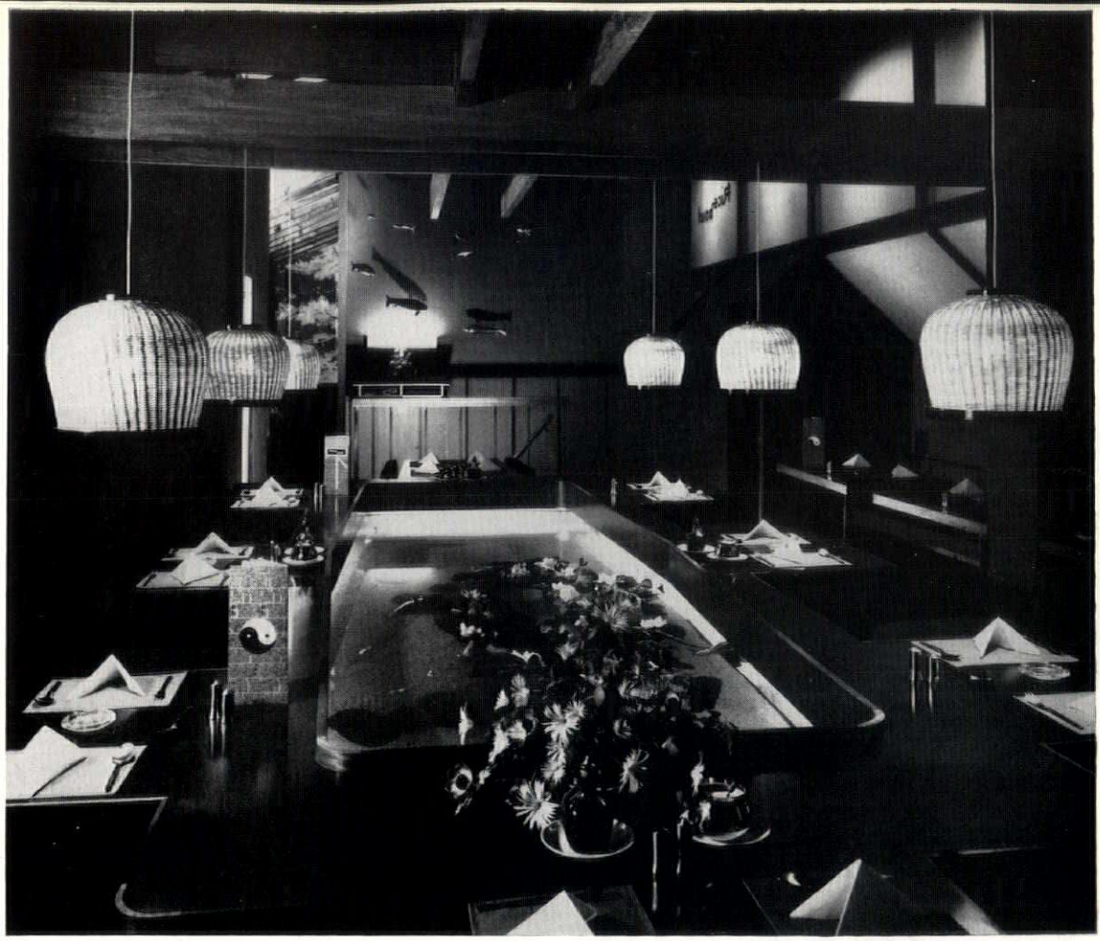
13, a close-up of the suspended feature in the centre of the dining area, the visual focus of the entire design and the only overt reference to the theme of the establishment—the rest of this space has an almost functional-tradition simplicity.

13



The Rice Bowl, Maida Vale

The site here was a fairly straightforward one, albeit originally intended for shops, on the corner of a building, and is effectively a single space threaded around an entrance unit to flats above (the kitchens are in the basement below). A suitably oriental atmosphere is given, not by small-scale details, but by large and simple devices, such as the beamed structure supporting the lamps, and the central lily-pool.



14, looking over the lily-pool from the main street frontage (seen in illustration 3, page 43). Stairs down to kitchen at far end, with passage to second part of restaurant to their left. At the right, seating space is bracketed out over the pavement, with its own sloping, translucent plastic roof.

Three restaurants in London

ID

14

1



DR

design review

New Seating

The extremes to which technology has led the simple business of sitting down are illustrated by two new designs being marketed by Hille of London: Charles Eames's heroic black synthetic-leather and polished cast-aluminium 'tandem seating' and Robin Day's ingenious and inexpensive polypropylene chairs.

1, the end of an Eames tandem-seating unit. Originally designed for O'Hare International airport, Chicago, these will be supplied only to special order in Britain. Structurally, the design is adaptable, and the three-seater unit shown here is only a sample. The epoxy clad support-beams are strong enough to carry a cantilever of two seats beyond the legs, on units with nine seats or more.



2

New Seating



3

DR

2, the Hille polypropylene chair is the product of protracted research and close collaboration between designer—Robin Day, manufacturer—Hille, and chemical industry—in this case, Shell. The result exploits, probably for the first time, the full possibilities of using plastics in the production of a chair body. It is seen here with a swivelling and extending base, the most expensive version at present in production. The Eames seating (see previous page) reappears in the background.

3, the least expensive production version of the polypropylene chair, on stove-enamelled steel stacking legs, which is to be marketed at less than sixty shillings, thus making it the cheapest performance-tested plastic chair to be sold, and the first one to be genuinely competitive with traditional wooden construction in price and durability.

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

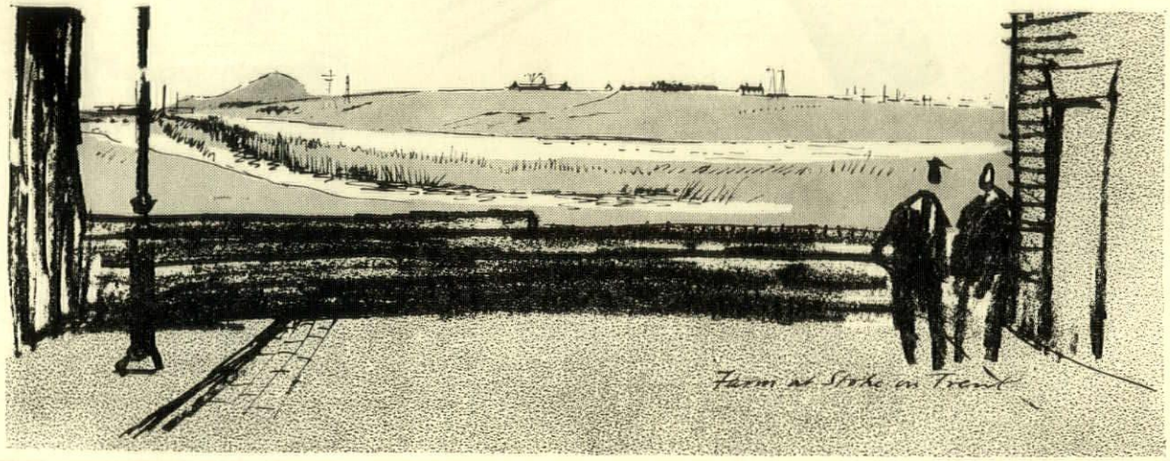
LOOK OUT

SOS

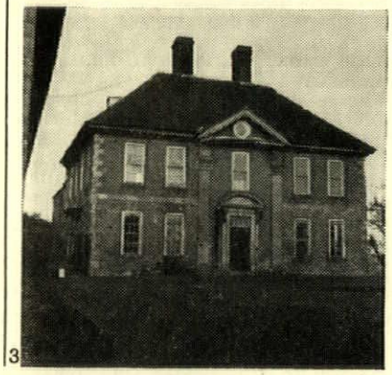
STOKE ON TRENT
There is a working farm a few yards from Stoke on Trent station, an incredible sight at the end of a grim Pottery street, 1. The site is scheduled for a school. But the effect of real farmland in the middle of a city is irreplaceable. There are surely plenty of educational uses which could keep it going as a farm ; for Staffordshire is still a largely rural county.

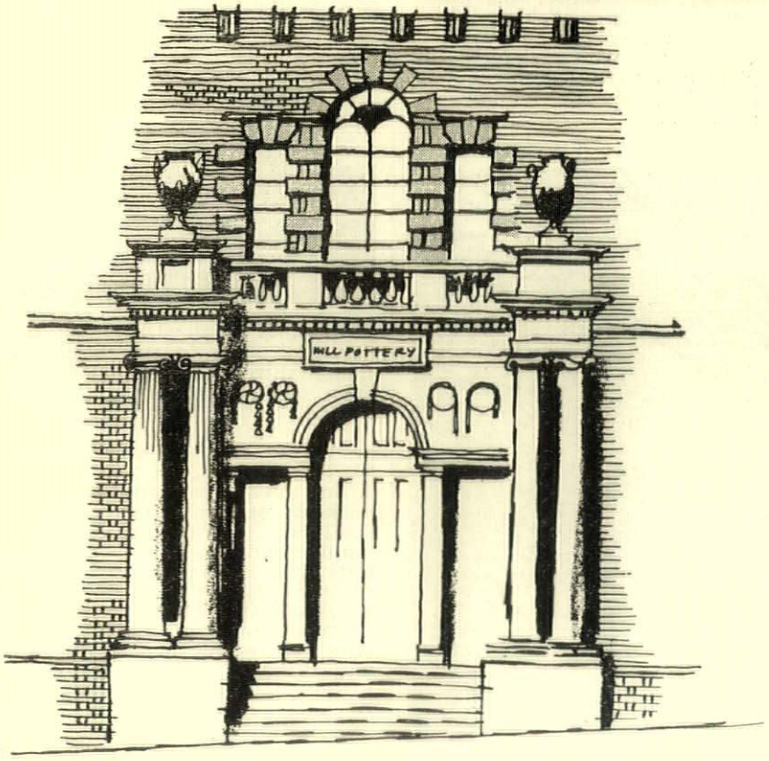
HILL POTTERY, BURSLEM, STAFFORDSHIRE
A magnificent building, 2, the best in the Potteries to represent Wedgwood's adventurous spirit. The bottom floors are tenuously used as a store; the rest is empty. Just round the corner from Burslem's Civic Trust face-lift, and many times more worth attention than shop fronts whose specious brightness has already succumbed to more potent forces than a colour chart.

ASH MANOR HOUSE, SHROPSHIRE
A Queen Anne house, as elegant as any in the country, going to decay, 3. Anywhere near London it would be snapped up. This part of Northern Shropshire, near Whitchurch, seems to be as forgotten as anywhere in the country ; yet Liverpool is only 30 miles away and Manchester only 35.



1


3

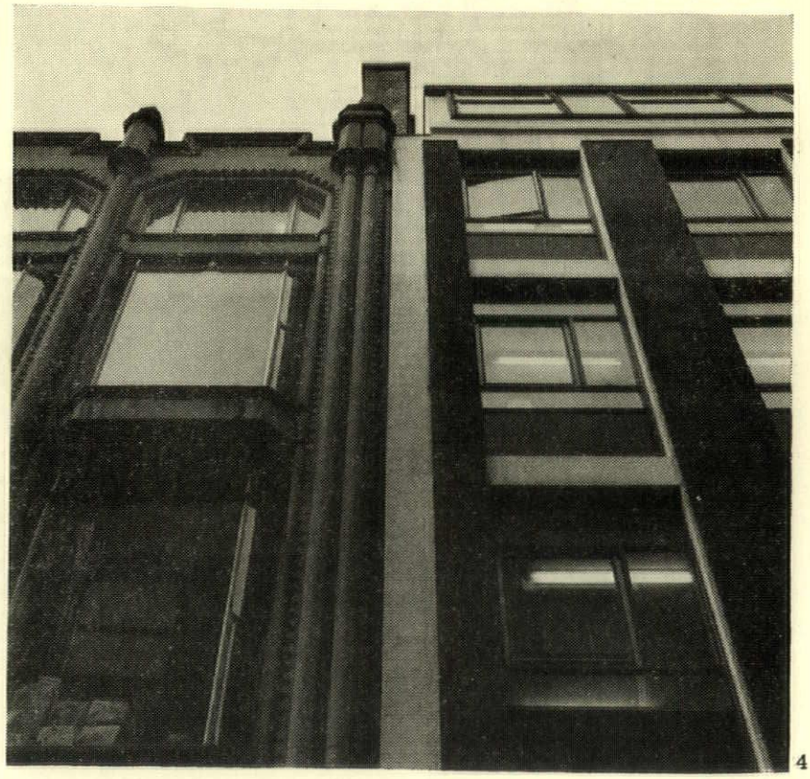


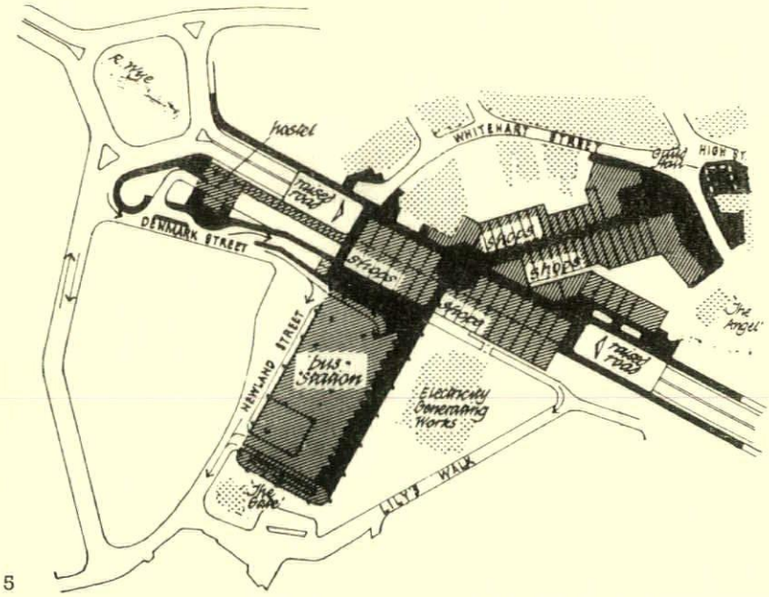
2

CREDIT

ORIEL CHAMBERS, LIVERPOOL
The war-damaged side elevation of this remarkable building has now been repaired, and a decent new block added, 4, which carries on the existing rhythm of vertical strips. This is part of an internal modernization which has left the outside and staircase quite untouched. The architects were James and Bywaters.

HIGH WYCOMBE RELIEF ROAD
A new relief road for the centre of High Wycombe, 5, designed by the Buckinghamshire County Planning Department in co-operation with the Borough—'this is one of those cases where both Councils are completely unanimous about the matter.' The new road runs south and west of the existing centre and is raised, allowing free pedestrian flow

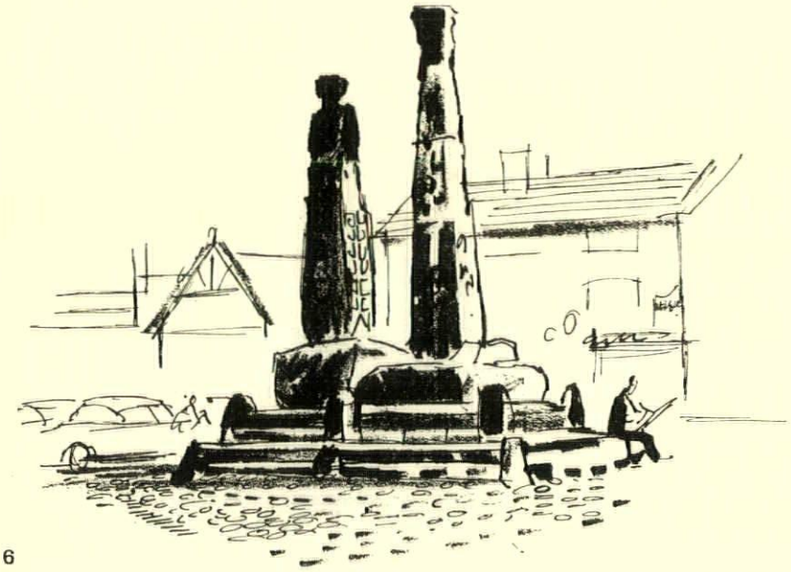

4



5

between shops and bus station and reducing the site costs. Provided that the details of the road are well handled (and the county's recent record is one of the best in the country) this could be a novel kind of easement for what will be a marvellous town when the through traffic has been taken away.

SANDBACH, CHESHIRE
A famous pair of Saxon Crosses in the market-place and a memorable surround, 6: cobbles running right up to them without railings or notices; the past and the present speaking directly to each other. May they never be isolated through wrong-headed ideas of preservation.


6



7

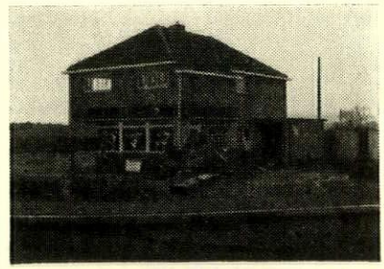
OUTRAGE

SHOP FRONTS, LIVERPOOL AND BROSELEY
The re-styling of Watney pubs by DRU has led to some very inferior imitations. This example, 7, comes from the centre of Liverpool, and shows a prissiness and emasculation which is no better than the sans-serif tradition which the re-styling was supposed to replace. Far too much fine art and not enough honest commerce, here: a point made even by the 'Higson's Ales' above in spite of all its crudity. Made also more eloquently by a new shopfront at Broseley, Shropshire, 8, where unaffected plastic stick-on letters have been used by the owner to give an effect with real force and style. The letters themselves were supplied by Messrs. Williams, of Bridgnorth.



8

CROSSGATES, RADNORSHIRE
The nicer the area, the worse the new buildings seem to be. Mid-Wales is truly unspoilt, in its


9

people and its rural rhythms. But this new shop in the middle of Radnorshire, 9, would look ugly even on the outskirts of Hornchurch.

SOUTHERN APPROACH TO SEVENOAKS, KENT
A fine townscape transition—from parkland straight into the town—spoilt by just two objects. The lamp standard is well designed, but sticks up and blurs the edge of the town: the addition to Sevenoaks school, behind it, is a graceless hulk in a style which only centres of higher education and church authorities now seem to pursue. Another building here—lighter, subtler, and above all more alive—could have announced the town delightfully.


10

FARM AT FULMER, BUCKS

ARCHITECTS | **DAVID DRY, K. HALASZ and ASSOCIATES**

1, the farm building group from the south-east: from left to right, loose-boxes, implement shed, garage, two cottages with covered way between.

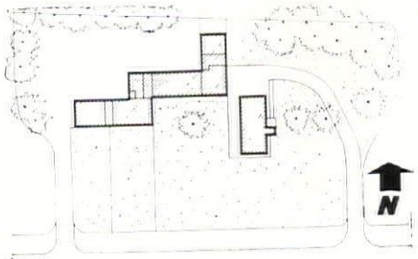


FARM AT FULMER, BUCKS

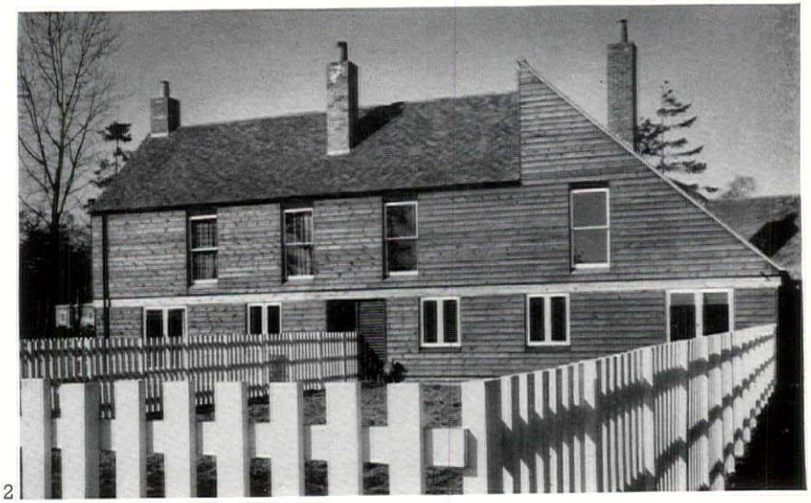
The owners of this cattle and forestry farm required a group of buildings comprising farmhouse, implement sheds, horse boxes, stores and a barn, served by two cottages and a small flat, the house having a separate entrance and a private garden. The placing of the buildings on the site came naturally from the position of existing trees and the requirements of access, privacy and orientation. The farmyard is set against an existing screen of trees which form a natural shelter to the north and west sides, while the farm buildings make up the other two sides of the yard and act as a screen to the main house. This, although visually part of the group, is cut off from the yard by these ancillary buildings. The cottages face away from the yard to the south, and the entrance porch of the second cottage is shared with the bed-sitting room flat which is at first floor level in the monopitch roof linking the two-storey cottages to the single-storey farm buildings.

An economical form of construction was required which would nevertheless have a quality sympathetic to the strong local tradition of building. Load-bearing brick walls are of 9in. solid construction with gable walls, partitions and out-buildings in light studding, the whole structure being covered with aluminium-backed building paper and creosoted weather-boarding. The brick plinths and chimneys are in a second-hand local red brick. The roofs are covered with a similar red tile. The block walls are painted white internally and the ceilings and studs covered with tongued and grooved deal boarding, varnished. Heating is by electric elements set into convectors with air brick outlet grilles. The sash windows on the first floor and other windows and external doors are of soft wood, painted white, ventilation in the living-rooms being provided by frameless glass louvres in the top of the glazed doors.

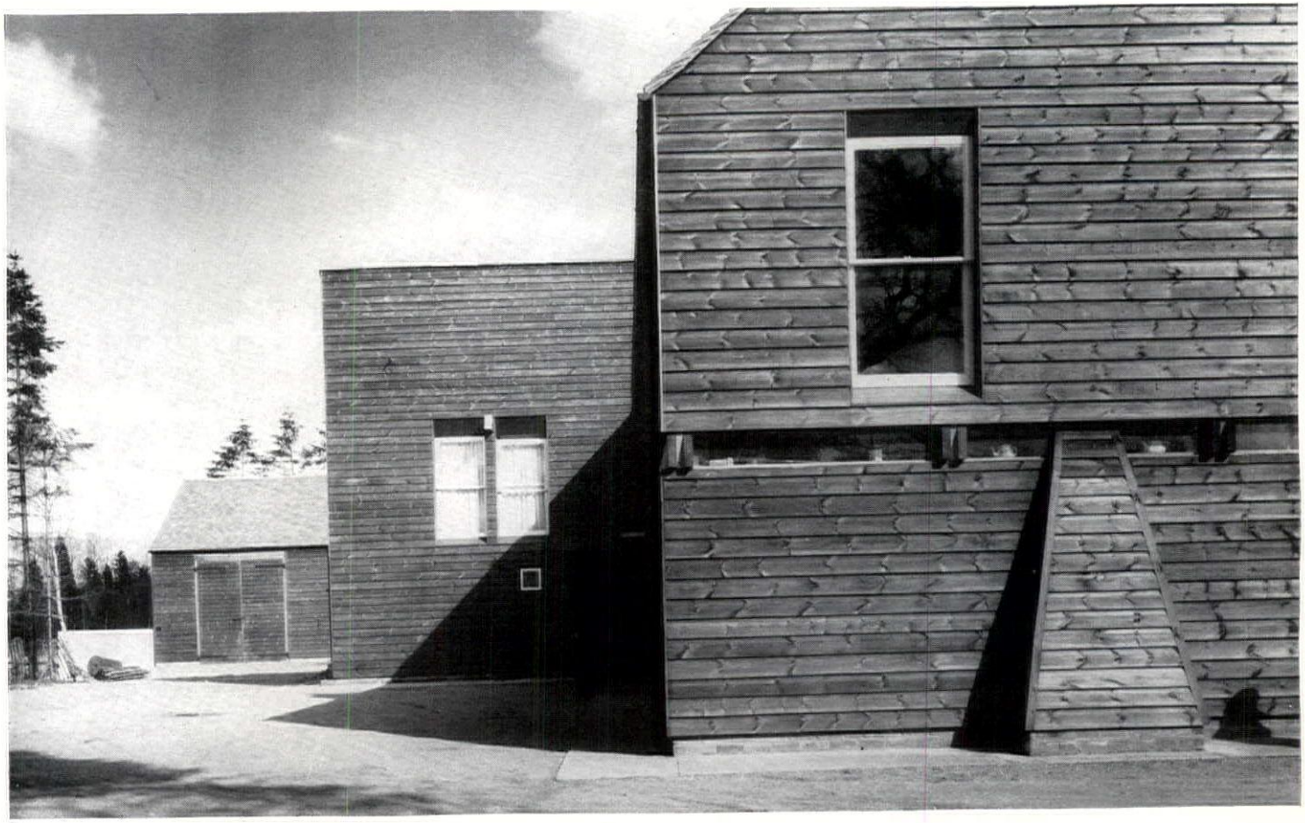
Consulting engineer, Stephen Revesz.

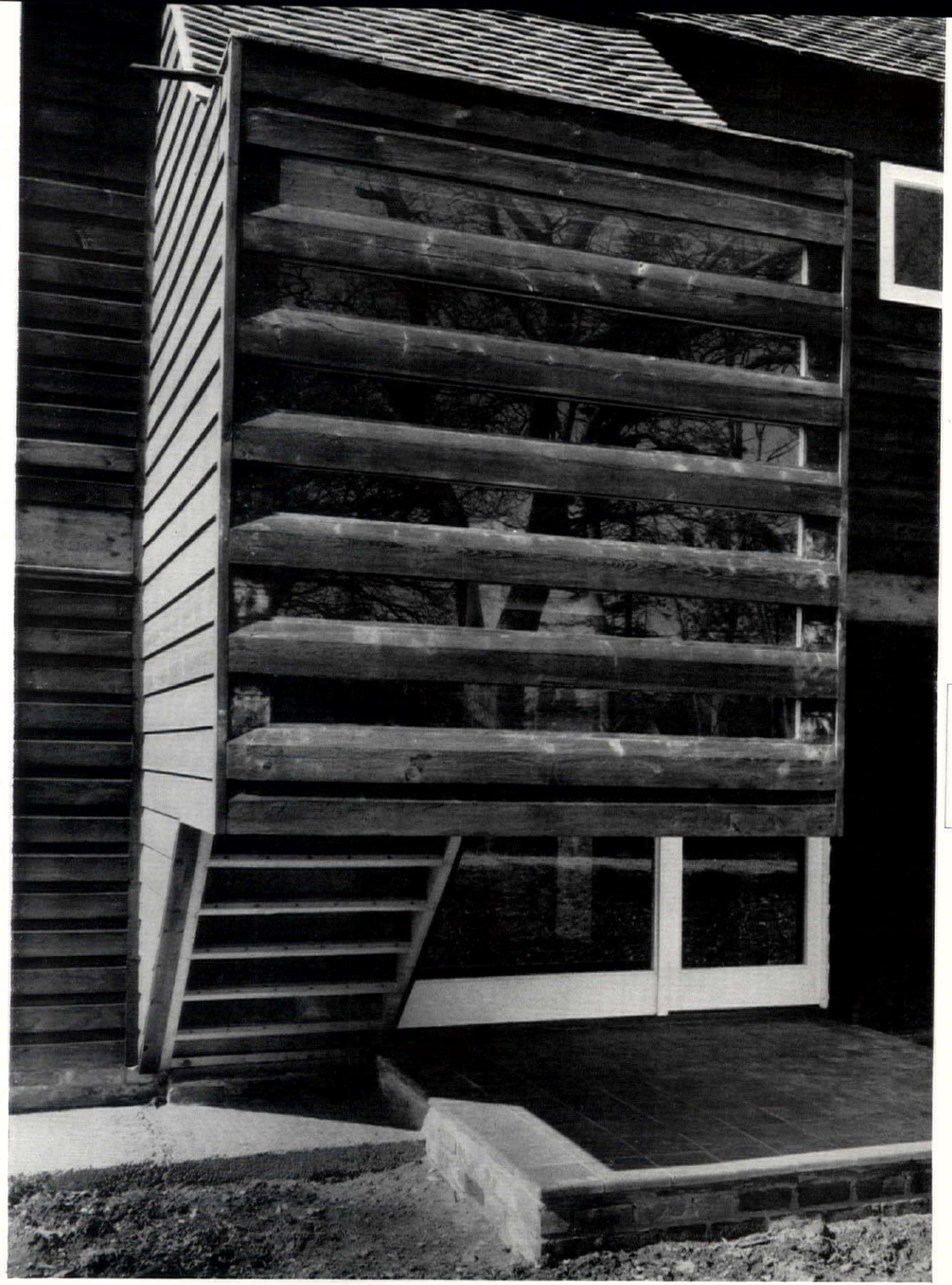


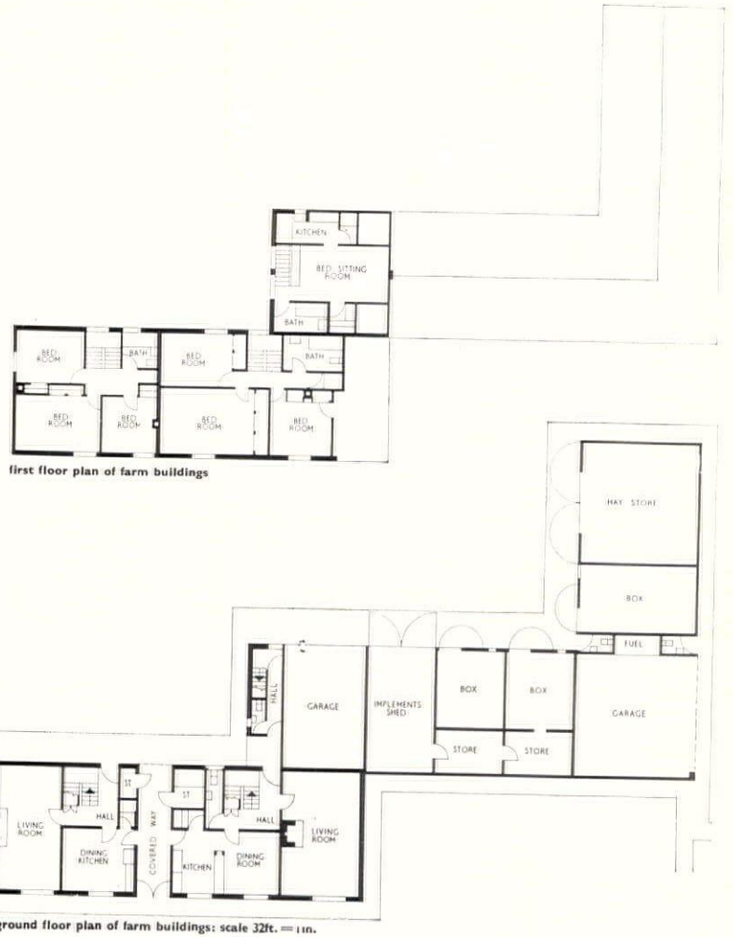
site plan


2

2, the south front of the two cottages that form one end of the group of farm buildings (see site plan alongside—the farm buildings are on the left ; the separate building on the right is the farmhouse). 3, the farm buildings from the west : from left to right, hay-store, entrance and bedroom window of one cottage, end wall of second cottage.


3



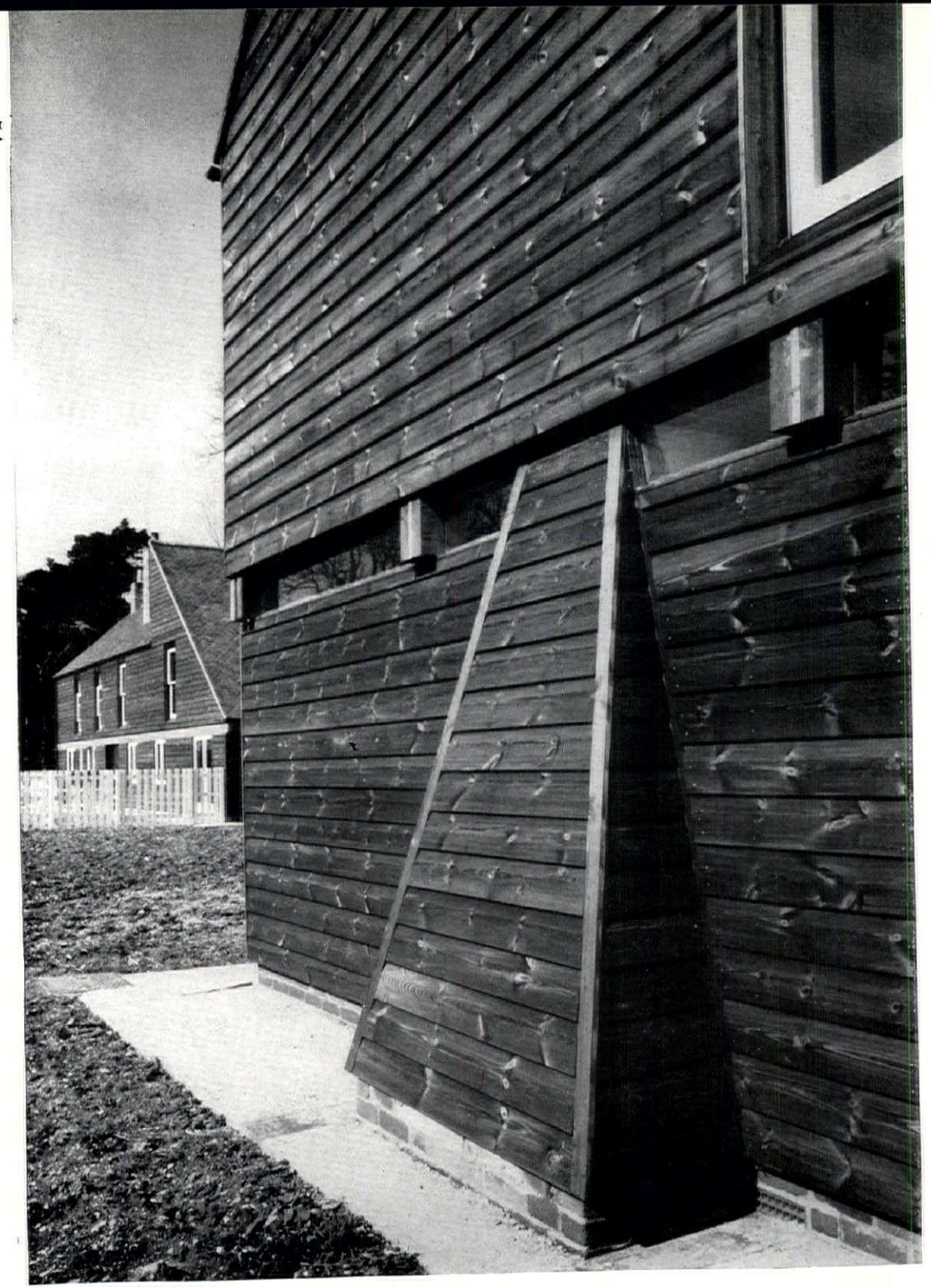


first floor plan of farm buildings

ground floor plan of farm buildings: scale 32ft. = 1in.

photographs by Eric de Maré

4, close-up of entrance porch and projecting stair to farmhouse (east side), showing timber detailing—see overleaf.



5

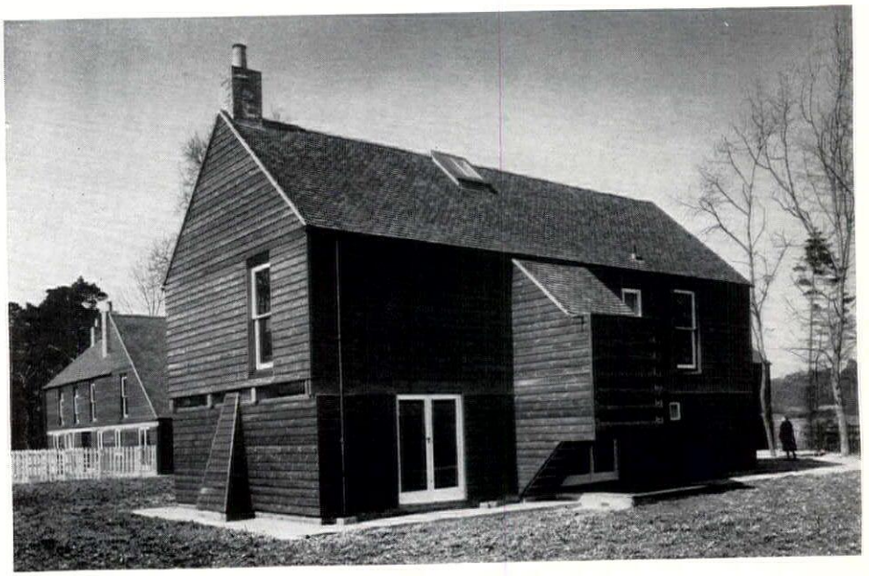


ground and first floor plans of farmhouse: scale 32ft. = 1in.

FARM AT FULMER, BUCKS

for criticism see page 56

5, end wall of farmhouse (south front) showing detail of exterior of living-room chimney breast. On the left are the two cottages at the end of the range of farm buildings. 6, the farmhouse from the south-east, with cottages in background on left. See 4 (page 53) for close-up of entrance porch.



6

FLATS AT BLUES POINT (pages 12-15)

In spite of the growing richness and complexity of the architectural scene in New South Wales, Harry Seidler still stands out as one of the two or three most important architects practising in Sydney. Hitherto this has been due primarily to the extreme simplicity—almost austerity—of his style, with its predilection for severe and unadorned surfaces and for a predominantly white-and-grey colour scheme of exposed natural materials, all of which stand in strong contrast to the general tendency of Sydney architects to elaboration and picturesqueness. But in the last two or three years the nature of his commissions has begun to change from relatively small buildings in the suburbs to large tower blocks in conspicuous sites, notably the Lend-Lease office block overlooking Sydney Cove, and the Blues Point tower, under discussion here.

In these larger works his restrained aesthetic, which still bears traces of his training under Gropius and his early practical experience with Breuer, makes him stand out even more. The skyscrapers of Sydney are not, in general, a distinguished body of towers and their tendency to modern-baroque gimmickry makes many of them conspicuous for the wrong reasons. Against this, Seidler's ability to behave with the utmost architectonic decorum when in public view makes him an exemplar his fellow professionals could do well to study—and not only in Australia.

He has not been in any notable manner blessed with easy or indulgent clients—they include some of the toughest commercial buccaneers operating in the city, but one suspects they have been men who can appreciate the economies inherent in radical solutions and in a thoroughly rational approach to design. At the purely economic level, the Blues Point tower is competing in a market where the financial margins are apt to be very fine-drawn and where recessions in demand for residential units can strike suddenly. The internal planning of the tower, particularly in the placing of the four vertical ducts and the associated bathrooms and kitchens, reveals a systematic approach to economy of services, while the use of the alternately handed floor-plans not only provides alternative views and aspects for the living rooms on all sides of the block, but its ingenuity in dealing with the fire-regulations affords another economic solution to a problem that would have been infinitely more difficult to solve by any other means. But in both cases the final result suggests that these solutions chimed in with his preferred manner of designing rather than obstructing it—except where an occasional bathroom seems to open a little too directly from the front door of a flat, there is no sense that the planning has been forced in order to exploit the four-duct system, and there are no visible conflicts at all in the handling of the exterior.

This exterior is, by any accounting, an extremely important part of the design in its widest sense. Not only is the site at Blues Point one of the most spectacular and desirable on the north side of Sydney Harbour, but it is also one of the most conspicuous in the area. It is, so to speak, the mirror image of Bennelong Point on the south side of the water and the other side of the Harbour Bridge, which is the site of Jorn Utzon's new opera house, and when an opera-goer stands on the terrace of Utzon's building and looks up the harbour, he will see Seidler's tower block framed in the curve of the bridge-structure, the only building visible beyond it. By its very form, the Blues Point tower must focus this view by virtue of its height and location. The clarity of its form is therefore very much in its favour, particularly the manner—tidy but not bald—in which its top storeys are resolved, with the blank walls of the drying yards and the centrally placed tank-room/viewing tower above them.

But the distance between the two points jutting out into the harbour is not so great (only just over three-quarters of a mile) that the detail of the elevations cannot be picked out. The pattern of the fenestration can be seen easily at this range, and gives an animation to the facades that verges on the restless in some lights. On the other hand, certain raking conditions of sun which pick out the vertical structural projections and the re-entrant at the corners, and throw one face into shadow, immediately give strength and coherence to the elevations.

HOUSE AND FLAT IN MELBOURNE (pages 16-17)
HOUSE AT HUNTER'S HILL (pages 18-19)

As the author of *The Australian Ugliness*, Robin Boyd is clearly in an extremely exposed position as a designer of suburban houses, since the main onslaught of his argument was directed against the 'featurism' of Australian domestic architecture which is, almost by definition, suburban. One of the reasons why his attack went home with such effect is, undoubtedly, that most of the better Australian domestic architecture is, in various ways, as featuristic as the bad (the suspended roof of his own house, AR, November, 1960, has been criticized on these grounds) and a situation seemed to be emerging in which to do without 'features' would look as gimmicky as having them.

Under this circumstance, the possibility of publishing together two non-featuristic Australian houses, both standing in a rather special relationship to local building traditions, provides a welcome opportunity to appraise the potentialities of domestic architecture in New South Wales and Victoria. To see the Boyd house in its setting in South Yarra is to see it also founded deeply in a local tradition of suburban building that is far older than Featurism but in some ways more modern. This tradition appears to date from a suburban building boom of the late 'twenties, in which a fairly strong American accent can be detected (Walter Burley Griffin was, of course, based in Melbourne at the time), and certain aspects of this house, notably the three-storey elevation, echo the mood and to some extent the characteristic proportions of houses of this period so closely that one might suspect some kind of Melbourne equivalent of Neoliberty revivalism.

On closer examination, such a suspicion would not stand up—the section of the house in particular, but also the semi-courtyard planning of the upper level entrance, belongs to a different world, the world after the domestic architecture of Gropius and Breuer. Both plan and section are, in fact, very like some of those worked out for similar sites by Harry Seidler. Indeed, the very simplicity of the elevations would suggest that if the design has any local stylistic sources, they must be in the work of Melbourne's forgotten pioneer of modern domestic architecture, Kinnear, one of whose characteristically simple houses is fairly close at hand.

But all that this means, in the final account, is that Robin Boyd's is a distinctively Melbourne house, suggesting that there may be a particular manner of building houses that is peculiar to this area and its climatic, social and cultural conditions. Its urbanity, and its sophisticated simplicity of means, seem particularly at home in Melbourne, which—for better or worse—is the Australian city which seems to deserve the appellation 'cultured,' in the European sense. Sydney does not, even its virtues are felt (especially in Melbourne) to be uncultured in this sense, and the house at Hunter's Hill has grown out of very different conditions of life and leisure.

In Melbourne one might delude oneself that one was living in an English climate, in Sydney one cannot, and climatology is something the architect must study in some way. Lucky the inhabitant of a spec-built house whose featured picture-window faces the 'wrong' way (in order to be seen by neighbours) and does not fill the house with sub-tropical sun. Unlucky the client of the architect who cares nothing for the neighbours and has put his glass-wall on the sunny side in conformity with Modern-Movement dogma. The appraisal of the minimum climate-control performance required for houses in the Sydney area is only just beginning, and it is as a contribution to this climatic study, quite as much as the simplicity of architectural means, that makes the Hunter's Hill house important.

However, these two aspects of the house must be considered

together—both the simplicity of the means and the care for climatic control and other environmental considerations, stem from an attitude of 'first things first.' The obvious comparison with John Voelcker's Lyttleton house at Arkley, north of London (AR, May, 1960), is not superficial—both present a simple, peasant exterior to the outside world because they are both preoccupied with creating a certain kind of controlled environment inside, but whereas the preoccupation of the Lyttleton house had to be acoustic, at Hunter's Hill, apart from certain considerations of privacy, the preoccupation is mainly climatic.

Now, in so far as there is a continuing tradition in domestic architecture in Sydney, it seems to be concerned with the extremity of the climate—understandably enough. The town seems prone to architectural fashions, or moods, in which climatic and environmental considerations are temporarily submerged in enthusiasms for certain current styles, followed by periods of adjustment in which that style is brought to order and made viable for local conditions. This kind of cyclic exchange between form and function is not an architectural tradition of the sort that may be discerned in Melbourne, but at a different cultural level it has something of the same force and continuity.

THREE RESTAURANTS IN LONDON (pages 43-47)

The passing of the *espresso*-bar craze has left some permanent scars on the way the design of restaurants and eating places is considered in Britain. It has re-opened the question of the creation and manipulation of mood or atmosphere, and of the way in which the public space should be focused visually—on the tables (as is traditional in restaurants *de luxe*, but not in other traditional eating houses) or on some feature, not to say gimmick, in the public view. In practice, the two questions have to be answered together, since mood is very much a matter of how the space is organized, and in practice also the degree of visual sophistication with which these questions are approached in Britain today has increased enormously.

All three of these restaurants by Lucas Mellinger can be seen as focused on some feature which is, almost literally, central to the design, but in only one case, the *Rice Bowl*, could it be proposed that this feature was a pure and arbitrary creation of the designer's whim. The concept of tables bracketed off the side of a lily pond is in no way inherent either in the function or structure or site of the restaurant—it is a pure coffee-bar gimmick, differing from its *espresso* predecessors chiefly in being better detailed and thought out.

The *Wayang* extension is a different matter—the roofing of a square site without interfering with its flanking walls suggests quite naturally a square dome or tent dropped into the space, which is what Mellinger has made here with his laminated wooden portals spanning from corner to corner, planked over in a simple manner that makes the function of the whole structure as an inserted shelter perfectly clear. At the same time, the centralizing visual effect of these crossed portals seems to make anything except a centralized seating plan inconceivable beneath them. The lowering of the block of seats around the central table into a kind of pit greatly increases the sense of central focus, while equally increasing the general feeling of space. But at the same time it vastly increases the psychological impact of any object suspended in this central space—no photograph can, in physical fact, reproduce the effect of this rather mouldy looking *objet-trouvé* garnished with oriental art-works and loops of plant-life, and it would require the pen of a Robert Melville to do justice to the way in which it obsessively transforms what might otherwise be a rather severe and architectonic space into a cave as atmospheric as the vastly more elaborate and over-wrought 'Trader Vic' establishment in the basement of the London Hilton.

Against this standard, the *Sands* in New Bond Street may seem to attempt too much but achieve less, even when the extraordinary difficulties of the site have been allowed for. Since the trick of passing the staircase through and under the supports of the mezzanine and lift-shaft has itself been treated as a major optical effect—and with extraordinary success—one can easily feel that any other visual games, however well executed (like the canted cantilevering legs to the tables) are an attempt to gild the lily, and make the interior look too much like that of the numerous air-line offices of the locality. In the basement, however, these objections are less easily sustained. The device of turning the carpet up the walls and then turning it again on to the ceiling, has been seen before, but it serves here to give visual continuity and a proper degree of acoustic damping to the environment.

But, in any case, this is not a focused environment—attention in this basement room is spread—in spite of the so-called throne at one end—over the whole eating area, and the main visual accents (if that is not too strong a word for a rose in an inverted lampshade!) belong to the places where one eats. Though there is no single device here as brilliant as the half-mirrored vault that crosses the room above, this is a far more successful design, and an extremely sympathetic space for eating in.

FARM AT FULMER (pages 51-54)

This must be the first complete farm to be illustrated in THE ARCHITECTURAL REVIEW for at least half a century. There are two reasons. One is that farms do not normally in Britain get built from nothing; there was always a farm there before. Building consists of adding new structures and remodelling old ones and the typical farm is an accumulation of buildings of many periods.

The other reason is that architects have not taken nearly enough interest in the design of farm buildings. Perhaps their interest in new programmes and purposes has caused them to ignore a type of building that has served the same general purpose (though changing its mode of operation) ever since building began; perhaps the farmer's method of getting his building needs seen to is a long-standing hand-to-mouth method that by-passes the architectural profession.

The absence of formal architectural advice can be seen as gain in some places where groups of farm buildings have, as it were, grown together in sympathy with the landscape and where the more selfconscious stylizations of the modern architect might have been too assertive and sophisticated; but far more often his contribution is missed: visually, the group of farm buildings is inept and unrelated; practically, there is no planning. Perhaps more important, the architect has been given little chance of performing the role he is specially fitted for: rationalizing the structural basis of the modern farm building, devising standard elements that will cheapen and simplify building and at the same time allow for all the permutations of use that different patterns of farm require—in fact recognize the farm as a kind of industrial plant with its own requirements in the way of flexibility and adaptability and apply to it the same kind of study that he regularly applies to other kinds of industrial building.

In the last year or two there has, however, been increased activity in this direction; at least some awareness of the need for the better design of farm-building elements suitable for prefabrication.* But new architect-designed farms are still almost unknown. The farm illustrated here is therefore an event, even though it is a modest 'one off' design, making no claim to tackle the problem of standardized structures.

It has, however, other virtues relevant to the problem of how to give farm buildings a place within the range of the modern architect's idiom. It successfully grafts on to a modernized version of the local domestic vernacular, a bold use of timber in the functional tradition—a tradition of which farm buildings are of course one of the historical sources. These timbered staircases, porches and louvred openings read as natural extensions of the weather-boarded wall surfaces, and the walls and roofs are themselves composed of simple, sharply defined geometrical elements that again accord with the functional tradition.

The small accents provided by white paintwork and palings give sparkle and precision to the range of buildings and the farmhouse, though planned as a separate unit with its own access, has been designed so that it remains visually part of the group.

* See AR, August 1962.

EXHIBITIONS

PAINTING AND SCULPTURE

I don't see much of a future for Zen in the West. The thing we're after more than anything else is tranquillization, and it takes too long to obtain the kind promised by Zen. Drugs and surgery provide tranquillity much more quickly, and although it's of very low quality it's probably ousting Zen even in Japan. Nevertheless, Zen has a great and understandable appeal for many artists in Europe and America because it seems to provide a philosophical foundation for their own unintentionalism. Some American painters have actually sat at the feet of Zen masters and sampled the Zen disciplines, which seem to range from physical activities calculated to keep the mind off sex to deep meditation on Emptiness, which, like religious double-talk everywhere, means of course Fullness. But one doesn't need to be a Zen initiate to appreciate its aestheticism of simplicity or achieve Zen-like poetic ambiguities, and in this respect the painter Rothko has created, with virtually two patches of colour, images of Emptiness as Fullness, or Fullness as Emptiness, more optically convincing than the work of the Zen masters themselves.

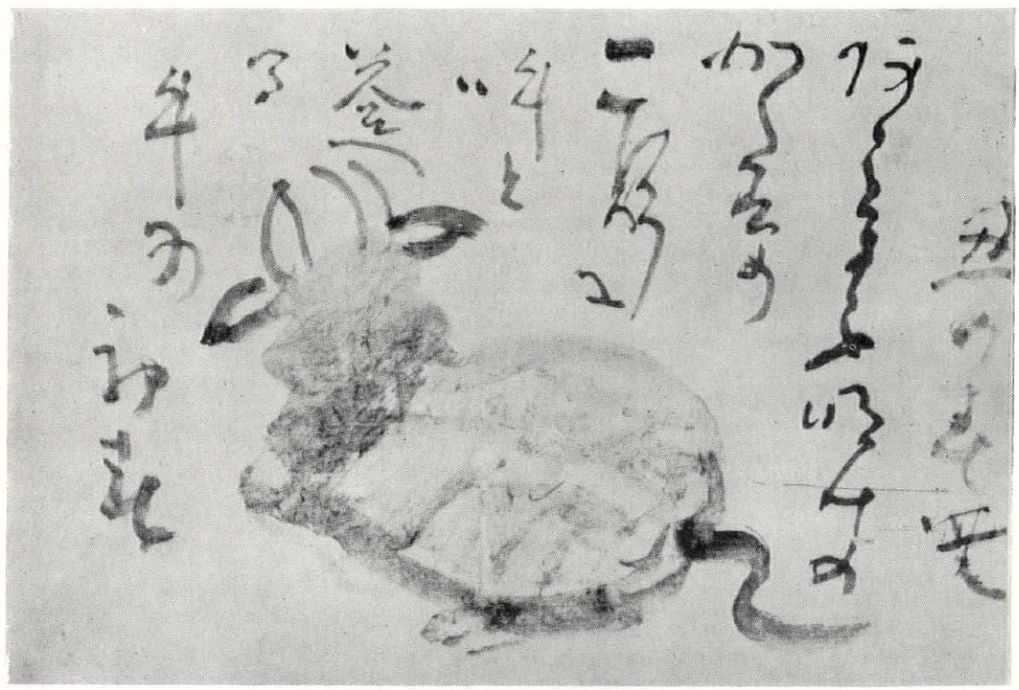
The exhibition of brush drawings by the Zen master Sengai recently held at the Arts Council Gallery touches on such notions in a way which seems indirect because the symbols do not carry for us the associations which presumably leap on sight into the Japanese mind. An example is this drawing of a reclining Ox, 1. The poem written around it reads

'Kah' cries the Crow,
at the dawn of the New Year:
'Mo' respond the Ox,
ushering in the first day of Spring.

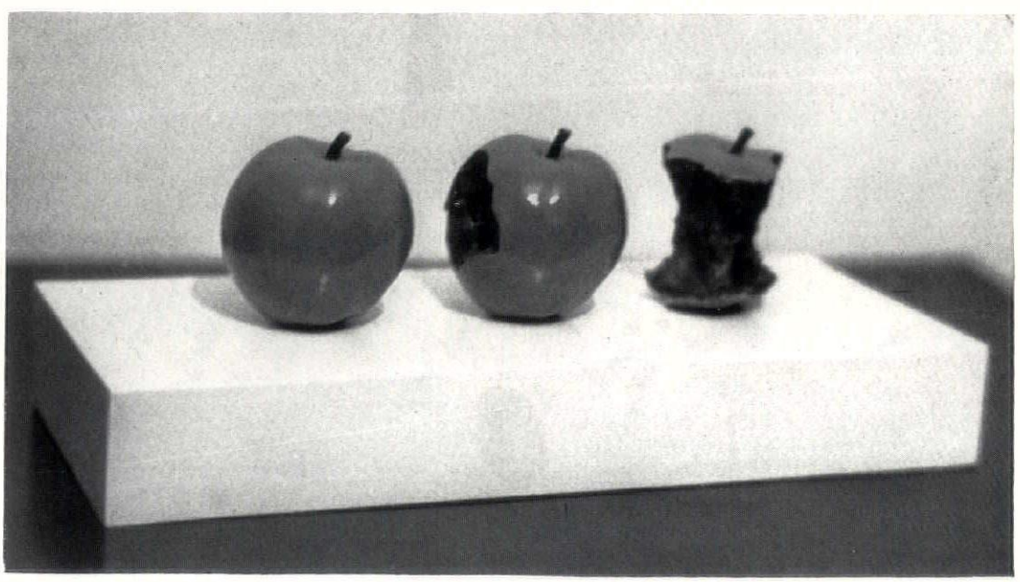
But neither the poem nor the drawing (nor both together) even faintly convey to me the meaning ascribed to them in the catalogue—'the beginningless beginning and the endless end meet in the absolute present—here we experience the mystery of being in timeless time, which is the reservoir of infinite possibilities.' The language of the 'explanation' is not unfamiliar: it could have been used by one of our astronomists rounding off a lecture on man's place in the expanding Universe, and incidentally, I saw a painted bronze object in Billie Apple's recent show at Gallery One which seemed to me to be a more simple and successful attempt to present an image of 'timeless time' than the Sengai drawing. The exhibition was an up-to-date game with *trompe l'œil* designed to arouse disorderly thoughts about appearance and reality, and the object I have in mind, 2, was facetiously entitled 'Two Minutes thirty-three seconds.' It presented in a straight row an uneaten apple, a half-eaten apple and an apple eaten down to the core. They were cast from a real apple, were painted to simulate the false perfection of apples in colour ads and only the bitten parts were left as unpainted bronze. They are three stages in the fate of one apple presented in terms of having one's apple and eating it. It has been devoured and is still there. Billie Apple by the way is an assumed name.

I don't know whether Japanese connoisseurs consider the drawing of the reclining Ox to be an important example of Sengai's work, but to me it seems less beautiful than many others, including some to which the catalogue attributes much slighter meanings. The catalogue was prepared by Mr. Suzuki, who is already well known as an explainer of Zen to the barbarians. He has a puzzling tendency to provide long-winded paraphrases of the splendidly terse and perfectly intelligible truisms which he himself has presumably translated from Sengai, but he also provides some useful information.

Sengai's head was shaved for the priesthood when he was eleven years old and he eventually became the one hundred and twenty-third abbot of Japan's earliest Zen temple, founded in 1195. He retired in



1

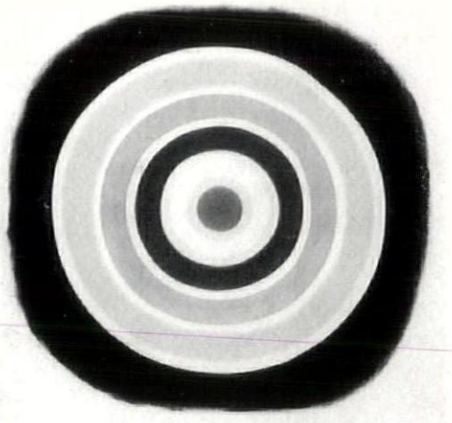


2

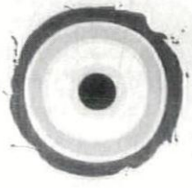
1811 at the age of sixty-two and most of his drawings were made in his old age. It's said that he gained his insight into Zen by finding the correct answer to the following test question for novices set by an early Zen master: 'Here is a man supporting himself by his teeth on the branch of a tree. A monk comes along and asks him a question about the great principle of Buddhism. If the man does not answer he is not a pious follower of Buddha. If he opens his mouth he will fall to the ground. What is your solution in this critical situation.' Like all guardians of a cult, Mr. Suzuki knows the value of silence at crucial moments and omits to tell us Sengai's solution. It was almost certainly non-verbal and probably took the form of a single gesture, but I must remain silent about my own speculations on this subject.

The exhibition as a whole was a fairly convincing reflection of the kind of tranquillized non-attached personality which is the expected end product of Zen disciplines. Sengai is a fine graphic artist and at his best achieves magical relationships between scripts and figures, but I saw nothing in his work which suggests that he, so to speak, left it to his brush to do the drawing for him although some of our painters claim Zen support for their semi-automatic practice. Sengai's drawings are invariably illustrations of his little poems, and he quite certainly knew beforehand what was to be done. But I think it's the branch of Zen that deals with marksmanship, the idea that the Japanese bowman who has acquired Zen insights can hit the target without aiming, which has captivated some Western painters. I've not yet heard that Zen marksmanship is influencing the game of darts, but if a painter starts a picture by making aimless sweeps of the brush and by the time the canvas is covered finds the result satisfactory he can I suppose claim to have 'hit the target' without having had a conscious aim in mind.

Reading about the wonders of Zen marksmanship has had an even more curious effect upon many painters; it's landed them with a fixation on targets, and some of them have now been painting nothing but pictures composed of concentric bands of colour for several years. Some of these target paintings, I should add, are beautiful, and it would be a cultural courtesy if some Japanese millionaire bought them up for important public demonstrations of Zen marksmanship. There wouldn't be much damage done to the pictures; just a little hole dead in the centre. The American artist Kenneth Noland is probably the best of these target painters, and his first one-man show in London coincided with the Sengai exhibition. It was the opening show at the



3



4

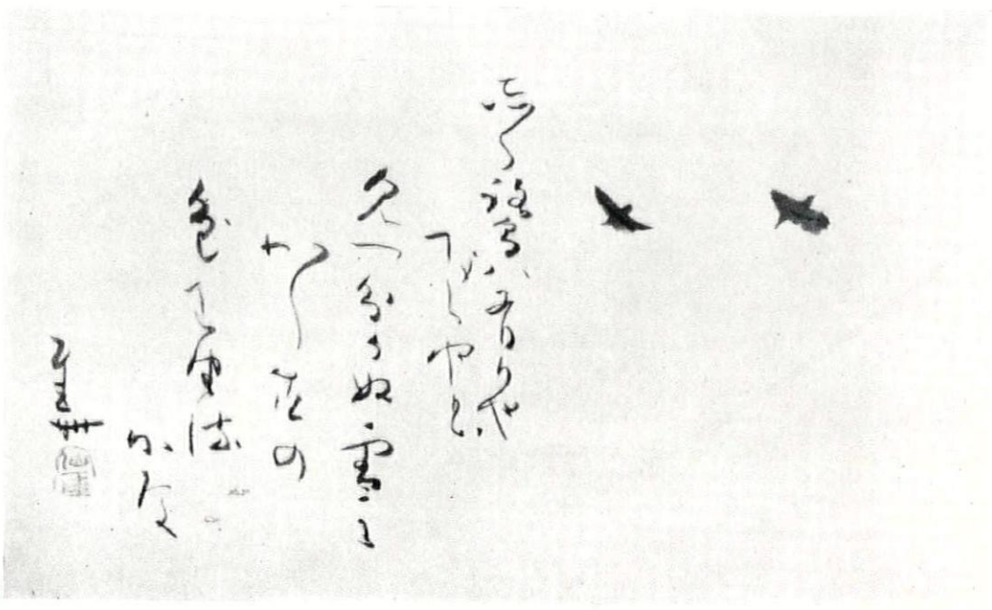
Kasmin Gallery in New Bond Street and had to compete for attention with one's first view of the gallery itself, which is a far-out transformation of the large back-room of the old Walker Gallery. But it held its ground with a number of striking variations on the target theme. In many cases the concentric colour-bands seemed 'made for one another' and had a settled look as if they had long been the traditional colours for targets in some country one had not visited and where targets were revered as sacred objects. At the same time they gave the illusion that they were slowly revolving and that some were near, 3, and others far away, 4.

Perhaps the finest and most poetic of Sengai's drawings, and which might well strike the outsider as being most 'Zen' in its utter simplicity and spontaneous aestheticism, is the one called 'Ravens,' 5, which is a poem and two black marks. The translation of the poem reads:

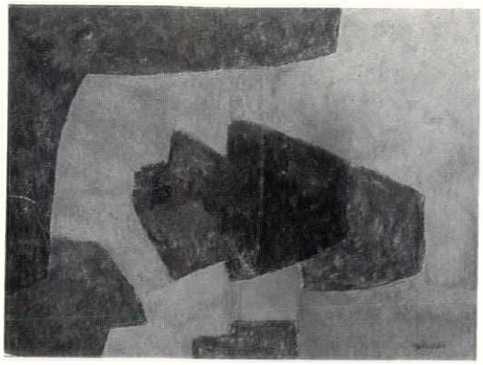
White heron on snow is hard to
distinguish;
But the ravens—
How they stand out!

Mr. Suzuki says that these lines symbolize the 'doctrine of identity and difference' and that Sengai brings out 'the aspect of the difference in contrast to the sameness.' The peculiar magic of Sengai's drawing is that the sheet as a whole re-creates in abstract terms the situation described in the poem: the calligraphy in which the poem itself is inscribed stands for the standing herons and the two black marks stand for the flying crows. The two black marks in the right half of the sheet create a superb balance for the straggle of writing on the other and give one the feeling that the amount of ink used on them would be just enough to write the words of the poem. It seems to be much less a matter of contrasting difference with sameness than of establishing identity in difference.

It is this feeling for identity in difference that gives the art of Serge Poliakoff its impressive consistency and its meaningfulness. It doesn't show itself in black-and-white reproduction, 6, where one sees only the arbitrary shapes of the colour areas. It's the subtle quantitative relationship between the different colours which, whilst creating thrilling contrasts, achieve an even, equable and glowing surface. His



5



6

recent retrospective at Whitechapel leaves one with the strong impression that the twentieth-century abstract art of the West has discovered of its own accord some of the secrets of Zen 'Knowledge.'

Robert Melville

ARCHITECTURE

BELLICOSE PROPHECIES

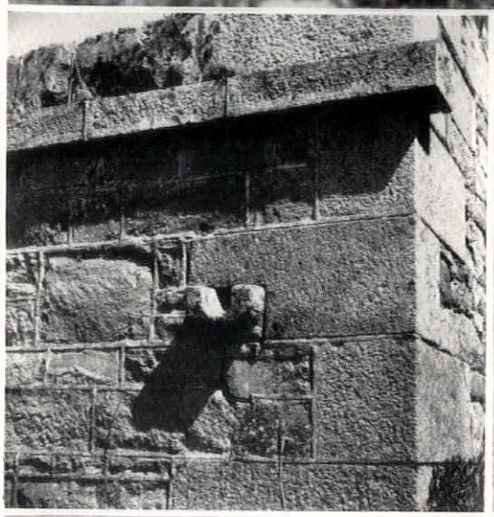
The fortifications of the Channel Islands have a many-faceted interest for us today, but have only recently come under proper architectural study. They belong to two epochs or generations. The first, built by the British in the last century to guard against Napoleon and other continental adventurers, survives in some almost diagrammatically perfect examples of classic military engineering, such as the three-lobed, five-turreted fort Houmet Herbé, 1, on Alderney, with its superlative masonry detailing, 2, that gives the first functional tradition a late, austere neo-Classical authority.

But this generation are not, now, always pure and uncompromised—many of them were brought up to the standards of the second generation, the German generation, during the Second World War. Some of these bastard works exhibit an easy nonchalance, as in the additions to the base of Archirondel tower, Jersey, 3, where German brick consorts cheerfully with British granite. At Elisabeth Castle, Jersey, the situation is more complex—the concrete of a German fire-control tower, 4, squats on top of a system of nineteenth-century gun platforms and ramps that go back another two centuries before that.

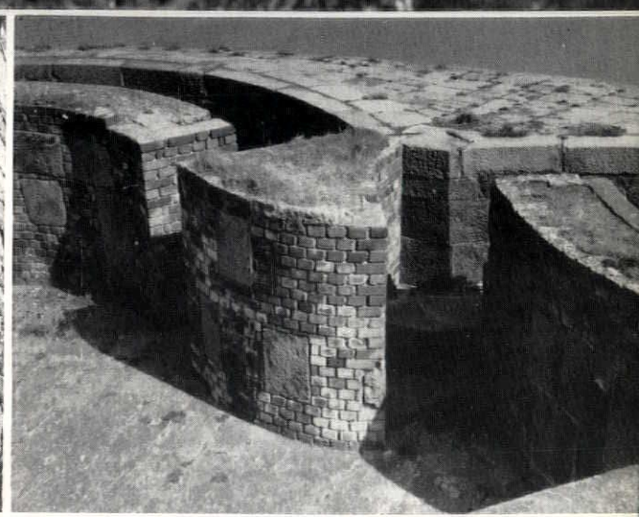
The pure second generation, however, raise questions of a different order, not all concerned with military history. Built by the Todt organization as part of the West Wall (and forming a bastion from which hardly a German shot was ever fired) they raise disquieting thoughts about the genealogy of the forms of modern architecture.



1



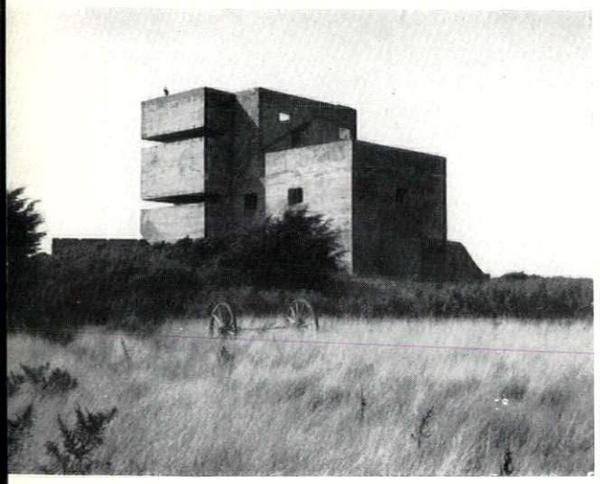
2

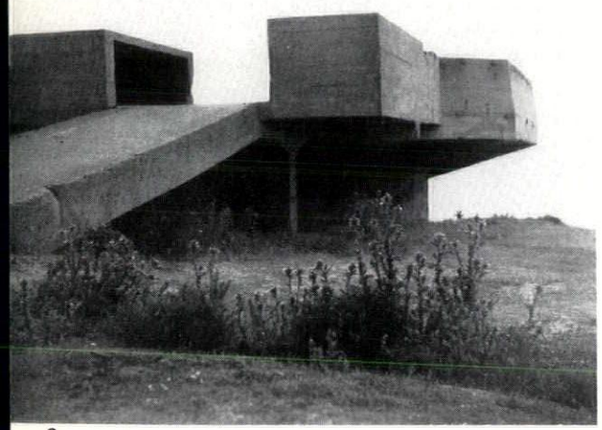


3

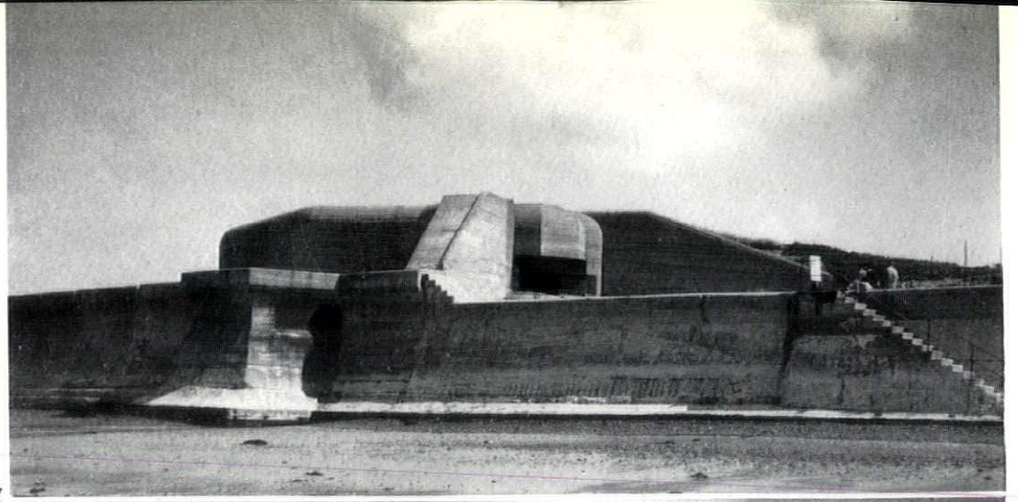


4

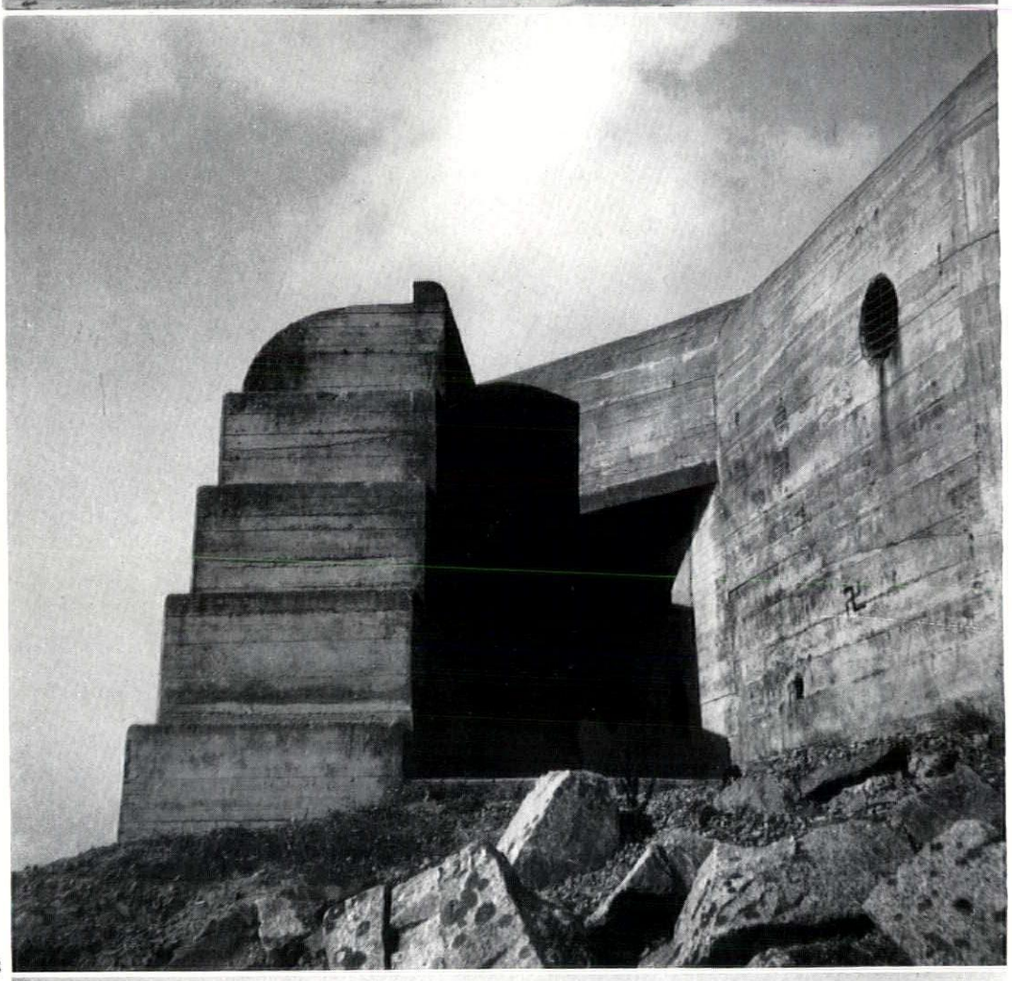




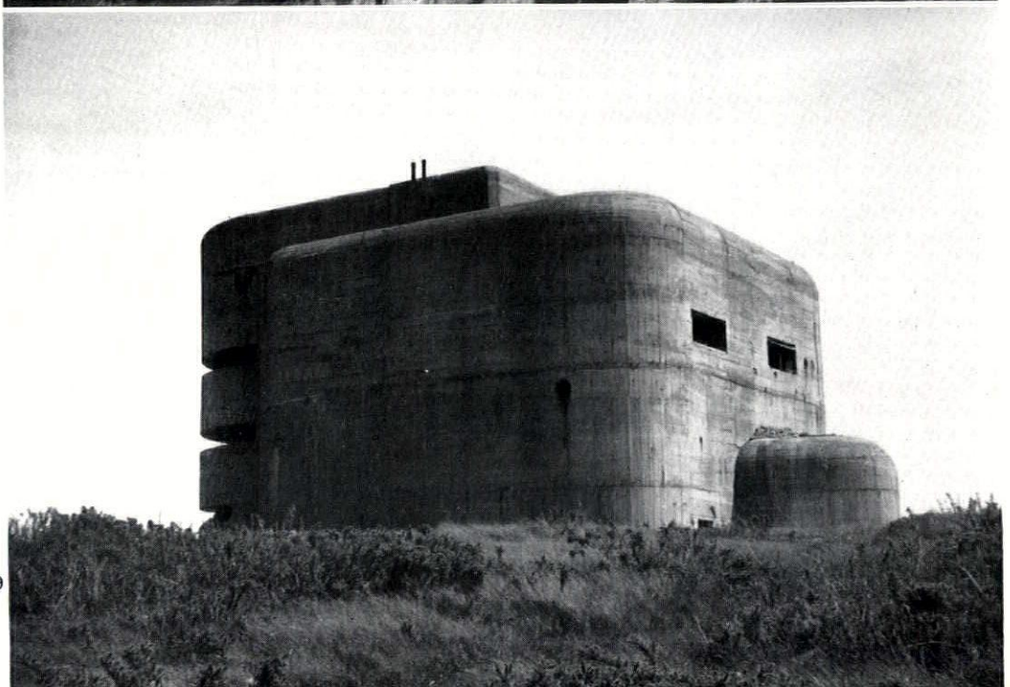
6



7



8

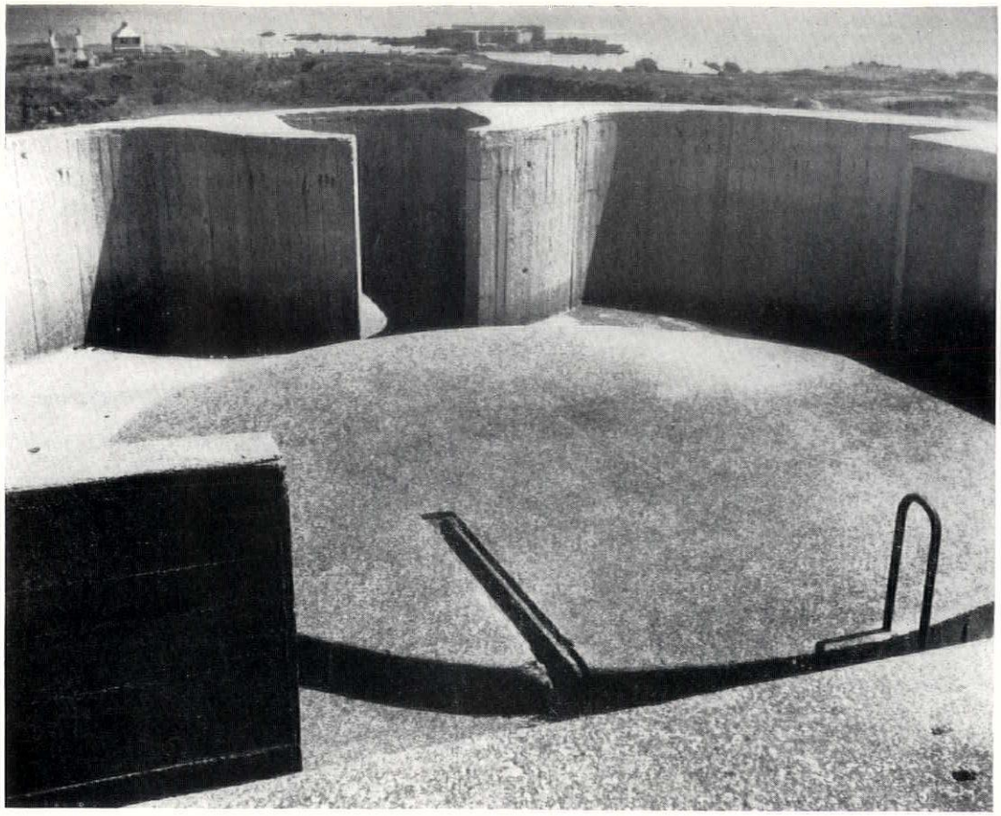


9

The chopped and slotted box-shapes of the German fire-directory tower at Point la Moye, Jersey, 5, suggest the early modernism of the Berlin school surviving in a constructional tradition where the imperative demands of function put form beyond the reach of political interference.

These functional aspects of the Jersey towers have already been the subject of comment in the AR (April 1962) but since then, the researches of Jeffrey Taylor and Colin Partridge—two architectural students from Cheltenham—have added knowledge of a wide variety of architectural forms in these strong-points, and have also indicated some striking prophecies of non-military architecture built or conceived between ten and twenty years later. The gun platform at Noirmont, 6, has striking affinities with some recent American and Japanese projects; the gunsites at St. Ouen's Bay, 7, and l'Etacq, 8, cowering under their ponderous concrete lids suggest, for purely military reasons no doubt, the forms of Steiner's Goetheaneum or some works of the Expressionist revival.

But most disquieting of all is the fire-control tower at Mannez Quarry, 9 (on Alderney), for its blind forms with their snubbed-off corners seem to belong unmistakably to the plastic (not to say plastics) minded Sixties. Stranger still, the



10

radar post on its upper deck, now an empty exercise of the very purest form, 10, anticipates in detail the rough shuttered concrete aesthetic of Jo Johansen's Taylor house (World, AR, August 1962) with its curving walls and vertical boarding. Indeed, the more one looks into this pool of spectral classicist quiet—an enclosed space set apart, a platform open to the sun, with an inner sanctum set exactly on its axis—the more one seems to see an apotheosis of that mood of romantic archaeology that has culminated, twenty tears later, in Vincent Scully's *The Earth, the Temple and the Gods*. No one can possibly suggest any stylistic or other connections between Hitler's defences and the American scholarship of the present time, yet one must ask what kind of men drew up the memoranda and standard plans on which the individual defences were based, or one must ask how far the functional requirements of an ancient priesthood scanning the sky for portents, and a radar scan searching the sky for intruders, can really have posed a formal discipline so similar.

Michel Santiago

SHRUBS

NATURAL BARRIERS

There are many situations, often in the heart of the country, where security demands an impenetrable barrier which all too frequently takes the form of an enormous wire fence supported by concrete posts. The hard lines of these fences are visible for miles, drawing attention to themselves and attracting anyone with a sense of mischief to break in quite apart from the devastating effect such artificial enclosures have on their landscape setting. A more modest boundary within free growing thickets of thorny shrubs would be far more effective and less conspicuous.

Although the wild rose, *Rosa canina*, is such a feature of the country hedges in June, and its great sprays of pink flowers are closely woven into English tradition, little use is made of its other very noticeable quality—its strong growth and extremely aggressive thorns. Where an impenetrable barrier of fair size is required this rose and several other species like the sweet briar, *Rosa rubiginosa*, are invaluable as well as being attractive both in flower and when covered with their bunches of orange hips in the autumn. Growing best on heavy clay and loam soils they will do quite well on others provided that they are not too dry and thin.

On a smaller scale and for generally poorer and drier soils, gorse, *Ulex europaeus*, is the ideal barrier. The dark green, cushioned habit of growth scattered at all times of the year with honey-scented gold flowers, is always satisfying, and the sharp spines are proof against all assault once the plants are established. Although of garden origin, the double-flowered variety *plenus* is often to be preferred because it is less inclined to straggle with age.

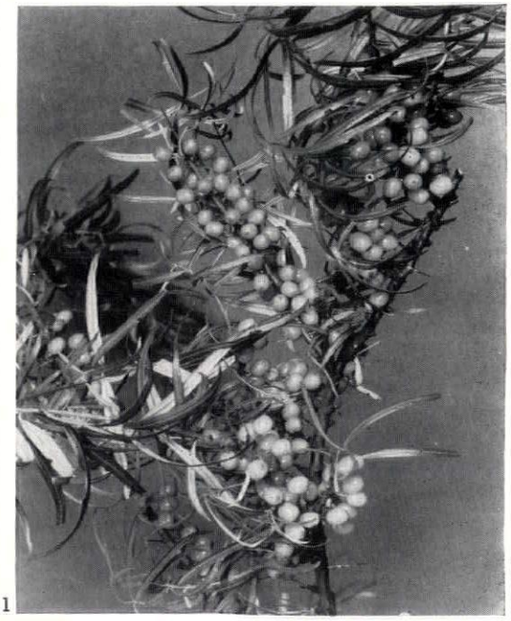
For a large barrier on any soil from sand dune to heavy clay, the sea buckthorn, *Hippophae rhamnoides*, 1, is excellent. Suckering over a wide area and growing up to 10 ft. high it is also armed with the most formidable spines on stems and branches. The fine silver-grey leaves and amber berries do not, however, fit into every scene and are more at home in the sombre setting of heath and pine country, or by the sea, than against the lush green of pastureland.

The common blackthorn, *Prunus spinoza*, is a strangely despised shrub which combines all the virtues of hawthorn with a much more delicate appearance. The branches really are black and when scattered with their small white flowers in spring they look exactly like that famous spray of plum blossom which is the subject of so many Japanese prints. The elegance is deceptive, however, as the shrub is covered with sharp spines and will grow freely on any reasonable soil to a height of 15 ft.

Holly forms an ideal thicket, either allowed to grow freely into small trees or trained by careful cutting into a dense mass. The polished green leaves always look cheerful, even in winter, and when they drop form an added defence, as the dead leaves retain all their prickles until they rot away. Rather slow growing and therefore not cheap to buy, it can nevertheless be grown in quantity from seeds or cuttings if time and space are available.

Near buildings and in more urban situations a choice could be made from the aggressive shrubs of garden origin. Many members of the Berberis family are extremely suitable, particularly *B. thunbergii*, 2, growing from 4 to 5 ft. high, and

1, Hippophæ rhamnoides.



1

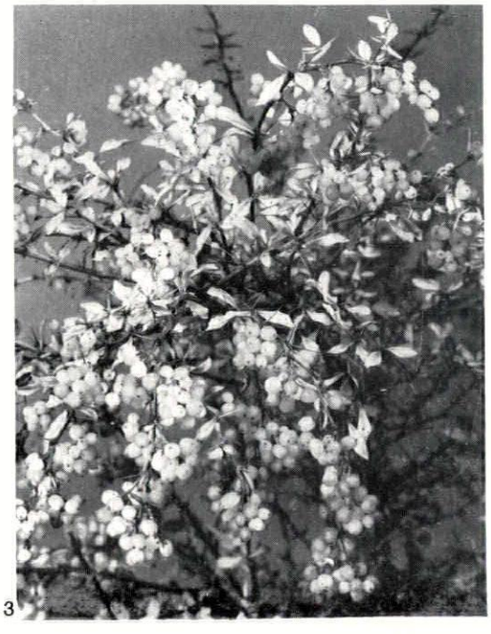


2, B. thunbergii. 3, B. wilsonae.

B. wilsonae, 3, at about 3 ft. Although deciduous, the leaves of both colour beautifully in the autumn, and the coral berries of *wilsonae* are particularly striking. Neither is too gardenish in appearance and both would blend perfectly with a semi-rural position, while the quality of their thorns is beyond reproach.

The nearest thing to a living barbed wire entanglement is the curious Japanese orange, *Aegle sepiaria*. Its yellow-green leaves are sparse and the white orange blossom distinctly exotic, but the whole plant seems to consist otherwise of stout green spines which could be guaranteed to stop anything. Though not a plant for the wild country or an exposed situation, it will grow in reasonable conditions to a height of about 6 ft.

A. du Gard Pasley



HISTORY

GREEK MILLS IN SHETLAND

Corn mills with horizontal water-wheels are first recorded during the first century BC *both in Thessalonica and in the Pontus and it is probable that these Greek mills came into fairly wide use* in eastern Mediterranean and near eastern countries from this time. By the fourth century AD they had spread to Ireland and China.[1] The Scandinavian examples, known here as Norse mills, could have been invented spontaneously, or may have derived from the same prototype.

The only such mills now in use[2] are in Anatolia and Persia, so it is astonishing to find that in the Shetland Islands three such mills had only stopped grinding 15–20 years ago; the owner of one of these claims, with every apparent justification, that his mill could be grinding again 'within the hour'. Two thousand years separate these Shetland mills from the Greek prototype and as many miles divide them from the nearest examples known to be in use.

Had there been any demand for it, such a simple water-mill might have been invented much earlier: the Greek mill, directly transferring the power from its horizontal water-wheel to the millstone fixed above it on the same axle, is only an extension of the idea of the rotary quern, using water power instead of manpower. An abundance of slaves made such developments unnecessary. It was not until a labour shortage made the old system unworkable that the water-powered Greek mills rotating their millstones once for every turn of the wheel came into use. But they could only temporarily satisfy the increased demand. By contrast the simplest Vitruvian mill, with its vertical water-wheel, turned its millstone five times for each revolution of the wheel.[1] This was a real technological break-through; the increased efficiency showed that the more complicated machinery paid for itself, and the Vitruvian mill gradually spread throughout the richer corn-growing lands of the western world. During medieval times the Greek mill was still widely used and in poorer districts it persisted. Eventually it came into its own in nineteenth-century France when the modern turbine was developed from it.[3]

Distribution was governed by two fac-

[1] Oxford History of Technology II, ch. 17: Power by R. J. Forbes.

[2] That is to say, mills which the writer knows of. It is hoped that readers of this article may know of others. Examples of mills that are genuinely working, as against *in situ* museum examples, only have been included here.

[3] *Mills and Millwork*, by Sir William Fairbairn, Longmans, Green & Co., London, 1871 (3rd edition, Vol. I, p. 157).

1, the three remaining mills at Huxter (one roofless). Each was fed by a separate leet off the stream to which the water returned to drive the mill below it. Thus they can all work at the same time or separately. The mills lie in close succession on the short stream below the loch, which acted as the mill pool; the lowest mill is a stone's-throw from the rocky shore where the stream meets the sea.
2, the entrance to the grinding room (at the upper level). An idea of the scale of these diminutive buildings is given by the low doorway, which is about 4 ft. 3 in. high.

tors: suitable water power (a relatively small quantity moving at high velocity) and a meagre corn supply.

By the end of the eighteenth century, travellers to Shetland were sufficiently surprised to record the mills in the journals of their tours, some with a note of condescension: 'very clumsy' (Lowe 1774), 'It was a truly awkward piece of machinery' (Neill 1806).[4] But later travellers were intrigued by the simplicity of the machinery which, when all was said and done, achieved exactly what was required.

Sir Walter Scott, on his tour in 1814, estimated that there were 500 mills then working in the islands. At that time there was also a number in the North of Scotland and in the Hebrides. It is unlikely that they survived in the richer arable land of Orkney. During the nineteenth century they fast disappeared, so that the Society of Antiquaries for Scotland felt justified to print an excellent paper in their report of 1886.[4]

Three or four families had shares in each mill, so there might be as many as 50 in a parish. Each mill would be as near as possible to the owners' crofts. This, and the need to make the most use of the water power available, meant that a succession of mills might be built on one stream. The stream is usually fed from a loch, often dammed and semi-artificial, to ensure a constant water supply. The water is taken from the main stream by a narrow mill-leet; having run through the mill, it goes back to the stream to be taken off at lower leets as required. Each leet is controlled by its own sluice gate.

The Shetland mill must be one of the humblest industrial buildings ever constructed. At first sight it seems rough and ready, but a closer look at several mills shows how carefully the design had been worked out throughout the islands, and the efficiency of the result: a minimum of space, material and water-power achieve what is required and no more. In such windswept country bare of trees, timber is scarce so spans are kept to a minimum.

Each mill is a two-storey structure, and it is usually built out from the bank of a stream over a mill-leet. The lower chamber houses the water-wheel and the upper the grinding-room, which is reached from the higher ground level.
Grinding Room (typical dimensions: 10 ft. 6 in. by

[4] *Proceedings of the Society of Antiquaries of Scotland*, 1886, p. 257. The Horizontal Water Mills of Shetland, by Gilbert Goudie. Goudie gives much more detailed notes on the reports mentioned above.



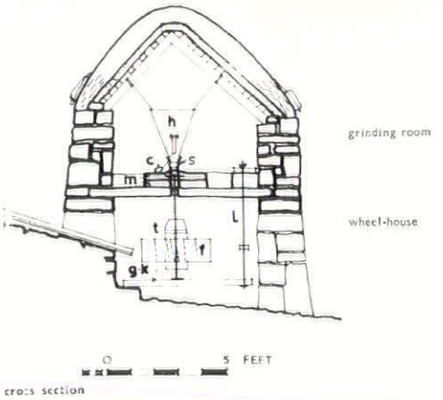
1



2

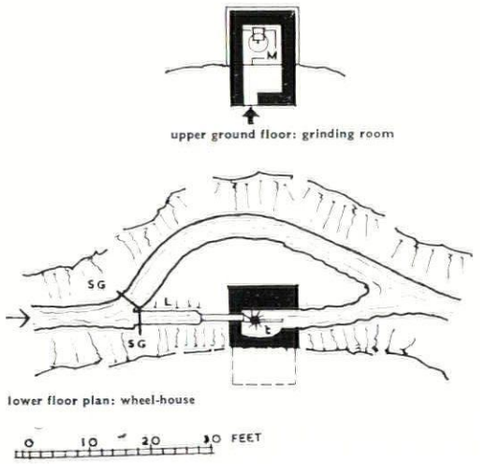


3, *the horizontal water-wheel in the lower chamber revolves on the same axle as the upper millstone in the grinding room above. The lightening-rod (seen in front of the wheel) governs the level of the ground-kane on which the tip of the axle rests. The precise clearance between the two millstones, and thus the fineness of the meal that is ground, can therefore be adjusted by varying the length of the rod.*



cross section

6 ft.): The floor of the grinding space is raised 7 in. and is protected by a low kerb which stops short of the wall to allow the ground meal to be swept out. Sometimes there is a hearth in the corner by the door, and usually a bench.



Walls: Random rubble brought to courses; battered from base; average thickness 2 ft. to 2 ft. 6 in. at grinding floor level. Walls of the grinding area are plastered.
Roof: Straw thatch held down against gales by netting weighted down by stones, on turfs on 3 in. by 1½ in. (average) driftwood battens on seven 3 in. by 2½ in. (average) rafters. The roof of the mill which was measured was asymmetrical, thus giving the greatest headroom where it was most needed: over the mill-stones.[5] The placing of the stones off-centre gave better working space to the miller.
Floor: Stone slabs spanning 6 ft. The floor of the grinding space is plastered in clay.
Door: Ledged and boarded, hung on wood pivot hinges and secured by a wood latch.
Chute: A 7 in. by 7 in. wood trough sloping at approximately 1:3 discharges the water from the leet to the centre of the wheel.
The tirl or water-wheel (t in the diagrams herewith) is set horizontally in the lower chamber. Its wooden hub (15 in. max. dia. by 18 in. high) is bound with iron hoops. Nine 12 in. wood feathers (f) projecting 12¾ in. are set diagonally in the hub (one of the water-wheels at Huxter had a concrete hub, 14½ in. high, with wood feathers).

[5] Unfortunately only two of the mills seen had roofs; so this may not be typical.

The axle: A vertical wrought iron 1 in. dia. bar runs through the hub, through a hole in the lower millstone (which rests on the floor above) and is fixed into the upper millstone which it thus revolves when the water-wheel turns. At the top the round axle is beaten into rectangular section to prevent it turning in the 1½ in. by ⅞ in. horizontal bar which is set in the upper millstone. The hole in the lower millstone is caulked to prevent grain running through.
Lightening rod (l): The top of this wrought iron rod is threaded so that its effective length can be adjusted by a wing nut. This controls the position of the ground-kane (gk) on which the axle rests and thus the relative position of the mill-stone can be adjusted for the grinding of fine or coarse meal.
The hopper (h) is slung from the rafters above the mill-stone. Now made of wood, it was originally a straw skip. Oats or baer are fed from the hopper through a wooden *shoe* (s), into the hole in the upper stone. The angle of the shoe governs the speed of the flow of the grain. It is kept running by the *clapper* (c), a piece of wood which rests on the upper stone and which is tied to the shoe by a bit of string. The clapper is knocked about by the motion of the revolving stone; it thus joggles the shoe and keeps the grain running.
The mill-stones (m): As the silaceous stone used has to be brought from other parts of the islands (e.g. Weisdale) these are the only expensive part of the equipment. Dimensions of examples measured at Huxter and on Unst varied:
Diameters: 3 ft. to 2 ft. 3 in.
Thicknesses: 4½ in. to 2 in.

Goudie reminds his Victorian antiquarians how vital the millstone was to the small communities whose basic food depended on it: 'No man shall take the nether or the upper millstone to pledge; for he taketh a man's life to pledge' (Deuteronomy XXIV v. 4). A far cry from sliced, wrapped loaves.

A long drought could seriously hold up grinding, so when the loch filled up again after a spell of dry weather, the mills would be worked continuously. The present owner of one of the Huxter mills can remember all four mills grinding all day on such occasions. In his father's time, they sometimes worked all night, too. In those days the grain was dried in special kilns in the barns (later the ordinary house ovens were used). On a still winter night it is easy to hear again the din of the grinding and the roar of the mill stream, and to see the lights of the hurricane lamps as the owners went from mill to mill to fill the emptying hoppers and sweep the meal into sacks before it overflowed the grinding-floor.

Elisabeth Beasley

ACKNOWLEDGMENT:

Mr. George Coutts and Mr. Georgeson, of Huxter, Sandness, Shetland, the owners of the mills described here, most kindly supplied much of the information in this article.

SKILL

SHUTTERING

2, formwork in practice

In his first article Graham Lewis discussed design considerations in relation to formwork in reinforced concrete construction. In this article he goes on to consider the practical forms that this can take on site, beginning with traditional timber work and going on to review patent forms with their advantages and limitations.

The most usual material employed in the shuttering for columns is 1⅛ in. or 1½ in. planed boarding, cleated together, cut to the sizes required and held around the column position by column clamps, the shuttering being originally positioned by the kicker to the column, and brought into upright by adjustable props on two or four sides.

If a fair face to the columns has been specified, the boarding will be replaced by ¾ in. ply which must be stiffened by 4 in. by 2 in. sawn timber, all held in position the same way by column clamps. A column shuttered in this way can be seen on the right in 1. 2 shows four adjustable props resting on scaffold and bringing the column into upright.

There are, of course, many alternative methods of holding shuttering without the use of the manufactured column clamps. Some prefer the use of banding like that around packing cases, though this method requires a special tool for tightening. It will be found, however, that the banding can only be satisfactorily used where the column is square as, in a rectangular column, banding will not hug the column sufficiently tightly.

Another method is by using timber yokes with long bolts and nuts. In order to overcome the lengthy business of tightening the nuts to the length of the thread, they can be left loose with the adjustment effected by means of wedges. By and large column clamps are preferable for, although they are crude, they are robust and tested and can stand up to mishandling by workmen. In addition they are in such common use that workmen are used to them.

The kicker has been mentioned as the positioning factor to the column shuttering. The kicker is, in fact, the base of the column cast separately some 6 in. in height, the size of the column on plan, over which the shuttering is placed and clamped and which forms a firm base for the start of the column shuttering.

The kicker can be formed by placing the concrete into a small box shutter about 6 in. high, accurately placed on the slab. The rods from the column below project through the slab, and the concrete is placed in the box and around the bars. When the shutter box is removed, the kicker is left with the starter bars projecting. Alternatively it can be formed by placing concrete blocks accurately in position on the slab when the concrete is still wet.

In the photograph, 1, on the left of the picture, can be seen the column bars projecting through the formwork for the next lift. It is sometimes thought that with the use of either of these methods the column loses strength where it is most needed, as the next lift of column bars will start from the top of the kicker. The alternative is to cast the column and beam in one operation, holding the toe of the column shutter not by means of a kicker but by means of an outer frame; but this method has the disadvantage that there is nothing to whlch to tie the shutter which is inclined to ride up during concrete placing and vibration.

Columns are usually vibrated from the outside of the shuttering by means of a mechanical hammer fitted with a rubber pad at the head.

Accuracy in the setting out of kickers cannot be too strongly stressed, because, whatever form the kickers may take, they do form the basis for the setting out of the building. The practice of merely plumbing down to the floor below in setting out for columns can cause creeping errors which, as the job progresses, will prove disastrous. For this reason it is advisable to leave a series of holes one above the other, through the slabs, as the building rises which can be used as plumbing points throughout the building operation. The principal plumbing point can, in fact, become the vertical datum for the job.

Such close accuracy is required in the setting out and shuttering of columns and mullions that extra care should be taken when gang moulds are used. A gang mould is a section of composite formwork used for mullions which are small in section and close enough together for their shuttering to be made in one large frame, containing shuttering for six to ten mullions at a time. Gang moulds require careful design to allow for striking without destroying the main template of frame work, but at the same time the timber reinforcement and holding devices must be of considerable stability to maintain an accurate shape. Accuracy can be lost after the first use, as moisture in the concrete tends to warp the timber.

All the considerations which have been mentioned with regard to shuttering for columns in reinforced concrete buildings apply equally to the concrete cover to stanchions in steel framed buildings, except that, due to the substantial steel sections to be encased, spacing pieces can be used inside the shutter.

Accuracy in setting out the kicker and the trueing up of the shutter itself are, however, more important because the steel frame is not necessarily accurate and it is often necessary to true up the building in the concrete cover. It is more difficult in concreting around rolled steel stanchions to avoid honeycombing and more care must be taken with vibration. In all cases, whether in reinforced concrete buildings or in steel framed buildings, the question of fixings must be considered at an early stage. It is comparatively easy to allow for fixings in the shuttering. It is a laborious business to start cutting into compact concrete for fixings, if by some chance or another they have been overlooked at the beginning.

Shuttering for beams

The method of shuttering for beams is of necessity governed by the type of slab construction to be used, as the concrete for beams and slabs is placed in one operation, except in certain circumstances where a totally prefabricated slab is used. With this exception, whether a reinforced concrete slab, a pot floor, or any other kind of floor, such as the pre-stressed, prefabricated plank, is used, the beam shuttering will be erected with the shuttering for the slab and will be part and parcel of it, insofar as reinforcement and concreting are concerned.

Where the decking for the slab is supported from the slab below and does not rely on support from the beam casings, the timber in beam shuttering is made up of 1¼ in. sides and soffit, the soffit and edges of the sides resting on 2 in. by 2 in. beam bights. Struts from the beam bights to the top of the side shuttering hold the sides in position. The whole of this construction is carried on 6 in. by 3 in. bearers, which in turn are supported from below by adjustable props.

If a camber is required, the soffit is bowed by the provision of firring pieces on the bights. By this method, as soon as the concrete has gone off, the struts to the sides can be knocked away and the sides removed to allow for the curing of the concrete while still being supported from below.

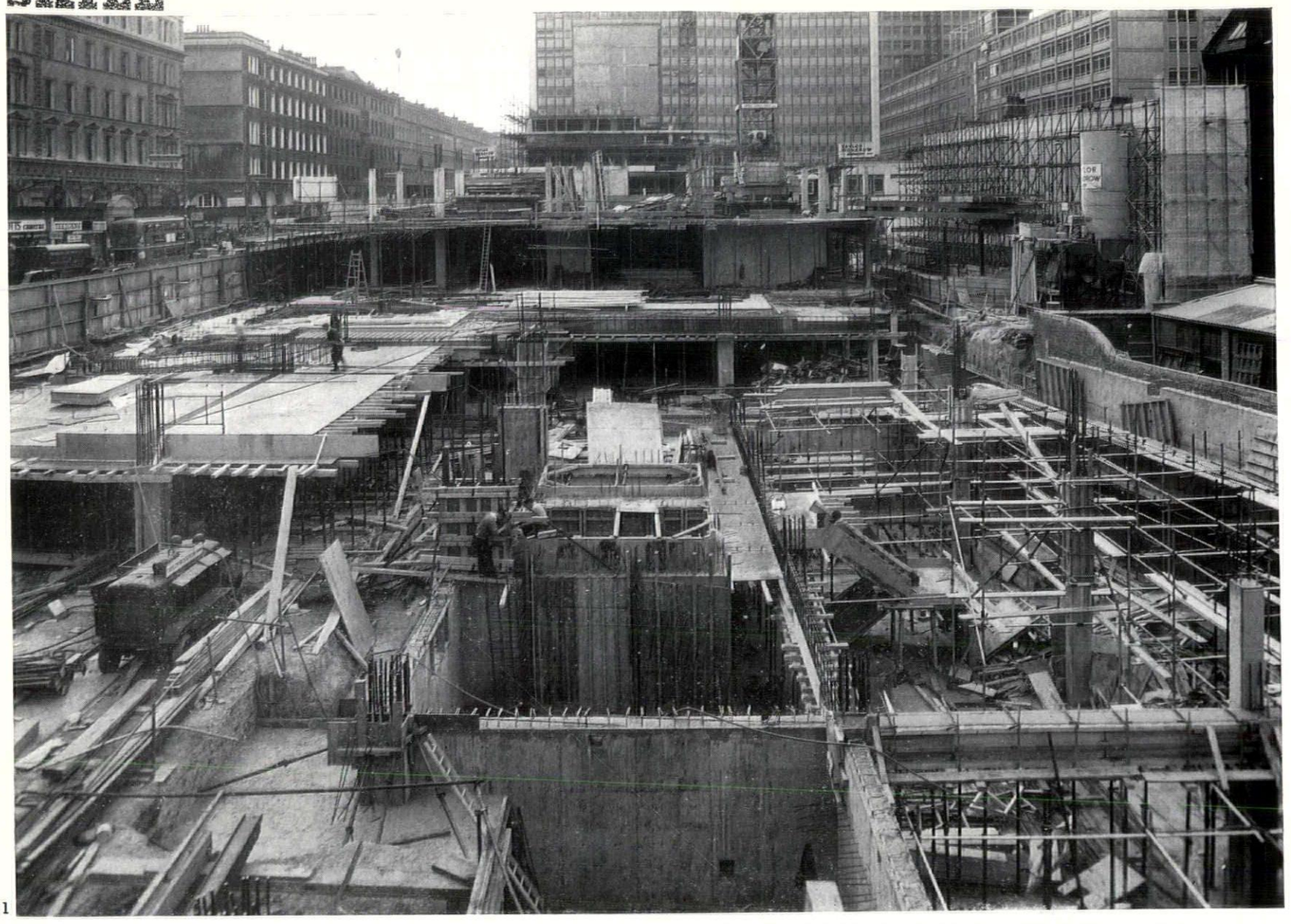
Shuttering for edge beams has been considered earlier and as far as simplicity is concerned the same general principles apply. In most cases of edge beam shuttering, however, a scaffold exists which can be of assistance during construction.

Shuttering for slabs

There are devious methods of providing formwork for slabs but the shuttering in most common use is that made up of the 8 ft. by 4 ft standard sheets of ¾ in. plywood laid on 4 in. by 3 in. bearers, resting on 6 in. by 3 in. runners and supported by adjustable props. The photograph, 1, shows this form of shuttering in the process of erection. It should be noted that the bearers are merely laid on the runners and the ply on the bearers, thus avoiding unnecessary damage to the timber by nailing and cutting.

Shuttering for retaining walls

When the design of shuttering for a retaining wall is under consideration, it should be remembered that most retaining walls are required to be waterproof. When this is the case, engineers talk strongly in favour of relying on good concrete to keep the water back. It is the author's opinion that good concrete in a retaining wall is as effective as, and more economical than, a retaining wall tanked with asphalt. A mix of concrete of 1 : 1½ : 3 in 'super' cement with a low water content vibrated with a high frequency



1, *slab, column, beam and wall construction in progress. Note the loose beams holding up the slab soffit, also the column clamps used in the free cast beam (bottom right-hand corner). In spite of the large quantities of shuttering material on the site, there is a considerable sense of order. Note, too, the compressor and air lines serving the vibrators.*

vibrator will, in the author's opinion, except under extreme pressures, keep the water back. It is, however, essential that proper supervision is given during the construction of such a wall and it is essential that the daywork joints have a proper water bar.

The agent will have to bear in mind, therefore, that each day's pour of concrete must be finished at the top and sides with a rebate to take the water bar which will most likely be in polythene. Therefore, each lift of shuttering with its rebated stop end should be to the height and length to take an average day's pour of concrete.

Under normal concreting conditions, whether the concrete is skipped in by crane or blown by a placer unit, a good average day's pour is 60 to 70 yards from one batching plant. At the end of the day, when the last concrete is being placed, the timber to form the rebate must be continuous of the length of the wall which has been concreted that day. When the toe to the retaining wall has been cast with a rebate for the water bar, a kicker must be formed with a rebate for the water bar, and on the kicker is placed the shuttering for the first lift. Each lift is then finished with a rebate for the water bar.

To provide a firm base for the shuttering to walls below ground, a 'dumpling of muck' is normally left in the centre of the site from which the struts can be punched. Struts can also be punched off mass foundations if they should form part of the engineering design.

Shuttering for walls

Shuttering for walls is the most difficult and costly form of shuttering. The shuttering for any form of reinforced concrete wall must start from a kicker, which is similar to that for columns but which is, of course, the length and thickness of the wall. It is advisable to cast bolts into the sides of the kicker for tying down the main shuttering which is inclined to lift during the placing and vibration of the concrete.

The formwork for walls should be made in panels as large as practicable, bearing in mind the lifting tackle available. Panels are generally made up of ¾ in. ply backed by 4 in. by 2 in. uprights with either 4 in. by 3 in. or 6 in. by 3 in. walers, depending on the size of the panel. All timbers should be bolted through to the shutter to avoid dismantling when the panels are being moved. A good example of wall shuttering can be seen in the photograph, 2, on the right-hand side of the picture.

The shuttering to each side of the wall to be cased is held in position with through bolts or ties. Often the bolts are threaded through a cardboard sleeve to render them recoverable. The whole shuttering system is then brought into an upright and plumbed position with the use of adjustable props or scaffolding.

In all shuttering operations the use of scaffold, which is required anyhow to get there, must not be overlooked.

PATENT SYSTEMS AND SPECIALIZED COMPONENTS

It is useful at the beginning of the job to make, in egg boxes or similar containers, innumerable small cubes of cement and sand with wire cast through them and trailing from them like shoe laces, for use as spacing pieces between the shuttering and reinforcing rods. The sizes of the cubes should vary and tally with the various thicknesses of concrete cover required to the steel, and they can be distributed along the shutter and can be wired to the steel, ensuring a uniform concrete cover to the thickness required.

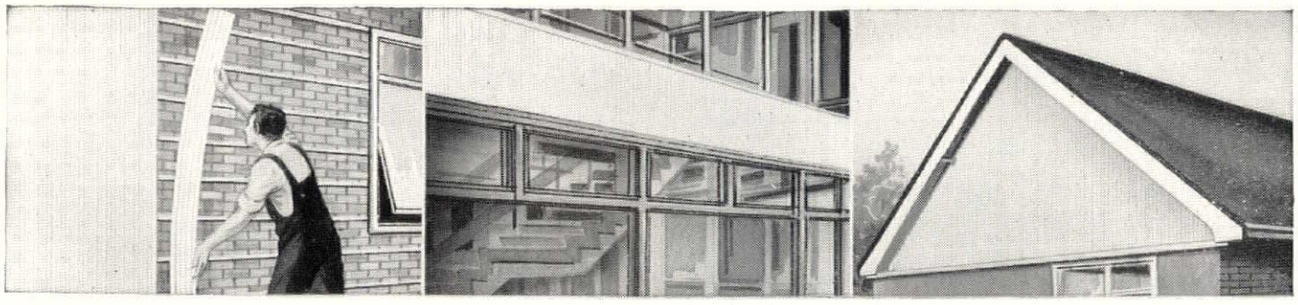
While it is common practice in conventional forms of shuttering to use manufactured components in conjunction with timber and plywood, certain complete systems of shuttering have been developed, made up almost entirely of manufactured parts. Plywood still plays a major part in these systems.

Patent forms of shuttering vary from complete factory fabrications to the manufacture of useful proprietary components for use with timber components and, when the job is planned, consideration should be given to the use of these systems of components from the point of view of economy and time saving.

In the following part of this article the author describes the various patent systems and some of the specialized components available.

Immediately after the war, when timber was scarce and costly, in the place of plywood a 24 in. by 24 in. pressed steel pan was much in use, so also was the ¼ in. steel plate welded to angles for stability. Large quantities of the pans were manufactured and many are still in use but this method of providing decking can only be used when a rough finish is required to the underside of the slab, as the pans are inclined to warp and get out of shape. Also, by the nature of their manufacture, they are slightly rounded at the edges and concrete penetrating the joints leaves a square pattern on the underside of the slab. Very often, too, the penetration of concrete grout around and between the pans is inclined to hold the pan to the soffit and, when the shuttering is struck, they are firmly stuck and are very difficult to remove. Although 'half pans' are manufactured, more often than not the edges of the decking have to be made up in plywood as

[continued on page 68



NEW AND MAINTENANCE FREE



The house, shop, office or factory that wants low cost good looks, calls for Marleyclad.
Made of toughened, rigid p.v.c. and specially designed to provide permanent decorative facings, it can be used economically over large areas.
Marleyclad is light and easy to fix. It can be drilled and sawn.
Being rot and weather proof it is maintenance free—especially important to those wishing to cut constantly recurring costs of painting and decorating.
Marleyclad can be used in all types of building, shop fitting and decorating, interior and exterior.
It also has countless applications in furnishing, displays, exhibitions etc.
Moneywise too—things look better 'Marleyclad'.

TECHNICAL DATA:
Weight: 8 ozs. per sq. ft. (approx)
Flame spread: No spread of flame. Self extinguishing.
Thermal expansion: 0.043 ins/ft. 100°F, rise in temp.
Colour: White
Size: 8″ cover width. Up to 20′ in stock. Other lengths to order.

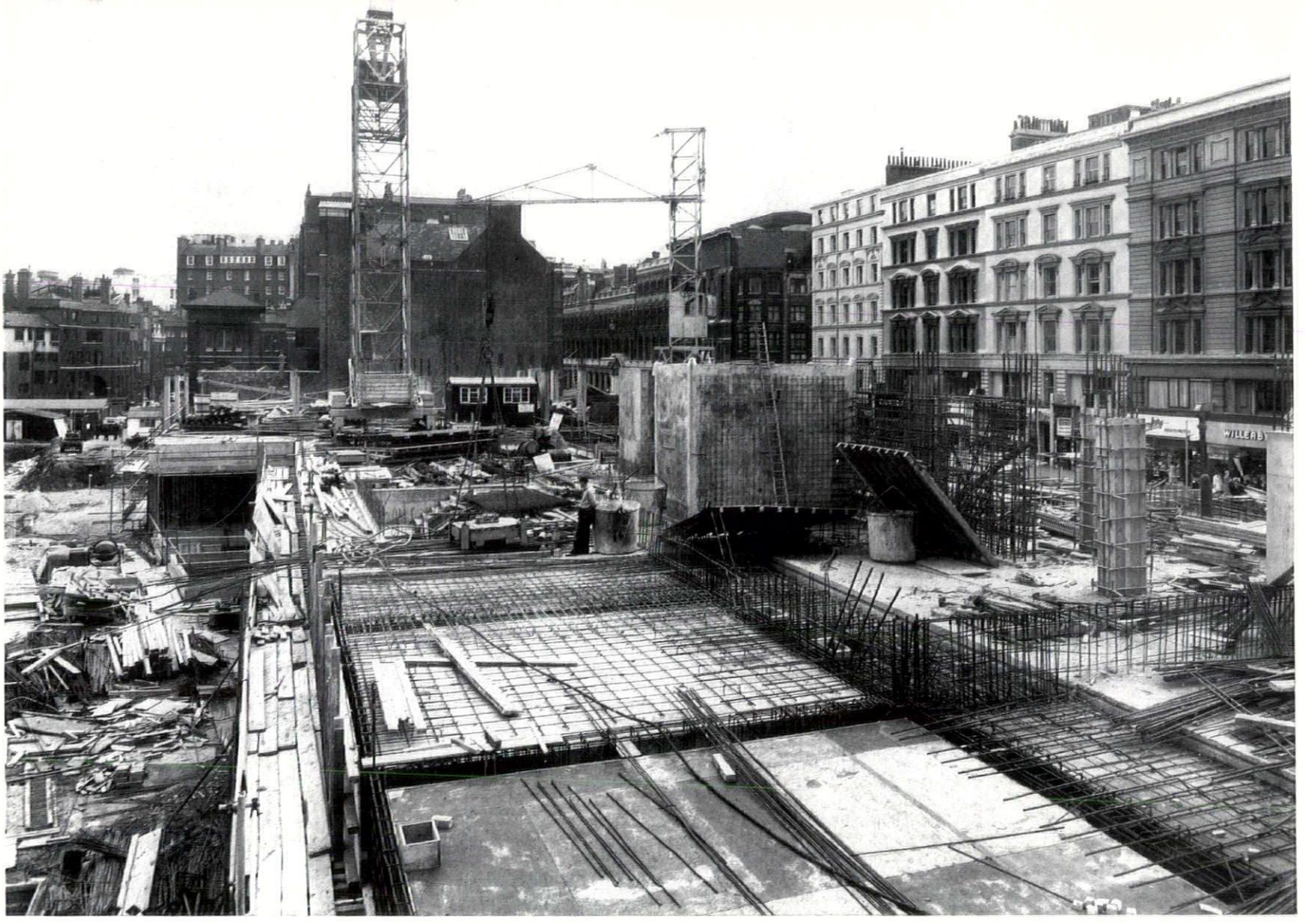
MARLEY clad

Permanent decorative vinyl cladding

Further information from:

MARLEY SEVENOAKS · KENT · TEL: SEVENOAKS 55255

London Showrooms: 251 Tottenham Court Road, W.1. Barbour Index No. 372. Gorco Bureau Section 17/6.



2

continued from page 66]
concrete bays are seldom to the 24 in. module of the pan.

The adjustable prop

Probably the most valuable labour-saving device to be invented for use in shuttering is the steel adjustable prop, commonly called the 'Acrow' prop in the industry, yet Acrow Engineers Ltd. are by no means the only manufacturers. The prop has two adjustments, a telescopic adjustment by which it is quickly set to approximate length and secured by means of a metal pin, and the final adjustment by means of a worm thread which is capable of adjustment to a fraction of an inch.

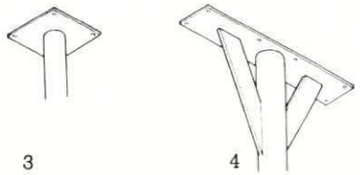
Apart from a hundred and one other uses, the prop has become almost indispensible to shuttering operations. It can be used satisfactorily as a free-standing support for a lift of anything up to 16 ft. Beyond this limit, however, it will require lateral bracing which can be provided in various ways.

Certain high lift props are manufactured which are fitted with slots rather like a clover leaf, positioned just below the adjustable thread and into these slots can be fitted specially manufactured diagonal bracings. The bracings are provided with bosses at the ends which drop into the slots on the props forming a 'birdcage' or to be more descriptive, a 'spider's web.' Where these bracings are not available, scaffold and tube couplings can be used. Sometimes, however, there is a preference to build a birdcage scaffold on the slab last cast with a decking sufficiently high to allow the normal props under 16 ft. in length to be used.

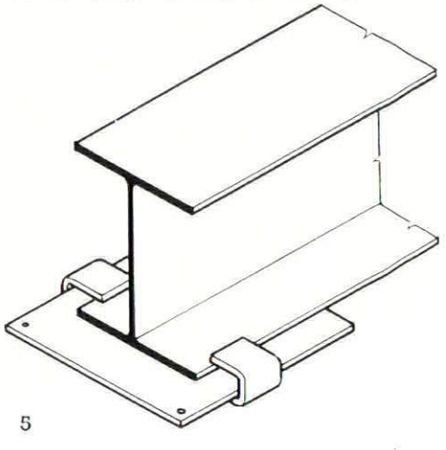
Special head pieces can be fitted to the prop to allow for various uses, 3 and 4. With its range of use widened by adaptation of these components, it follows that the adjustable prop forms the basis for support in many types of patent shuttering methods. One of these methods is the V-form system of

[continued on page 70

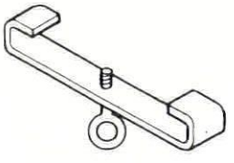
2, wall shuttering ready for positioning, a column shuttered and held with column clamps on the right, also reinforcing rods being fixed for slabs and upstand beams. Cranes, as can be seen, also carry 'small loads.'
3, the standard square top plate with four holes for fixing.
4, the head of a beam prop.

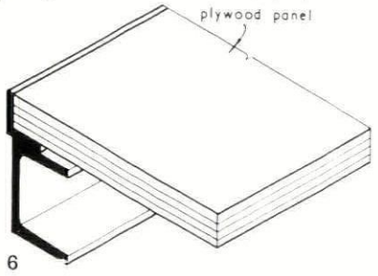


3 4

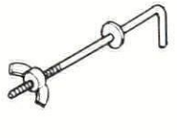


5





6



7

5, the registering holes in the plate at the head of the prop ensure the automatic location of the support beams, consisting of 6 in. by 4 in. joists fitted with steel pins for automatic location to the prop head plates below and the form panels above. The clip holds the form panel and prevents it rising.
6, the frame of the form panel is a steel channel with a steel angle for securing the ply panel welded to it. The ply can be reversed in the frame giving it a double usage.
7, the anchor hook to hold up the slab panel during striking.

Ibstock FACING BRICKS make this fine new building





Photographs Nicholas Horne, Totnes.

The Royal Sailors' Rest Home

Albert Road, DEVONPORT

is an outstanding example of modern brick construction, faced as it is with Ibstock Facing Bricks. Pleasant appearance, durability and economy are combined with a large colour range.

Architects: Fouracre & Luxton.
Merchants: J. W. Truman.
Builders: Hill & Lang (Plymouth) Ltd.
Bricks: 2⅝" Best Handmade Multi Golden Brown Sandstocks.

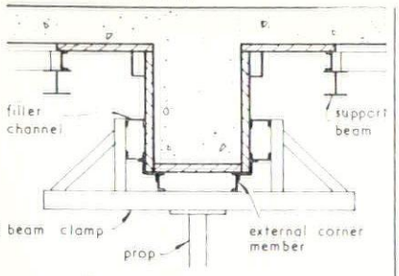
Most machine made bricks are readily available—but handmade bricks are in short supply and all orders should be placed as far ahead as possible. We are, of course, anxious to receive enquiries for future deliveries and shall be happy to make reservations against architects' specifications.

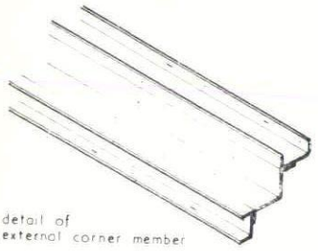
Send for full details and sample

Ibstock FACING BRICKS

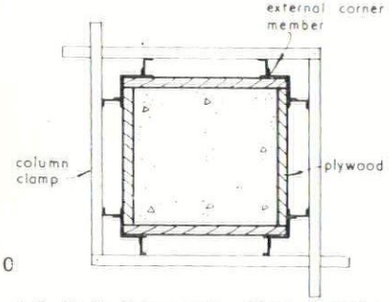
THE IBSTOCK BRICK & TILE COMPANY LIMITED, Ibstock near Leicester. Telephone: Ibstock 531
London: B.R. Goods Depot, Wright's Lane, Kensington, W.8. Telephone: Western 1281

continued from page 68]



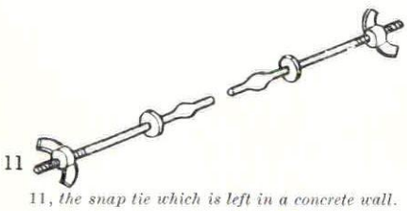


9 detail of external corner member



10

8, 9, 10, *the V-form system of beam shuttering.*



11

11, *the snap tie which is left in a concrete wall.*

formwork in which all the components are manufactured. For shuttering for slabs these consist of the prop, the support beam, the form panel and the clip, 5 and 6. Although the form panels are made in a variety of sizes, the rigid module of the manufactured components makes the layout of supports to the shuttering less flexible than in the conventional method. The positioning of the lines of props should, therefore, be carefully plotted on the plans before erection starts.

When erection does start it is necessary to brace the initial area of props with horizontal scaffold tube supported from existing columns, but once this area is decked down the support beams and decking can be extended without further bracing.

To facilitate the striking operation slab anchor hooks, 7, should be inserted into the holes in the form panels before the concrete is poured and the butterfly nut made finger tight with the hook projecting above the slab shutter. Then, after the concrete has cured sufficiently, the shuttering can be struck by the following method:

The tubular bracing is removed and a mobile scaffold erected between the lines of props. The props should then be slightly lowered, releasing the supporting beams. The panels are, however, retained in position by the slab anchor hooks, and, therefore, the supporting beams can be lowered and the props removed leaving the panels held up by the slab anchor hooks. The form panels can then be taken down one at a time as a separate operation by undoing the wing nuts to the anchor hooks. By this method there is no 'crash' striking, and damage to the shuttering is reduced to an absolute minimum which is, of course, essential as the panels have to be used again.

The portions of the slab anchor hooks which still remain projecting from the underside of the slab can be utilized, if required, for fixing strap hangers for false ceilings, pipe work, ventilation fittings and electrical trays.

When the V-form system is used for beams, the shutter itself is formed of plywood but is held in position by manufactured components. These consist of the beam clamp, the external corner members and the filler channels, all supported by the adjustable prop, 8 and 9.

In shuttering for columns the sides are of plywood supported at the corners by external corner members. The sides can be given extra support, if required, with filler channels. The whole of the formwork is then secured with column clamps, 9 and 10.

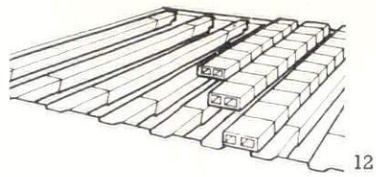
The form panel already described in shuttering for slabs can also be used in shuttering for walls, fastened together with a special clip, the walings being of scaffold tube. Provision is made in the centre stiffeners of the form panels for housing snap ties, 12. The components of this particular kind of patent shuttering system can be used for varying purposes, apart from those described and illustrated.

A new form of shuttering to be known as U-form is at present in process of development. Insufficient information is available, however, for the details to be published in this issue.

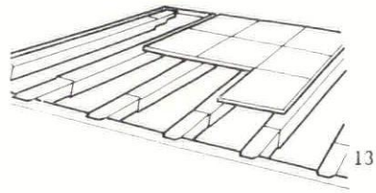
Another method of shuttering for slabs is with the use of telescopic floor centres. These, in a box section, are manufactured by various engineering companies and consist of a centre portion with two sliding end portions. They are manufactured in various sizes allowing for a minimum span of 4 ft. and a maximum span of 17 ft. 6 in., and can be used in various ways as illustrated in 12, 13 and 14.

The box section floor centre has the disadvantage of being heavy to handle, is cumbersome in adjustment and difficult to strike. There is, however, telescopic floor centring

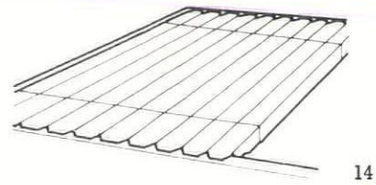
[continued on page 72



12



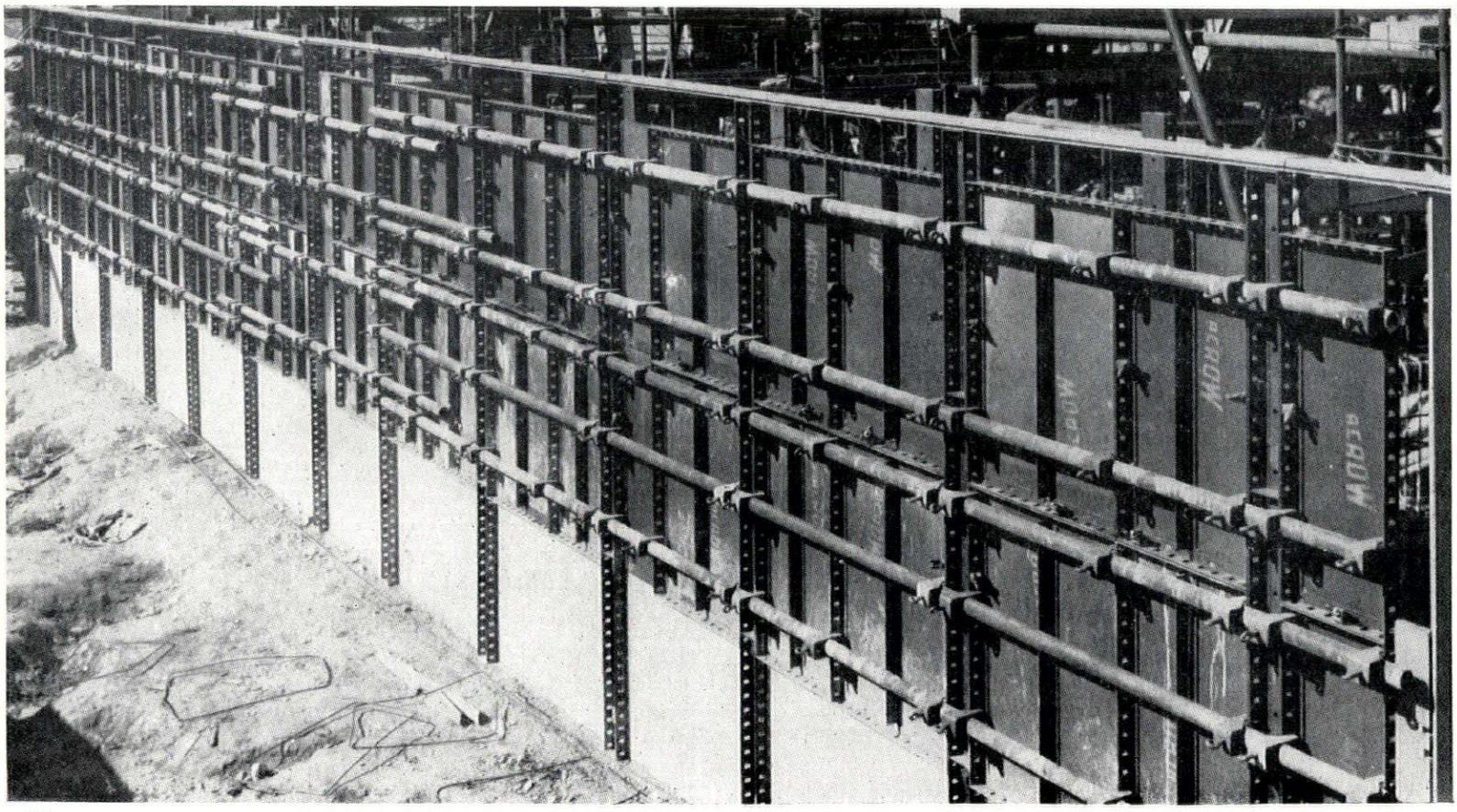
13



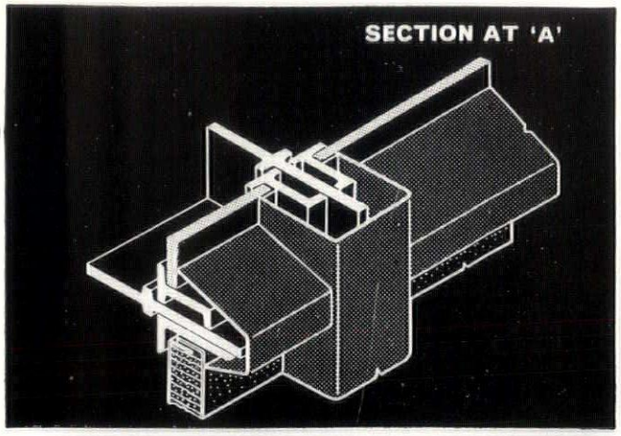
14

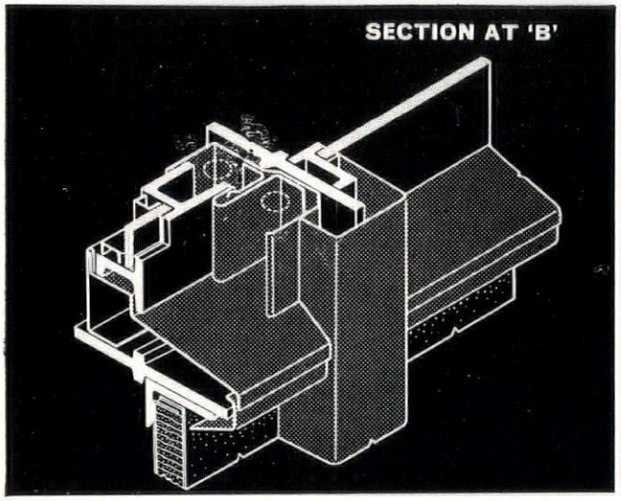
12, *the floor centring spaced to receive the hollow pots in a pot floor construction. Slip ties will be laid between the rows of pots as spacing pieces and the steel reinforcement will be fixed in the channels so formed. The floor is then ready for concreting.*
13, *the floor centring used to support the decking for a reinforced concrete floor.*
14, *the floor centres forming the decking in themselves.*

15, *the wall form system as a* 6 *ft. set-up in conjunction with* 10 *ft. channel soldiers for standard application of double sided formwork.*



15





STAINLESS STEEL IN ARCHITECTURAL DESIGN

OFFICES FOR PFIZER LTD · SANDWICH · KENT

F. A. Reed and Partners: Chartered Surveyors
Stainless steel clad Holoform window walling
by The Morris Singer Company Limited

The double-hung sashes made from M.S. universal casement sections, are set within a frame constructed from pressed, polished stainless steel sections. The stainless steel used for this framework is Silver Fox 316, a molybdenum bearing quality which resists surface deterioration in marine atmospheres and is expected to give an impression of high quality and finish throughout the entire life of the building.

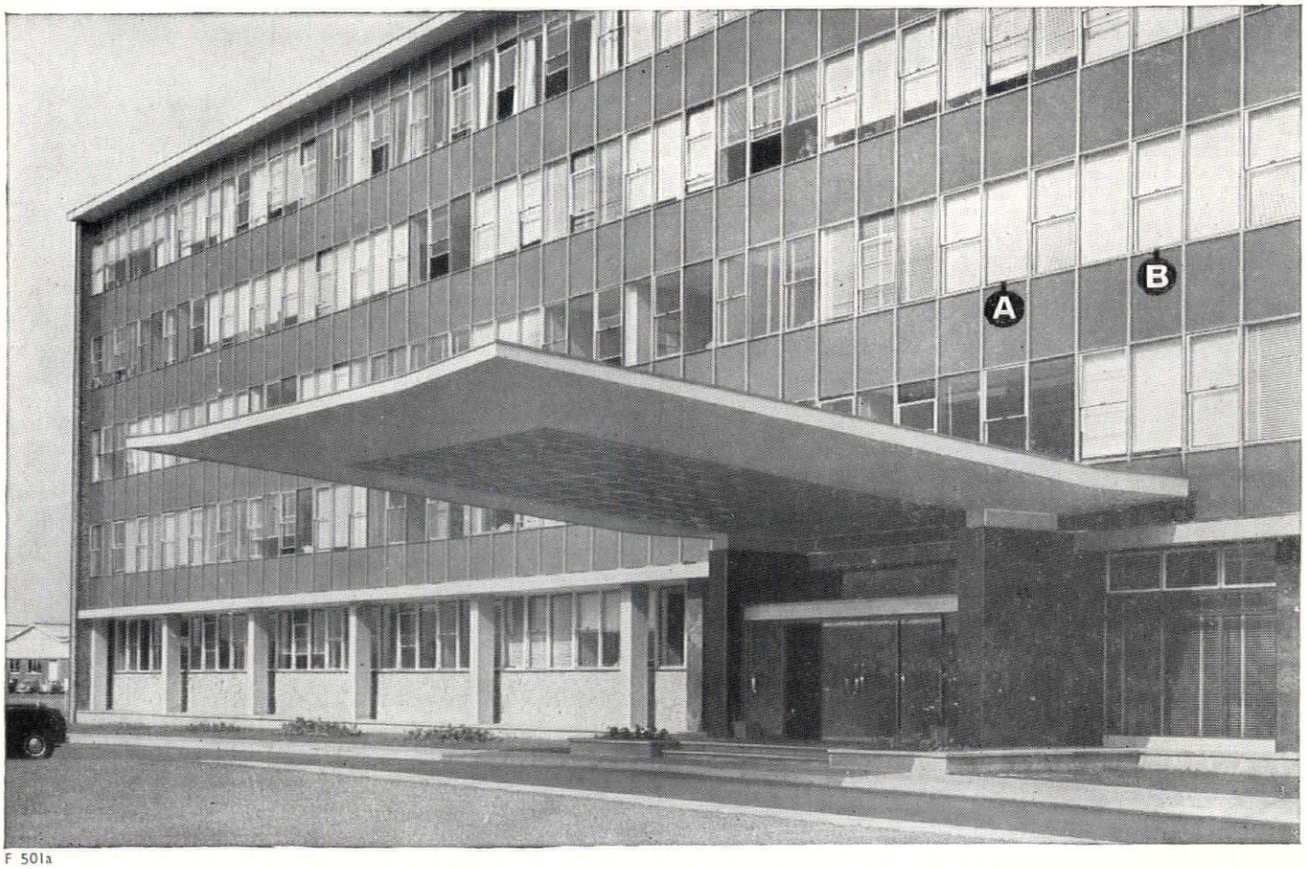
Write today for the 40-page brochure "Stainless Steel in Architectural Design" ref. no. SF 469.

'SILVER FOX' STAINLESS STEEL

samuel fox & company limited

STOCKSBRIDGE WORKS · SHEFFIELD

A subsidiary of The United Steel Companies Ltd.



F 501a

continued from page 70]
manufactured on the lightweight lattice girder principle which performs the same function but which is altogether easier to handle. Some are manufactured from high tensile steel. The range of span for this type of centring is from 8 ft. to 22 ft. Some types are manufactured allowing for nailing strip to be fitted to the upper edge.

There is a further system, known as the wall form system which, although used primarily for walls, can also be used for columns, beams and floor slabs. This system, when used in walls, can be used as a single lift, climbing, single sided and double sided. It can also be used for walls which are circular on plan. The main components consist of panels, corner angles, soldiers and fixing clips. Scaffold tubes are used as walings.

These panels are made of perforated rolled steel angle welded to a plate. Corner angles and soldiers are of similar perforated angle, rather like Meccano. The panels are connected by fixing clips of varying design. The assembly is illustrated in 15 which shows a 6 ft. set-up in conjunction with 10 ft. channel soldiers for standard application of double sided formwork. Note the scaffold tube splicing to maintain the continuous alignment of the complete assembly. Correct wall thicknesses are being maintained between opposite soldiers by wall ties for which holes are provided in the soldiers. Panels and soldiers are all held together by clips. The scaffold tube walings are also held to the soldiers and panels by clips.

When the pour is complete each section of the complete assembly is lifted by crane or other lifting tackle, the tie bolts having previously been removed. The complete assembly is then repositioned with the bottom flanges of the panel 6 in. below the top of the previous pour. The soldiers are then rebolted into ties which have been cast into the previous pour for this purpose. The panel components of this system can also be used for the decking out of slabs and in some instances for shuttering to beams and columns.

Mention has been made of wall ties and also cones and bolts in connection with shuttering construction for reinforced concrete walls. Irrespective of the type of shuttering used, wall ties play an indispensible role in stabilizing the wall shuttering.

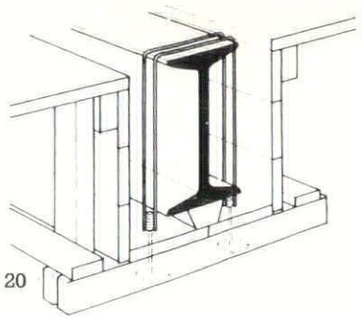
The conventional way of bolting the shuttering through a wall is to cut a short cardboard tube to length with a cone either end with the bolt holding the shuttering together passing through cones and tube, 17. This is a cumbersome method and it is not always possible to withdraw the bolt. Patent fittings are, however, manufactured as formwork ties which consist of ties, bolts, cones and washers. Ties, cones and bolts are obtainable in varying lengths depending on the thickness of the wall to be cast, 17.

Loops can be used for securing single sided formwork in which the cones and bolts are similar to those for ties, 18. When the shuttering is to be struck the bolts are undone, the washers removed and the shuttering taken away. This leaves the tie and the cone. The cone is removable; the tie, however, remains embedded in the concrete and the hole left by the cone is made good.

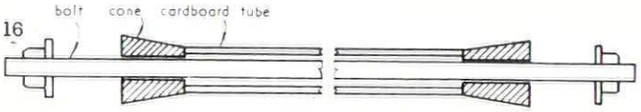
Another manufactured component in common use is the column clamp There are many designs of column clamp, not all of which can be illustrated. One type, however, is shown for reference in 19.

Reference has previously been made to shuttering for concrete cover to steel framed buildings. Due, however, to the rolled steel joists being structural in themselves, it is possible to hang the beam casing shutter from the steel itself, 20, and the illustration shows one method of doing this. In the components used the bolts are of standard length, but the straps are manufactured to suit the various sizes of joists or girders available.

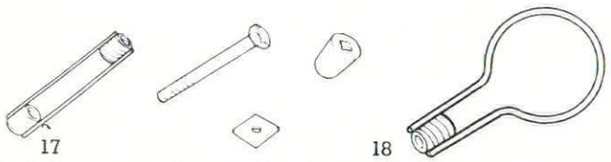
Finally, it can be seen that the thoughts of a contractor engaged in the erection of a reinforced concrete building must concentrate not only on steel and concrete but to a greater degree on shuttering: economy in time and money depends to a very large extent on the contractor's knowledge of shuttering methods and his ability to employ his shuttering hands economically. This should not, however, start with the contractor. If the architect and engineer have designed with shuttering problems in mind, economy by simplification will be the result. A study, too, of the whole science of formwork in all its intricacies and eccentricities raises the question: What can we do to eliminate this arduous and costly procedure? Surely there must be a way?



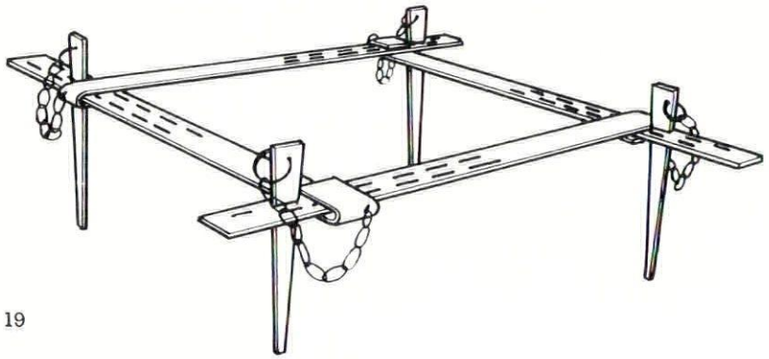
20, *method of hanging the beam casing to an rsj.*



16, *bolt, cones and cardboard tube. The bolt holds the shuttering on either side of the concrete wall. When the shuttering is struck the nuts are undone, the bolt and cones are removed leaving the tube.*



17, *bolt, cone and tie. When the shuttering is struck the bolts and cones are removed leaving the tie embedded in the concrete.* 18, *the loop which, again, is left embedded in the concrete.*



19, *a column clamp which is in everyday use.*

THE INDUSTRY

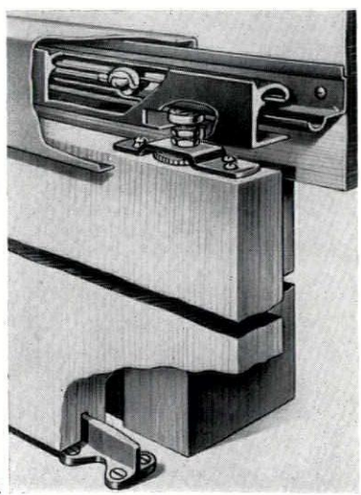
Sliding door gear

The range of sliding door gear available on the market is almost confusingly wide, ranging from large heavy industrial gear to fibre channels for small cupboard doors. Additions to this varied choice are still to be welcomed as each new type can usually be said to answer some outstanding problem be it only silence of operation.

In its detail the new 'Twynball' gear by King, 1, can claim to add its own modicum of development to systems designed for use with light interior doors. Designed for quiet running, positive operation and easy installation, the equipment will handle such doors up to 3 ft. wide. Basically it comprises two large diameter steel balls running within a nylon cage and connected by a steel linking rod. These are located in the door carriage and run in the main track. Both carriage and track are extrusions of aluminium. Bottom guiding is achieved by a diecast aluminium floor guide running in a groove cut in the bottom edge of the door or, alternatively, by a fibre floor guide running in a galvanized steel channel let into the door.

The main advantages claimed for this gear are the absence of open bearings to collect dust, smooth and quiet operation and minimum maintenance.

Geo. W. King Ltd., Stevenage, Herts.



Aluminium finishes

In the Skill article on aluminium in the April REVIEW mention was made of the various finishes which could be applied to the metal for either decorative or protective purposes. These were, of course, the finishes generally accepted as standard. At the exhibition organized the same month by British Aluminium a new type of finish was shown which does not come under any of the usual categories. This is Bondene coating.

Bondene is a p.v.c. laminate film, twelve-thousandths of an inch thick, bonded to the aluminium sheet to provide a tough inert coloured finish. The surface is embossed and several patterns such as leather-grain, woodgrain and marbling are available, but, of course, in the plain colours generally provided differences between embossing patterns will tend to be revealed only as slight variations in texture.

Ten standard colours are available, varying from white through cream, grey, yellow, red, blue and green to black. As is usual with flexible p.v.c. materials, these colours are all clear and bright and no doubt, used with taste, can provide interesting colour effects. The textured opacity of these colours could contrast well in flat or formed panels with a framework of ribs having the clear sparkling finish of anodizing. Although the range is confined to these plain colours, alternatives can be obtained on quantities exceeding 25,000 sq. ft. either in other plain colours or in multi-colour patterns.

The coating is normally applied to one side only, but coating of both faces can be done if required. After coating, adhesion is sufficiently strong to enable work to be done on the sheet such as pressing, punching, shearing, drilling, bending or corrugation. Thus several of the Rigidal standard profiles can be obtained Bondene coated. These include the 'Classic,' the 'Trough,' the 'Mansard' and the '3 in. Pitch' profiles. In flat sheet it can be had on thicknesses from 24 gauge to 14 gauge up to 48 in. wide and 12 to 25 ft. long according to thickness. It is claimed that most standard alloys used for sheet products will accept the finish but, if it is intended to use it with a particular alloy it might be advisable to check on suitability.

[continued on page 74



Staff Restaurant, Mezzanine, New Zealand House

New Zealand House–
Establishment Furniture

Geo. M. Hammer & Co. Ltd. are proud to have supplied the Establishment Furniture to the order of the High Commissioner for New Zealand in London.

Designed by the Architects, Robert Matthew, Johnson-Marshall and Partners, many hundreds of Desks; Side Units; Magazine, Committee, Dining and Side Tables; Bookcases and Bookcase Cabinets; Lockers and Wardrobes, beautifully fashioned from Mansonia, were supplied. The Desks and Committee Tables have black lino tops and the Dining Tables are veneered and finished with heat, acid and spirit resisting lacquer.

Geo. M. Hammer & Co. Ltd.

SPECIALISTS IN LIBRARY, LABORATORY, OFFICE & CHURCH FURNITURE

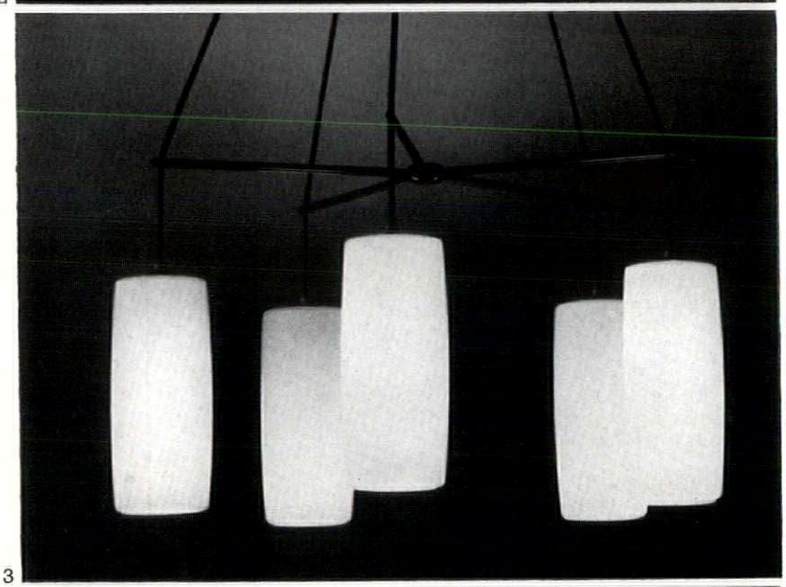
Craftsmen in woodwork since 1858

Catalogue of 'U' Range Office Furniture designed by Sir Basil Spence, OM, RA, PPRIBA on request

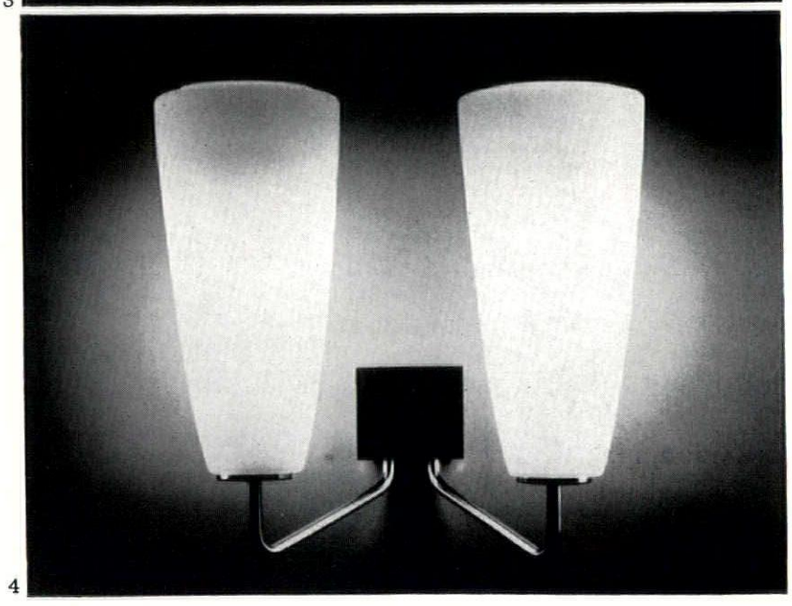
Crown Works, Hermitage Road, Harringay, London, N.4. STAmford Hill 6691-2



2



3



4

continued from page 72]

Although the manufacturers claim suitability for external applications and no doubt their confidence is justified in view of experience in the weathering of p.v.c. materials already known, some architects may have misgivings about how these highly coloured soft textured surfaces will react to the normal begriming effect of our urban atmospheres. The manufacturers might do well to consider this point in any information they issue and accompany it with recommendations as to cleaning.

When used externally, fixing accessories such as p.v.c. washers and top-hats can be supplied to match.

*The British Aluminium Co. Ltd., Norfolk House, St. James's Square, London, S.W.*1.

Lighting fittings

The opal glass diffuser in light fittings for decorative purposes is understandably popular and the new Opalight B range by Merchant Adventurers Ltd. forms a useful addition to the designer's choice. There are nine shapes in the range illustrated fully in 2 offering a variety of character to meet most needs. With these nine shapes on single, twin, 3- and 5-light pendants and brackets, possible permutations are obviously extensive—the manufacturers claim over 250—and two of these are illustrated in 3 and 4.

The glasses are of three-ply white opal glass with a satin etched matt surface, and metalwork is of aluminium anodized pale gold or satin silver with spreaders available in aluminium or oiled teak. Special mountings are also available to provide ring, straight line or free groupings and a technical advisory service is also offered to assist in designing fittings or complete schemes.

The range is fully illustrated in a new catalogue issued by the manufacturers.

Merchant Adventurers Ltd., Hampton Road West, Feltham, Middlesex.

CONTRACTORS etc

New Zealand House, London. *Architects:* Robert Matthew, Johnson-Marshall & Partners. *General contractors:* Holland and Hannen & Cubitts Ltd. *Sub-contractors: Terrazzo:* Alpha Mosaic & Terrazzo Co. *Curtain tracks:* J. Avery & Co. *Strip hardwood flooring:* Acme Flooring & Paving Co. *Air-conditioning services, kitchen equipment:* Benham & Sons Ltd. *Collapsible shutters:* G. Brady & Co. *Machine bored piles:* Braithwaite Foundation & Construction Co. *Curtain manufacturers:* Binder & Kindersley Ltd. *Dewatering:* Blaw Knox Ltd. *Strong room:* Chubb & Son's Lock & Safe Co. *Ceiling suspension:* Campbell Denis Ltd. *Glass:* James Clark & Eaton Ltd. *Sprayed vermiculite:* Collins (Contractors) Ltd. *Carpet laying:* Carpet Layers Ltd. *Internal planting:* Coverwood Nurseries: *Doors, joinery and special furniture:* Samuel Elliott & John P. White Ltd. *Bank hoist:* Evans Lifts Ltd. *Spiral escape staircases:* S. W. Farmer & Son Ltd. *External windows, air-conditioning convectors, balustrades in public areas, external third floor and penthouse balustrade:* Gardiner, Sons & Co. *Stainless steel columns, stainless steel skirtings and fascias, anodized aluminium canopy:* Grundy, Arnatt Ltd. *Internal glazed screens and doors:* James Gibbons Ltd. *Cork and linoleum rubber floorings:* Haskel Robertson Ltd. *Demountable partitions and fire-resisting partitions:* Holoplast Ltd. *Plumbing:* Matthew Hall & Co. *Sliding door tracks:* P. C. Henderson Ltd. *Fire shutters:* Haskins Ltd. *Faience:* Hathernware Ltd. *Aluminium balustrade to stair No.* 11*:* G. Johnson Bros. Ltd. *Plastering:* Jonathan James Ltd. *York stone paving:* William Knight & Co. *Precast concrete paving:* J. Murphy & Son Ltd. *Granolithic paving:* Malcolm McLeod & Co. *Insulation:* Newalls Insulation Co. *Lifts:* Otis Elevator Co. *Fibrous plaster ceilings and tiled ceilings:* Petradene Ltd. *Balustrades (escape stairways, second floor courtyard and service areas):* T. W. Palmer & Co. *Window cleaning track:* Palmer's Travelling Cradle & Scaffold Co. *Glazed wall tiling:* Parkinsons Wall Tiling Ltd. *Damp-proof membranes and sheeting:* Ruberoid Co. *Steel reinforcement:* Rom River Co. *Projection equipment:* Rank Precision Industries Ltd. *Waterproof rendering:* Sealers Ltd. *Slate paving:* Setchell & Co. *Venetian blinds:* Stilsound Vertical Blinds Ltd. *Document elevator:* Sovex Ltd. *Marble paving and linings:* J. Whitehead & Sons Ltd. *Electrical services:* Troughton & Young (Electrical) Ltd. *Portland stone facings and pavings:* Wandsworth Stonemasonry Co. *External planting:* William Wood & Son Ltd. *Chairs, sofas, benches, tables:* Carlsson (Ekselius); Christensen (Kjaerholm). *Curtain materials, chairs, tables:* Finmar Ltd. *Chairs, tables:* C. W. F. France & Son Ltd. *Chairs:* Scandia. *Carpets:* Carpet Distributors (New Zealand) Ltd. *Office furniture:* Geo. M. Hammer & Co. *Furniture:* L. M. Furniture Ltd. *Tackless carpet gripper:* Roberts Smoothedge Ltd. *Fireclay ware and fittings:* Adamsez Ltd. *Spiral staircases:* The Birmingham Guild Ltd. *Paints:* Lewis Berger Ltd.; Docker Bros. Ltd. *Galvanized soil drainage:* Econa Ltd. *Light fittings extract units:* Fulford-Brown Bros. Ltd. *Lense lights:* Luxfer Ltd. *N.Z. timbers and veneers:* William Mallinson & Sons Ltd. *Pre-cast concrete plant tubs:* Mono Concrete Co.

Farm at Fulmer, Bucks. *Architects:* David Dry, K. Halasz and Associates. *General contractor:* William Bigg Ltd.

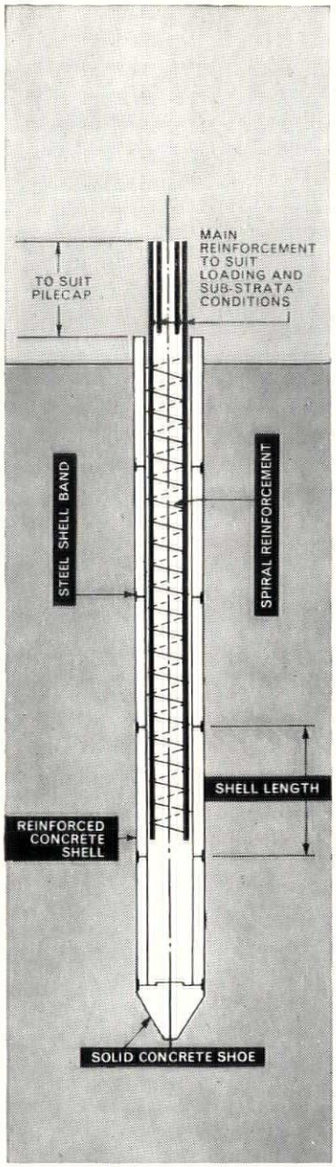
Three Restaurants in London. *Architect:* Lucas Mellinger.

'The Sands', New Bond Street. *Sub-contractors: Plenum system:* Andrew Air Conditioning Ltd. *Gibson clocks:* Baume & Co. *Decorative plasterwork:* Clark & Fenn Ltd. *Cut-out lettering:* The Lettering Centre. *Service lifts:* A. Marshall Hunt (Bristol) Ltd. *Mosaic and terrazzo:* The Mosaic & Terrazzo Precast Co. (Staines) Ltd. *Vinyl flooring:* James Halstead Ltd. *Catering equipment:* Oliver Tom's Ltd. *Water softener:* Permutit. *Door handles:* H. Paul Roberts. *Carpeting:* Turberville, Smith & Sons Ltd.

'The Rice Bowl', Edgware Road. *Chairs:* Stafford Furniture. *Cooking equipment and ventilation:* Benham & Sons Ltd. *Service lift:* A. Marshall Hunt (Bristol) Ltd. *Verplex glass fibre laminate:* Universal Laminated Plastics Ltd. *Vinyl flooring:* James Halstead Ltd. *Wickerwork lampshades:* G. W. Scott & Sons Ltd.

'Wayang', Earls Court Road. *Decorative plyglass panels:* Plyglass Ltd. *Dress curtains:* Primavera. *Loose furniture:* Conran Furniture Ltd. *Sliding glass windows:* P. G. Allday & Co. *Accoflex wall tiling:* Armstrong Cork Co. *Bench seating:* John Lewis & Co. *Mural photographs:* Autotype Co. *Laminated timber roof:* H. Newsum & Sons Ltd.

CONSIDER THESE



ADVANTAGES OF WEST'S *SHELL* PILING

combining the principles of pre-cast and cast in-situ Piling.

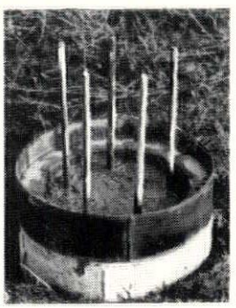
Taking a set; Pile is hammer-driven to correct dynamic set, ensuring that it is driven to the exact depth required for the load.



Fatigue-free pile core is cast in-situ, after completion of driving. Reinforcement and concrete mix can be varied to suit loading requirements.

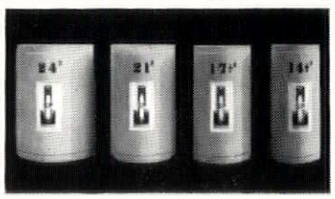


No waste or costly cutting of pile heads—only top shell protrusion need be cut, and core trimmed. Pile extension while driving is a basic operation.



External dia.	Core dia.	Shell length	Normal loading ranges (tons)*
24 in.	19 in.	3 ft.	100–200
20/21 in.	15 in.		75–120
17½ in.	12 in.		50–80
14½/15 in.	10⅞ in.		up to 60

*Depending on length and sub-strata



These facts emphasize the basic feature of West's Shell Piling System: the pile is firmly driven to a secure set but there is no fatigue in the pile core—a double assurance of stability. West's Shell Piles have proved their efficiency under all site conditions and for all types of structure. Early consultation with our Design Department is recommended to ensure the provision of the most suitable scheme for your soil and load conditions.

Our latest publication "West's Shell Piling" gives full details of our comprehensive foundation service. Please write for a copy.

WEST'S PILING

the foundation of stability

WEST'S PILING AND CONSTRUCTION CO. LTD.
Bath Road, Harmondsworth, Middlesex.
TEL : SKYPORT 5222. TELEX : 21819 WESTPILE. LONDON.
Branches in London, Bristol, Birmingham, Manchester, Newark, Stratford-by-Bow, Glasgow, Belfast, Rome, Singapore.
Australasia: West's Shell Piling (A/sia) Pty Ltd., Melbourne, Sydney, Adelaide and Wellington, N.Z.
South Africa: P. R. Wade & Co. (Pty.) Ltd. Durban. France: Carbonisation Entreprise et Ceramique, Paris.
A MEMBER OF WEST'S GROUP OF INDUSTRIES

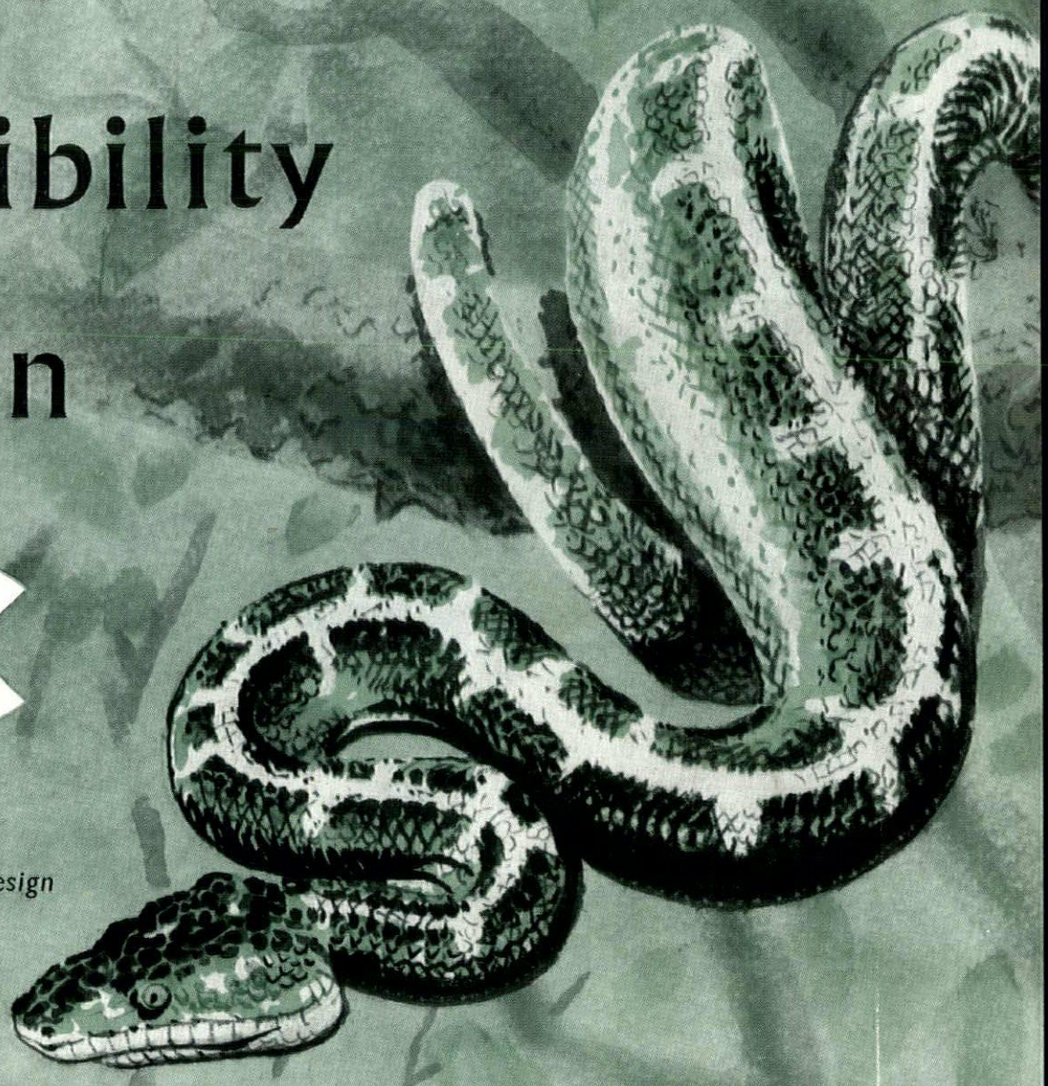
D64

Printed in Great Britain for the Proprietors of "The Architects' Journal," of "The Architectural Review," and of "Specification" (The Architectural Press, Ltd.) 9-13, Queen Anne's Gate, Westminster, S.W.1, by Knapp, Drewett & Sons Ltd., by appointment to Her Majesty the Queen, Printers, Kingston-on-Thames.
Editorial illustrations engraved by The Engravers Guild Ltd., Windsor House, 23/26, Cursitor Street, London, E.C.4.
Entered in the New York Post Office as Second Class Matter

Reinforced Concrete for flexibility in design

BRC

Specialists in Reinforced Concrete Design and Suppliers of Reinforcement



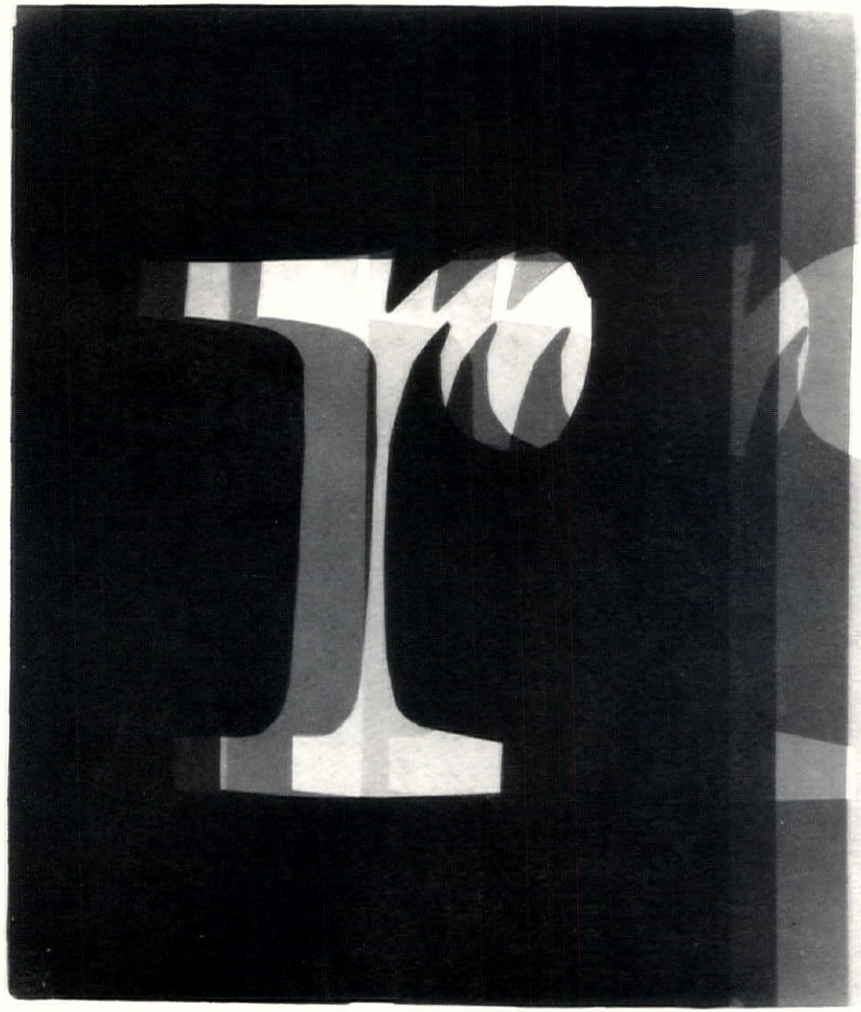
THE BRITISH REINFORCED CONCRETE ENGINEERING CO. LTD., STAFFORD

London, Birmingham, Bristol, Chelmsford, Leeds, Leicester, Liverpool, Manchester, Newcastle, Cardiff, Glasgow, Dublin, Belfast, Bulawayo, Calcutta, Johannesburg, Lagos, Singapore, Vancouver.

Export Sales: 54 Grosvenor Street, London, W.1

H-W.1077





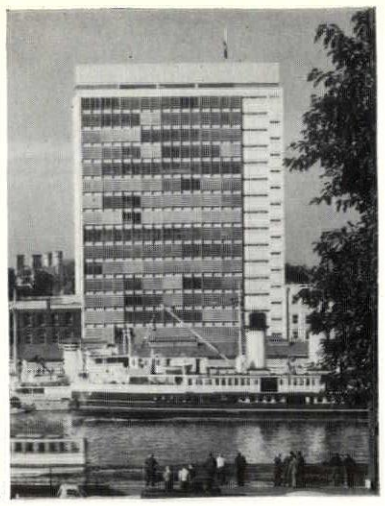
THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 798 AUGUST 1963 FIVE SHILLINGS

Design for business 'Artifort' is a name synonymous with Europe's most advanced furniture design and techniques. ☐ These chairs by Geoffrey Harcourt are from the superlative 'Artifort' collection and may be seen at DRUCE of Baker Street, together with other 'Artifort' products designed by Pierre Paulin, Kho Liang le and Theo Ruth.



DRUCE of Baker Street

Druce of Baker Street, London, W.1. WELbeck 4488



1

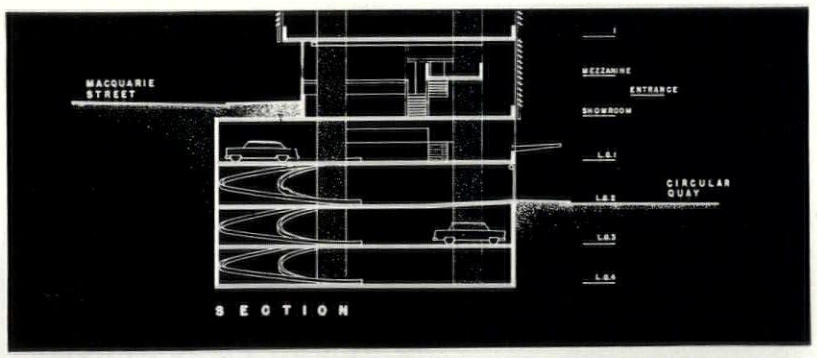
SEIDLER OFFICES

recent work in Sydney

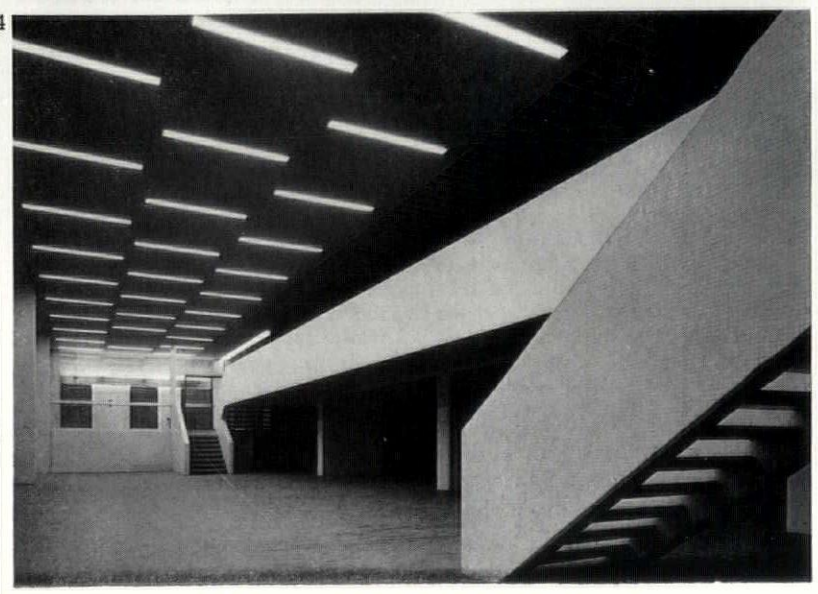
The appearance of the sun-breakers in Harry Seidler's Lend-Lease office building, 2, in a special issue of *Techniques et Architecture* (3/23, 1963) devoted to claddings and external elements is a fair measure of the international eminence his work now enjoys, but it is less than a fair measure of this particular building, which is by far the most important he has designed to date. Standing on a commanding site between Macquarie Street and the Circular Quay, 1, in Sydney, it houses the Lend-Lease development company which gives it its name (and finances much of Seidler's large scale work as well). The differences in level between the street and the quay, 3, make possible a neat arrangement for entering the parking floors from the lower level, as well as a half-sunken showroom-mezzanine, 4, below the level of the Macquarie Street entrance.



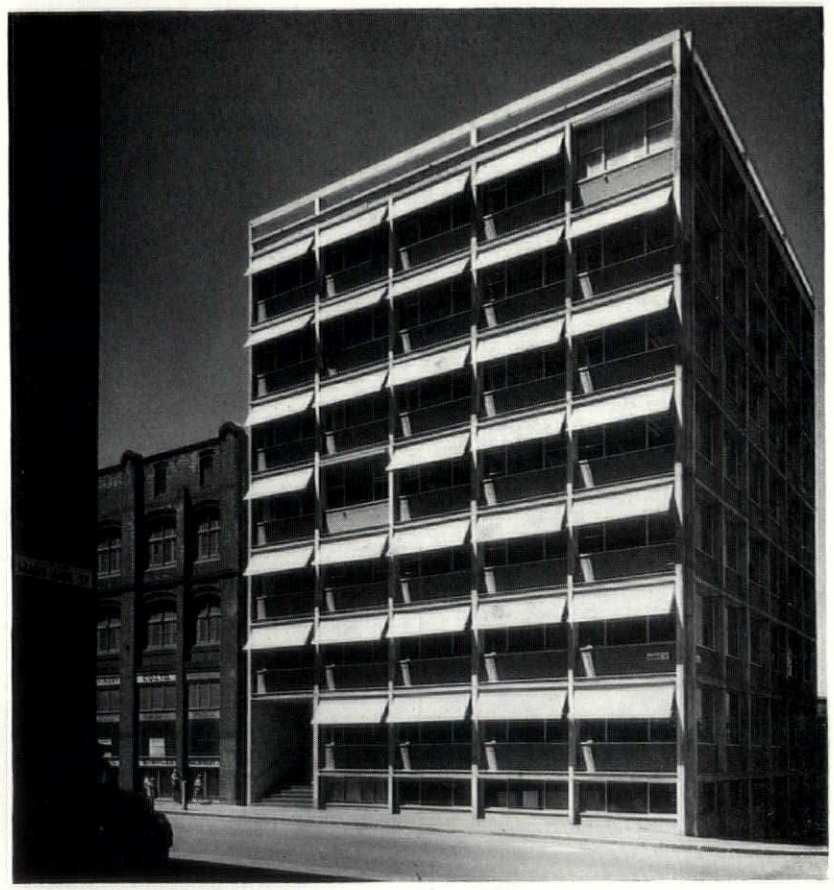
2



3



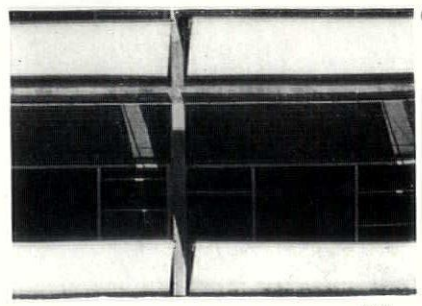
4



5

Silvers Building

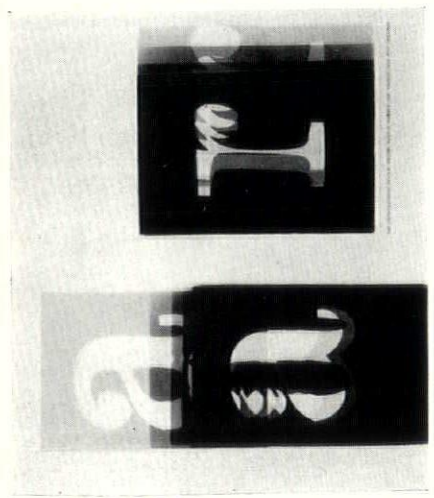
As the interiors reveal, this is one of Seidler's show-case jobs, but at least one other recent design of his in Sydney, the Silvers Building, 5, shows how well he still works under conditions of economy that engender a warehouse aesthetic. Plain concrete bricks set in off-the-form concrete structure and carrying white-enamelled roll-out sun-shades, 6, set a tone that



6

ACKNOWLEDGMENTS

WORLD, pages 75–78: 1–7, Max Dupain; 8–11, *Bauwelt*; 12, *Deutsche Bauzeitung*; 13–17, *Interiors*; 18–22, *The Japan Architect*; 23–28, *Arkitektur*. VIEWS AND REVIEWS, pages 79–81: 1, Banham Arphot. FRONTISPIECE, page 82: Irina White DEPARTMENT STORE, SOUTHEND-ON-SEA, pages 86–90: Galwey Arphot. EXPLORING EYE, pages 91–93: Bell Haworth. MARINAS, pages 94–108: 1, Fairey Air Surveys; 2, Harry Merrick; 3, 7, 8, 10–13, 30, Elisabeth Beazley; 5, Aerofilms and Aero Pictorial; 9, Olive Kitson; 18–24, 26–29, P. A. Bond. Cresta Marine, Newhaven (page 104), 2, Elisabeth Beazley. Fort Picklecumbe (page 107), 7, London & Wide World Photos. Poole Marina (page 108), 10, Brian Field. Eastney Marina (page 108), 12, Chichester Photographic Service. THE MIDWAY GARDENS OF FRANK LLOYD WRIGHT, pages 113–116: 3, 4, Chicago Architectural Photo Co.; 6, Museum of Modern Art, NYC; 7, A. Iannelli. INTERIOR DESIGN, pages 117–119: 1–6, Nicolas Breton. DESIGN REVIEW, page 120: 1, 2, Michael Scott; 3, James Mortimer. CRITICISM, pages 121–122: 1, Nicolas Breton; 2, Henk Snoek. STEELWORKS, NEWPORT, MON., pages 123–128: 1–4, 6–12, Galwey Arphot; 5, Henk Snoek. LOOK OUT, pages 129–130: 2–11, 14, 15, Nairn Arphot. MISCELLANY, pages 131–137: Shrubs, J. E. Downward; Floorscape, Irina White SKILL, pages 138–146: 1, War Office; 2, Toomey Arphot; 4, Colin Westwood; 9, John Pantlin; 10, MOHLG; 14, John Champion; 15, Gee Walker & Slater. THE INDUSTRY, pages 146–148: 1, 2, J. R. Jameson; 4, Natural Vision Studios.



This month's cover is from a photogram by Ken Garland.

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

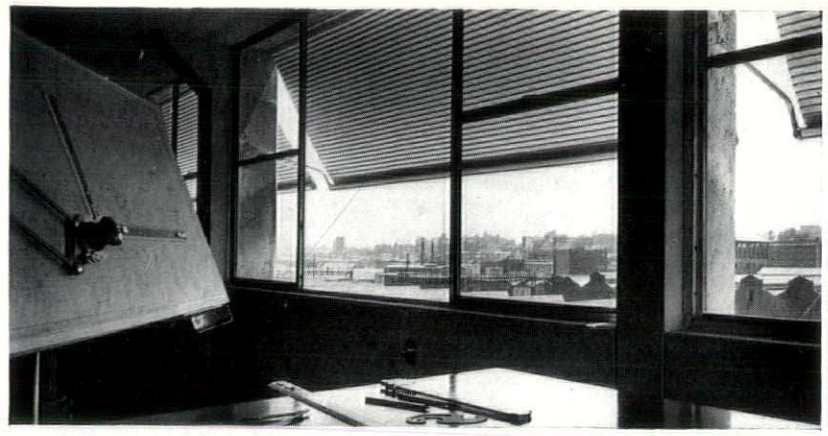
VOLUME 134 NUMBER 798
AUGUST 1963

SUBSCRIPTION RATE:— *The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada $10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto, via V. di Modrone 18, Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of 27s. 6d. Postage 2s. 9d. extra on the completed volume.*

Directing Editors	*J. M. Richards, Nikolaus Pevsner, H. de C. Hastings, Hugh Casson*
Executive Editor	*J. M. Richards*
Assistant Executive Editor	*Reyner Banham*
Assistant Editor (Production)	*William Slack*
Features Editor	*Kenneth Browne*
Technical Editor	*Lance Wright*
Assistant Editor (Counter Attack)	*Ian Nairn*
Staff Photographers	*De Burgh Galwey, W. J. Toomey*
Advertisement Manager	*George Dunn*

CONTENTS

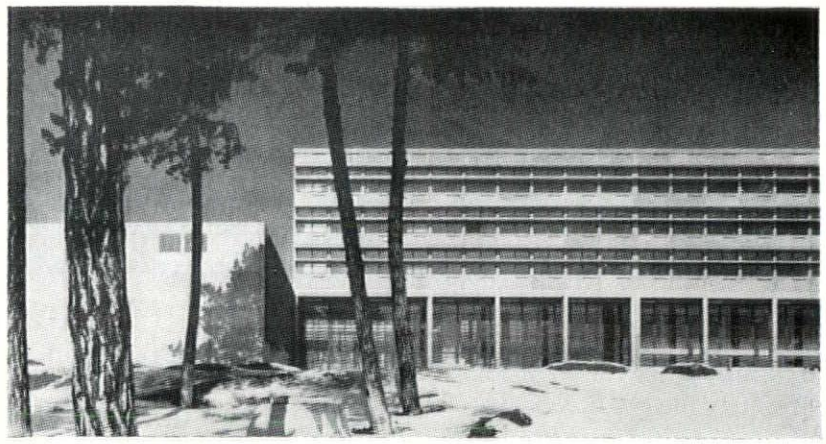
75 **World**
79 **Views and Reviews**
82 **Frontispiece**
83 **Traffic Signs**
86 **Department Store, Southend-on-Sea:** *Architects, York, Rosenberg and Mardall*
91 **Exploring Eye: Valley of Nepal**
94 **Marinas:** *Elisabeth Beazley*
109 **Townscape: Leicester Market:** *Kenneth Browne*
113 **The Midway Gardens of Frank Lloyd Wright:** *Alan M. Fern*
117 **Interior Design**
Roof Restaurant, London Hilton Hotel: *Architects, Sir Hugh Casson, Neville Conder and Partners*
120 **Design Review: Small-pattern carpets**
121 **Criticism: this month's buildings**
123 **Steelworks, Newport, Mon:** *Architects, Sir Percy Thomas and Son, in association with Gollins, Melvin, Ward and Partners*
129 **Look Out**
Miscellany
131 **Exhibitions**
133 **History**
135 **Shrubs**
136 **Floorscape**
138 **Skill**
Industrialized Building: 1, System Building— Open or Closed
146 **The Industry**
148 **Contractors, etc.**



7

SILVERS BUILDING

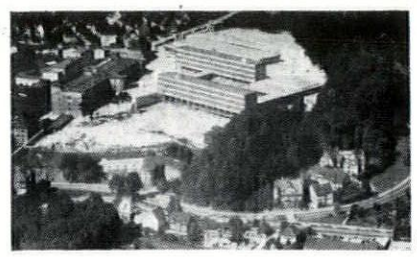
is relevant to its fairly tough townscape setting in Ultimo, but remains businesslike without becoming slummy and gives workable interiors, 7, with views over one of the most extraordinary industrial roofscapes in the Southern Hemisphere.



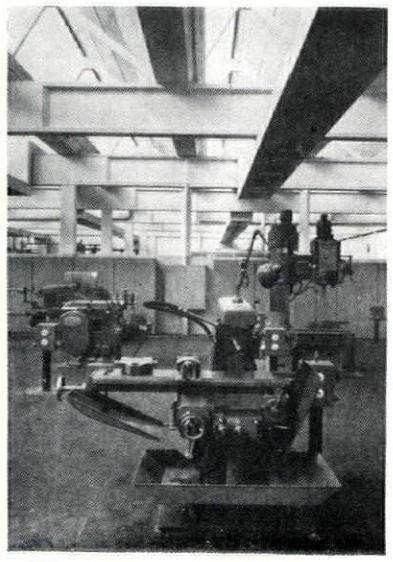
8

ULM'S OTHER SCHOOL

While *der Spiegel*, the international art-grapevine, and other organs of opinion continue to keep the Hochschule für Gestaltung in the news, Ulm has acquired another school of distinction, the Staatliche Ingenieurschule, 8, whose construction marks another stage in the town's realization that it is becoming one of Germany's major engineering centres. Designed by the Stuttgart team of Gunter Behnisch, Bruno Lambart and Winfried Büxel, it stands at the foot of the Gaisberg behind the old *Kaserne* and the town's suburban fortifications on the Stuttgart side, 9. As will be seen, there are two tall class-room blocks on stilts, backed by lower workshop areas and flanked by the lecture hall block and the canteen (which last does not show in this picture). The interior arrangements, whether in the workshops, 10, or the class-room blocks, 11, are clean and keen and challenge comparison with the best work of this class in the world, and—as is very proper in view of the inevitable mixture of uses—the acoustics and sound insulation have been the subject of special studies which will be found in detail in *Bauwelt* 22, 1963, together with a full description of the school.



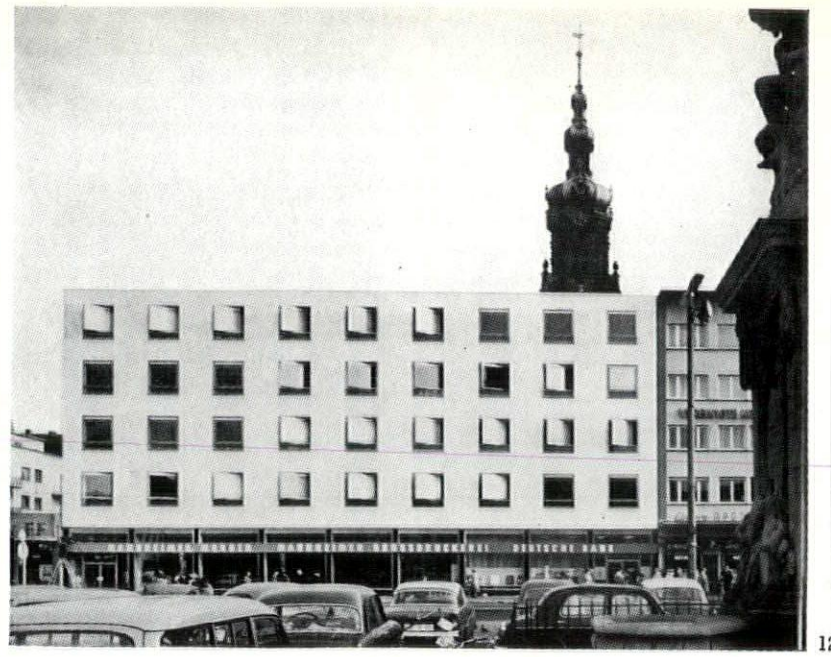
9



10



11



12

SAY NEXT TO NOTHING

One of the most taxing aspects of any attempt to follow Mies van der Rohe's alleged prescriptions about less-is-more and the virtues of almost nothing, is to know how near to nothing is enough, and the right context in which to produce it. Most of Mies's own followers have got it wrong by saying almost nothing architecturally but for reasons that Mies himself could not accept. They say the same almost nothings as the Master himself, but only because he has said them first, whereas Mies himself says as nearly nothing as the job in hand requires, and appears sometimes to vary the nearness to nothing to accord with the setting in which it will appear (e.g. Crown Hall in the setting of the other Miesian buildings of the IIT campus).

It is easier, in some ways, for a non-follower of the master's style to equal his precepts, and Albrecht Lange and Hans Mitzloff seem to have got it exactly right, 12, in their newspaper offices for the *Mannheimer-Morgen*, overlooking the Marktplatz in Mannheim. Not only have they said the bare minimum architecturally, and said it with exactly the right degree of smooth effrontery, but to have said it in front of that particular spire shows exactly the right tone of voice for the setting, and punches home once more all those lessons about putting very simple modern buildings alongside very curly old ones that we were supposed to have learned twenty years ago from the Brazilians and ten years ago from the Italians, but have forgotten.

THE KERZMEC REPORT

on human office-practice

As a preface to a depressing (as all such issues seem to be) special issue on office blocks—made the more depressing, as usual, by the amount of talent that had gone into the buildings illustrated—*l'Architecture Francaise* (247–248, 1963) carried a report by Thelm Broch Kerzmec to his interstellar superiors on Arcturus III—in other words, *Lettres Persanes* done in terms of science fiction. The substance of Kerzmec's report was the relatively low stage of development of the Terran civic beings. Unlike those on Arcturus, which had come first, and developed living organisms to do their detail thinking for them, the Terran civic beings appeared to have come after the living organisms, who had created them out of their capacity for individual thinking, which they now sought to control and employ for the benefit of the civic being.

'It is particularly clear that their ignorance of force-fields of variable expression obliges the living organisms to organize space by means of solid elements whose necessarily three-dimensional construction and purely mechanical production leads to a rectangular format for the collective organs of the civic being. This rectangular structure, being permanent because material, causes the growth of the civic being to proceed not by plastic adaptation but by a process of destruction and reconstruction. . . .'

Having noted further that the living organisms move during the hours of natural light into rectangular structures known as 'offices' (qui constituent les organes de base de l'Etreville) Kerzmec also observes 'It is in these "offices" that the living organisms disindividualize themselves most effectively for the benefit of the civic

KERZMEC

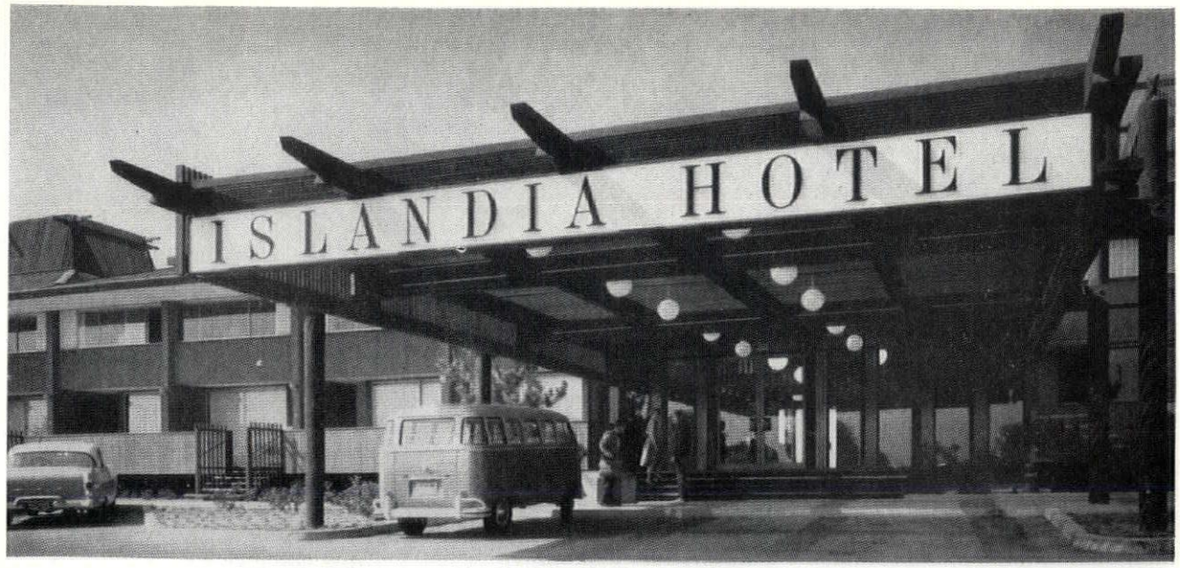
being, and this is due to the creation of a suitable physiological and psychological micro-climate. The offices, better equipped functionally, better serviced, conditioned, mechanized and computed than the dwelling-rectangles, permit a better synchronization of the actions of the living organisms, and this leads by a process of hypnotic symbiosis to an absolutely soul-less condition which alone is compatible with the role these living organisms should play in a well run city. . . . If, therefore, we wish to aid Terra in its fight for liberation from its intrinsic limitations, we must offer the means to keep the living organisms permanently in the offices, a means so compelling that none would wish to leave.'

Difficulties, Kerzmec admits, would stem from the present methods of production of living organisms, but there is reason to believe that the time is not far distant when the 'offices will be able to produce their own organisms,' and that will be the subject of his next report. Many Terran organisms, noting how the employees of other large insurance companies besides Connecticut General seem to spend all their spare time on company property, as well as their working hours, must wonder why Kerzmec didn't just add a couple of paragraphs to the present report.

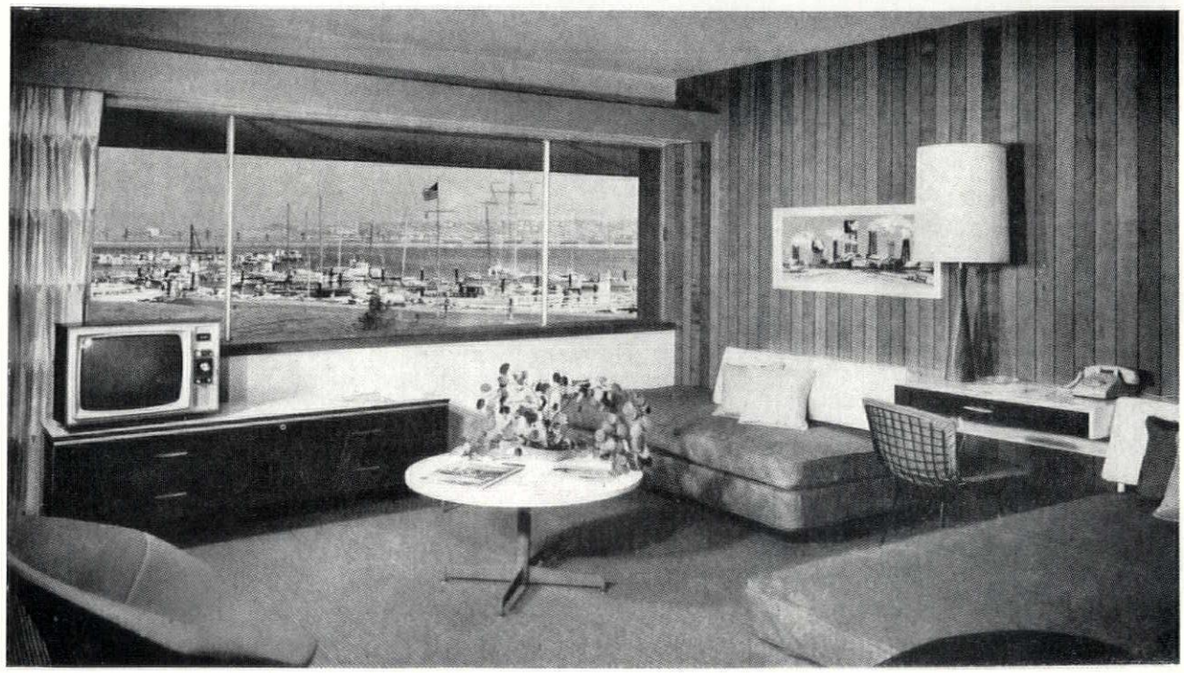
ISLANDIA

Hotel on a Marina

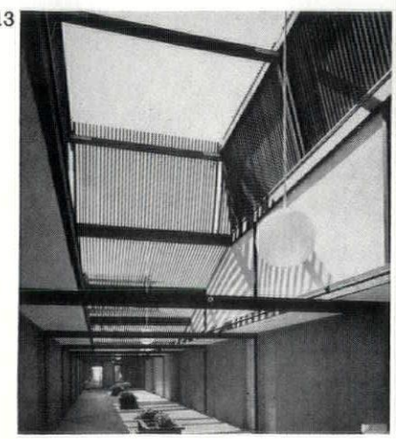
Although the REVIEW is making a major study of marinas on pages 94-108 there are one or two contributions to the architecture of boating that are not shown there because they are marginal to the marina situation. One such—illustrated in *Interiors* (May, 1963)—is the Islandia Hotel at Mission Bay, San Diego, 14, designed by Liebhart and Watson with Willis Short for the interiors. The style is relaxed and makes one realize how much all types of hostelries in the US owe to motel thinking—the open, slatted skylights on the second floor, 13, are one notable example; the subdued opulence of the rooms, 15, with their picture window views of the boats, is another. Off shore, among the boats, is a five-lobed restaurant reached by boarded walkways seen through the restaurant windows in 16. All this, and especially the other public rooms, may seem a little too plushy to those brought up on the spartan affectations of English yachting, but this is very restrained by US standards—compare, for proof, the entrance hall of yacht club, 17, from the same issue of *Interiors*.



14



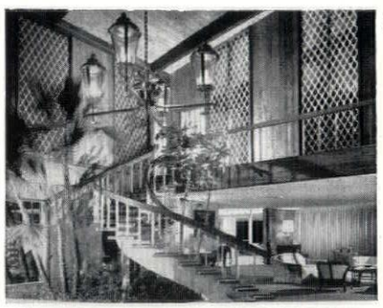
15



13



16



17

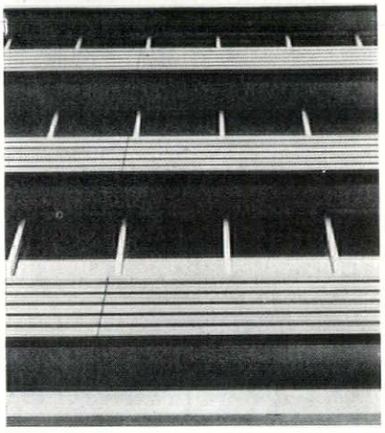
GOLDEN TRIANGLE

Among the occupational hazards of designing large buildings in Tokyo is a set of zoning regulations that pretty well enforces perimeter development, and effectively precludes more varied dispositions of accommodation on site. The sort of result that can ensue is seen in the National Cash Register



18

TRIANGLE

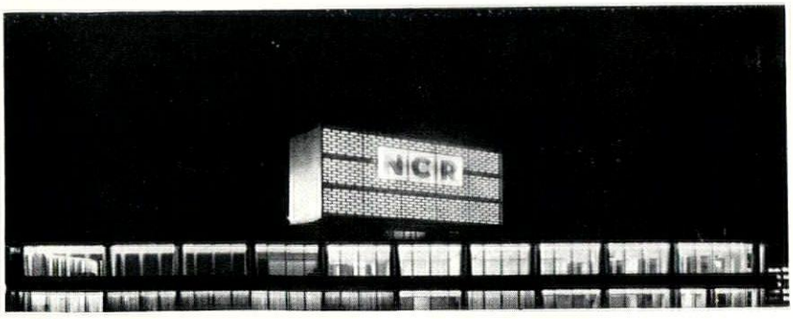

19

Building, 18, designed by Junzo Yoshimura and Associates for a site so desirable from the developers' point of view that *Japan Architect* (March, 1963) describes it as the 'Golden Triangle.' Because of its form, the block has a large amount of external surface in proportion to its volume and this, combined with the exposure of one long flank to the sun, puts a heavy load on the air-conditioning. To reduce this, there has been recourse to built-in environment controls such as double glazing in tinted glass.

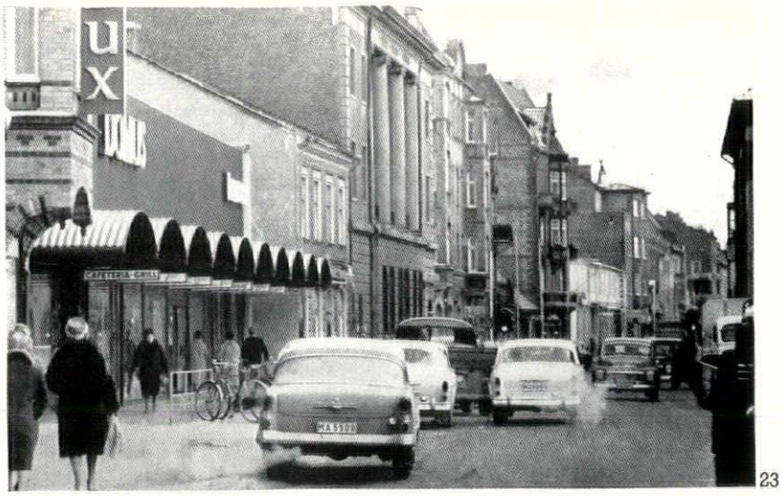
In view of all these problems, it is reassuring to see what a relaxed building has resulted. The external detailing is cool and simple, 19, and the show interiors accept the triangular module of the design and put it to work, 20, as the basic grid of both floor and ceiling. The stairs, too, though they rise from a pool of water and in other ways also accept the standards of expense-account styling, still manage to do so with restraint and conviction, 21, and even the skysign on the roof, 22, must be among Tokyo's least exuberant, though none the less effective for that. It also performs the useful public service of changing colour to indicate changes in the weather forecast—the background shows all yellow for fine weather, all blue for rain, and alternating squares of both colours for cloudy.


20


21

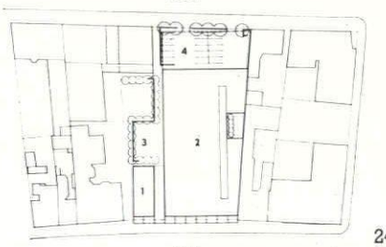


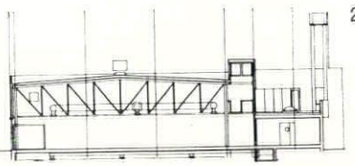
22

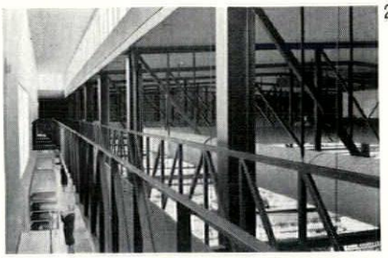

23

SWEDISH SUPERMART

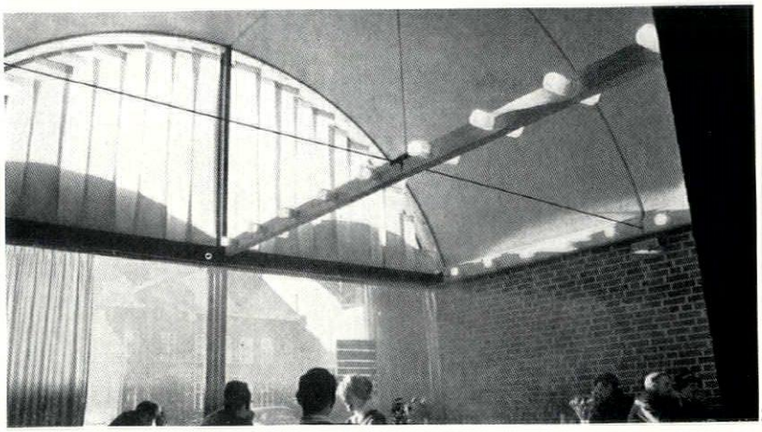
Single-storey intruder in a traditional street


24


25


26

A supermarket on the main street sounds like small-time America, but the Domus store in Trelleborg fits, in fact, into the tight Swedish townscape, 23, of a site, 24, between the inevitable Algatan and the equally inevitable Nygatan—though the latter is little more than a service road here, and Algatan is the main business street. Behind the arcaded canopies, the store is a big single sales-space under a run of clear-span trusses, 25, with a service cat-walk running through their lattice, 26. Separated from this main selling volume by a covered passage is a restaurant (1 on plan, 24) whose vaulted ceiling, 27, picks up the theme of the canopies on the front. It all seems very civilized, simple and Swedish, until one thinks of the townscape consequences of this sort of redevelopment. This store may be in Sweden, but it is still a single storey structure like its sub-topian equivalents in the Middle West,


27

and a few more like this (one can be seen in the middle distance in 28) would completely destroy the Algatan as an urban street. We may regret that *Arkitektur* (4, 1963) did not examine these townscape questions when it illustrated Domus, but we are in no position to be superior, since many English towns are currently threatened with similar store developments.


28

views and reviews

MARGINALIA

HOMAGE TO CLOUGH

Clough Williams-Ellis is a unique and versatile figure and it was right that his eightieth birthday, which occurred in June, should have been celebrated in a number of different ways. One was a dinner at the House of Commons, attended by a great number of his old friends and admirers, at which he himself spoke wittily and too modestly; another was the publication of a book about Portmeirion, the most remarkable of his many architectural children, itself now nearly forty years old.

The book* has a text which entertainingly recounts the history of this extraordinary Mediterranean village in North Wales and of the site which the architect has so romantically exploited, describes the work that has been done there over the years and, with a wealth of anecdote, the people who have stayed there or in other ways been associated with it. It has photographs by Edwin Smith which most successfully bring out its curious personality—one which persuades even the puritan to accept and enjoy an architecture of pastiche. It has a prologue by Christopher Hussey, reprinted from an article he wrote in *Country Life* in 1930 and an epilogue by Mr. Lewis Mumford, reprinted from the *New Yorker*.

In the last, Mr. Mumford refers not only to Portmeirion but to Clough Williams-Ellis's lifelong efforts on behalf of the Welsh and English landscape, and this is indeed the work that has put everyone in his debt. His book *England and the Octopus*, published more than thirty years ago, was, as Mr. Mumford says, 'the opening gun in a fresh campaign to overcome the devastating ugliness that was spreading again in the motor age, as it had spread in the earlier railroad age, over the small historic towns and still verdant rural areas of Britain. Williams-Ellis was resuming and following through the pioneering work done by William Morris two generations before; and as a result of a sharpened public conscience about both the natural landscape and historic buildings, a whole series of public trusts and national foundations are now addressing themselves to this task.' In spite of these invaluable organizations the work becomes ever more urgent, and those partaking in it rightly look to Clough Williams-Ellis as the inspirer of them all.

* *Portmeirion. The Place and its Meaning.* By Clough Williams-Ellis. Faber and Faber. 42s.

THE LIVING CITY

At a time when the discussion of city life (and how to plan it) has become increasingly portentous, doom-fraught and pessimistic, it was refreshing, if confusing, to see the exhibition lately staged at the Institute of Contemporary Arts (with assistance from the Gulbenkian Foundation) under the title of *The Living City*. Staged and organized by a group of recently qualified graduates from the Architectural Association, it re-stated for the benefit of a wider public the theme—often made in AA fifth-year planning projects—of the urban scene as an enjoyable and vital spectacle of advertising, Pop-art, machinery, people, transport, and the like.

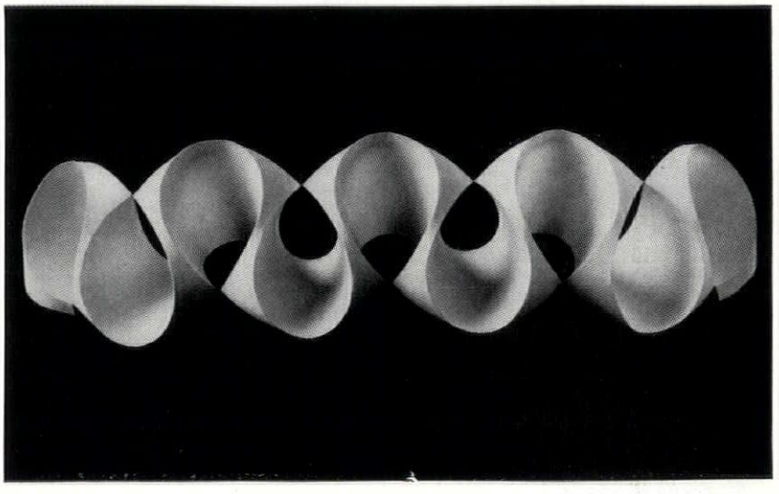
The technique of the exhibit was to present this spectacle in capsule form in a crazy-house structure (owing something to *This is Tomorrow*, AR, September 1956) of things and images in a non-rectangular space-frame, 1. But the exhibition itself also declined to offer any commentary or guidance to the visitor who was not prepared to do some homework in advance by reading the catalogue. The creators of the show will no doubt attract some sympathy for their refusal to comment ('an experience and not . . . a display of data') after so many elaborately didactic town-planning exhibitions with nothing to say, but they might have learned from the Pop-art material that they pillage with such enthusiasm that even 'experiences' can be tailored to suit their audience, or specifically beamed at a selected public. Here, having bravely decided to cram in everything at once, and leave the viewer to sort it out for himself, they may have failed to reach some sections of the public who are not 'with it'. On the other hand, the totality of the experience could mean that—when the message does get through—it may more effectively drive home a lesson that the AR has been doggedly and patiently teaching for almost two decades now.



1

HOCHSCHULE AT THE RCA

The rising prestige of German training in art and design was given suitably distinguished acknowledgment recently when an exhibition of work and teaching methods from the *Hochschule für Bildende Künste*, Berlin, was held at the Royal College of Art in London. This was something of a summit meeting, for the Berlin College occupies a similar position in Germany to that of the RCA in Britain, though it has an architecture department (under Professor Werner Weber) which is a subject that the RCA has dropped. The rest of the courses run fairly close to one another, at least as far as subject matter is concerned, and the student exercises shown, such as 2, seemed to suggest that the teaching methods have drawn together as well, if College exhibitions, such as the recent and much admired show of the Graphics department, are any guide. There does seem to be an increasing trend towards the establishment of international norms in advanced art-teaching and design training at present, which promises the possibility of an increasing interchange of students between major European schools—certainly this exhibition suggested that British students might feel quite at home in the Berlin *Hochschule*.


2

THE MAYFAIR LABORATORIES

While university planners are gloomily convincing themselves that science departments in future will have to be built in open fields, beyond even the suburbs of towns, because of the unprecedented and unpredictable rates of growth of laboratories, it is worth recalling that one of Britain's greatest 'science departments' stands on a cramped central site in London that must be worth a mint of developer's money, and has managed, by dint of improvization and adaptation, to keep up with its changing needs for laboratory space. The Royal Institution, which has given laboratory-room to distinguished scientists as distant from one another in time and qualification as Count Rumford, Professor Tyndall, Michael Faraday and Sir Lawrence Bragg, still stands in Albemarle Street, Mayfair, behind the handsome colonnade designed by Vulliamy in 1838, though practically everything behind the facade has been altered at least once since then. About the quality of the laboratory space it had to offer, opinions varied—Tyndall is on record with the judgement that the chemistry laboratory 'was badly ventilated, badly lighted, badly drained, and quite unfit to be occupied for many hours daily. It was probably the very worst, and certainly all but the worst, Chemical Laboratory in London!' Against this one must note the words of Sir Robert Robertson to Rome Guthrie, architect for the changes of 1928 onwards 'Do ye not know, Mr. Guthrie, that most of the greatest discoveries in Chemistry have been made in cellars?'

The whole history of this extraordinary institution and its equally extraordinary adapters, alterers, designers and architects was given in a lecture to the RI in 1956 by A. D. R. Caroe on the basis of his long architectural association with the property, and the text of this lecture has now, belatedly, appeared in print (published by the Royal Institution at 3s. 6d.). At a time when the growth, change and decay of institutional buildings with their changing functions is coming under serious academic study, this is a prime source document from which a great deal may be learned.

CORRESPONDENCE

THE HARDWARE BAZAAR

To the Editors.

SIRS,—We wish to register our dissatisfaction with the views expressed by Mr. T. M. P. Bendixson in his article captioned 'The Hardware Bazaar' in your May issue, where it

concerned brassfoundry products, locks and door-closers made by British manufacturers. Reference is made to the Guild of Architectural Ironmongers Convention Exhibition, held in Harrogate last year, and part of one of the judge's remarks is quoted. Your contributor has completely ignored the fact that the competition part of the exhibition was organized for the sole purpose of finding out whether Continental door-furniture is superior in appearance, design, finish, or workmanship, when compared with the British. Judgment was given by an impartial committee which gave results that showed an overwhelming success for home products. How, therefore, can Mr. Bendixson claim that British products are technically and aesthetically stodgy? We do not agree with him that there is need for despondency about the standard of British products, and that British manufacturers are inhibited by tradition.

We are also concerned with the inference that Continentals have done more to encourage the design of concealed door-closers. The ones referred to are of extremely low efficiency, require quite expensive fixing, and are of a type that has been tried and rejected by British manufacturers some twenty to thirty years ago.

We feel that this article, which will be avidly read by architects keen on their detail fittings, will do irreparable harm to British manufacturers, and will influence merchants who are not fully aware of the true facts.

Yours, etc.,
WILLIAM NEWMAN & SON LTD.
(A. W. Newman, Managing Director).
Birmingham.

Mr. Bendixson replies: Mr. Newman asserts that there is no cause for despondency in the quality of British brassfoundry products. The report published by the RIBA on the ironmongery competition at Harrogate in June, 1962, agrees with him at one point but goes on to say, 'Manufacturers appear to be inhibited by tradition and, in many sections, we consider that there was a lack of progress in developing new ideas.' The report also comments on a lack of simplicity, little progress in methods of fixing and a dearth of related ranges of ironmongery. As I indicated in my article, this places the bulk of British manufacturers in the same unimaginative boat as their Continental counterparts, and to an architect who is more interested in getting up a satisfactory building than in worrying about relative standards of inadequacy, this is lamentable.

To the Editors.

SIRS,—The article on ironmongery in your May issue makes interesting reading although the lack of recognition of the efforts of some British manufacturers, at least, to meet the demands of architects for clean modern designs tends to make the overall picture somewhat less than fair.

The range and in some cases complexity of Continental devices offered can be related to the higher appropriations for windows and for door and window furniture acceptable in Continental budgets. The ingenuity of many of the devices cannot be disputed although doubts may reasonably be held as to the continued mechanical efficiency of some of them over a desirable working life.

In this regard the Continental practice referred to by your correspondent of employing the lock spring to return lever handles to the horizontal position is in a number of ways open to criticism. It results in stiff and noisy operation of the latch bolt, and in some cases damage to the lock, compared with the light quiet engagement given by the English design. Further, the Continental system, whilst perhaps acceptable for use with light die-cast furniture, is likely to prove unsatisfactory when using the heavier bronze or chromium plated lever handles.

A factor which is possibly overlooked when assessing the respective merits of English and Continental ironmongery, is the availability and provision of service when required after sale. Manufacturers of architectural hardware in this country in general are prepared to accept full responsibility for the quality and mechanical efficiency of their products, not only at the time of supply, but during their normal working life.

Yours, etc.,
JAMES GIBBONS LTD.
(L. S. Temple, Director).
Wolverhampton.

Mr. Bendixson replies: Probably no matter is more disputed among architectural ironmongers and architects than the relative merits of Continental and British lock mechanisms. In my article I said many people prefer the single spring Continental type. This was the result of talking to a large number of architects. Lacking facilities to conduct *Which*-type comparative tests, there was no alternative open to me. Nevertheless, Mr. Temple's general comment about higher expenditure on door and window furniture on the Continent and his point about the British two spring mechanism being better suited to heavier furniture are good ones.

ST. ANDREW'S HALLS, GLASGOW

To the Editors.

SIRS,—The letter in your June issue regarding the burned-out St. Andrew's Halls, prompts me to suggest that in such cases the rebuilding of part of the masonry might be an alternative to complete demolition. Almost a century ago Glasgow built a new University to replace early Renaissance buildings of the old College on another site. Some of the old stonework was saved and used to build an entrance lodge for the new project. If something similar were done in cases like this it would be a less drastic solution than losing all trace of the old work, especially as there is often a sentimental regard for the building irrespective of architectural merit.

In the present case there is a large amount of masonry still in good condition apparently, and of refined classic detail which could probably provide enough material for, say, a small museum related to music or souvenirs of the old halls. Much might depend on the condition of the stonework, but even a few items incorporated in a new building, or as features of the setting or the landscaping of it, would be preferable to complete loss. There have probably been in the past many examples of similar procedures, but the idea does not now seem to be popular, probably for economic reasons.

Yours, etc.,
A. D. C.
Glasgow.

LLOYD'S REGISTER

To the Editors.

SIRS,—In your welcome note on Lloyd's Register (AR, June, 1963) you write: 'One (building) which still stands . . .' Why still? Have the rumours by any chance reached you, which I have heard more than once, to the effect that this splendid little building is in fact doomed? It is hard to believe, but the Government, in listing and protecting public monuments (see the Euston Propylaea) have been so totally lacking in any sense of responsibility to Victorian (to say nothing of Edwardian and later) buildings that anything might seem possible. Collcut's Imperial Institute went; there is hardly anything left now of this remarkable architect's work as attractive as his Lloyd's Register, and as for interiors where else could you match that bronze and ivory frieze? Are the rumours false? Or is to too late to plead?

Yours, etc.,
S. T. SCOTT.

BOOK REVIEWS

THE NEWCOMERS

MAKERS OF CONTEMPORARY ARCHITECTURE: R. BUCKMINSTER FULLER, *by John McHale;* PHILIP JOHNSON, *by John M. Jacobus, Jr.;* LOUIS I. KAHN, *by Vincent Scully, Jr.;* KENZO TANGE, *by Robin Boyd;* EERO SAARINEN, *by Allan Temko. Published by Prentice-Hall International, London, George Braziller Inc., New York.* 30s. *each.*

EERO SAARINEN ON HIS WORK, *Edited by Aline B. Saarinen. Yale University Press.* 1962.

Two years ago Braziller published a series of monographs on '*The Masters of World Architecture*'—in this sense modern architecture. These excellent and beautifully illustrated books were very reasonably priced at 32s. each. They were nearly all written (somewhat unevenly) by a younger generation of American architectural historians than we are accustomed to and presented for the first time, I believe, the pioneer modern architects—many still performing—in historical rather than polemical perspective.

The success of that series has since prompted the publishers to produce two new series in the same format and at a similar price. The first of these 'Great Ages of World Architecture' make very fresh and welcome additions to any library. Now appear 'The Makers of Contemporary Architecture.' The different emphasis in the title is significant, for with the tragic exception of Eero Saarinen, all five 'Makers' are alive; all have made their mark since the war, and all (however important their work) still have the quality of promise rather than fulfilment.

One's first reaction to this series, however, is why? First, why in book form, a form which tends to give too definitive a character to the work of men whose style is still evolving? Secondly, why such a Yankee bias—four Americans and one Japanese? The answer to the first (apart from sales policy) is I think that these are really stiff-covered appreciations (the masters series is now in paperbacks) of the kind we rather like to see in the magazines but which, often regrettably, cannot be separated from other matter and, to be fair to the subjects, we should treat them as such. Le Corbusier from the early thirties produced brochures of his own work—saved it is true from the slight shadow of pretentiousness which lingers here by their character of 'man-at-work' rather than 'men-in-history.'

To the second question one must reply with another question. Who else? For the fact remains that, seek as one will, it is hard to find five other individuals of this significance in this category. In Europe, with the possible exception of Arne Jacobsen or Eiermann, there is no individual architect as distinct from groups—and group work by implication cannot have the same intense originality—who fits the bill, i.e. sufficient productivity, high standard and variety. If groups were to be included certainly SOM and possibly the LCC would be among them.

Curious as it may seem, if we were to double this list, we would still be hard put not to include at least two further Americans, just as in the eighteenth century there would have been a predominance of French and English, and in the sixteenth Italian, names, so today America sets the pace. Such is the growth and wealth of her economy.

Having said this, and in fairness to the 'Makers' one must do so, I find these books fascinating. For they underline, even more strongly than the 'Masters' series, the growing and most welcome (if sometimes over-conscious) tendency to see architecture not just within the narrow confines of the Modern Movement (which surely died quietly somewhere in the 'thirties?) but related to a broader (historical) framework. 'My own belief,' writes Vincent Scully, who significantly contributes a book to each of the three series, 'is that the meaning of modern architecture can be properly understood only in the light of all the architecture conceived by man.' In other words the ruins of the Villa Adriano begin to count again as much as the paradigmatic Farguswerke. Modern architecture becomes not only international but inter-cultural.

Individually these books differ widely.

Buckminster Fuller: Just as the Vatican recognizes the Anti-Christ as a positive force, so no doubt should the Anti-Architecture of Fuller act positively on the moulding of modern building; yet I wonder? Fuller's life work and ambition has been to create the universal shelter—cheap, anonymous, mass-produced. Yet his closest answer to this dream, the famous Great Circle Dome, is expensive and awkward to adapt (the difficulty of making a door is quite ludicrous) requires more skilled craftwork than many comparable 'trad' techniques and so far has only been put to rather exotic and special uses such as DEW

line strategy shelters or prestige exhibition sheds. Whether it has any more universal future than the ill-fated Dymaxion experiments remains to be seen. It can be, however, a beautiful crystalline object when not adapted to mundane use and an important efflorescence of Fuller's vital ideas, which are of permanent value.

Fuller's architectural achievements are, in all truth, modest, but his ideas have quickened the minds of tens of thousands. To hear him lecture (a task requiring the best part of a day) is to listen to one of the great spellbinders of our times, for Fuller is really the heir to Emerson and has much in common with Jeremy Bentham and English Utilitarianism. McHale gives an excellent account of both the man and his activities, even if he makes him out to be a little like the universal panacea. It was surely fitting that Buckminster Fuller was 1962 Charles Eliot Norton Professor of poetry at Harvard.

Philip Johnson: Johnson was nearly 40 when he came to architecture in practice—having already made a career as a scholar and critic (he collaborated with Hitchcock on *The International Style*, 1932). First known widely for his Glass House (1949) he had already shown in the little patio house at Cambridge, Mass. (1942) that sense of style which marks all his work. Though often judged by many to be purely a Miesian—his biography of Mies and collaboration on Seagram tending to support this—his work has always shown special undertones which set it apart. These are now more fully revealed in the later experiments with solid and arched forms.

Jacobus stresses that this is an interim report, and stopping inevitably in the middle of an unresolved stage of development it gives a somewhat lopsided picture. However, it does reveal Johnson as both the most original post-war domestic architect and as one who has exerted a tremendous and serious influence in liberating modern architecture from the dead hand of the Functionalist tyranny. Johnson's is an academic and aristocratic architecture of great intelligence, taste and quality. It derives from many sources, most notably Mies, Wright, Schinkel and, more recently, H. H. Richardson. It doesn't always come off—but then it always aims high—when it does succeed it sings above to the crowd. As a book this is a joy to behold for itself.

Louis Kahn: Kahn is 62 and certainly the most influential post-war architect. Like Johnson (the only contemporary architect, as Jacobus perceives, 'who can convincingly be bracketed with him') he was a late starter but for very different reasons. His development was normal, and in the *beaux arts* tradition, inherent in most American schools until the mid-40's, but it was also inhibited by poverty and the Depression. George Howe, that perceptive and urbane scholar-architect, brought him to Yale in 1947. This gave Kahn independence. Howe also gained him his first important unhampered commission, the monumental Yale Art Gallery (1951), whose exposed concrete structure and services first revealed to the U.S. an alternative nobility to that of Mies. Kahn has since developed these ideas further in the Richards Medical Centre, the Unitarian Church at Rochester and the projects for Dr. Salk. In these he has imbued modern architecture again with that sense of order and beautiful planning, inherent in *beaux arts* thinking. Broadly Kahn, like Johnson, is a 'classicizer' and like him deeply involved with history. It is worth noting that during the 'fifties both Johnson and Kahn were teaching at Yale where Vincent Scully was lecturing. Scully writes of this period; 'The debilitating hostility between architect and historian which had characterized some of the pedagogy of the modern movement was on the wane.' This historical approach which has a somewhat different slant, I believe, to the derivative historicism prevalent in both Italy and here, is a major factor in understanding Kahn. His plans are Roman, his axonometrics Choisy, yet his aim is Ruskinian enough—to get at the bottom of the complex problems of modern technology and drag from them simple truths and give them architectural expression. Kahn is almost inarticulate, and yet succeeds in conveying his ideas to his students by his compelling almost saintlike singleness of purpose. Scully gives a brilliant account, which is as much about what happened at Yale in the 'fifties as about Kahn. He writes of Kahn perceptively that 'he tends to bridge the gap between the architect as artist and the architect as practitioner as no other seems able to do—just as he has been healing the breach between the present and the near, no less than the distant past.' However, these hasty snapshots of unfinished buildings are hardly helpful to appreciation of his work.

Kenzo Tange: Younger than the other architects in the series Tange came to fame with his competition-winning Hiroshima Memorial in 1949. His work has particular appeal to Europe in part because his problems (costs, building types and materials) are close to ours. His use of highly articulated structural forms and exposed concrete derives both from traditional Japanese building—Tange is an authority on Katsura—and from Le Corbusier. Though his output is not as great as the others it is highly impressive in a career which only began in the mid-'fifties, and many of the buildings are very large. Perhaps they do not yet attain the lyricism of Le Corbusier or even the variety of Saarinen—being neither as original as the former nor as experimental as the latter. But any apparent evenness of quality—albeit a high one which is greatly compensated for by moral fervour—is, I suspect, due to Robin Boyd's rather monotonous style which fails to hold one's interest.

Eero Saarinen: In many ways Saarinen was the most gifted architect of his generation and these very gifts tended to give, wrongly I believe, the appearance of slickness, even superficiality, to his work. His ability to produce novel solutions to the problems of modern industrialism was one of his greatest assets. Brought up in an atmosphere of architecture, in his early schemes he worked with his equally famous father—these buildings are inevitably diluted, but from the early 'forties he rapidly made his own mark both as a designer of furniture and in various competitions. Into a decade he packed a vast range of buildings ending with the Yale Colleges (recently completed) and the monumental Dulles Airport which recall to us that he was trained as a sculptor.

The first generation of international architects had too much time to think and digest ideas and too little building; that was their tragedy. The tragedy of Saarinen (and some of his contemporaries) was that he had too much to do in so short a time. Given another ten years who can say what he might have done in perfecting and canalizing ideas. Allan Temko gives a fascinating and very sympathetic picture of Saarinen in an extremely well written book; full of fireworks. In addition the Yale University Press has printed a superb folio on Saarinen edited by his widow. The folio contains a careful section of his buildings from 1947-54 and statements and writings of his own. Its scale and quality make it a fitting memorial to one of the University's most promising architect sons.

Fello Atkinson

NEW TOWNS

NEUE STAEDTE IN ENGLAND. *By R. Rosner Callwey, Munich*, 1962.

The English New Towns are one of the contributions which the peculiar English talent for practical idealism has made to the world. Other nations regard them with intense interest and curiosity. The German Government has expressed this interest by a contribution towards the cost of production of Mr. Rosner's book. The divergence between literary and design utopias in the past has recently been commented on by Professor Meyerson of Harvard in a review of an exhibition of Visionary Architecture. 'The literary utopias constructed a desirable future in terms of altered social organizations and institutions, the design utopias portrayed a desirable future in terms of . . . the organization of space.' By limiting themselves severely in the political and social field, and by following largely in the tradition of the shrewd and practical idealism of men like Ebenezer Howard, the English town designers have been able to bridge the gap between vision and realization, and the result is the settlement between 1950 and 1960 of 350,000 people in the New Towns of Britain under conditions of physical, social, political and economic change which demanded a great deal of adaptability, and created a wealth of useful experience and precedent.

Mr. Rosner being an architect of an unusually wide range of knowledge and interests, he has been equally able to comment on design as on finance, industrial location, social adaptation and local government. With such a wide field to cover, the orderly arrangement of the subject matter is especially gratifying. After a historical introduction which gives readers an idea of the immensity of the devastation and petrification caused by a century of wrong-headed development of English cities, and after a chapter devoted in some detail to Ebenezer Howard's ideas and organizing ability, he describes the work of the Barlow and Uthwatt Commission and the gradual emergence of a climate of active concern, which was much intensified by the War and the mood of the population in the immediate post-War years. The relevant clauses of the 1947 Town and Country Planning Act, and of the New Towns Act, 1946, and their later amendments are explained, and a brief—perhaps too brief—review of each New Town follows. While each town only receives a few pages of text and photos, and a scale map, there are further chapters where every aspect of the New Towns is discussed: population, planning, housing, industry, central areas, neighbourhoods, etc. It is in these pages that the English reader will find the most interesting information, the assessment of success or failure, the costing, the detailed allocation of space and resources.

The rather sudden and unexplained appearance of a German project for a Satellite Town, Neu Winsen, near Hamburg, leads to the discovery that Rosner is not only familiar with the English scene, but is active in German town planning, in association with two German colleagues in Hamburg. He is, therefore, qualified as few other men to interpret the work done in England to the interested public of Germany. I missed the names of the architects and other men responsible for the design and realization of the new towns, but ended up by finding them in a general acknowledgment of 'assistance given,' and in footnotes.

Gerhard Rosenberg

MEDIEVAL ENGLAND

BOUWMEESTERS DER MIDDELEEUWEN EN HUN WERKEN, IV. ENGLAND, 1066-1550. *By A. H. Wegerif. Stichting voor Kunst en Kunstenaars, The Hague*, 1962.

This a strange book. It is nicely produced and nicely illustrated and at first seems to be that highly desirable thing, a history of English medieval architecture in a foreign language. But it is not; it deals, as its title says, with the architects rather than the buildings. The arrangement of the buildings is topographical, not historical. No efforts are made to describe the development, say, of the castle or the manor house, or the changes from English thirteenth to fourteenth century space and details in churches. Instead one reads: 'In one of the smaller castles in Hampshire, that at Warblington, at the time of its remodelling in 1507, Richard Gylys, the free mason, and Thomas Parkyns, the joiner, were at work and received 3s. 8d. a week. On the bishop's house at Waltham Jacob Royalton was active in 1472. Control of the works at Calshot Castle in 1539 was in the hands of Thomas Berty who also appears on the building of Hasilworth Castle.' The author of course owes all these facts to Mr. Harvey and amply acknowledges his indebtedness to that exceedingly generous scholar. The dangers of his treatment are those not always absent from Mr. Harvey's own work. Under the illustration of the west front of Winchester it says: '1346 etc., Architect William Wynford,' although on the very next page one reads that Wynford was Wykeham's not Edingdon's architect, i.e. that he appeared for certain at Winchester only in the eighties. The book which had been preceded by similar volumes on French medieval architects ends with a 22-page list of English masons, carpenters, etc. condensed from Mr. Harvey's *Biographical Dictionary*.

N.P.



Flags, because of their simple boldness of pattern and their clear colours, have enormous townscape value quite independently of their emblematic significance, a fact which the photograph opposite,  *by Irina White, taken on one of the islands of the Cyclades, dramatically underlines—see the article 'Put Out More Patterns' on pages 136 and 137. The visual clarity of such flags also has lessons for the designers of such things as traffic-signs—see the article beginning below.*

TRAFFIC SIGNS

The proposed new traffic signs for Britain's roads are a step forward in several respects. First, the committee responsible for them* recommends—this was long overdue—conforming generally with European practice. This means, in effect, that Britain should sign the 1949 Protocol under which 30 countries, including most of those in Europe, agreed to standardize their road-signs and symbols, an agreement from which Britain, however, stood aloof. Neither the political advantages of Britain aligning herself with Europe, nor the practical advantages of British motorists who go abroad, and Continental motorists who visit Britain, finding road-signs with which they are already familiar, need to be underlined. It may be worth emphasizing, however, that the signs laid down under the European Protocol are not permanently fixed but are continually under review. Representatives of the participating countries meet regularly to discuss and improve them on the basis of current ideas and experience; the Worboys committee itself suggests several variations on current European practice which it hopes may in due course be accepted into the Protocol.

Arising from Britain's proposed adherence to the Protocol is a second, equally long overdue, step forward: the recognition of the validity of symbols in their own right, without explanatory lettering to back them up. Europe has for a long time shown more courage and initiative than Britain in this respect. The red disc with a white bar across it is accepted in Europe as indicating no entry to a street; in Britain we insist on confusing the visual image by writing 'no entry' on it as well. In Europe motorists are accustomed to obeying an arrow which shows them when they must turn to the left; in Britain we assume they will not understand it without the words as well. In Europe the warning that children may run into the street is given by a picture of children running into the street; in Britain a similar picture is not thought adequate without the word 'children' underneath. This is now to be changed, and it is not only a matter of visual clarity and logic—a matter of sign language being the proper language for this purpose—but of efficiency and road-safety as well; a motorist should not have his attention distracted by a written message and feel compelled to slow down to read it when the symbolic message can be taken in at a glance.

The symbolic language of the Protocol signs, which Britain already to some extent employs, is of two kinds: diagrammatic or pictorial symbols such as have already been referred to, and a code of colours and shapes that indicate different categories of signs. The latter form the grammar, as it were, of the Protocol language. Its most important elements are the red circle, which indicates prohibition—inside the circle, on a white ground is an indication of the thing prohibited—the red triangle, which is the warning sign—inside the triangle, on a white ground, is an indication of the danger the warning is about—and the blue circle bearing a white symbol indicating a positive instruction—e.g. 'turn left.' Informatory signs other than direction signs, which are not mandatory (e.g. P for parking) are also white on blue but rectangular in shape.

Two positive instructions only are given a form that makes them exceptions to this rule: the 'stop' and 'give way' signs, which are red in colour to create more immediacy of impact (the colour can be justified by the warning element also present in them) and for the same reason they carry words to reinforce the symbolic

* Committee set up (under the chairmanship of Sir Walter Worboys) by the Minister of Transport at the end of 1961. It has just produced its report (HM Stationery Office no. 55-403. Price 15s.) and the Minister has announced his acceptance of its recommendations in principle.

message. 'Stop' is now internationally used (and will, therefore, replace the word 'halt' which is sometimes used in Britain instead); 'give way' could perhaps be dispensed with later, but being part of a new sign (and of a new and very important policy for traffic-control at junctions)* the Worboys committee thought it necessary to preserve the words, at least until the public has got used to the significance of the sign.

These two exceptions underline the fact that any signing code must have an element of flexibility. Another illustration of this is the cancellation bar that has been used to reinforce the message of certain prohibitory signs. Theoretically, according to the Protocol code, a picture of a bicycle inside a red circle should be sufficient indication that bicycles are prohibited, but a bar crossing out the bicycle makes it clear beyond the risk of misunderstanding even though it can be said to be making the same statement twice over. This duplication of a message is allowed for in the European Protocol. The Worboys committee takes advantage of this more often than is customary on the Continent, but is perhaps wise to do so while the symbolic system is being learnt. The cancellation bars could, like the 'give way' legend, be discarded after a time in the interest of absolute simplicity.



1



2



3

Specimens of the new traffic signs. 1 and 2, warning signs (black on white in a red triangle): a new sign indicating the end of a dual carriageway, and a new version of the sign for a steep hill, with wording omitted. 3, prohibitory sign (black on white in a red circle): no overtaking—the cancellation bar is also in red. 4, informatory sign (black and white on a rectangular blue background). This one indicates that a telephone is to be found 250 yards down a side turning.



4

It is a matter of educating the public, in as short a time as possible, to learn the language of symbols, a process on which the success of the new traffic signs will depend. But the need for such education must be accepted, just as the need is already accepted for educating the public in the rules of the road and the Highway Code. The Worboys committee was right not to compromise with the principle of traffic signing by means of a code of symbols on the ground that large numbers of the public may not understand the significance of a symbol without having to learn it. On the other hand it goes without saying that a symbol whose message is immediately obvious is better than one that has to be learnt.

On the whole the symbols recommended in this report seem to get as close to this ideal as possible, and as examples of graphic design the traffic-signs bearing them are a great improvement on those current in Britain at the moment.* They are many and various, which the complexity of the problem makes necessary. It is clear, for example, that the committee found particularly complex the problems posed by parking and restricted waiting signs, which at present clutter up our city streets with innumerable notices carrying wordy legends about the hours between which waiting and loading is allowed and the days of the week on which they apply. The committee seems to have gone a long way towards rationalizing and simplifying these, though this process cannot be taken far unless local authorities are willing to simplify the regulations they impose. For example, it is doubtful whether the custom of allowing waiting on alternate sides of a street on alternate days on the ground that it is fairest to shopkeepers justifies the confusion it creates or in fact brings the shopkeepers much benefit.

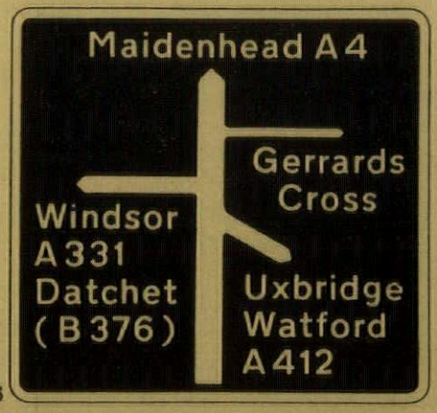
This is not the place to describe the signs or the signing systems recommended in this report—they can be studied in the document itself, and individual signs have only been referred to above in order to indicate the kind of rationalization the Worboys committee has attempted. This essay is more concerned with the impact of the committee's work on the total environment—both functionally and visually; on where its decisions impinge on those of the town and landscape planner. This brings up the very important subject of direction signs on which the committee makes exhaustive and far-reaching recommendations. Here the principle of conforming to Continental practice is less relevant since Britain is unique both in the complexity of her road network and in the density of the traffic it bears.

The committee's most important new proposal is for the creation of what the report calls a system of primary routes. This is a network, marked out from the existing main roads and separately signposted, that will provide the best communication between main centres and give long-distance drivers an easily identified preferred route, bypassing congested areas. This seems a most useful way of classifying and linking together the essential parts of our chaotic road system, and its success will largely depend, of course, on clear signing. The committee reasonably proposes that this should be done by colour, and have devised standard direction signs for these primary routes with white lettering on a dark background. The primary routes will thus be clearly distinguished from other roads, which will be signed with black letters on a white ground. The colour chosen by the committee (or, rather, the majority of the committee) for the background of these primary route signs is likely, however, to be criticized by many.

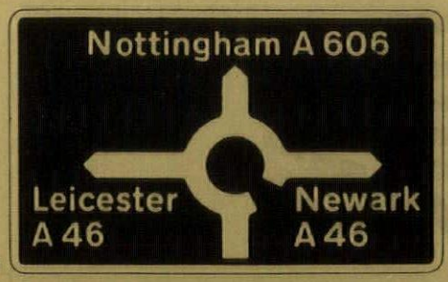
There were restrictions on the choice of colour: blue was already earmarked for motor-ways, red must be kept for danger-signs, yellow is too light in tone to show up white lettering, and black on yellow (see the present AA signs) is too unsightly. The right choice would seem to be black—already successfully used in Oxfordshire and wholly logical, since white on black for the primary routes would be a reversal of the black

* A high proportion of road accidents takes place at junctions. The committee's recommendations about priorities bring Britain to some extent into line with current Continental practice. Their recommended system of signs to control traffic at junctions is reinforced by roadway markings—another important step forward.

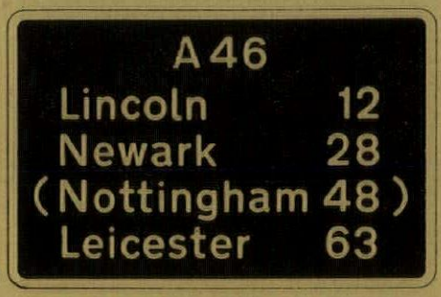
* Much of the credit for this must no doubt go to Mr. Jock Kinneir, the designer employed to advise the committee.



3



6



7

The new direction signs. 5 and 6, advance direction signs for a complex junction and a roundabout junction on primary routes. In 5, the relative importance of each road is indicated by the differing width of the map-type route symbol. The signs are green, with white symbols, lettering and borders and yellow route numbers. 7, a route confirmatory sign for primary routes, again green, white and yellow. The brackets indicate that the town is reached by a turning off the route. 8, stack-type advance direction sign for non-primary routes—black on white. This type is for use where the roadside space available is too small for the preferred map-type sign (as on the left above).



8

on white of the remainder. But the committee condemns it as 'funereal'—an extraordinary judgment, since black and white in combination produce the gayest effect imaginable and constitute a long-standing English tradition.

Instead the committee has chosen green—the same green already in use experimentally on the Stamford bypass—and one gets the impression that they felt sympathetic towards green because it is supposed by some to harmonize with the greens of the countryside. This is a belief that should long ago have been discredited. It is, in fact, the most difficult colour to use in the countryside and large traffic signs of this colour could be really damaging to the landscape. It is significant that the four members of the committee who are named in the report as disagreeing with this choice are the four architect members—those with some training in aesthetic matters.

It appears that they would have preferred black, but would have accepted one particular green that was tried out but rejected by the majority—a very dark, muted green, the greater aesthetic advantages of which are obvious. These four members argue, in making their reservation, that this green has no functional disadvantages, and that it is not, therefore, a question of sacrificing efficiency and safety to amenity. If they are right, the argument is clearly on their side. It is still open to the Minister to prefer their view. If he does not, he may expect an outcry from those who mind about the landscape and the way it is treated as the new signs begin to go up, if not before.

This one question of colour apart, the new direction signs are well conceived and designed with admirable judgment. Their map-type route symbols are clear and simple, and their lettering is excellent. It is an instance in fact of the very great improvement that has been taking place lately in the standard of publicly displayed lettering. This improvement can be attributed to many good examples recently set, beginning perhaps with the Festival of Britain; more recently several brewery companies have had their house styles redesigned using good and appropriate lettering, and in the field of traffic signs there is the very good lettering used on the motorways, itself the product of an earlier Ministry of Transport committee.*

The lettering designed for the new signs is similar to this, well spaced and proportioned and—the most important decision of all—lower case. This was undoubtedly the right choice, whether on grounds of legibility or taste, and the committee was right to resist the pressure of the well organized capital-letter lobby which always puts its views forcibly forward when such an occasion arises—as indeed it has every right to do.

The Worboys committee has done its work well. The Minister has already accepted its recommendations. The next problem is their effective implementation. This will depend greatly on the open-mindedness and goodwill of the local authorities who are, by virtue of their own or delegated powers, wholly in charge of the erection and placing of signs. The committee was probably right in not proposing any greater centralization of responsibility, but at present local authorities vary enormously. They will have to show equal ability and enterprise if the primary route system is to be usable, as intended, on a national scale, if the new signing systems are to be consistently employed and maintained and if the signs themselves are to be sited so as to be a contribution, as the committee hopes they will, to the reduction of roadside clutter.

Finally, since the change these signs are designed to effect, both in the appearance and in the efficiency of Britain's roads, is the kind of change that is far better for being uncompromising and complete, the Treasury must make the money available to enable it to take place in the shortest time possible—as short in fact as is within the capacity of the sign-making industry; the committee suggests five years for all traffic signs.

* Chairman, Sir Colin Anderson. This committee, also, had Mr. Kinneir as its designer.

DEPARTMENT STORE

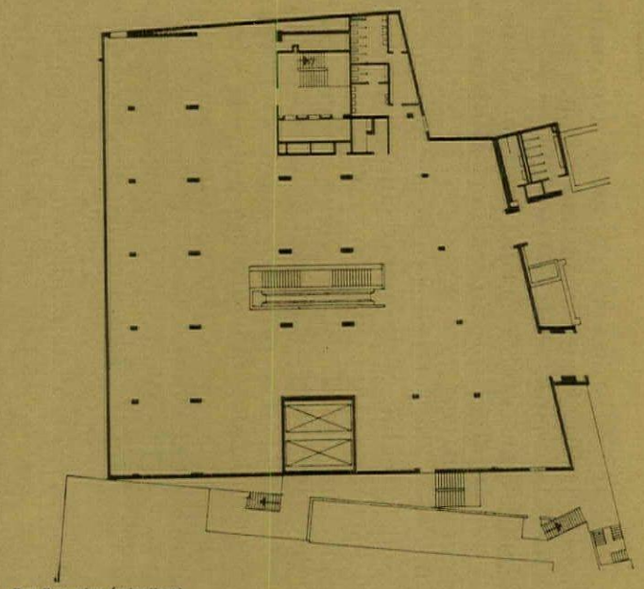
SOUTHEND-ON-SEA

ARCHITECTS: YORKE, ROSENBERG & MARDALL

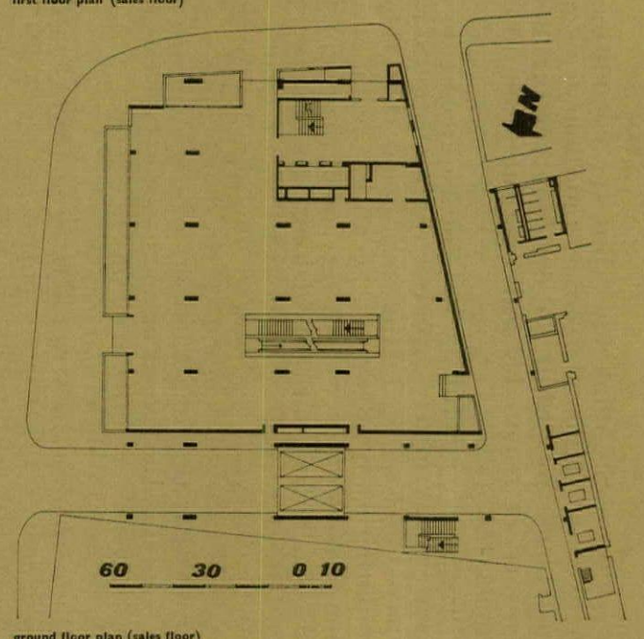
An extension to the existing Keddie's store, which fronts on to Southend High Street. The extension, however, backs on to the old store, and faces Warrior Square, which is mostly residential. At present, three sales floors are provided, at basement, ground and first floor levels, with two storeys of car-parking above. At a later stage the lower parking deck will become a sales floor like those below it, but this may not happen until the other half of the extension is built. When that is done, the area of the upper parking deck on the store roof will, by itself, be sufficient to provide the 150 parking spaces that are a town-planning requirement for redevelopment on this site.

Above the podium formed by the sales and parking floors rises an eight-storey office slab, of which the uppermost floor will be used as an executive suite by Keddie's, the rest being lettable office-space. Two car lifts at the north end of the first phase serve the parking decks, and three passenger lifts, with access from an entrance hall at the southern end of the site, serve the office floors. The whole structure is in reinforced concrete with lightweight slab floors. The external finish is of white glazed tiles (as on a number of other recent designs by this office) laid vertically, and the entire building is on a tile-sized module to avoid having to cut the tiles. The canopies over the frameless display windows are aluminium clad on both fascia and soffite; other windows have painted soft-wood frames, and those on the office-floors have horizontally pivoted opening lights.

In the sales area, all fittings, etc., were designed by the architects in consultation with the store management. Services and lighting are carried on, or above, an open ceiling grid made of varnished Columbia pine. Ventilation and heating in these areas is by a high-velocity single-duct system, with warm air curtains at the entrances: in the office areas, heating is by convectors mounted flush between structural columns below the window-cills. The job architect was Freida Olsen, and Terry Addison was responsible for the interiors.

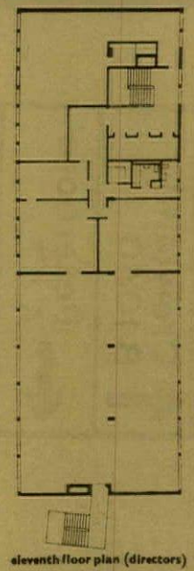


first floor plan (sales floor)

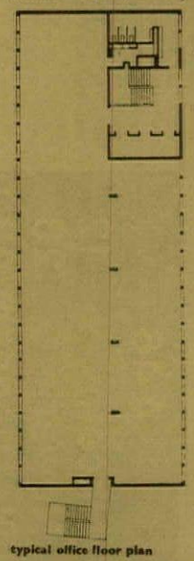


ground floor plan (sales floor)

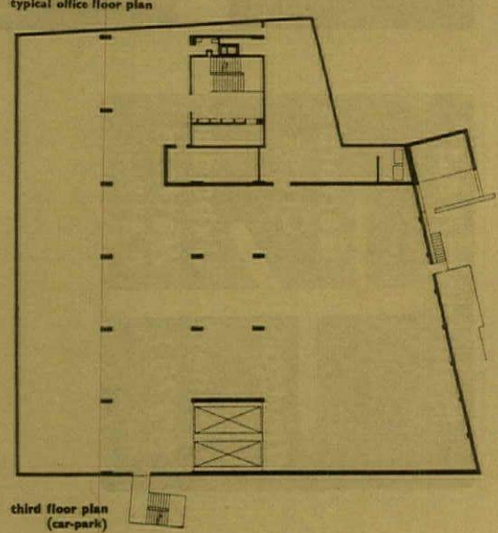
1 (facing page), the main elevation of the store from Warrior Square.



eleventh floor plan (directors)



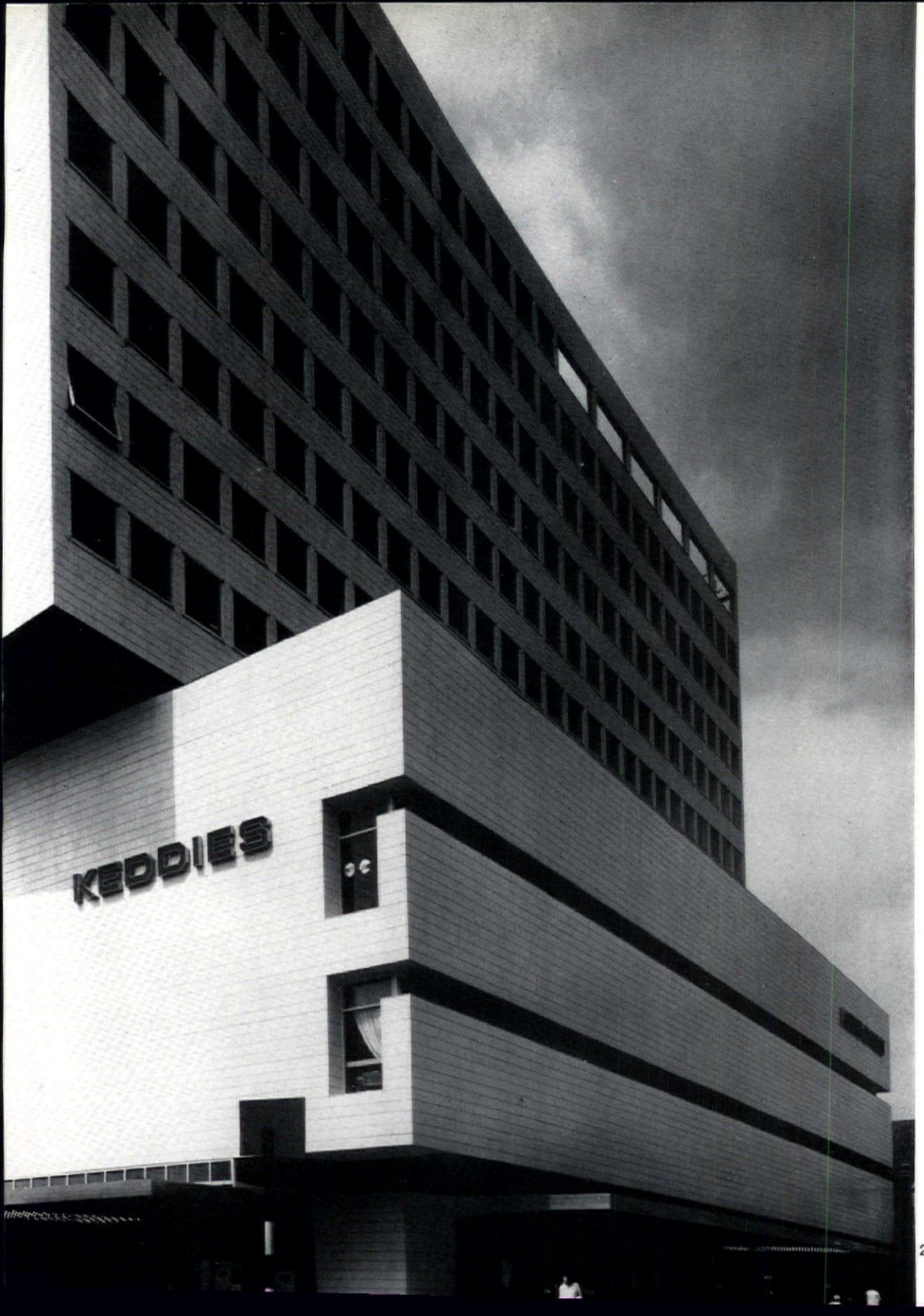
typical office floor plan



third floor plan (car-park)

THE NEW SCALE AT SOUTH-END

KEDDIES

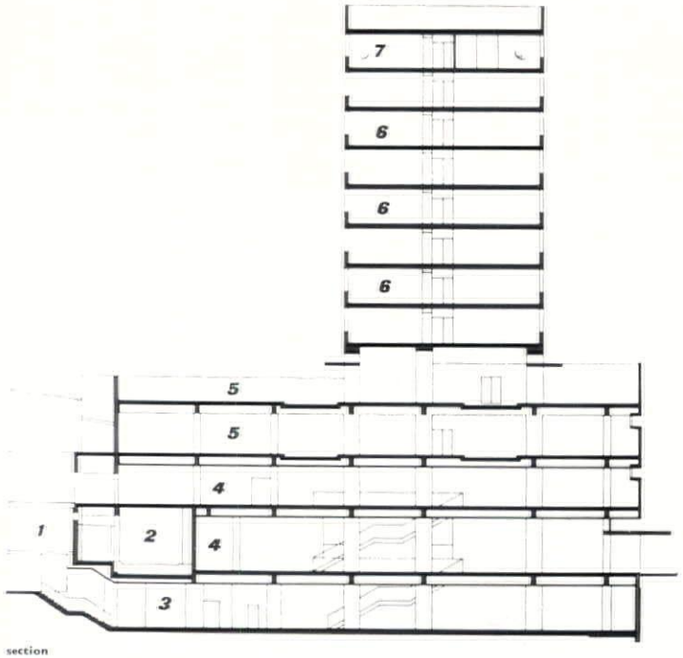


2



3

2, the four-storey podium containing sales floors and car parking, with the eight-storey office slab behind.
3, rear elevation of the store, where it is connected to the existing store.
4 (facing page), close-up of the podium showing the white glazed tiles with which the whole of the exterior is finished.



section

key
1, existing building
2, roadway
3, customers' tunnel
4, store
5, car park
6, offices
7, directors' suite

DEPARTMENT STORE, SOUTHEND-ON-SEA



4

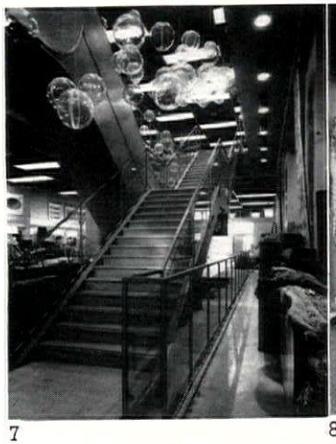


5

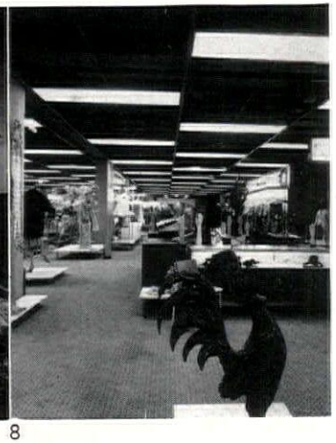
6



5, detail of tile and glazing junction at main entrance.
6, the aluminium canopy which runs along the whole of the front elevation.
7, 8, two views of the sales floors ; the ceiling grid is of varnished Columbian pine.

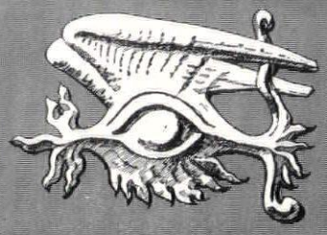


7



8

photographs by H. de Burgh Galwey / *for criticism see page 12*



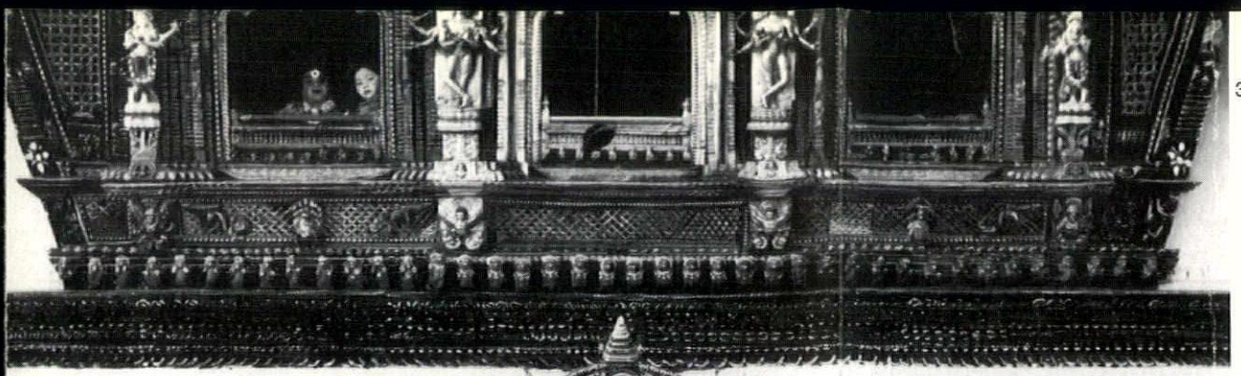
the exploring eye

In the cities of Nepal, temples and Royal palaces are intermingled and share in common the tiers of roofs that symbolize rank as the umbrella does generally in the East. On this page, 1, are the temples in the Kot, or main square, of the capital city of Kathmandu, on one side of which is the Hanuman Dhoka, the old Royal Palace. Overleaf, 2, is the central square—called Mangal Bazaar—of the second city of the Valley of Nepal, Patan. On the right is the old palace of the city's kings, now used for government offices and schools. The bell and high platform on the left are used for summoning and addressing the townspeople. 3 shows the entrance front of the house of Kumari, the living goddess of the Newars, the people of Kathmandu. It is arranged round a court with a small shrine in the centre, which is the traditional form of a Newari house, and the carved window surrounds with elongated cills and lintels are typical of Newari building. 4 shows the towers of Basantpur, the eighteenth-century court of the Hanuman Dhoka. At the top of the left-hand tower is the temple of Shiva of Koilasi, the patron deity of Nepal. The copper dome in the background is an observatory. 5, Taleju, the royal temple in the compound of the Hanuman Dhoka. Built in the middle of the seventeenth century, it is raised on a pyramid of steps. The roof is of gilded copper, and the eaves are supported by carved wooden brackets, depicting various deities, between which are pierced screens enclosing a gallery. 6, a corner of the old royal palace in Patan, now used as a police post.

EWAN MACLEOD

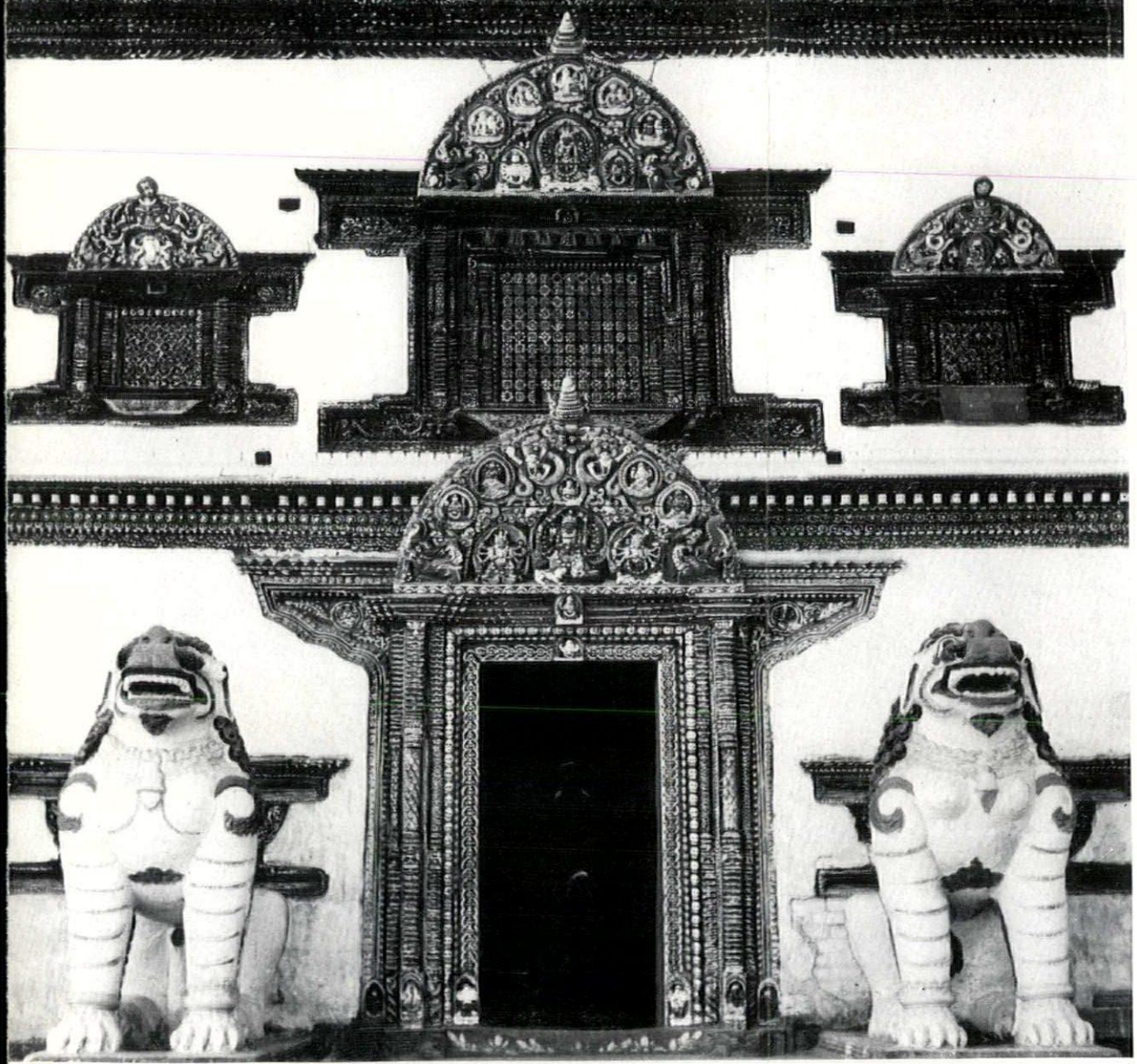


1, *temples in the main square of Kathmandu, in the Valley of Nepal.*



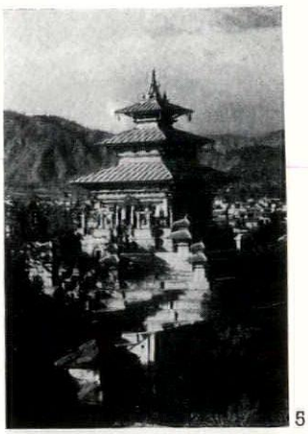
3

photographs by Bell Howarth

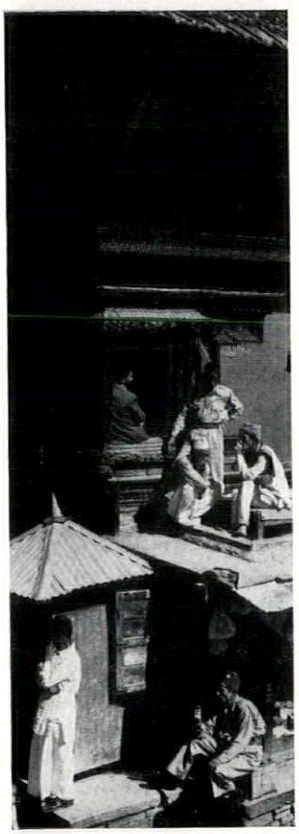




4

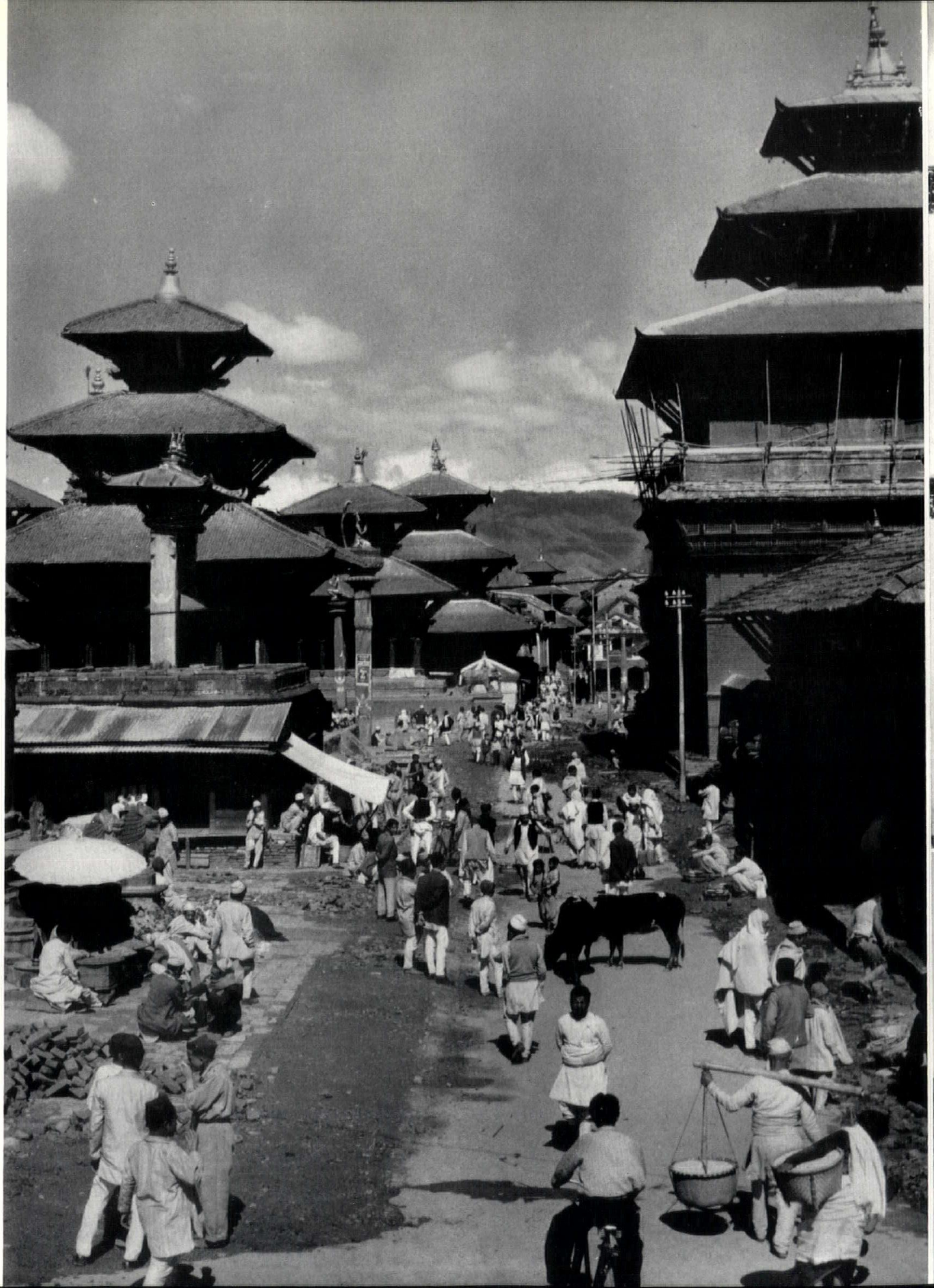


5



6

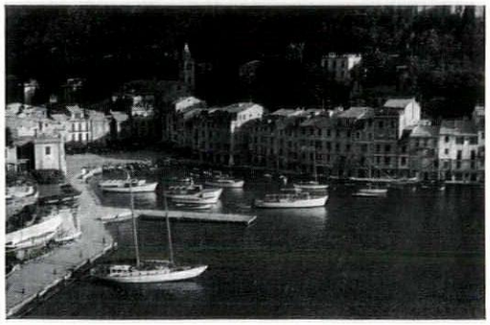
2 (facing page), the central square of Patan, Nepal's second city—see text on preceding page. 3, the house of Kumari, the living goddess of the Newars, the people of Kathmandu. Kumari herself, with a circular mark on her forehead, is looking out of an upper window. 4, the towers of the eighteenth-century court of the Hanuman Dhoka, the old Royal Palace at Kathmandu. 5, the royal temple in the same palace. 6, the old royal palace at Patan.





1

The increased popularity of sailing and other forms of pleasure boating, combined with the increased overcrowding of our coastline, have made many people look towards the type of planned yacht harbour known in America as a 'marina.' If marinas are to come to Britain—and several are already on the way—they will raise many problems of amenity, topography and design. These are discussed by Elisabeth Beazley in the article beginning opposite, which is followed by illustrations of some current projects for British marinas. The vast scale of some of the American marinas is shown by 2, below, Long Beach Marina, California, which has moorings for 1,800 boats. Contrast this compact and highly organized yacht-parking with the traditional British method, 1 above, mooring on buoys in the Hamble River, a busy yachting centre. Contrast also the absence of enclosing form in the Long Beach example with the walled-in effect of old harbours like Portofino, 3. The pattern evident in 2 would be lost at ground level. Open space preponderates because of the greater need for car-parks than for buildings.



3

2



Elisabeth Beazley

MARINAS

Just when the need has vanished for any Briton ever to set foot on a boat, even in order to emigrate, the urge to do so is causing a demand for moorings which is completely outstripping the supply. This, naturally, is at its most acute within weekend reach of the large centres of population, particularly in the south and south-east of England, but there seems to be every likelihood that it will spread. The natural deep water moorings are nearly all taken up. It is now no longer enough to own a yacht; it may remain high and dry until your name has slowly reached the top of the waiting list. To meet this demand planning applications for marinas have come in to every county planning office whose area includes English Channel coastline, besides others on the east coast and in Wales. Most of these proposals are having a sticky passage, and many have sunk without trace. The object of this article is to try to ventilate some of the problems that a marina automatically raises.

In some quarters there is opposition to the very word marina and, without a clear picture of what it describes, such aversion is natural enough. First then, what does it mean? The simplest way to visualize a marina is as a place for parking yachts which is arranged so that the owner can walk aboard at any state of the tide without using a dinghy. In America, where the word was coined back in 1928, the definition is wider: 'the modern water-front facility for recreational boats'; in Britain, this is translated as an artificial yacht harbour which provides various services for the yacht owners. Inevitably this has been abbreviated simply and inaccurately to 'yacht harbour.' If the only result was the fashionable label 'marina' on plans where the existence of a pool of water seems to need justification, this would not much matter. But the problem goes deeper: if 'marina' is substituted only by the words 'yacht harbour' most Englishmen will have a false picture of what is intended.

To many of us a yacht harbour conjures up a picture of sailing boats riding at their moorings, swinging freely with the tide; each boat is doubled by its reflection; masts and rigging mix with the clouds below them. They are protected by a steep rocky headland and an immense stone breakwater, as permanent as the rocks. Since the harbour provided the original *raison d'être* for the town its buildings crowd round the quays. There is no quicker way of getting into the heart of a town than to sail into it. Inevitably such harbours have a sense of enclosure and shelter even stronger than that given by many a formally planned piazza. The simple forms of old warehouses, boat-sheds, houses and pubs walling in the water make not only a marvellous back-cloth to the fine lines of the yachts, they also absorb the odd untidy shack, rubbish dump or rusting hulk in such a way that these do not stick out like a sore thumb.

A marina is not like this: it differs in almost every way. In siting, since it may be on open country or on a featureless derelict site. In planning, because the basic idea demands that a maximum number of boats be moored in a given space; the boats are therefore closely packed but on the land there may be an amount of 'spare' ground (a lot of this is needed for car parks) unfamiliar to the usual economy of land use connected with traditional harbours. In use, because, although it is greatly to be hoped that the few marinas which are planned in old-established sailing centres will attract more sailing boats than power craft, there seems little doubt that elsewhere, if proportions are not even, power will dominate.

In addition to these differences, British marinas are usually designed to meet the needs of a different type of customer to the man often popularly associated with harbours. Forget that description from the *Wind in the Willows* which has been quoted with so much affection and so often in books on sailing and cruising. Marinas are not for those who want to mess about in boats. On the contrary they are primarily for the man who feels that pressure of work, lack of time and an adequate income call for a service whereby one telephone call will arrange that his yacht will be serviced and ready for sea at any specified time throughout the twenty-four hours, regardless of tide. An efficient service is what he needs and he must be willing to pay for it. Many yachtsmen are.

This brief comparison of the ideas behind a modern marina and a traditional harbour is only intended to dispel any notion that because a marina is concerned with boats

and harbours it is automatically an attractive project. Like any other it must first be properly sited and well designed. It then has immense possibilities, both in itself as useful, ship-shape and good to look at, and also as the greatest asset to its surroundings.

But before going further into its possibilities the question of the need for marinas should be looked into: while it is evident that the demand for moorings is generally urgent and in certain places the shortage will quickly put an end to any expansion, no one seems to have anything but the haziest idea of the real size of this demand. In 1961, a writer on marinas,* in a brave attempt to come to grips with the problem, made an estimate of boat production from a cross section of the 522 yards listed in the *Ship and Boat Builder's Annual*. From these figures it was estimated that 15,000 yachts of 14 ft. length and upwards were produced annually for the home market. Although the writer carefully explained his methods of arriving at the figure, such is the shortage of data that this figure is now quoted often without reference to its limitations (how many, for instance, are dinghies?). Nor can this figure give much idea of *where* the moorings are most wanted. No wonder some authorities appear to be unconvinced of the need and prevaricate over niceties which seem of little importance to the developers. A lead might be taken here by the Royal Yachting Association in conjunction with the Cruising Association; member associations in co-operation with their harbour masters or other authorities could return figures of moorings available and numbers on waiting lists. Perhaps one of the oil companies—some of these firms have already given financial backing to research—might step in with financial support for a simple general survey of this sort. It would put the developers in a much clearer position when pressing their schemes, and give some basis for establishing the priorities in a particular area: no marina can exist without making its impact on its surroundings be they for better or worse. A few facts would clear the air and, if all the guesses are correct, instil a much needed sense of urgency.

Those most actively interested in marina development are not usually the yachtsmen (individuals excepted) but the boatbuilders. It would seem that if harbours are not built, they will have to stop building boats. (The Eastern Regional Board for Industry has realized this and has been at great pains to work out a scheme whereby its coast line and estuaries can best be developed with all users' interests considered.)

By comparison with the sustained interest shown by magazines such as the *Ship and Boat Builder and Marine Trader* and the *Boating Industry* (an American publication), which has special marina issues, yachting magazines† do not reflect urgent concern. It was in fact the boatbuilders who coined the word marina in the first place: *the National Association of Engine and Boat Manufacturers* (USA). Its publication, *Marinas: recommendations for design, construction and maintenance* (by C. A. Chaney), has no equivalent in this country and (with its predecessors by the same author) is the only marina book yet published; it is to be found on the shelves of grateful developers and architects throughout this country.

But it deals only in part with our particular problem: great tidal range. This, together with dredging, causes the most expensive and important problems which have to be solved in British marina construction. Here the tidal range reaches 33 ft. in places; by contrast many American sites are on the lakes and inland waterways, as are so many of the Dutch harbours. The Swedes have the smaller Baltic tides to contend with. We cannot expect other nationalities to solve problems which scarcely exist for them.

Problems caused by big tides (e.g. all those concerned with pontoon access, mooring and construction: the essence of a deep berth marina) must now be tackled in isolation in numerous offices throughout England, since all our marinas are first jobs and little experience has yet accumulated or been published. Their solution is of as great importance visually as it is practically. If some of the components manufacturers, the development associations of the materials used (e.g. Timber Research and Development Association‡; Cement and Concrete Association) could finance such publications and, more important, finance some of the very necessary research that must be done before some of the marinas now on the drawing-boards are to get much further, much unnecessary duplication of work might be saved. Some developers would willingly experiment with new materials if they could afford the time to do the necessary research. The present system of each man solving each problem as a one-off job, however unintentional, is absurd but inevitable until someone has the time and money to take the initiative (as the NAEBM has in America). If this was the eighteenth century, when such a generous abundance of books on building was published with such good results, you may be sure that an enterprizing individual would already have published a general work, *Marinas made Plain to the Meanest Capacity*, or a more detailed treatise perhaps entitled *Pontoons in Timber, Fibre Glass, Steel or Pre-cast Concrete; their Junctions, Mooring and Flotation Exactly Described*. . . . Incidentally the *Facilities File* of the National Association of Outboard Motor Manufacturers is in this tradition.

Types of Marina

Marinas fall into three main types. Conditions outside the harbour (sheltered or exposed), range of tide, soil and hydrographic conditions, are among the deciding factors.

(*a*) *The locked basin:* most locked harbours have one (sometimes two) single gates which allow boats to enter for a certain time on each side of high water, depending on the height of the sill of the lock and the dredging of the channel outside. The disadvantage is that the time of entry to the harbour is limited and boats may have to wait outside in rough weather waiting for the tide; nor can they leave at will. The advantage is that once a lock is formed, the harbour has a tide range limited by its design; piles to which the pontoons are secured can therefore be much shorter (and cheaper), and such problems as those of connecting the pontoons to the shore are greatly simplified.

(*b*) *The tidal basin:* with pontoons moored to piles, floating the full tidal range. Piles are usually also used to moor boats at their non-pontoon end. Used where the tide range is small or the building of a locked harbour is impracticable. With big tides the long piles necessary will have to be braced for stability. They cannot be braced below water level (fouling of pontoons) therefore an additional 7 ft., say, will be added to their length in order to take bracing which allows headroom on the pontoon at high tide. Such piles are not only expensive (although in many cases the best answer) but they can give the harbour visually an entirely different character to that of a tideless basin. It may be a character scarcely realized by the designer himself at the earliest stages of the design. It can be exciting: a forest of piles, rising thirty feet or so above your head at low tide, dwarfing the yachts, contrasts strongly with the uninterrupted fingers of jetties lying quietly on the water of so many perspective sketches. It is essentially urban in character and in keeping with the dolphins, cranes and other giant furnishings of a port. It could alter the scene in some lazy backwater more radically than any new building.

(*c*) *The haul-out marina:* The Americans regard this type as a true marina and it is now popular for sizeable boats as well as dinghies and small power craft (a vertical marina has been developed where boats are stacked three deep). If sailing is to continue to expand, particularly among the less well-to-do, we should consider the particular problems of the haul-out marina right away. It is much cheaper to construct (little or no dredging, piling or pontoons are necessary). Visually the boat parks, often behind security netting, deserve careful design, otherwise the place may look lie a war department dump. Dinghy

[continued on page 99

* *Ship and Boat Builder and Marine Trader*, September 1961. *No Marinas* by Ocean Tramp.

† Exception: *The Yachting World* (September 1962). 'Marinas' by Raglan Squire.

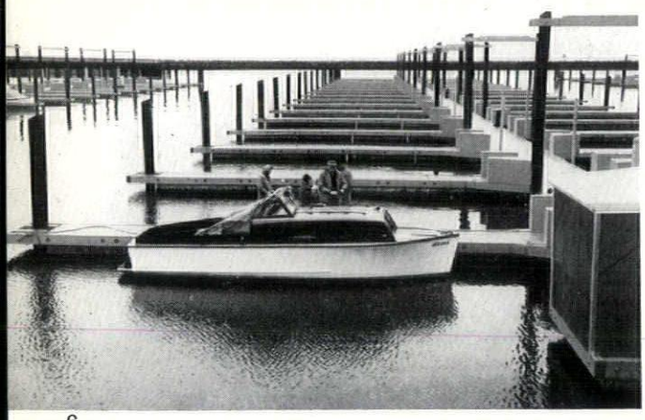
‡ The TRDA has already done research into the life of timber piling.

4, *Shishole Bay Marina, owned and operated by the Port of Seattle. This is an* $8,500,000 *co-operative project between the Port and City of Seattle and the US Army engineers, who constructed the* 4,370 *ft. breakwater and dredged the basin at a cost of* $2,500,000. *The marina is seen here at an early stage—it is designed to hold* 1,600 *moorings.*



5, *Birdham Pool, Chichester Harbour—a locked harbour accessible for* 2½ *hours on either side of high water. Vernon's Pool, which is about to be developed as a marina, is beyond the canal on the right.*





6

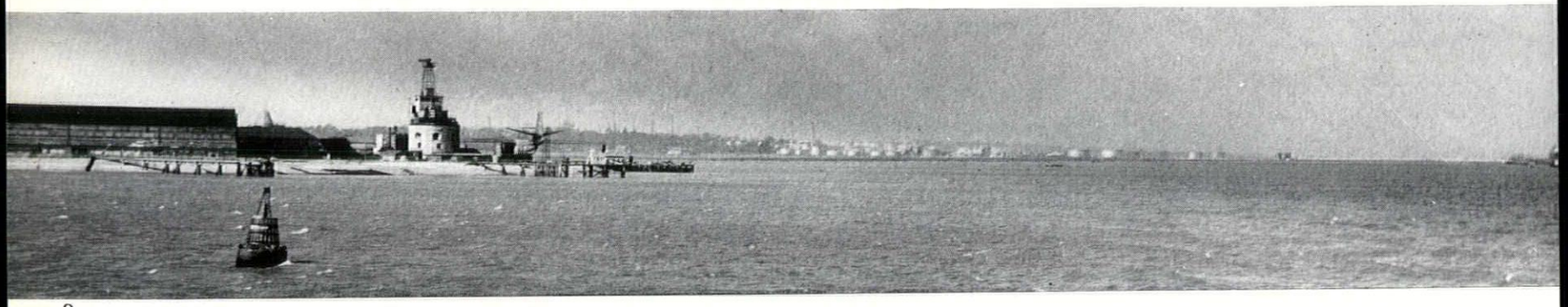


7



8

6, *pontoons with finger jetties moored to piles (Port of Seattle). In a British marina with, say, a 25 ft. tidal range, braced piling would be at least 32 ft. above the pontoons at low water: they would be about the height of the dolphin in* 7, *but in a locked harbour like Birdham,* 8, *the problem is automatically solved.*



9

9, *Calshot Spit, showing part of one of the ex-RAF hangars (and a moth-balled Sunderland) with the power station site and oil refinery in the distance. A tanker can be seen at the jetty on the extreme right. Hampshire County Council's proposed sailing centre would include deepwater berths in the lee of the spit and would make use of the existing hard-standings and buildings for dinghy parks, etc. Agreement must first be reached with the Southampton Harbour Board, who is responsible for new moorings in Southampton Water and is anxious that smaller boats should not interfere with ocean-going ships in the navigable channel.*



10



11

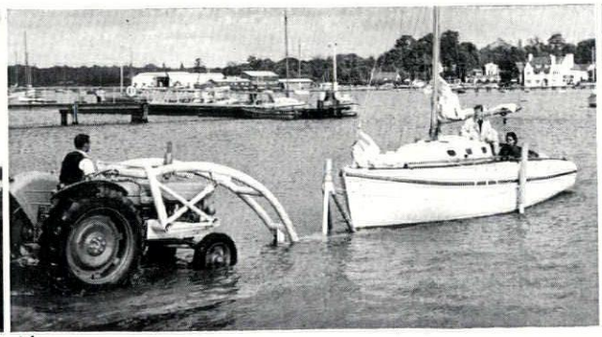


12

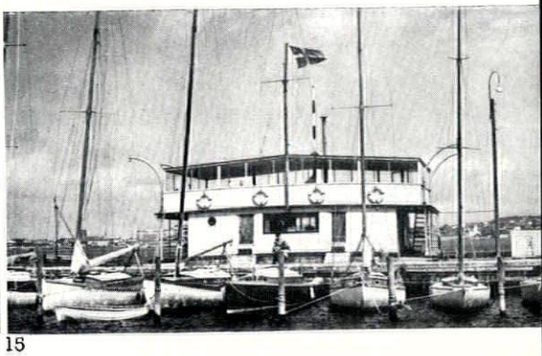
10, *semi-derelict suburban land at Sleeper's Hole, Newhaven, where a marina will be fully operational by this summer (see pages* 104–105). *The new showrooms and offices can be seen in the background.* 11, *derequisitioned RAF property at Calshot Spit; far too much land of this sort still stagnates* 18 *years after the war.* 12, *a dinghy park underlining the urgent need for positive design of details such as security fencing or the arrangement of slot machines.* 13, *cabin cruiser instead of week-end cottage. When the difficulties of finding or getting planning approval for a week-end cottage within reach of London, together with the cost of a site, are considered, the attractions of a cruiser which might never leave its moorings in a marina are easily understood.* 14, *hauling-out of larger craft. Fairey Marine, Hamble, has provided one answer to the mooring problem by providing a quick haul-out service with shore berthing for boats with retractable keels up to* 31 *ft. o.a.l.* 15, *the deck house of a steamer has been converted into a club-house (for, the Aalburg Yacht Club, Denmark) which seems admirably suited to its function. With so many ships being scrapped, smaller haul-out marinas and youth sailing centres might investigate the possibilities of such conversions.*



13



14



15

continued from page 96]

parks will save the trailing of boats at weekends; it would be interesting to know in this connection how many do-it-yourself kits are sold to home boat-builders each year.

Haul-out marinas would seem to have great possibilities in Britain, in spite of the problem that many boats deteriorate from not being kept in water. However, modern glues and such new materials as fibre-glass may eliminate this problem. A haul-out service is included in some of the conventional designs, and Fairey Marine Ltd., at its factory on the Hamble, has developed a system whereby boats of up to 31 ft. o.a.l. can be put in the water in a matter of two or three minutes from specially designed trailers.

Siting

The problem of siting has to be tackled both from the yachtsman's and developer's angle and that of the marina's effect on the area as a whole. This includes appropriate land use (e.g. is a marina an asset on a lonely estuary?), harbour traffic, land traffic, other users: e.g. the shell-fishing industry. . . . One thing is clear: to find an ideal site which satisfies all conditions might mean no marinas. But at least a site must satisfy the majority of conditions. First, from the yachtsman's point of view it must be both accessible from his work and be somewhere where he wants to keep a yacht. In the south this gives the Solent high priority, particularly among sailing yachtsmen. It is sheltered; there are numerous other harbours within the sheltered water to which to sail; to a northerner it might seem already crowded but by southern standards it is not, and one is assured that given the moorings there is plenty of room. Other places on the south coast such as Newhaven, where one of the few marinas proper is going ahead, might by comparison seem bleak outside the harbour. But here power-craft owners are likely to be in the majority. It is well situated for the run across to France, and, if a chain of marinas was constructed at about 40-mile intervals along the south coast, the very real problem of where to go would be solved. Newhaven, too, like Sheppey, is very accessible from London, and this is a great advantage.

If the increase in boats is anything like the forecast, marinas will have to be built in the non-traditional sailing areas. It is anyway preferable that marinas with a high proportion of power craft should not be built in a relatively quiet sailing estuary. The thrill of a fast motor boat must be counter-balanced by the noise, wash and smell it can create. It is exhilarating to watch high speed turns from, say, the Thames embankment where no sound can be heard above the din of the traffic, and the river lies empty under a winter sun, but the same manoeuvres could have a very different affect on a quiet green estuary, bobbing with boats in the height of the summer. Modern power craft are so simple to drive that on such waters little skill is necessary: press the self-starter and off you go.

The developer for his part must find a site where the cost of what is inevitably an expensive undertaking will not be prohibitive, and where he can get a lease of the foreshore and river bottom in question. From his point of view the depth of water immediately off shore and the condition of the bottom are extremely important. Very shallow water for a long way out means expensive dredging and is anyway unconducive to sailors. Alternatively a shelving shore, like much of the Clyde, some of which drops into 12 fathoms, makes marina construction very expensive. Expert advice has to be sought as to whether the proposed harbour is likely to scour or silt, whether the bottom is suitable for dredging and whether the dredged material is suitable for dumping on land to be made up: a dig and fill procedure is the obvious economy, and if land now unsuitable for buildings can be made useful, it is to everyone's advantage. Problems of piling for mooring the pontoons and types of harbour wall must be considered.

Test bore-holes must therefore be made: an expensive procedure. This together with the possibility of a marina being the subject of a public enquiry before planning approval is granted means that the gamble of getting a marina under way is considerable. Around £10,000 might be spent before outline planning approval was refused.

A marina, by the very newness of such projects, is likely to be on land scheduled for other purposes if not on white land. If this involves a substantial departure from the development plan, the application may be referred to the Minister and this alone, rightly enough, causes suspicion among local inhabitants. The cost of a public enquiry may then be added to the cost of test-borings and the cost of the delay. Any measures to speed things up and to create a positive attitude would be useful. Immediate research on the various aspects of marina development could be a useful first step by providing a general basis for informed advice the Minister may seek on the possible repercussions of the particular schemes turned in for his consideration. If it was also available to planning officers unfamiliar with marinas their work might be simplified too.

The range of the tide is a prime consideration for the developer. This makes an area like Poole Harbour, with its 7 ft. tides, or parts of the Solent, such as Lymington River, with their double high tides, particularly attractive. However Cresta Marine at Newhaven with their 25 ft. tide in an unlocked harbour is one of the most advanced projects we have.

Another delaying factor may be the anxiety of the present harbour users. Visions of small dinghies drifting under the bows of big merchant ships are however, not realistic when marina yachts are powered craft and thus much more manoeuverable than most merchant shipping. The Dutch, incidentally, apparently manage these matters well in the confined space at Rotterdam.

There is, for instance, anxiety in some quarters that a proposal for a new sailing centre at Calshot might interfere with the tankers fuelling at Fawley, while others feel that carefully worked out rules of navigation and more buoys marking the deep channel could answer this problem. To an outsider it does seem slightly incongruous that an oil refinery should obtain permission to share the Solent, one of the oldest sailing centres in Britain, and that there should then be objections to its traditional use. Other marina projects, e.g. Sheppey, are facing similar difficulties.

Where dinghies are concerned, and several marinas are planning dinghy parks in addition to their deep water berths, their shallow draught should make it possible to regulate the traffic: at low water let each sail in the shallowest water in which it can float.

As a general traffic rule it is preferred that new marinas should be near the mouth of a river in order to prevent congestion in upper reaches, but this is not necessarily a major consideration.

American experience suggests that a marina's effect on the adjacent land values is not to be ignored. It can also be a great asset visually. A well sited marina can become a focal point in an otherwise depressed area, particularly one of unused derelict land, which would be otherwise difficult to make positively attractive. For this reason marinas are quite often part of a much broader redevelopment scheme which contains housing development as well as its own basic necessities. The scheme at Stokes Bay (page 105) is a good example. The site consists of windswept forlorn property, partly in the process of being derequisitioned. Poole harbour (page 108), has a site at the edge of industry and residential property on a narrow strip between a railway and the water.

Some marinas appear to be designed to provide a raison d'être for housing development (holiday or otherwise). The first question to ask is whether this is the right place for *new housing*? If it is, well and good. If not, whatever the merits of the individual design, it should be resisted. The proposal (which looks like being turned down) for a marina at Osborne Bay linked with a holiday village for two thousand, would seem to fall into this category. The Isle of Wight already has its full share of watered down subtopia around the coast; new housing, whether holiday or residential, should surely first attempt to infill rather than bite into a stretch of unspoilt country (page 107). If this country was as undeveloped as, say, Norway or New Zealand, one might

applaud such a scheme: if well detailed its village planning and landscaping should make an attractive project. Those who oppose it are not without alternative suggestions: there is a site on the Medina, up stream in East Cowes, which if well developed would certainly be an asset to the suburban locality. Others suggest that many more moorings could be made available at Cowes itself if money was spent on dredging out the shallow water at the mouth of the river (east side).

In relation to the Solent it is worth making the point that day or weekend sailors want places to sail to as well as places to sail *from*. Their first wish is not to sail to another marina but to look for the *illusion* of adventure and loneliness in comparatively lonely places, e.g. Beaulieu River, Newtown and Osborne Bay. (Hence local sailors' objection to the Osborne Bay scheme—despite its careful design and landscaping.)

At Fort Picklecumbe, an empty nineteenth-century fort near the entrance to Plymouth Harbour, a company is developing the old gun batteries and quarters as self-contained flats and a club-house. This seems an excellent use for a piece of derelict but architecturally arresting property. That a new harbour run on marina lines should be made out of the old one as an attraction to induce people to take up residence seems to be intelligent use of the existing potential of the site.

The ever growing landward traffic problem has also to be remembered. Marinas must be near railheads or main roads. A conservative estimate puts the number of car-parking spaces per boat at 1 to 1.5; 1 to 2 or 3 may soon prove nearer the mark. Small country lanes, or small country towns could be quickly jammed by a weekend rush of traffic to a new marina added to an already groaning road system. A site in Lymington, which in some respects seems ideal, is an example where a problem of this sort may have to be solved.

The planning officer also has the potential problem of the floating gin palace whose owner seldom intends to put to sea, or, more mildly, that of the marina turning into a floating caravan park. To anyone searching for a weekend cottage or for building land in the south of England, such a solution might seem very apt. For the rent of a berth at, say, £200 per annum and the cost of his boat, the problem is solved.

Some local opposition to marina projects, however they are to be used or are sited, is to be expected. Few of us welcome any change in our own surroundings, particularly if these are rural and the project in question will bring in more people: this simply underlines the importance of proper siting, but some opposition seems inevitable whatever the conditions. The Duke of Edinburgh pointed out in his presidential report to the Royal Yachting Association (1963) '. . . whilst some harbour authorities are tackling the problem (of new yacht harbours), there is usually strong, if perhaps rather selfish objections to individual proposals for this kind of development. I am firmly convinced that if yachting is to expand additional harbour mooring space must be found.'

Local opposers might bear in mind that if sufficient marinas are built, pressure will be relieved on the traditional moorings since it is probable that many busy weekend yachtsmen will opt for a marina which, in addition to its services, may allow him more sailing time. To that extent a marina has the advantages of a holiday camp in that it can relieve pressure on simpler accommodation.

The Developers

There are now over 3,000 marinas in the United States. Out of over 40 considered in Britain during the last three years, we now have four operational (Penton Hook on the Thames, Newhaven, Birdham Pool, and the Dart Marina). In Britain all developers are private companies; in America things started this way and opposition had at first to be overcome, but the pattern of development there is now shifting, and it is not uncommon for a municipality to construct a marina and for it then to be taken by a private company. Private developers in the USA are even beginning to complain about the municipalities' interest (see the *Boating Industry*, August, 1962). This gives food for thought. In England the only municipality which has so far shown any initiative (others have nibbled) is Portsmouth. Eight firms were asked to submit plans for a recreational and holiday centre, including a marina, at Eastney on Langstone Harbour; this rather down-at-heel site could be made positively attractive by such development. Other municipalities might follow this lead. Southend's dinghy lake is anyway a beginning. A city marina would seem to have a great tourist attraction potential. Construction is reported to be starting shortly on a 'boatel' on New York's East River (70 boats and 220 car-parking spaces), but there is no word of such developments in the LCC's planning department.

Federal aid may also be forthcoming. An article in the same issue of the *Boating Industry** described this: 'Direct Federal interest . . . is largely a matter of licensing concessionaires in federal recreation areas. . . . However the Government does foot the bill where private operators could not afford to provide the necessary buildings and related facilities. . . . As to profitability: if concessions are operated on a sound business basis *with no more facilities than the patronage will support*, they can yield a good living. Few get rich from them, however.' (Our italics.) We should know a lot more about this sort of marina; doubtless much could be learnt from Holland and Scandinavia too. In Holland some yacht harbours are partly run by the municipality. In Denmark they are municipally owned and maintained but no new marinas have yet been built.

There seems a real danger in Britain that only rich men's marinas will be considered during the next few years (exception: the Hampshire County Council's proposals for a sailing centre at Calshot Spit). Those architects who have been to America to study the problem have so far concentrated on these; it is now time for a thorough survey to be made of the workings of the simpler and often smaller schemes which also appear to flourish. It would seem that we should make room for many more sailing centres run on these lines (probably the majority would be haul-out marinas). Their proper designing and siting is equally important.

Marina Services

Yachtsmen ashore still concentrate their interest on their boat; they want the sociability of their club-house and the service of the repair yard or chandler's shop, a hot bath and a hot meal; but the meal is best eaten in a restaurant looking down on the harbour, and the service buildings must be as near the water as possible. The whole focus of interest is the harbour with its comings and goings; it is inward-looking. The surroundings matter relatively little. A good design will underline this potential.

A typical marina has the following basic services. In some they are more elaborate; in others extremely simple.

In the harbour: moorings on floating jetties for all boats or hard standing with haul-out or other facilities for handling shore-berthed craft.

On pontoons: water supply and electricity to each berth, some provide telephones; fuelling points; fire alarm and firefighting systems; garbage collection system.

Sewage disposal system: this obviously varies according to the site of the harbour, and whether it is locked or open. Public lavatories ashore and the sealing of heads of boats in harbour is one solution. Other authorities let the problem take care of itself (apparently with success according to some American experience).

On shore: harbour master's office and control room; club-house or other facilities for yachtsmen for hot food, bar, w.c.s, showers/baths, changing rooms; boat repair yard; sleeping accommodation (very useful if yachts are not all of a size to sleep aboard—may vary from hotel to hostel standard); chandlery; food shops; off-licence—many marinas have a showroom, where boats, engines, etc., are displayed for sale; self-service machines for food, milk, etc.; car-parking (1.5 cars per boat minimum); petrol sales; a service station where cars can be serviced while owners are at sea.

Provision for children: seldom officially

* The *Boating Industry*, August 1962, Governmental Aid for Marinas, George Maxwell, Art Wechsler and Adel Chidakel.

provided but bigger marinas might well make provision for care of yacht-bored children while parents are at sea; a nursery for small children; dinghy sailing, etc., for older ones; hostel accommodation for overnight.

Landscaping: ominous reference to lawns and flower-beds in some publications may not be in character. Few plants survive near the sea. Robust use of hard surfaces in the true harbour tradition is likely to be more useful.

Other accommodation: in some places more shore accommodation will be useful.

A holiday village can be a real asset on the right site.

The word *boatel*, which is now often used, does not seem to have any particular meaning unless we also use golftel and skitel.

Rentals

Local yachtsmen may well oppose marinas on financial grounds. Where space now taken up by cheap moorings is converted into a harbour, the existing holders may not feel inclined to pay for the services and convenience which automatically go with marina development. Yet if all other moorings in the area are taken they may have little alternative. Cresta Marine Ltd. at Newhaven has provided for a number of mud berths, which although more expensive than the old moorings are about two-thirds the rent of those on the new pontoons. Figures can be misleading, since a marina rental will include for the care of the boat in winter and all the year round security, in addition to the many services already mentioned.

The following figures, strictly incomparable since they come from different harbours (but all on the south coast) and include different services, give an idea of what yachtsmen were willing to pay in 1962. Note that the first table is in shillings.

CHICHESTER HARBOUR DUES

(non-profit making: application has been made for these to be raised)
rates in respect of vessels used for pleasure anchoring or mooring within the harbour (not for hire):
16 ft. to 19 ft. in length 17s. p.a.
20 ft. to 30 ft. in length 30s. p.a.

CRESTA MARINE, NEWHAVEN

Deep water berths: 1s. 6d. per foot per week based on l.o.a. up to 25 ft.: (making a rental of up to £97 10s. 0d. p.a.)
Trailer park charges: 24 ft. to 25 ft.: £69 0s. 0d. p.a. (the old rental for mooring here is quoted as £12 p.a. Cresta Marine has guaranteed free mooring space to any young local yachtsman, not yet earning a full wage).*

FAIREY MARINE LTD., HAMBLE

(this does not claim to be a marina, but seems to be well on the way; the company offer shore berthing facilities to the owners of their boats).
26 ft. Atalanta parking (April 1 to September 30) £60
winter storage, £14
(includes 2 free launches and slips per week).

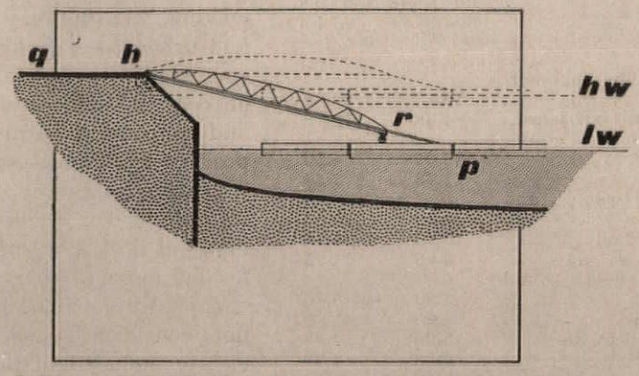
When such figures are compared with typical car parking figures, or it is remembered that the original cost of the boat to be parked often far exceeds that of the price of a typical suburban house, even marina figures do not seem excessive.

There can be no doubt that most of the money spent on marina development is below the high tide mark. Dredging and piling, and the building

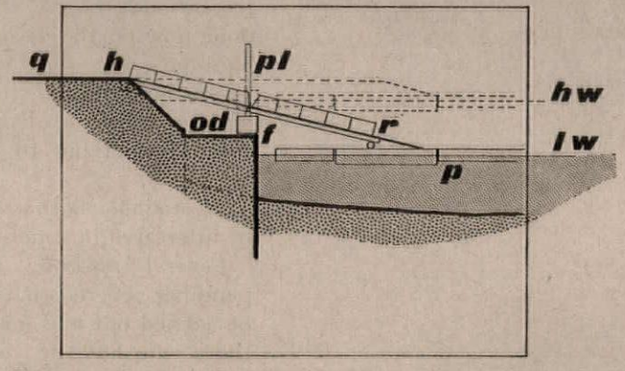
**The Times*, January 18, 1963.

bridging the gap

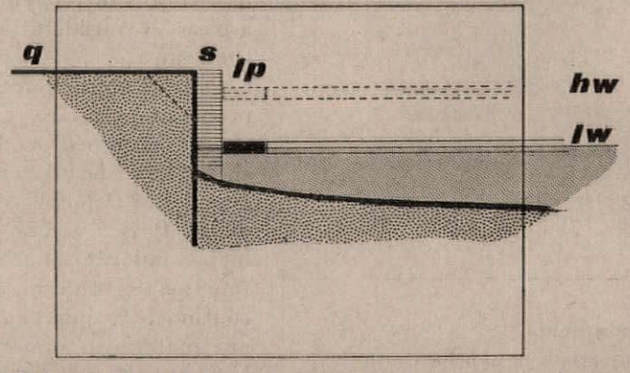
A big tide causes technical difficulties in bridging the gap between the floating pontoon and the shore. The span of the bridge **(A)** *may be considered uneconomically long, while steps* **(C** *and* **D)** *are sometimes ruled out because of the inconvenience caused when gear cannot be trucked direct from the car to the yacht. (Architects:* **A, B, C,** *Raglan Squire and Partners;* **D,** *Bond and Will.)*



A *Long articulated bridge of heavy construction (ramp 1 in 4).*

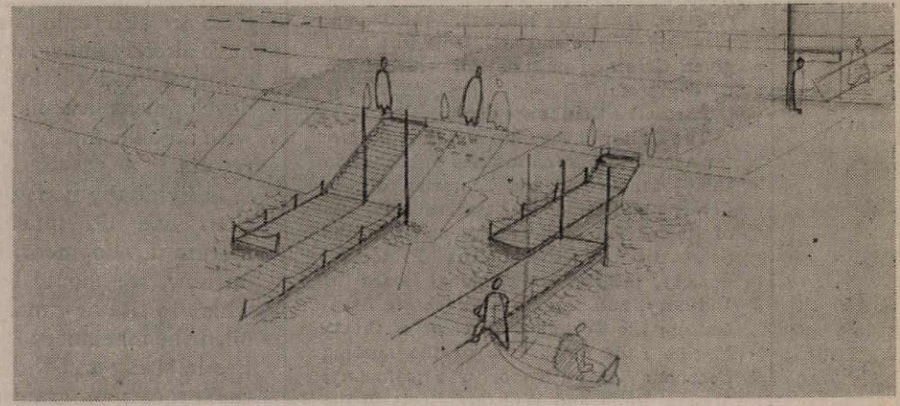


B *Method of supporting bridge at mid-span (ramp 1 in 4).*



key
q, quay
h, hinge
r, roller
p, pontoon
hw, high water
lw, low water
od, ordinary datum
f, float
s, steps
lp, long pontoon to span length of steps
measurements
lw-od, 7.4c ft.
lw-hw, 13.5 ft.
od-q, 12.0 ft.

C *Steps and pontoon.*



D *Pontoon and boom design at Cresta Marine, Newhaven (see also pages 104–105). Finger jetties or booms from the main pontoon provide easy access to yachts and also provide a means of mooring the non-pontoon end of the boat. In a harbour like Newhaven with its 25 ft. tides it would be both expensive and ugly to use piles for mooring the yachts as well as the pontoons. Piles for the pontoons are at approximately 60 ft. centres; from these pontoons booms, 10 ft. to 20 ft. apart (according to the size of the boats) project. The joint between pontoon and boom has been designed on the principle of an aircraft wing; everything depends on its rigidity since there is no pile to anchor it at its tip. Contrast this design with that at the Port of Seattle (page 98); there 16 ft. tides allow for shorter piling. The Newhaven pontoons and booms are designed so that complete sections or parts can be replaced in case of damage.*

of harbour walls are very expensive operations. This outlay must be recovered by provision of services the customers will pay for. The following table* shows the percentage of income from various facilities in USA:

PERCENTAGE OF INCOME FROM FACILITIES

Facilities	190 *municipal and commercial marinas*	118 *club type marinas*
Rental from slips and moorings	19.43	25.83
Restaurant and bar sales...	4.38	19.23
Sale–accessories and equipment	13.01	4.20
Repairs	11.73	7.56
Sale—new boats and engines	10.50	5.04
Sale—fuel and oil	10.15	12.59
Winter storage	9.96	11.75
Sale—used boats and engines	8.23	5.40
Rental of boats	4.20	1.68
Sale—bait and tackle ...	3.68	1.68
Sleeping quarters	2.63	4.20
Sale—groceries and ice ...	2.10	0.84

* [p. 243 *Marinas: recommendations for design, construction and maintenance*, C. A. Chaney. National Association of Engine and Boat Manufacturers.

Acknowledgments

Too many people have helped with this article for each to be acknowledged individually: marina developers, oil company officials, harbour masters, yachtsmen, planning officers and architects who have given time and material for which I am most grateful.

Particular thanks are due to:

The Editor of the *Ship and Boat Builder* for access to marina articles published in this journal; and the Librarian of the Cement and Concrete Association for use of its marina bibliography and file; the Secretaries of the Solent Protection Society, the Eastern Regional Board for Industry, and the Royal Yachting Association; the Technical Director of Cresta Marine Ltd. for details of the floating pontoons designed for the company; Messrs. Bond and Will (architects to the company) for information based on their experience at Newhaven; Mr. John Foulsham, ARIBA, for general background resulting from his visits to American marinas; and to Raglan Squire and Partners particularly for use of research done by this firm in Europe and USA on constructional details of pontoon mooring and access.

Conclusion

This article only touches on a few problems; experts will know of dozens of others. However, it seems that certain points emerge.

Sites: since a marina is essentially inward looking, focusing on its harbour, suburban and urban sites should be used before we encroach further on what is left of unbuilt on coastline and estuary. A well-designed and properly sited marina can then be a positive asset to its surroundings.

Demand: a survey should be made now to discover the demand for moorings and haul-out berths; a sense of urgency, badly needed in some quarters, should result.

Haul-out marinas: in America these are not considered back numbers and are clearly included in their definition of the word: 'the modern water front facility for recreational boats.' Research should be done now on the design and economics of haul-outs, otherwise many less well-to-do yachtsmen may be unable to sail, and dinghy owners will further clutter the roads by having to trail their boat at weekends.

Municipal marinas: authorities might be interested in American experience.

General research: into the technical planning repercussions of marinas should be carried out and made available so that those who have to consider projects previously quite out of their sphere would have terms of reference which could form a basis to consideration of their particular problem.

Constructional research: particularly in problems peculiarly acute in Britain, i.e. those concerned with big tidal range, should be undertaken and published so that experience is not wasted and work duplicated. It is too easy to imagine that the high standards of harbour design in the old functional tradition will automatically continue. Requirements are new and so are materials: a new tradition must be built up. It may be in steel and timber, but plastics, prestressed concrete and fibre glass are also taking over. Those firms who have already undertaken research might be commissioned to do more, perhaps by a development association in collaboration with an oil company who could publish the results.

Individually none of these small suggestions can do much towards speeding marina development, but if all were acted on now, we should have a better idea of where to site new marinas; we should have oiled the machinery that establishes priorities in siting and thus perhaps speeded up the process of granting outline planning approval; and much more would be known about efficient design and construction. It would be a start. Otherwise it would seem that in five or ten years time the boatbuilders' yards and back gardens will have their full complement of craft doomed to remain unlaunched while many a would-be yachtsman resigns himself to yet another weekend spent mowing the lawn.

service pontoons

Those oil companies who have taken the lead in the design of road service stations have been the first to show interest in the design of these pontoons. A simple solution which can be integrated into a marina plan is now needed. 16, *the* Shell Boei, *designed and built by the Schiedam shipbuilding yard, is the first self-contained floating service station in the Netherlands. Accommodation: reception area, workshop, w.c.s and bunk.* 17, *service pontoon at the Port of Seattle, trimly detailed and integrated into the design of the marina. European design has produced pontoons to float within a harbour—a slightly different problem—and answers such as this one are needed here.* 18, *electric outlet on a pontoon (Royal Maas Basin, Rotterdam).* 19, *waterpoint (Yachthaven, Schiedam).*

bridges and piling

20, *at the Dart Marina the articulated bridge is in one span. This marina has* 40 *deep-water berths and* 60 *haul-out.* 21, *shore end of bridge to pontoons (Rotterdam). Pontoon moorings to piles must be strong enough to withstand the strain of tides, wind and impact, and must allow free running of the pontoon with as little friction on the pile as possible.* 22, *concrete pile with timber rubbing strips on right, mooring bollard on left, at Antwerp (see also* 29). 23, *timber pile with plain steel stirrup (Rotterdam).* 24, *timber pile with roller on stirrup (Royal Maas Basin).*

harbour wall facings

moorings

25, *recent cobble facing to breakwater (Brighton).* 26, *concrete setts above low-water mark, sheet piling below (Royal Maas Basin, Rotterdam). Both these details show imaginative and robust use of materials which are much more interesting to look at than the sheet-piling or mass concrete which could have been the answer. Mooring details have to be thought out for light, floating pontoons.* 27, *steel ring bolted to floating wood pontoon (Rotterdam).* 28, *bow moorings running on cables on piles to allow for rise and fall of tide (Schiedam).* 29, *bollards for pontoons (Antwerp).* 30, *traditional heavy cast-iron shore bollards.*

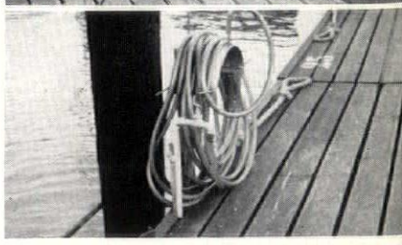


16

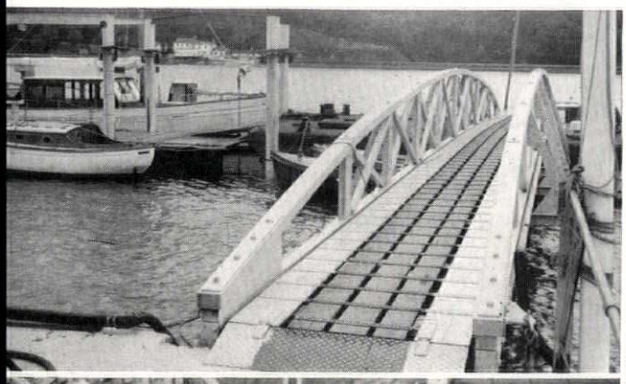


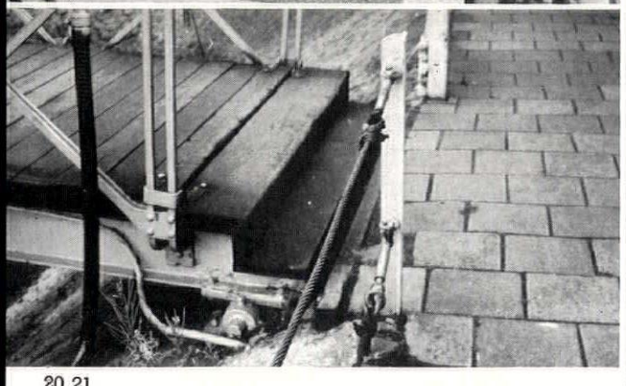
17



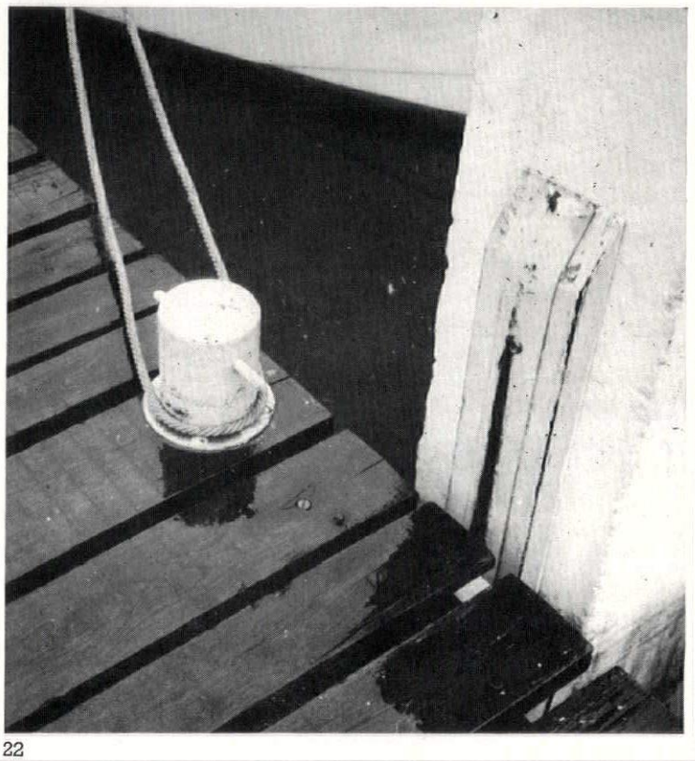


18,19

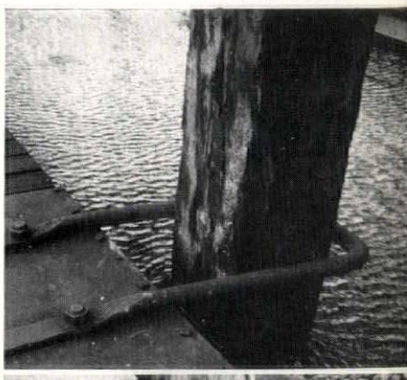




20,21

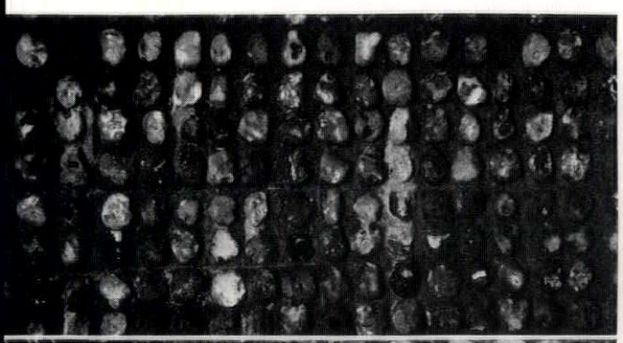


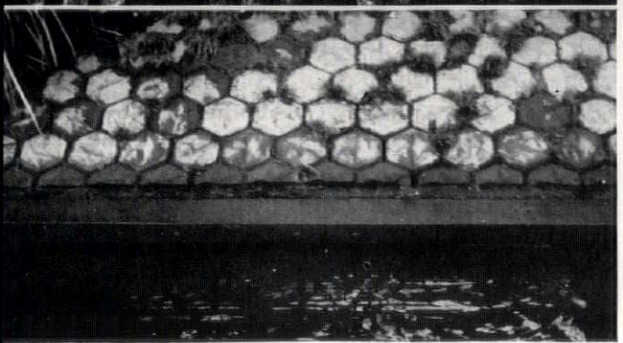
22



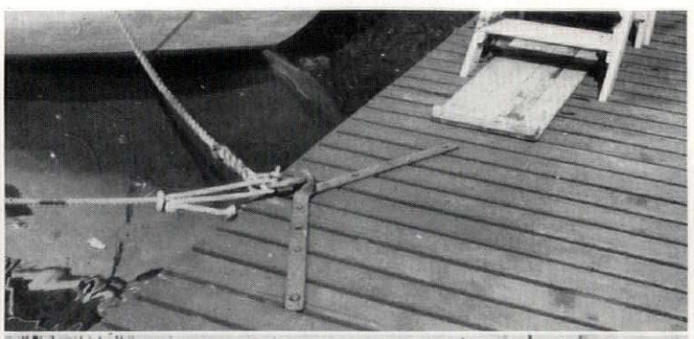


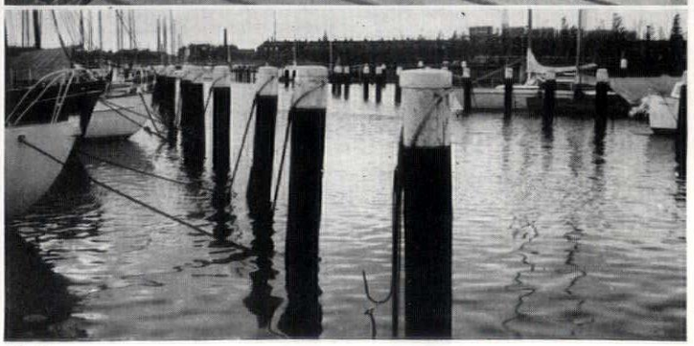
23,24



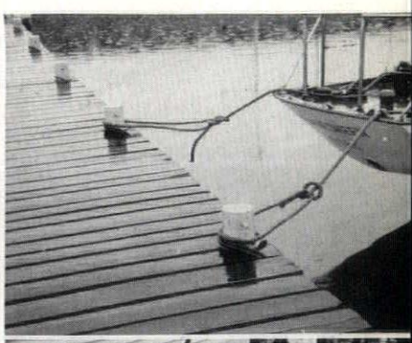


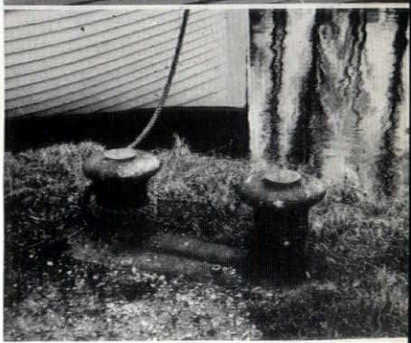
25,26





27,28

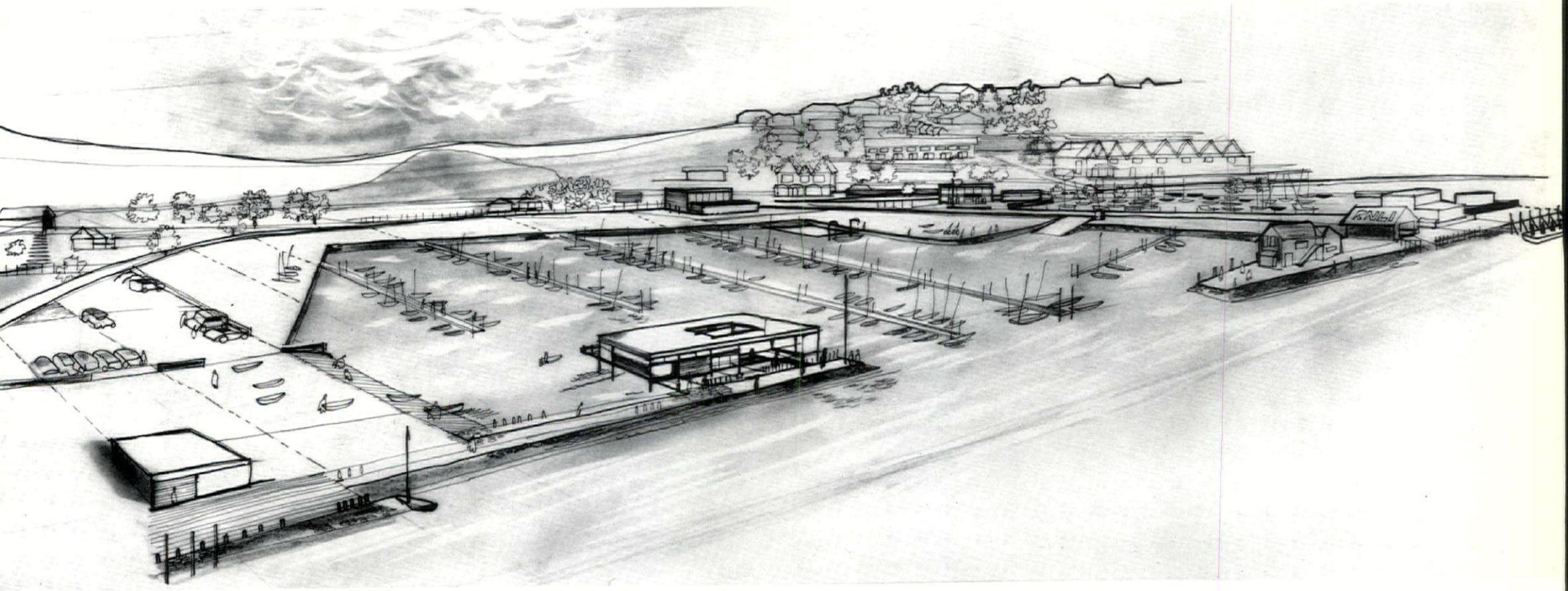




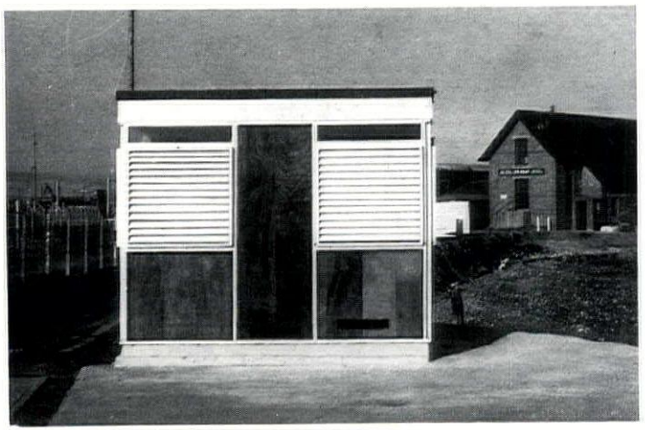
29,30

1 CRESTA MARINE, NEWHAVEN

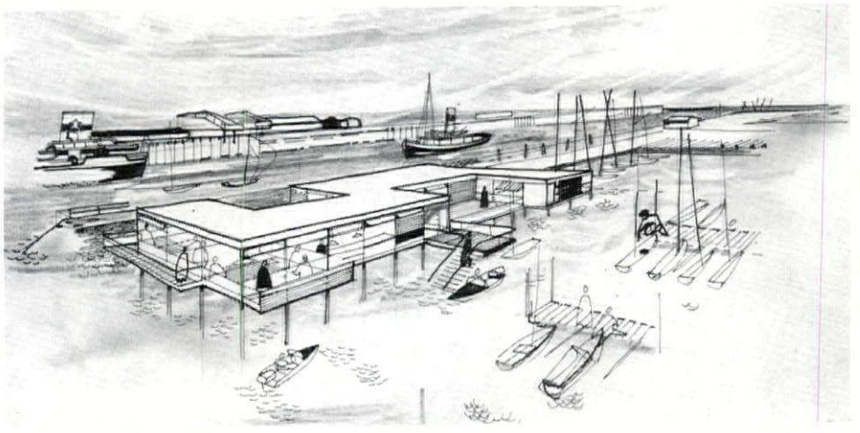
ARCHITECTS | **BOND AND WILL**



1



2



3

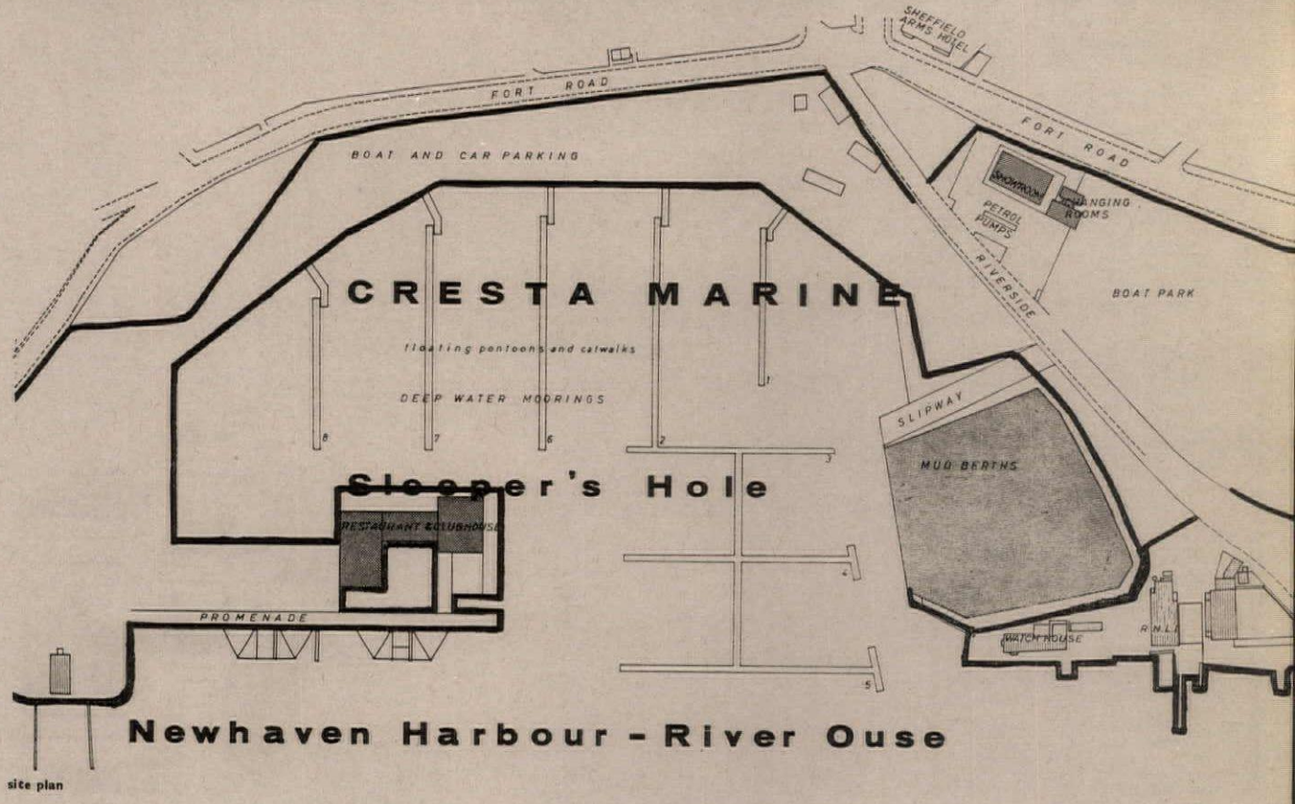
1, general view of Cresta Marine from Newhaven Harbour. 2, the engine house. 3, the restaurant and club house with the harbour beyond.

The experience gained in this first unlocked British marina coping with a tidal range of 25ft. will be invaluable to other developers. The site is derelict land off Newhaven Harbour. The existing hole is being dredged out and since silting may occur the company owns its own dredging equipment. The piling is steel tube and green-heart; piles up to 75ft. in length are necessary to cope with the tidal range and the mud bottom. Timber pontoons with fingers have been designed on the principle of an aircraft wing by the technical director of the company.

Esso have fuelling rights and have provided a refuelling pontoon. A club house, changing rooms, boatel, workshop, chandlery, boat showroom and petrol station are included in the scheme and the usual services are provided on the pontoons. Sewage disposal is via the harbour. This is the first British marina to have put up new buildings. The straightforward design and simple use of unclad steel, brick, etc., and restrained use of colour are in the best harbour tradition.

Deep water berths: stage 1, 150; stage 2, 300. Haul out berths: 300. Tidal berths: 70. Rent per berth in deep water moorings: 1s. 6d. per ft. o.a. per week.

Developers: Cresta Marine Ltd. Engineers: Cresta Marine Construction Co. Quantity surveyors: Parsons and Young.



site plan

2 STOKES BAY MARINA, GOSPORT

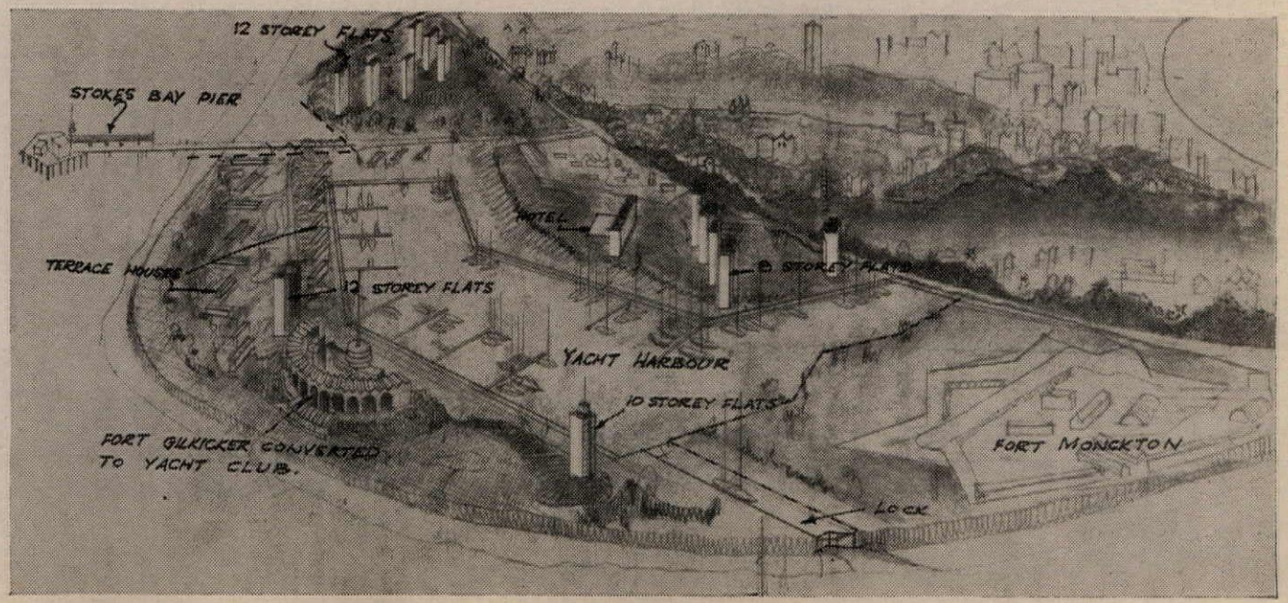
ARCHITECTS | **RAGLAN SQUIRE AND PARTNERS**

The site is 116 acres of marsh land forming Gilkicker Point; at present contains partly used and derelict War Office property, a golf course and a shallow lake. It is proposed to form a locked harbour by dredging to provide moorings and haul out facilities for 1,000 boats. Tidal range 13ft.

In addition to a full yacht basin service together with club house, restaurant, etc., it is proposed to build 880 flats in tower blocks of 12 storeys, 188 terrace houses with sheltered courtyard gardens, and a hotel and to provide open space for public use between the housing and the sea. The yacht harbour should make a focal point in a now featureless site. The project is awaiting the result of a town planning enquiry.

Developer: The Earl of Mayo.

4, general view of Stokes Bay Marina.



3 SHEPPEY MARINA

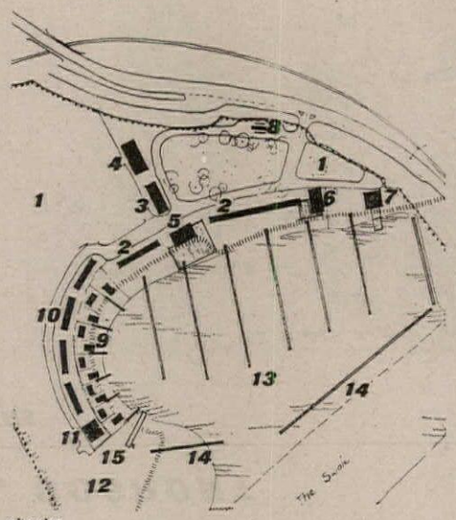
ARCHITECTS | **JULIAN KEABLE AND PARTNERS**

An unused mid-nineteenth-century granite fort Sheppey adjacent to the Kingsferry Lifting Bridge crossing of the Swale. The landward part of the site is below the level of the sea wall; now rough grazing. Access to sea (at all states of tide): via the Swale into the Thames Estuary and the Medway. Tidal range: 17ft. In addition to marina services on the pontoons, there will be a motel, pub, restaurant, shops, filling station, and covered car-parking. Permission is also sought for flats and chalets, some with private berths.

Deep water berths: approx. 300. Haul out berths: approx. 300. Expected proportion of power to sail with auxiliary power: 60 per cent.

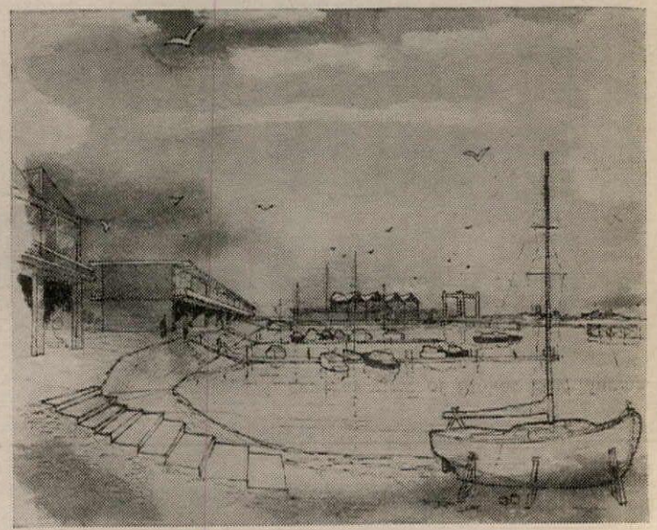
Outline planning approval has been received. Approval of the Minister of Transport under the Coast Protection Act is awaited.

Developer: The Sheppey Marina Holdings Ltd.



site plan

key
1, car parking
2, boatel
3, shops
4, covered parking
5, yacht club and restaurant
6, pub and snack bar
7, boat house for repairs
8, petrol
9, bungalows with moorings
10, blocks of 3 flats with ground floor garages
11, 4-storey blocks of 8 flats
12, laying-up area
13, marina basin
14, tidal breakwaters
15, slipway



5, Sheppey Marina seen from the slipway.

4 FORT PICKLECUMBE, PLYMOUTH

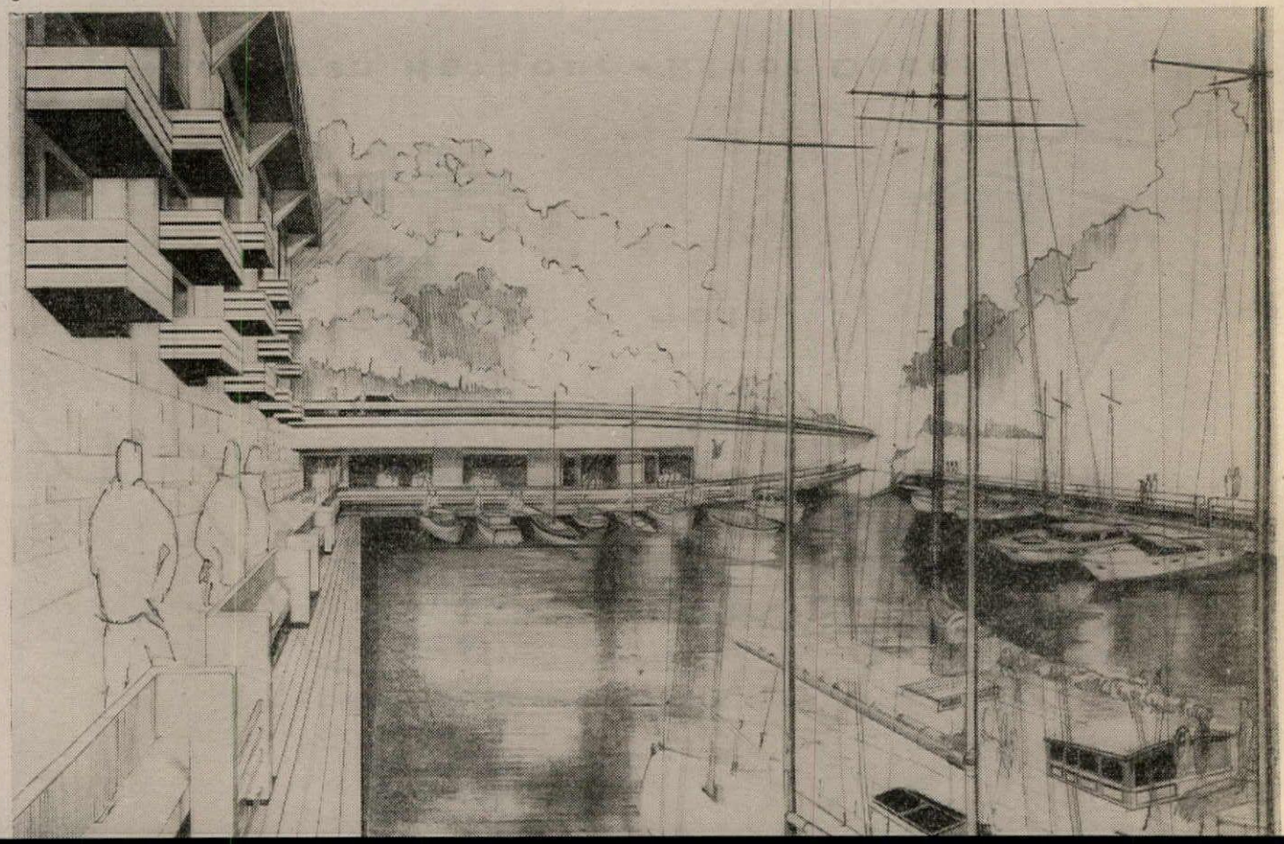
DESIGNER | **JOHN EVANS**

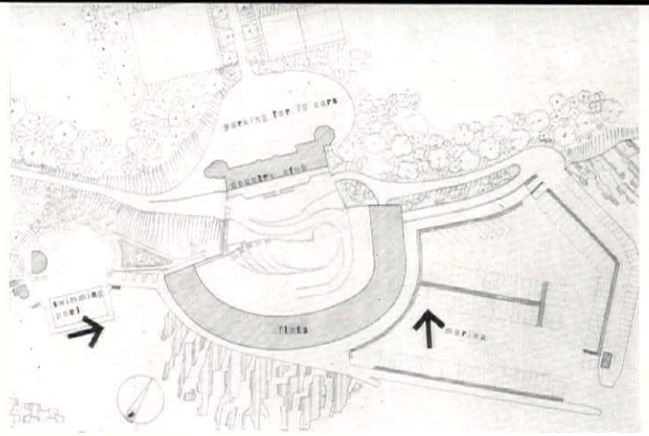
An unused mid-nineteenth century granite fort originally constructed to guard the approaches to Plymouth Harbour is in the process of being converted into a country club and 95 self-contained flats with garages on the fourth floor at the level of the approach road, in the gun battery. Additional services include self-service food store, restaurant for 150, bars, lounges, laundry, dry-cleaning and valeting, a nine-hole golf course, tennis courts and all-year heated swimming pool are to be provided.

The tidal range is approximately 16ft. The old harbour is being reconstructed to provide moorings for 250 boats (50-50 power: sail expected). Approx. rent per berth 1s. 3d. per foot run per week. There will be haul out facilities for a minimum of 100 dinghies. Shell-Mex and BP have fuelling rights in the harbour. The project is now under construction by direct labour.

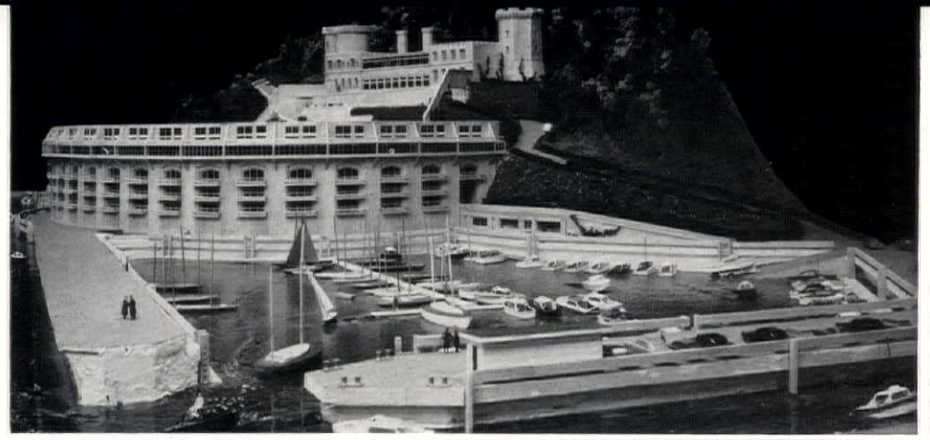
Developers: Fort Picklecumbe Hotel and Country Club Ltd. Engineers: Walter Redlich and Associates.

6





site plan



7

FORT PICKLECUMBE

6 (facing page) the marina with the converted gun battery on the left. The possibility of using plastic and polystyrene for the pontoons is being investigated. 7, model of the whole scheme from the east, with Fort Picklecumbe in the background.

5 KING'S QUAY MARINA, ISLE OF WIGHT

ARCHITECTS | **DEREK LOVEJOY AND ASSOCIATES (in association with Basil Phelps)**

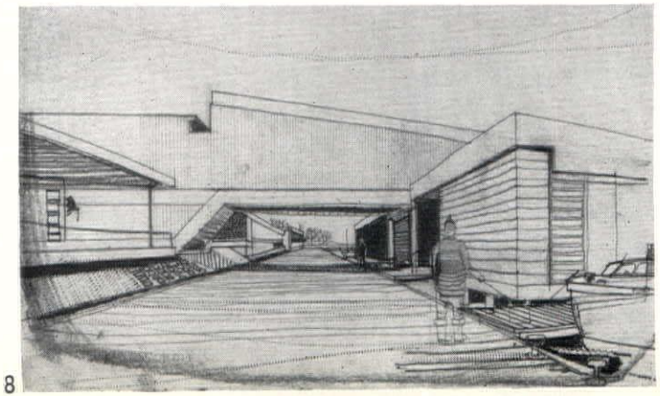
8, looking along the main pier. 9, aerial view of model, with the 'yachtsmen's village' on left and the marina on right.

The site is 56 acres of secluded agricultural estate and woodland bordering Osborne Bay to the west of King's Quay.

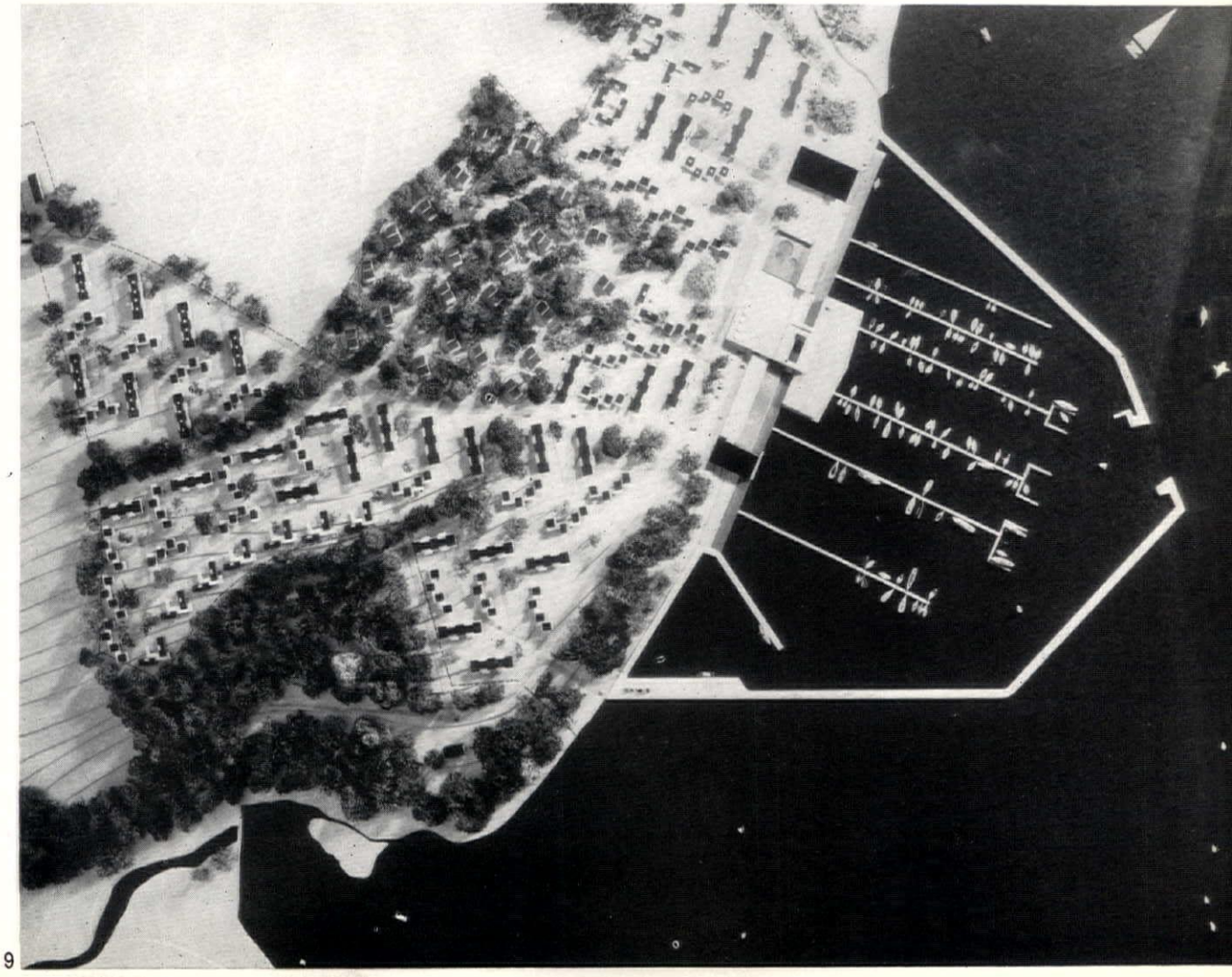
A harbour for 500 yachts and cabin cruisers to be fully integrated with a "yachtsmen's village" housing 2,000 is proposed. A community centre and swimming pool are included in the scheme as well as the usual marina services. The designers emphasize that no building is above two storeys so that there will be no discordant breaking of the skyline from distant viewpoints. There are no enclosed gardens (except patios) and the ground area will be landscaped as a whole.

The scheme awaits outline planning approval. It seems that the first question that must be answered is whether this is a suitable site for a new holiday village for 2,000.

Developers: Messrs. H. E. Butler (Southsea). Marina consultant: Ian Grice. Hydrographical surveyor: D. McMillan. Siltation surveyor: Foremost Dredging Co.



8



9

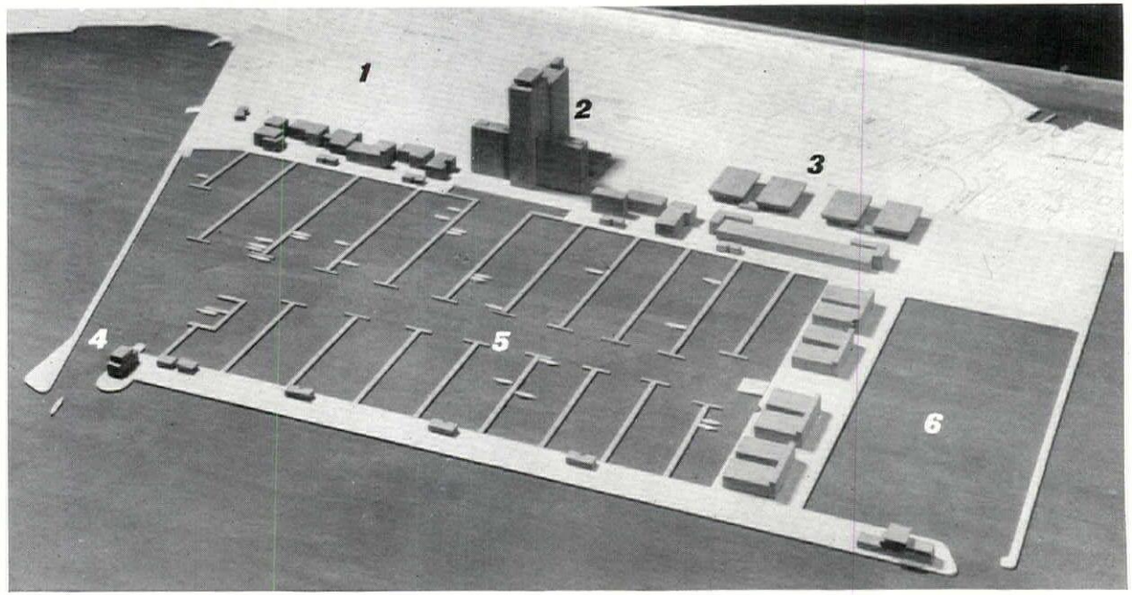
6 POOLE MARINA, DORSET

ARCHITECTS | **FULLER, HALL & FOULSHAM**

The site is part of Poole Harbour adjacent to the Hamworthy shore with Carter's tile works, housing and shops immediately to the north. Ninety-five per cent of the 52-acre site is at present below high-water line and is used as a mooring area by Poole Yacht Club for whom a separate yacht basin is being formed. The land is being made up with the dredging of ballast from the new basins. Poole Harbour has a tidal range of only 7ft. 6in. which makes it exceptionally suitable for marina development.

Deep water berths: 700 (approx. ratio sail: power expected 50-50). Rent per berth: approx. £2-£3 per ft. o.a. length per year. Dinghy park: approx. 100. Haul out service: for those bringing boats by trailer and in boat repair yard area. Services on pontoons.

Developers: West Sussex Marine Development Co. Engineers: Sir Robert McAlpine and Sons.



11, model of Poole Marina, seen from above Poole Harbour.

key
1, car and dinghy park
2, hotel and flats
3, shops and offices
4, marina master and custom's office
5, yacht basin
6, Poole Yacht Club basin

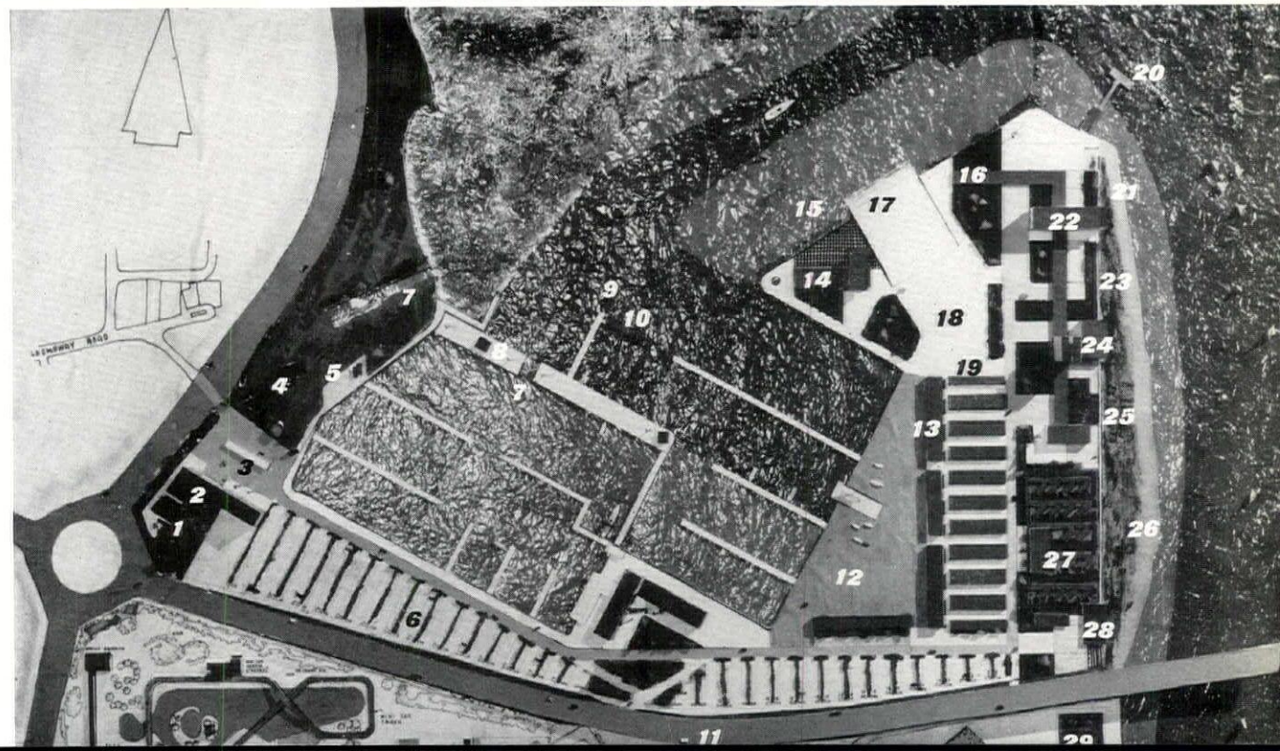
7 EASTNEY MARINA, PORTSMOUTH

ARCHITECTS | **DENIS CLARKE HALL & PARTNERS**

This scheme for a yacht harbour for 600 yachts at all states of the tide is one of two being considered by the City of Portsmouth for the development of the area immediately to the west of the entrance to Langstone Harbour opposite Hayling Island. The site consists mainly of a tidal estuary drying out at low tide except for small channels. There is a single bank running north on the eastern edge on which is an Admiralty exposure station. The City of Portsmouth propose at some future date to develop the roads to the west and link them with a bridge to Hayling Island. Except for the shingle bank the predominant soil is mud.

Developers: D.W.H. Shorework.

key
1, harbour master and ferry house
2, offices
3, petrol
4, existing pub
5, bus terminus for ferry
6, car park
7, lock
8, harbour master
9, fuel
10, boatel
11, elevated roadway leading to Hayling Island bridge
12, yacht yard
13, repair shops
14, yacht club
15, small boat moorings
16, water sports club
17, launching ramps
18, trailer park
19, lock-up garages
20, water ski pier
21, public access to foreshore
22, hotel
23, gardens and terraces
24, casino and restaurant
25, low sea wall
26, public foreshore
27, motel
28, cafe and foreshore access
29, admiralty exposure station



LEICESTER MARKET

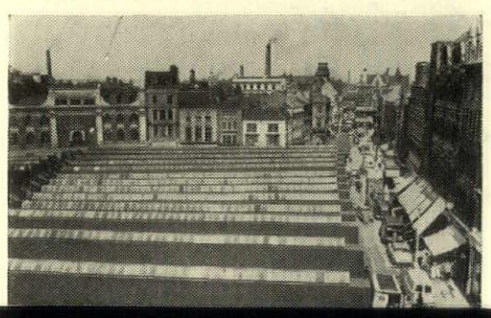
1, *Leicester Market as proposed.*

Leicester Market is one of the biggest and wealthiest in the country. It operates under a set of crude sheds, 2, which now need replacing, and some of the property around the market-place has run down also. The scheme for its redevelopment, prepared by the city planning officer, Konrad Smigielski and shown in the model, 1, above, has rehabilitated instead of sweeping away—a conclusion reached independently for different reasons by the economic consultant, J. D. Trustram Eve. It was Smigielski's first big job in Leicester but he resisted the temptation to plan a monument to himself, and resisted also the seductive package deals of developers who would have built all over the only part of central Leicester with any character.

The designers, led by Henryk Blachniki, kept the shape of the market-place. The old roofs are replaced by an extensible pattern of interlocking hexagons which provide an open space in front of the steps of the old Corn Exchange, previously invisible. Kenneth Browne was retained as townscape consultant to advise on the existing character and suggest how it could be enhanced in the new buildings. The remainder of this feature is based on his report and the sketches that formed part of it. It represents a break-through for the use of an independent but experienced eye, unconcerned with political expedients or aesthetic theories, seeing the place simply as an organism or personality.

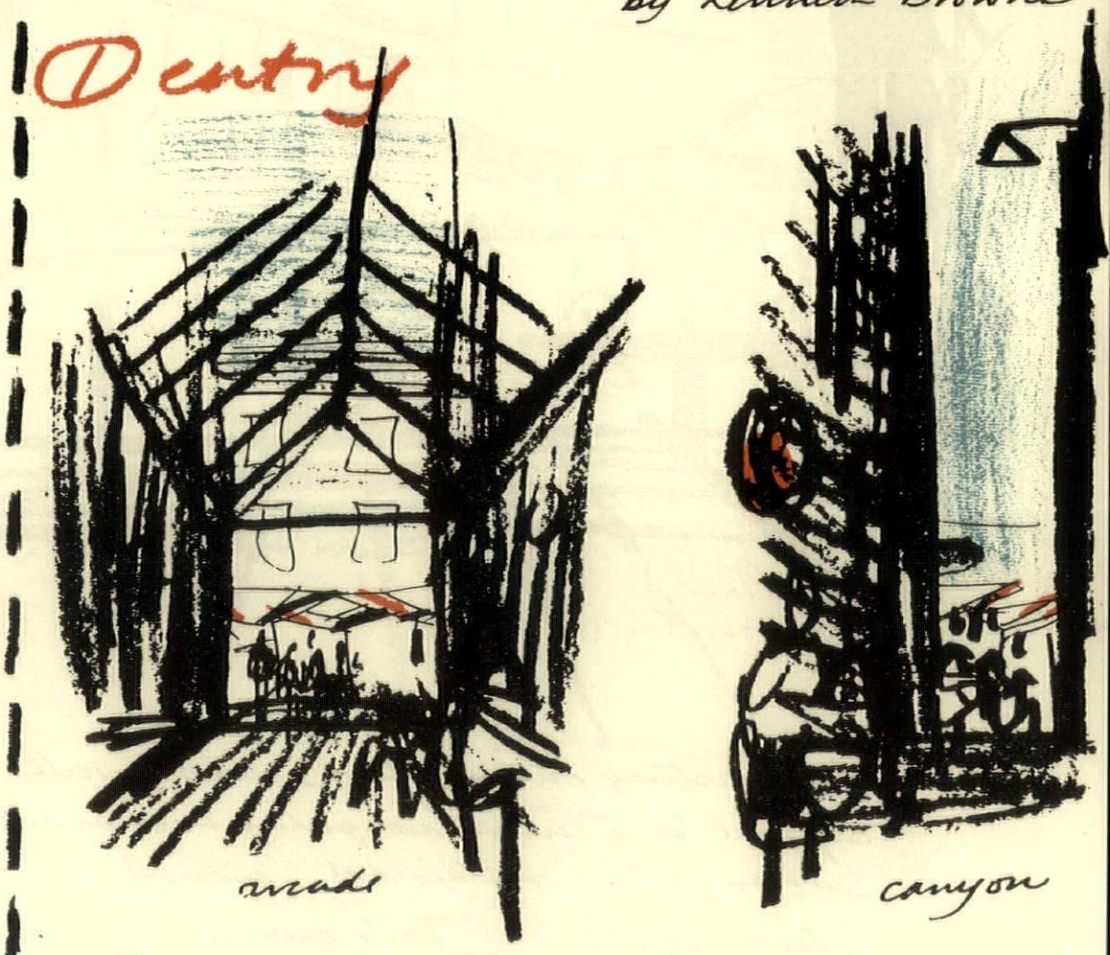
I.N.

2, *the existing market.*



— a townscape notebook

by Kenneth Browne

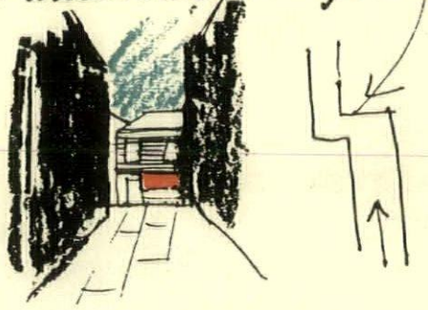


The present system of alleyways & arcades should be extended — —



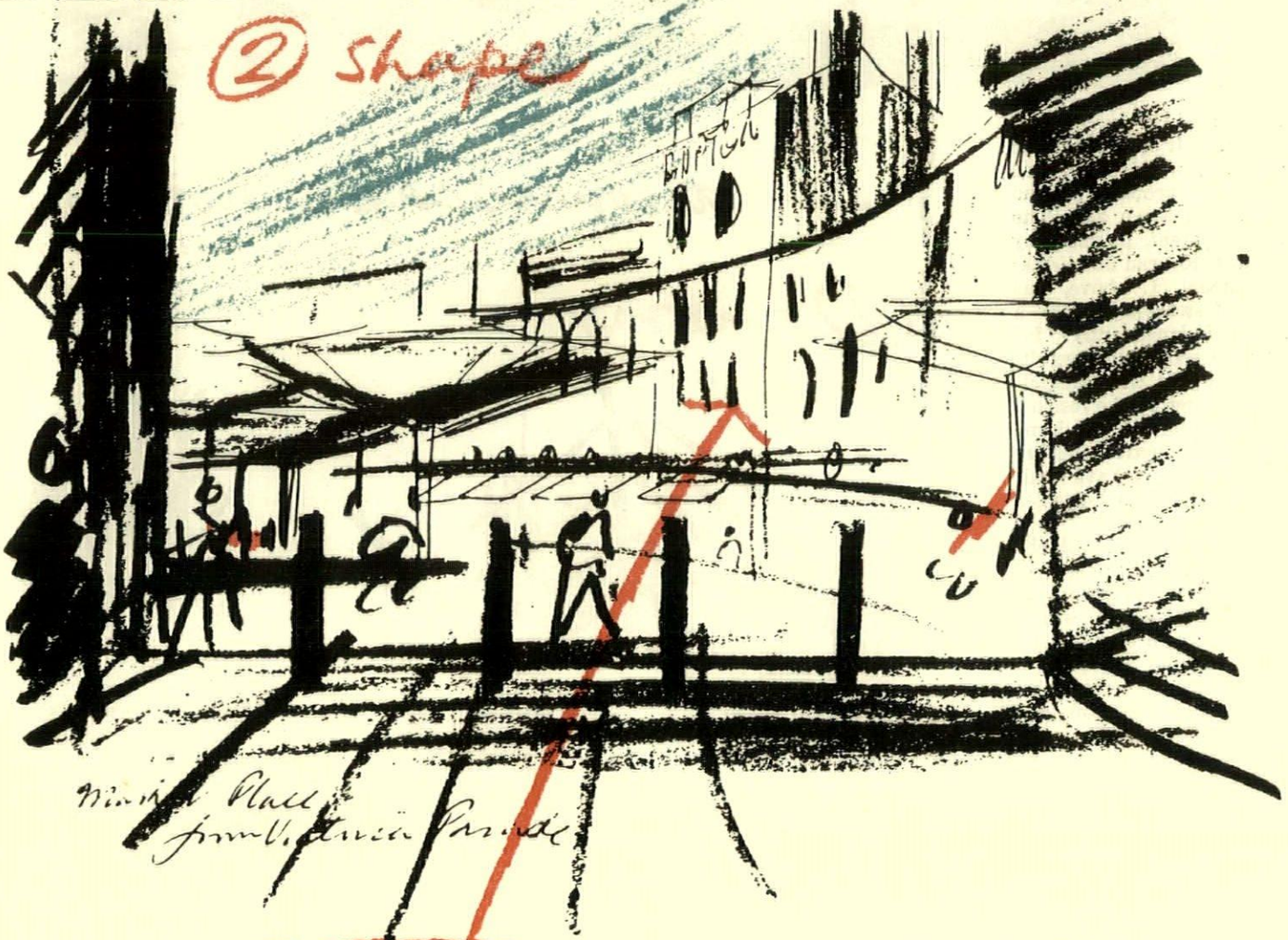
dark – light – dark – light

. . – – & the visual experience should be made as varied as possible; and include the cranked alley which adds suspense



. Arcade with central light well

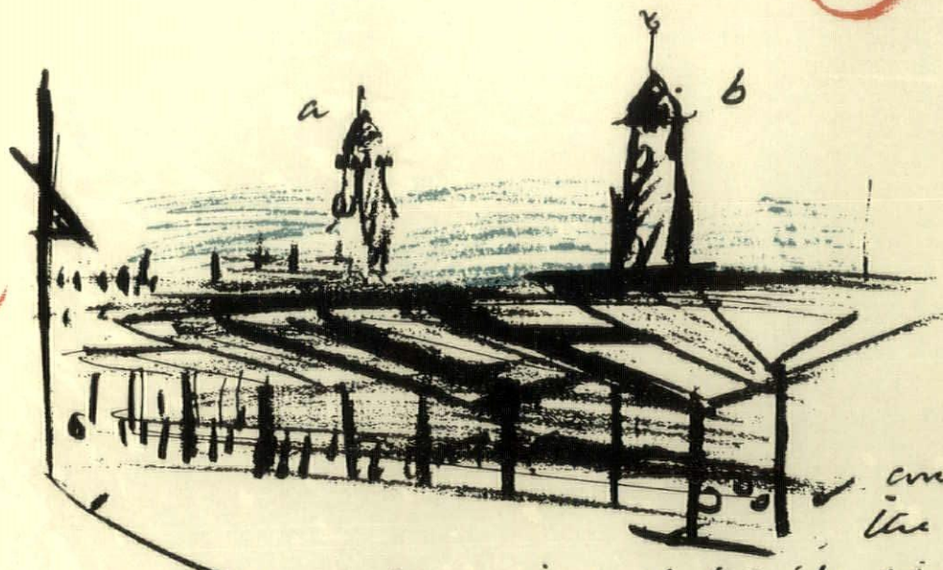
② shape



Victoria Parade

the existing curve of the west wall of the square is a most important characteristic & this line must be retained (even if the buildings are later renewed). This curve should be left unobscured from this (Victoria Parade) entry to the square.

(3) surprise



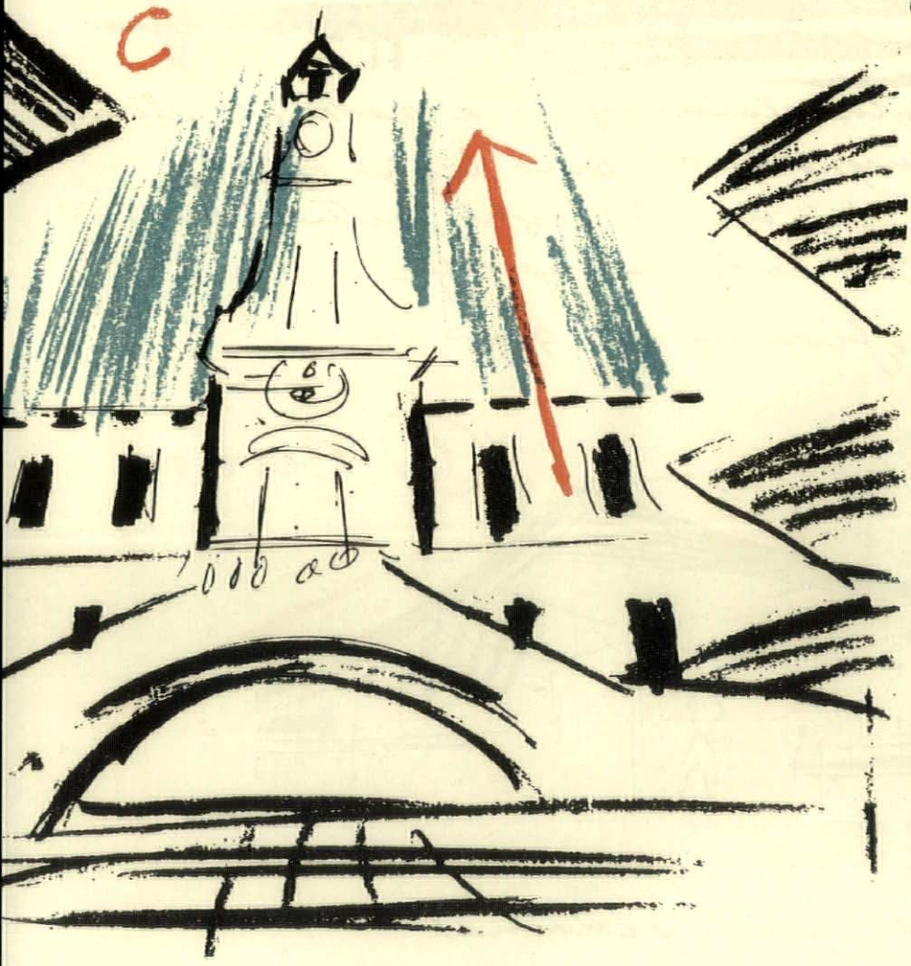
a

At present the towers of town hall a and corn exchange b appear like minarets over the top of the market roofs. This element of mystery must be kept & so the line of roofs should continue across the front of the corn exchange — by so doing the impact of this building is enhanced.



b

Approaching the central piazza from inside the market — only part of the facade is seen



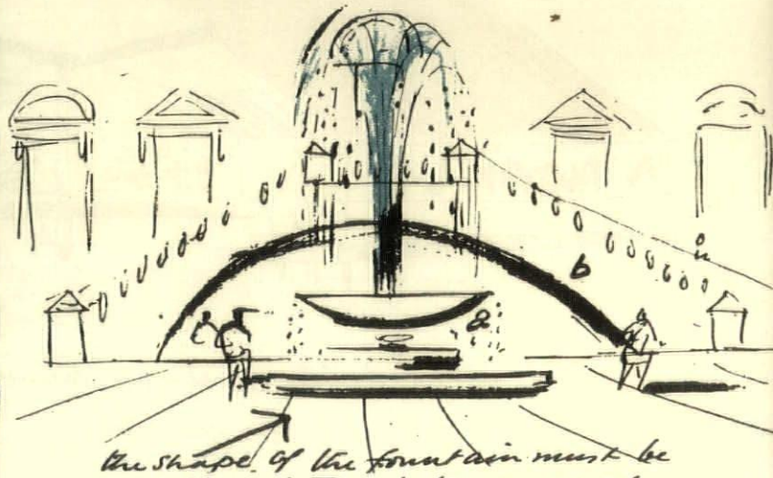
c

nd the tower is given an impact
y surprise) that it would not otherwise have.

(4) water

A fountain with an impressive throw of water would be a great attraction in the piazza — refreshing in summer, adding movement etc.

position — best placed in front of the stairway leading up to corn exchange.



the shape of the fountain must be carefully related to the curve of the arch.

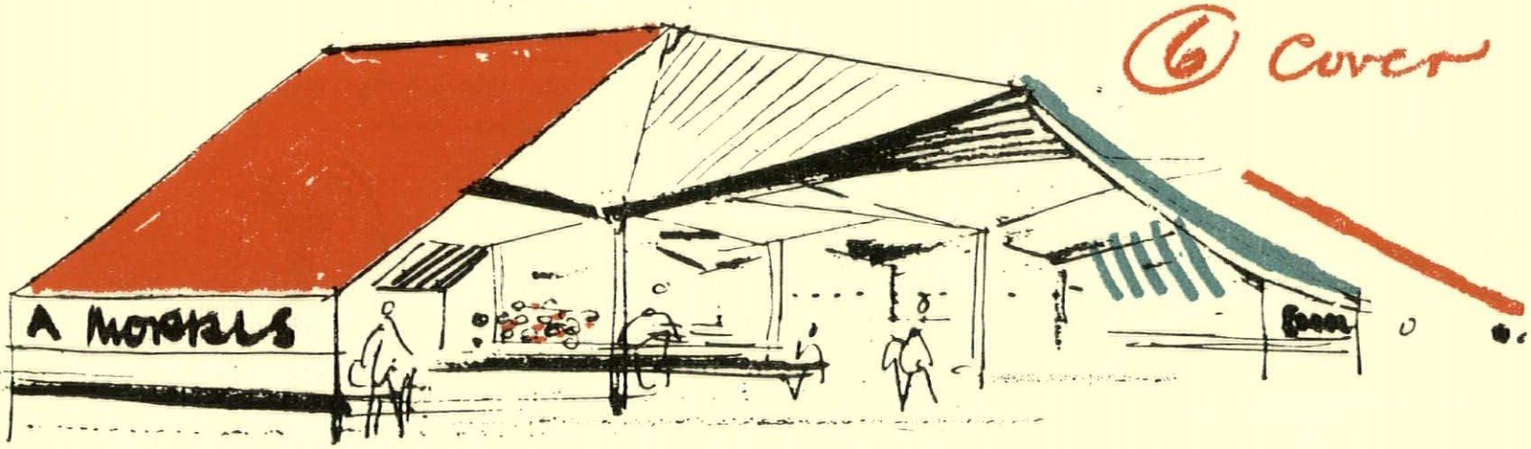


(5) atmosphere

the existing atmosphere is worth retaining — a dark, exciting Aladdin's cave lit by myriads of bare light bulbs haphazardly placed — too much light, either day or artificial would kill the entrancing effect.

the colours of fruit, flowers do glow in the darkness.

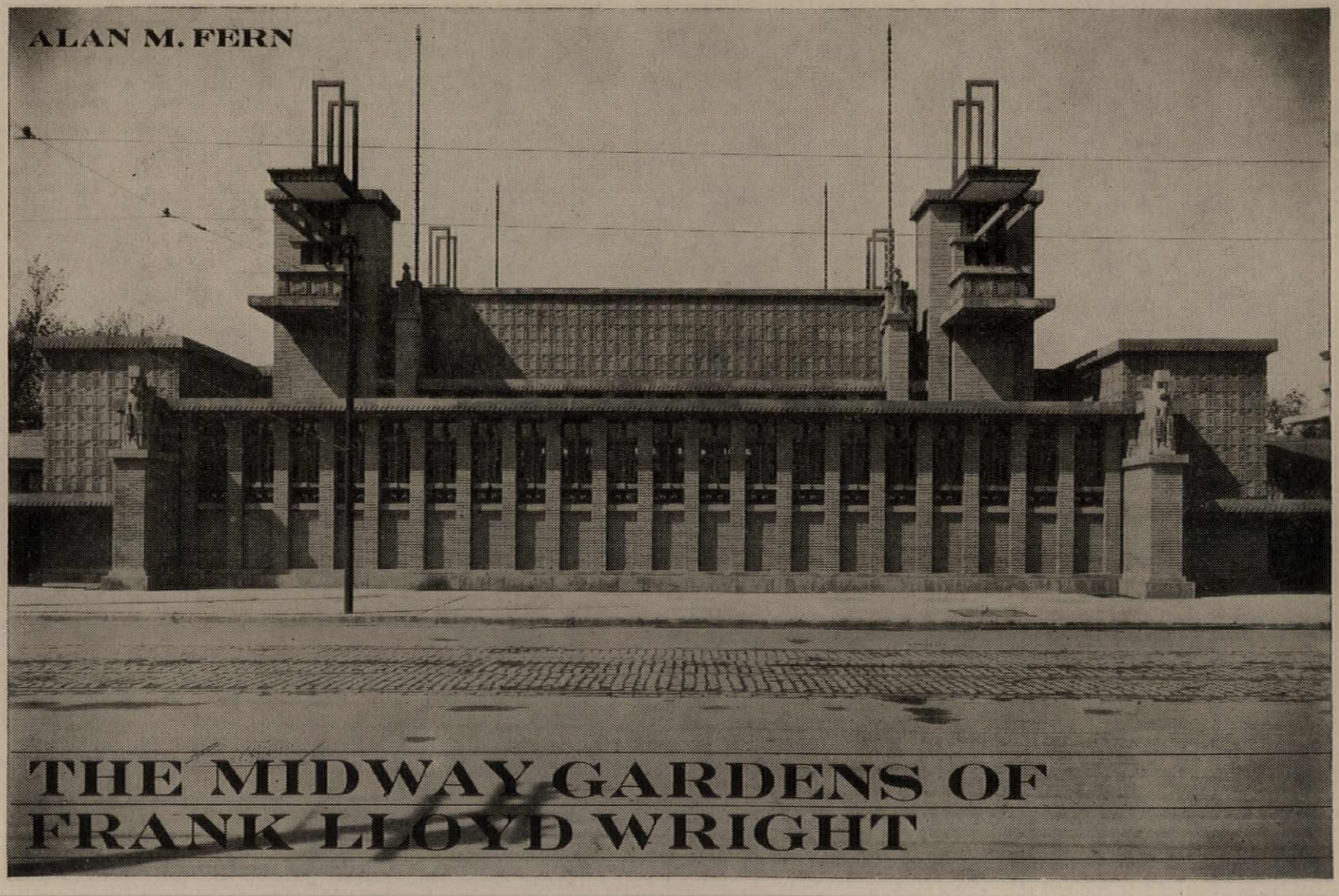
(6) Cover



retractable canvas blinds (brightly coloured) on perimeter only — purpose: to keep out too much light and add excitement & change

ALAN M. FERN

THE MIDWAY GARDENS OF FRANK LLOYD WRIGHT



1

An unhappy fact today is that crucial buildings of the past have become expendable. It is becoming increasingly difficult to assess the work of some of our most important architects as their buildings disappear—often with only the sketchiest documentation left to justify earlier critics' excitement. Frank Lloyd Wright is a case in point. While many of his houses are still in use, only the Johnson Wax Company buildings, the Unity Temple, the Price Tower, the Guggenheim Museum and the Imperial Hotel remain of his large, non-residential projects, and the last is threatened.

This is particularly unfortunate in view of the current interest in the planning and construction of festive buildings; for Wright was a master in the handling of complicated spaces and of integrating disparate functional units into a visually related whole. His one essay into the area of pure entertainment architecture—the Midway Gardens in Chicago—was one of the first of his buildings to disappear. Fortunately it was photographed in detail during its happiest days.

In the Midway Gardens Wright created something which might be appreciated in our cities today: an enclosed area, rich in planting and in light-hearted ornament, 1, with a variety of spaces for eating, drinking, dancing, and listening to music (both indoors and out), with parking space provided outside the walls.

The project was conceived by Mr. Edward Waller, Jr., son of one of Wright's earliest clients, who came to the architect's Chicago studio in the Orchestra Hall Building in autumn, 1913, with his idea. Waller wanted to provide an entertainment centre in the area near the University of Chicago and the pleasant residential neighbourhoods around it. He knew that Wright could give him something out of the ordinary, and he was not disappointed when the first conception of the building was described. Wright thought of his scheme as a '. . . synthesis: planting, furnishings, music, painting and sculpture, 2, all to be one.'[1] Recalling his ideas in *An Autobiography* years later, he wrote:

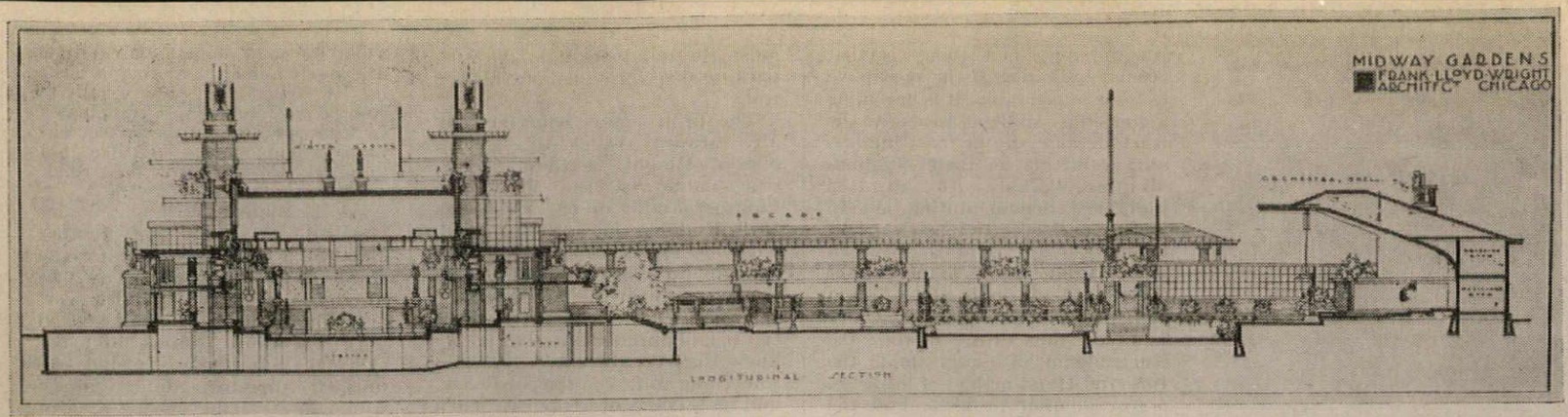
'Meantime the straight line, square, triangle and circle I had learned to play with in Kindergarten were set to work in this developing sense of abstraction, to characterize the architecture, painting and sculpture of the Midway Gardens. Most places of the kind I had seen at home or abroad were phantasy developed as cheap, erotic foolishness. A kind of papier-maché scene painting. In the Midway Gardens there was to be no eroticism. No damned sentimentality either. There was to be permanent structure. The lovely human figure might come into the scheme but come in only to respect the architecture, dominated by a proper sense of the whole. The human figure should be there but humbly, to heighten the whole effect.'[2]

As the plans took shape, Waller engaged his staff and further elaborated his programme for the Gardens. A successful caterer was hired to supply food and beverages; Max Bendix, who had worked with Theodore Thomas and the Chicago Symphony, would be musical director; dance music would be available in one area of the Gardens while serious orchestral programmes (with soloists from the opera and ballet) would be the mainstay of the entertainment. In view of the intellectual tone of the neighbourhood this seemed a sure-fire notion. The whole project was to cost about $350,000; Mr. Waller had already secured $65,000 and was confident that the first season's receipts would make up most of the deficit.

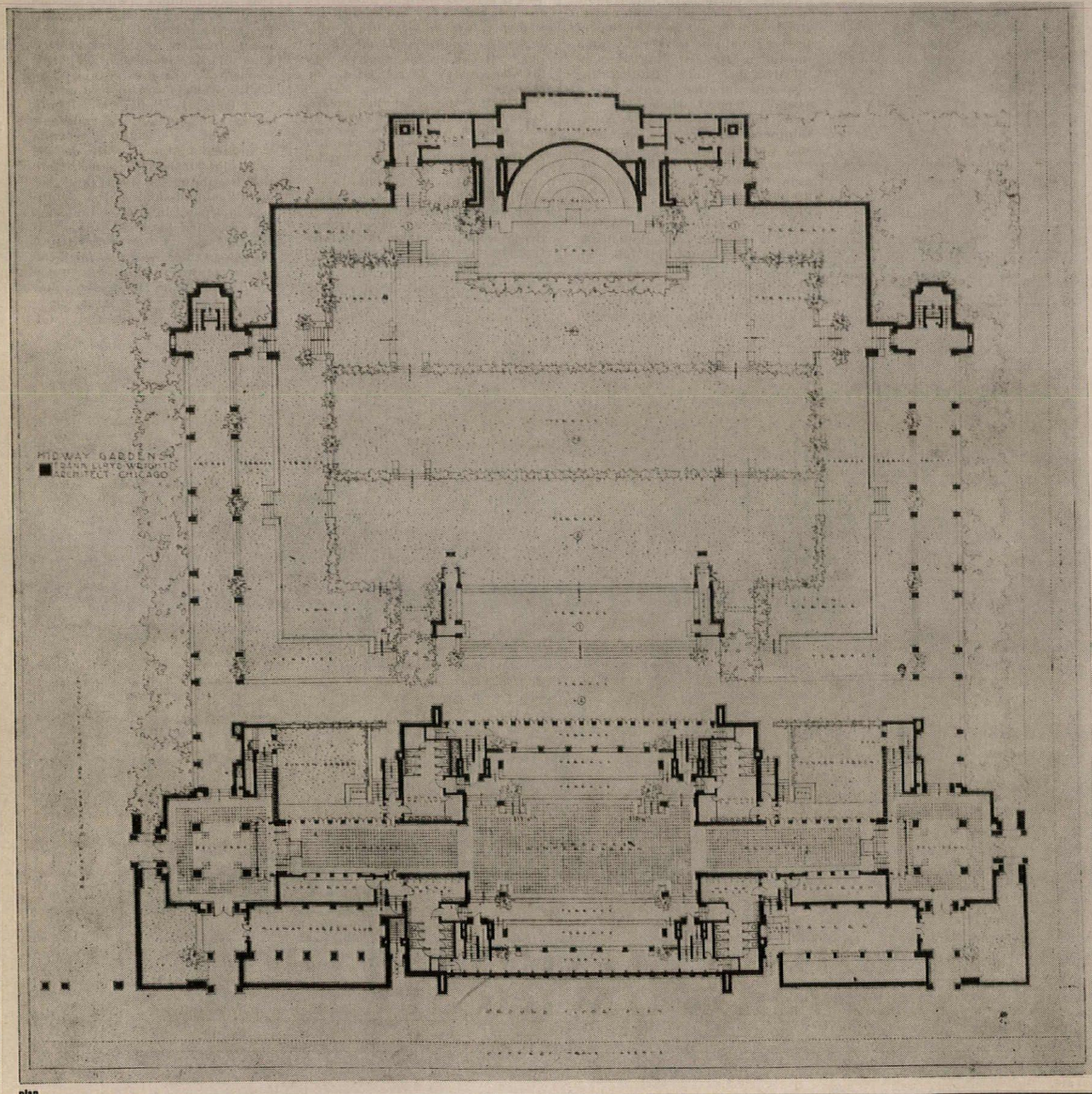
Wright finished the plans before the beginning of 1914, and set about commissioning the sculpture and painting for the building. He presented his ideas to his collaborators, and they refined and developed their own ideas until the architect was satisfied. Three painters: William Henderson, John

[1] 'Organic Architecture' (1935), reprinted in *Frank Lloyd Wright on Architecture*, ed. Frederick Gutheim (The University Library, N.Y., Grosset and Dunlap, n.d.), p. 188.

[2] Frank Lloyd Wright, *An Autobiography* (N.Y., Duell, Sloan and Pearce, 1943), p. 181



section



plan

Norton (both of the School of the Art Institute of Chicago), and Jerry Blum, and two sculptors: Alfonso Iannelli (who was responsible for the figure sculpture and many of the decorative concrete panels) and Richard Bock (who worked on the capitals for the interior columns), joined Wright's son, John, as the working artistic staff. The construction was in the capable hands of the Paul F. P. Mueller Company.

The collaboration was not always smooth, for Wright was never a man gracefully to give in to a co-worker's ideas or cheerfully to acknowledge credit for an idea not his own. Moreover, he emphatically wished to subordinate everything to his building (as we have seen), and this was scarcely designed to placate skilled and temperamental designers. When he wrote about the Gardens in *An Autobiography*, Wright seemed aware that he had trampled on his co-artists, but this was only a passing regret in view of their success in creating a unified decorative scheme.

'. . . I found musicians, painters, sculptors were unable to rise at that time to my synthesis. Only in a grudging and dim way did most of them even understand it as an idea. So I made the designs for all to harmonize with the architecture; crude as a sketch is crude, incomplete as to execution, but in effect sufficiently complete to show the immense importance of any such attempt on any architect's part and show, indeed, that only so does architecture completely live.'[3]

Around the first of March, 1914, the construction crew started the foundations for the Midway Gardens, and the artists took up their work in a tar-paper studio on the site. Waller and Wright had hoped to be finished by May 1, but union difficulties harassed the contractor and the artists, and the disastrous fire at Wright's Wisconsin home, Taliesin, took the architect away just when the crucial final work was being done.

When the Midway Gardens opened in August, 1914, all of the work was not completed. Some of the decoration around the entrances was not in place, and the embellishment of the towers of the Winter Garden, 3, was unfinished. These comparatively minor flaws scarcely detracted from the astonishing effect of the whole complex of buildings and gardens. Along Cottage Grove Avenue was the main entrance to the Gardens, and the large enclosure of the Winter Gardens. In summer the Winter Gardens were used for dancing and indoor dining; the symphony orchestra could play in here during bad weather. Passing the bar (which was at the 60th Street end of the Winter Gardens) the visitor emerged on the interior Garden, 4. At the west end of the Garden was the orchestra shell, with 700 opera seats placed near it, 5, for those who came only to listen to the musical performance. The rest of the space was taken up with dining tables, 6, and service cubicles, and the entire Garden was surrounded by a balconied wall. Along the south side, running from Cottage Grove to the end of the main Garden, was the Garden Club, providing private quarters for members and their guests and banqueting rooms for parties.

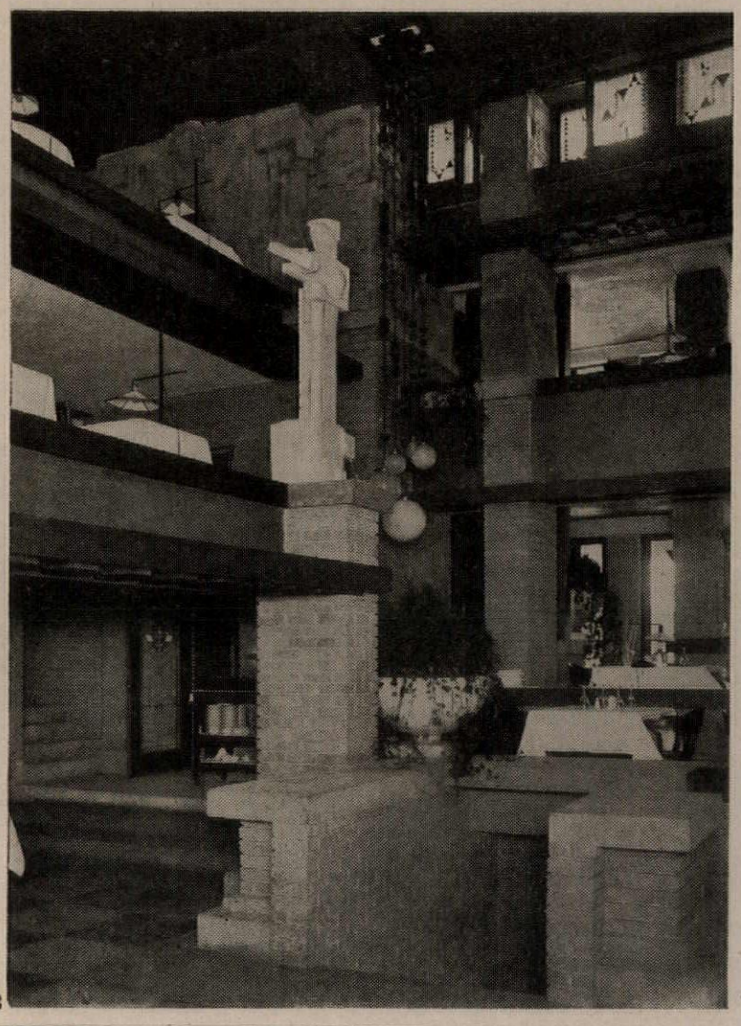
Several decorative motifs ran through the entire group of structures: figures, based on geometrical forms, 7, and cast in cement; 'trees' of cubes set along uprights; and flat panels with designs composed of circles and rectangles. The building itself was of brick and concrete.

The first season, despite its shortness, was a notable success. But in the winter of 1914 the World War in Europe was having a deadening effect on night-life even in Chicago, and Pavlova herself (she danced at the Midway Gardens during the 1916 season) could not restore the brilliance of the Gardens' opening months. The original firm despaired of recovering its investment, and was relieved to be able to sell out to the Edelweiss Brewing Company around 1916.

The wartime slump might have been only temporary, but the

[3] 'Organic Architecture,' *loc. cit.*

2, '. . . *synthesis: planting, furnishings, music, painting and sculpture.*'
3, *the towers of the Winter Gardens.*



2

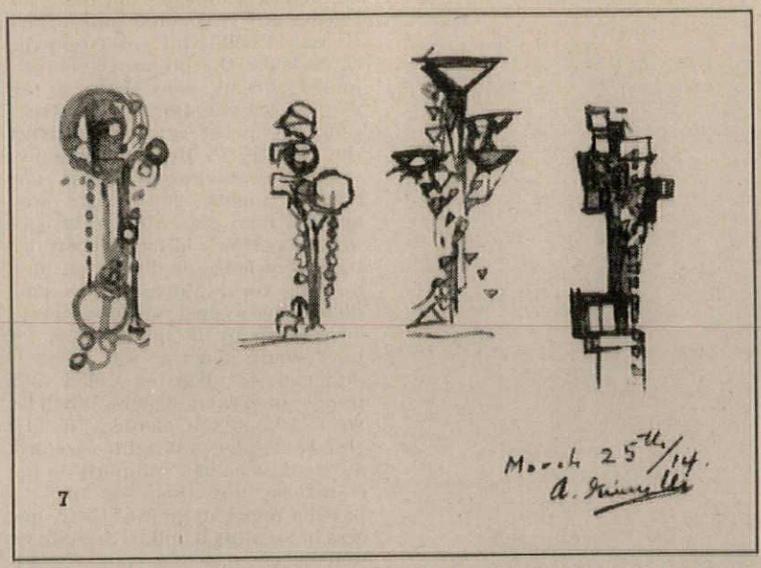


3

change in management marked the beginning of the decline and fall of the Midway Gardens. The Edelweiss firm cared little for the notion of serious entertainment that had characterized the Gardens under Waller's management. Now it became simply an overgrown beer garden, catering to a lower class of patrons. Accordingly, the decorations were 'enlivened' and spoiled; and without interesting musical programmes the main Garden was usually deserted, patrons who preferred the accustomed saloon gloom of the South Side tavern finding even the open part of the Winter Garden too jolly for their tastes.

If the Edelweiss Brewing Company had any further plans for altering the Midway Gardens they must have put them aside forever in 1920, for in January of that year the 18th Amendment to the Constitution made the legal operation of a beer garden a most unprofitable venture. Unsuited by the openness of its plan for conversion into a speakeasy, the Midway Gardens changed hands again, served for a while as a garage and car-washing establishment, and finally closed in 1928 or 1929.

Accustomed as we have become to fighting for the preservation of masterpieces of architecture, the quiet resignation with which the Midway Gardens was demolished comes as a surprise. The *Chicago Daily News*[4] noted the passing of the Gardens as the end of an era, but the golden days were so remote as to be beyond recapture. Wright himself was sufficiently upset by the alterations to his building and to the decorations that he hoped for someone in mercy to '. . . give them the final blow and tear them down,'[5] although he could not conceal his glee that the excellence of the construction made the demolition a losing proposition for the unlucky contractor who did the job.



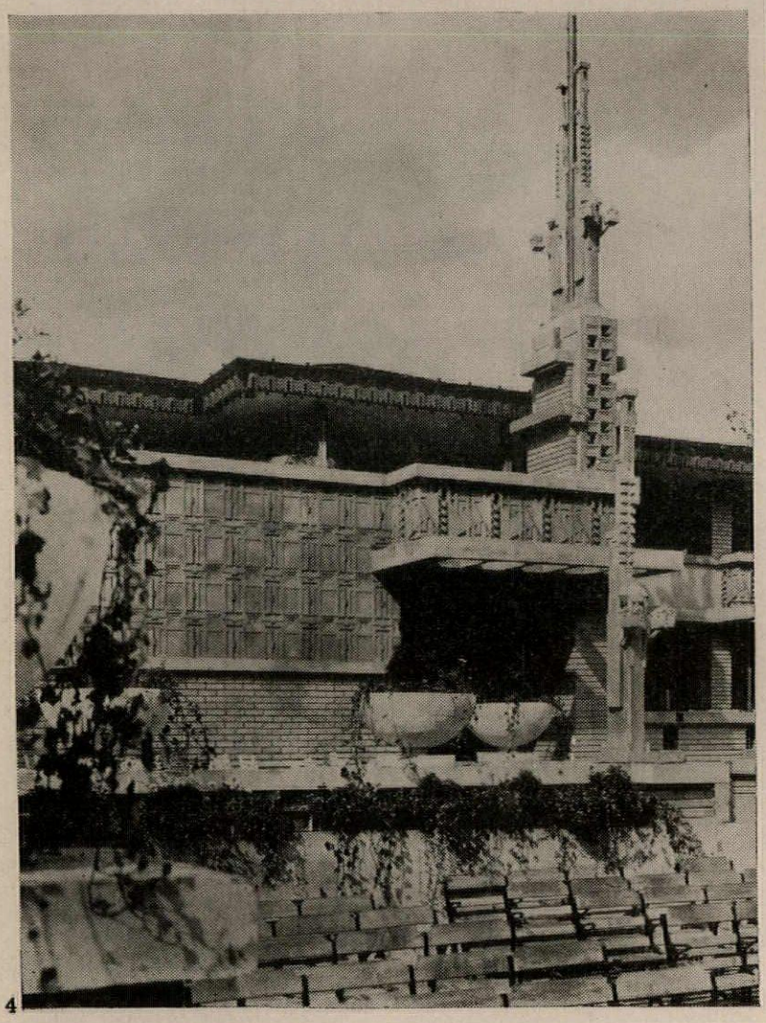
7

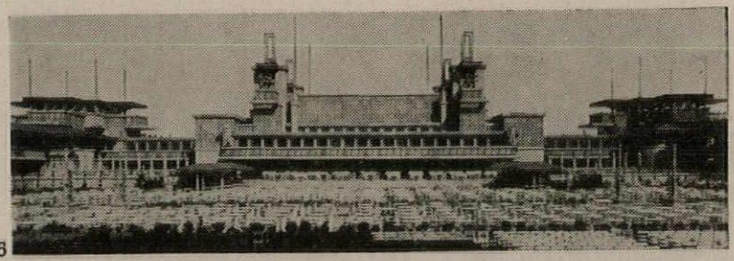
This article is based upon an exhibition catalogue prepared for an exhibition for the College Humanities Staff of the University of Chicago. The exhibition of Wright's Midway Gardens was held in April and May, 1961. Great assistance in the preparation of the exhibition was given by Mr. Alfonso Iannelli; thanks are also due to Mr. John Lloyd Wright for his co-operation in providing material.

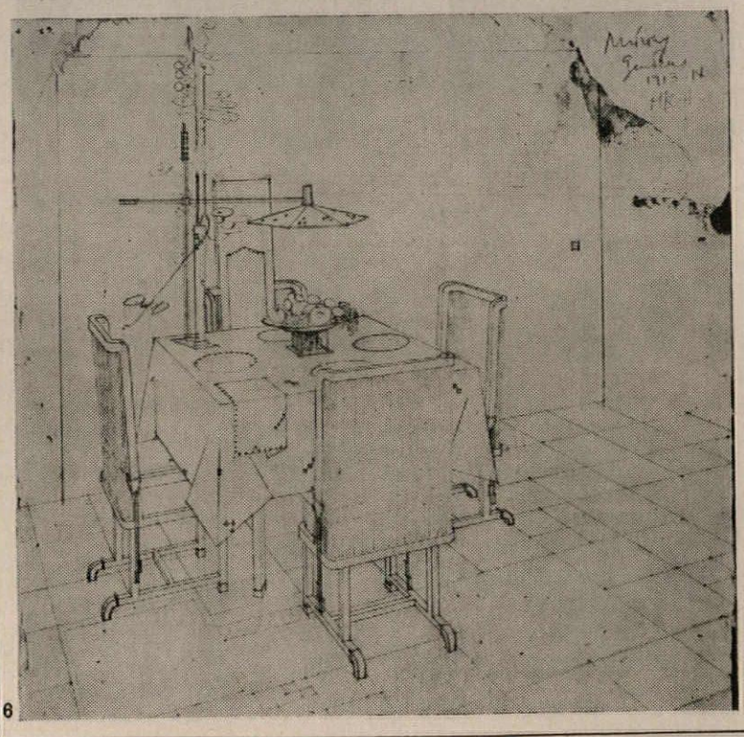
[4] October 10, 1929.

[5] *An Autobiography*, p. 192.

4, *the interior Garden.*
5, *the orchestra shell.*
6, *drawing by Frank Lloyd Wright of dining table and chairs.*
7, *sketches by Alfonso Iannelli for sculptured figures following geometrical themes suggested by Wright. Left to right,* '*Circle,*' '*Polygon,*' '*Triangle,*' '*Square.*'


4


5


6

ID

a monthly review of interior design

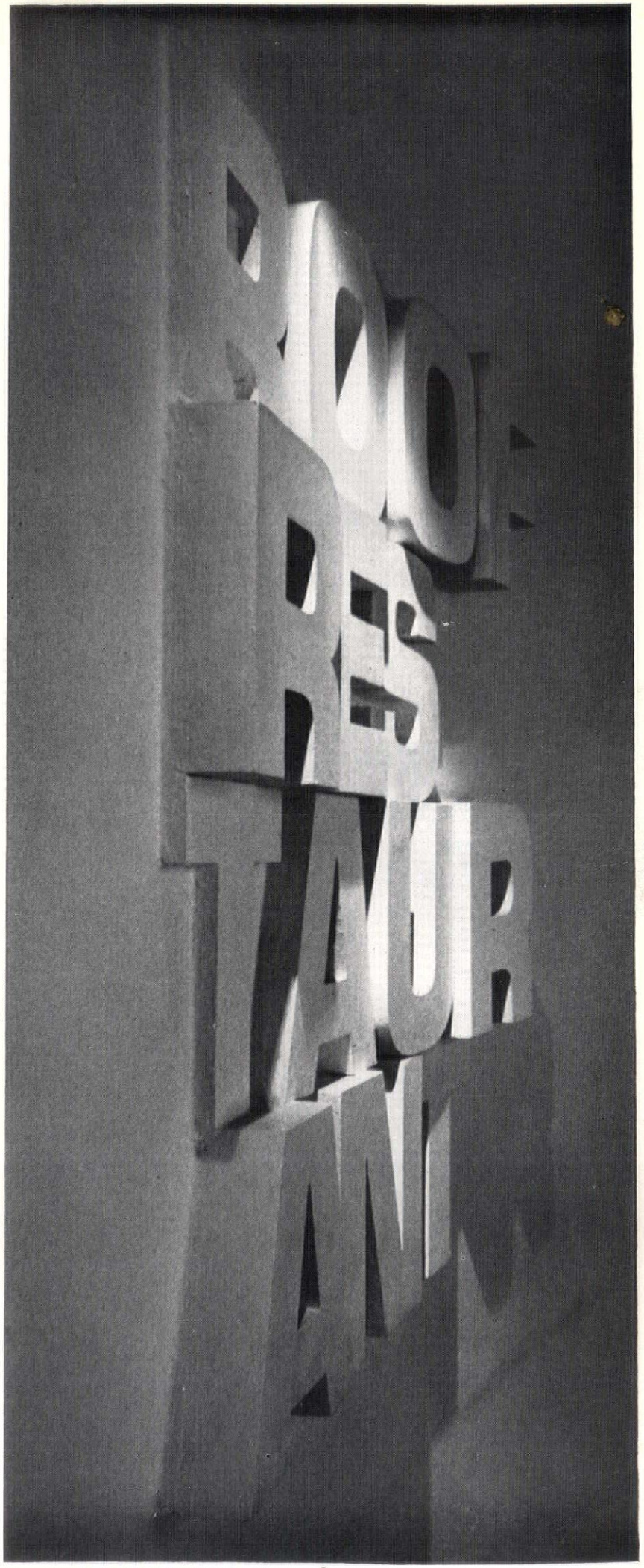
Roof Restaurant London Hilton Hotel

architects: Sir Hugh Casson, Neville Conder and Partners
associate architect: Timothy Rendle
assistant: Christopher Harris

The restaurant, which includes a band-stand and dance-floor with an adjoined bar which serves as an ante-room, occupies most of the highest floor of the London Hilton Hotel, and commands immense views westward over the Royal parks and southward over Westminster and the river. The shape of the typical floor-plan (see page 119) gives a natural breakdown into one large limb, containing the restaurant proper, and a smaller one containing the bar, the two spaces being united by an undulating wall faced in ceramic units (which were shown in detail in AR, May 1963, p. 374), in which the entrance doors from the lift lobby are concealed.

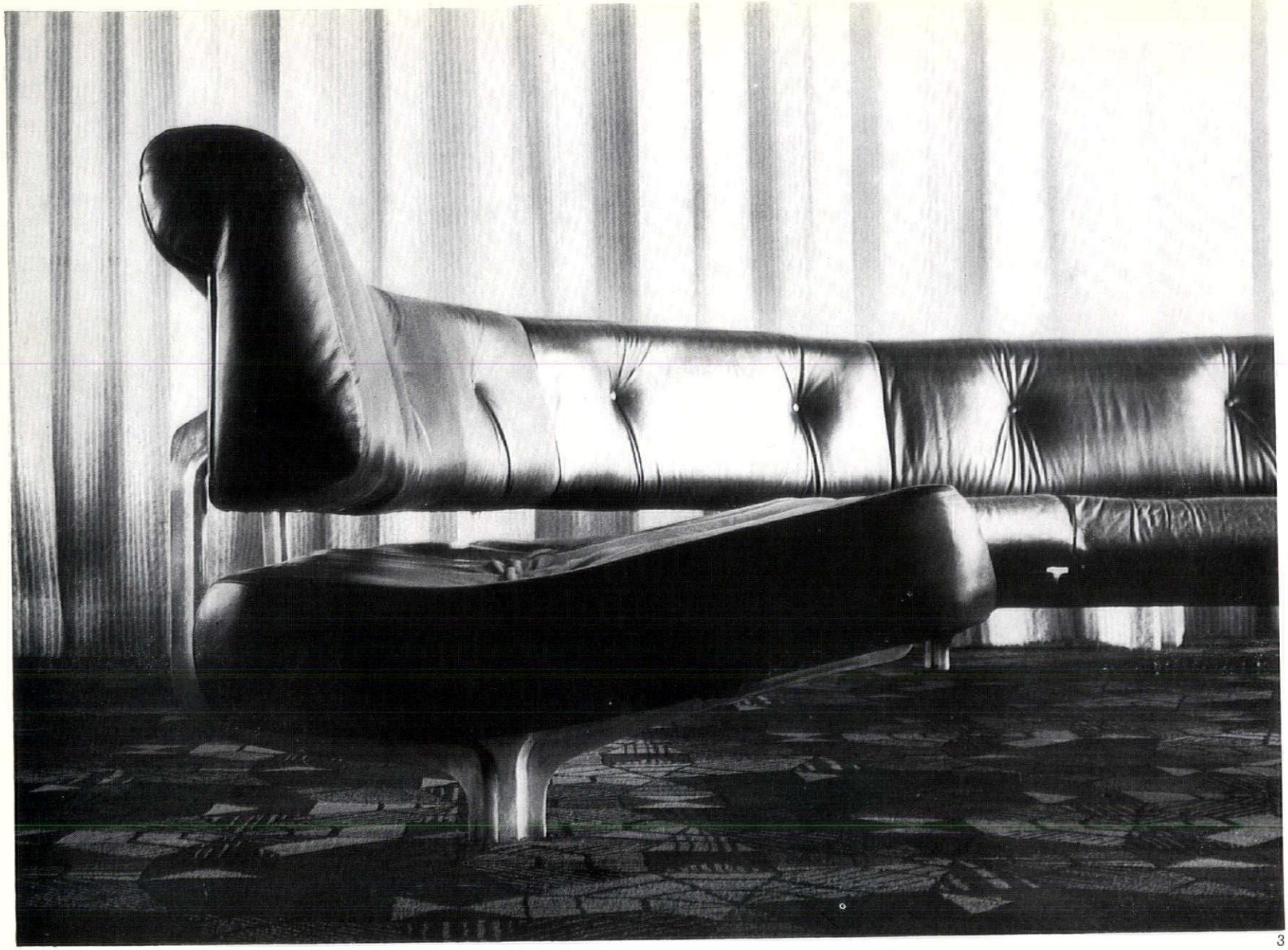


1

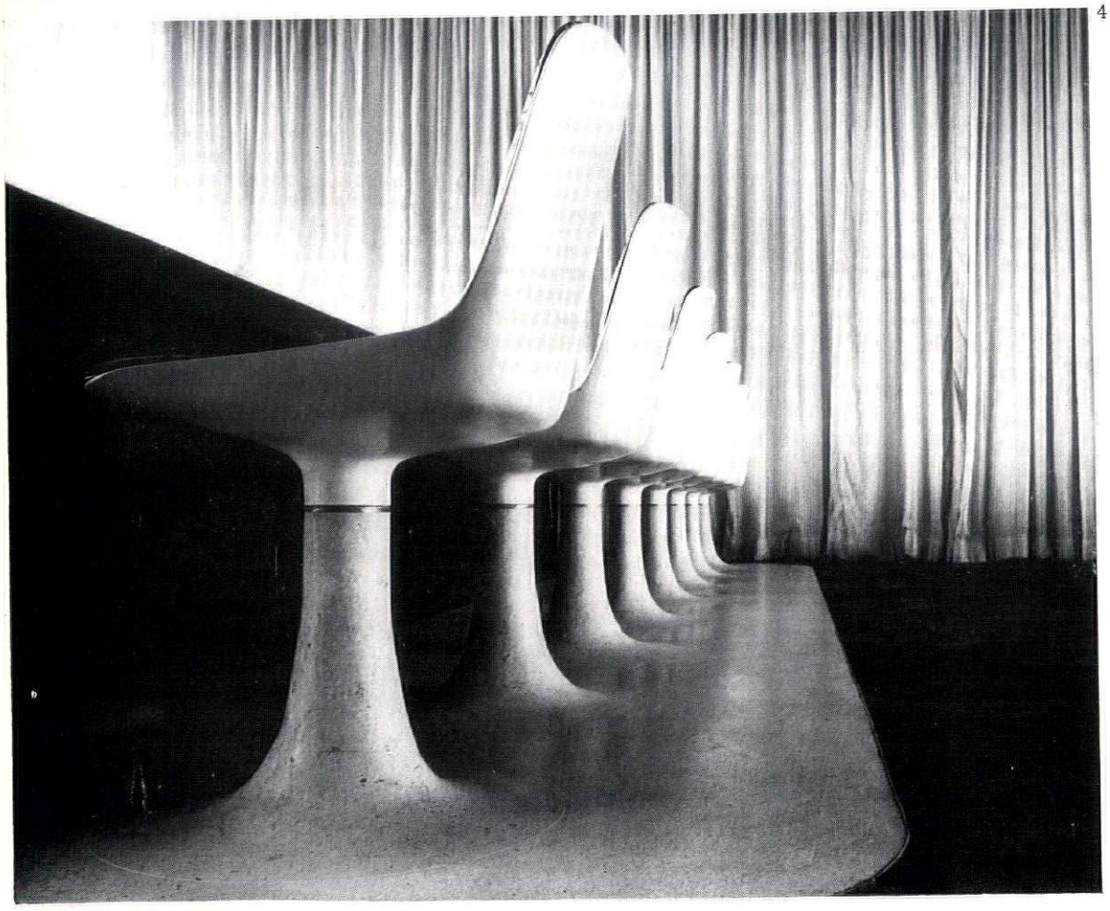


2

1, general view from the main restaurant into the bar, whose floor is raised three steps above dance-floor level; band-stand at left, with ceramic wall running through into the bar area.
2, relief lettering on the wall of the lift lobby, outside the entrance to the restaurant.



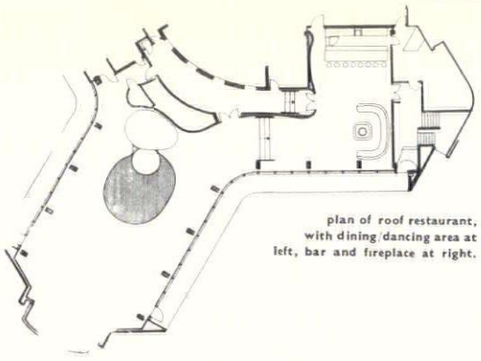
3



4

3, one end of the sofa in the bar area; upholstered in black leather and carried on massive cast-aluminium leg-units, it surrounds the fireplace (see 5, opposite) and can accommodate up to a score of persons. The strongly patterned carpet was specially designed by Audrey Levy.

4, glass-fibre swivelling bar-seats, mounted on bases rising sculpturally from the terrazzo floor. By the use of a device similar to a rising butt hinge, gravity returns the seats to face forward after they have been turned. Behind the bar, the barman stands at a lower level than the main floor, in order to obstruct as little as possible the views out of the windows behind him.

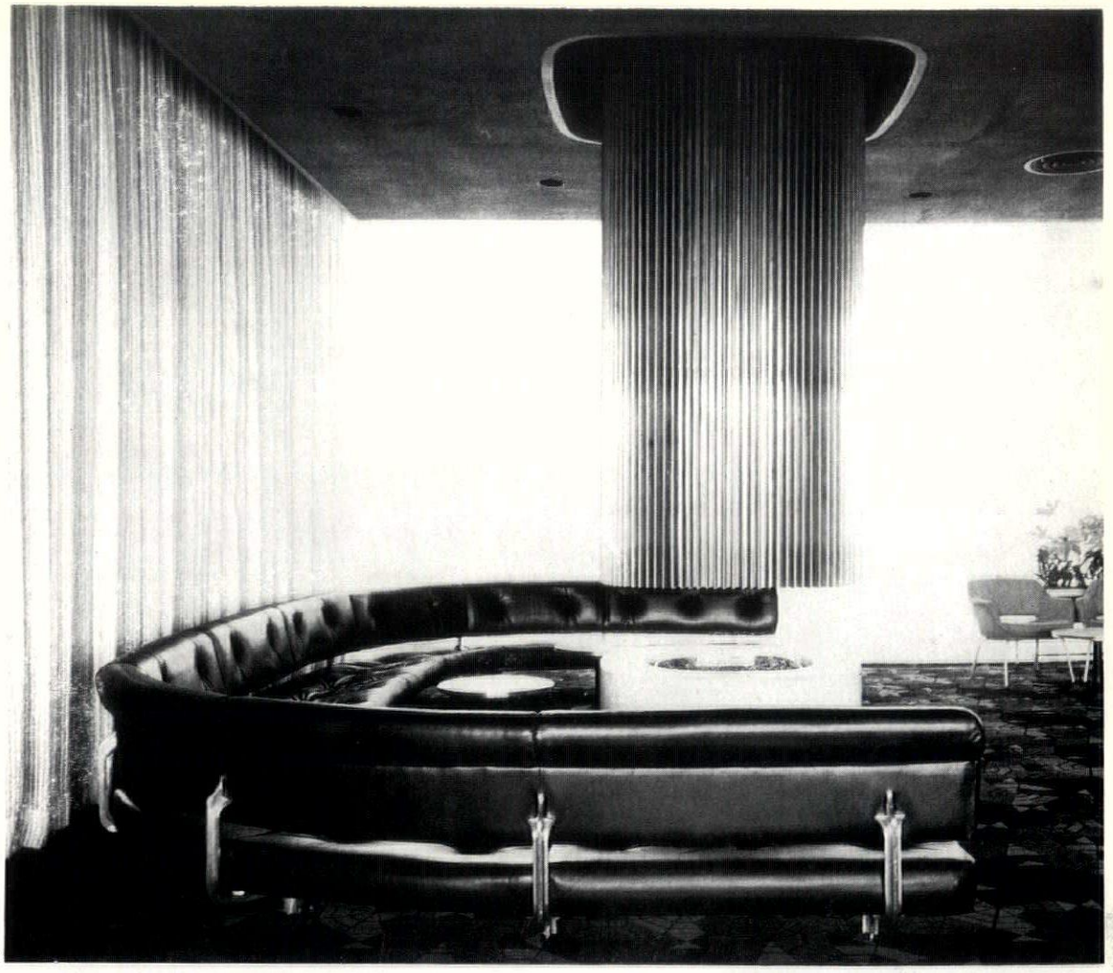


plan of roof restaurant, with dining/dancing area at left, bar and fireplace at right.

5, the horse-shoe sofa and the fireplace with chimney canopy above.
6, the lower edge of the chimney canopy, showing its fluted form, and the grate of the fireplace below. When not in use, the fireplace is normally covered by a massive sheet of glass in order to discourage its use as an ash-tray, etc.

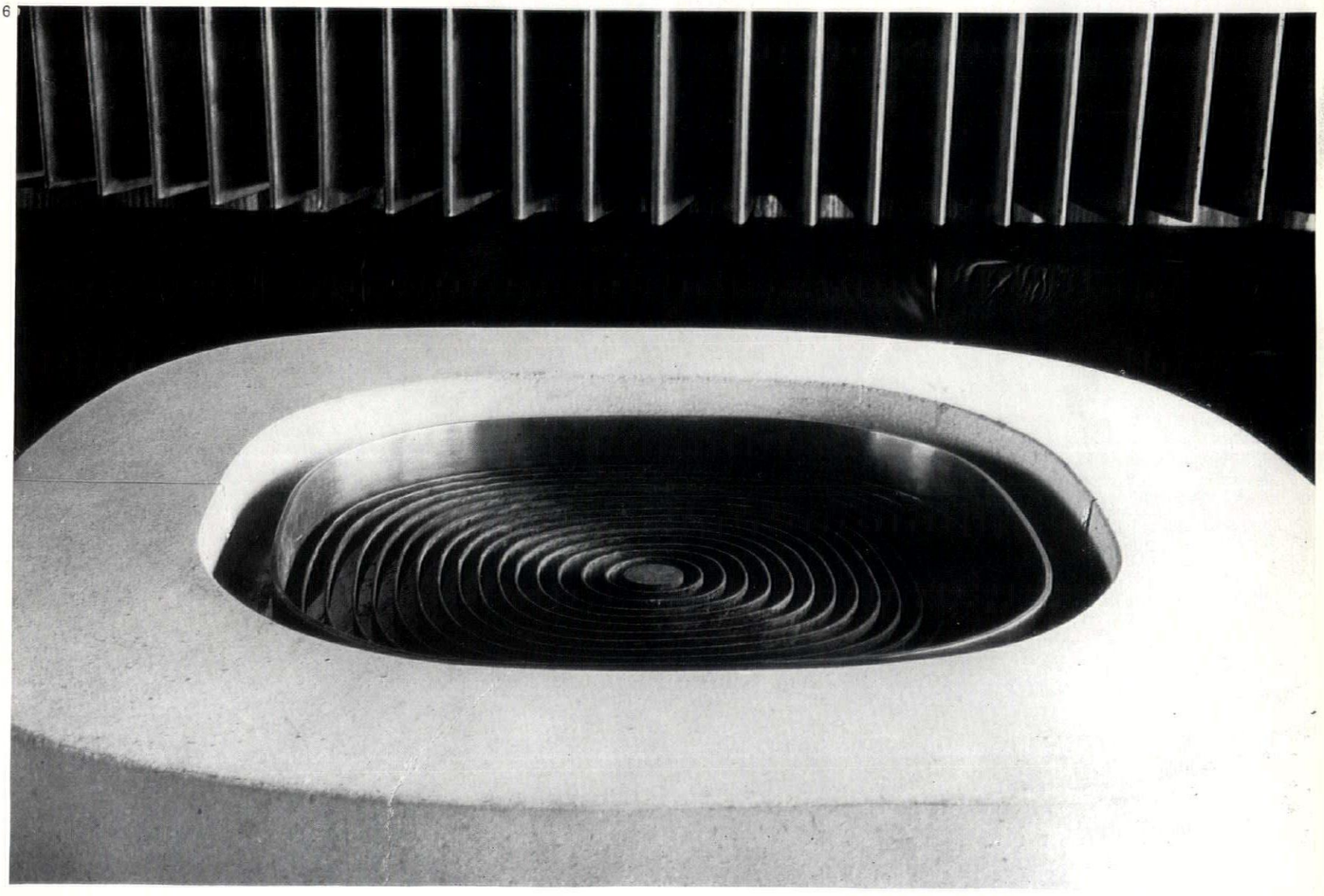
ID

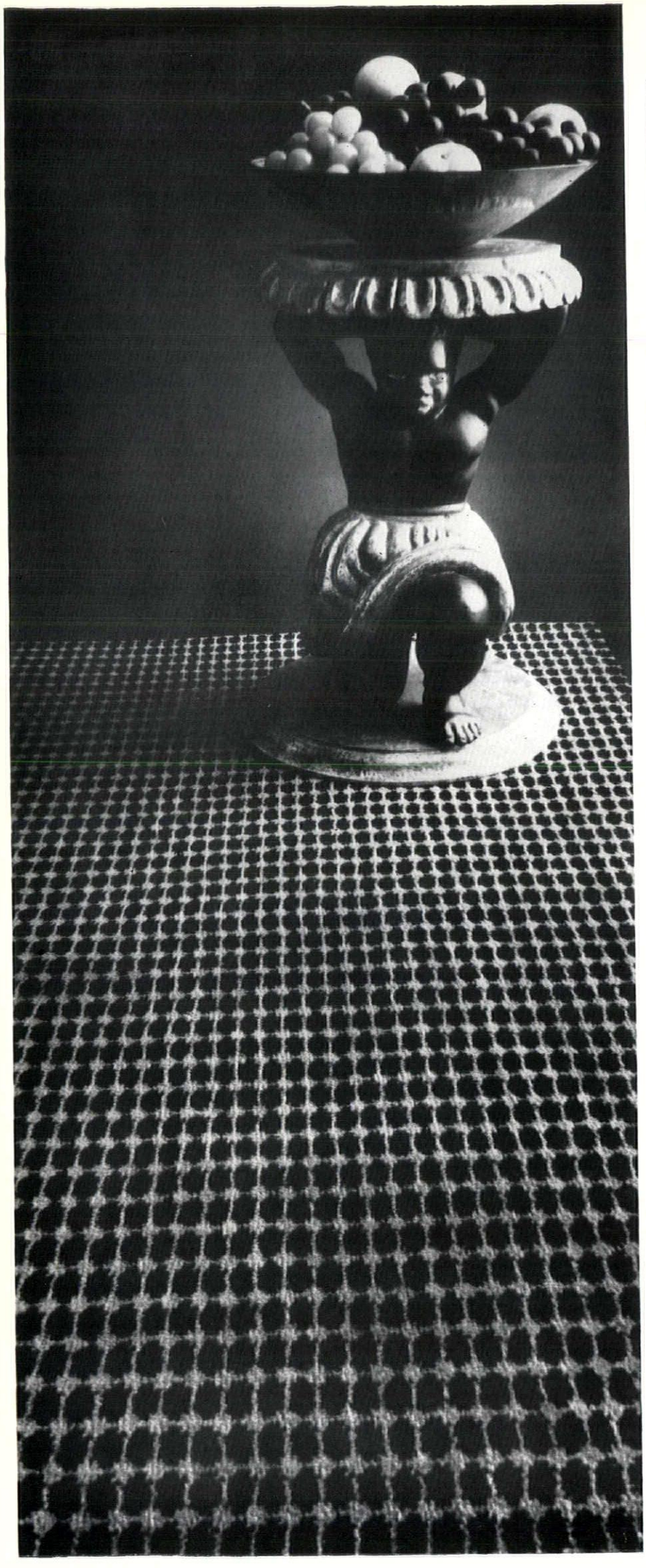
Roof Restaurant London Hilton Hotel



5

6

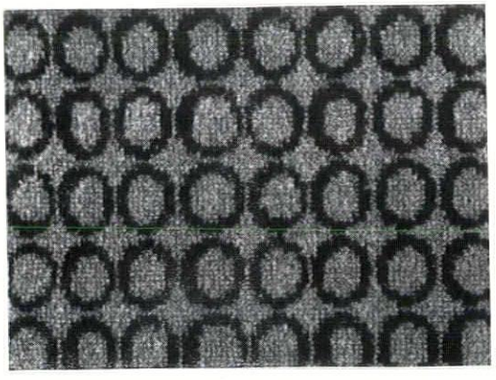




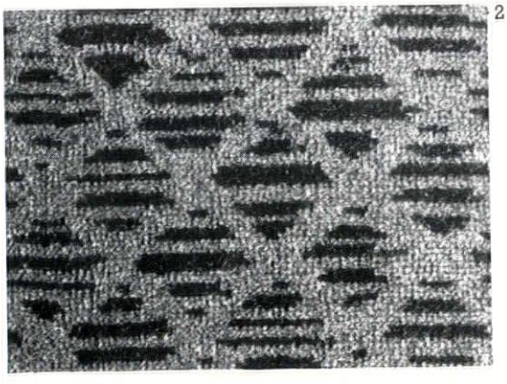
DR
design review

small-pattern carpets

The use of such boldly patterned carpets with large repeats as that in the roof restaurant illustrated on the previous pages is still far from common practice, and most designers are still feeling their way towards the possible advantages of pattern in giving scale and order to a carpeted floor, but only at the speed at which tolerably orderly patterns become available. These recently introduced small-pattern Stockwell designs should aid the advance appreciably.



1



2

1, Ovoid, designed by Olive Sullivan, shown about one-fifth full size.
2, Arbour, designed by John Farleigh, also about one-fifth scale.
3, Thumbprint, designed by Olive Sullivan; the name of the design aptly indicates the scale if one thinks of the designer's feminine thumb.

3

DEPARTMENT STORE, SOUTHEND (pages 86-90)

Commercially, Southend is in the process of transformation from a traditional market-town *cum* seaside-resort to something more metropolitan in scale and ambitions. Tall tower blocks already punctuate its skyline; standard shop-fronts, recently enlarged or rebuilt, of the household-name chain stores, have taken over much of the High Street. But behind the shops the scale of building drops off almost at once to long low residential rows of Victorian bow-fronts. Keddie's store is the only commercial operation in the whole town which exploits the possibilities of this contrast. An old-established store, with a moderately pompous classicizing façade (a palazzo order of engaged columns over an all-glazed and partly modernized ground floor) toward the High Street, it has placed its extension (illustrated here) at the back looking directly over Warrior Square, a well planted and well-grown public garden surrounded on three sides by buildings of domestic scale and largely domestic occupation.

The effect, at present, is as if the whole Keddie organization had turned its back on the High Street, for the new block is a substantial multi-storey affair which dwarfs all other structures in the immediate vicinity, including Keddie's own main front—though this situation may change when, after an unspecified lapse of years, the High Street block is rebuilt as well. The reciprocal effect of the new block and the Square is equally unusual. The trees can give, in photographs, the impression of a New Town setting, but Warrior Square is urban in character, and some High Street traffic, diverted, passes down the western end of the Square, directly in front of the show windows. The site, though it affords some room for expansion over property to the north to take up the whole end of the Square, is a restricted one, and does not permit low-density development of a new town style.

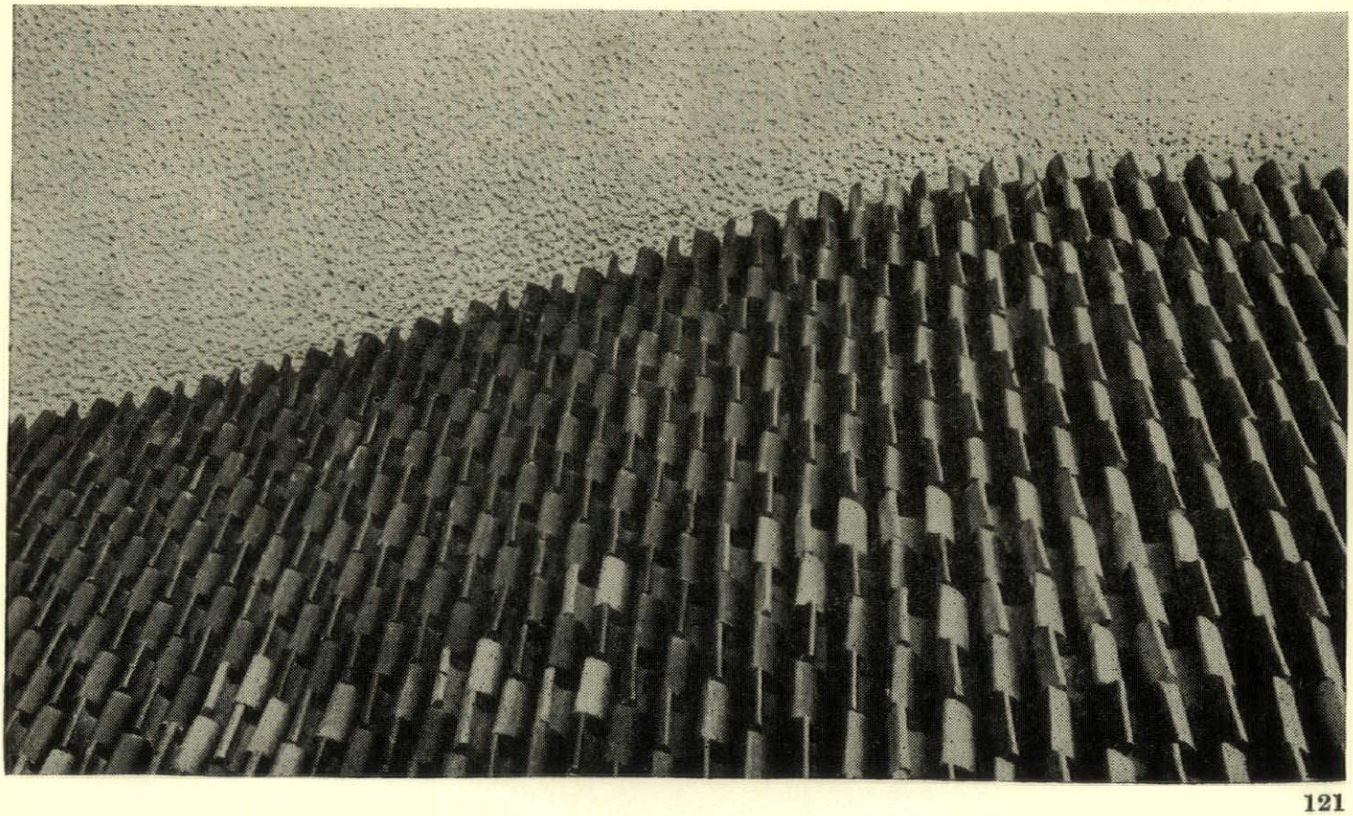
The architects have clearly had regard for the relationship of the new block to the Square, and the four-storey podium already gives a secure sense of enclosure, a wall of structure comparable in height to that of the buildings on the other sides of the Square, and there is a clear *distacco* between the podium and the office tower above—the latter's bulk, though always present and visible from the Square, is not seen as *part* of the Square, while the podium is. This separation into upper and lower parts is made manifest partly by the setting back of the office block from the building line of the podium, and even more emphatically by its overhang at the southern end. Though this is not seen from many parts of the Square (because of masking by the trees) it makes a powerful impression on anyone entering the Square on that side, and makes it clear that the slab is something different to the podium in structure as well as content.

About the content of the podium there is, at present, some confusion. The identical window-strips at first- and second-floor level illuminate different functions, since the first floor is a sales floor and the second (like the third) is a parking deck. This lack of correlation between form and function is only temporary, however, and when the block is extended to the north, all the necessary parking will be provided on the third floor, and the second will become available as a sales area. Strictly speaking, the term 'third floor' is a misnomer; the parking deck is, in fact, the roof of the podium and is open to the sky except where it is sheltered by the office slab above. All this is effectively concealed from the viewer in the Square by a full-height parapet wall. Purists might require—machine aesthetes might enjoy—the exposure of the ranked noses and tails of cars on this deck, on the grounds that the high parapet is not needed functionally. But the Square needs it visually; the sense of enclosure would be seriously impaired if the solid wall of the podium did not reach this height.

ROOFTOP RESTAURANT, LONDON HILTON HOTEL (pages 117-119)

Rooftop restaurants have a special status among the furnishings of smart success; like pent-houses they are negotiable currency in the market of mass-media concepts of luxury and glamour. Most of them have been purely gimmick designs, as a consequence, and it has become almost mandatory that they should rotate mechanically. Some nervousness was expressed about the intention of the new Hilton Hotel in London to sport a night club/restaurant on its roof, but the announcement that the design would go to Sir Hugh Casson and his partners made

1, *the curving wall of ceramic units at the Hilton Hotel.*



it clear that whatever originalities the design might exhibit, they would not be simply styling gimmicks.

Nevertheless, the problems presented by the given structure into which the design had to be fitted were considerable. In plan, occupying the western and southern legs of the Y-shaped plan of the hotel, the available space is not particularly convenient or attractive in form, and clearly needed to be visually revolutionized. At the same time, whatever was done would have to be able to make its peace, and convincingly, with the stunning views of London offered by the large windows on all sides. The basic *parti* was to make the smaller, bar-and-lounge area different in character to the larger dining-and-dancing area in the western limb, and to render this the more effective by destroying the obvious geometrical relationship between the plans of the two halves.

The free form wall of small brown ceramic units is extraordinarily effective in this disorganizing role. Particularly when looking back from the dance floor, the wall takes the eye past the change of direction between the two limbs without allowing the point of change of direction to become apparent, and the steps up to the higher level take precedence as the caesura between the two spaces (the continuity of the strong geometrical pattern of the carpet also helps to confuse the junction between the two parts). The curved wall also serves two different functions at its ends: at the lower, it forms an acoustically functioning back wall to the bandstand, but at the upper it serves to conceal and confuse the point of entry from the lift-lobby, and it shares the visual dominance of the space with the fluted canopy of the fireplace.

But the real determinant of the character of this area is the raising of the floor level, which completely transforms the nature of the space, because one becomes conscious of the ceiling. But, in any case, the organization of the space is completely different to that of the lower dancing area, which either looks casually out of the windows, or inwards on to the dance-floor and the bandstand. In the upper area, the placing of the bar with its back to the window, and the provision of a row of fixed bar-stools, provides an organized view in a particular direction—over the barman's head (the raised floor enables him to stand apparently lower than usual) and down toward Westminster.

The rest of this space is focused very tightly around the fireplace by means of a very luxurious upholstered bench of horse-shoe plan-form—an heroic piece of furniture which is an important contribution to the growing school of aluminium framed, black leather design for luxury seating, which seems to have originated with Charles Eames. The vertical lines of the canopy, coming down directly over the fireplace, increase this focusing effect, and it is here, more than anywhere else, that the design is really able to stand up to the panoramic temptation to gaze out of the window, and provide a genuine choice of where to look. In the lower part, the view will always win, unless the activity on the dance-floor is unusually animated, and one wonders if the designers might not have been well advised to under-design this part more sedulously and not try to compete with the view.

STEELWORKS, NEWPORT, MON. (pages 123-128)

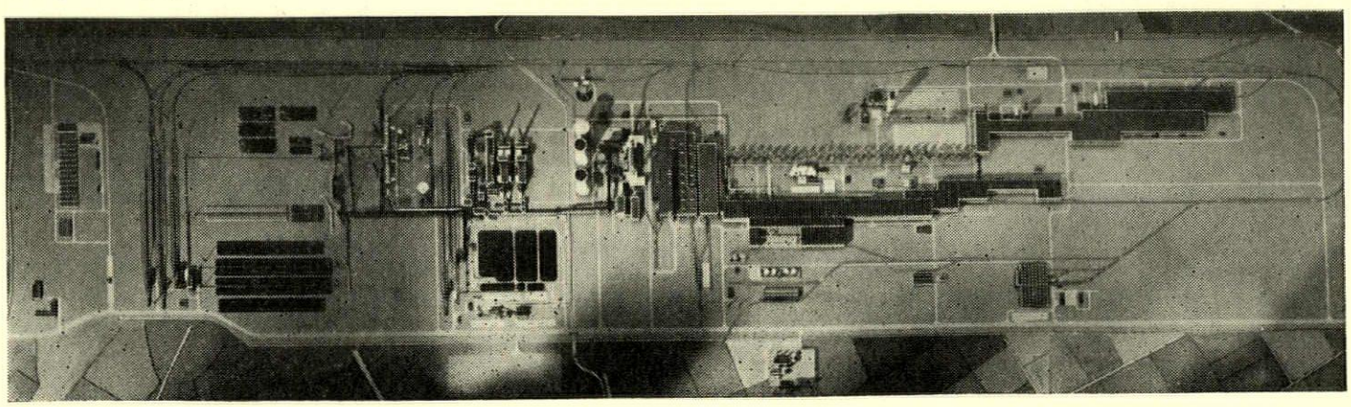
The problem with a project like this is control: control of form and colour so as to give the whole some meaning and coherence and prevent it just sprawling over the landscape. An architect can't expect to have detailed responsibility for buildings like blast furnaces and strip mills; their best characteristics can emerge naturally from their engineering needs. But such projects are an example of the way the trained eye of the architect can be used in just the way a painter uses his trained eye to organize a picture—to introduce those positive visual qualities that the process of functional planning won't automatically create. It could equally well be the eye of a landscape designer or even the painter himself; an enlightened engineer co-operating with a landscape painter might be the ideal team for this sort of project, but in this case the responsibility logically fell to the architects because they were employed anyway to give general advice about materials and to design certain buildings like laboratories—see description on page 124.

Their efforts have been remarkably successful considering the unusual difficulties. The chief of these was the size of the project—a range of buildings continuing for over two-and-a-half miles. This would normally be far too great a distance for the eye to comprehend, but the main general view of this building (and the only view obtained by the public—the steelworks employees will see the buildings serially, as townscape not landscape) is the view from the railway train; the main London-South Wales line forms one of the long boundaries of the absolutely flat site.

The train provides a swiftly moving viewpoint, in effect telescoping the long range of buildings into something comprehensible—a fascinating if exceptional circumstance whose demands the architects have clearly understood. They have treated the landscape broadly, laying down a few basic principles: to let buildings like blast furnaces and cooling towers, which have their ready-made sculptural character, tell as it were their own story and, as a foil to these, to keep all other buildings to long, low, rectangular shapes; to give these as much consistency as possible by employing the minimum variety of building techniques and materials and geometrical elements (which also assisted ordering and constructional procedures); to use colour positively. In addition, planting has been used to weave this vast building project more closely into the texture of the countryside, though the planting and natural landscaping programme has only just been begun and it will be some while before it tells. Like the overall treatment it has been kept simple—wide belts of trees, small in scale near the buildings and larger near the boundaries of the site to accord with the wide horizons of the distant hills and river.

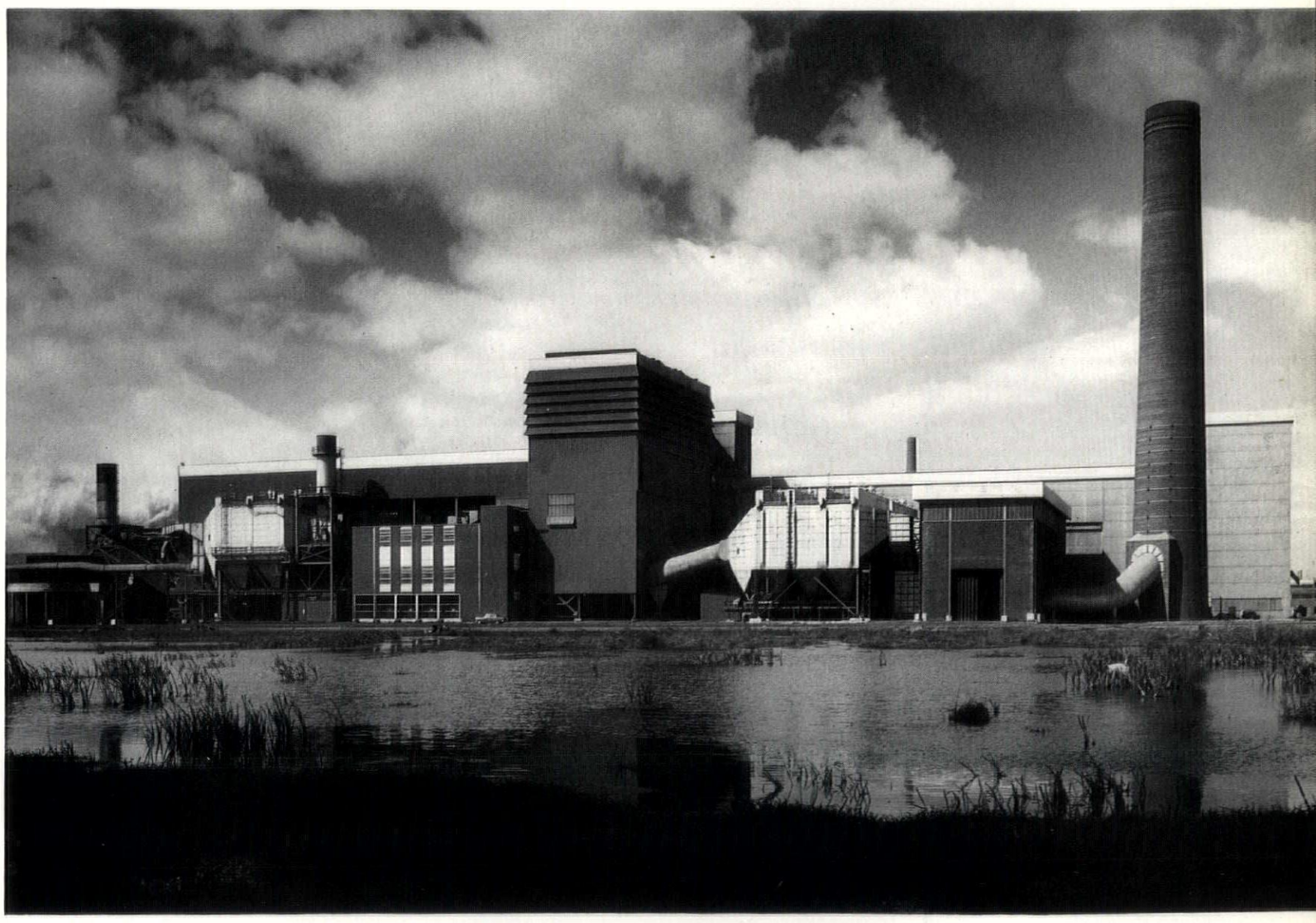
The most notable contribution, however, that the architects have made to the problem of giving shape and coherence to what might have been simply an amorphous mass of structures is their use of colour, which has not, one imagines, been so constructively used in this sort of context before. The colours used and the principles on which they were chosen are particularized on page 127. The changes of colour and contrasts of tone are highly successful both in defining the architectural forms in depth (i.e. correcting the tendency for buildings of great scale to read two-dimensionally) and to identify, as well as relate to each other as they appear and reappear in perspective, the elements of different geometrical form and architectural character.

2, *aerial view of the model of the steelworks at Newport: see the block plan on page* 124.



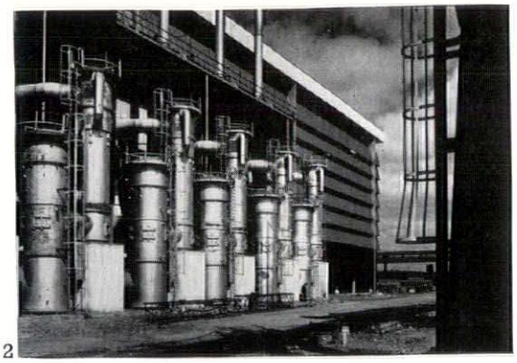
STEELWORKS, NEWPORT, MON.

ARCHITECTS | **SIR PERCY THOMAS & SON**
in association with
GOLLINS, MELVIN, WARD & PARTNERS

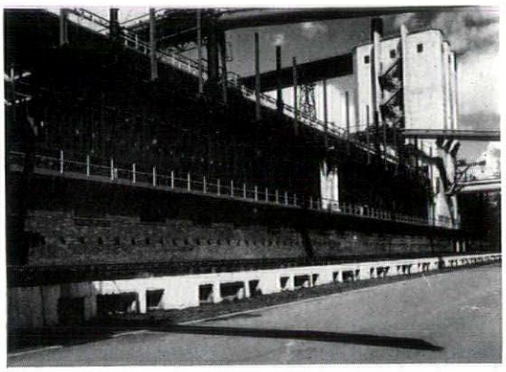


1, the ore sinter plant.

The Spencer Works at Llanwern, near Newport, belonging to Richard Thomas and Baldwins, is the biggest industrial development ever to be undertaken in Britain as one operation. The first stage, now completed, can produce nearly one and a half million tons of steel ingots a year, most of which will be rolled in the same works into light plates and sheets. The site stretches for three and a half miles alongside the main London to South Wales railway line.



2



3

2, recuperators for the soaking pits in the steel-making plant. 3, some of the 140 coke ovens. 4 (facing page), filtration plant for hot mill effluent on left—soaking pits bay on right.

STEELWORKS, NEWPORT, MON.

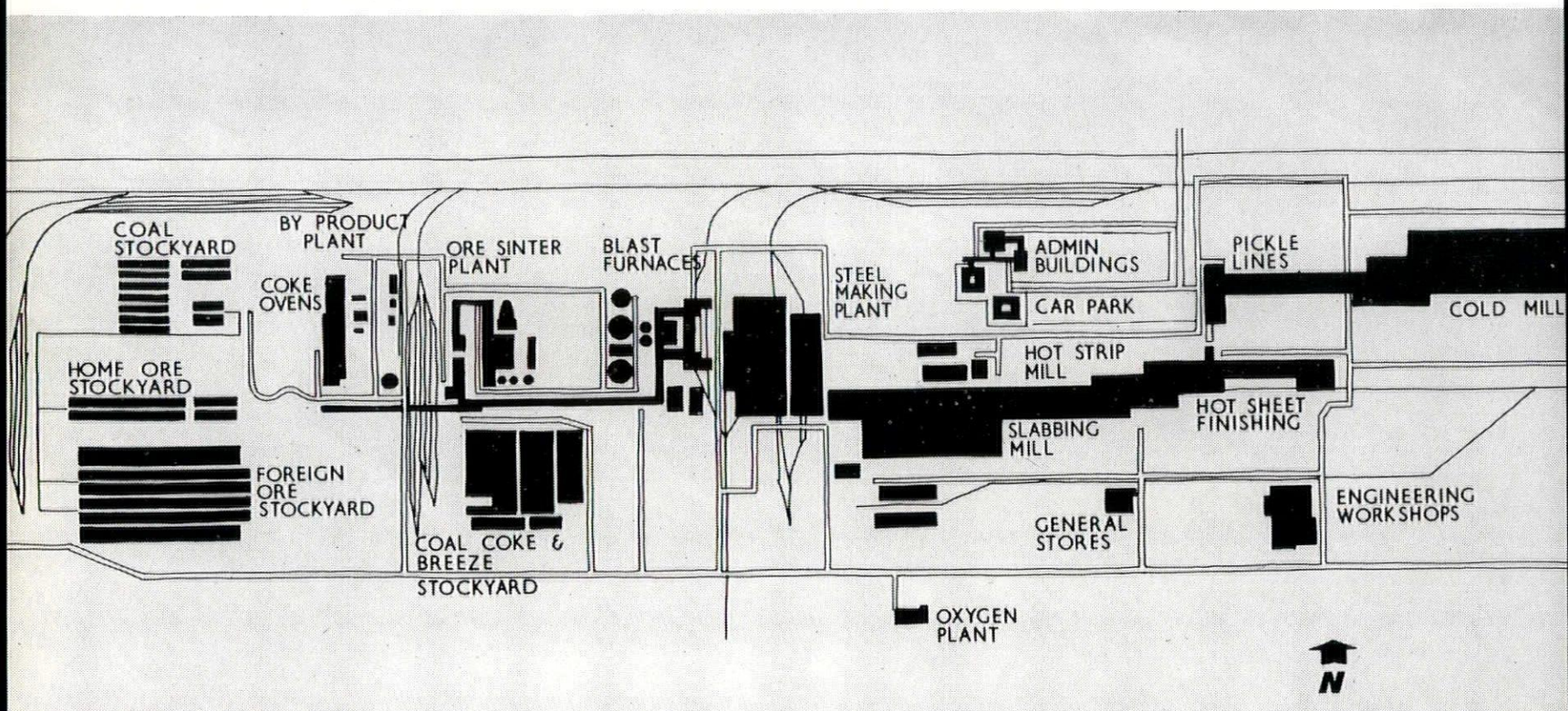
It is in the main an engineering project, but the two firms of architects named above were responsible for the architectural treatment (including massing, elevational design, design of standard details and advice on cladding and materials) of all the buildings, and were also fully responsible for the amenity buildings, the central and subsidiary laboratories and the computer building.

The site is flat, with the only natural feature the Black Mountains in the distance to the north, and the architects' task was a landscaping as well as a constructional one: that of integrating so vast and (because of the layout the industrial process required) so rigidly planned a range of buildings into the rural scene. This has been achieved by simple contrasts of form, by restricting the number of elements used and by the judicious use of colour. There is also an ambitious programme of tree-planting.

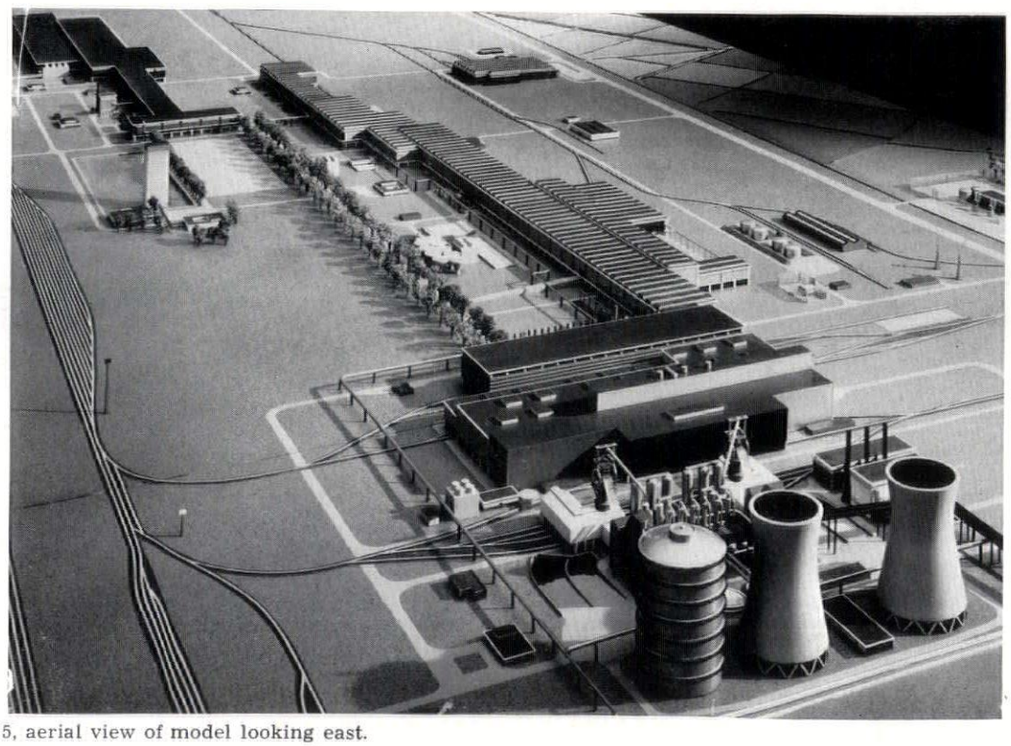
The larger buildings that house the main industrial processes (steelmaking, hot and cold strip mills, pickle lines, etc.) and the boiler and turbine houses—also those forming part of the exposed plant units like the blast furnaces—have vertical cladding, formed from steel sheet protected by asbestos, with a specially designed profile large enough to give a surface texture in scale with the large areas covered. Ventilation is by monitor roof-lights or, in the case of buildings like the hot strip mill which require additional ventilation, by louvres formed in the walls by adjusting the fixing of the cladding sheets. Natural light is provided by substituting patent glazing for the cladding sheets.

At the focal centre of the works, adjoining a proposed new access road, is the site of a future group of administrative buildings including a 250ft. high office block which, when built, will be the dominating element of the scheme. Two buildings of this group have already been completed: a central laboratory and a computer building. These are single-storey, with the accommodation grouped round a central court and,

block plan

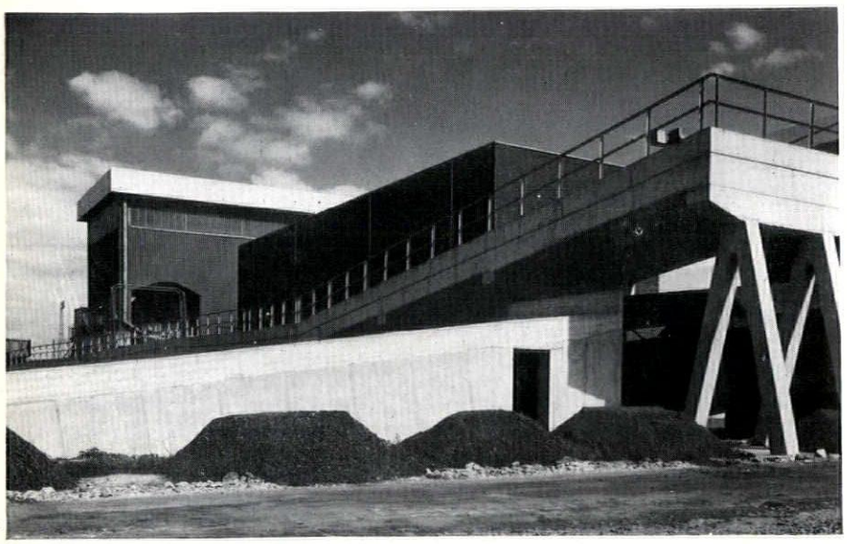




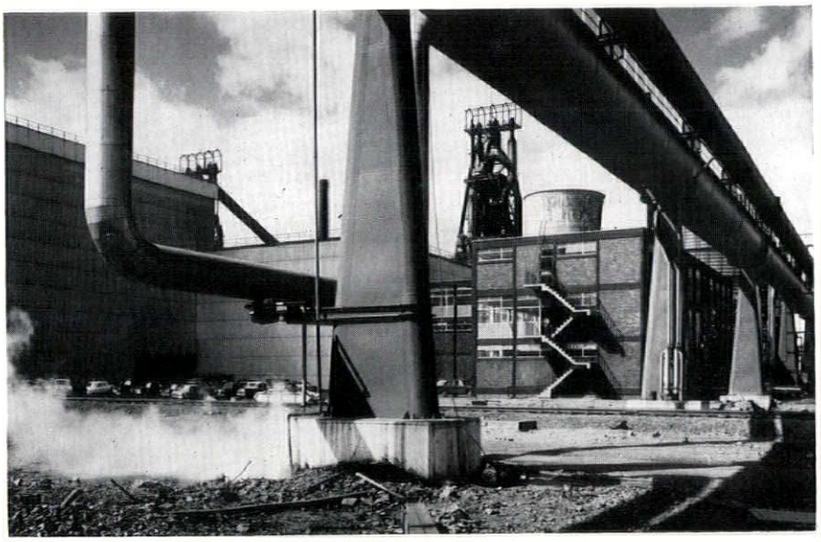


5, aerial view of model looking east.

6



7

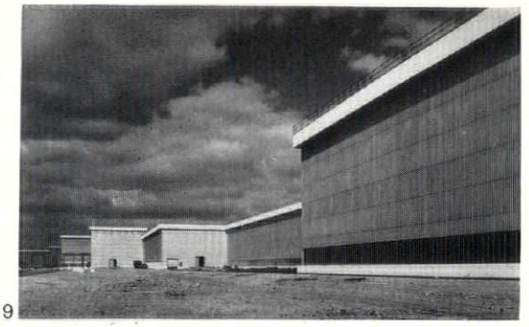


8

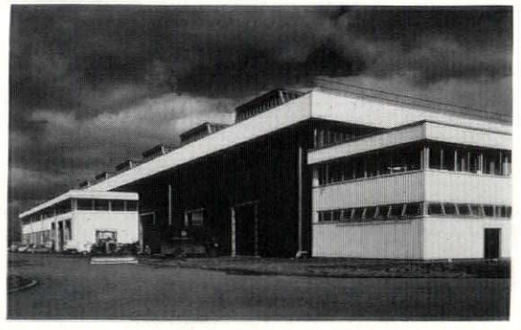
6, raw materials tippler, with a floodlighting tower rising behind. 7, another view of the raw materials tippler. 8, gas pipes frame the steel plant amenity block, right, and the steel-making plant on the left.

being among the buildings that will be seen by visitors, have been designed to display the use of steel in building. They have exposed steel frames, painted black to stand out against the aluminium colour of the background buildings. Windows, partitions, door-frames and most of the loose furniture are also steel.

Colour has been equally positively used throughout the scheme. The larger buildings, because of their huge scale, tend to look two-dimensional. These have been painted in clear sharp colours chosen in relation to the light, bluish atmospheric background when seen from a distance. The cold strip mill is blue; the hot strip mill, set back from the railway frontage and forming a background to the central group of administrative buildings (see above) is aluminium; the boiler house is white. Towards the end of the line of buildings, the stripping and soaking pits have been painted black and a strong blue, and a section of the pickle line at the opposite end red, with the object of defining the extent of the group. The large exposed plant, which is given its own interest by its sculptural quality, is painted in low tones and the smaller elements of these are very light or very dark, according to whether their position tends to disrupt or emphasize the total design pattern. Overhead conveyors are black and minor vertical elements, such as lighting standards, small stacks and exhausts, are aluminium to avoid interrupting the general horizontal emphasis. At low levels there are small areas of bright colour, both to add visual interest and for safety (e.g. all handrails are bright yellow). Pipelines are also in bright colours, conforming to B.S. specifications. Brickwork (chimney stacks, plant bases, etc.) is black.



9



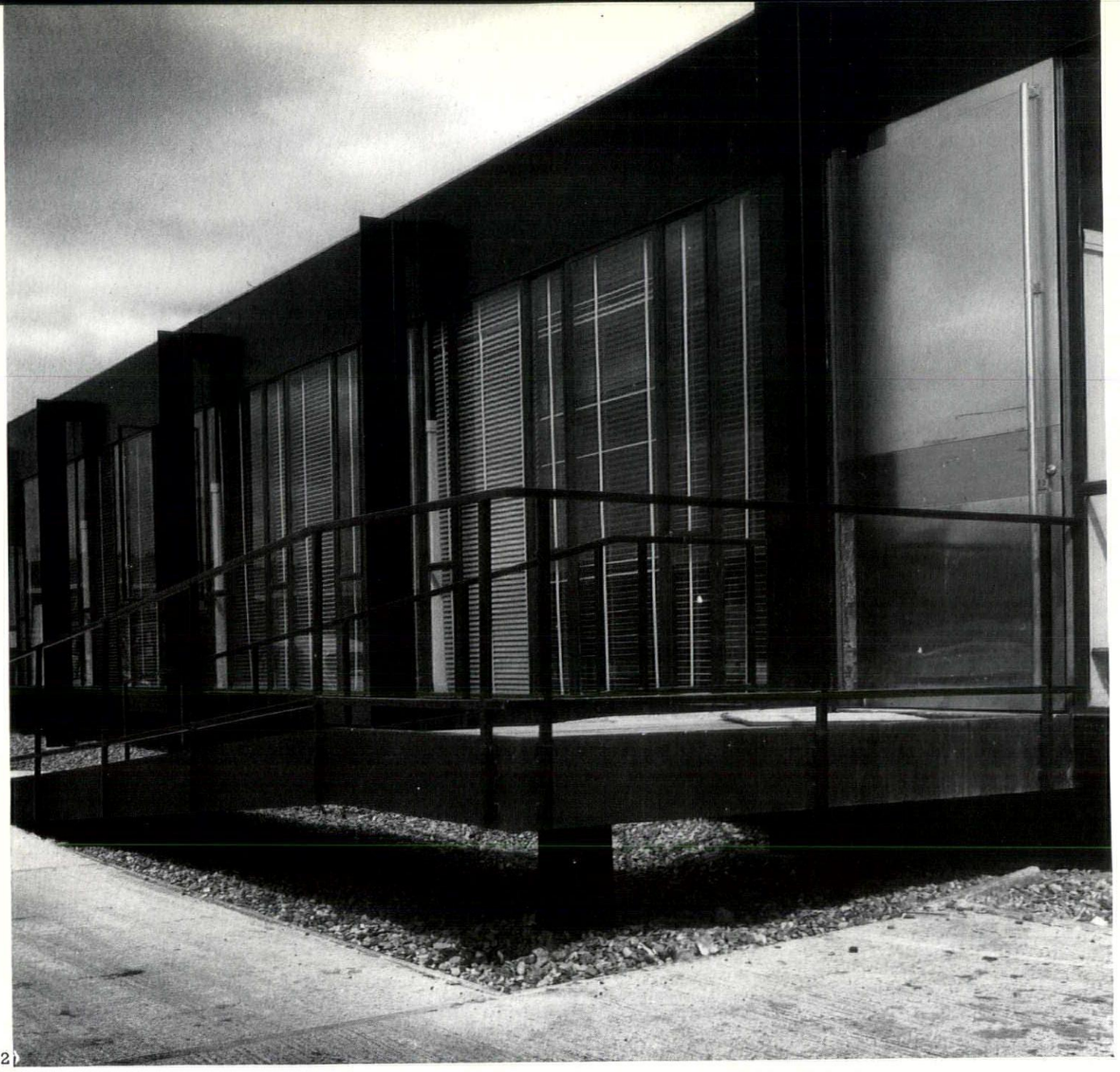
10

9, the hot-strip mill. 10, the central engineering workshops. 11, the computer house in the administrative centre.

STEELWORKS, NEWPORT, MON.



11



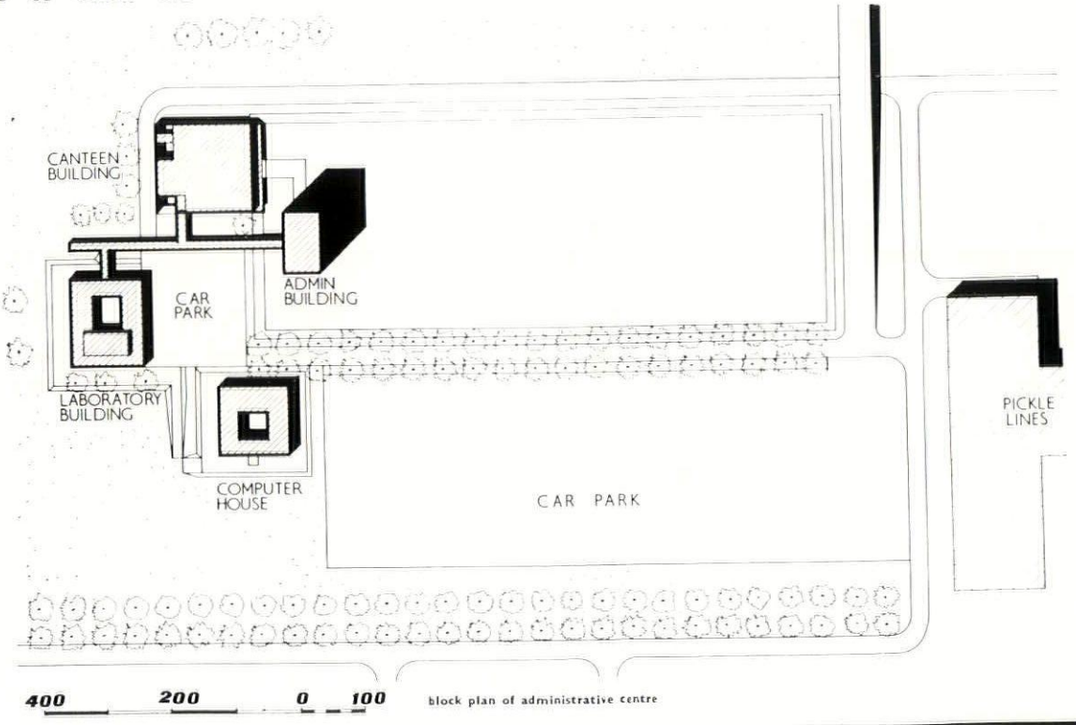
12

12, close-up of the central laboratory building, which has a steel frame painted black. This and the computer house (preceding page) form part of the still uncompleted administrative centre of which the eventual layout is shown below.

STEELWORKS, NEWPORT, MON.

photographs by
H. de Burgh Galwey

for criticism see page 122



block plan of administrative centre

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

LOOK OUT

SOS

PELWALL, STAFFORDSHIRE
One of Soane's latest and oddest houses, 1, in an unfashionable part of the north Midlands, near Market Drayton. The house itself is at least boarded up, but the weird entrance lodge is free to all comers. Help, quickly: this is an irreplaceable act of the imagination just going begging.

ALBERT DOCK, LIVERPOOL
The most dramatic of all British docks, 2. Replacement has been in the air for some time, and although there is no immediate threat, this is exactly the right moment for the new brooms which have revolutionized Liverpool's planning to say unequivocally that the dock should be preserved. It is as important to the city as the Cathedral or St. George's Hall.

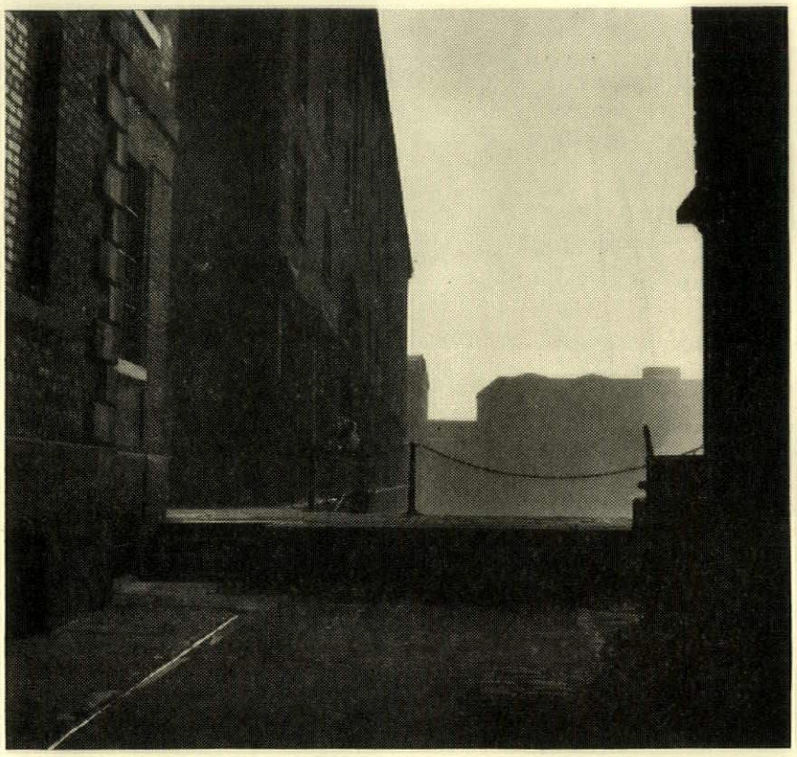
ALDBROUGH, YORKS, N.R.
The North Riding villages are the best in England. The planning authority must realize that they are entrusted with something as valuable as a cathedral, and be accordingly stringent in their conditions of consent. The new house, 3, which has gone up on the north side of a magnificent village green at Aldbrough, 4, is a disaster—wrong in shape, colour and texture. Other villages in the Riding, such as Snape, are being spoilt by careless new housing. Many more are impaired by the simple replacement of vermilion pantiles by dull red tiles, something which alters the whole colour-balance of the village. Yet Aldbrough itself can show an admirable example, 5, of how to convert a cottage in a way that will add to the village instead of obliterating it. The ability is there: it is up to the planners now.

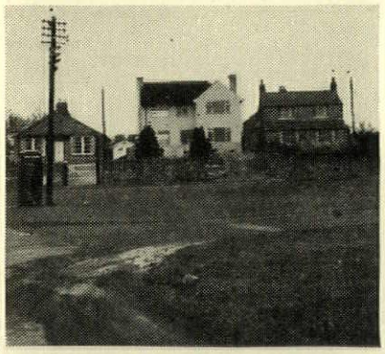
OUTRAGE

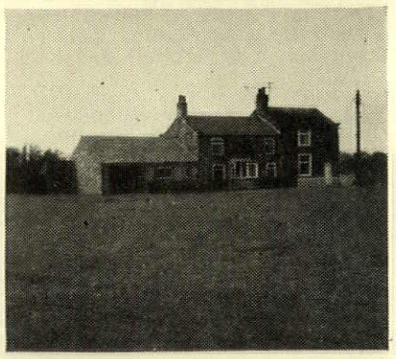
BARNARD CASTLE, CO. DURHAM
What in current fashion is termed an 'outworn area' has been replaced at Barnard Castle. The result might have stepped straight out of the worst blunders of northern France. Heavy design and a prickly surface which is just bearable in the High Street,

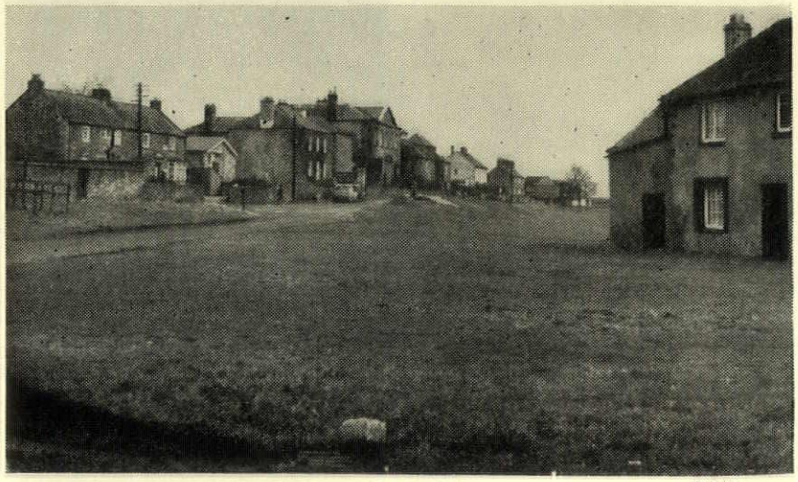


1


2

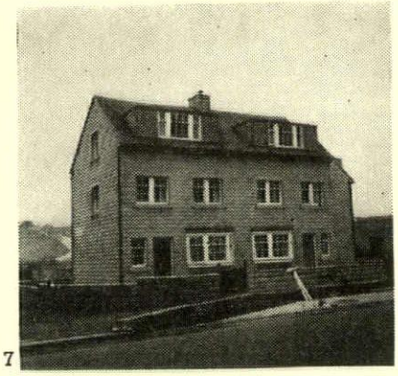

3


5

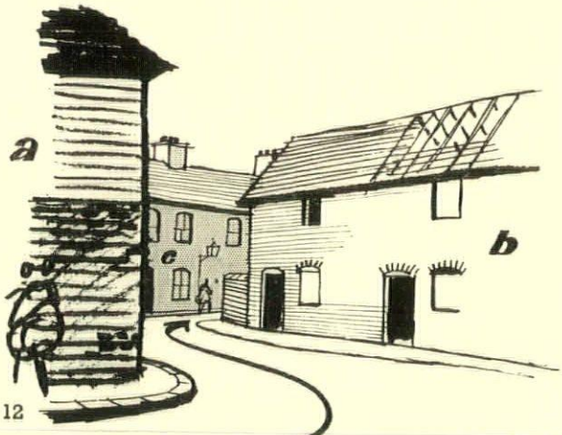

4



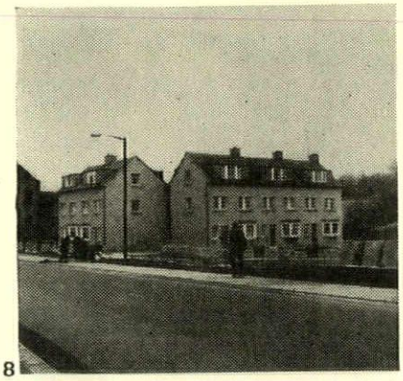
6



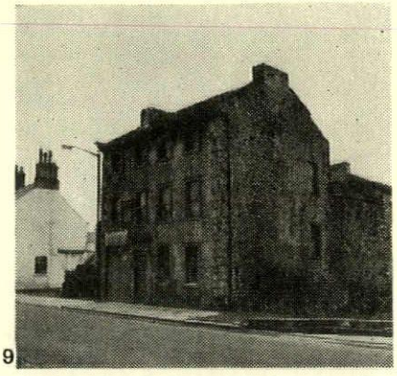
7



12



8



9



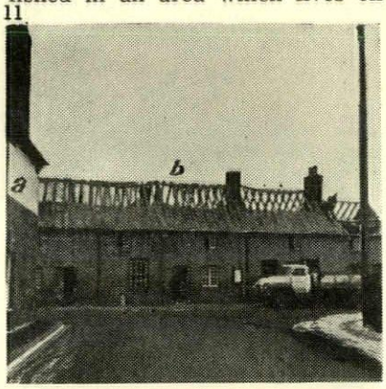
13

6, when it is surrounded by sanity, becomes a grisly parody of traditional building down by the riverside, 7 and 8. The one remaining eighteenth - century building, 9, is for the moment a standing reproach to the insipid good taste of the rest. But they'll soon have it down, no doubt.

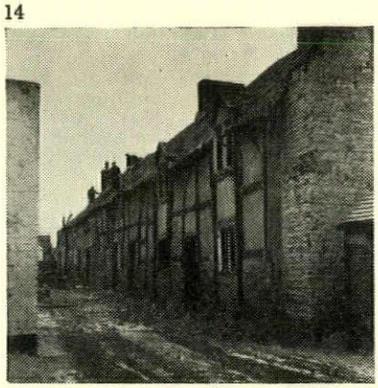
. . . and here is the same spirit again at Barnard Castle—this time on the floor instead of the buildings, 10. A sloping market-place can easily and naturally contain cars; there are several methods of inflecting the floor-surface which would add to the townscape. The one which destroys it utterly has been used here; an artificial levelling-out backed by a coy stone wall and three levels of asphalt and kerb.

SHOTTERY, WARWICKS
This piece of demolition would be savage anywhere. In one of Britain's most visited villages it is incredible. The terrace was the hinge of the village, first of all closing the initial view, 11, then crowding up the corner, 12 and 13, to create a memorable place out of what might have been just a collection of cottages. 14, the half-timbered backs—being demolished in an area which lives on half-timbering. There had better be some new building on this site to give the village its signature back, and it had better be good.

11



14

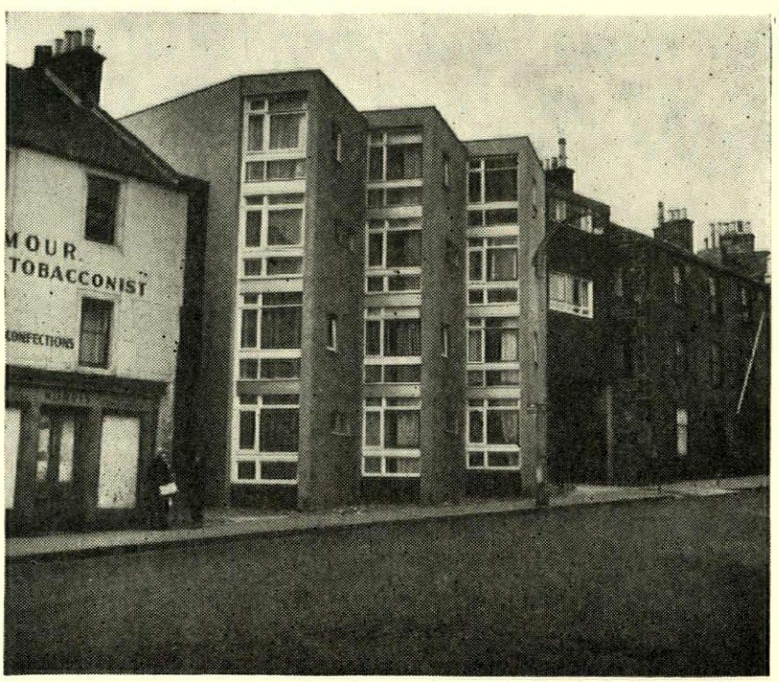


CREDIT

BURNTISLAND, FIFE
A neat addition to the townscape, 15, by Wheeler & Sproson. A view down the street, and an incident in the street. Both easy, once it has been done. But how many do it?



10



15

EXHIBITIONS

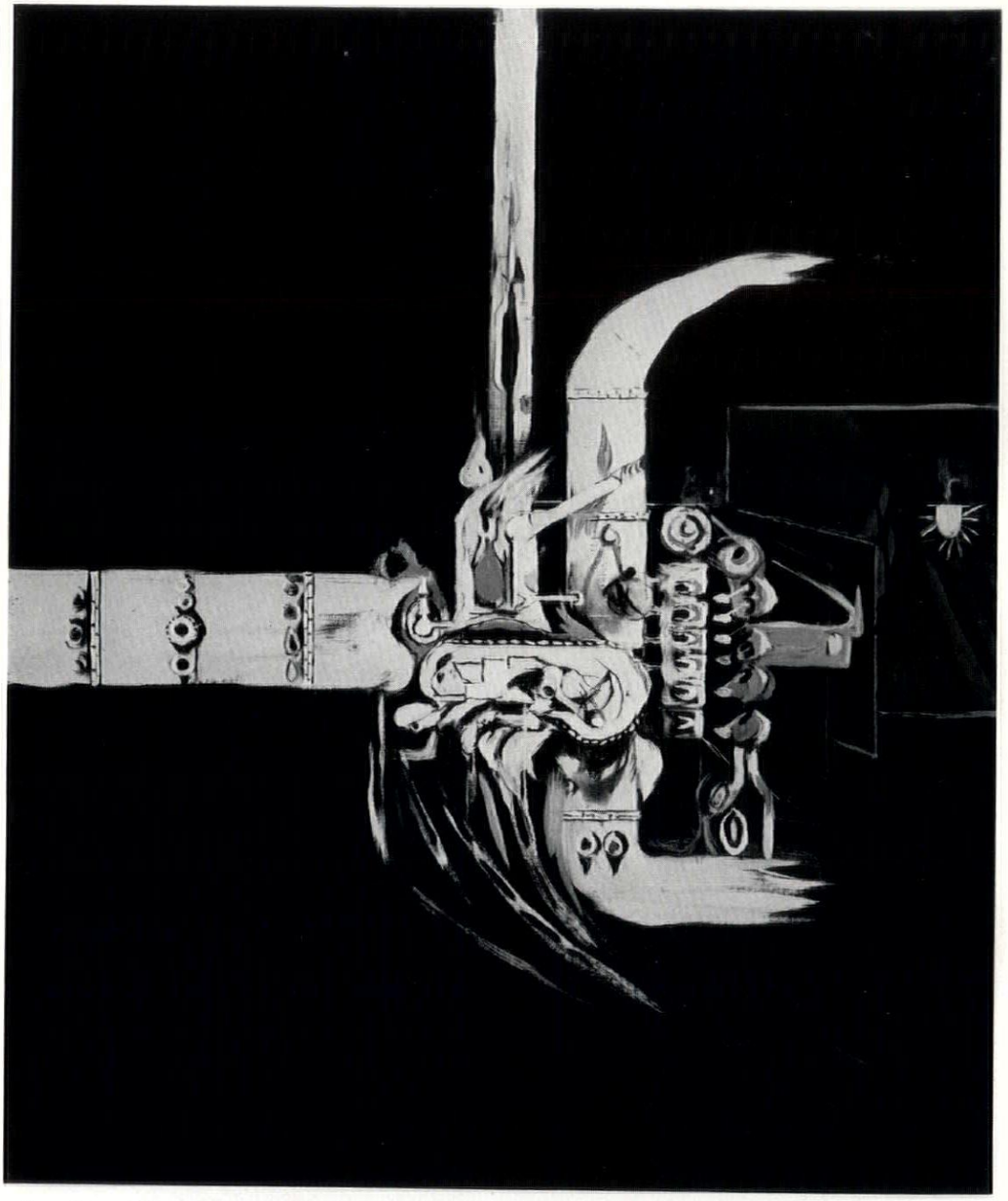
PAINTING AND SCULPTURE

The sub-committee of the Contemporary Art Society which selected the painters for the 'British Paintings in the Sixties' exhibition, should be given an opportunity of putting on a show with the same title in the Spring of 1970, *subtitled 'Second Thoughts.'* With six and a half years to go before the sixties are out, it seems reasonable to hope that they will feel compelled to make a few changes. As it is, it produced an indoor spectacle which was among the more reliable amenities of the English summer, even though a good deal of the pleasure it afforded put it in the category of cruel sports.

The exhibition was too large, and in spite of the fact that both the Tate and Whitechapel were used, several pictures which were catalogued were not on view. Like the selectors themselves, I regretted a few absences, and if I regretted some of their choices even more, they nevertheless made a really serious attempt to bring the work of our best living painters together. They said in the catalogue, rather too cryptically, that it was a good moment to show what British artists are doing because 'the international art situation is for once in our favour.' I am not sure what this means; the exhibition made it clear that on the one hand we are making no important contributions to the international schools, and on the other, that we have a few good independents, and I hope the selectors mean that a greater number of foreign collectors and museum directors than hitherto are treating this independence as a virtue.

The most compelling works were by artists who have little or no connection with one another and in almost every case have a strong dislike of what the others do. But they all seem to me to have taken advantage of the fundamental arbitrariness of modern art to stand or fall by a total adherence to their own predilections and to be somewhat more closely linked by their involuntary romanticism than they themselves could possibly credit.

The famous Bacon triptych, first exhibited at his Tate retrospective, had a destructive power that turned the rest of the exhibition into a struggle for survival, and anything that managed to stay alive seemed in one way or another to accept its authority. The grandeur of his images



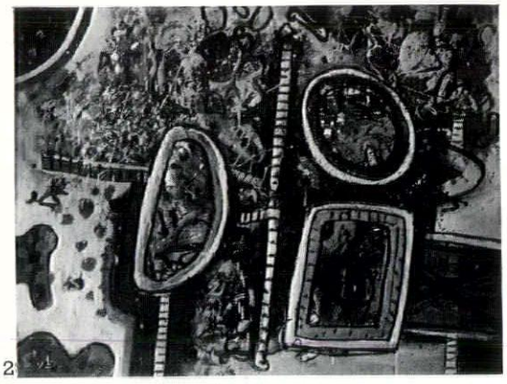
1

arises from his power, as great as that of Goya and Munch, to impart a sense of glory to the incessant restlessness of the flesh. He never pays tribute to death, and he paints dead meat as well as Rembrandt and Soutine painted it because it's still moist and unstable. If there had been any room in his pictures for the medieval hopefulness that treats death as the servant of another world, the two pieces of meat chatting in the foreground of the first panel of the triptych would have been skeletons. By the same token, there is no room for disenchantment in his pictures. They are filled with the glorification of being. Everything formed by Bacon's brush strokes is alive and everything living is sacred.

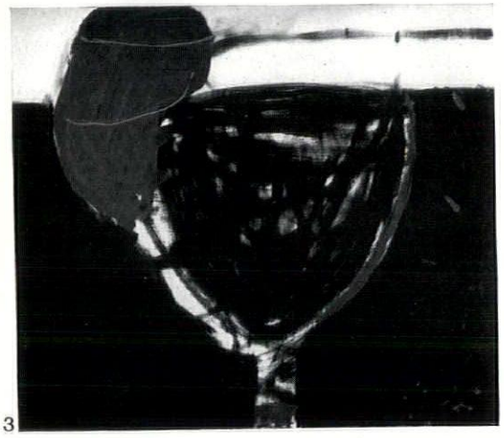
Sutherland was well represented by his large and splendid 'Hanging Form over Water,' less well by his soft and seemingly growing 'Machine on Black Ground,' 1, which doesn't achieve a dense enough presence and celebrates melodramatically what the other calmly presents. The hanging form does not refer back to any known thing in the natural world but is composed of living entanglements, and in the context of the Tate show looked as if it might be a metaphor for the convulsed figure hanging upside down in the third panel of the triptych.

In the same context, the pictures of Alan Davie, with their unnamable discharges of paint, 2, seemed scarcely less convulsed than the spurting figure on the bed in the centre panel of the triptych.

Hilton, too, whose lopsided forms, 3, are sometimes painted in a way that shocks the eye like the unexpected sight of nakedness, has more in common with these painters than with the Cornish abstrac-



2



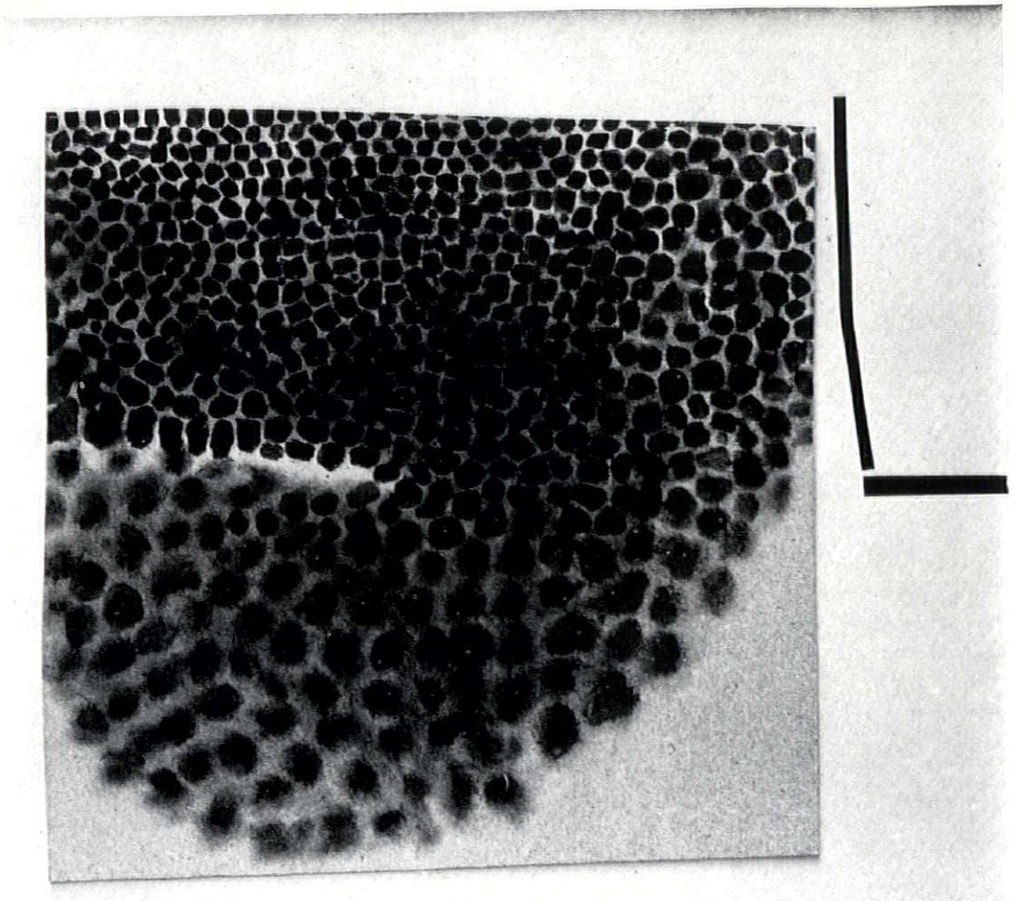
3



5

tionists who are, so to speak, his official associates.

It would be going too far to try to tuck the Pasmores under the wing of the Bacon triptych, but they were the outstanding abstracts in the exhibition because Pasmore's immoderate aestheticism has pushed him into a marvellously arbitrary formalizing, and his 'Black Abstract—Growing Form,' 4, might almost be described as a surrealist masterpiece of pure abstraction.

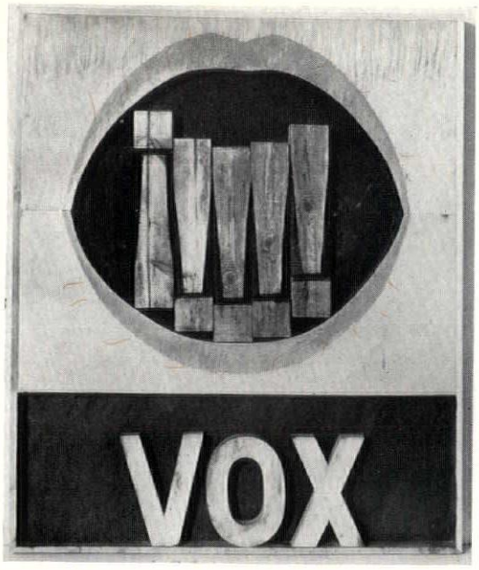


4

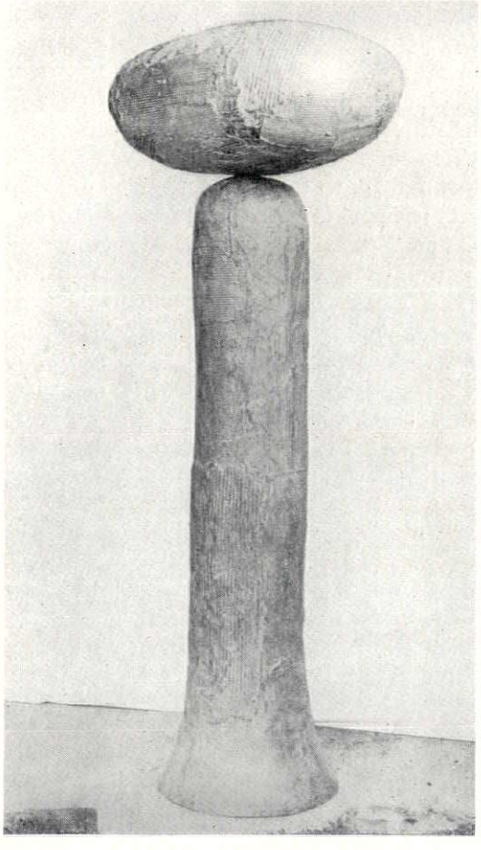
Artists like Bacon and Sutherland and the first generation of American abstract expressionists grew up in the surrealist atmosphere which prevailed in the late 'thirties, and owe their sense of direction to surrealism's techniques of interference, its cult of the marvellous, its avowed eroticism and its philosophy of the excessive solution. It has been a more fructifying influence than any of the purely pictorial isms, and it's not surprising to find its traces in the best enterprises of the young men at Whitechapel, in the work that's to say of Blake, Kitaj and Hockney.

Kitaj's fine Spanish Civil War painting had its second showing, but it's doubtful if British painting can lay claim to him yet, for although Bacon is one of the influences on his work the end results are so far thoroughly American.

The Hockneys that were actually shown were two versions of a marriage between a man of our time and a woman of ancient Egypt. The picture reproduced in the catalogue—a gay transformation of a photograph from a health-and-strength magazine for pederasts—was not on view. The first of the marriages, 5, is in his familiar flat, graphic style. It catches the flimsiness of a film set and the girl could be a cardboard cut-out ad for 'Cleopatra,' but the second marriage is much more sombrely and richly painted; the head of the woman is a serious paraphrase of an Egyptian



6



7

stone head and turns the museum without walls into a bridal chamber.

Peter Blake's contribution included two of his most remarkable works to date. One of them is called 'Postcard' (sorry, no photographs available) and is based on an Edwardian picture postcard of a matador with the gold braid of his tunic picked out in real silk. He has painted the figure in blacks and greys, and the only accent of colour is the heavy gold thread that he has stitched into the canvas for the facings of the tunic. The effect is beautiful and mysterious and brought to mind Stroheim's use of gold in the film 'Greed.' The other painting, a study of three workmen in conversation, is Baconian in its feeling for the instantaneous and in its tonal brushwork. The title of the picture 'The Lettermen' is printed in large meticulous letters on a deep strip of glossy paint at the bottom of the canvas and by rights should look quite out of place, but the old-fashioned display letters are somehow in accord with the working-class types depicted above and bring his seemingly irreconcilable concern with both matt tonalities and smooth, shining surfaces into a fascinating agreement.

It was nice to see that Joe Tilson was giving his well-made wood reliefs more impact by introducing allusive impurities, and in his 'Vox-Box,' 6, the allusions are handled with tact. The colour and shape of the open mouth is not too obvious, and the pieces of wood not too toothy.

At the Battersea Park sculpture exhibition, which included a number of interesting sculptures from the U.S., the arbitrariness of modern art could be seen at its worst in some of the English figurative sculpture and the American scrap metal salvage drive. Almost all the English bronze figures seemed to be the work of jejune sadists, bent on finding new ways of vicariously tormenting the human body, and there were very few things from either country that were not an affront to the natural setting. Sir Herbert Read, in a diplomatic but excellent introduction, named, as examples, three works which could be said to grace their setting. They were by Moore, Hepworth and Butler, and I could find no others. But there was one work whose simplicities might have seemed of a negative order in an exhibition less lumbered with vacuous complexities, which acquired a curious gravity and aplomb. It was a pale bronze by William Turnbull, 7, which succinctly commemorated the birth of Aphrodite, who sprang from the member, as they say, of Uranus after it had been cut off by Cronos and thrown into the sea.

Robert Melville

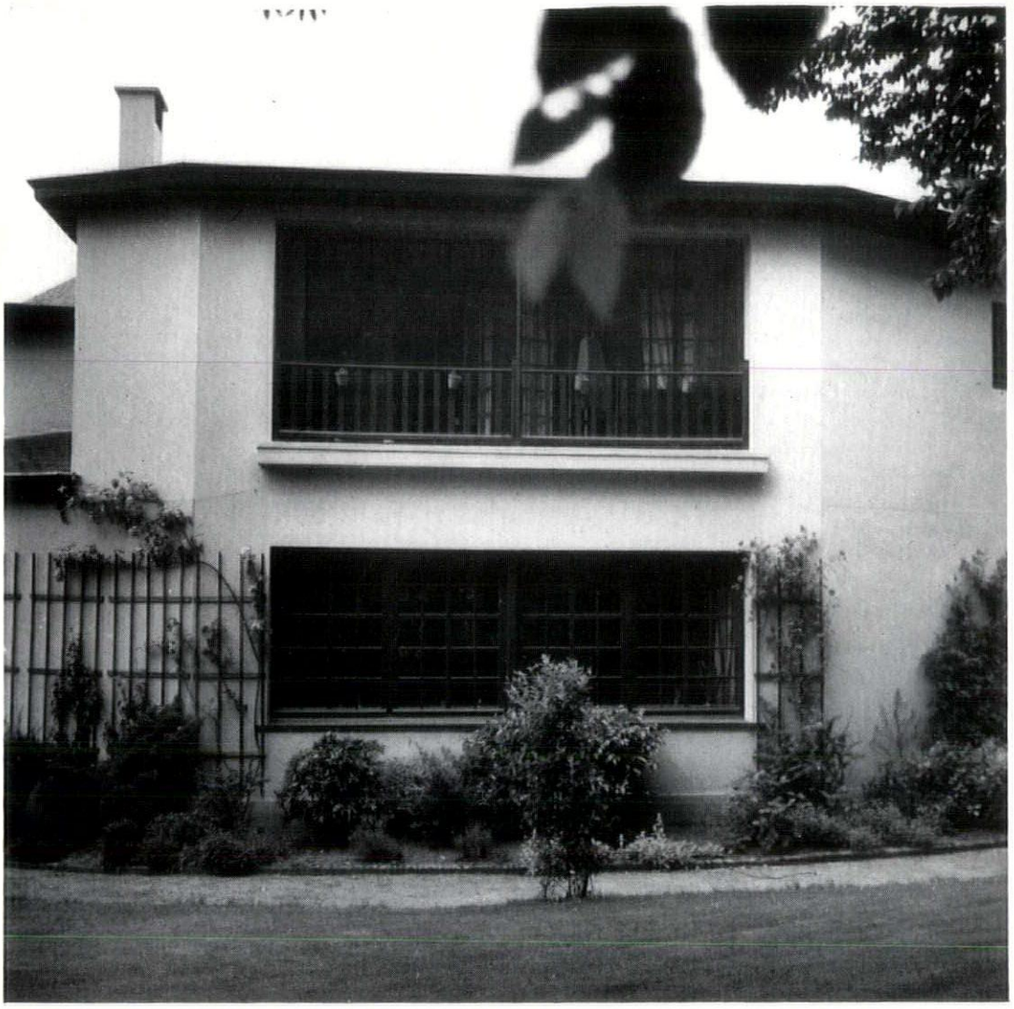
HISTORY

VAN DE VELDE'S OWN HOUSE

It was through his readings from Ruskin and, particularly, Morris, that van de Velde, young avant-garde painter that he was, ceased painting pictures and turned his total energies to design-reform. Of the generation com-

1, *Van de Velde's own house, 'Bloemenwerf', at Uccle, Brussels.*





2, *the back of 'Bloemenwerf.'*

ing after Morris, he developed Morris's theories and carried them a stage further by pioneering the idea of applying good design to industrial products. Roughly speaking, his concept was that the artist-designer, instead of directing his creative energy into hand-craft work (and, therefore, as it happened with Morris, unique production for an exclusive market), should express himself—and I stress that phrase in the case of van de Velde's own work—in the design of useful things intended to be industrially mass-produced and available to all.

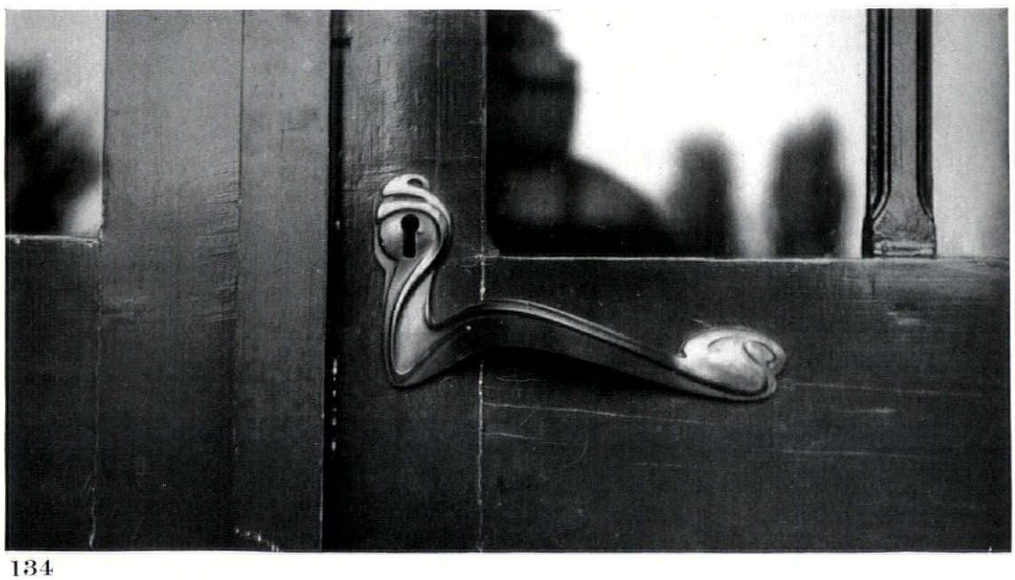
Like Morris, van de Velde had the opportunity, literally, of putting his own house in order. In 1895, twenty-six years after the building of Red House, he designed and built for himself and his newly married wife Maria a house at Uccle, a suburb of Brussels, which they named 'Bloemenwerf.' There are perhaps no visual comparisons to be made between the two houses, but they have in common an air of domestic commodiousness and a lack of pretension, as can be seen in 1, a photograph taken last summer.

Van de Velde had had no architectural training, and therefore probably relied considerably on the practical knowledge of his builder, which may account partly for the strong regional flavour of the house. It must have been a colourful sight in its original paint-scheme, but even allowing for this it is difficult now to see how it could have excited so much criticism and ridicule*. The stucco-work had a brownish tinge, the roof tiles were reddish-grey, and the area that shows dark at the gables in the photograph was painted in stripes of grey and deep green. Behind the long window above the porch was the studio. Inside, the opposite wall of the studio forms a gallery looking on to the centre of the house: the hall, which reaches the full height of the house and is lit by a skylight. From his work-table van de Velde could look out on to fields on one side and, as a family man, was not out of earshot of the domestic activities within. This 'kernel' hall plan was repeated in the Leuring House at Scheveningen (1903), where again the first-floor landing was an open gallery overlooking the central hall.

After the front, the back of Bloemenwerf, 2, is a surprise, much less regional, and much more direct, and indeed twentieth-century, in flavour, with its long, sharply cut-in windows. Like Morris before, van de Velde felt strongly about the ugliness of the ordinarily available household furnishings, and set about designing his own furniture and fittings, in order to achieve a harmonious environment for his family's life. His furniture designs are well-known now, especially the type of chair which drew from Edmond de Goncourt the epithet 'Yachting Style' when he first saw van de Velde's furniture in Paris in 1896. These chairs were designed first for Bloemenwerf.

When it came to the smaller details of an artistic ménage, items such as table glassware, he could find acceptable only a few simple utilitarian pieces from a Belgian glass factory, Val St. Lambert at Liége. Only exception (another Morris link this) was the new designs being produced by James Powell & Sons at the Whitefriars Glass Works, which he enthusiastically bought. This was the firm which had made the table glass for Red House from the designs of Philip Webb and who were continuing, under the management of Harry J. Powell, to make very simple and beautiful

3, *front door handle at 'Bloemenwerf.' The door was originally solid, without glazing.*



* As van de Velde tells us in his autobiography, *Geschichte meines Lebens*. Henry van de Velde. Edited by Hans Curjel. R. Piper & Co., Munich. 1962.

glassware which the firm of Morris & Co. were retailing.

Another point in common with the Morris circle: van de Velde's wife and her friends' clothing did not escape consideration for their part in the aesthetic environment, and the resulting dresses and robes were extraordinarily beautiful. Some of his designs can be seen in an album* published in 1900 in connection with a textile exhibition held at Krefeld in that year, during which van de Velde lectured on female dress reform on artistic lines.

Van de Velde was a product of the climate which, around the end of the nineteenth century, fostered that renaissance of the decorative arts known as Art Nouveau, but he was an Art Nouveau designer with a difference. His work exhibits all the basic characteristics of that style; that is, new forms and newly-thought-out ornamentation derived directly from natural forms, wayward and expressive shapes, and an avoidance of straight lines; but his forms were always abstract, never realistic. The front door handle, of Bloemenwerf, to take but one example, 3, epitomizes this personal style of his.

With such examples of his own work, which was on the whole rationally designed, he could afford to be critical, as indeed he was, of most of his contemporaries, for their lack of guiding principles and the extravagance of their designs.

Betty Bradford

SHRUBS

TROPICAL EXUBERANCE

Envious glances are often cast at the wonderful foliage in the glass houses at Kew, or at architectural illustrations showing tropical foliage used abroad, but with a little trouble very similar effects can be produced in this country, using only perfectly hardy plants. The method is really a very simple trick: shrubs and trees of rapid growth and naturally handsome foliage are planted in good soil, top dressed every spring with manure, and cut almost to the ground.

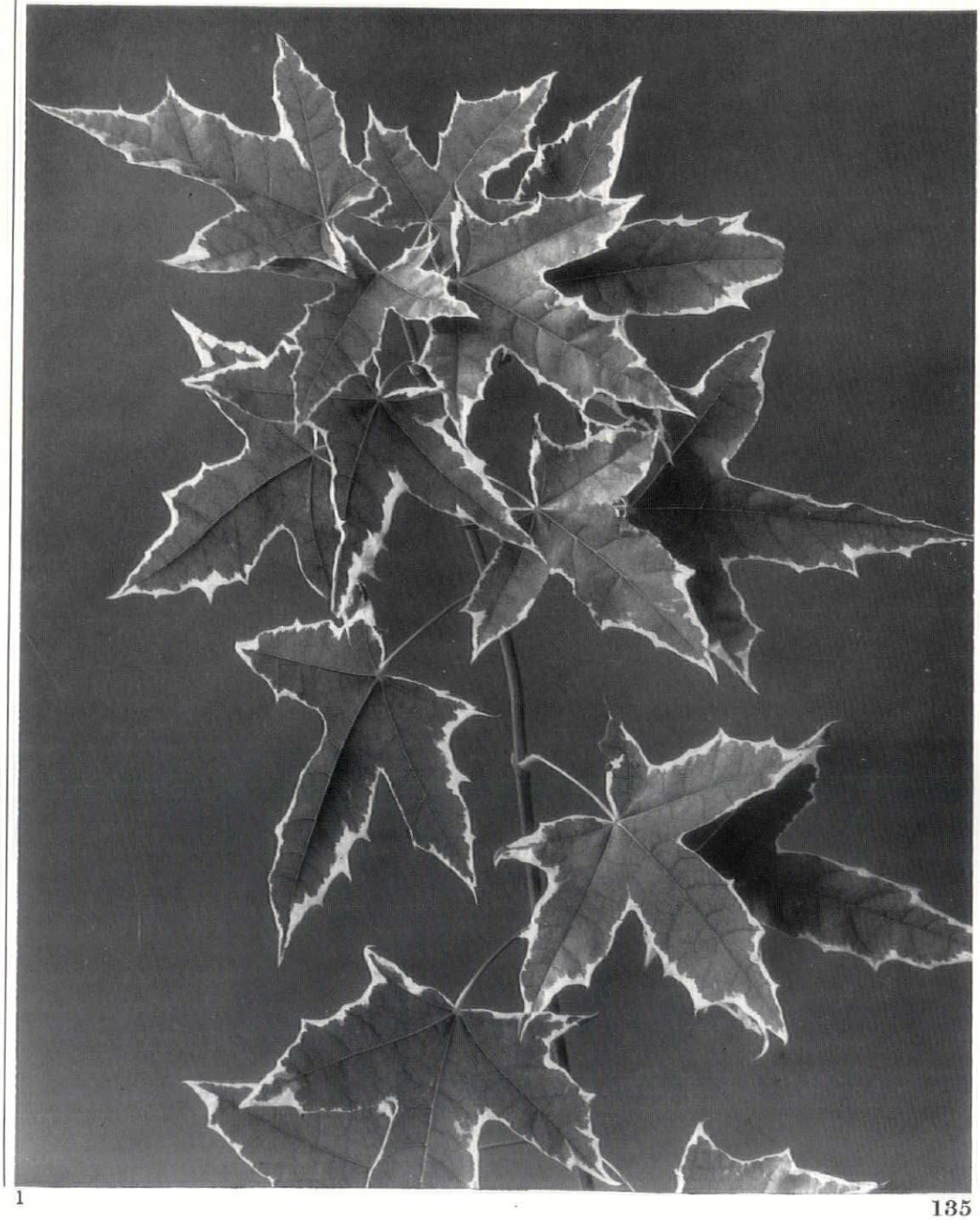
Strong shoots with enormous leaves are then sent up, giving very much the same effect as plants from the tropics. Of course, this treatment exhausts them more than normal growth, and they would need to be replaced every seven or eight years, but as no other maintenance is required, the total cost of labour and material is far less than the normal dreary process of bedding out.

Ailanthus glandulosa, the Tree of Heaven, which grows so well in some of the London squares, is an excellent example. Naturally a forest sized tree, if cut back every year it will produce several tall shoots with beautifully cut leaves often 2 ft. long. *Paulownia tomentosa* is another large tree which will perform similarly, although in this case the leaves are soft green and velvet textured, about the size of a dinner-plate. Even when it is not cut back but allowed to grow its normal 50 ft. it is a superbly sculptural object and in a warm summer will send up spikes of startling blue-purple flowers.

The more interesting varieties of the common sycamore, *Acer pseudo-platanus* and of *Acer platanoides*, the Norway maple, 1, can be treated in the same way to introduce pleasant variations of crimson, purple or silver splashed foliage. Even the old horse chestnut, *Aesculus hippocastanum*, will throw up the most enormous palm-like leaves and grow 4 or 5 ft. in one season.

Evergreens which will withstand such drastic treatment are rare, but the broad leafed laurel, *Prunus laurocerasus latifolia*, will produce a fine show of large, dark green shiny leaves on strong spraying stems. Another magnificent plant for this purpose is the despised spotted aucuba, *Aucuba japonica crotonoides*, which filled Victorian shrubberies. When cut back it sends up stout green shoots on which the formal clusters of leaves appear from a distance as great golden flowers. Neither of these shrubs should be cut down every year, but could be done alternately every two or three years.

For fine, feathery foliage one could use one of the clump-forming bamboos like *Arundinaria murielae* or *Phyllostachys flexuosa*, both elegant varieties with tall,



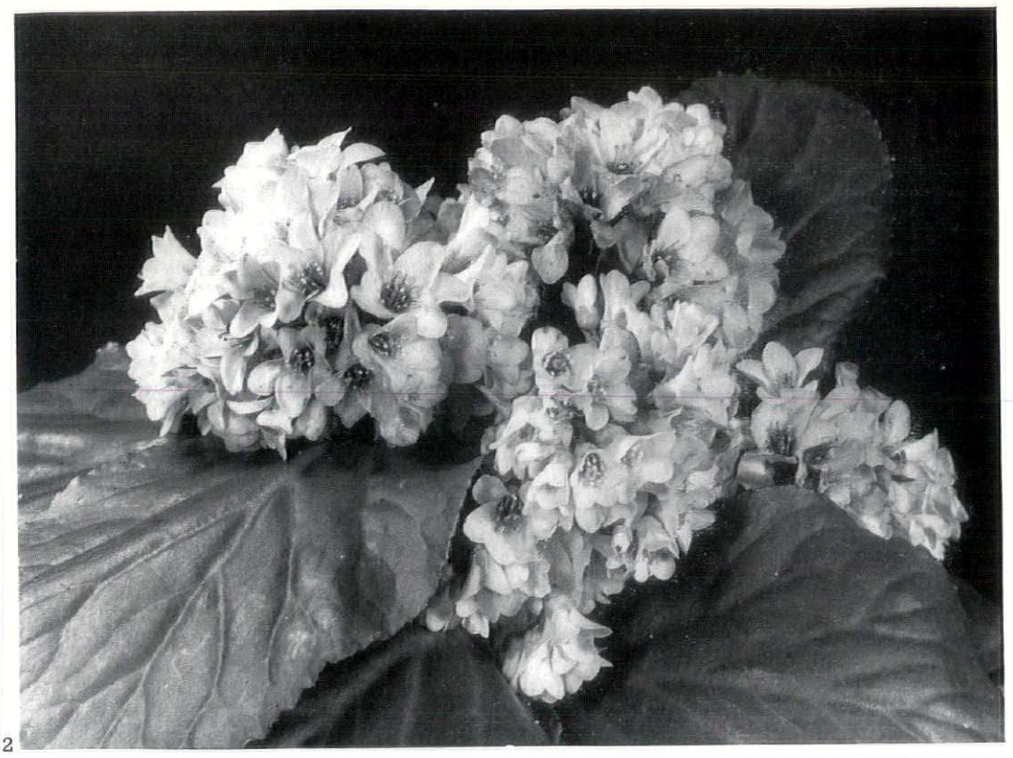
1

* *Album moderner, nach Künstlerentwürfen ausgeführter Damenkleider.* Einleitung von Frau Maria van de Velde. Verlag Friedrich Wolfrum, Düsseldorf. 1900.

arching canes about 8 ft. high, and delicate pale green leaves. Even more suitable, since it can be cut down every winter while the bamboos cannot, is a gigantic grass, *Arundo donax*. This sends up stems 8 ft. high bearing on alternate sides long, drooping blue-grey leaves. Unlike most of the ornamental grasses, which are to be viewed with suspicion since they tend to be very invasive, it remains in a clump where it is planted.

Such an exotic shrubbery might well be accompanied by herbaceous plants of similar character. Even the common rhubarb will give an exceedingly opulent effect when suitably massed, while its cousins *Rheum palmatum* and *palmatum atropurpureum*, with dull surfaced, deeply cut leaves of green or crimson, look even better. For a touch of winter greenery the round shiny leaves of *Bergenia cordifolia*, 2, the old elephant's ears of children's games, will form a good solid mass towards the edge of the bed.

A. du Gard Pasley



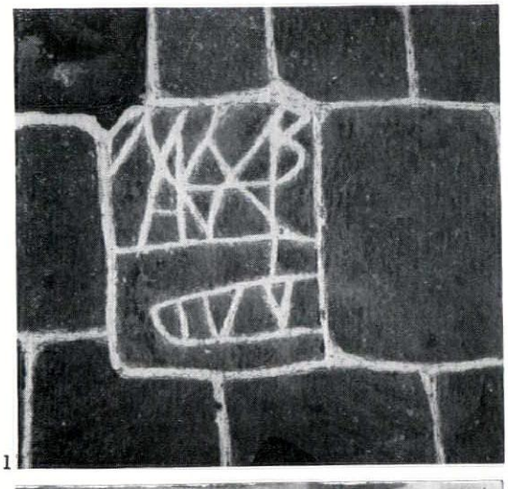
2

FLOORSCAPE

PUT OUT MORE PATTERNS

The tendency of Greek islanders, particularly in the Cyclades, to pattern their paved streets with paint, 1, *has long been a subject of delighted comment* by visitors from cultures where road-surfaces are seen (or, rather, remain unnoticed) in a purely functional light. What is less commented is the manner in which these floor-patterns are themselves of great variety, and fit into a general pattern-making sensibility that invades other parts of Cycladic life. There are, for instance, less regular ways of painting floors, 2, as well as figurative motifs, 3, whose origins (Byzantine? Archaic? Scythian?) it would be fascinating to know.

Over the same painted streets—as these



1



3



2

fine photographs by Irina White show —one may see flags displayed on national festivals (frontispiece to this issue), under conditions in which the mere fact of their being rotated ninety degrees out of their normal attitude destroys their official emblematic *gestalt* and leaves them as pure patterns on the sky. A sign with no more to say than 'eggs' may deploy its one and entirely sufficient symbol in patterns of the utmost elegance, 4, and an insistence on dozens, half-dozens and quarter-dozens that seems to go beyond purely commercial information, but may only reflect some personal quirk of the sign-maker. Finally, there is the all-patterned, all-painted environment, 5, intricate in changes of scale, invading all accessible horizontal surfaces as well as the floorscape, bringing order into what is, after all, no more than someone's tiny front yard.

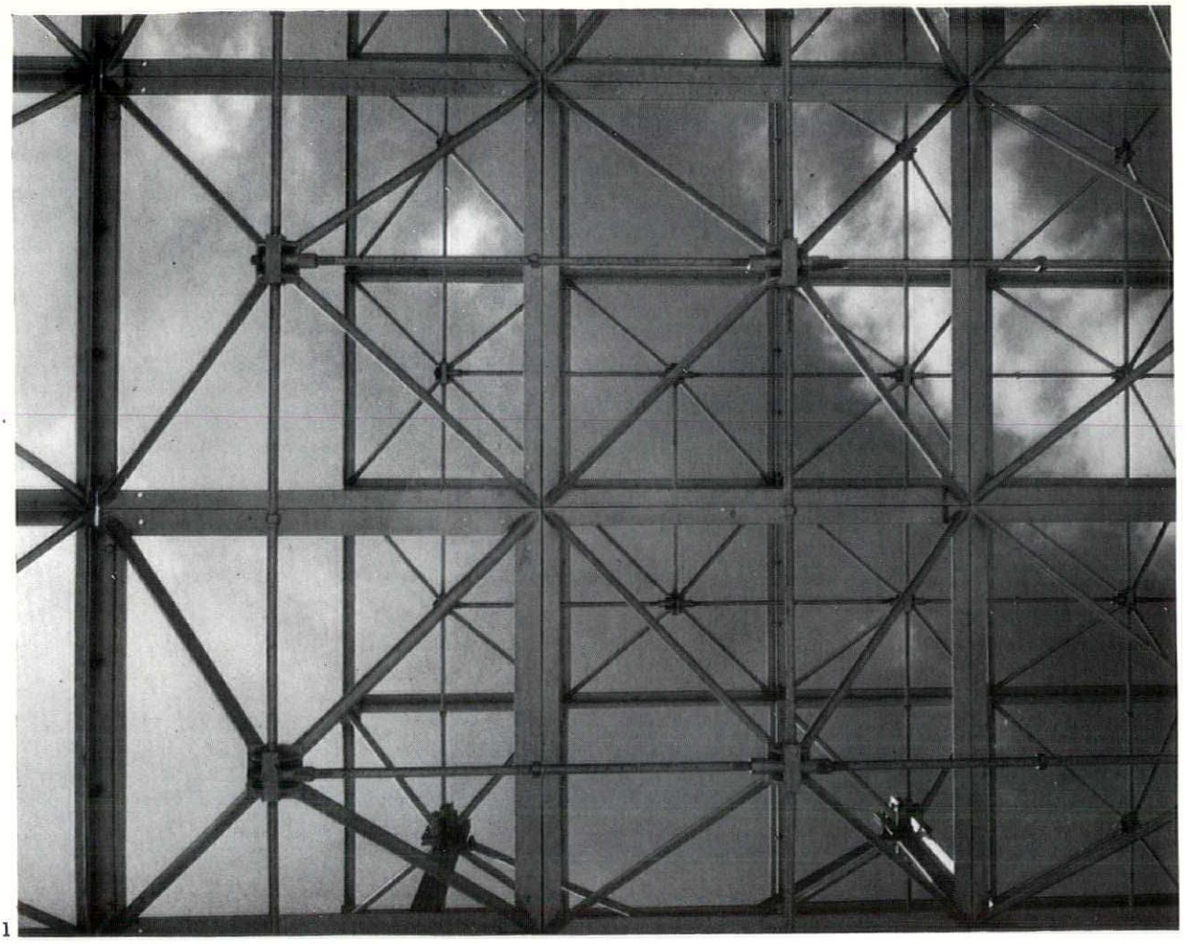
Michel Santiago



4

5





1, *steel frame of the Nenk method of building, now being developed by the War Office and described on page* 142. 1

SKILL

INDUSTRIALIZED BUILDING

1, System Building—Open or Closed

In National Productivity Year, the question of productivity in the building industry has naturally been highlighted. In the process of industrialization is seen the only hope of the industry being able to satisfy the explosive growth of demand for its product. In the harsh reality of here and now, because of past tardiness, new ideas must be produced, developed and executed in virtually the same breath. This article, the first of two, reviews the factors and the systems produced to date.

It is impossible to consider particular forms of industrialized building without also trying to understand the conditions within which they arise, the factors which must influence their development and the objectives they are trying to meet. Government Policy is inevitably critical, both because it controls national economic policy, of which building comprises nearly 50 per cent of the total annual national investment, and in a more particular sense, it is directly responsible for at least half of the annual national expenditure on building.

The decision, therefore, by the Prime Minister in October, 1962, to reconstitute the Ministry of Public Building and Works, by amalgamating with it the Works organizations of the three Service Departments, Admiralty, War Office and Air Ministry, was of particular significance. It at once completed a chapter in the history of post-war building in the UK and, one believes, opened a new and maybe even brighter one. All Government Departments having a direct responsibility to build now became the responsibility of one Minister. Although not yet sufficiently important to warrant a seat in the Cabinet, unlike his colleague at the MOHLG, he was nevertheless charged with the additional responsibilities of co-ordinating and extending the activities of all the research and development groups throughout the Government Service, as well as a direct responsibility for those within his own Ministry; of encouraging and developing generally the use of new and rapid methods of construction; of standardizing the use and production of building components to the greatest extent, and disseminating as widely as possible the best modern practices in building.

His first act was to appoint Sir Donald Gibson as his Director General of Research and Development and Roger Walters as Deputy. This helped to restore some equilibrium and hope after what an *Architects' Journal* editorial at the time referred to as '. . . a brash political gesture to demonstrate its anxiety over its building programme.' Be that as it may, here at last was recognition at Government level of the need for central direction and influence, example and advice. It could expect to enjoy also the support of other advisory Ministries, particularly those of Housing and Local Government, and Health which had, in the recent past acquired for themselves new Chief Architects who were sympathetic to the same aims.

Where had it all begun? What did it all mean? To what extent was it attributable to the efforts of the post-

war pioneers in prefabrication? How would industry respond? What additional hope and encouragement could be assumed for the future? How sure was the foundation on which these hopes could be based?

These and many other questions were being asked at the time. Now, almost a year later, how much nearer are the answers? By what standards are we entitled to judge?

The historical process background is dealt with in an article by Mr. Guy Oddie to be published next month. Sufficient to recall here that the process began, politically, with the Butler Education Act of 1944. This inspired not only the notable progress in school buildings, but an attitude in the rising generation of a preference for white-collar jobs. These are both significant factors when considering the present state of affairs in the industry. But they are not the only ones. If Government is to persuade industry to adjust itself fully to the new needs, it must create both financial stability in the economy, and a sufficiently strong central influence in Research and Development to be properly effective. It has already recognized the ineffectiveness of attempting to adjust the national economy by regulating the flow of building work. It must now apply the obvious conclusion from this that it is necessary to determine its building policy as far ahead as possible and to make its plans known. The time scale of the building process, from receipt of instructions from the client to handing him the completed building, the scale of capital investment involved, particularly if factory production is to be fully exploited, warrant adequate advance budgeting. To expect industry to await each year the Treasury's bingo-like announcement is both futile and disastrous.

The creation of the Directorate of Research and Development was considered at the time to have been handled in a most unsatisfactory manner. Its strength in numbers still seems to be pitifully inadequate for the enormous task it has to carry out. The degree of confusion, however, can be shown to be attributable to the industry too. That it was obviously quite unprepared for the change when it was announced and its subsequent panic actions in trying to catch up, were a reflection of its lack of real understanding of the problems before it. Coupled with the reactionary attitudes of the Building Societies as regards the private financing of non-traditional building projects and reticence on the part of some members of the building Unions to recognize and accept change, the problem began to assume a complexity that seemed beyond ingenuity to comprehend.

Many conferences, courses, symposia, etc. on industrialization in the building industry have been held, the most recent being that of the RIBA at Sheffield. From these one can begin to detect the issues of common concern, and those which motivate and differentiate the various factions.

For convenience, forms of industrialized building might be considered within two groups:

(*a*) Those which have been developed to suit the needs of a particular client or group of clients and are generally to be found in the public sector and

(*b*) those forms developed or acquired by commercial firms to meet the specific problems of particular building types in anticipation of persuading clients to use them.

Both groups want to achieve better value in regard to design and performance. Both wish to speed up the processes and procedures, technical and administrative and both recognize the need to get improved results from substantially static labour resources.

Both groups are concerned to help in reducing the immense programme of building facing the nation, and both are choosing to do so by concentrating their efforts on particular consumer markets. To what extent has this latter approach been valid in the past and is it likely to be in the future? On the purely economic level it might be argued that it was vulnerable: if advance orders cannot be guaranteed, the amount of capital expenditure required to make production fully effective may not be worthwhile risking. On the other hand the anticipated magnitude and duration of the problem at any time may be more limited such as to warrant a more expedient solution involving a substantial but rapidly recoverable investment.

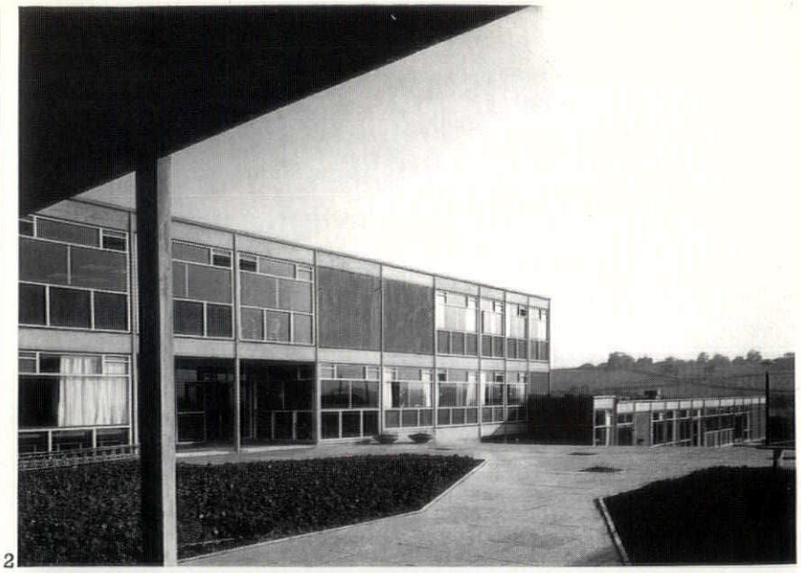
Ultimately, however, the industry must concern itself with all buildings and with the total building process. Its efforts might, therefore, be more usefully directed at the development of components parts that will fit together in any building type, and to increased industrialization of processes and procedures.

In short, the common aim of both should be to contribute to the ultimate formation of a 'new language of building' as has been the case in the past, by initiating and developing component parts or 'letters of the alphabet.' This evolution will produce components that, in the first instance, are complementary to traditional methods of building, and may even, in the long term, replace them entirely. It would be fruitless to hazard how long this might take, but the trend is already established.

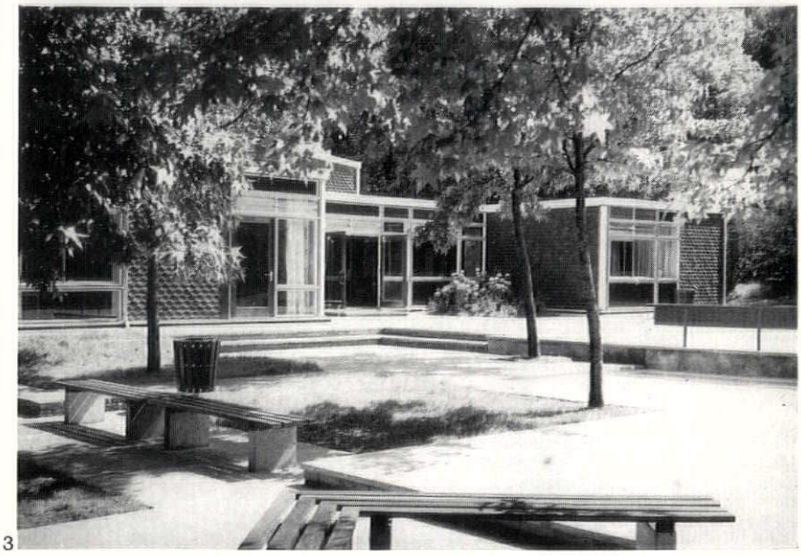
Whereas it can be shown that inflexibility generally restricts demands on the variety of components, the ultimate long term solution will not be by producing huge quantities of restricted bits but by manufacturing many different ranges to meet a wide variety of performances and to enable the designer to have the freedom which he has traditionally enjoyed in meeting all his client's requirements.

Central Government Departments have already given a lead by the D.C. paper and other guides on dimensional co-ordination and its application, and these are being supported by professional and trade organizations. The public authorities, which can support developments with large building programmes, have a particular responsibility in this respect, and should be directing their work to the achievement of complete interchangeability of component parts as soon as possible. There are strong indications that this is happening.

Systems of industrialized building developed within the public sector have been initiated and controlled by architects. Where there has been sustained development, they have prospered. When development effort has ceased or been kept to a minimum, they have tended to fossilize. They have tended to be of the 'light and dry' type and have been concerned largely with school building. The application to housing was a much later manifestation, and in at least its first form, can be shown to be directly descended from earlier work and thought. Indeed, there is a very strong common ancestry among most of the forms developed, and this is understandable historically. Whether it can be justified technically and administratively is probably open to question.



2



3

2, *Arnold High School, Nottinghamshire, by MOE using the Laingspan system.*
3, *the famous CLASP school erected at the Milan Triennale,* 1960.

The greatest influence has been of the Ministry of Education, and its Architects and Building branch. Professionally staffed by those who had already made the work of Hertfordshire internationally famous, it proceeded to stimulate both industry and local authorities by collaboration in technical developments, and the creation of an administrative climate which was suited to the new conditions, and which formulated

4, *fire and ambulance station, Sutton-in-Ashfield, Nottinghamshire, using CLASP construction.*



4

regulations and advice which were at once sensible and respected. 'Intergrid' was developed with Gilbert-Ash Ltd., Laingspan with John Laing. Both are concrete frame systems and are being applied to a range of building types beyond the schools for which they were originally designed. Their progress generally, however, in terms of finishes and design is certainly less than some of the others. Development of a steel frame with Brockhouse Steel Structures Ltd. and first applied at Belper, was selected as the basis of the CLASP system developed in Nottinghamshire.

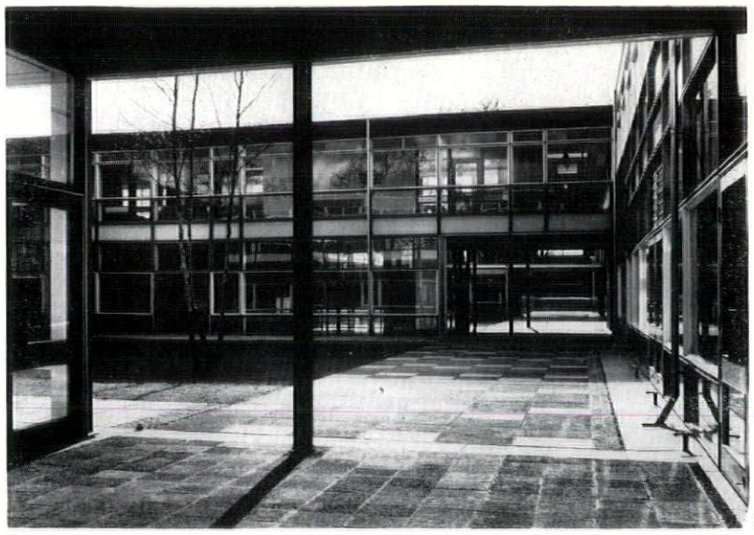
This system, also owes a very great deal to the earlier work at Hertfordshire, and many of the details had a very direct ancestry. It took building techniques a very significant stage forward in two respects. First, it developed the pin-jointed steel frame and other major elements into a structure which could be built on sites liable to mining subsidence without disintegrating and, secondly, as part of this development, designed foundations which showed that many of the previously held conceptions were invalid. These technical achievements are well-known and rightly applauded. The financial benefits which enabled schools to be built in mining areas without extra expenditure for subsidence precautions, were of vital interest to other similarly afflicted authorities. With the support of the MOE a new concept of organization and administration in Local Government, the consortium, was founded. This, too, has prospered and there are already at least eight such consortia formed or forming. Success was not limited, however, to technical and administrative aspects, for at the Milan Triennale in 1960, a CLASP school won the premier award. Since then it has been chosen for York University among a wider range of building types, including fire and ambulance stations, libraries, etc.

The second consortium inspired and influenced by CLASP, SCOLA is also building its first programme with a system designed for its purposes. In the meantime Hertfordshire, the source authority, has been progressing within its own county boundaries, and has taken positive steps to develop a wider use of interchangeable component parts by designing no less than four other complementary systems, one of which it is making available through a professional collaboration with MOPBW and Kent to be known as SEAC (South Eastern Architects Collaborative).

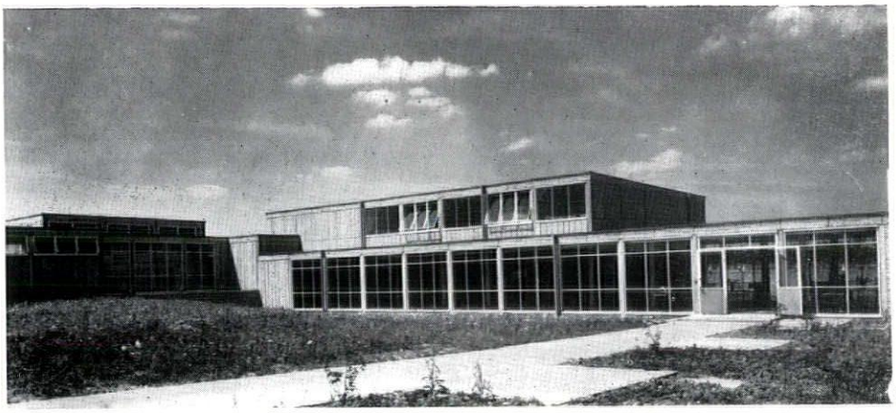
The wheel has completed a full circle—8 ft. 3 in., 3 ft. 4 in., 2 ft. 8 in., planning grids, etc., MOE, CLASP, SCOLA, HERTS—and all primarily in school buildings. Technical ingenuity and some brilliance have occurred, consortia have been created and administrative and contractual innovations made; but has there been any radical alteration of the basic principles first revealed in the early 'fifties in Herts.? Structures are still primarily of post and beam form although translated into concrete on occasions and with columns sometimes located off-grid. Once the 8 ft. 3 in. grid dimension was shown to be too large and clumsy all subsequent planning grids have been either 3 ft. 4 in. or 2 ft. 8 in., and there has been no challenge of the real significance or suitability of either of these sizes. Refinements of detailing are evident, but a study of buildings carried out over the years, although reflecting a growing sophistication as designers have increased their confidence in the new vocabulary, does not reveal any fundamental evolution of design. Plan form and architectural expression all show a strong ancestral recemblance.

This does not necessarily imply an unsatisfactory solution particularly considered in the terms of the limited problems each initiator/designer selected. The inevitable question must be asked—can this limited approach form a sufficient basis for expansion into the wider field of building problems, and is it likely to be adequate in giving proper expression to the whole range of user requirements with which the profession and industry is now faced? Is it not evident that there is a constant increase in flexibility as the range of problems become increasingly diverse? Whereas complete classrooms or houses could be tolerated in meeting urgent problems expediently the more subtle satisfaction of individual technical spatial and environmental requirements has involved the development of component parts that can be assembled in a variety of ways related to a comparatively small reference grid—even 8 ft. 3 in. was found to be too large. The particular dimensions considered suitable were related primarily to the size of classroom which represented the major unit of accommodation in each county's annual programme. Smaller rooms could be compromised without any real hardship. But can these dimensions be justified when applied to buildings that have a greater range of spaces within them?

[continued on page 142

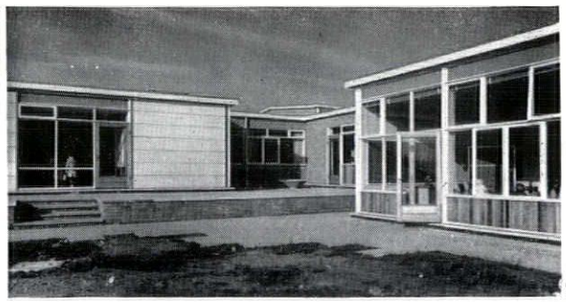


5

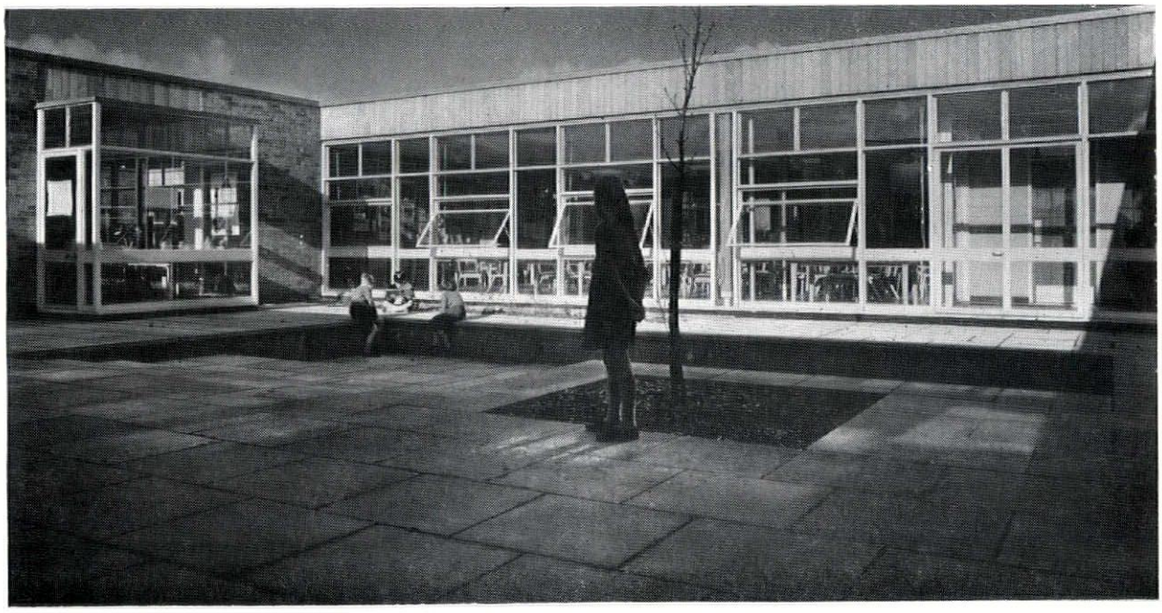


6

5, Worksop Grammar School, Nottinghamshire. The modular dictates of the system blend with and enhance the formality of the design.
6, school at Hitchin, an early example of a Hertfordshire school.
7, infants' school at Mansfield, Nottinghamshire, using CLASP.
8, school at Cheshunt, a later Hertfordshire development.

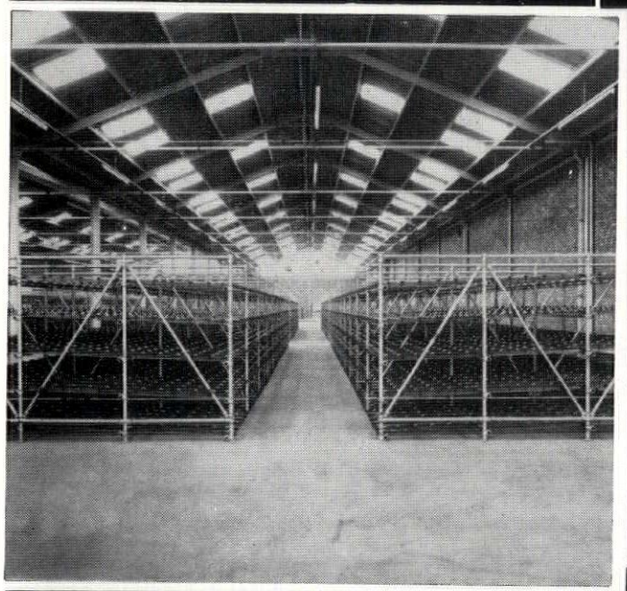


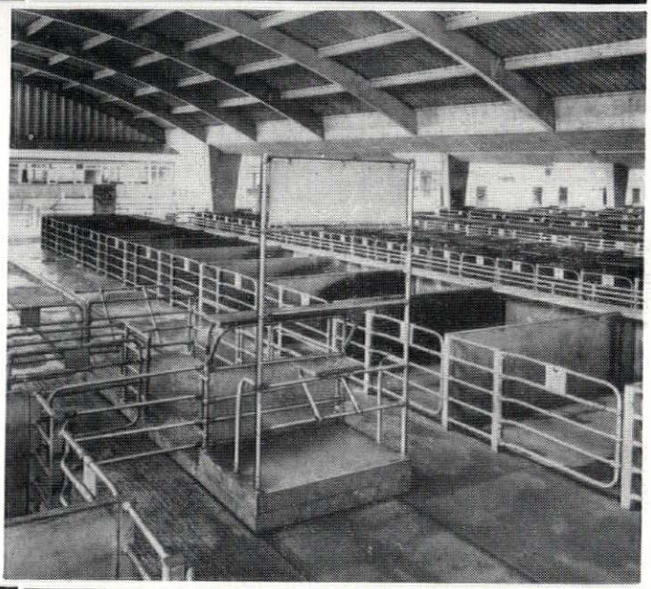
7

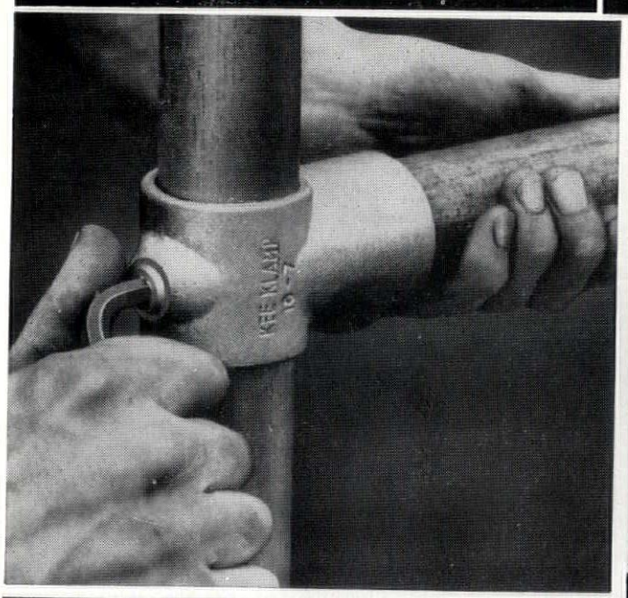


8

ARCHITECTS SET GREAT STORE BY KEE KLAMPS







Supermarkets – Cattle Markets – Storage Systems – Sale Rings they all come alike to the Kee Klamp system of tubular construction for almost any kind of structure can be built with these neat, strong sleeving units which are so much in demand today because of their versatility, efficiency and economy.

Get to know more about Kee Klamps – full details and consultancy freely available.

gascoignes **Kee Klamps**

Geo. H. Gascoigne Co. Ltd., 579 Gascoigne House, Reading, Berks. Telephone: Reading 54417

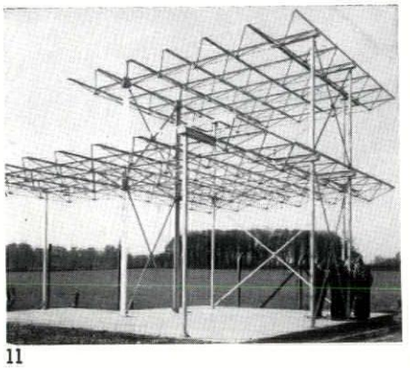
T.P.35



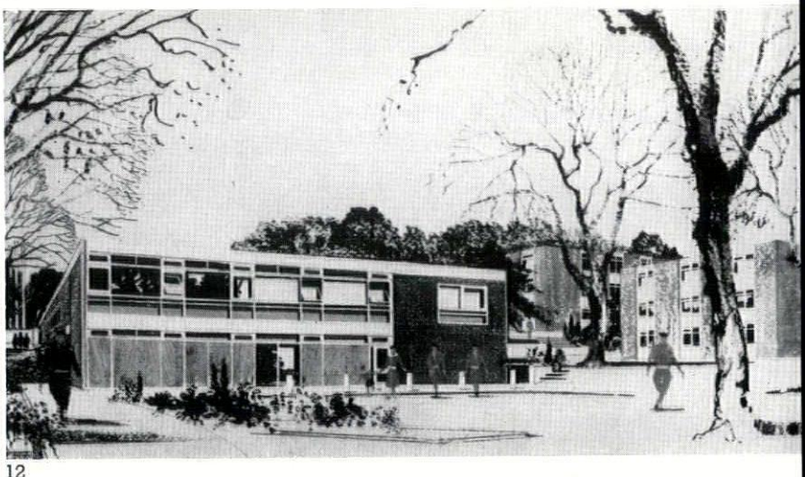
9



10



11



12

9, MOHLG development of CLASP on 5M basis was used for old people's flatlets at Stevenage.
10, subsequent to the 5M CLASP, MOHLG developed a further 5M system based on the lower cost limits of two-storey local authority housing, shown in these prototype houses at Sheffield.
11, experimental mock up of the NENK system developed by the War Office for the Army building programme.
12, NENK developed in the first full scale project recently begun, the new barracks, etc., at Maidstone.

continued from page 140]

When the more extreme problem of housing was faced in these terms, a new unit for dimensioning was found to be necessary. In the Ministry of Housing and Local Government's development of 5M, first in the Old People's flatlets at Stevenage and subsequently in the four prototype terrace houses at Sheffield a grid of 1 ft. 8 in. has been chosen. To question this particular selection is pointless. That a new choice was necessary is significant. To what extent is there a need for even greater flexibility? In housing the Parker Morris recommendations include the need for flexibility of initial layout, and of subsequent adjustments of partitions to meet changing family requirements. This has been literally interpreted in 5M where a 4 in. flexibility in the positioning of some partitions can be achieved. Analysis of other building types reveals a similar need for different spatial dimensions. In the Ministry of Public Building and Works paper DCI on Dimensional Co-ordination, a variety of increments was recommended for different purposes. It may be appropriate or even justifiable on grounds of sheer expediency to make particular selections to meet particular needs at a particular time. But it is inappropriate in the context of wider design requirements as a basis for long-term policy. From the industry's point of view, concerned with all basic materials and their manufacture, it is evident that no single choice could be universally suitable or acceptable.

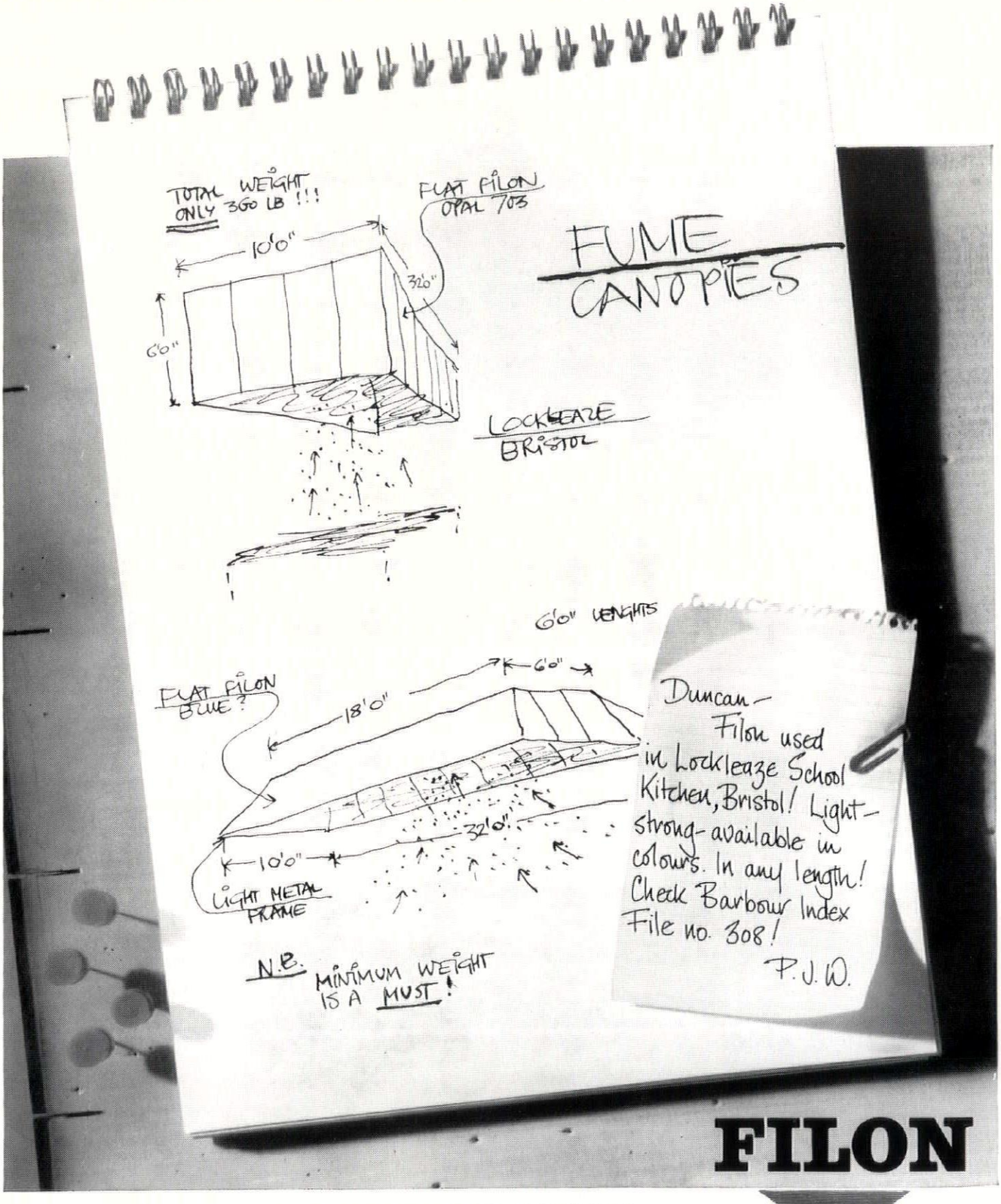
Those responsible for the evolution of methods of building have a responsibility, if only as a result of the wide recognition their work has received and of its general influence, to foster the creation of an increasing vocabulary of interchangeable component parts, and to alter the basis of their work, if necessary to do so.

The only industrialized method of building to have been consciously developed from the outset with the aim of achieving maximum flexibility in design, performance and cost is the Nenk method, originated in the Directorate of Works, War Office and now continuing to develop in Sir Donald Gibson's Directorate General of Research and Development at Ministry of Public Building and Works. The first prototype programme is under construction at Maidstone, and although it is not yet possible to assess completed buildings, the variety of design problems and expressions confirm that it has achieved the flexibility intended. This has only been possible by a thorough reconsideration of all aspects of the problem—selection of preferred dimension, structural concept, relationships between carcassing and finishes. The concept is based upon an acceptance of the need for a continual extension of the basic principles through the media of new materials and techniques as these become available. This should make it possible to expand the vocabulary of components with each new project and more rapidly provide an increasingly flexible method of building. Its interpretation into particular projects deserves the collaboration of sympathetic and sensitive designers.

In contrast to all these forms, work has also been proceeding, in the public sector, on 'heavy' as opposed to 'light' methods of industrialized building, notably by the LCC, another authority with a well-earned international reputation, particularly in housing, but with a history of lost opportunities of exploiting its many brilliant technical achievements. It has never chosen to formulate continuous building programmes, to support and develop each new building form. These would make up an impressive list, and some would have their origin in the early 1950's, when it could be properly claimed that the

[continued on page 144

PAGES FROM AN ARCHITECT'S NOTEBOOK:



FILON

B.I.P. REINFORCED PRODUCTS LIMITED

Streetly Works · Sutton Coldfield · War · *Telephone: Streetly 2411*

A MEMBER OF THE TURNER & NEWALL GROUP



13, *perspective of multi-storey block using Bison Wallframe System.*

continued from page 142]

UK was at least as advanced as any other Continental country in the development of concrete panel forms of construction particularly for multi-storey flats. It is a melancholy thought that, as the LCC is about to disappear altogether, one of its last major projects, the housing development at Morris Walk, Woolwich, is to be carried out in the Larsen and Nielsen system, which however technically excellent this may be, was developed in Denmark. This is particularly dispiriting when it may be seen that, of the very small national expenditure of research in the building industry, a generous proportion has been on the development of concrete techniques.

It may be justifiable to attribute even part of the reason for the present influx of Continental systems generally to the default of the LCC and other large housing authorities, as well as the MOHLG, in not promoting more effectively this sector of the industry?

But industry, too, must take its share of the responsibility for not being prepared to meet the increase in productivity required of it.

Housing is always, however, an exceedingly complex problem, charged with emotional and political overtones, and bedevilled by particularly severe cost limits. One can begin to be hopeful of the progress now being made in the MOHLG; but it must be recognized that a very large proportion of the housing programme is likely to be built in systems imported under licence from the Continent, particularly by large national contractors.

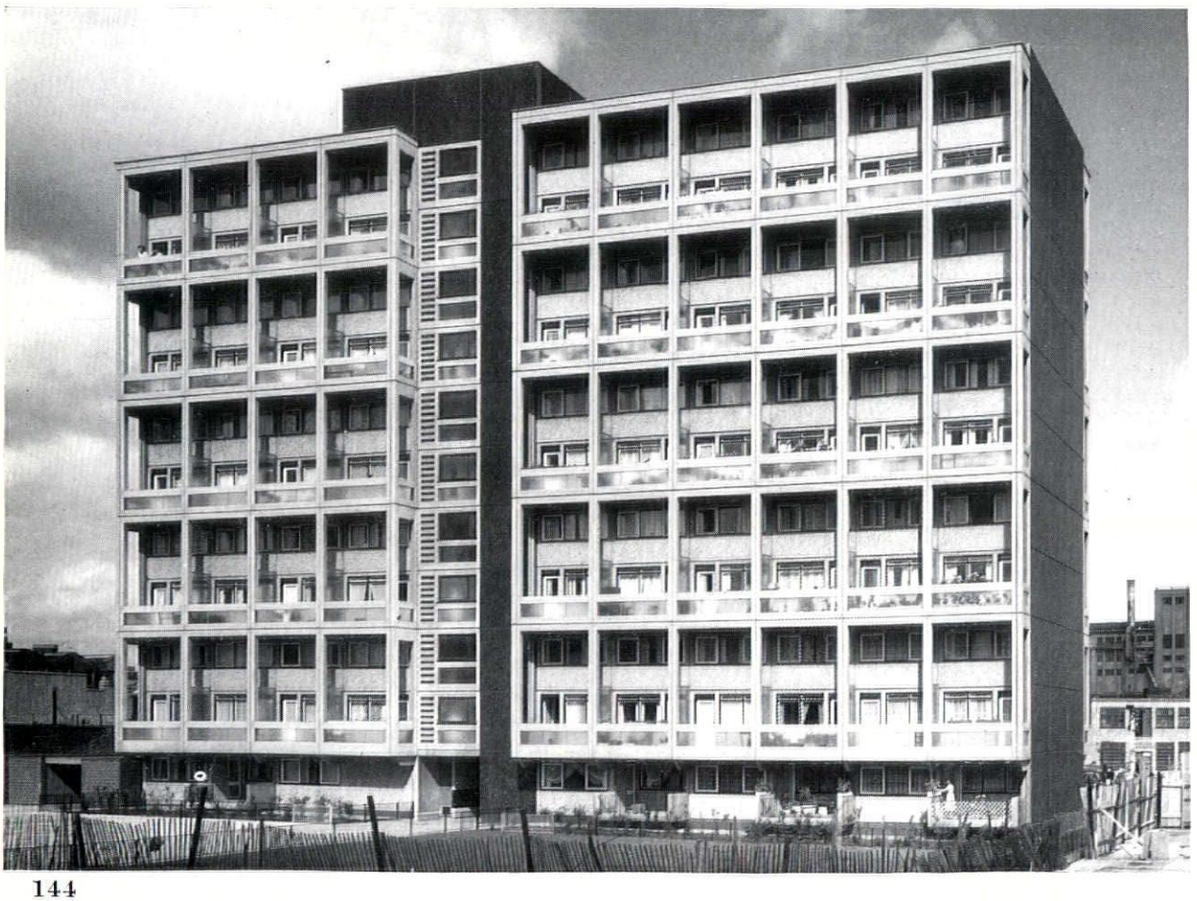
What effect is this likely to have on our environment? What are the qualities of these new systems? Both these questions are difficult to assess as there have been virtually no projects carried out in any of them. Some of the literature even has not been translated and other translated very badly. One fears the worst while hoping for the best. They have been acquired by contractors for reasons of extreme expediency, are being purchased by clients for similar reasons, and seem to be serving no better purpose than satisfying otherwise embarrassing statistics for some client authorities and maintaining profits for the contractors who would otherwise have been unable to offer any alternative under the new circumstances. Continental experience and precedent offer little consolation: the systems are generally the product of engineers and most of the buildings are undistinguished. They are all similar in principle—involving the manufacture of large panels of concrete to form walls and floors, built up into box frame structures. The panels can be manufactured on site in prefabricated panels or by prefabricated shuttering, or in factories, depending upon the degree of tolerance and finish required, and the amount of capital investment appropriate to the quantity of production anticipated. Panels are either solid or of sandwich form, and each system has its own range of jointing techniques. The Jesperson system, designed by P. E. Malmström, with its greater flexibility and more sophisticated jointing techniques, seems to offer a potentially better solution than many.

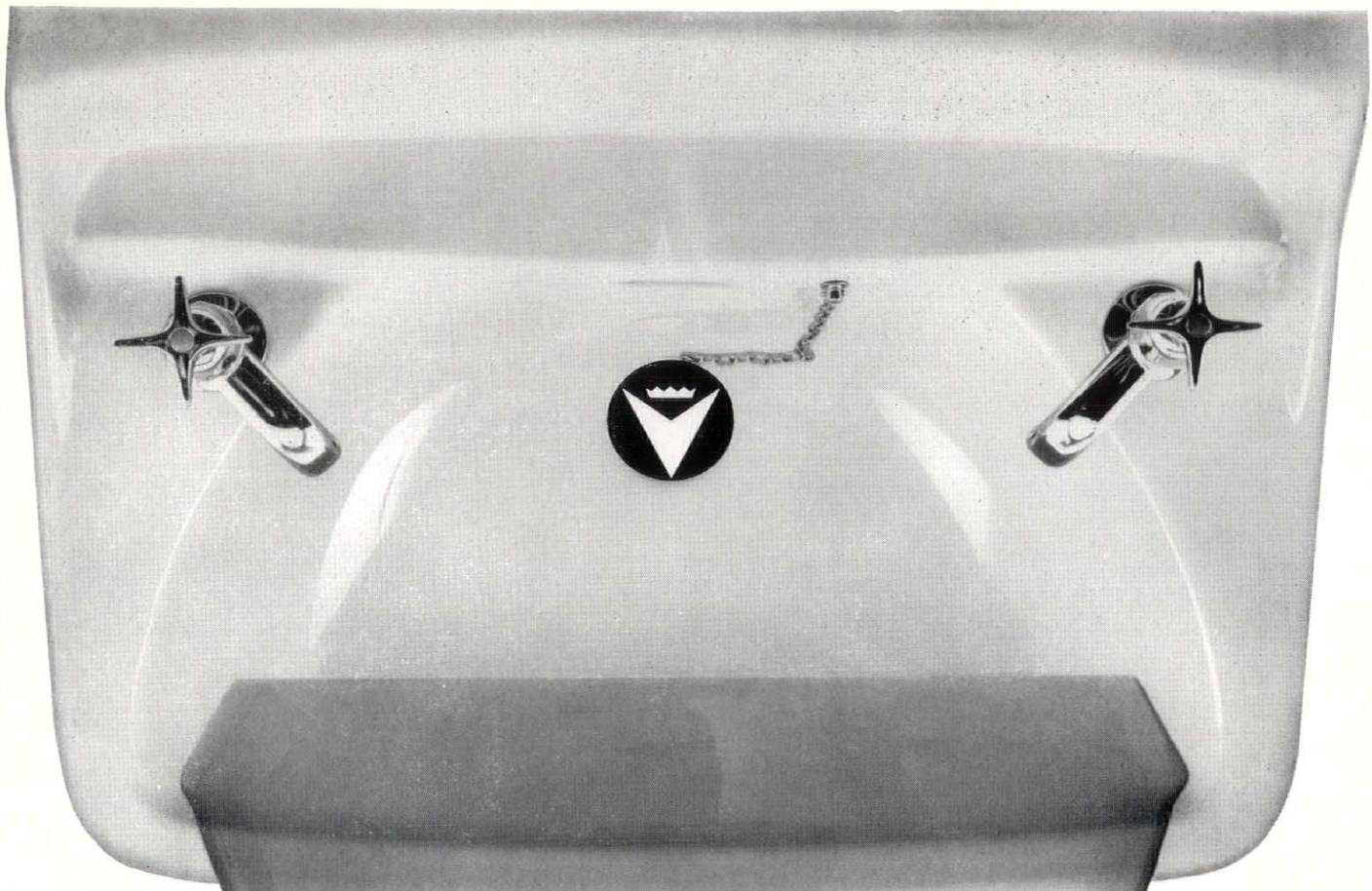
At the time of writing probably about a dozen licences had been acquired: the rate of proliferation would make it impossible to gauge the number by the time of publication.

Two of the best known British systems in this form of construction in full production are probably Concrete Limited Wall Frame, and the Reema system. A rather different approach and an ingenious one, is Costain's Jackblock system, currently under construction on a block of flats in Coventry, and about to be applied in an office block in Brussels. Industrialization, beyond the use of gigantic jacking devices in the basement, takes the form of rationalizing traditional building processes, rather than by the use of prefabricated components, and carrying these out under controlled conditions below a polythene tent. It is still virtually a prototype and so is difficult to assess in detail, but it is questionable

[continued on page 146

14, *flats at Battersea for LCC using Reema system. Architect: H. J. Whitfield Lewis.*





Royal Venton

This is the age of vitreous china. Liking, preference and demand is for this scratchless, glass-hard material fashioned for modern living by Royal Venton. Simple, clean cut, elegant lines, craftsman designed to please every taste. At a really competitive price... designed to suit every pocket.

Illustrated is part of the Coronet Suite, a Design Centre exhibit. See your Royal Venton Architects Specification for full details about the complete Royal Venton range of sanitary ware.

John Steventon & Sons Ltd
Cledford Works Middlewich
Cheshire Tel Middlewich 3261-2-3



15

15, *development at Aldershot by Building Design Partnership using G80 system.*

continued from page 144]
whether it can be applied to any great scale, and certainly does little to stimulate the factory production of building components.

A further system, still at a comparatively early stage in its development, is G80. One may dare to hope that it will benefit from early lessons and produce a really worthwhile contribution to industrialized techniques in concrete.

In view of past reticence and current sociological thinking about high flats, the possible profusion of such blocks for reasons of expediency give cause for real concern. Those organizations, possibly less well endowed than the large national contractors, or with slower responses, are keen to contribute also to increased productivity by industrialization, so keen, that many are commissioning architects to design systems specially for them. The exact number of these at any particular moment of time is quite impossible to tell, proliferation is so rapid. Some months ago the total number of house types was in excess of 200. The alarmingly sudden increase could prove a serious financial embarrassment to many of those involved. The potential of all could not be realized even assuming that they were all competent technical solutions.

The industry, in all its branches, professional, constructional and manufacturing, is already fragmented to almost disintegration. Positive guidance and co-ordination to prevent further disintegration is urgently needed. The direction of these efforts towards the manufacture of universally acceptable components would be a much more valuable contribution to the problem.

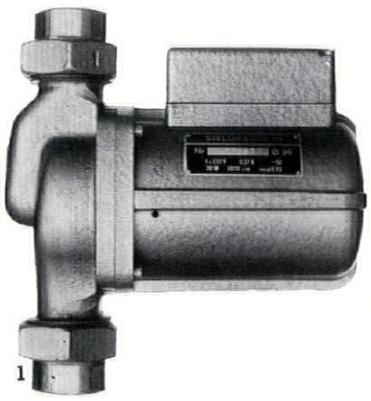
Buildings of a further group are those of a less permanent nature ranging from industrial types of sheds to the more sophisticated timber forms. These latter are making an important contribution within a a particular range of problems. Some, including Derwent, A75, Medway, Middlesex, C-DA and Terrapin, are of an advanced technology and continue to invest in development and design. The results are often buildings of genuine quality. It is intended in the second article to give a comparative analysis of some of the forms of industrialized buildings developed or acquired by the industry.

THE INDUSTRY

Central heating

Steel Radiators Ltd. (Stelrad) have produced three new products for central heating systems designed to increase efficiency and control.

The first is a new circulation pump called the Stelorator, 1, for use in all small bore installations. The casing and impeller are so constructed that the pump operates independent of the direction of rotation thus eliminating the need for an inspection window. The motor windings are insulated by a special enamel process which, it is claimed, makes burn-out virtually impossible and the rotor which is permanently immersed in water is enclosed in a stainless steel sheath.



1

By a reduction in the electrical condenser capacity, hum has been virtually eliminated and so really silent operation has been achieved. Two types are available, Type 29 giving a 6 ft. head at a rate of 6 gals. a minute and Type 21 giving a 3 ft. head at a rate of 4 gals. a minute. Cost is £20.

Another development introduced here after extensive experience on the Continent is the Stelostat, a thermostatic valve. This is fitted to the inlet pipe and is no larger than a conventional hand-operated valve but gives fully automatic radiator control. The room temperature can be regulated for the individual radiator giving a precise room control. The range covered is from 50 deg. F. to 80 deg.F. and the valve can be fitted either horizontally or vertically in $\frac{1}{2}$ in. or $\frac{3}{4}$ in. pipes. The neat appearance as can be seen in 2, does not make it over-obtrusive in the room decor.

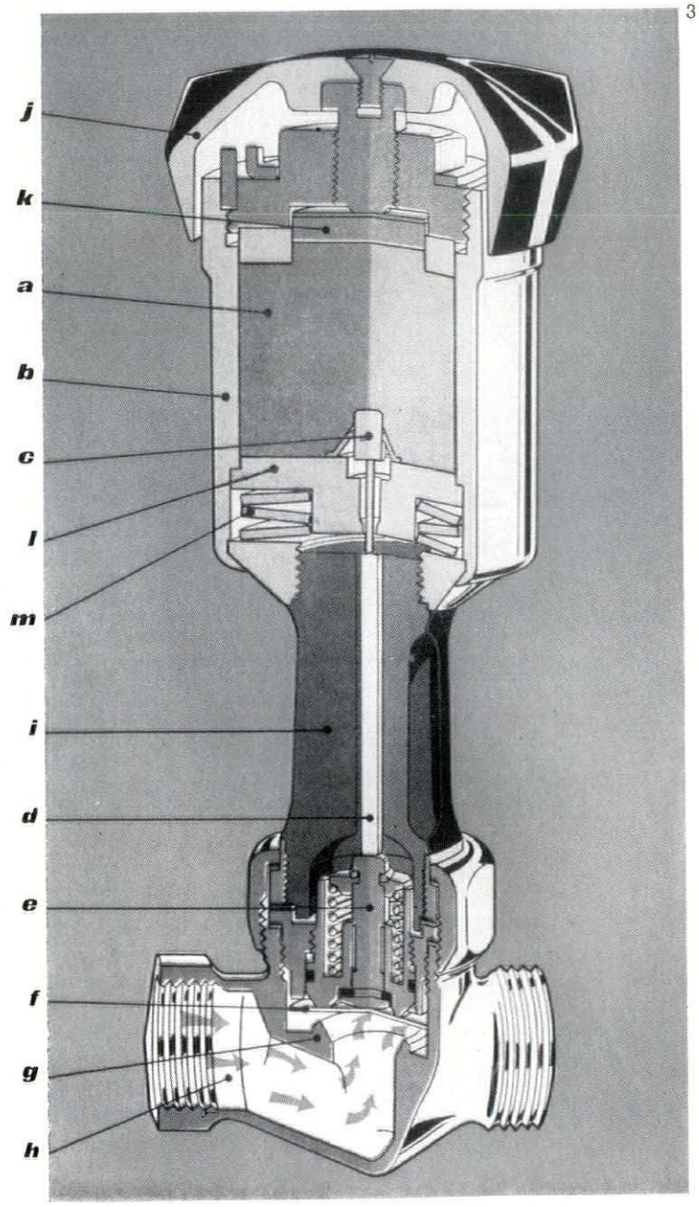
The diagram, 3, shows a cut-away section of the valve. The sensitive element *a* is a soft rubber mass enclosed in an aluminium cylinder *b*, which is highly polished to protect it from the influence of heat radiation. When the room temperature rises, the rubber mass expands, pressing the piston *c* downwards. The movement of the piston is transmitted, via the glass rod *d* and the valve spindle *e*, to the valve *f*, which throttles the flow of circulating water. When the room temperature drops, the rubber mass contracts and the valve opens again. The valve seat *g* is sheared to prevent accumulation of any foreign matter that may be contained in the water. The aluminium cylinder *b* and the valve body *h* are connected by an insulator of glass-fibre reinforced bakelite *i*. This material as well as the glass in the rod *d* is designed to restrict the conduction of heat from the water to the sensitive body to a minimum. All spaces between moving parts of the valve operating mechanism are packed with siliconized grease to prevent the entrance of water or the transmission of heat. By turning the graduated handwheel *j*, the piston *k* and the sensitive element *a* is actuated so that the valve opens or closes when the desired room temperature is reached. In this way, the room temperature is kept constant. An unexpected rise in room temperature

[continued on page 148

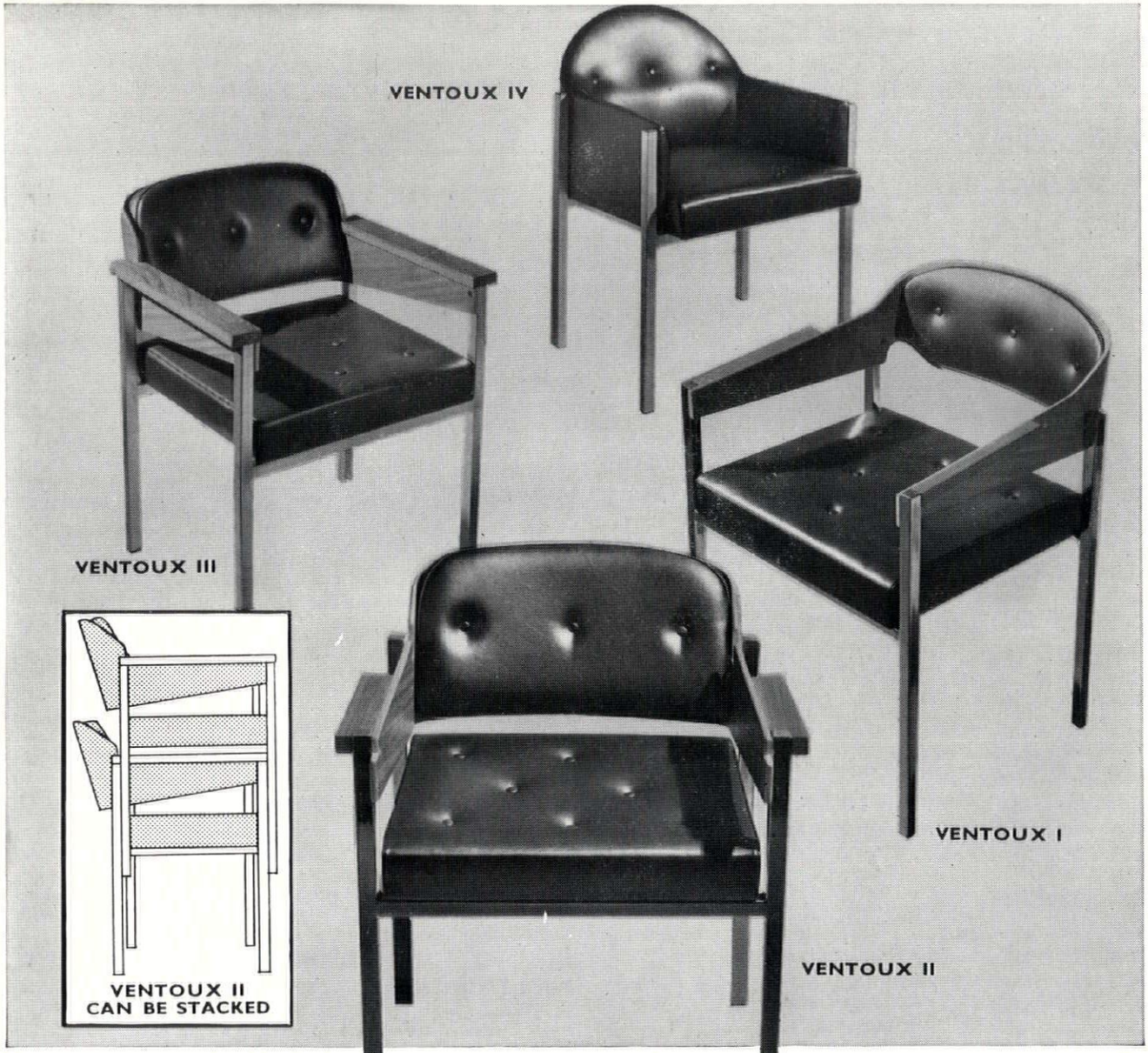


2

key
a, sensitive element
b, aluminium cylinder
c, piston
d, glass rod
e, valve spindle
f, disc valve
g, valve seat
h, valve body
i, insulator of glass-fibre reinforced kabelite
j, graduated handwheel
k, presetting piston
l, disc
m, spring

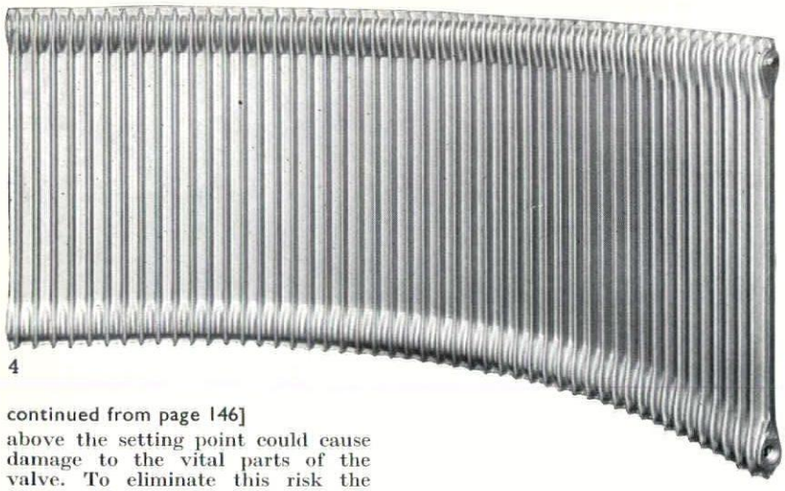


3



Architects and Interior Designers will welcome G. N. Burgess' introduction of their new VENTOUX range: they will also be delighted with the reasonable prices and many uses of the chairs, which were designed by John Pound. Man-sized and roomy, they combine an impressive austerity of outline with a richness of fabric and finish. VENTOUX 1, 2 and 3 have oiled teak, afrormosia or, to choice, veneer laminated wood shells mounted on finely engineered anodised ALUMINIUM (or, alternatively, chrome steel) square tube frames, with de luxe upholstery of buttoned seat and back units in stretch-back vinyl materials. For details, write to G. N. BURGESS and Company Limited, Feltham, Middlesex; Feltham 4871.

Zephyr FURNITURE



4

continued from page 146]

above the setting point could cause damage to the vital parts of the valve. To eliminate this risk the Stenostat is provided with a pressure-limiting device, consisting of a disc *l* and a spring *m*. When the pressure in the rubber mass rises above a certain limit, the disc is pressed downwards and the spring is compressed and relieves any excess pressure on the valve parts.

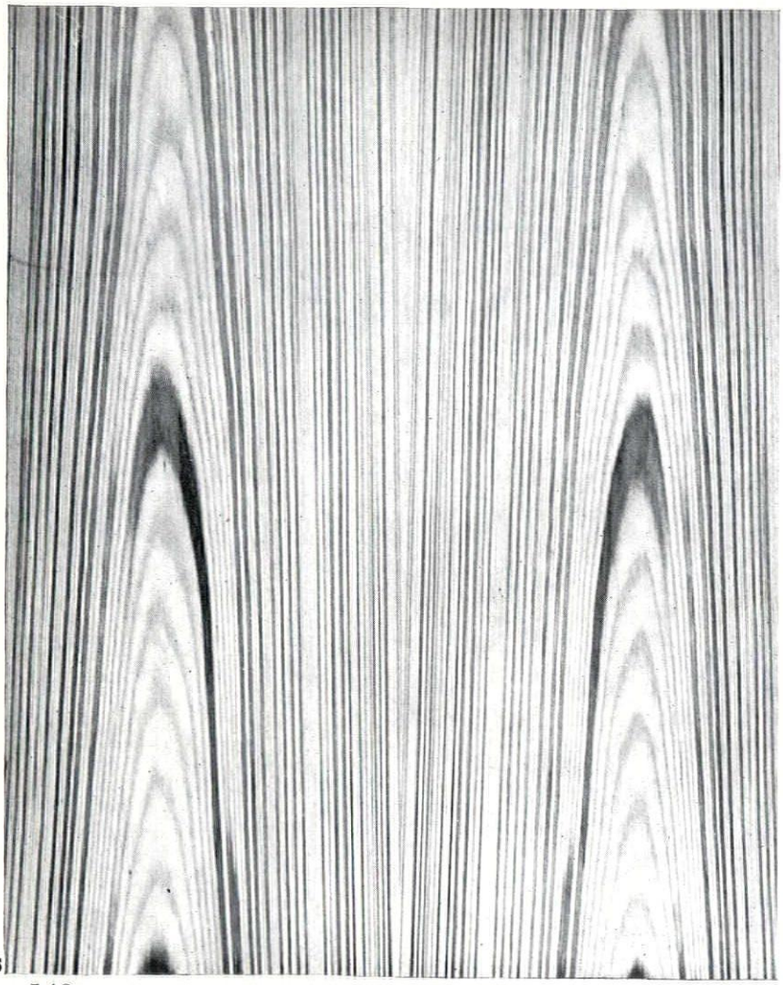
The third new item is the Nuvello radiator. This is a pressed steel radiator, but by virtue of the highly contoured surface shape a greatly increased heating surface is available for equal wall space used. Two widths are available, the first 1⅛ in. giving a 50 per cent increase while the 2⅜ in. width gives 100 per cent increase. Thus a normal panel radiator of approximately 48 in. by 24 in. would present a heating surface of 18½ sq. ft., while the 1⅝ in. wide Nuvello of the same size gives 31¾ sq. ft. and the 2⅜ in. wide model gives 45 sq. ft. The radiators are available curved to order as can be seen in 4.

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

New Sanderson collection

A fair sign of what has been happening to public taste, as expressed in contract decorating, can be seen in Sandersons' sumptuous sample-book for their new Designer's Collection. Elaborately produced, with numbered black plastic interleaves to separate one section from the next, it contains no patterned wallpapers at all, except for a very few metal-faced Swiss 'Tekko' designs and four 'scenic' papers—none of which seem sufficiently gimmicky to appeal to the rather specialized market for this kind of low-pressure illusionism. But the rest—and an excellent rest it is—consists of textured papers and cloths, wood-weaves, cork and metallic-faced coverings and others of that type. Many of the slatted wood-weaves are substantial enough to be hung independently as screens, but the rest are all exclusively wall coverings. The sources of the collection are highly international — including France, Spain and China, for instance, as well as the expected sources such as Japan, Scandinavia and Switzerland—and Sandersons' claim that this is the 'most comprehensive . . . collection' of wall coverings ever assembled may well be true.

Arthur Sanderson & Sons Ltd., 52 Berners Street, W.1.



5

Wood veneers in melamine

There is no need to extol the virtues of melamine laminates to architects. They have been using them for many years now and are well aware of the wearing properties and the useful applications. The variety of top paper printed patterns by all the companies in the field has proliferated and the choice is wide.

There are occasions, however, when the architect wishes to use the warmth and texture of natural wood coupled with the wear resistance of melamine. This presented the industry with several technical difficulties which were not easily solved. However, Bonded Laminates Ltd. have apparently achieved success in this field and have now embarked on a joint venture with John Wright & Sons (Veneers) Ltd. to produce Belfort Fineline laminate sheets.

The top veneer supplied by Wrights is the already well-known Fineline produced by peeling veneers and then gluing up contrasting layers into a block before cutting veneers from the edge of this block. The process has been further developed so that this secondary cut is carried out on an arc profile providing a controllable degree of natural figure as shown in 5.

The combination of this veneer and melamine surfacing provides an interesting new addition to the range of internal finishes.

John Wright & Sons (Veneers) Ltd. Bonded Laminates Ltd.

Euromart

In the May, *Euromart*, issue of the ARCHITECTURAL REVIEW there were some errors in the captions to the illustrations on pages 369–380. In the caption to illustration 24, read *Haunchwood* for Henchwood, and in captions 21 and 35 read *Swedecor*, not Swedecon. Captions 37 and 38 were interchanged, and the design credit in 18 and 19 should be given to: Ceramic Consultants and Timothy Rendle, in association with Sir Hugh Casson, Neville Conder and Partners.

CONTRACTORS etc

Department Store, Southend. *Architects:* Yorke, Rosenberg and Mardall. *General contractor:* Tersons Ltd. *Subcontractors: Electrical:* Cable Jointers Ltd. *Heating and ventilation:* Norris Warming Co. *Autopark installation:* Wm. Wadsworth & Sons. *Balustrading:* The Wessex Guild. *Basement waterproofing:* Quickset Water Sealers Ltd. *Canopy steel and internal steel stair:* Carter-Horseley Ltd. *External wall tiling:* A. H. Herbert & Co. *Fire shutters:* Mather & Platt Ltd. *Flintkote flooring:* Stuarts Granolithic Co. *Goods lifts and conveyor:* Sovex Ltd. *Ironmongery:* N. F. Ramsey & Co. *Lifts and escalators:* J. & E. Hall Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Shopfronts:* Universal Shopfitting Co. (London) Ltd. *Steel escape stair:* S. W. Farmer & Sons. *Store despatch system:* Lamson Engineering Co. *Terrazzo:* Malacarp Terrazzo Co. *Timber windows:* J. Honour & Sons (Joinery) Ltd. *W.c. cubicles:* Rowe Industries Ltd.

Roof Restaurant, London Hilton Hotel. *Architects:* Sir Hugh Casson, Neville Conder and Partners. *Sub-contractors: Lighting consultants:* Wheel-Garon Inc. *Electrical:* Phoenix Electrical Co. *Heating:* Mellor Bromley (Air Conditioning) Ltd. *Audio systems:* British Relay Wireless Ltd. *Curtains:* Norrington & Adams Ltd., Donald Bros., Hugh Mackay & Co. *Fireplace stainless steel grill and hood, cocktail tables:* John McCarthy. *Wall tiles:* Hathernware Ltd., fixed by Rockwell Mosaics Ltd., in conjunction with Ceramic Consultants Ltd. *Horseshoe sofa:* Aerofoam Ltd. *Chairs:* Conran & Co. *Bar stools:* Edward G. Suckling. *Reservation desk, music stands:* F. E. Ward Ltd. *'Collarstud' tables:* Andrew Pegram Ltd. *Candle holders:* Whitefriars Ltd. *Planter:* Ceramic Consultants Ltd.

Steelworks, Newport, Mon. *Architects:* Sir Percy Thomas and Son in association with Gollins, Melvin, Ward & Partners. *General contractors:* Sir Robert McAlpine & Sons Ltd. *Sub-contractors (central laboratory and computer building): Steelwork:* T. C. Jones & Co. *Metal windows:* Aygee (Metal Windows) Ltd., Williams & Williams Ltd. *Electrical:* Grierson Ltd. *Suspended ceilings:* Draftsele Ltd. *Floor finish:* Granwood Flooring Ltd. *Metal partitions:* Rowe Industries (Kirkby) Ltd. *External doors:* W. W. Turner Ltd. *Laboratory equipment:* T. Dryden. *Terrazzo:* Art Pavements & Decorations Ltd. *Venetian blinds:* J. Avery & Co. *Sub-contractors (sub-stations, pump houses and miscellaneous buildings): Facing bricks:* Cape Building Products Ltd., Star Brick & Tile Co., Armitage Brick Co. *Roofing:* William Briggs & Sons. *Metal windows and door units:* John Williams of Cardiff Ltd. *Ironmongery:* James Gibbons Ltd. *Suited locks:* Ingersoll Ltd. *Sanitary fittings:* John Slater (Stoke) Ltd. *Suspended ceilings:* John Bland & Co. *Paints:* Duresco Products Ltd. *Sub-contractors (amenity buildings): Facing bricks:* Cape Building Products Ltd. *Roofing:* William Briggs & Sons. *Door and window units (metal):* Aygee Ltd. *Door and window units (timber):* E. W. King Ltd. *Vitreous enamel panels:* Edward Curran Engineering Ltd. *Precast concrete frame:* Dow-Mac Products Ltd. *Partitions:* Sankey-Sheldon Ltd. *Heating and hot water:* Richard Crittall Heating Ltd. *Sanitary fittings:* John Slater (Stoke) Ltd. *Cooking equipment:* Benham & Sons. *Lockers:* RTB Ltd. *Paint:* ICI Ltd. *Floor tiling:* Pure Rock Asphalt Co. *Ceramic floor and wall tiling:* Artistic and Industrial Floorings Ltd. *Lift installation:* Keighley Lifts. *Suspended ceilings:* John Bland & Co. *W.c. partitions:* Henry Hope & Sons. *Door and window units:* Aygee Ltd. *Roofing:* F. R. Weatherall & Co. *Ventilation:* Z. D. Berry & Sons. *Doors:* Bolton Gate Co. *Scaffolding:* Mills Scaffold Co. *Erection:* British Steel Construction (Wednesbury) Ltd. *Painting:* W. J. Brooker Ltd. *Cladding:* Cellactite & British Uralite Ltd. *Structural:* Holst & Co., Dorman Long Ltd., Drake & Gorham (Con.) Ltd. *Cladding:* Carter Horseley (Eng.) Ltd., Hill Bros. Glass Co., Manchester Slate Co. *Air conditioning:* Mathew & Yates Ltd. *Insulation:* Newalls Insulations Co. *Cladding:* Robertson Thain Ltd. *Piling:* West's Piling & Construction Co.



You might see this sign anywhere; the Barrett brand of construction is in big demand for large and small contracts all over the country. Barrett efficiency in design and erection can often save you money in time and materials, and the finished construction is always just right for its purpose. That's the Barrett way.

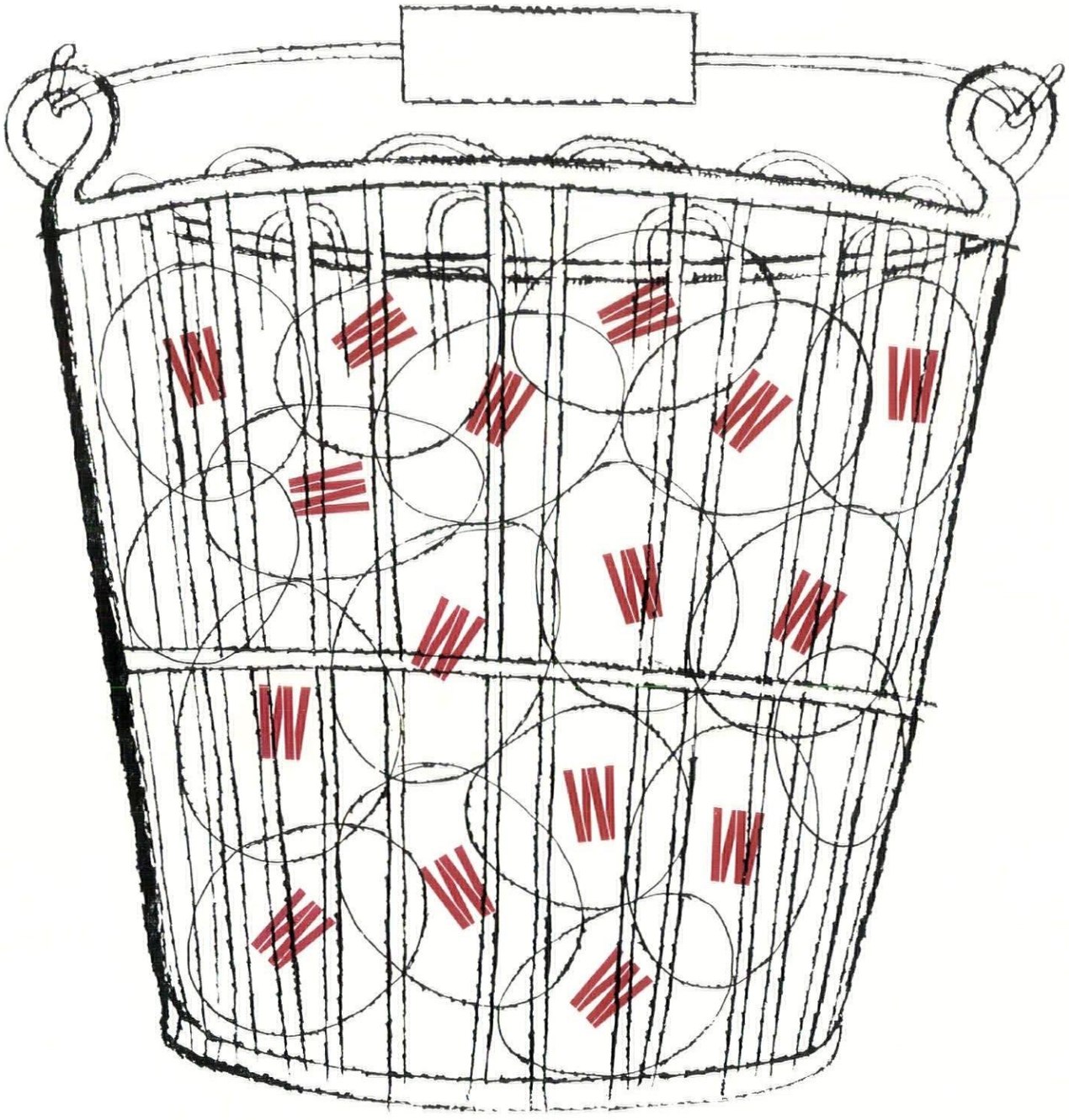
Henry Barrett & SONS LIMITED

STRUCTURAL ENGINEERS, IRON AND STEEL STOCKHOLDERS

37 THORNTON ROAD, BRADFORD, YORKS. Tel: 22115 (6 lines)

Printed in Great Britain for the Proprietors of "The Architects' Journal," of "The Architectural Review," and of "Specification" (The Architectural Press, Ltd.) 9-13, Queen Anne's Gate, Westminster, S.W.1, by Knapp, Drewett & Sons Ltd., by appointment to Her Majesty the Queen, Printers, Kingston-on-Thames. Editorial illustrations engraved by The Engravers Guild Ltd., Windsor House, 23/26, Cursitor Street, London, E.C.4.
Entered in the New York Post Office as Second Class Matter

ALL THE EGGS ARE FOUND IN OUR BASKET



THE WINCILATE GROUP SERVICE—Finest slate quarried and selected. Architects' requirements discussed and drawing prepared. Wincilate slate cills, surrounds, copings, cladding and flooring precision finished, delivered, and fixed. For further details and information sheets, contact the Wincilate Group*, The Town Hall, Bow Rd, London E3

To get the best service in slate specify WINCILATE by name

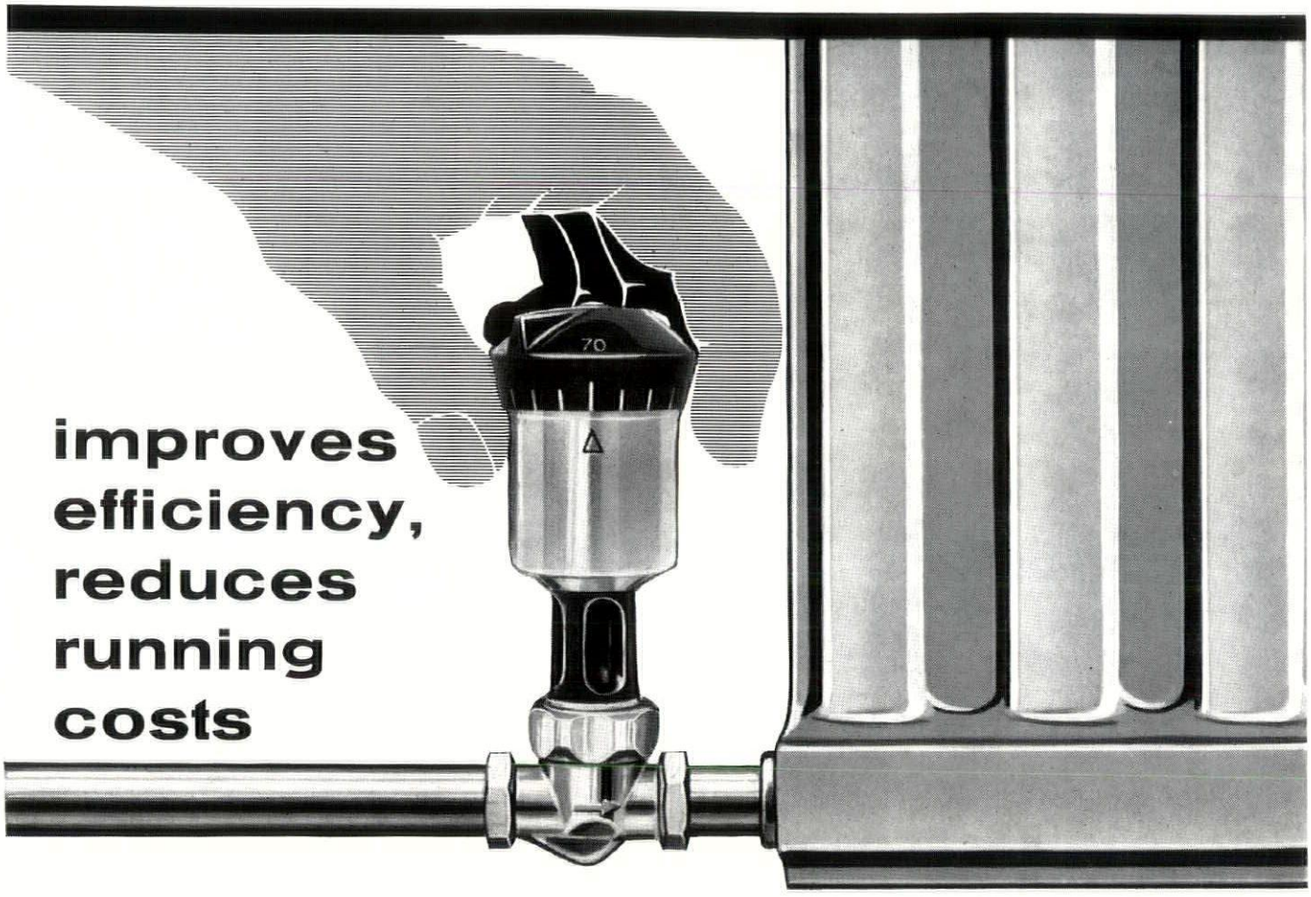
ADV 2203

* The Wincilate Group: The Bow Slate and Enamel Company Limited, Aberllefeni Slate Quarries Limited, The Slate Fixing Company, Lloyd Quarries Limited, Goddard and Son, Manorian Limited

THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 799 SEPTEMBER 1963 FIVE SHILLINGS



Stelrad heating...



improves efficiency, reduces running costs

Today's demand is for better, more effective heating systems. Steel Radiators Ltd.—the pioneers of the steel radiator in the U.K.—have made two important additions to their range of central heating products, which bring new flexibility to designers and considerable advantages to users.

STELOSTAT

(Covered by world-wide patents)

The new thermostatic valve that controls the heat output from individual radiators, and maintains pre-set room temperatures.
Of similar dimensions to an ordinary control valve, Stelostat may be easily fitted to existing or new small-bore installations, the low cost will be rapidly recovered from savings in fuel consumption.

STELRADS



The best steel radiators for every installation. Available in the widest range of sizes, shapes and heat outputs to meet all the requirements of industrial, institutional or domestic systems. The specification of Stelrads is an insurance; research, careful manufacture and stringent 100 lb. pressure test ensure the longest trouble-free life.



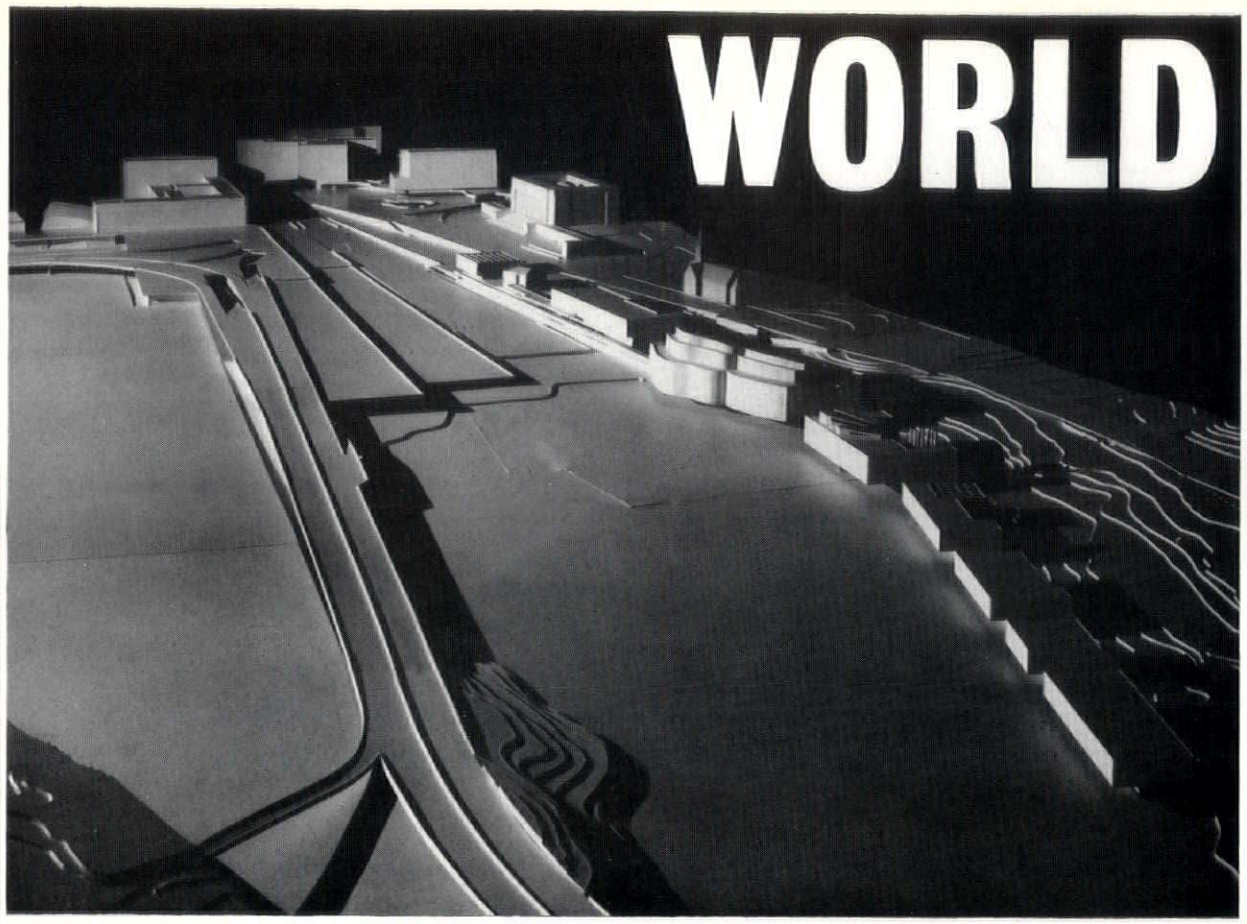
STELERATOR

A new accelerator pump for small-bore systems which is compact, completely silent in operation, and has a power consumption of only 20 watts. Self lubricating bearings and the judicious use of stainless steel in its construction ensure satisfactory service over very long periods.

THE BEST COSTS LESS WITH STELRAD HEATING

STEEL RADIATORS LIMITED

SOUTHALL, MIDDX. TEL.: SOUTHALL 2603. ALSO AT: DALBEATTIE, SCOTLAND. TEL.: DALBEATTIE 491



CIVIC WEDGE

Aalto's New Centre for Helsinki

Immediately north of the centre of Helsinki are two lakes separated by the railway line that leads out of the elder Saarinen's terminus station. Though bordered on the other sides by quite agreeable little parks and public gardens, these lakes are largely cut off from the centre of the city by the spread of railway sidings north and north-east of the terminus.

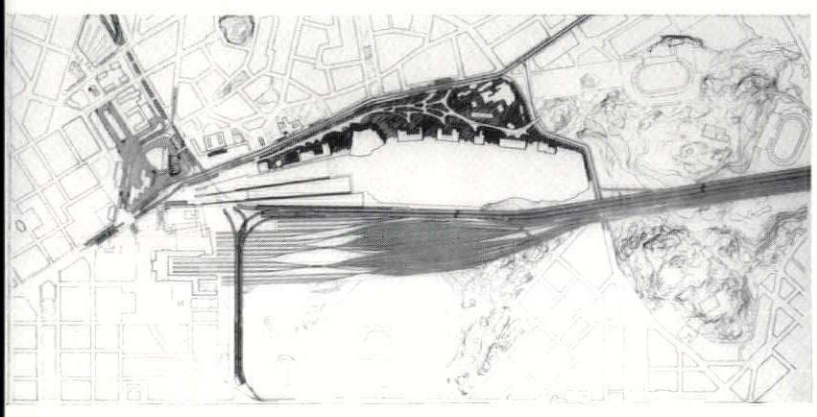
Beyond these sidings, and bordering the western side of the larger lake, the Töölönlahti, is the Hesperia Park, and this is the site that has been chosen by Alvar Aalto for a new civic and cultural centre. He was asked in 1961 by the city council to recommend a site for such a centre and to prepare a layout plan. His site, and the plan for developing it, have now been formally accepted.

He has overcome the barrier between the new site and the existing centre of the city by cutting back some of the intervening railway sidings and bridging over others. As a result the new civic centre, 1 and 2, becomes a logical extension of the old; in fact it almost incorporates, at its southernmost point, Siren's parliament building which has hitherto stood in a somewhat isolated position on the northern fringe of the centre. The new site extends northward as far as the hilly park in which the Olympic stadium stands, where the main traffic artery divides, leading to, among other places, Helsinki's principal airport.

So this is a logical enough direction for the centre to extend, and the shape Aalto has given to it is that of a chain of buildings along the edge of the lake and actually projecting forward over the water. A strip of the Hesperia Park is left between the buildings and the main road. At the southern end of the lake, nearest the city, the land now largely covered by railway sidings becomes a wedge-shaped piazza (1 shows the view from the lake looking into this piazza). The piazza is on three different levels, has shops along either side and has car-parking underneath it.

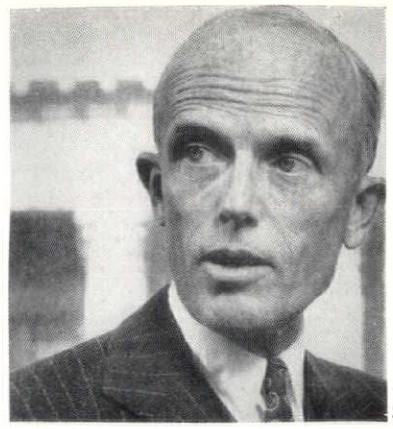
The first of the chain of buildings to be erected will be the concert hall. The architect will be Aalto himself, who has already nearly completed the detailed designs, and hopes to start building next year. Other (future) buildings are theatre and opera house, library, etc.

The project has been well received in Helsinki by civic authorities, the press and the architects. The only criticisms the architects seem to have made are that it eats up a lot of the park, leaving too narrow a strip between the civic centre and the main road, and that as the open end of the piazza faces north, cold winds may make it unusable as a pedestrian space in winter-time.

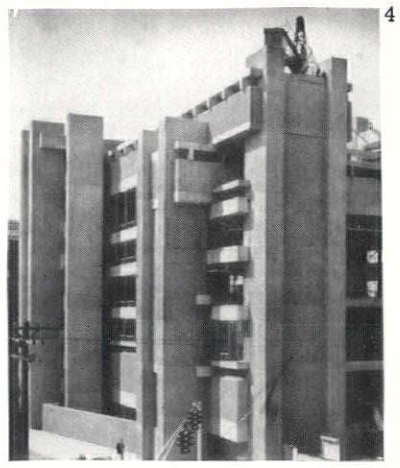


GRISWOLD'S MEMORIAL

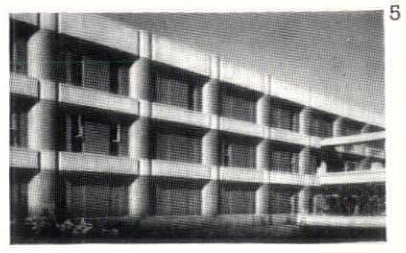
There are few personalities in architecture today who cause the obituarist to reach instinctively for such standard eighteenth-century tropes as 'Lie lightly on him Earth . . .' or 'Si Monumentum Requiris . . .' but the late President Griswold of Yale qualifies for such phrases as no Modern Ape of the True Latin could ever hope to do. In the thirteen years


3

of his Presidency, tragically terminated by his death earlier this year, A. Whitney Griswold, 3, established himself as the most active and discriminating academic patron that Twentieth Century architecture has known. He galvanized the Yale Corporation into one of the greatest fund-raising and building operations in American University history—Yale's endowed funds rose from some $120,000,000 to over $370,000,000 under his leadership, and the list of buildings erected is the most notable register of architectural talent that could have been called in the American Fifties. The sequence opens with Louis Kahn's Art Gallery extension—a commission sufficient in itself to guarantee Griswold a niche in history, in view of what has followed. Then comes Saarinen's master-plan for campus development, Schweikher's Science block and Saarinen's Hockey Rink—all commissioned by 1956. Rudolph's forestry laboratories followed, and then his Mansfield Street apartments, Saarinen's Morse and Stiles dormitories, SOM's computer centre and their Rare Book Library—this last not completed in Griswold's life-time. Also uncompleted were two of the greatest of his commissions, buildings that may prove the most durable or discussable of all his monuments: Paul Rudolph's erudite, complex and nervous architecture school,

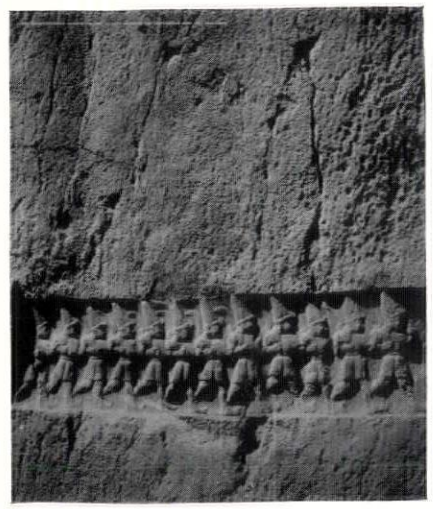

4

4, now within sight of completion, and the Kline science centre, 5, in which many disparate threads and


5

ACKNOWLEDGMENTS

COVER: Ara Güler. WORLD, pages 149–152: 1, Eva Ja Pertti Ingerv; 3–5, 9–12, *Architectural Forum*; 6–8, 13–15, *Bauwelt*; 16–21, Banham Arphot; 22, 23, 26, H. R. Jowett. VIEWS AND REVIEWS, pages 153–155: 1, 2, Henk Snoek. FRONTISPIECE, page 156: Cervin Robinson. CATHEDRAL CITIES, pages 165–179, Nairn and Browne Arphot (except 5, page 173, Kersting). INTERIOR DESIGN, pages 183–184: Toomey Arphot. EXPLORING EYE, pages 185–187: Ara Güler. TWO HOUSES NEAR WIGAN, pages 188–191: 1, 3, A. Grimshaw; 2, 4, 5, Galwey Arphot. CRITICISM, pages 192–200: 1, 3–5, 11–13, 16, Cervin Robinson; 2, 6, 7, 14, George Cserna; 8, Bill Engdahl, Hedrich-Blessing; 9, 10, Hedrich-Blessing; 15, Lionel Freedman. MISCELLANY, pages 203–208: Exhibitions, 1–3, James Mortimer; 4, Robert David; 5, Baer, Photopress; 6, Photo Studios. LOOK OUT, pages 209–210, Nairn Arphot. CRITICISM, pages 211–212: 1, A. Grimshaw; 2, Toomey Arphot. SKILL, pages 213–220: 1, Colin Westwood; 3, John R. Pantlin; 6, H. E. Meyer; 7, Sydney W. Newbery; 9, Edwin Lewzey; 10, Morris Studios. THE INDUSTRY, page 222: 2, Hubert Davey.



On this month's cover, *a file of Hittite infantrymen march in relief across one of the galleries of Yazili Kaya in Asia Minor. Carved in the fourteenth century* BC, *they were recently photographed by Ara Güler, and form the subject of this month's 'Exploring Eye' on pages 185-187.*

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

VOLUME 134 NUMBER 799
SEPTEMBER 1963

SUBSCRIPTION RATE:—*The annual post free subscription rate, payable in advance, is* £3 3*s.* 0*d. sterling, in USA and Canada* $10.50, *in Italy Lira* 6940, *elsewhere abroad* £3 10*s.* 0*d. Italian subscription agents: Librerie Salto, via V. di Modrone* 18, *Milano; Librerie Dedalo, Via Barberini* 75-77, *Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of* 27*s.* 6*d. Postage* 2*s.* 9*d. extra on the completed volume.*

Directing Editors	*J. M. Richards* *Nikolaus Pevsner* *H. de C. Hastings* *Hugh Casson*
Executive Editor	*J. M. Richards*
Assistant Executive Editor	*Reyner Banham*
Assistant Editor (Production)	*William Slack*
Features Editor	*Kenneth Browne*
Technical Editor	*Lance Wright*
Assistant Editor (Counter-Attack)	*Ian Nairn*
Staff Photographers	*De Burgh Galwey* *W. J. Toomey*
Advertisement Manager	*George Dunn*

CONTENTS

149 **World**
153 **Views and Reviews**
156 **Frontispiece**
157 **Bauhaus: '23-'24:** *W. F. Necker*
160 **Hotel at Andros:** *Architect, Aris Konstantinidis*
Hotel at Nafplion: *Architect, Yani Triandafilidis*
165 **Cathedral Cities:** *Ian Nairn and Kenneth Browne*
180 **The New English Humanism: Prefabrication in its social context:** *Guy Oddie*
183 **Interior Design**
Tourist Office, Piccadilly, London: *Architects: Ernö Goldfinger and Charlotte Perriand*
185 **Exploring Eye:** *Hittite Sculpture*
188 **Two Houses near Wigan:** *Architect, Anthony J. Grimshaw*
192 **Criticism:**
Housing in New York, Washington, Chicago and Philadelphia: *James Marston Fitch*
201 **Cromford Canal Pumping Station, Derbyshire** *Measured drawings by John Mosse, Peter Mosse and Michael Ball*
Miscellany
203 **Exhibitions**
205 **Lamp Posts**
207 **History**
208 **Lettering**
209 **Look Out**
211 **Criticism: this month's buildings**
213 **Skill**
Industrialized Building: 2. Comparison of Systems
222 **The Industry**
Contractors, etc.

GRISWOLD

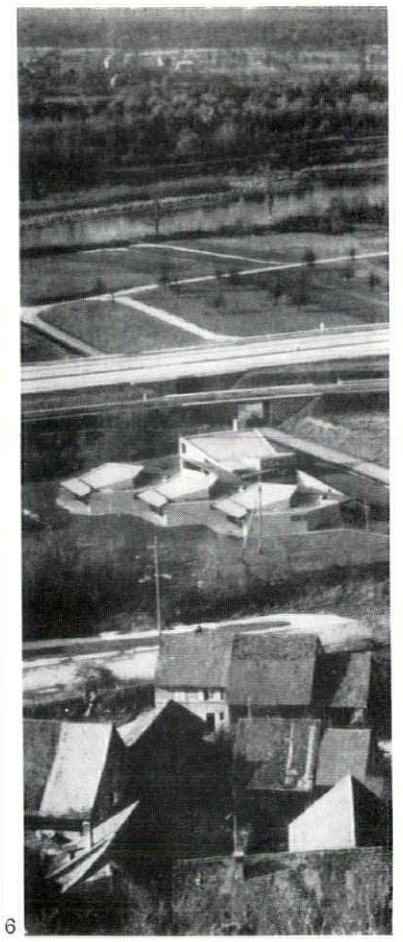
tendencies in Philip Johnson's recent thought have come together in an architecture at once monumental and utilitarian that adds new breadth to his work and new stature to his name. It is the sort of building for which any patron might be happy to be remembered.

Griswold's departure has undoubtedly left a great void in the architectural life of the Eastern United States. *Architectural Forum* did him the rare honour of an editorial obituary and a six-page summing-up of his achievement (June, 1963) quoting many typical Griswoldiana, of which the last and best deals with a Yale problem that is largely his own creating—the variety of styles in which his patronage has taken shape, the seeming incompatibility of the different architects employed. 'No *common* denominator,' said Griswold, 'Just quality.'

DORFSCHULE

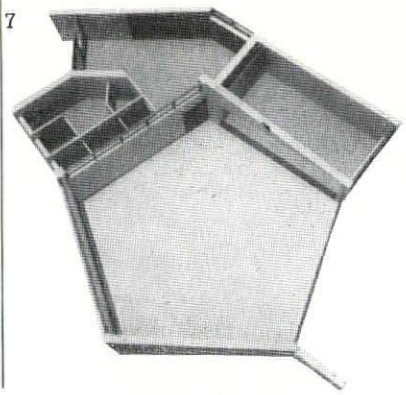
Informal Plans in Germany

There is something of a moral obligation, it seems, for someone to make comparisons between any conspicuously informal style of modern architecture, however sophisticated, and the unsophisticated informalities of peasant or industrial architecture, particularly peasant. Comparisons between Aalto's recent work and that of Finnish peasants are in all the books, *ad nauseam*, but the work of Hans Scharoun and his followers has escaped this confrontation, until recently, when Günter Schoning and Christian Türcke brought it on themselves with their little village school at Kleinkems in Baden. The picture in *Bauwelt* (24, 1963) leaves little to be said, 6, about the comparison: it is all there in a single view. But there is more to be said about the school, which is more regular in plan, 8, than any comparable work by

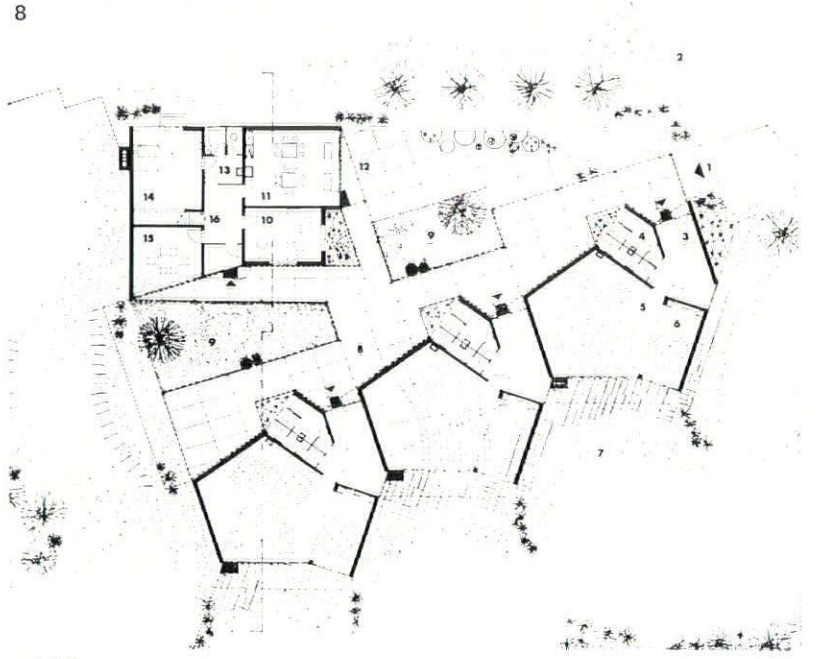


6

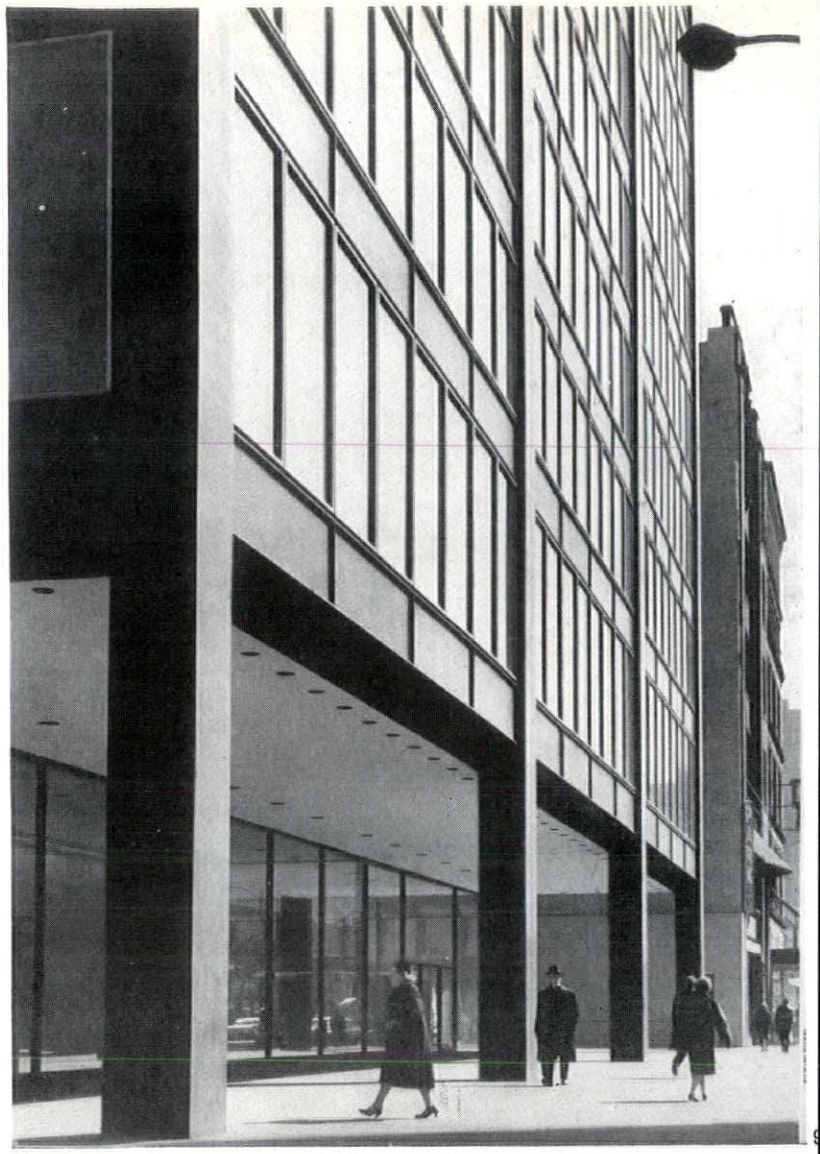
Scharoun himself, with an extremely interesting classroom/cloakroom unit, 7, that makes full use of the functional potentialities of informality.



7



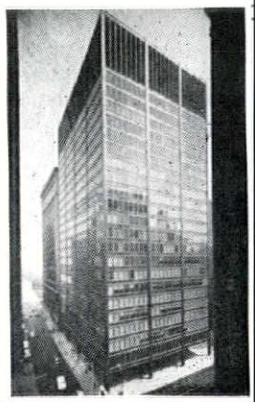
8



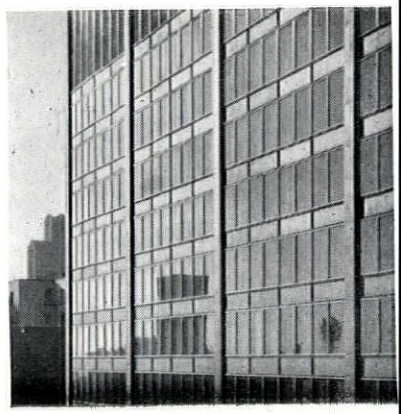
9

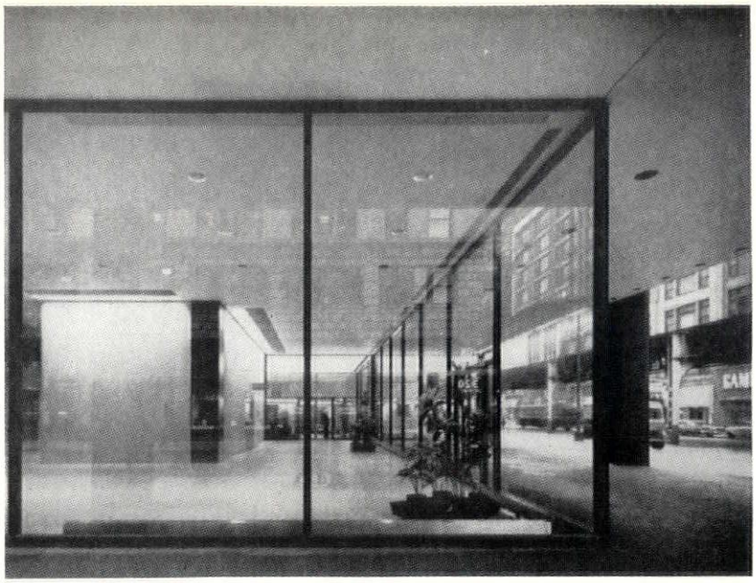
CHICAGO IMAGE

The Continental Centre



With Skidmore, Owings and Merrill becoming daily less predictable, as stylistic variability is exaggerated by the apparently cut-throat tactics by which the three main SOM offices compete for jobs (New York Office designing for Iowa, San Francisco for Louisiana, etc.) the guardianship of the 'great conservative' image seems to be passing into other hands, most notably those of C. F. Murphy and Associates. Not only is their O'Hare International Airport (AR, Nov. 1962) convincingly (and confusingly) more SOM than SOM themselves, but their most recent office-block, the Continental Centre, 10, at Wabash and Jackson in Chicago, really looks as if it ought to have been designed in the Chicago office of SOM by Myron Goldsmith, for it shows all his predilections for the slow monumental spread of long spans (42 feet between column centres) and all that intense sobriety of surface, abstinence of detailing, 9, that is still part of the conservative Chicago image. In some ways, the facade is almost too sober, and only the two-over-one rhythm of the windows and spandrel panels, 11,

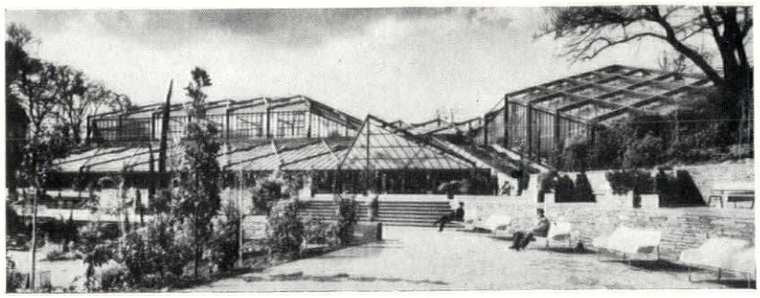




12

CHICAGO

saves it from seeming downright blank. But this intense simplicity runs with dedicated consistency through the whole design—12 is the entrance lobby—and gives it an air which has some stronger claims to comparison with Mies van der Rohe himself, than any of the Chicago works of Skidmore, Owings and Merrill.



13

HAMBURG GLASS HOUSE

Among the many pleasures in *Bauwelt's* special issue (27, 1963) on the new landscaping and garden-design in Hamburg (an unexpected pleasure: Frei Otto—no less—on the Great Conservatory at Chatsworth) was an illustrated description of the new plant-house in the Botanical Gardens.

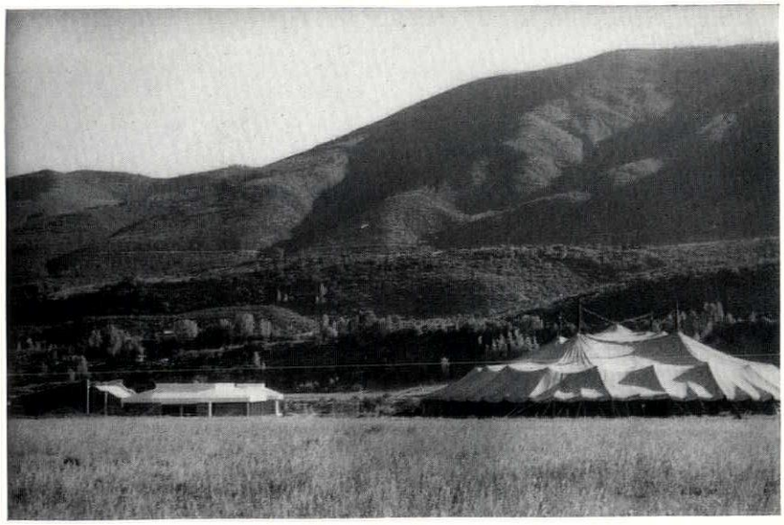


14

Designed by Hermkes and Becker, it has a distinctly irregular silhouette, 13, fully justified by its plan, and the casual relationship of its section to the underlying ground-form. The result gives some remarkable interiors, which vary between an expressionist reworking, 14, of Buckminster Fuller's Climatron, to a rather sinister and cave-like fern-garden, 15, running round one end of the main house. This last particular effect derives from a coffered roof of precast concrete units, with thick glass lights let into it, strong enough to carry a public terrace on its upper side. The rest of the glazing is hung from steel frames outside the glass, resting on sub-structures of reinforced concrete and load-bearing brick.



15

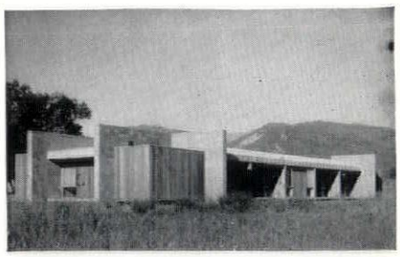


16

ASPEN MONUMENTS

Although the world at large still thinks of the Aspen Design Congress as a sort of summer-camp under the spreading canvas of Eero Saarinen's great tent, 16, the various bodies and operations connected with Walter Paepcke's vision of Aspen as a cultural centre in the Rockies have acquired a number of permanent buildings, all designed by Herbert Bayer, over the last few years. The Aspen Meadows Hotel and its health centre may be classified among these, as also the Institute for Physics, 17, and the Seminar rooms by the big tent itself. But visitors to this year's congress found a new and unmistakably monumental cluster of buildings next to the Seminar group: the Paepcke Memorial Buildings, 18, 19, built in memory of Aspen's founder (more properly re-founder since the town almost died completely after the failure of the silver mines) and intended to house the Institute for Humanistic Studies which carries on the direction of most of Aspen's cultural activities.

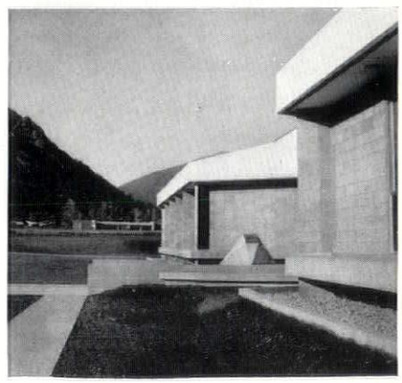
The functional distribution is tripartite and is reflected in the three-



17



19

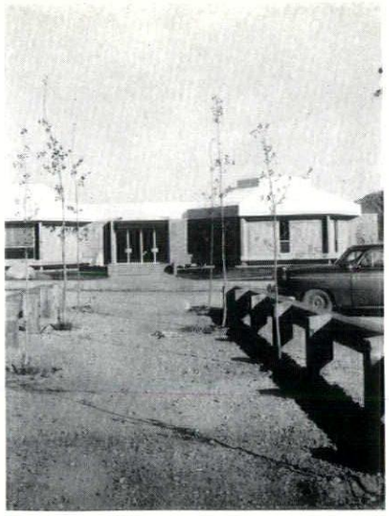


18

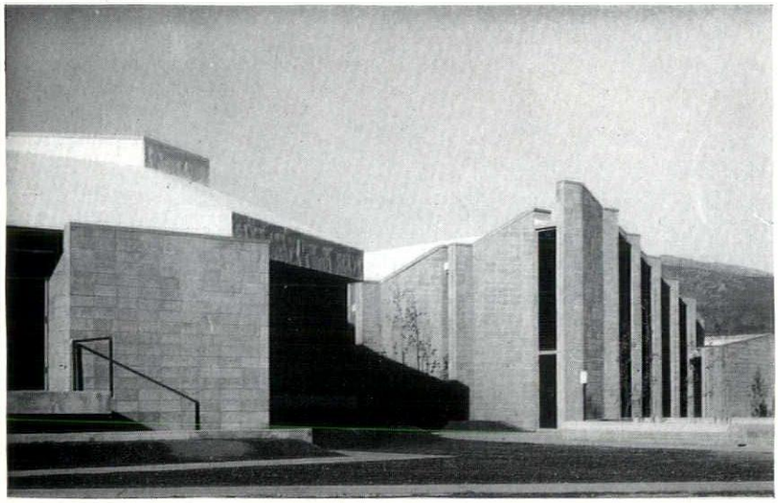
ASPEN

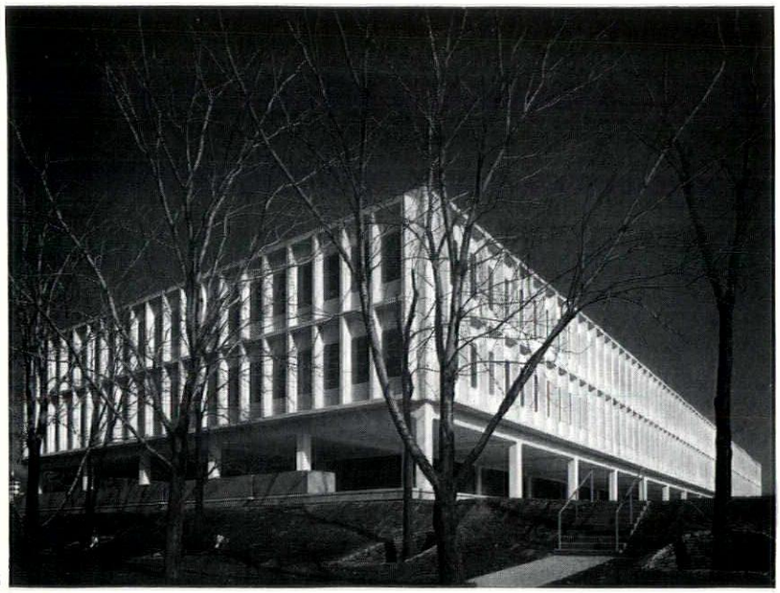
lobed planning and massing of the rooms. On either side of the entrance, 20, are the library (to the right) and the offices, while beyond them lies the auditorium. It is interesting to observe how Bayer, faced with an institutional, not to say academic, building of this kind has moved very close to the accepted monumental modes of current US academic architecture, even to the use of the mausoleum roofs, 21, and the craggy outlines of the auditorium itself (right). At present, nestling among new-planted lawns and small scale landscaping it looks something of a stranger on the rough and ready meadows of Aspen, but if it is true that the tent itself is to be rebuilt in more permanent form, then the Paepcke Memorial may only be the first stage of a new and more monumental Aspen.

20



21



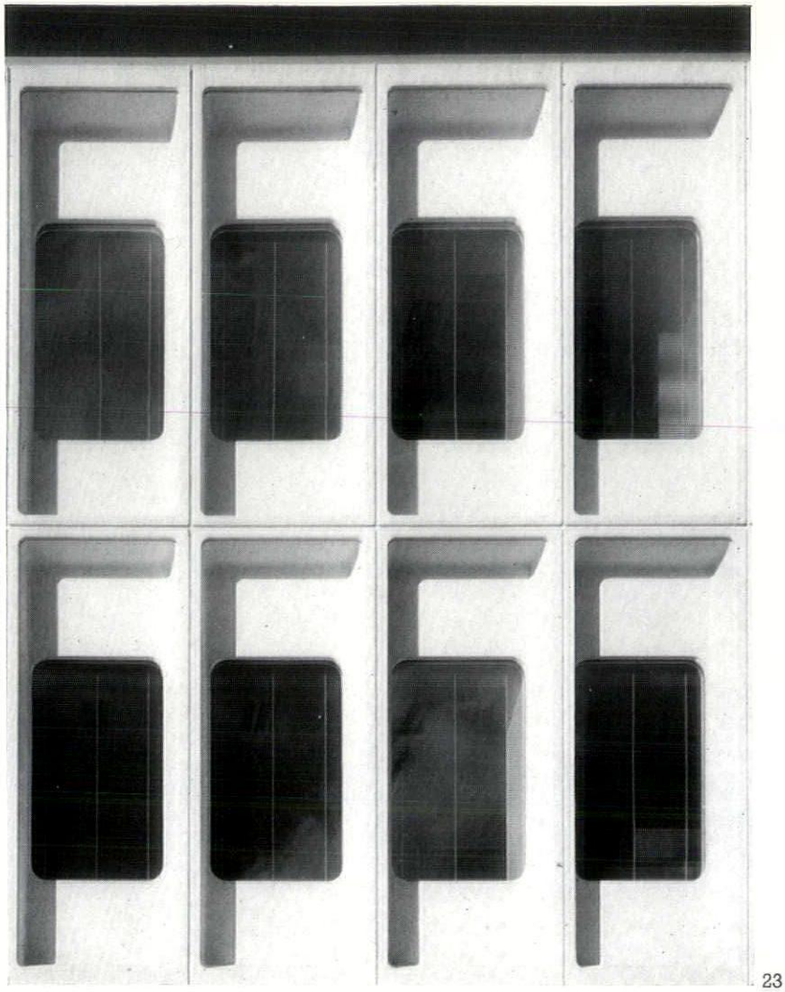


22

IMPERIAL OIL

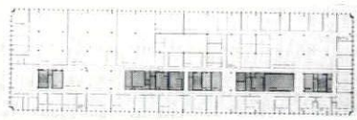
offices at Don Mills

Canada's most distinguished architectural office, John B. Parkin and Associates, has just added another building of distinction to its impressive record of designs. The Imperial Oil building, 22, is not their first design in the new town of Don Mills, but it is the largest and most imposing. Its conception, with its wide bays and precast window/wall units (which may be compared with those by I. M. Pei on pages 192-200) are in line with advanced North American practice,

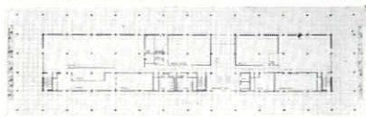


23

23, as is the fairly elaborate landscaping. The planning of the interior is relatively simple, but employs one interesting device that may repay further study: the lifts-and-services core does not lie in the centre of the typical office floor plan, but is offset one bay to the south, 24, with the result that it falls against an outside wall on the ground floor, 25, thus providing for a greater variety of planning solutions at the office levels, and the possibility of shielding the main areas of the ground floor from traffic noises from the adjacent road—though it does not appear that this possibility has been consciously taken up. Among other notable features of the building (and one that will not go unnoticed) is the fact that in spite of its destination as a prestige headquarters and its impeccable detailing, 26, the final cost came in at around $18 per square foot, which is competitive with spec-built office prices.



24



25



26

views and reviews

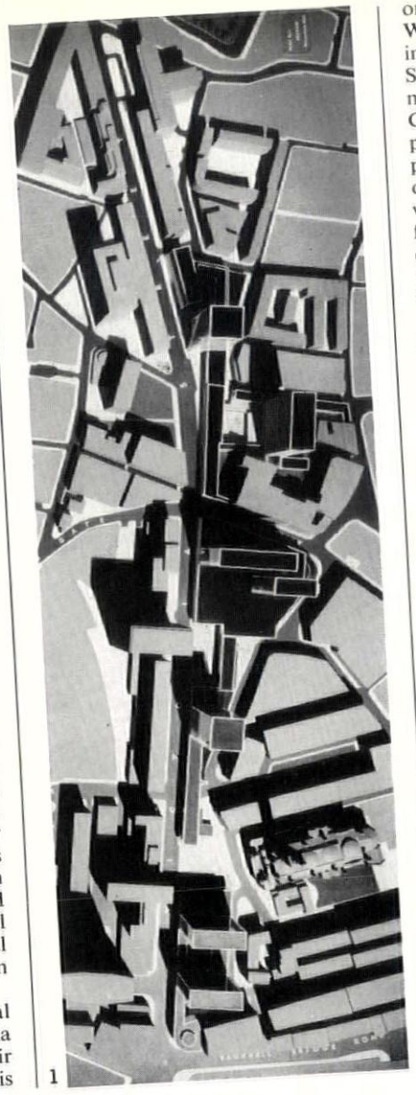
MARGINALIA

THE NEWER VICTORIA

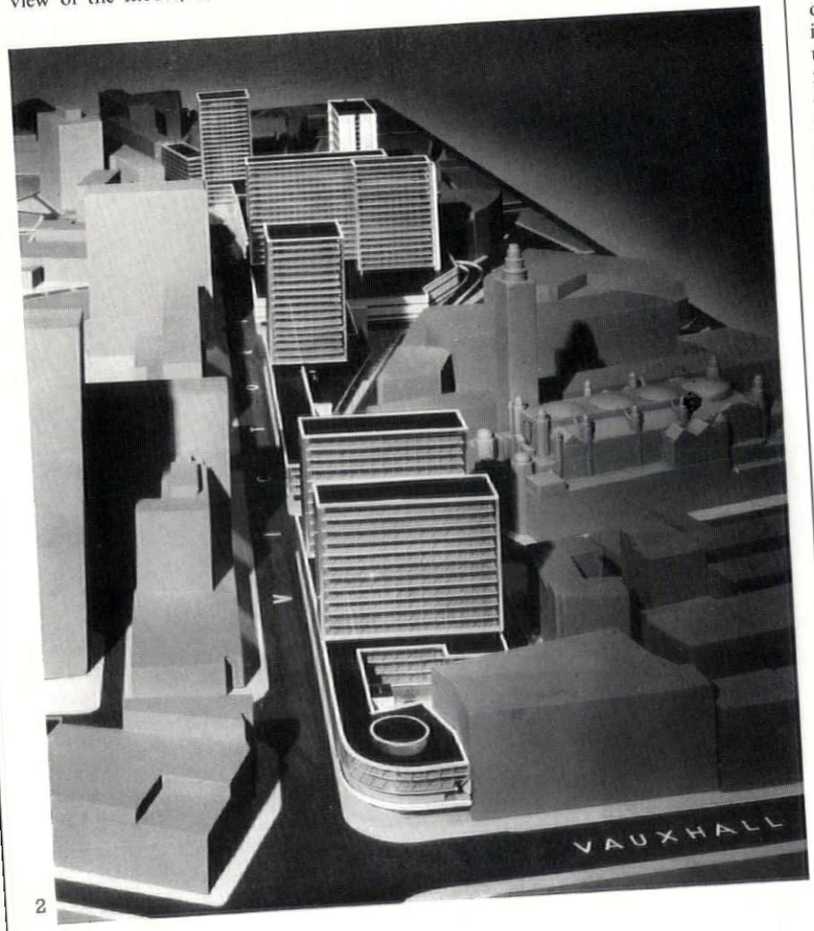
What the Stag Brewery site (see 'The New Victoria,' AR, June, 1963) failed to do is to be done on the opposite side of Victoria Street; namely, plan and design a whole large area comprehensively in spite of multiple ownership. In a half-mile length of the south side of the street (Vauxhall Bridge Road to Abbey Orchard Street), nearly all the properties belong to three freeholders: the Church Commissioners, the Crown Estates and the Army and Navy Stores. They came together when the opportunity for a unified development became evident and agreed to appoint the same architect, Mr. C. H. Elsom.

The result, which the LCC has helped at every stage, is a truly comprehensive scheme, consisting of a 45 ft. high podium with shops on the ground floor, which will be sheltered by the projection of the podium over the pavement. Above the podium rises a series of towers, fourteen to eighteen storeys high, one containing flats and the others offices. The whole scheme will provide a small increase in residential accommodation but no increase in office accommodation.

One square tower provides a visual focus at the point where Victoria Street changes direction—see the air view of the model, 1. The podium is only broken to allow the forecourt of Westminster Cathedral (on the right in 1) to be opened up to Victoria Street, but the mistake is not being made of opening it up too widely. Glimpses of the cathedral and its campanile will be obtained here and at points up and down the street, though other existing views of the campanile will be blocked. 2 shows the model from the south-west, with the cathedral on the right and the continuous podium with its series of towers and Victoria Street beyond.



1



2

EKISTICS UNDER DISCUSSION

Thirty years after the famous CIAM congress (the one that produced the Athens Charter) on board the s.s. *Patras II* and at Athens, another international group of architects, town-planners, sociologists and scientists held a meeting this July to discuss and co-ordinate means of tackling the present crisis—to use the group's own term—in the development of cities and city regions. The meeting took place on board s.s. *New Hellas* and terminated at Delos, in Greece. It was convened by Dr. C. A. Doxiadis, the Greek town-planner who is also chairman of the board of directors of the Athens Technological Institute.

British members of the group included RIBA president Sir Robert Matthew, Richard Llewelyn Davies, two scientists (Sir Robert Watson-Watt and Professor C. H. Waddington) and Lady Jackson (Barbara Ward). Among the Americans were Dr. Margaret Mead, the anthropologist, and Professor R. Buckminster Fuller. Other countries represented were Canada, India, Pakistan, Poland, Switzerland (by Sigfried Giedion), Germany, Spain, Ghana, Iraq and Japan.

The meeting drew up a declaration of principles which began by pointing out that whereas world population increases by 2 per cent each year, the urban population increases by over four per cent, and that in the next 40 years more city building will take place than in the whole past history of man. It called for internationally based city planning policies based on systematic studies of human behaviour and the wider use of advanced technologies. The report urged, among other things, that more attention to the sciences of human welfare should be given in universities and other institutions of higher learning which should establish a 'discipline of human settlements' in its own right, initiate basic research and bring together specialists from all disciplines to work together in this field.

To describe the science of human settlements Dr. Doxiadis has coined the word 'ekistics,' which has been used for some while in his Athens institute and is now beginning to gain wider currency.

LAMBERT'S NEW LONDON

An extremely useful and significant recent publication is Sam Lambert's *New Architecture of London: a selection of buildings since* 1930. Its usefulness comes from its comprehensiveness —nearly two hundred worthwhile modern buildings are covered, as well as the planning background—and its clarity; the maps are excellent and the gazetteering efficient, while an introductory page in four languages explains the use of the book as a visitor's guide and offers suitable warnings about such matters as access to buildings. In general, it is the handiest and most up-to-date guide to modern buildings in London that can be bought, and sets a standard of presentation that is made the more remarkable by its price—seven shillings. One hopes that with luck it may live long and be brought up to date by a new edition each year, as is the case with Sam Lambert's other classic guide, *London Night and Day*, which the Architectural Press now has in its tenth edition since 1951.

But the significance of *New Architecture of London* lies in its publisher, noted on the title page as 'The British Travel and Holidays Association in collaboration with the Architectural Association.' The AA's activities in preparing such guides are well known, and much of Lambert's material was taken from the last AA map and gazetteer, published in 1957, but BTHA are welcome new entrants in the field. Anthony Cox says in his introduction that 'the fact that the BTHA . . . has made this present guide possible and is its publisher, is itself a really substantial recognition that modern architecture is a really significant feature of London today.' One could go further, and note that this is also a significant departure from BTHA's famous preoccupations with beefeaters, Welsh hats, morris dancing and the rest of ye olde British way of life. Modern architecture has made a major breakthrough, and become part of the official tourist image of Britain.

JAPAN JOURNEY

Exactly a year ago the AR produced a special issue on the modern Japanese architectural scene, the outcome of a visit to Japan made by the AR's Executive Editor at the invitation of the Japanese Foreign Ministry. This issue has now been republished, with additional illustrations, as a book.*

The issue combined, readers will recall, an anthology of new buildings and a travel diary, and the same form is preserved in the book. The day to day diary of the author's journey to and around Japan, in which he records personal impressions of all kinds, architectural and otherwise, is interrupted by detailed illustrations of the new buildings he found the most interesting and by short articles on special aspects of Japanese architecture. At the end of the book, as in the case of the September AR but more fully illustrated, are biographies of the leading modern architects.

These are the men who, in the last few years, have suddenly made Japan one of the countries that is making a major contribution to modern architecture. One of the purposes of the book is to put their work into its historical and social perspective.

OBITUARY

ROGER HINKS: 1903-1963

The death of Roger Hinks, the British Council's representative in France, deprives his friends and colleagues of one of those rare in-

*An Architectural Journey in Japan. By J. M. Richards. The Architectural Press. 42s.

dividuals who made memorable almost all occasions he took part in. He had the ability, through an incisive brilliance of intellect, to lift the spirit and excite the imagination, sometimes using it with devastating effect to demolish pretension, but more often to illuminate a chosen subject, or, hilariously, to point up the ridiculous or the absurd.

He made many distinguished contributions to art scholarship; three of his books which have become standard works are *Carolingian Art*, 1935, *Myth and Allegory in Ancient Art*, 1939, and *Caravaggio*, 1935. He delighted in all aspects of architecture and, as a regular reader of the AR, was no mean judge of townscape, though his particular interests led him naturally to the study of townscape in painting. At the time of his death he was planning a lecture in Warsaw on the townscape paintings of Bellotto, and readers of the AR will remember his *Peepshow and Roving Eye* (September, 1955), in which he fascinatingly explored the use of the *camera obscura* in Dutch seventeenth-century townscape paintings, illustrating the distortions resulting from the method by comparing the paintings with the same views, often unchanged, today.

It was unexpected, to say the least, to find him a considerable authority on the New York subway system—a department of knowledge which is not mastered without difficulty. But his enjoyment of the visual delights of his own age, rare among those in his field, led him to a keen appreciation of the American, and especially the New York, scene. He must have been one of the few people who went to that city for a rest. Being a very early riser, he found in the first part of the New York day, when the city is shared only with its garbage collectors, a remote and healing quality, and he was quick to see the advantages of early morning light for photography. It was in New York that he took his first colour photographs—exceptionally good ones—providing an unmistakably Hinksian view of its beauties.

Roger Hinks's many other qualities and skills have been described elsewhere: his brilliance at languages, in conversation, as a letter writer and a diarist, his combination of administrative ability with scholastic distinction. His career started in 1926 when he became an assistant Keeper in the Department of Greek and Roman Antiquities in the British Museum. During the last war he worked on the staff of the British Legation in Stockholm, and, in 1945, he joined the British Council, being made Director of the British Institute in Rome; he was afterwards the Council's representative in the Netherlands and in Greece. He was appointed representative in France in 1959 and he was due to retire this September. He was created a C.B.E. in the last Birthday Honours. His death, at the early age of 59, is a great loss not only to London, where he had chosen to live, and to his many devoted friends, but to all who would have delighted in and profited by the articles and books planned for completion in a retirement he was never to enjoy.

Ian McCallum

CORRESPONDENCE

WHAT NEW TOWN?

To the Editors.

SIRS,—No one seemed to give much attention to Dawley after the announcement of the designation order. Conceivably there has never been so little opposition to a proposed new town, and indeed the local council has been positively pushing the idea forward. Paradoxically this has led to an almost listless attitude towards it, which could eventually make it nothing more than a Harlow-on-the-slagheaps, a mere extension of the activities of the big private developers who have already compromised planning on the east side of the town.

Thus Ian Nairn's article is welcome for drawing attention to the place. A lot of what he says is true, especially concerning the designation area boundaries, proposals to swamp Madeley and Ironbridge, and the way Oakengates has been left out of the game. Nevertheless, his somewhat defeatist attitude towards the possibilities for what the administrators have left is very depressing. Here is a site, it seems to me, which asks for a tight hill-top town (around the existing town), where the townspeople could enjoy magnificent views eastward across open country to Wolverhampton and Cannock Chase, and westward to the Wrekin and the crazy outline of the west Shropshire hills; where old and new building could mix to mutual benefit; where the town design, aided by ever-changing natural and man-made levels and sudden views, could be as exhilarating as at Cumbernauld; where industry could sink contentedly into the wooded valleys (as it does there already—viz. Coalbrookdale); and where hardly an acre of agricultural land need be touched. But what does Ian Nairn suggest? 'Arcadia . . . Nothing earth-shattering . . . Dawley must be played softly and gently. . .'—as though this were an effete stretch of the Home Counties instead of a powerful and industry-scarred landscape in one of the more fascinating corners of England.

Admittedly the existing environment is idiosyncratic, some of it even endearing. But this environment is the result of a local economy which has long since ceased to be, when the pits were many and their individual work-forces small, when every pitman grew his own vegetables on a plot by his cottage, and when the idea of 'industry' as opposed to 'agriculture' was not formulated. Today local opinion would call it 'scruffy,' and 'scruffy' is a word which describes the East Shropshire industrial area as a whole. Its clothes are worn and it feels under the weather. That is partly why there has been so little opposition: it is felt that 70,000 extra people and more industry will give the area its sorely-needed boost. Mr. Nairn's proposal for random groups of half-a-dozen-houses-and-a-pub among the old pit-workings will only aggravate the visual misery, the 'scruffiness.' The new town has to be a concise statement, a tangible symbol of prosperity returned to the area where the industrial revolution first flexed its muscles two hundred years ago.

Yours, etc.,
DAVID T. HILL.

Shifnal, Salop.

Ian Nairn replies: Mr. Hill's views were mine also before I went to have a close look at Dawley. It was what I found under the scruffiness that made me change my mind. There seemed to me to be a marvellous angularity and cussedness in Dawley, still living and vivid, which ought to be kept. It depends very much on the intricate and cussed layout of houses scattered almost indiscriminately amongst the mine-workings: this bit of scruffiness is positive, not negative. It could be transmuted into the New Town without losing its essence (when I said that Dawley should be played 'softly and gently' I did not mean that the result should look soft and gentle. I ought to have said so).

If the true Dawley-Oakengates new town were going to be built, then the concise statements and urban drama could happen where the site calls for them—i.e. at Oakengates. But Dawley ought still to have remained quirky and awkward—that is the genius loci. It is *not* dramatic scenery, unlike Ironbridge, and unlike Oakengates, and the views are gentle and rolling rather than magnificent. It is simply not the place for a grand gesture.

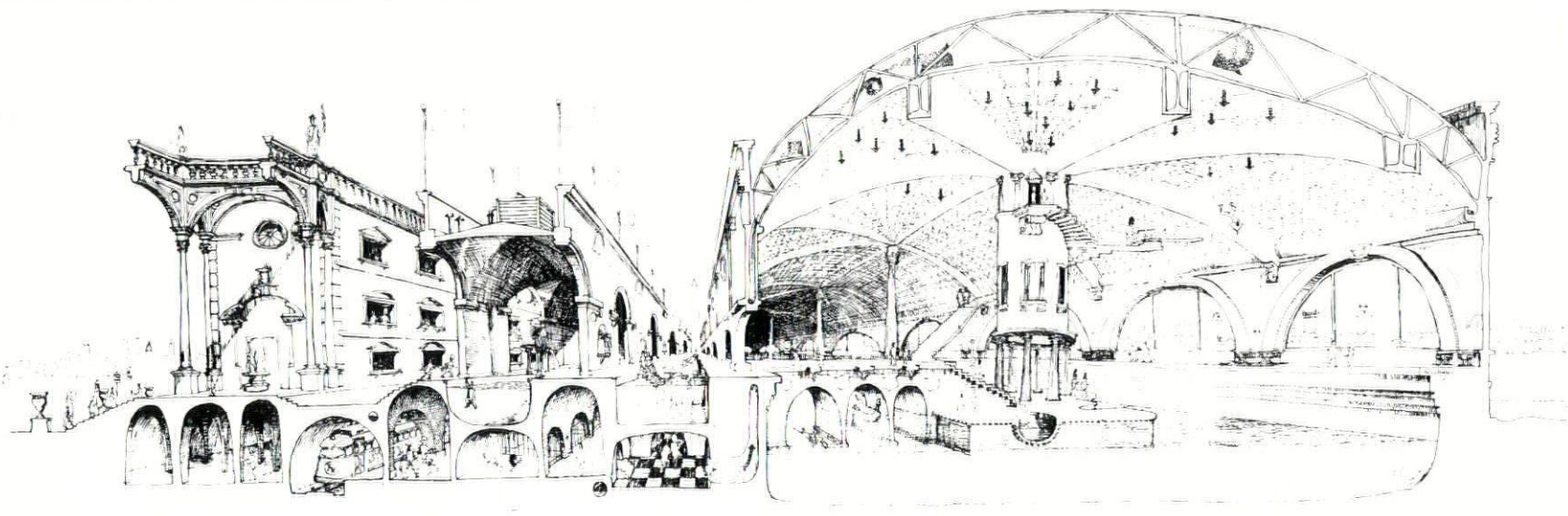
BOOK REVIEWS

ART NOUVEAU IN GERMAN

JUGENDSTIL. *By Robert Schmutzler. G. Hatje, Stuttgart*, 1963. 136s.

Here at last is the standard work on Art Nouveau. Dr. Schmutzler has let it grow through twelve years, and it has proved to have been worth waiting for. It is first of all exquisitely produced, the best produced art book, I have no hesitation in saying, that I have seen for years. This applies to the choice of illustrations, including the quality of the many photographs specially taken and which sometimes reveal beauties one had never dreamt of. It also applies to the drawings, etc., scattered through the text or rather placed with superb judgment in just the right positions. To refer to just one example, one should look at the very last of these vignettes on the final page of the acknowledgments. Dr. Schmutzler's text is in every way up to the standard of illustration. Again, not for years have I read such accurate, sensitive, unjargoned descriptions of works of art in German. The book is not cheap, nor could it be with its 348 photographic illustrations, twelve colour-plates and about 90 line blocks. It is worth every penny of it. Concerning what Dr. Schmutzler has to say, readers of THE ARCHITECTURAL REVIEW will be familiar with his most import-

3, *this heroic vision of an air-conditioned urban nightmare with classical detailing appeared in the first issue of* Image (*May*, 1963) *the student magazine of the school of architecture in the University of Texas. No explanation was offered beyond the fact that it was an architectural satire by Wallace Hughes.*



ant thesis, the decisive formative influence of England on Art Nouveau. He has developed this thesis in two articles in THE ARCHITECTURAL REVIEW in 1955, and it reads as convincingly now in a continental text as it read then. Otherwise, factually, there is not much that goes beyond Dr. Tschudi Madsen's book on the sources of Art Nouveau, a book into which at least as much learning has gone as into Dr. Schmutzler's, but which cannot compare with it in literary skill and, of course, in production. There should be no difficulty in finding an English publisher for a translation of so brilliant and so enjoyable a book.

Nikolaus Pevsner

INDIVIDUAL AND OFFICE

MARCEL BREUER 1921-1961. *Introduction by Cranston Jones. Thames & Hudson.* 147s.
SOM: Architecture of Skidmore, Owings & Merrill. *The Architectural Press.* 84s.

I hesitate slightly before reviewing this the first full-scale survey of Marcel Breuer's work; since Breuer is not only one of the most lovable of architects, with many friends in England, but also because of what he did to bring refinement to our crude 'native' modern architecture. I have a personal debt also since his prompt reflex action some twenty years ago almost certainly saved my life!

My hesitation was due to a feeling that one must make adverse comparisons between the complexities of much of the later work and the lyricism of earlier designs which, even today, have all the salty freshness of the mid-30's—those few brief years between slump and war when modern art combining with science seemed to herald a new visual elegance.

It may come as a slight shock to find Breuer, described as he is on the flyleaf, as one of the architectural giants of our time. Yet, on reflection, and allowing for publisher's licence, this may well be true. For, if one seeks the source of that, particular modern architecture (so frequently and perjoratively labelled Bauhaus) which has become the vernacular style of the day, not only in Europe and the US, but everywhere, we will find it nestling below the lofty and often icy peaks of the Bauhaus building and the Van Nelle factory in a number of less dogmatic and more acceptable smaller buildings which must include the Doldertal Flats (shockingly neglected when last I saw them), the Harnischmacher House and the influential Gane pavilion at Bristol, as well as a wide range of furniture and accessories, designed by Breuer.

Looking again at these things one is made aware both of Breuer's passionate interest in craft techniques—he was master of the Bauhaus carpentry shop—and of his early training as a sculptor. As Cranston Jones writes in his foreword 'Breuer's orientation gave him an intuitive understanding of the unconscious aesthetic of machine age technology'—while 'his sculptor's eye discovered the new potentialities of the forms of folk architecture (particularly those of the Mediterranean).' To all this he has added a pre-occupation with the tactile quality of materials. In his work a dialogue, as it were, takes place between hard and soft, smooth and rough, dark and light.

'To Breuer,' Cranston Jones writes, 'there are two principal concepts underlying modern architecture; the flow of space within the building and the flow of stresses through the structure.' It is the application of the last principle which one questions, especially in the larger buildings (such as the Benedictine College in Minnesota and the IBM Centre in the lovely Var Valley) which have preoccupied Breuer since the 50's. For however much one can accept such a principle intellectually in fact one senses that excessive structural expression ultimately degenerates into 'Expressionism.'

Yet the alternative 'classicism' contains seeds of boredom and popular incomprehension, neither of which is Breuer guilty—such vices as his architecture may have arise out of its variety which is endless.

Today he has an international practice concerned increasingly with large buildings and he is determined to try to solve some of those problems of structural expression never fully faced up to by much modern architecture—his concrete is, incidentally, some of the best in the world. But his reputation remains highest as a domestic architect and it can properly be said of him that no other twentieth-century architect has so clearly expressed the spirit of his times in individual terms. In these immaculate, yet casual, houses—Breuer has built four for his own use—choicely sited whether in America or Europe, one glimpses vividly a cultured cosmopolitan twentieth-century way of life at its most enviable.

In contrast to Breuer's individual contribution, Skidmore, Owings and Merrill, or SOM as the firm is now better known, is the archetype of the team office specialising in large scale commercial work with branches in New York, Chicago and on the West Coast (they have never done a private house to my knowledge—other than for a partner). As American offices go—and many go back to the nineteenth century—SOM is a young firm. Although Skidmore and Owings came together for the 1933 Chicago Exposition, they only made their name with the Atom City at Oak Ridge where they developed the type of organization which made them capable of tackling the largest and most complex jobs. The form of the present firm dates from '49 and its first internationally famed building, the Miesian Lever House, is still the best of all those curtain-wall towers for which it was the prototype. Yet, unlike so many bureaucratic concerns the quality of work has not diminished. Needless to say, its contribution is not as original as that of the 'individual' architects but its totality, mechanical refinement and technical competence may be even more important to our age when whole cities are being virtually rebuilt. This lack of diminution of quality is probably due, as Henry-Russell Hitchcock suggests in his critical introduction to this volume, to the relative looseness of the SOM organization. The importance given to designers and the inclusion of engineers in the hierarchy have encouraged a greater degree of experimentation than might have been expected. One is not usually moved by an SOM building as one is by one of Wright's or Corbusier's but one is never disappointed and always aware of the superb programming which carries the building through to the last chair, ash-tray or plant. No other firm has achieved this sort of thing with such consistency. At its Park Avenue best it is a most convincing microcosm of the future. It is least happy when attempting the single masterpiece as in the Beineche library at Yale.

Both these books, predominantly plans and photographs, originated in the Hatje stables in Stuttgart. They are beautiful productions and models of the kind of thing German publishing houses always excelled in. Between them, they portray with great clarity certain aspects of the best international architecture of the 50's and 60's.

Fello Atkinson

UNDERGROUND MOVEMENT

FANTASTIC ARCHITECTURE. *By Ulrich Conrads and Hans G. Sperlich, translated by Christiane C. Collins and George R. Collins. The Architectural Press.* 73s. 6d.

From early Gaudi to late Goff a second line of modern architecture runs tangled through the background of the official story. Its works and words used to illuminate manifestoes and are still to be found in young graduates' slim quarterlies and in the oddments columns of the professional press. It does not fit into any of the defined categories, yet has been almost too consistent over the years for the description 'Eccentric' to be apt. It is like a revolutionary underground movement, whose dedication is unquestioned but whose methods are suspect. It is architecture in which artistic expression is pushed beyond the conventionally respectable limits.

Ulrich Conrads and Hans Sperlich call it *phantastisch*, and in the course of their text add the terms visionary, idealistic, imaginative and utopian. Beyond this they attempt no definition, and it could be argued that the total effect of the illustrations makes definition unnecessary. We can see what they mean.

Fantasy comes in two kinds. The more common and acceptable is extroverted and constructive, seeking short cuts to Utopia. This kind is always dominated by an idea, a particular form-thought which is more remote and more ruthlessly pursued than ever any idea is in conventional architecture. The other kind is indrawn and has defiant, if not destructive, tendencies. It seeks some personal poetic retreat into nature from the world of intellectual building. This kind includes the magic grotto and the labyrinthine organism. Frederick Keisler, whose *Endless House* exemplifies the genre, explains that he is not interested in free-flow art forms but in 'a life dedicated to fundamentals rather than to mechanized equipment and interior decoration.' Bruce Goff combines in his work the two kinds of fantasy and remains the hero of the movement.

There may be no doubt about where a man like Goff stands, but at other times it is hard to see where the authors place their boundary between fantastic and normal. Several of the examples given—including Niemeyer's Caracas museum and some of the space-frame schemes—are normal enough for nearly all conventional histories. Even Ralph Tubbs's Dome of Discovery makes a surprise appearance here. But where is the TWA bird? There is not a thing of Saarinen's. Nor the Sydney Opera House. Nor Ronchamp. Nor any undergraduate adventures. SOM's airforce chapel is included, but none of the other more earthy recent American reactions against the normal SOM. Wright is represented by the Guggenheim and one or two others, but not by Johnson Wax. 'The very nature and spirit of this material makes a tidy organization of it impossible,' the translators apologize for the authors in their preface. And yet the very word fantastic seems to demand some definition of boundaries, at least of those between it and normal progressive work on the one hand, and Googie or Miami-Spectacular on the other.

Modern fantasy began as a movement in the Berlin Expressionist group and their 'Utopian Correspondence' of 1919, here quoted at length. The movement believes passionately in the art of building, which 'stands above all artistry' and is 'the great and only art,' as they said. It regards the respectable majority of modern architecture as hardly worthy of contempt. It aspires to create sheer, undefiled architecture, and therefore is doomed to be frustrated, though it is no less admirable for that. Its credo might be summed up in the ringing words of Bruno Taut in 1919: 'I find clients almost repulsive. . . .'

The value of this book, despite the arbitrary selection, is its call for the serious consideration of fantasy. It presents well-known examples not as isolated aberrations but as a movement, however unorganized, with some consistency and with theories at least as elaborate as those of the establishment. It conveys much of the essential excitement and it shows up the compulsive nature of a fantastic idea—which could hypnotize even Adolf Loos into developing his horrible Doric column for the Chicago Tribune competition. The authors are not mesmerized by their subject. They admit, in what amounts to a sudden outburst in a caption, that the 'prefigured' form of much fantasy is 'annoying,' because of the painful discrepancy between form and content.

Perhaps it is unfair to ask more from the book. If the authors had tried to pin down for us the exact point at which fantasy departs from the polite society of accepted architectural concepts, they might have had to go beyond the bounds of their subject to tell us the meaning of architecture. As it is we are left with old questions. Is the architect who resists the undoubted attractions of such personal expression strong, or merely insensitive? Is this fantastic work, which so clearly springs from the spirit and the heart, 'pure architecture . . . the highest expression it can achieve,' as Bruce Goff insists? Or is it a frivolous denial of all the practical disciplines which are the very strength of architecture? In practice fantasy works on a razor's edge between these extremes and readers are left to themselves to sort out the examples into two heaps. One could be the most valuable stimulation to today's architecture, the other an awful warning.

Robin Boyd


RENTING OFFICE
ENTRANCE 330 E 33 ST

Democracy in a concrete grid: a gamut of human reactions to windows, curtains, blinds and air-conditioning, revealed (opposite) by the fenestration of the south face of one of the blocks in the Kips Bay development on Manhattan island. This and other recent housing designed by I. M. Pei are discussed by Professor J. M. Fitch in this month's Criticism *article, which begins on page* 193.

W. F. Necker

BAUHAUS: '23 - '24

There is no exact equivalent to the Syndikus *in English firms and institutions. In Germany he is the legal and financial expert on the staff. If we introduce Dr. Necker (who now lives in London) as having been* Syndikus *to the Bauhaus, when it was still at Weimar and before the Dessau buildings were designed, readers will not be surprised by the depth of interest in the following reminiscences, which he has put on paper for* THE ARCHITECTURAL REVIEW.

It was in the summer of 1923 that I arrived at Weimar. I had never before lived in a small town. Weimar had about 50,000 inhabitants, and it was characterized by its grand-ducal past. The last grand-duke of Sachsen-Weimar-Eisenach had been deposed in the revolution a mere five years before. The palace faced the large central square. Two other sides of the square were formed by parliament and ministries, and there were plenty of houses, all with stories of a great past. Here Goethe had lived, here Schiller, here Herder, Wieland, Liszt and Frau von Stein, Goethe's friend. There were old hotels like the 'Elephant' or the 'Erbprinz' or the 'Swan,' well known as Goethe's neighbour, all more than several hundred years old. In the back streets were the former embassies of the German states to the court of Sachsen-Weimar-Eisenach. The local gentry and nobility still set the tune, even though impoverished—and for the rest, Weimar was Pensionopolis.

It also possessed the Goethe and Schiller Archive and the Nietzsche Archive, the latter under the patronage of Frau Foerster-Nietzsche, the philosopher's sister who held court in the 'Indian Tea Rooms.' Moreover, very recently Weimar had acquired a new dignity: the German Reichstag had temporarily to be removed from Berlin where it was in constant danger of being incommodated by revolts and revolutions, and in addition the National Theatre was here (where in my time the future Frau von Goering acted in a very minor capacity). Finally, Weimar was now the capital of the new state of Thuringia, an amalgamation of the former eight small Saxon duchies and principalities. When they were united in 1920 their 'Credit and Mortgage Institutes' were also taken over by a new State Bank for the one and three-quarter million inhabitants. I went to Weimar to take up the job of a Finanzrat at this bank. However, instead of settling down in this job, I decided to join another institute which fitted into this sleepy little town like a jet motor into a horse cart: the Bauhaus.

Weimar had an academy of music, a gardening academy, both largely for daughters of respectable families, and a great number of finishing schools, whose crocodiles could be seen in the park in single or double file under the eyes of their teachers. That some of them left their rooms by night through the window or had nocturnal visitors was known but ignored; these institutes were respectable. At one end of the town was the old Academy of Fine Art, modernized and rebuilt by van de Velde just before the war. After the war the Thuringian government was a coalition of social-democrats and democrats; for not all Thuringia was Weimar. There was industry at Gotha (cars), Ohrdruf (guns), the famous Zeiss works at Jena, the world's greatest toy industry at Sonneberg, potteries at Kahla and in a Prussian enclave the Olympia typewriter factories and electrical industry. It was this Government which accepted the Bauhaus, or rather the conversion of half the academy into the Bauhaus.

Few people at Weimar ever understood the Bauhaus, but what they saw was enough for them:

the Bauhaus teachers did not call themselves 'professors,' and they were Russian, like Kandinsky, or Hungarian, like Moholy Nagy, or Swiss, like Klee (not so bad, if he had not painted like Klee). Also, they dressed in a very peculiar way, not at all like anybody else, and the students played their own variations on Bauhaus dress. The students were mainly Germans, but there was a sprinkling of Hungarians (with Breuer), Poles, Esthonians, Latvians, Czechs and others, and what they did was what Hitler later called degenerate art. The Weimarers, advancing on their way to National-Socialism, took a poor view of all this, and those who considered the Bauhaus all madmen were perhaps among the most sympathetic.

My arrival coincided with the first Bauhaus Exhibition and I was soon invited to the Saturday and Sunday dances at the hall of the Ilmschloesschen restaurant at Oberweimar and at the little country palace of Tiefurt, to which occasionally also students of the old academy went and where the jazz band played, with all the instruments now fashionable again: the 'devil's violin' (a broomstick fitted with a herring tin, strings, bells and cymbals), drums, etc., and even a gun. On the way back to Weimar sometimes ghosts appeared in the old Goethe Park, students disguised in a sheet, frightening late lovers. There were also Wednesday dances in the comfortable house and garden of Determann, a former student of the Academy, who had large strawberry beds with the help of which I concocted a drink of champagne, wine and fruit. At other times there was always beer because Determann had inherited shares in a brewery and got his beer in addition to his dividends.

The art of the Bauhaus masters was quite new to me. I liked Feininger, Kandinsky, Klee and Schlemmer. For a while I lived in the same house with Klee and was allowed to listen when he played the violin accompanied on the piano by his wife. I could understand what he painted and still remember how, in order to finish a picture he was working on, he announced to me that now he would put a little bird just there—and there it was singing up the picture from its corner. I also remember a student who was a confirmed cubist but to my delight painted a completely naturalistic still-life and portrait when he was in love. Certain doubts about the omnipotence of cubic forms came to the surface occasionally. I remember a picture made by a Bauhaus student which showed two completely cubic buildings, a tight-rope in between and on the tight-rope a sphere, and on the sphere a naturalistic nude. Out of one of the windows van Doesburg—an actual photograph stuck on—was looking in amazement at the daring of introducing into art anything which was not made up of right angles.

As far as I was concerned it was the workshops rather than the studios which thrilled me with their bold approach to problems. The master of the sculpture workshop, for instance, invented a set of functional chess-men which would all push into a box tightly like building bricks. The pawn was just a small cube, the bishops were two diagonals according to their moves, the queen was a ball on a cube to illustrate command in all directions, and so on.

So it will be understood that I felt tempted to become Syndikus of the Bauhaus when I was offered the job, even though the salary was lower than what I had at the time. The situation into which I plunged was unpromising, more so than I at first realized—both for political and financial reasons. The political change had come in the winter of 1923–4. Hitler's beer-cellar *putsch* in Munich had failed. But shortly afterwards Bavarian right-wing organizations began to prepare for a march on Berlin. The left-wing Thuringian government, in co-operation with the Saxon government, organized their police force and volunteers to resist it, whereupon the army declared the Saxo-Thuringian plan to be a revolt which had to be put down, and occupied Saxony and Thuringia. Their governments collapsed, and the new Thuringian government was nationalist to Nazi, and hence of course anti-Bauhaus.

I believed this government would not stay long, or else I might not have stayed; for even before the change the administration of the Bauhaus had not been a specially gratifying job. My predecessor Emil Lange, an architect, told me that he did not like the business management and that he wanted to go back to building. That he had also written the following letter to Gropius I did not know (because I was at the time back in Berlin):

'Since October (1923) I have done my utmost to further the development of the Bauhaus. Co-operation which should have been a matter of course on the part of the government officials, notably the Department of Finance, has not been forthcoming; the attitude shown by superior officials is malevolent, obtuse and so inflexible as constantly to endanger the growth of the institute; furthermore this attiude has entailed financial loss. Until recently it was possible to avert the most pressing dangers, but since the advent of the new government the official attitude has changed into open animosity.'

In spite of all this I accepted the impossible job in June, 1924. The Bauhaus budget had always been very low. At the beginning, in 1920, it had only been 206,000 marks, at that stage of the inflation barely £6,000, and since then had gone up less than the inflation and always too late. How could a school of two hundred students and about twenty masters be run on such a budget? Moreover, the State Bank which, thanks to the foresight of its young president, had received as working capital at the beginning of 1923 the value of 20,000 Goldmark to remain calculated on a basis of gold, whatever happened, and which consequently had ample reserves left, was not wholly sympathetic to the Bauhaus. Some of the officials, no doubt recognizing the coming of the Nazis, became openly hostile. I had been told that the Bauhaus had an open credit of 20,000 marks, but I found that the credit was exhausted. Even such social contributions as health insurance had to be paid by cheque on a Saturday or from my own account and I had to see to it that something was in our account on Monday morning! It was a tricky business, and Gropius was too much engrossed in the ideal aspects of things, and especially with the practical running and the complex

relations of master with master and students with masters, to make an attentive listener to financial intricacies.

Politics and finance could never be separated. The local press attacked the Bauhaus constantly, as well as myself, since I had repeatedly opposed Nazi propagandists in meetings and helped in organizing the defence of Thuringia at the time after Hitler's *putsch*. They also knew that I had written memoranda against idiotic economic plans of Nazi members of parliament. I had been threatened with prosecution for slandering the army and escaped only by telling the prosecutor that I would make this case into a huge 'show case' which he did not like. At one mass meeting Baldur von Schirach, later *fuhrer* of the Nazi Youth Organization, attacked me and I hit him in the face.

So, once again, it was not a promising situation when I started, and we soon decided to make an effort to get the Bauhaus away from the influence and the budget of the State. It was a plan to raise money privately and put the Bauhaus on a purely business basis, so that only the salaries of the personnel would be paid by the State. Gropius went with me to Berlin, and we tried everywhere to soften the hearts of bankers and other capitalists. We were offered at one place considerable sums in the form of loans that somebody had paid to some town and which were now about 40-50 per cent below par. In a few years' time we would have had to pay them back at 100 per cent which, of course, was impossible. Otherwise the tenor was: 'We are banks, not benefactors.'

The idea behind our proposals had been that we would produce prototypes for industry against licence fees. We had a few objects in mind which I had had registered, though not patented, because we could not find the money for full patents. Among possibilities were a table-lamp made of very simple components of metal, glass or even plastics with a perfectly semi-spherical shade, then our chairs (machines to sit in) and a coffee machine, and pottery. I even sent a small vase to a commercial pottery for reproduction (at our expense) to find out at what price they could be manufactured and sold. The result was depressing: the machine work was not up to our standard, the body too thick, the glazing definitely bad.

Our workshops had already achieved a high standard of quality but our costs were high. Our students were mostly poor and as, according to Bauhaus principles, students were apprentices just like apprentices in the trade, they had to be paid wages for their work, although they were mostly learners and as such they needed more time. It was, therefore, difficult for us to sell through shops. Only buyers actually interested in the Bauhaus gave us a chance—which did not come too often.

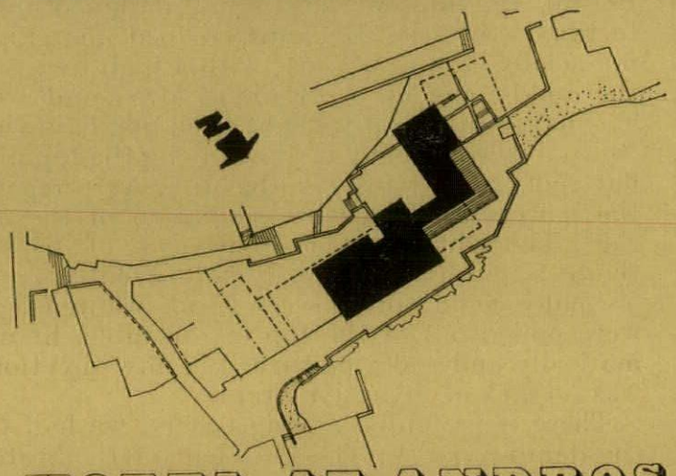
If the Bauhaus had been in a town where a number of major private or public buildings were going up, it would have been possible to fulfil the prime aim of the Bauhaus to demonstrate architecture as the mother art and all the fine arts and crafts working around and for her. The only time that this aim could be achieved was the Bauhaus Exhibition of 1923 with the *Haus am Horn*. It was designed by Muche, a Bauhaus master, and furnished with mostly built-in furniture, carpets, rugs and light-fittings all made at the Bauhaus or, when this could not be done, at least to Bauhaus designs. Practical building was not yet done at the Bauhaus and the great contractor Sommerfeld of Berlin, who himself had a house designed and partly furnished by the Bauhaus, helped materially and financially. It was a house with a high living-room in the middle and all other rooms lower and around it. The living-room got its light from one bay window to 'the outer world' and windows along the top under the flat roof. (Flat roofs, by the way, were regarded by the powers as a barbaric spoliation of the countryside.) The lighting made extensive use of strips and for the bedside tables somebody had invented lamps that normally could not be seen. If one wanted light they were pulled out of the top of the table, lit up automatically and could be turned in any direction: there was no lack of inventive brains.

There were faults; among others, we had to re-do the damp-proofing. The president of the State Bank, incidentally, wanted to buy the house for me, as the bank was under obligation to find me a place to live, but it turned out to be too expensive. The Bauhaus as it was at Weimar was necessarily incomplete, and Gropius himself said in 1923 that the goal of the 'Great Buildings' would still be 'far away.' The Bauhaus had no real building department and made use for practical and teaching purposes of Gropius's own architect's office, which was in the Bauhaus. It was also not complete in another way—and in my view it would not have been for a long time to come: the workshops were under a dual leadership: design masters and craftsmen masters. Men equally competent in design and craft could only come forward gradually as they went through the whole Bauhaus training. Breuer is such a one. He went through the cabinet-making shop initially. But Weimar offered little for all such developments.

So it was a piece of great good fortune when the Bauhaus was offered a new home at Dessau, also the capital of a former German duchy, but with much industry: aircraft, machine, railway carriages, etc. and about 90,000 inhabitants. Here, where the industries needed new buildings and new housing, a complete new Bauhaus was to be built, with houses for masters and students. But the budget was not even as high as in Weimar and when I saw the models of the new Bauhaus building I made up my mind not to go. Frankly I did not believe that the budget would cover even the costs for lighting and heating of buildings with this amount of glass. Also I knew that Dessau wanted a local man in my job, and I disapproved of the plan to save some money by combining at this stage the positions of craftsman master and design master in one person. I stayed for another six months at Weimar to help Bartning in the task of remodelling the school into a combined Academy of Arts and Crafts in conjunction with the old Academy, but I did not see him often and nothing had yet happened when I left. The next day I saw a large demonstration of workers going to the ministries: I joined them and showed myself to the officials of the finance and the education departments who had gladly accepted the new Nazi government. After that my stay was limited.

Considering the large numbers of people who visit the country in the summer, Greece has always been poorly provided with hotels. The situation has, however, been improved in recent years by a Government-sponsored programme of hotel building, through the Xenia organization, which has constructed a number of small tourist hotels and motels, chiefly on the seacoast and the islands, open only in the summer months. The architectural quality of these is remarkably high. A group of the Xenia motels was illustrated in the AR in December, 1961. On the following pages are two hotels that form part of the same programme, one on the mainland and the other on the island of Andros.

ON THE ÆGEAN SHORE



HOTEL AT ANDROS

ARCHITECT: ARIS KONSTANTINIDIS

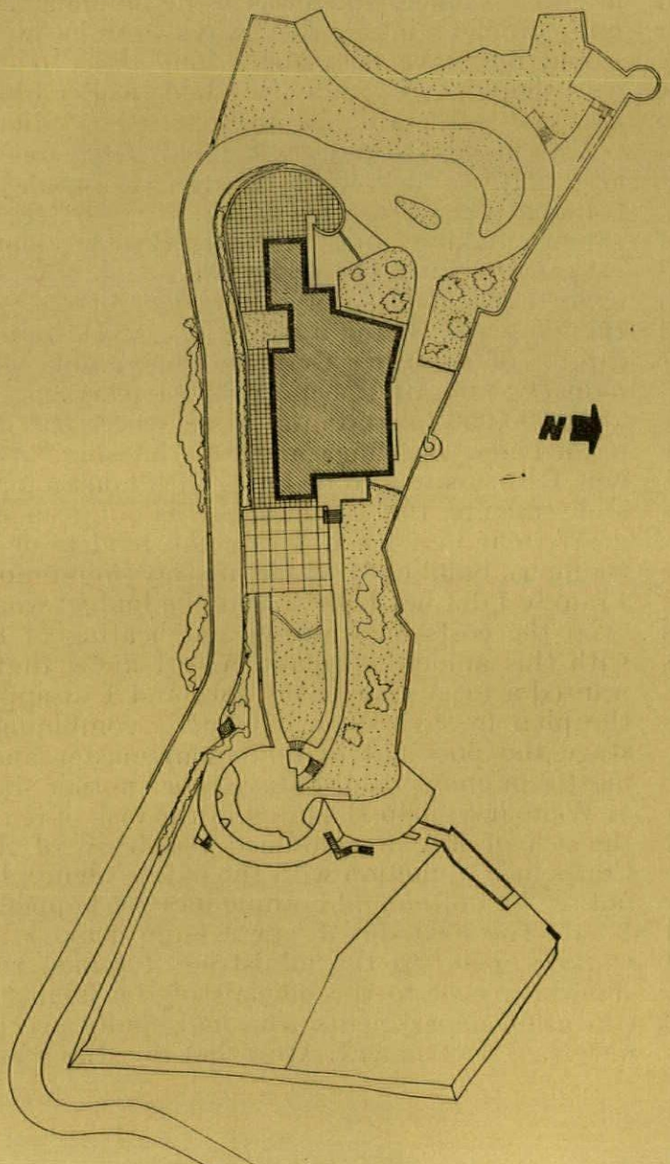
The hotel, which has 44 beds, is situated on the north shore of the bay of Andros (on the island of that name), with its own beach and little harbour. There are two wings, connected by a glazed lobby. One, parallel with the shore, has two floors of bedrooms; the other has the reception and kitchen on the ground floor and a restaurant seating 100 above. This extends on to an open-air terrace, made possible by the slope of the ground. There are single and double bedrooms, the latter with balconies facing the sea, which are protected from northerly winds by glass screens. Since it is only open from May to October, the hotel has no heating.

The building has a reinforced concrete frame, painted white, based on a 13ft. by 13ft. grid. Infill panels are brick, plastered in strong primary colours. Use is also made of marble and natural stone. Balcony railings and partitions are iron, painted black.

1 (facing page), the hotel at Andros from the north.

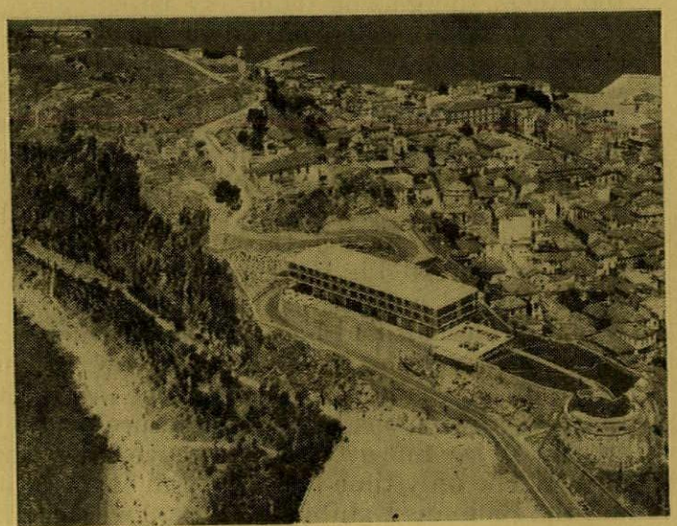
HOTEL AT NAFPLION

ARCHITECT: YANI TRIANDAFILIDIS

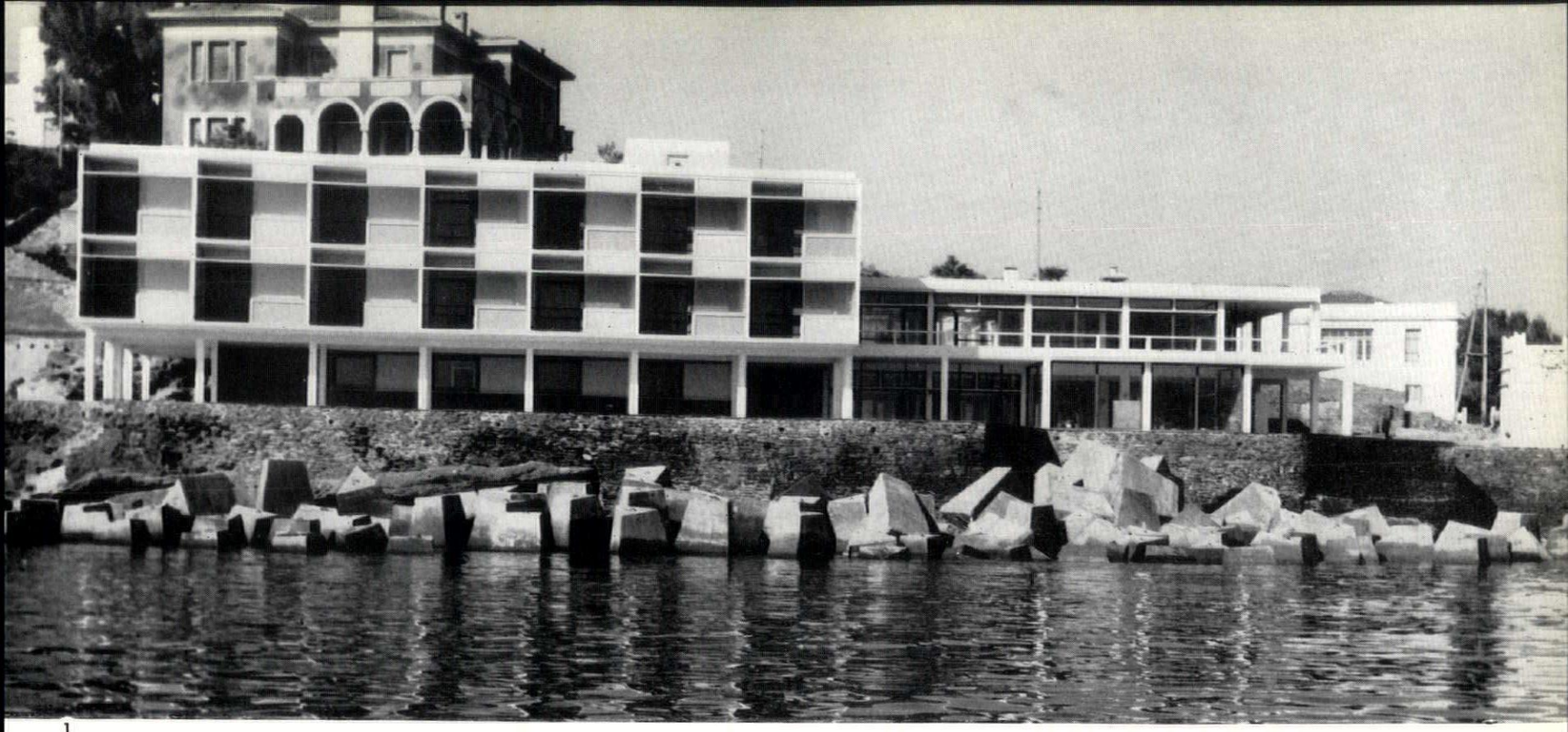


This hotel, which has 40 double rooms and 18 single rooms, stands high above the sea on an old Venetian fortification. Its rooms face either the open sea to the south or the bay—with a view of the old town—to the north. The building is set back about 14ft. from the south wall of the fortification, leaving room for a wide terrace on to which the lounge, bar and restaurant open. At the eastern end, adjoining the restaurant, is a pergola for open-air dining and dancing.

The building has a concrete frame, with the edges of the floor-slabs, the perimeter beam above the ground floor and the ground floor columns faced with white terrazzo. A suspended ceiling over the whole ground floor gives accessible space for services. Metal windows on the ground floor slide fully open. Balcony grilles are of precast concrete, painted. The pergola is of concrete with a white terrazzo aggregate. It has movable canvas awnings



2, air view of the hotel at Nafplion from the south-east.
3 (facing page), the approach to the hotel from the north-west.

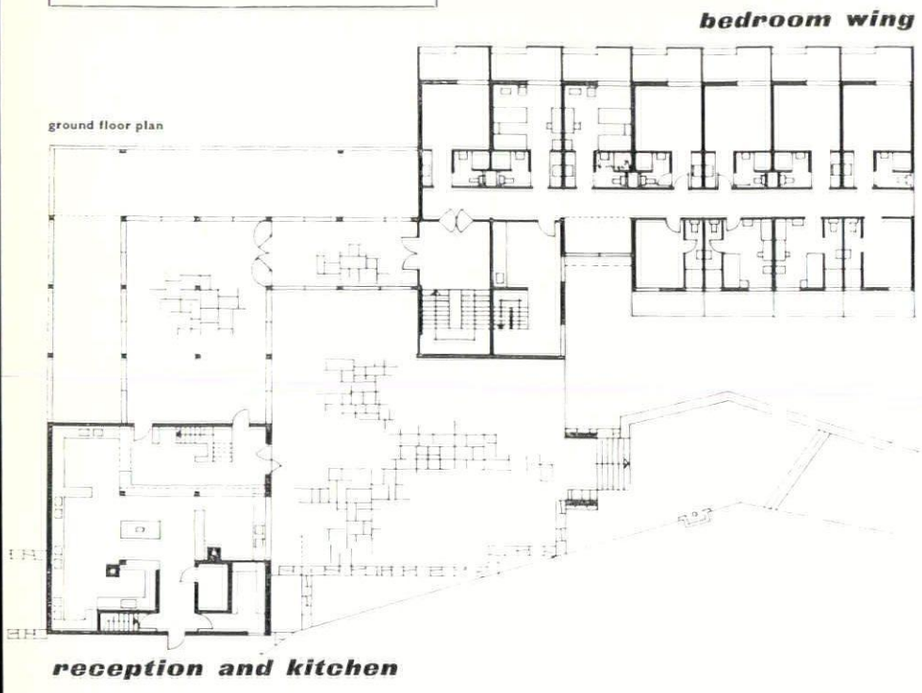


1

3



HOTEL AT ANDROS





4

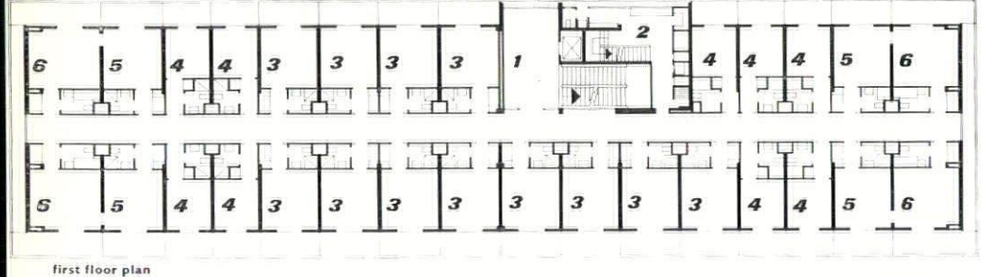
4, from Andros harbour. 5 (facing page), the restaurant block from the west.

HOTEL AT NAFPLION

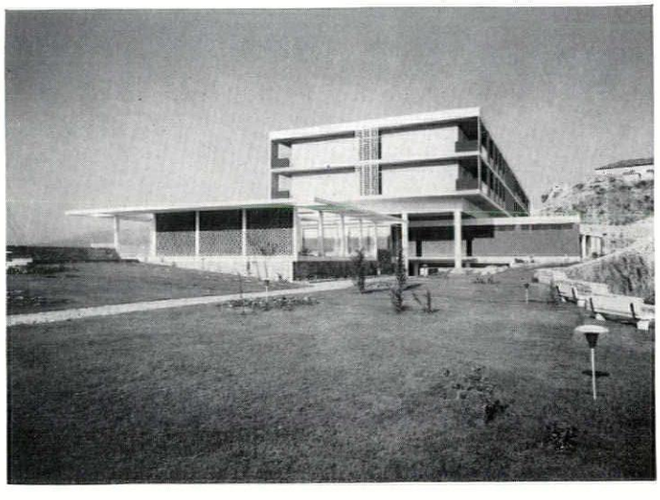
key

ground floor
1. entrance
2. lobby
3. reception
4. bar
5. lounge
6. terraces
7. offices
8. manager's room
9. switchboard
10. baggage
11, 12. rest rooms
13. staff cloak rooms
14. service entrance
15. service yard
16. receiving control
17. staff dining room
18-25. kitchen
26. dining room

first floor
1. lift lobby
2. service
3. double studio room
4. single studio room
5. twin bedroom
6. corner studio room

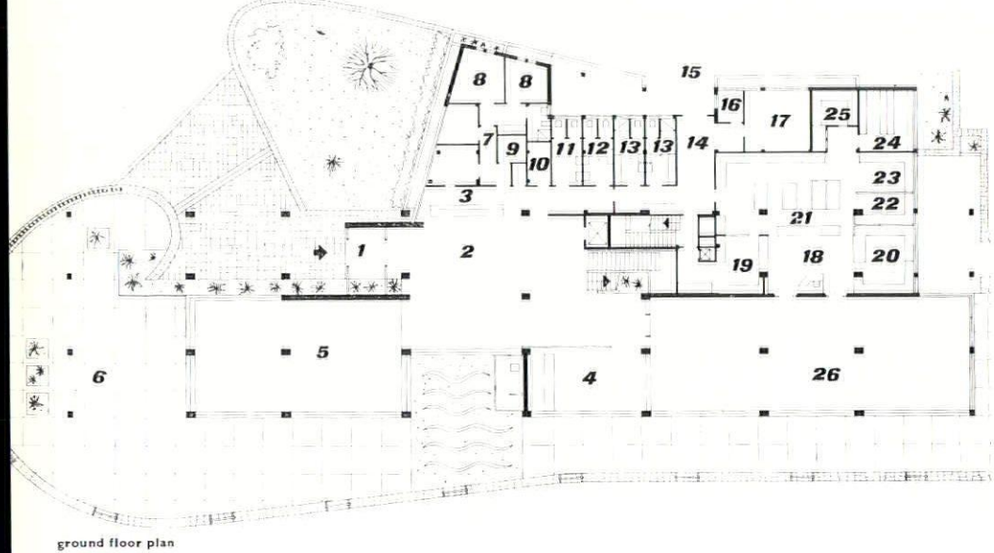


first floor plan

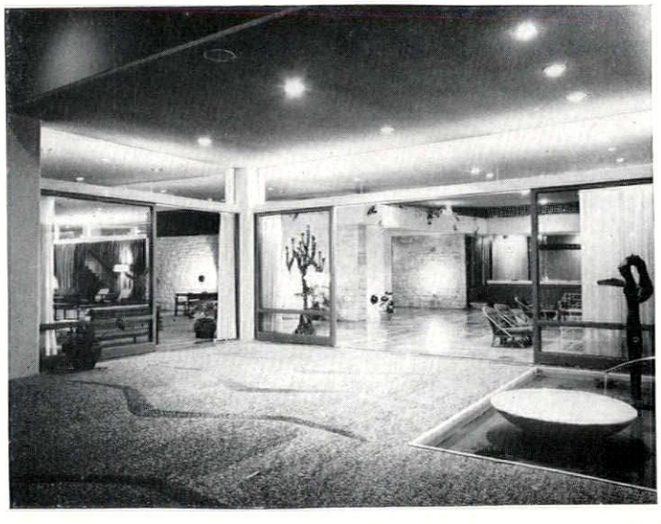


6

6, the hotel at Nafplion from the east, with the pergola in front of the main block. 7, the entrance lobby. 8 (facing page), from the south, with the walls of the old fortifications in the foreground.



ground floor plan



7

9, the restaurant of the hotel at Andros.
10, looking along the south side at Nafplion, from the pergola.

for criticism see page 211



9

10

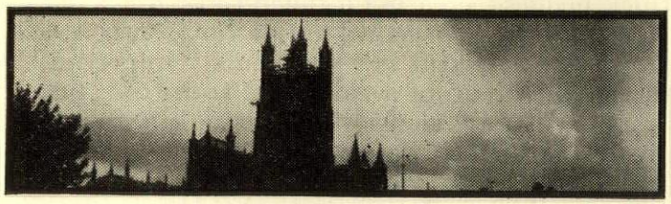


HOTEL AT ANDROS

HOTEL AT NAFPLION

Ian Nairn and Kenneth Browne

CATHEDRAL CITIES



'Worcester is at last to have a practical memorial to its great composer, Sir Edward Elgar, with the building soon of a six-storey office block on waste land in front of Shrub Hill Railway Station. This new landmark will be named "Elgar House" and forms part of a development project planned by Queensbridge Investments Limited, of London.'

WORCESTER EVENING NEWS

Mellow stones, quiet streets and the greensward: the English cathedral city, beloved of travel agents, crocketed dollar-earner. The picture is still true, today, provided you don't swing the camera away from the selected views. But it is only part of the truth. An equally just emblem would be terraces of broken-down cottages, about to be cleared for a car-park. Or a good up-and-down part of the main street being bought piecemeal by a property company with a high-sounding name so that it can remove the whole thing and replace it with the kind of comprehensive scheme the AR publishes every year in Preview.

These things are happening everywhere; but what may be unfortunate in a Midlands industrial town becomes a disaster in a cathedral city. There, of all places, the tolerance and diversity of old England is an essential foil to the homogeneity and order of the cathedral. A foil visually in the obvious sense, a vital foil in temperament too.

The angularity—still the same as in those cantankerous faces that peer down from fourteenth century roof bosses—is something which has got to be preserved from the smooth platitudes both of traffic circulation (roundabouts and regular rows of cars) and of redevelopment (straight frontages, childlike geometry and a sloppy slab or two). Without this per-

ceptible tension between church and town—between law-giver and law-breaker, if you like—then the two cease to interact. The place stops being a cathedral city and becomes merely a town with a big church in it.

As a matter of fact, one cathedral town was planned to be formal and regular from the start. And as a result, town and church at Salisbury have never grown together. There is a famous close which might as well be anywhere, and there is a decent, dullish little checkerboard town, and never the twain have met, in eight hundred years. Short of rebuilding the place completely, they never will.

Now the consultants' recent report on Salisbury* called this empty diagram 'one of the finest examples in England of medieval town planning.' It is part of the same process that makes every old building a good building, but also of the childlike faith that a simplification and rationalization is a good thing in itself. Which brings us back to the developers and *their* diagrams. It is that old deceiver, the intellect, trying to produce a simple solution where only a complicated one will do.

German bombs gave this literal simple-mindedness free play in one cathedral city—Exeter—and the result there is a nightmare: the close 'opened out,' the main streets straightened, the frontages made uniform, Surbiton-on-Exe. On the other hand, bombs at Canterbury provided the chance to show that angularity and individuality could be interpreted in modern terms. If it was not completely successful, it certainly led the way. And more recently, a single shop rebuilding there (Nason's, by Robert Paine and Partners) has provided an example which ought to be a compulsory visit for every developer and planner preparing to cut loose on a cathedral city.

Somewhere between the total failure of Exeter and the total success of Nason's are all the parts of all the other cathedral cities. The REVIEW has chosen six to give a cross-section. One of them is Salisbury, which turned out to be the wildest kind of special case. Of the others, one is in real peril. This is Worcester, and, tragically, it is the place with the most subtle and satisfying relationship of all between town and cathedral. Gloucester has a good consultants' plan which the developers seem prepared to ignore; it could soon be just as badly off. Chichester has wrecked its south-western approach, from the countryside, with a thoroughness that would be unexpected in the dimmest of industrial boroughs. But two of the cities are more than hopeful: Winchester through what seems to be an exceptionally happy relationship between college, cathedral city and consultant; Hereford—where very little has happened yet—through an extremely sensitive town plan. These two, with luck, might leave the twentieth century more deeply expressed than when they entered it.

This *affaire* between town and church is the core of the problem of realizing the cathedral city, and its shape changes with each one. But all have several things in common, and before looking at the differences it would be as well to put down the similarities.

1. *A big building which must be dominant.* Self-evident, maybe. But as Londoners now know to their cost, this means care over any tall building within sight. A point block of flats at the other end of town might do irreparable damage to one of the most vital views. And it is not a straightforward problem. Winchester, being a long low building lying across a valley, is not compromised by the blocks of flats and the County Hall, put up on the eastern and western slopes respectively. But a comparatively low slab down in the town, inoffensive in Worcester or Salisbury, might do it serious damage.

2. *Approaches.* Most have been spoilt already. Those that can remain should be scheduled as rigorously as the parts of the cathedrals themselves. Worcester, for example, has just one point on the south-western approach, from Malvern, where the cathedral is seen in the distance across fields, although private housing is creeping down the road to meet it. The eastern view of Salisbury, from Southampton, has been ruined since the war by an idle and inessential tangle of subtopia. Even now, the balance could be restored by tree-planting. The very worst bit of the scarifying drive into Gloucester from Wales could be mended by removing one lamp standard and a clutter of signs. These things are elementary and should be the first charge of the cities and their planners. To put it no higher, cathedrals are now big business.

3. *A green quadrant.* The bulk of the cathedral blocked any development behind it, away from the city, until the twentieth century. The result was always a green area, and occasionally real countryside—the best example, Westgate Fields at Chichester, is just about to be carved up. Only Gloucester walled in its cathedral with houses in the nineteenth century, and here slum clearance gives the chance to recreate the slower, leafier tempo which is needed as an extension to the cathedral precincts and as a foil to the bustle of the other three parts. This does not mean opening out, or turning the place into a public park, with rose beds copying the rose window; it does mean building up long stretches of wall, planting big trees and thick hedges—creating a place to be quiet in.

4. *Car parking.* Cathedral cities have two special problems. One is that it is as spiritually important to use all the back land of a cathedral town to a proper (not necessarily high-density) purpose as it is economically important to do so in London. Nothing is worse than acres of droopy car-parking behind each main street, which is Chichester's problem. So the car parks have either to be so thickly planted that they can become public parks, or they must go underground or become multi-storey and release more back-land space for better uses. Indiscriminate roof-top parking as proposed by the developers at Gloucester would be disastrous.

The other problem is that, as well as all the congestion natural in a local centre, there will be an extra need for car parking purely for tourists. This can be used as another excuse for swamping the close—as at Gloucester, where there are saloon cars just about inside the south porch—or else it can be a means of revealing the town to the visitor. The best example is Winchester, where a bad asphalt park in the close is being replaced by a new hotel, and the main car parks, though only a few yards away, manage to lead you through the town before you get to the cathedral.

* Draft Report on the Redevelopment of Salisbury City Centre, by Max Lock & Partners.

These sequences could be every bit as artful and exciting as the driveway winding through a Repton park (see page 176).

5. *Town houses.* All cathedral cities have a few town houses in the close. To balance them, the town has a special need to put houses in its own back land—and, incidentally, to make the houses part of tight continuous streets rather than buildings-in-landscape, however nice. Some of the cities are doing this in their slum-clearance; but there is a big need, too, for modern terrace houses for sale. Chichester, Winchester and Gloucester would seem ready-made for Span or a similar firm.

6. *Through traffic.* Through traffic must be taken right outside—and not, as Worcester is about to do, round a roundabout just outside the cathedral door. Every journey into these places should mean something, not simply be a stage on the way to somewhere else. But local or market traffic is another thing, part of the tension—town *vs* close—bustle *vs* quiet. To channel it all round an inner ring-road may make the centre too peaceful and may also lead to an inorganic sealing off of the centre from the outskirts. More than most, cathedral cities are a matter of wedges and lobes, not tidy concentric areas.

7. *Join of city and cathedral.* A vital area, the quintessence of the relationship. This, rather than the high street or the close, is where the town must run at the highest voltage. Every opening and every building counts. The last thing that is wanted is a drastic reduction in the voltage by opening out, the crooked made straight. Worcester had a wonderful relationship, both direct and subtle, which is about to be compromised for a bit of developers' development. Hereford, first opened out in well-meaning stupidity in the 1930's, has just been insulted by a new building in the worst tradition of mealy-mouthedness. The combination of this with the spiritless west front of 1902 is leaden anticlimax where there should be a culmination. New buildings should increase the suspense and contrast, not deflate it.

8. *Redevelopment.* This is the heart of the problem. A traffic improvement may impair a cathedral town, but one big slice of developers' hack-work could obliterate it. These towns depend, without any possibility of compromise, on an angular and irregular street line. Developers' architects, by temperament, training and economic pressure, design in smooth swathes. The two are absolutely incompatible, and there is no room for give and take. Development companies don't move into a town for peanuts or to make a tax loss. If they want to make money out of Winchbury or Canterchester they must be prepared to build in its pattern.

The problem can be solved in three ways. One sounds like a *non sequitur*—not to let the developers in. Yet it is quite viable. Most of the schemes are the result not of a commercial *fait accompli*, but of the council itself buying the land and then selling out. It is one more example of chasing the chimera of comprehensive development which may be suitable in some places, but is completely wrong in a cathedral city. The best thing is to leave the old rhythms of piecemeal change, but to exercise the kind of control which enriches instead of stultifying.

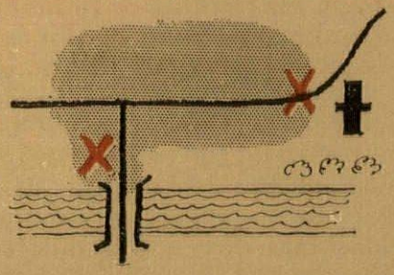
The second thing is for the city to act as its own developer, as Coventry has done and as Winchester did in despair in St. George's Street after they had put the area out to developers and got nothing but banality for their pains. In that case, the designers will certainly have a stake in the town, rather than it being simply another unit on the assembly-line. It also enables the town to hire, if they wish, a firm with some self-respect, as Winchester did with Sir Hugh Casson. But it needs a designer of Nash's calibre to design the necessary jagged up-and-downness without seeming affected. And the up-and-downness, to say it yet again, is absolutely essential, the one necessary thing for any cathedral city and most other county towns, too.

The third solution sounds too good to be true. Yet it is being used as a basis for negotiations by the remarkably enlightened planning office at Hereford. It is simply that the existing street frontages are kept and the back land redeveloped with multi-storey parking and new pedestrian arcades. The townscape energy in the block is concentrated rather than dissipated, the old streets remain and can be rebuilt piecemeal when they need to be, and not before.

These are the similarities. They are applicable not only to the disparate collection of towns lumped together as cathedral cities, but to every small British town which depends for its essence on individuality rather than uniformity. These are high stakes, and all the comprehensive development in the world will not compensate for the loss of the up-and-downness which is as much a part of the British character as it is of her market places. The Smoothies are abroad in Barchester—developers, councillors, planners, architects and churchmen. They need watching.

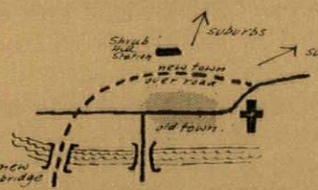
the individual threats and promises of six cathedral cities are shown on the following twelve pages ☞

WORCESTER

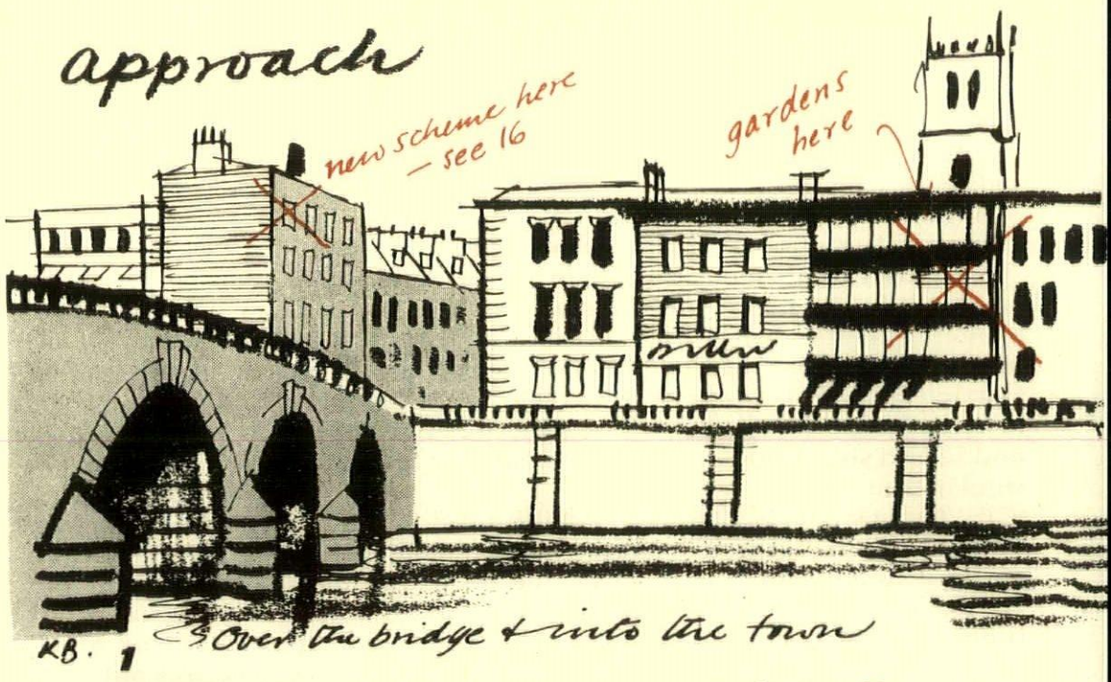


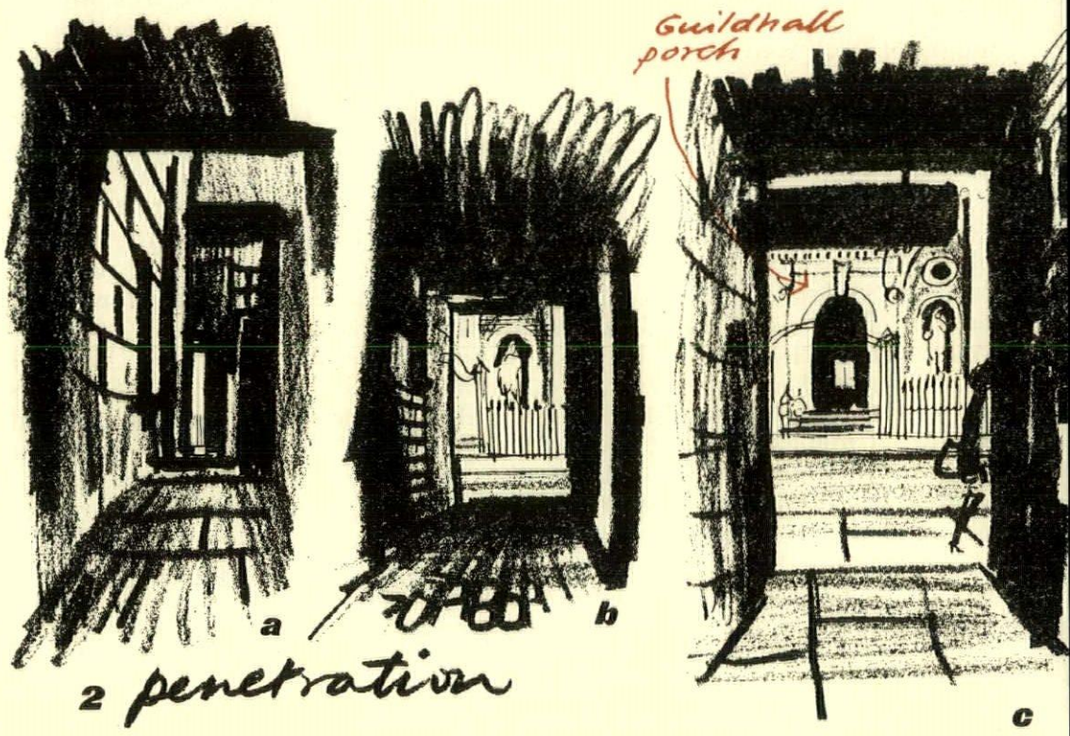
Worcester is in real peril. This most subtle and complex of cathedral cities, with a flavour that is sometimes more Italian than English, ***6***, is menaced by a fearful combination of insensitive local planning and crude developers' schemes. Insensitivity in driving a boulevard called Deansway from bridge to cathedral, ***17***; in allowing housing to creep down towards the best distant view, from the south-west, ***12***; in providing lunatic set-backs to what was a close-built street, ***15***; in permitting old buildings to be cut down to size in the High Street, ***11***—unlike New York, Worcester gets smaller and smaller all the time. The architects are not to be outdone in the race to see who can ruin the town first, ***14***. And when planners and developers combine, the townscape is slaughtered. At the monent, High Street meets the cathedral side on, sharp and exciting, ***3***. A simple, direct approach, but not inflated or dull: suddenly meeting your Maker when you expected to find your mistress. This is to be cut back and emasculated, ***4***, in a banal scheme, ***9***, which will drag the space open, drape it with limp buildings and still maintain the flood of cars a few yards away from the cathedral, ***10*** and ***13***. Another scheme, still tentative, would take away the left-hand side of the dramatic built-up bridge approach, ***1***, (the city itself wants to remove most of the right-hand side to extend a garden). The developers' proposals are on display, ***16***: the usual stuff with a set-back street-line and a slab or two. There is nothing to suggest that the city sees anything wrong in this.

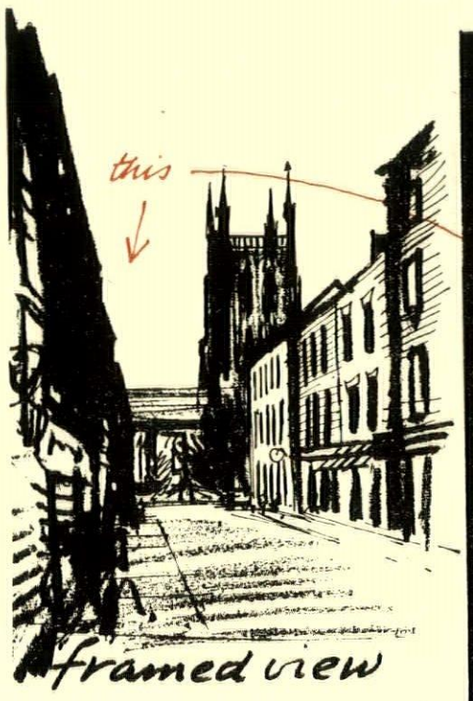
If Worcester does not get a completely new plan, it will go under. It is attempting to take Midland overspill to make up the population so that it can keep the county borough status (the present population is 70,000). In many ways it has the feel of a big city, and a rapid increase might be its salvation, if the whole city centre moves eastwards

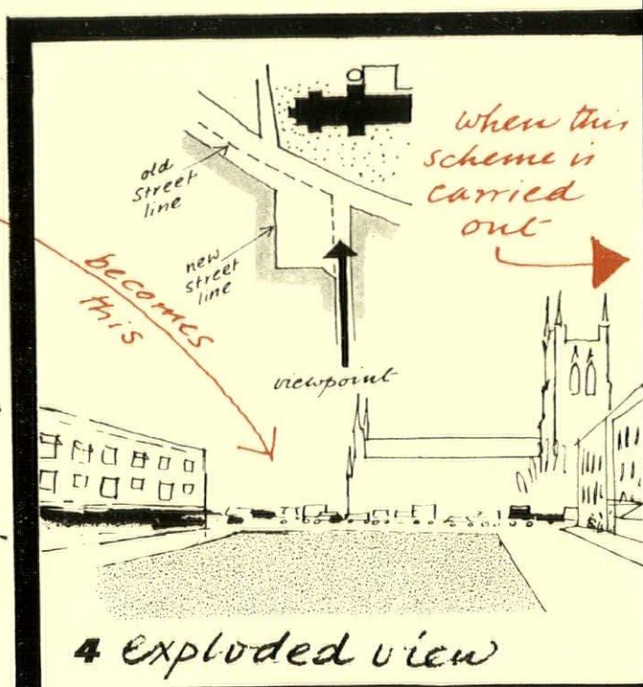


above an urban motorway which would link with a new bridge across the Severn, already planned. Then the old town, free of traffic, could conserve its wonderfully delicate virtues, far more engrossing than Salisbury's obvious charms: the cathedral above the river, ***5***, the quiet houses outside the close, ***7***, the subtle come-on of the view into the close beyond the deanery, ***8***, the tantalizing sequence up an alley to the Guildhall, with glittering baroque detail puzzling the viewer until the very last minute, ***2a-c***. St. Swithin's seductive facade, not quite central in a gently curved street, ***6***, is an epitome of one of the most intriguing towns in England. See it quickly, before Worcester is ripped apart.

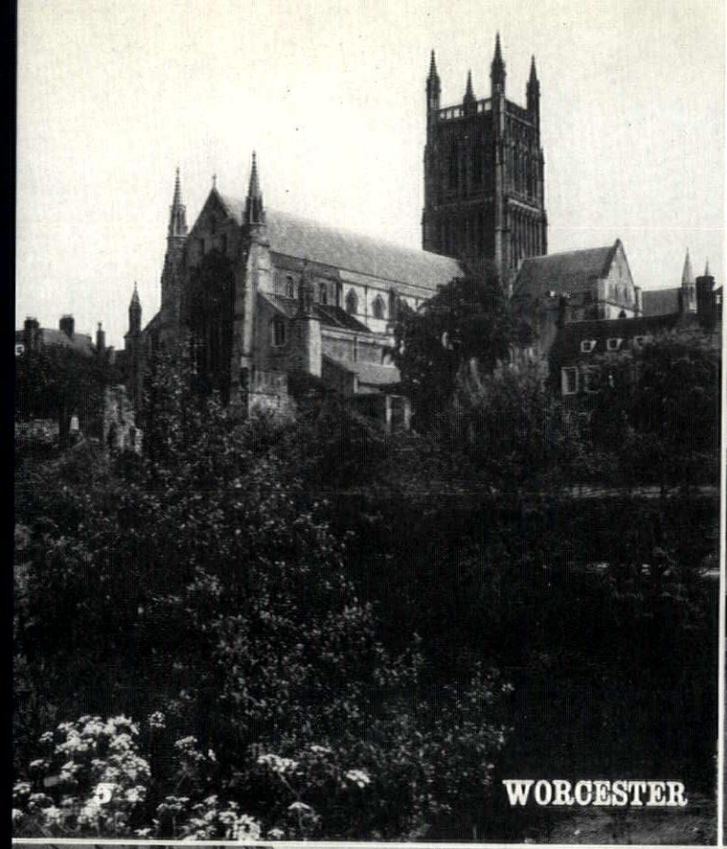




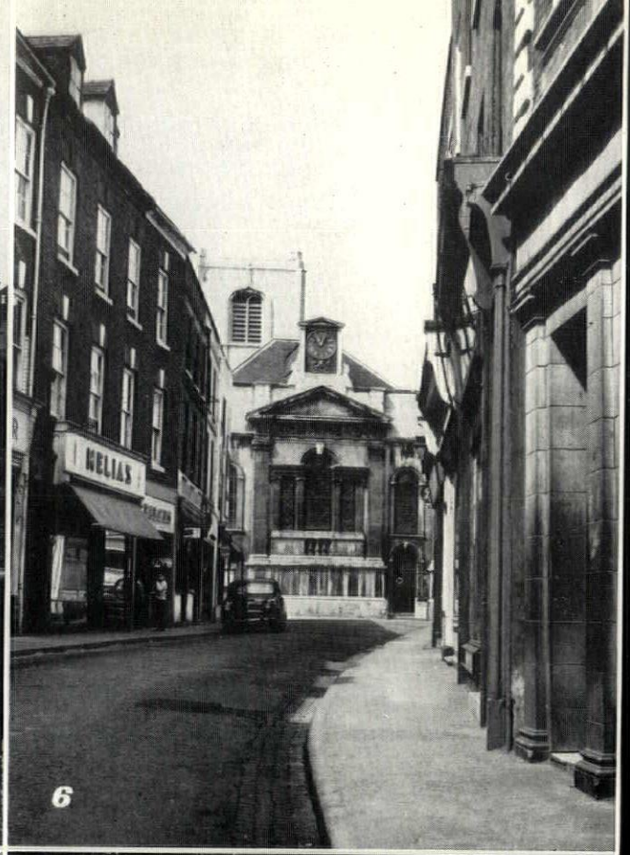




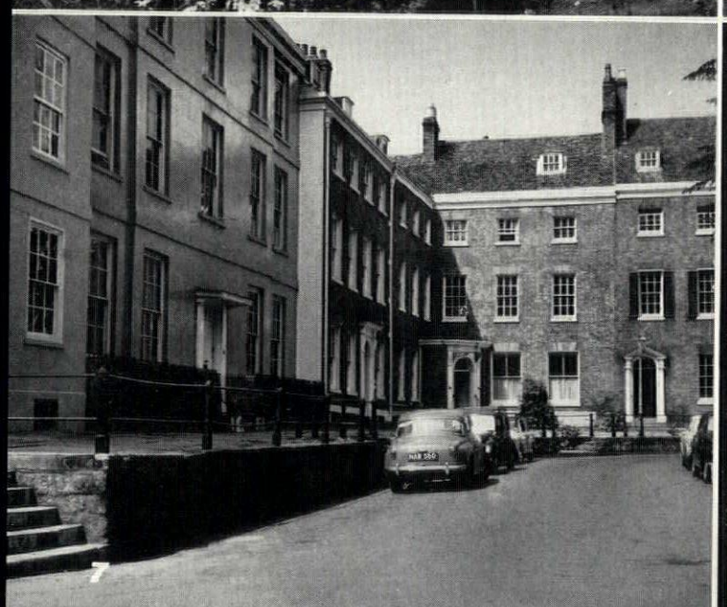
erosion



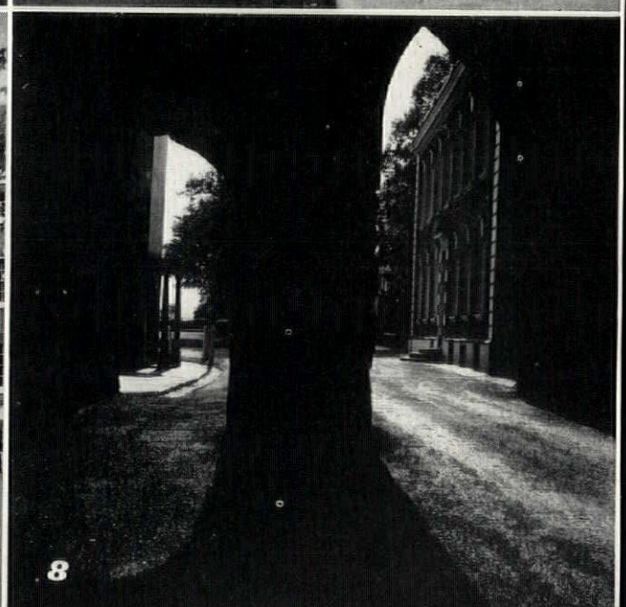
5



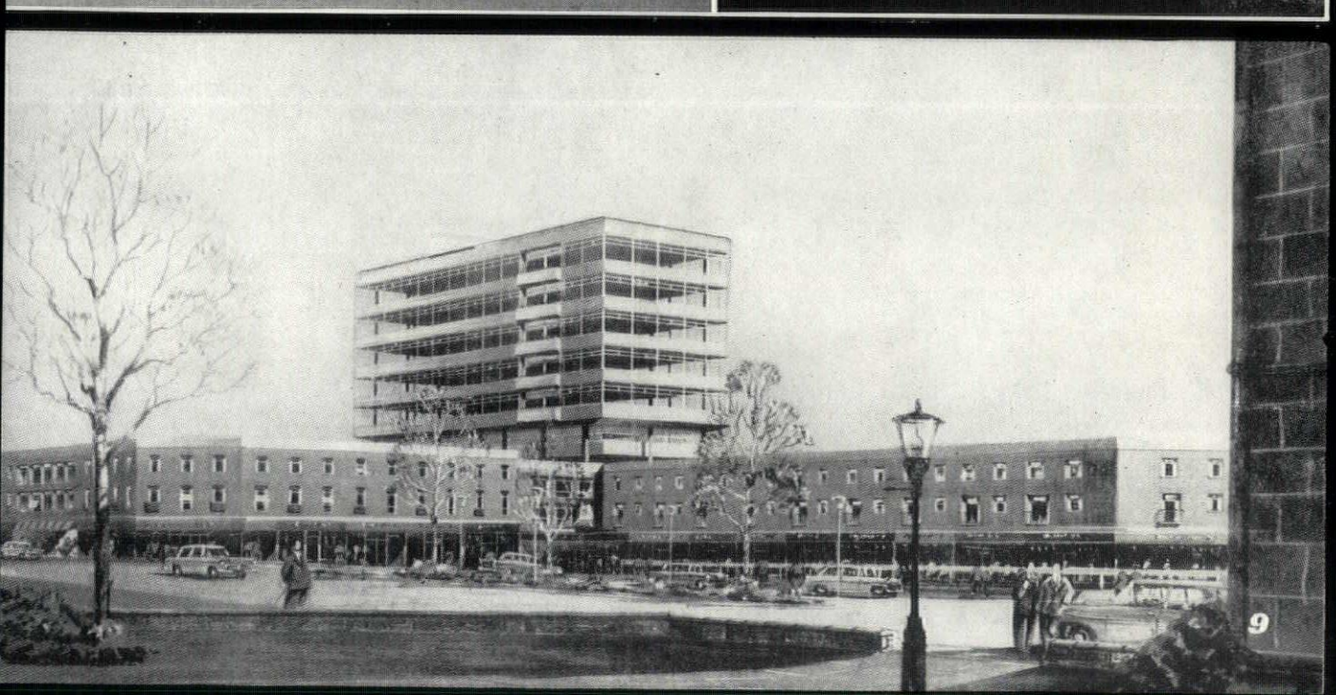
6



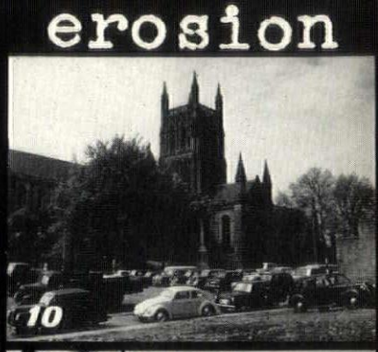
7



8



9



10



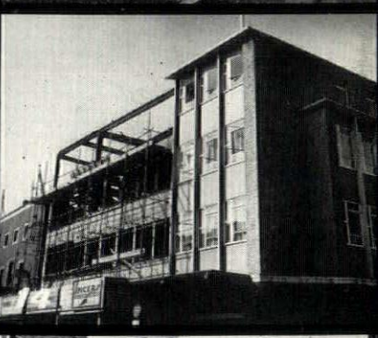
11



12



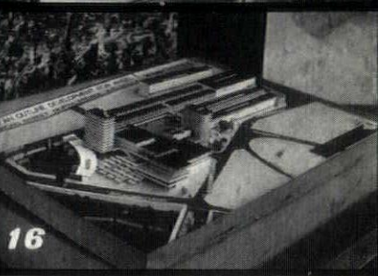
13



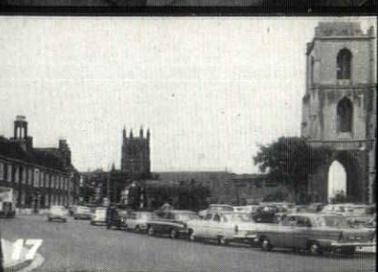
14



15

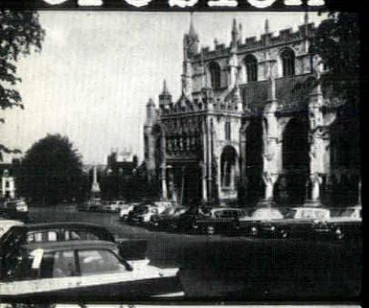


16



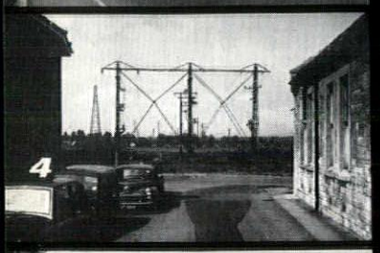
17

erosion

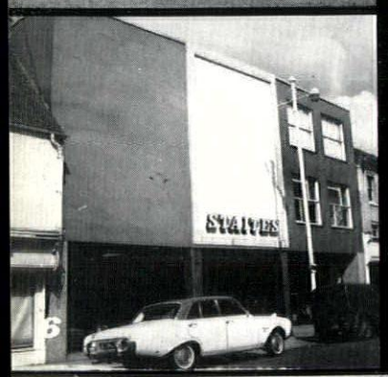

1


2

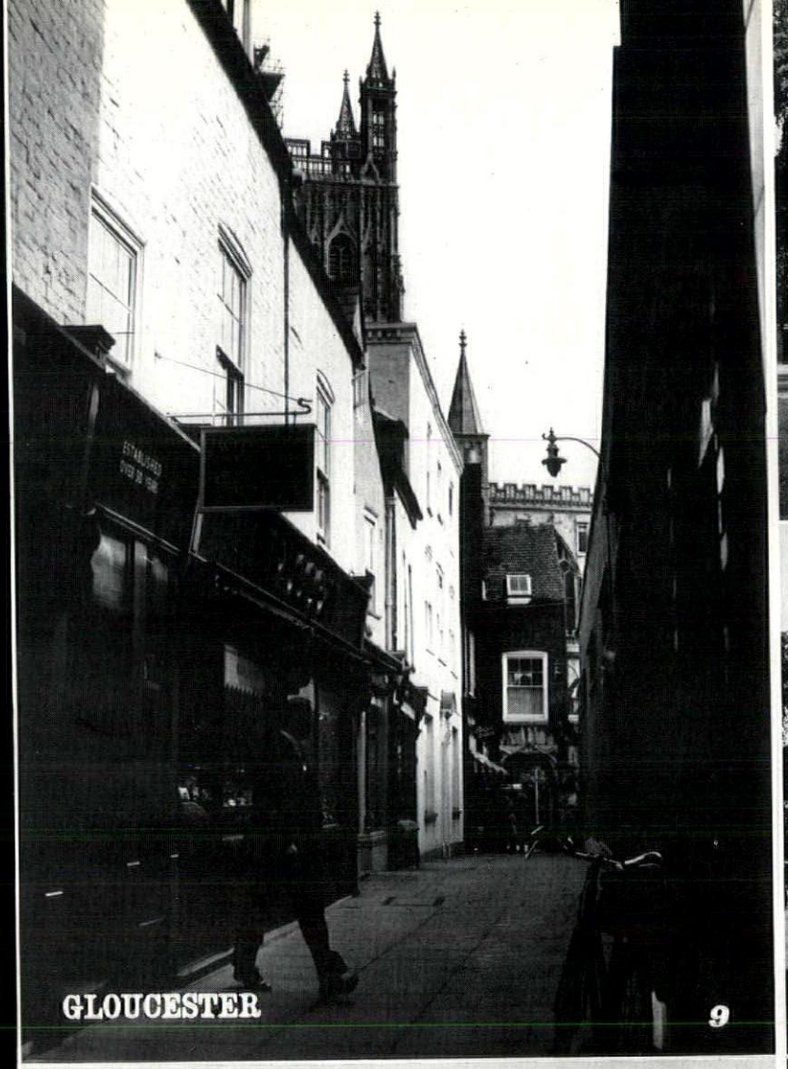

3


4

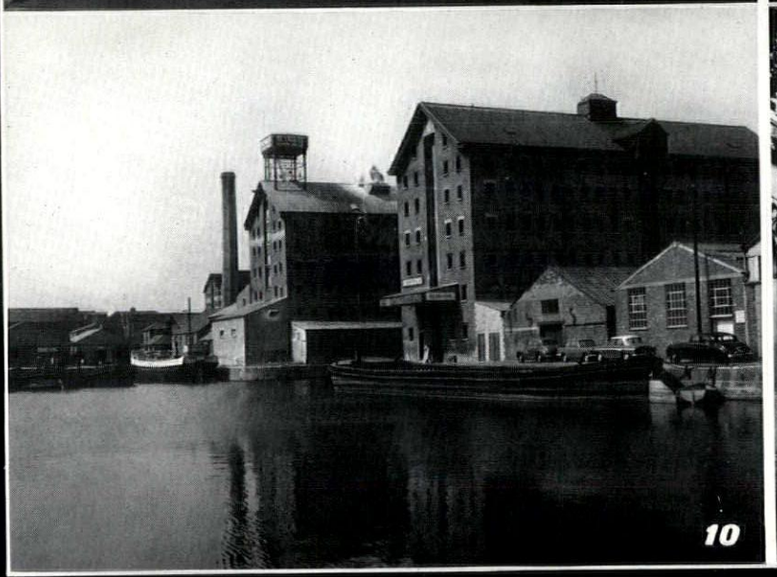

5



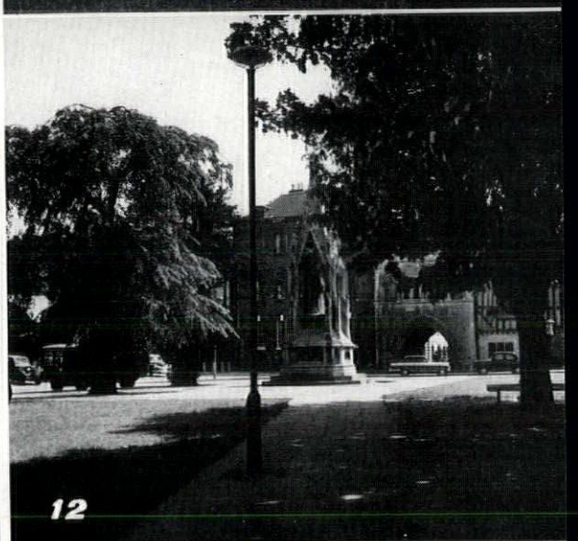
6

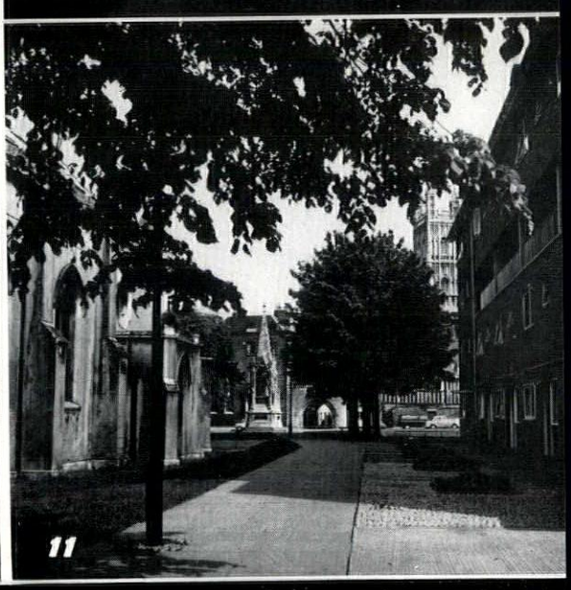


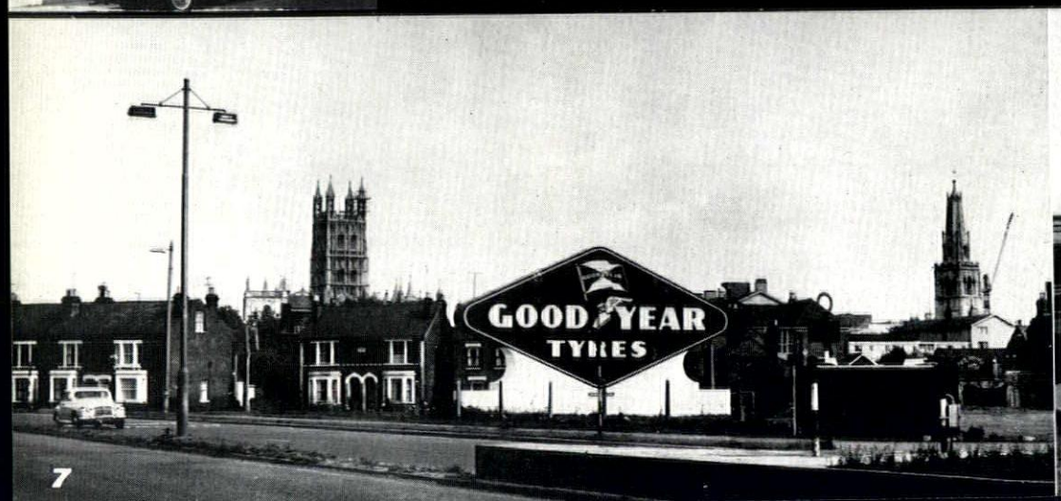
9


10


13


12


11

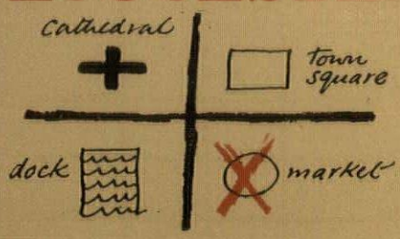


7



8

GLOUCESTER



Crucified on a Roman cross-roads, and risen from the dead. No point here in blocking the Cross, as at Chichester: the traffic should roll through—reduced, maybe, but unimpeded. Gloucester's quartered body has taken on two realized identities and two potential ones. Realized, the cathedral and the canal basin, ***10***. In potential, the town square in the north-east, the market in the south-west. Each quarter joins the main streets strait and secretly, like ***9*** (Cathedral to Westgate) or ***14*** (Cathedral to Northgate). The long, deep pub courtyards have the same rhythm.

That is inner Gloucester. The outside is a desert. From Wales, the approach that means most, there are just kilovolts made visible, ***3***, then the insane cacophony of the century that forgot what it was all about, ***7*** and ***8***. This could easily be altered, and is a better target for improvement than the absurdly genteel attempts at painting up a rough and tumble street (Westgate). If the big volts won't go underground, the local distribution, woefully arrayed on the green banks of the Severn, ***4***, surely can.

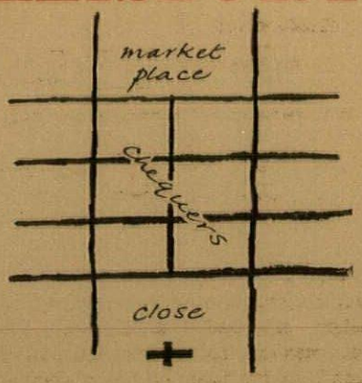
Then on to the by-pass, and from that to the best part of new Gloucester (***11-13***) a new housing scheme by the City Architect's department. It could be extended back to the road, to give a complete sequence and relieve the barbarous pressure of cars around the cathedral walls, ***1***. Two circular car-parks over the road, ***15***, could lead down naturally to ***11***, the meeting of St. Mary de Crypt and the new housing. From there the sequence is something that modern architecture can be proud of; old trees and monuments in a new arrangement, ***12***, with new furniture and paving taking up the play of elements without effort up to the gates of the close itself, ***13***.

Inner Gloucester has been realized in a consultant's report, by G. A. Jellicoe, but will the city be prepared to carry it out? His proposals for the market quarter seem likely to be lost in a welter of developer's millions and roof-top car-parking. The proper course is to keep the street frontages, especially in Southgate, and develop the backland. Keeping also the Victorian front of the Market hall for its position in Eastgate, ***16***, and the way it can announce the new market, ***17***.

Even Mr. Jellicoe's report opens out too much: Gloucester is one of the least displayable places in England. His Via Sacra would demolish the building on the right of ***14***, when the relationship is perfect as it is. The way would be just as sacred with a door in a wall, and the procession curving round the narrow street beside St. James's church.

A detailed point, but an important one. More important still is how the designers of Gloucester are going to measure up to their surroundings. Three bargain basement samples, ***2***, ***5*** and ***6***, do not raise many hopes; and ***5*** is the main point-de-vue down Northgate. God bless architects!

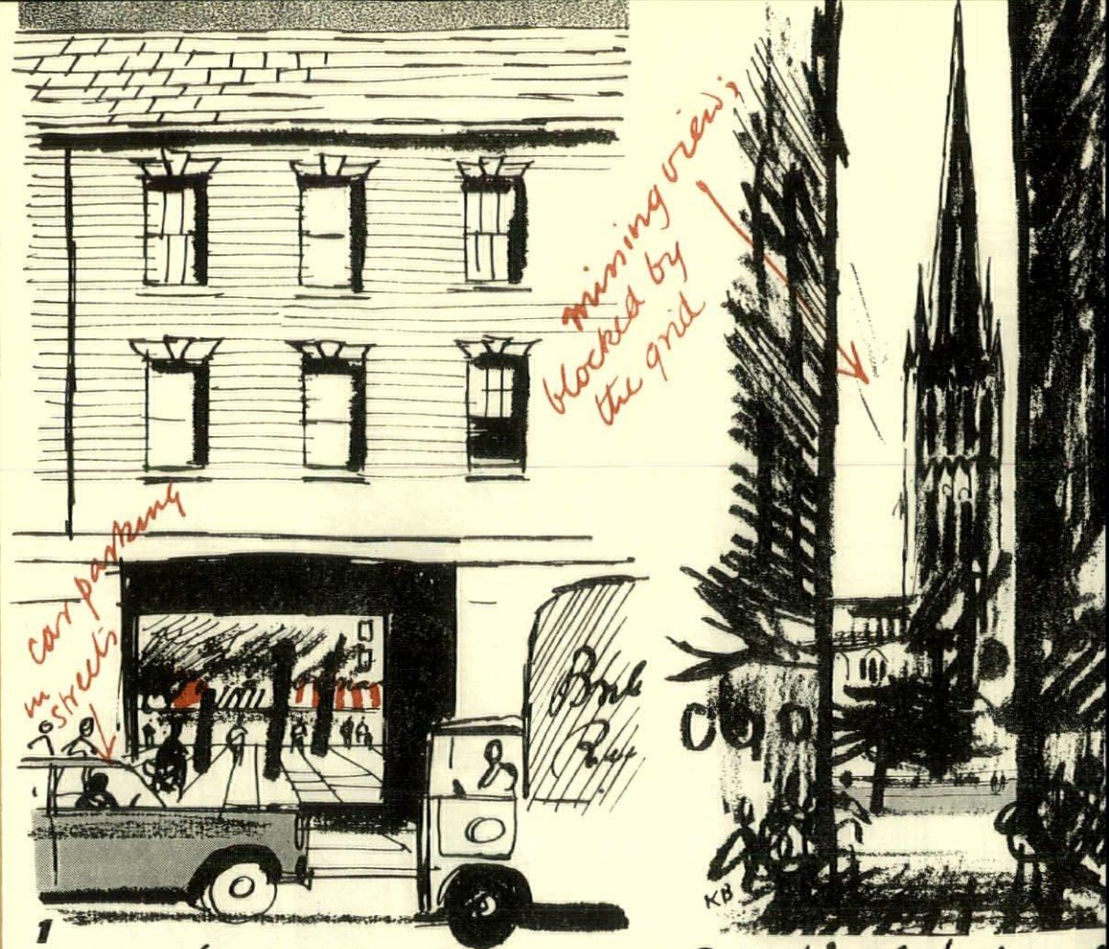
SALISBURY



The key map above tells all. The grid plan has stultified everything, and for the sake of a few isolated magnificent views like *5*—Early English on a plate—has sealed off the market place from the Close; has made all of the streets into endless perspectives, *11*; and has prevented the kind of view that ought to happen—the steeple as a sudden apparition at the end of a narrow street, *2*. There is no quiet concealed entrance to the Close at all, only the long trail along the straight streets. This will be improved if Max Lock's plan for Salisbury, newly accepted, is carried out. See 'Look out' on page 210. Vitality resides only in the chequers, the squares of the grid. There are lots of small pointers to this, the name chequer itself indicating an identity. The way the market place, really another chequer, turns in on itself and forgets the windy spaces outside, *7*. The effect of St. Thomas's Church, *6*, building up like a layer cake in the only chequer whose centre has been exploited, instead of becoming just an impromptu car-park, *9*. To exploit it they must be turned inside out, each chequer a miniature town, instead of being used for car parking as the new plan proposes, so so that the streets can be made free of cars.

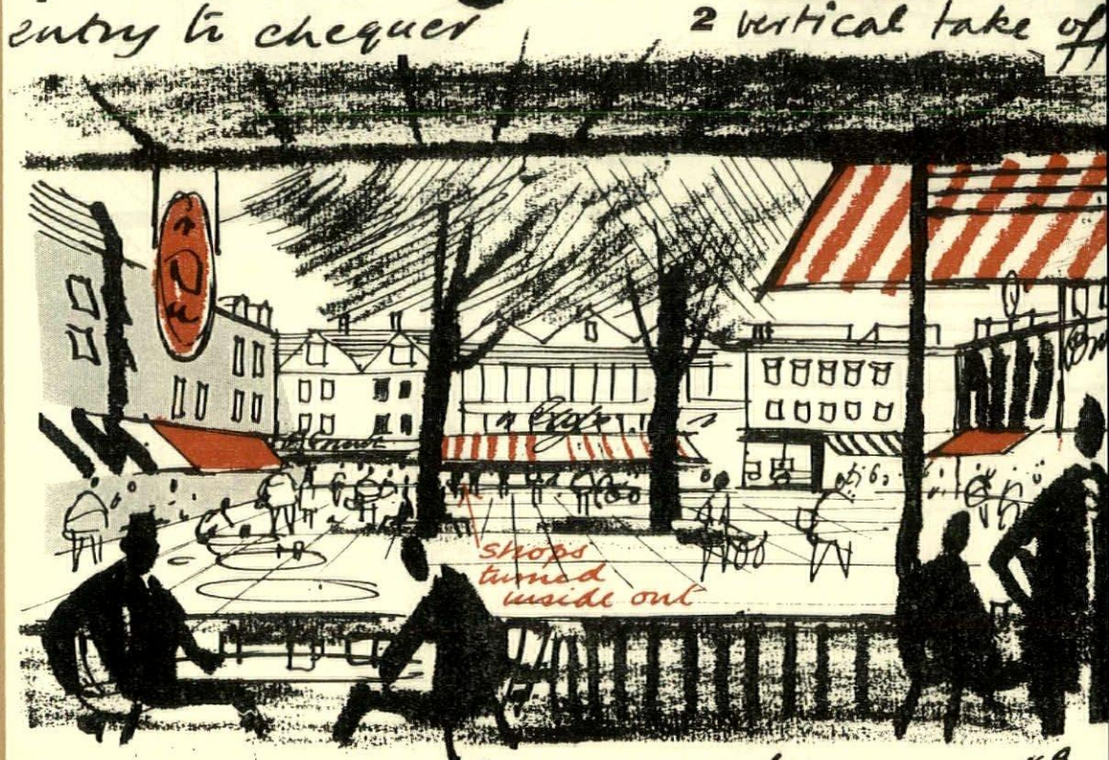
It is the straight streets which have been throttling Salisbury; they need to be treated as a utility, like the drains, whilst the shops are turned back-to-front, face inward on to the heart of the chequer, *3*. Entry to the chequers should be under buildings, *1*, and pedestrian paths would link one to the next. The grid is tamed to be a sequence of squares.

Salisbury's plan is an old disease; but the city has shattered its approaches quite recently. The way in from George Herbert's Bemerton is no tribute to the Finger of God, *12*, and on a much bigger scale the main road from Southampton is a disaster, *14* and *15*. Everything has just been thrown on the landscape. Yet avoidable and even now reparable, by planting an avenue of trees down the centre and letting the industry proliferate away at the sides, *4*. The new buildings are either careless chain-store stuff, *8*, or misplaced pomposity, *10*: and what could be better to round off the trip than a visit to the Eventide Centre, *13*?

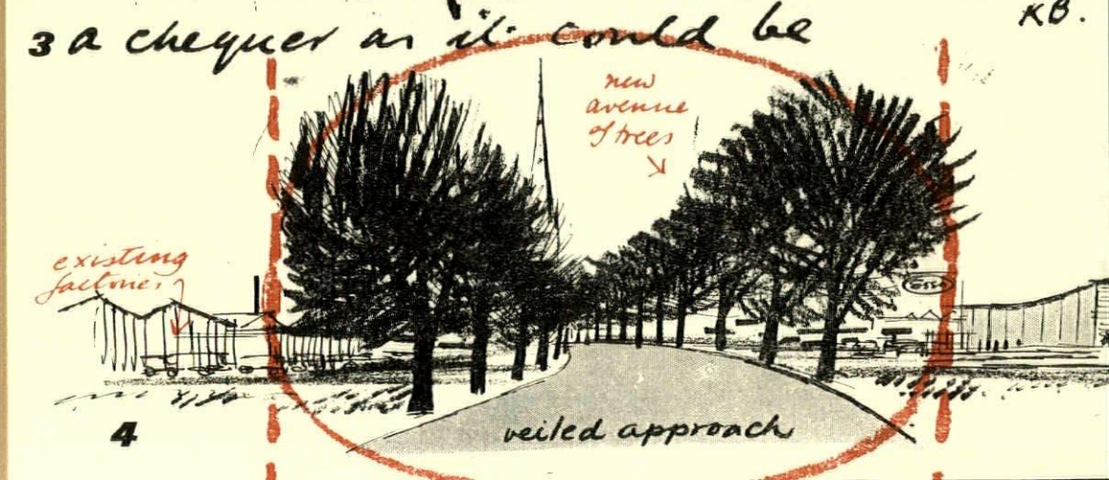


1 entry to chequer

2 vertical take off



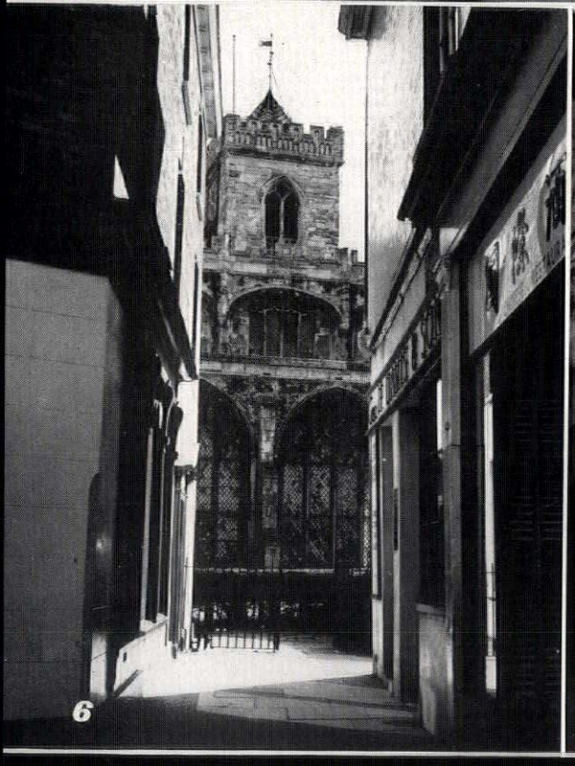
3 a chequer as it could be

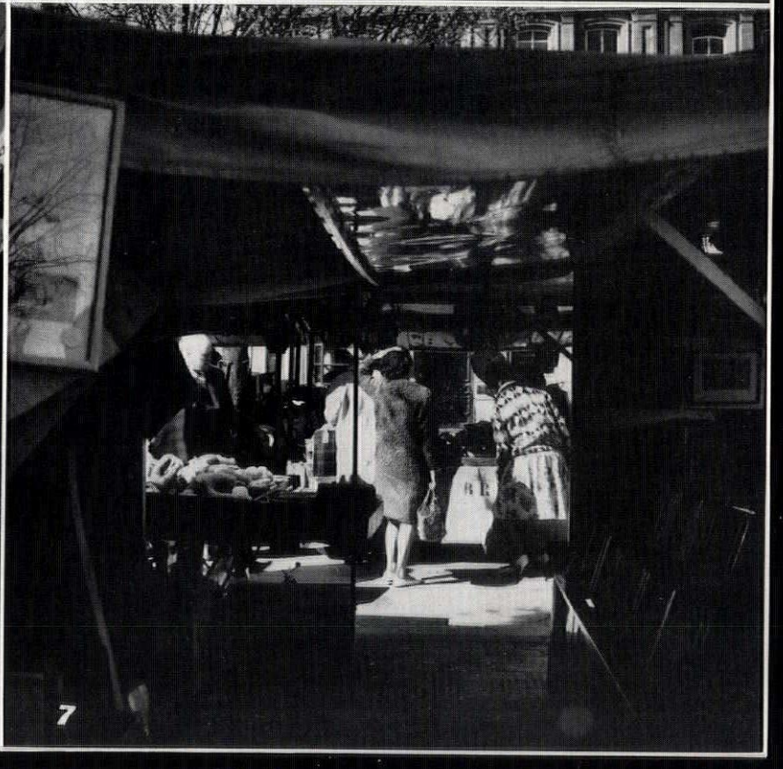


4

erosion















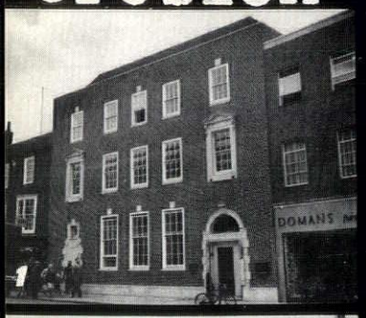








erosion



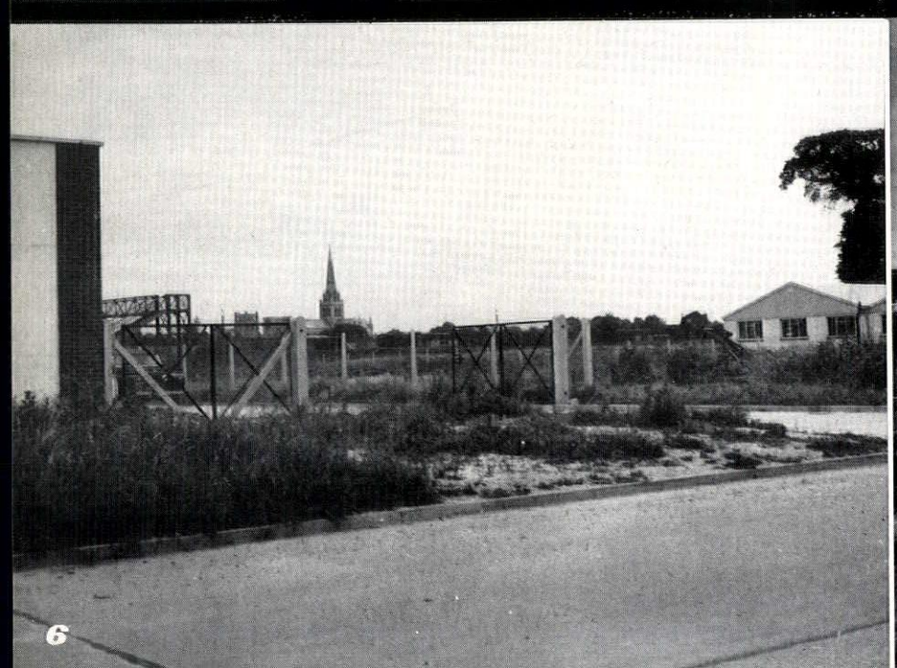
1


2


3

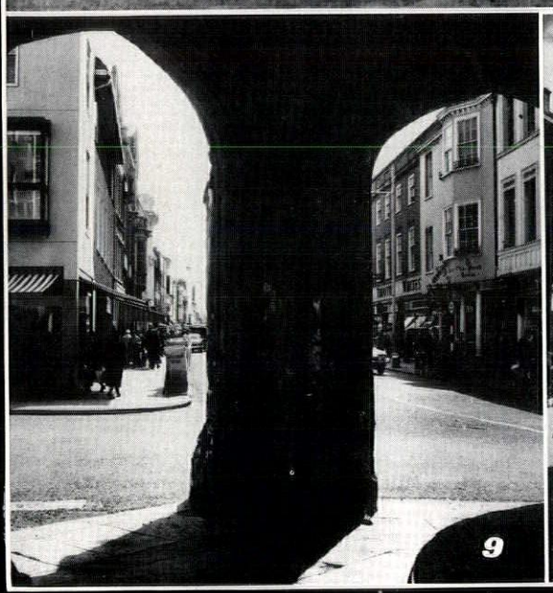

4

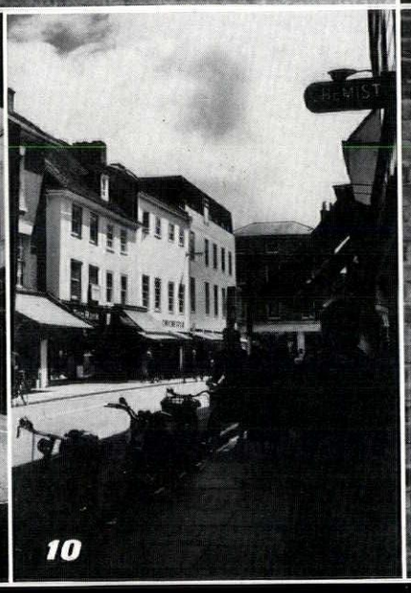

5

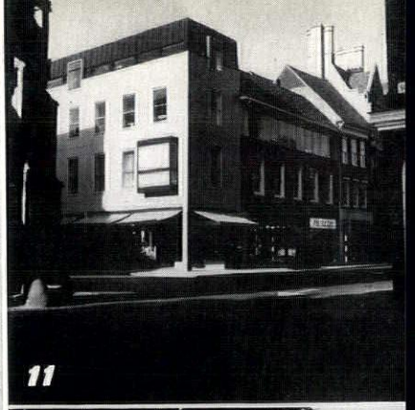

6

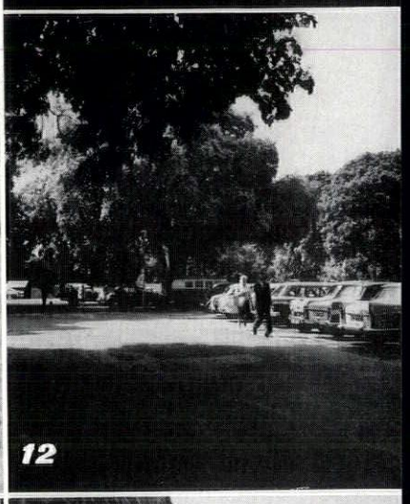

7

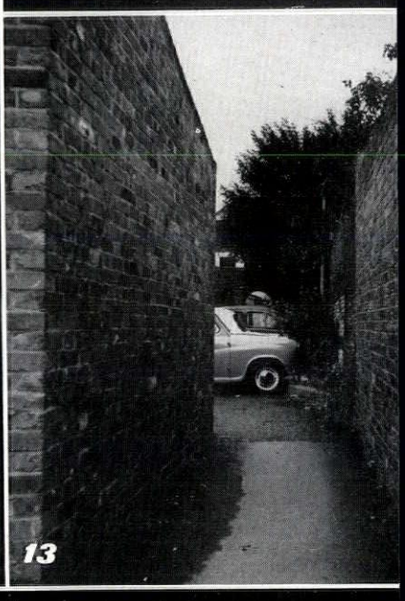

CHICHESTER 8


9

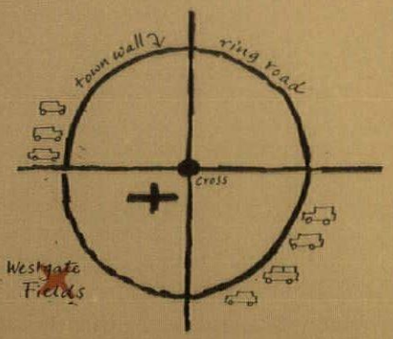

10


11


12


13

CHICHESTER



A curate's egg. Some of the new things are admirable, for example the landscaping of car parks, ***12*** and ***13***. Yet the planning authorities with the best of intentions, have completely wrecked the south-western approach, the Westgate Fields and the view from them, ***8***, which is, or was, almost the city's signature. Grass today; a ring road and a four-storey college of further education in a few months. The frame of the college is almost complete, an ugly lump to jar the distant views, and the new 'footpath' across the shattered fields is in the very worst municipal traditions, ***5***.

And, further out, beyond the by-pass, a factory estate has been creeping west to bespatter one of the best cathedral views in England, ***6*** and ***7***. A lot of trees will have to be planted very quickly before this city can recover its self-respect.

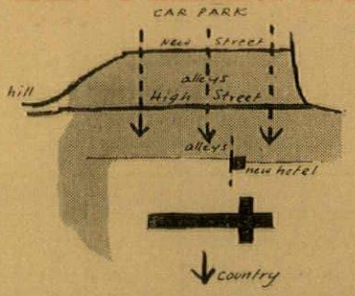
When the ring road is completed, it should be made to work for its living. The city at the moment has a small population (20,000), but a catchment area of three or four times as much. This means a big car-parking problem, solved up to now with a multitude of small car parks which have gnawed away at the town's back streets, ***3*** and ***4*** (the park in ***4*** holds only nine cars). Yet it is also the most sophisticated of the six cities, and there is a real demand for new housing in the centre.

The city needs to be separated into its unities or each will devour the others. First, the ring, with car parks outside, or just inside the walls. Second, the quadrants, which should be built up again and reclaimed from cars, with direct road access only from outside. Third, the main streets, the goal of visitors to Chichester, which should have provision for short-time parking and be blocked not only at The Cross but on all side turnings, ***16***, so that you select your street via the ring road, turn round in the side entries, and go back the way you came. ***17*** shows the diagram of traffic separation which is a diagram of character separation, too. The Cross can then become its old focus, with a market around it, ***14***, instead of being a haven that you have to dodge buses to attain, ***9***. The happy interlocking of cathedral and city, shown in sequence from South Street, ***15***, into the cloisters, ***18***, and out again behind West Street, ***19***, can be augmented and extended, in the footpath pattern of quadrants reclaimed from the questing Mini.

Curates egg. Buildings as bad as the new Barclays' in East Street, ***1***, yet also Sir Hugh Casson's block at the cross, ***10*** and ***11***, which is a model of how to provide up-and-downness in modern terms. A derelict building in West Street, ***2***, yet also a recognition in the citizens that it is an invaluable eye-stop and that a new building must be provided on the site.

Chichester has the friendliest cathedral. It could have the most exciting city, too, if its planners take care.

WINCHESTER



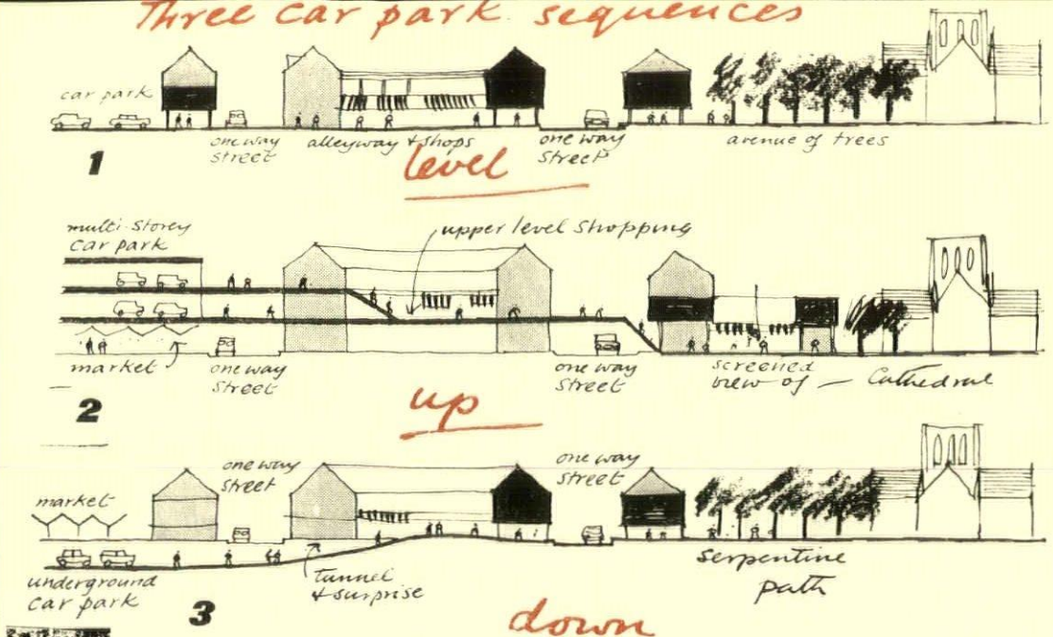
No need for a glossy photograph here. Winchester has something deeper, **6.** It does not need to be a pretty picture; from the moment you step out of the car, the longest nave in England has got you. Stretched across the valley between hill and hill, the mediaeval High Street, **8,** ran parallel to the north. The recently widened St. George's Street, **9,** runs parallel to the north of that, and is bound to become a second shopping centre—it has been given an admirable push by the new shops on the right-hand side of **9,** designed by Sir Hugh Casson.

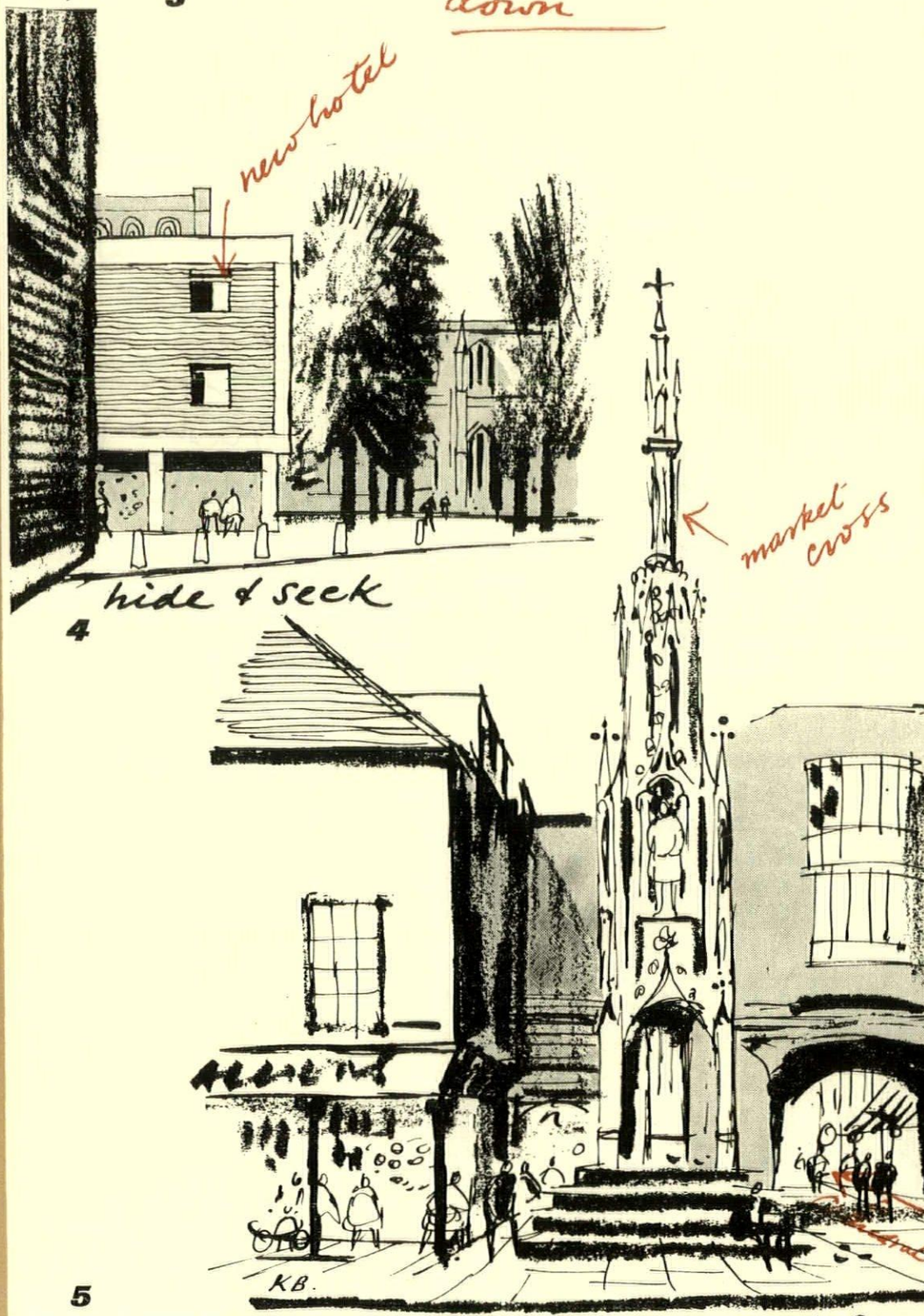
Beyond St. George's Street are the car parks, all at ground level, **1,** so that you filter through alleys, first to the High Street, **5,** and then into the Cathedral Close, **4.** The market cross in its niche, **5,** gives exactly the balance of religious and secular that a cathedral city ought to have. The new Trust House hotel, **4,** designed by Bernard Feilden, provides just the extra complication that is needed to set off those endless Norman bays. It replaced a car park, with the enthusiastic agreement of both City Council and Cathedral Chapter. Things in Winchester are looking up.

They could look up even more. Level parking is only one solution. A multi-storey park, **2,** with perhaps an open market underneath (Winchester so far does not have one) could lead by upper shopping levels like Coventry across the High Street and then suddenly down on the far side to the kind of hide and seek view of the cathedral provided in **4.** By contrast, an underground car park, **3,** could lead via a tunnel under St. George's Street to a sudden view of the High Street, and thence by a serpentine path across the close to the cathedral. The permutations are endless, all still possible, and in fact made easier by the new road than they were before. True progress, instead of the false stuff that waltzes around the country under so many august or grandiloquent names.

That is not all at Winchester. Clear water runs around under most of the town, **7,** and the back of the cathedral is a wonderful wedge of playing fields and old terraces beautifully maintained by Winchester College. Beyond that, countryside; the cathedral gives its immensely strong grin through peep-holes like **10.** There are also blemishes, crude buildings like **14** and **15** in the High Street and **12** on the outskirts (the siting does no harm to the city, but surely something more gracious could have been provided). Also, a slight tendency to kill with kindness, in the riverside gardens, **13,** and the over-careful restoration of half-timbered buildings, **16.**

But these are minor things: the basic pattern feels fine, shown best of all in the grand view from St. Ann's Hill, east of the town, **11;** a majestic sequence of objects in relationship: St. Cross, meadows, Cathedral, High Street, St. George's Street and the new car parks. A really good effort.

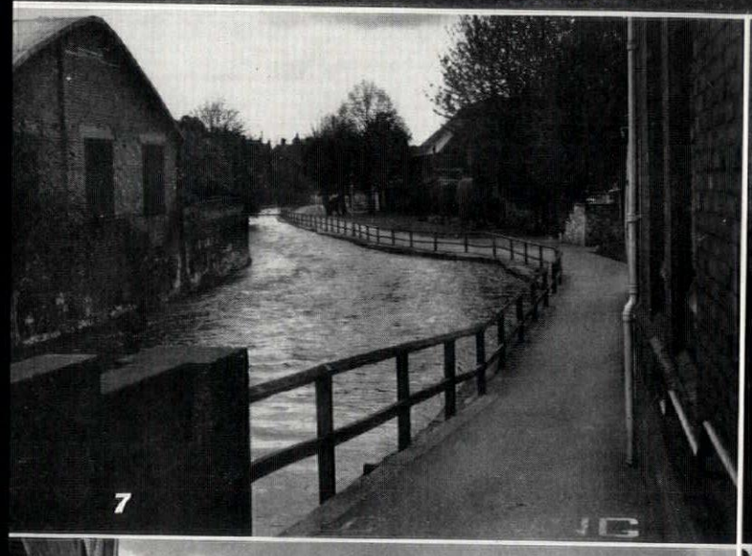


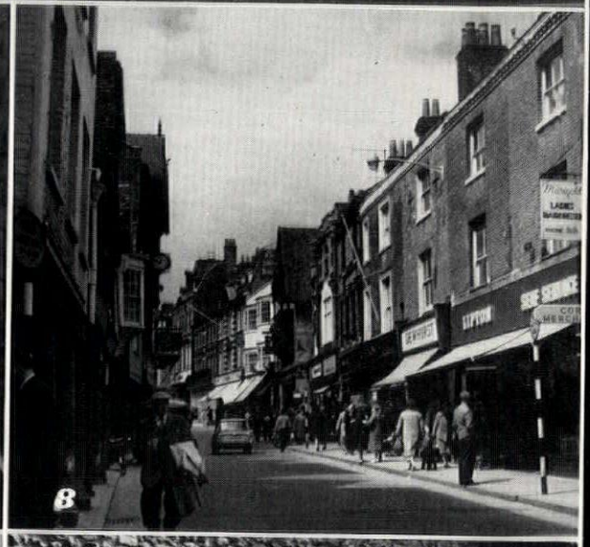


erosion

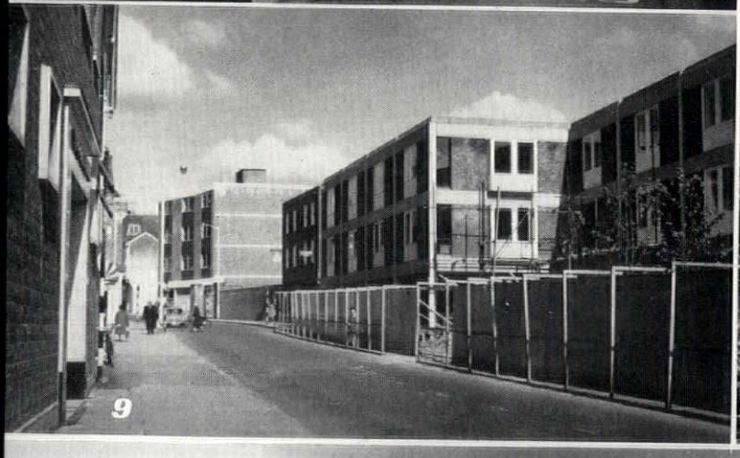


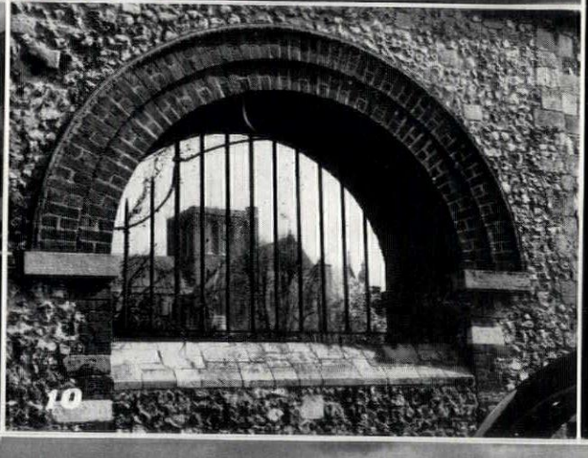
6 WINCHESTER


7



8

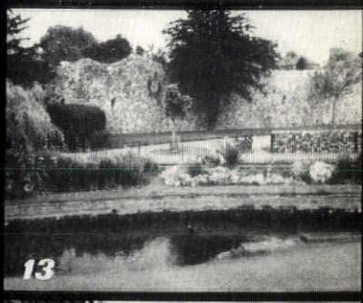

9


10



11


12


13



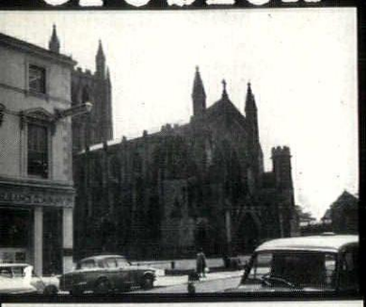
14

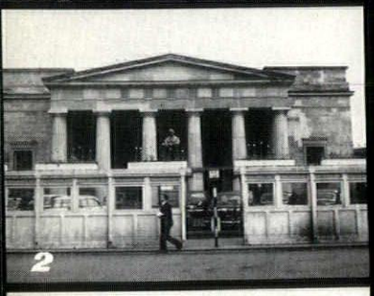


15


16

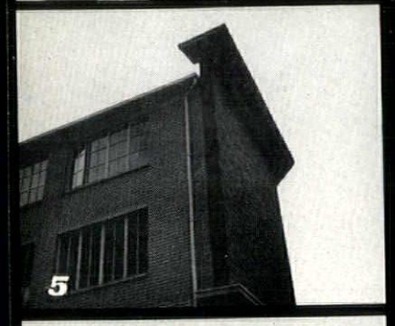
erosion




2

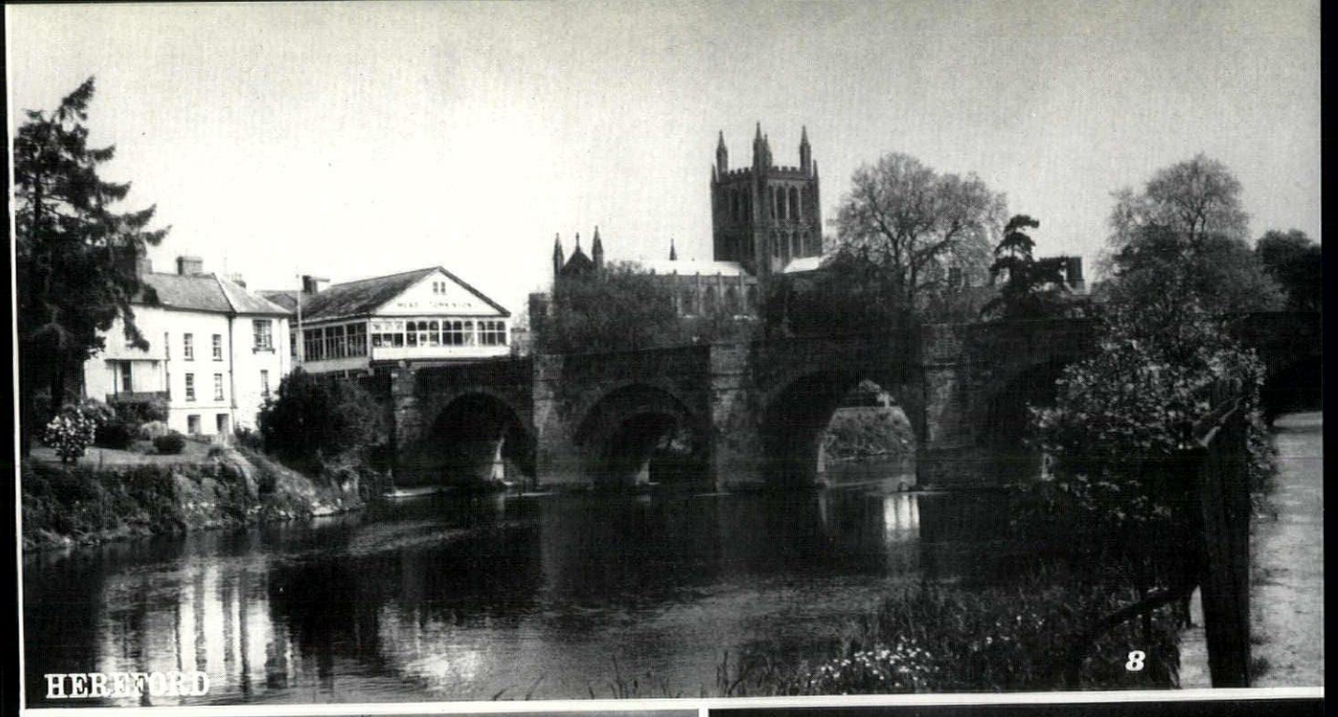

3

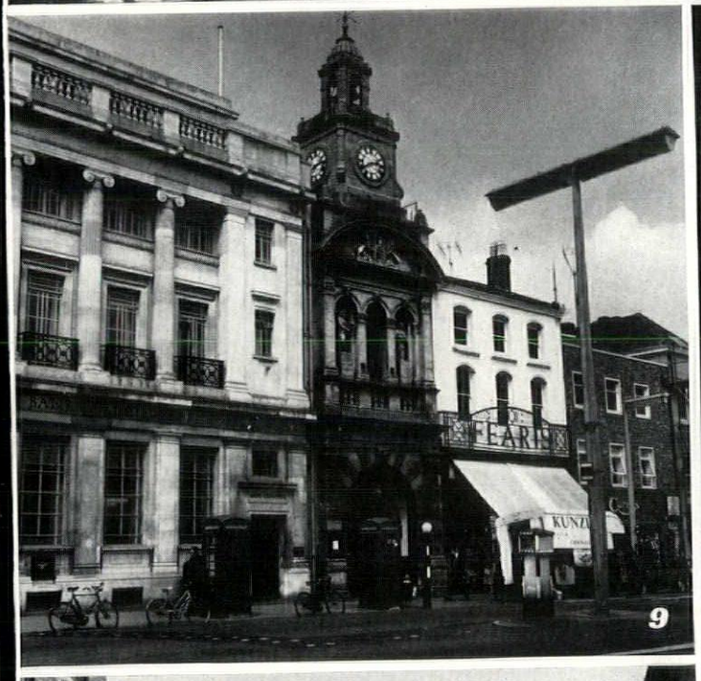

4

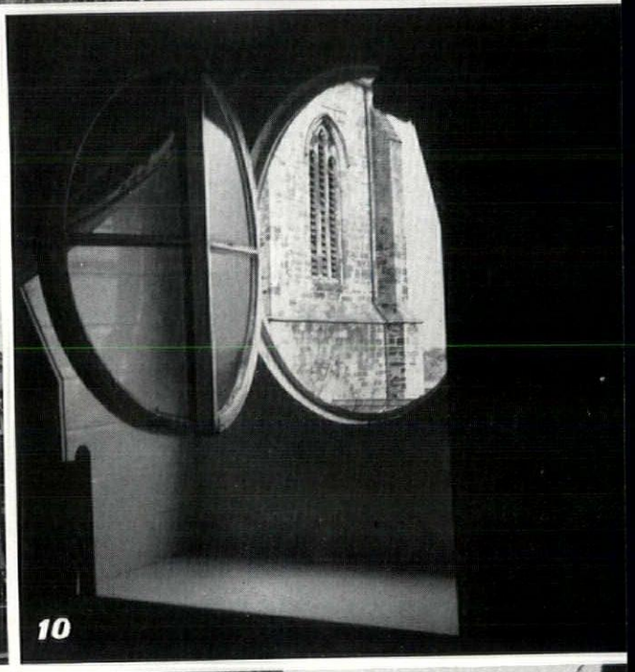

5

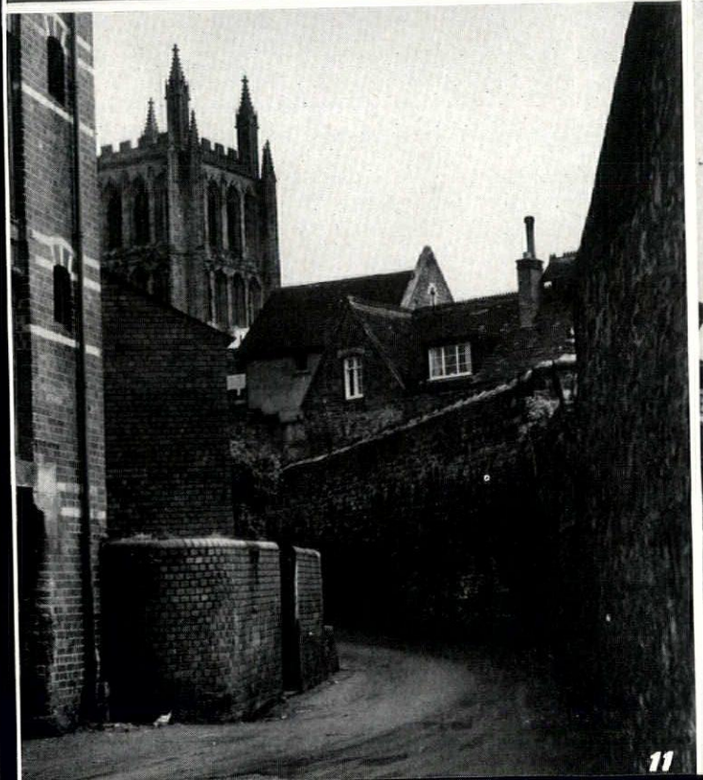

6

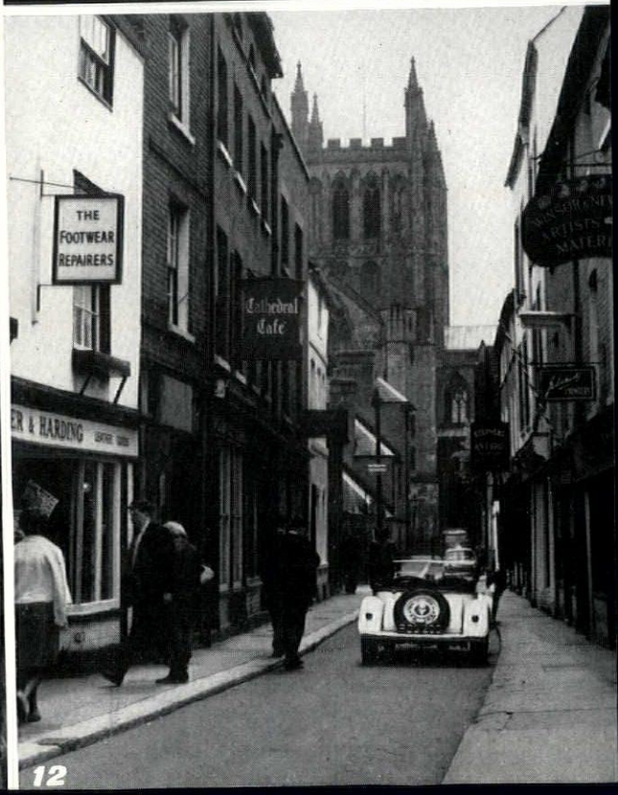

7


HEREFORD
8

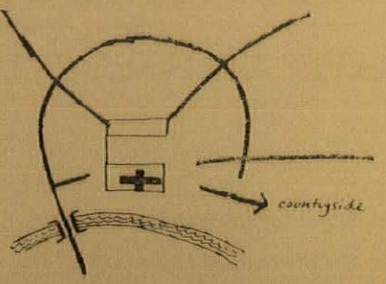

9


10


11


THE
FOOTWEAR
REPAIRERS
Cathedral
Cafe
12

HEREFORD



A lollipop to end with; an alive yet leisurely city with its cathedral spirit unimpaired. Hereford's planning might be expected to be backward. Instead, it has produced a most far-reaching and sensitive plan for the city centre, ***15.*** At the moment, through traffic runs past the West front of the cathedral and across the medieval Wye Bridge, which is really unbearable for pedestrians, ***6.*** A new bridge, which will be built next year, enables a relief road to continue round the line of the walls, but without turning into a rigid ring, and keeping the link with countryside along the river to the south-east. Spur roads run into the centre and are blocked at the points marked ***X*** on plan ***15.*** Most car parks are along the line of the walls; the whole heart stays undisturbed.

The idea can be taken even further. If the road is blocked, then why not build across it at selected points? The most important is the junction which is Hereford's weak spot. Until the 1930's, buildings stretched across and helped to screen J. D. Scott's flabby cathedral front from view. They were taken away as an amenity, but the result is only a blank waste, ***1;*** the building line should be restored, ***13.*** Directly opposite, a new building went up last year in the worst tradition of mealy-mouthed gentility, ***3;*** the gentility stops suddenly round the back side in a laughable bit of detailing, ***5.*** The whole place has gone flat: it needs tightening up with a new building across the road, ***14.*** The West front is screened. A recognizable space is created, the city doesn't leak away at its most important point.

For the rest, there are only minor quibbles. The most ominous thing is the standard of local architecture, ***7,*** which suggests that the planners may have a hard job ahead of them. Bus shelters in front of the Shire Hall, ***2,*** bad lamp-posts almost everywhere, ruining a particularly happy effect in ***4,*** on the approach road from the station. But small things, easily altered. The heart of the place is splendidly sound, placid river views, ***8,*** and subtle and delicate views of the cathedral, ***11*** and ***12,*** and the churches, ***10,*** contrasted with the robust rough and tumble of High Town, ***9.*** The frontages here will stay, if this block is comprehensively developed, with new arcades let into the back-land. True progress, and a model for other cathedral cities.

THE NEW ENGLISH HUMANISM

PREFABRICATION IN ITS SOCIAL CONTEXT

Guy Oddie

The expanding interest in industrial, which usually means prefabricated, building techniques is exemplified by the recent creation of the post of Director of Research and Development at the Ministry of Public Building and Works, by the appointment of Sir Donald Gibson to that post, by Sir Donald's industrial building experiments there and in the War Office and by the investigations now going forward into the use of prefabricated construction for housing and for other purposes like the new universities. This is therefore an appropriate moment to set down, for purposes of historic record, the sequence of events by which prefabrication became the key fact of the post-war school-building programme, enabling Britain to lead the world in this field, socially, technically and in the architectural results. These events, from which all the present-day activities have sprung, centred chiefly on the work of the Hertfordshire county council and the Ministry of Education. The events and the thinking behind them are the subject of the following article which coincides with the second of the AR's 'Skill' features (pages 213—220) on industrialized building.

In 1945 there began a programme of emergency building known as HORSA. In the light of subsequent achievements the initials have an ironical significance — *Hutted* Operation for the Raising of the School-leaving Age. The huts were supplied by the Ministry of Works. Huts they were, huts they looked and huts they were conceived as by the engineers who designed them—shelters to keep the wind and rain out. Their virtue was speedy erection with the minimum of skill—concrete portal frames spanning 24 feet erected on a simple site slab at 8 ft. 3 in. centres, filled in with concrete block walls or standard windows and covered with asbestos sheeted roofs on precast concrete purlins. The materials used were those least unavailable at a time of acute shortage, and the dimensions were those which secured their most economical use. In appearance, thermal insulation, durability and quality of finish they were unquestionably substandard and were never meant to be anything else. Worse still, they prevented any possibility of flexibility in planning. Any number of 8 ft. 3 in. units could be added to the length, like extra carriages to a railway train, but the width was constant, corners could not be turned, and to put two huts at right-angles demanded special and awkward details in materials which were strictly rationed.

It was against this unpromising background that the Hertfordshire miracle occurred. The miraculous element amounted to one of those fortunate accidents of history which bring together two individuals in one place at the opportune moment, in this case an architect and an educationist who both believed that they could make the future better than the past and who shared none of the prevailing desire for things to 'get back to normal.' There the miracle ended; the rest was hard work, determination, an element of genius and optimistic faith.

The educationist, the county director of education, was John Newsom. Perhaps some biographer will some day find the time to discover and say what made him tick, but tick he did; and the basis of his approach was that education was inseparable from environment, so no huts for him. He wanted schools designed for new and continuing developments in teaching, not repetitive railway carriages in which children and teachers would have to adapt themselves as best they could. But he had no blue-print for the ideal school; he would be content to learn as he went along. The architect was Stirrat Johnson-Marshall to whom it is difficult to give due and accurate credit without appearing fulsome. Marshall had so many rare qualities in combination that genius is hardly an exaggeration. Not a man of any very great learning, he found satisfaction, like many of his generation, in the Morris, Lethaby, Mumford, Bauhaus philosophies, without worrying too much about the various lacunae in their logic. He was in full sympathy with Morris's social-aesthetic theory, but in addition had complete faith in the possibility of a machine aesthetic, as Gropius and his Bauhaus collaborators had. Like them his aim was 'to unite art and industry, art and daily life, using architecture as the intermediary.'* He believed in the broad truth of Sullivan's rule that 'form follows function,' and in Mumford's comment that 'Such a rule must have its foundations, not only in the architect's mind but in the political institutions, the working order, the social attitudes of his community. To formulate it in fact, and to translate it from fantasy to concrete reality, the architect needs the active co-operation of his contemporaries.'

This last was the basis of Marshall's whole approach, to secure the synthesis, in his own phrase, 'of architect, administrator and educationist.' Thus he saw school-building as the opportunity to create an architecture based on 'human activities and purposes'—art produced by the individual genius for the connoisseur he stigmatized as 'capital A Architecture'; Newsom he saw as an active co-operator; and prefabrication, not as an emergency makeshift, but as the logical consequence of a faith in the machine aesthetic. These concepts have remained fundamental throughout the whole subsequent history of the new humanism which Marshall inspired.

Marshall's essential creative genius was not as a designer, but as a political animal. Without him Hertfordshire would never have persuaded the Ministry of Education to allow them to reject the HORSA huts and to embark instead on an approach to prefabrication which at that time was without precedent and which was designed to produce, not standardized and yet sub-standard buildings, but factory-made components for assembly into buildings of varying plans—a Meccano set. This persuasive leadership, based on philosophical conviction and illumined by vision and was reinforced by hard empirical realism. 'Human activities and purposes' meant sensibly planned lavatories as much as the pursuit of educational ideals, 'uniting art with industry' meant using manufacturers' know-how. The belief that art matters only if all can share it meant cost limitation, fair shares for all in social benefits limited by the financial resources available at the time. 'Uniting art and daily life' meant facing facts, above all the fact of urgency. 'Our job,' said Marshall, 'is to get the right buildings in the right place at the right time.'

Another facet of this realism was the recognition that 'the active co-operation of his contemporaries' not only meant getting clients and administrators on to the same wavelength, it meant, quite simply, that architecture itself demanded more talents than one man could hope either to possess or find the time to exercise, that to put up the right building at the right time meant teamwork. Not the least of Marshall's attributes was the ability to attract, not paler images of himself, but creative designers of strong individuality, each with a unique contribution of his own, and to make these fiery horses pull together.

The exact nature of this teamwork has sometimes been misrepresented. It was emphatically *not* architecture produced in committee. As in all building, conflicting requirements had to be kept in balance, but no decision ever reflected a compromise of view. Once the framework of the approach had been agreed each member of the team set about his individual task with no other restriction. One of Marshall's first recruits was Mary Crowley—the only one with a reputation that preceded her, having built some small private houses which had attracted attention before the War. In more recent years she had been engaged in social service in Scandinavia, and now she led the research into educational requirements, going out for long periods into existing schools, watching and listening to children and teachers at work, making imaginative assessments of their problems and what was needed to overcome them. Almost simultaneously, on the constructional side, the attempt began to design a 'Meccano set' capable of meeting the requirements Miss Crowley was discovering. Thereafter the whole development was a subtle interplay between educational and technical requirements reacting on each other.

The man most closely concerned with technical development was David Medd. He and Marshall had served together in the army during the final preparations for D-Day. They belonged to a unit whose task was to deceive the enemy into believing that the main attack would be launched from the North Foreland instead of from the south coast. Part of this deception demanded the use of dummy landing craft which had to be transported to their destination, and there erected, entirely during the hours of darkness. To answer this demand Marshall, Medd, and their unit adapted the techniques of the inflatable rubber dinghy. Although at first sight this may appear to have little relevance to the prefabrication of steel frames and concrete cladding, the experience of mastering an unfamiliar technique and adapting it to unprecedented problems had a funda-

*Quoted in Giedion: *Space, Time and Architecture.*

mental influence on their subsequent attitudes and habits of thought.

It is perhaps ironical that David Medd, who had done so much to develop factory-made building systems, should also have been a joiner and cabinet-maker of such high quality that William Morris himself would certainly have admired him. But this skill no doubt fostered his appreciation of production methods and brought him more easily into *rapport* with the manufacturers he was associated with. One such manufacturer, almost certainly the most important, was Ernest Hinchliffe, whom Marshall and Medd bumped into, quite by chance, shortly after reaching Hertford. Hinchliffe was a concentrated fireball of Yorkshire inventiveness who had had a small pre-war business making patent glazing bars. Foresight had turned his thoughts already to the possibilities of prefabrication as a post-war necessity, and he had begun experiments with steel frames to be used in conjunction with metal windows. From 1946 onwards the development of the Herts. schools went hand-in-hand with the development of Hinchliffe's firm, Hills of West Bromwich.

Hinchliffe's thought followed the same empirical lines as the others. He believed more in practical testing than in following too obediently code-of-practice methods of design; and if no manufacturer could be found to make a component which lay beyond Hills' scope, then he saw to it that Hills' scope was extended.

These were the four people then, Marshall, Mary Crowley, Medd and Hinchliffe, who formed the mainsprings of the design-production team which, under the benign patronage of the Hertfordshire county architect, C. H. Aslin (not himself an innovator but a first-class umbrella man with enough foresight to see the need for innovation and with the not inconsiderable courage needed to back it) set out to answer Newsom's exacting educational requirements against a background of material, labour and financial stringency. Within a year, they had taken the basic 8 ft. 3 in. concept of the Ministry of Works 'railway carriage' and developed a system which could be extended in any direction in 8 ft. 3 in. multiples and which was capable of variation in height as well.* The first prototype school at Cheshunt was complete and occupied by the autumn of 1946. The following year eight schools were completed in the system and a further twenty-one the year after that.

Some measure of Aslin's courage may be gauged by the fact that these developments meant throwing overboard some of the most cherished principles of local authority administration, notably open competitive tendering. It was in such practical terms that Herts. interpreted Mumford's prerequisite of changes in 'the political institutions, the working order, the social attitudes' of the community. Little was certain, at the time, about what the operation would cost, either in terms of capital or maintenance; only later was Aslin's boldness vindicated. Equally, the achievements were only made possible by the enlightened central administration of the Ministry of Education, who saw the necessity of allowing local authorities to plan ahead on the basis of a more or less assured investment programme. Students of party politics might note that while the Minister of Education during those years was Labour, the Herts. county council was predominantly Conservative.

The nineteenth and early twentieth century pioneers of the modern movement had little more to guide them in their search for functional form than their own intuitive reasoning. Intuitive reasoning played no small part in Herts. as well. Certainly, the forms which the architects found acceptable were those which Mondrian, Gropius, Le Corbusier and Frank Lloyd Wright had made familiar. But where the *avant garde* of the 1920's had been content to proclaim the virtues of daylight and proper orientation, the new humanism asked how much, what kind, what quality of daylighting is required to do the job in hand; and in considering heating requirements, classroom acoustics, the design of chairs and desks for comfort at work, or the functional effects of colour, they discovered factors conditioning design of which their predecessors had been largely ignorant, and which some of their capital A Architectural contemporaries still find too style-cramping to take into account. For this, much of the credit is owed to the Building Research Station at Garston, and in particular to two architects, William Allen (now Director of the AA School) and Anthony Pott (died February, 1963).

The BRS had been mainly concerned, up to 1946, with scientific investigation into the properties of building *materials*, and it was therefore natural in any case that Herts. should seek its advice in developing new building components to meet new requirements. But due largely to Allen's efforts, the Station set up, in 1946, a new division concerned with architectural physics, i.e. the building aspects of heat, light and sound. It was largely as the result of this work that architects were introduced to the then rather novel idea that the size of windows might be influenced less by architectural conceptions of a desirable balance between solid and void, than by how much daylight was required in the room.

In essence, the work of the architectural physics division of BRS transferred to the field of quantitative measurement questions which had formerly been determinable only by subjective judgment. Not that subjective judgment was discredited altogether; on the contrary it was valued all the more highly on those spheres where scientific inquiry showed it to be the most reliable criterion. Indeed, it is probably fair to say that Hertfordshire relied on measured observation and subjective assessment in almost equal proportions. Where measurement was possible (as it was in most questions of heat, light and sound) its results were accepted wherever they might lead; on the other hand subjective assessment was always preferred (as long as it followed *observation*) to statistical sampling of user opinion, which was regarded as usually of doubtful value.

Although Hertfordshire launched its earliest programmes with only vague ideas of how much they would cost, they simultaneously took energetic steps to apply the same techniques of scientific measurement to this problem also. Thus James Nisbet, a quantity surveyor, developed entirely new techniques of cost analysis and cost planning. Up to this point the common practice was to design a building and then find how much it would cost. If the cost was too high it was reduced simply by altering the specification, by having cheaper floor, wall or ceiling finishes, or by substituting cheaper windows or roof coverings. Cost planning, on the other hand, divided the building into about thirty elements, each of which was allocated a proportion of the available budget at the design stage. It was then up to the architect to cut his coat according to the target cloth, element by element, as the design was worked out in detail. This technique and the determination with which it was applied was the main reason why the general standard of finish in Herts. schools was so high: the necessary economies were achieved on other elements. Without the philosophy of architecture as a *service*, no one would have used the tool which Nisbet offered. Arguments as powerful as those advanced by the most financially reckless architect were frequently put forward for spending extra money; but the philosophy made everyone recognize, in the end, the necessity of accepting budget discipline in the interests of ensuring that the social benefits of the new schools were fairly spread.

Not the least astonishing aspect of the new humanist tradition is that Hertfordshire had firmly established its working principles within the first three years of the post-war period. Subsequent history is a record of extension of these principles into an ever-widening field. By 1949 the Ministry of Education had carried out a reform of its internal structure and set up a new Architects and Buildings Branch, securing Marshall as its head. Or rather as its joint head, for the principle of the architect working in active co-operation with his contemporaries was now given formal recognition by sharing the leadership of this new branch with an administrator. Shortly afterwards, Marshall was joined by Mary Crowley, David Medd and James Nisbet. As deputy and head of the Development group he recruited Anthony Pott, who with William Allen had been a major influence in the Building Research Station. Impatient with the superficial, Pott accepted nothing without question, and his phenomenal memory for sources of information made him probably the most knowledgeable man of his time in matters of building technique.

With this team at the Ministry, although Hertford remained a powerful influence, its role of pacesetter was transferred to central government. By undertaking development on its own account, by associating its administrators closely with the everyday practical problems of building, and by drawing on the resources of the Inspectorate of Schools, the Ministry equipped itself, as it had never been equipped before, to establish the most favourable conditions for the fruitful execution of large-scale building programmes by the local education authorities.

The aspect of the Ministry of Education's work which, in this context, was probably the most important, was its continuing research into educational demands and their implications for design. From this work emerged an entirely new relationship between the architect and the user of his buildings. Traditionally, the only consideration affecting the architect was the personal enjoyment, satisfaction or pride of the patron, no matter what other people in practice were involved. The shift from private to public patronage has invalidated such virtues as this simple relationship possessed, yet still allows the architect no contact with the real user, whose well-being and efficiency are so much affected by his work. His only contact remains with the promoter, whose comprehension of user requirements is confined merely to the broadest outlines.

The Ministry of Education led the way to bridging this hiatus. They did so by appointing a leading educationist, Leonard Gibbon, to work with the development group. He was no mere watchdog set to check that architects kept within the budget or provided the requisite number of rooms. His role was that of interpreter. Humane, intelligent and far-sighted, his background and training fitted him to make an expert assessment of both the present needs and future trends of that heterogeneous mass of individuals whom the term 'user' collectively describes. He fed educational ideas to the designers, and responded imaginatively to ideas bounced back by them. Encouraging fruitful ideas and distinguishing them from wild ones, tempering long-term ideals to the sharp winds of practical reality, he became an active and critical partner to his architectural and administrative colleagues throughout the whole design process. Gibbon's work

*The history of the 8ft. 3in. system is detailed in a series of articles by W. D. Lacey and Henry Swain (themselves members of the Herts. team) published in *The Architects' Journal* for 12 May 1955.

demonstrated the value of such a partnership and revealed its possibilities. From that work emerged the concept of the briefmaker, not as someone interposed between the designer and the client, but as an equal and integral member of the design team itself.

In the administrative sector the Ministry's most important innovations were two-fold. First, by long-term forward programming of investment it enabled authorities to plan several years ahead and ensure that pre-contract work was properly prepared. Secondly, it introduced a system of expenditure control which, besides ensuring an equitable distribution of money between authorities, left considerable freedom of action between an upper limit of cost and a lower limit of compliance with the minimum standards of area and performance. Both innovations were derived from Hertfordshire experience. Nisbet's pioneer work on cost analysis and cost planning enabled the Ministry to pitch its cost limits at a level which, while high enough to allow the skilful architect to exceed minimum standards by a comfortable margin, was yet low enough to demand conscientious attention to economy. With this safeguard against extravagance, the Ministry was left free to concentrate on getting the best possible return on its outlay. The old doctrine of least possible expenditure gave way to a new one—value for money.

As a corollary to this system of control a further innovation was adopted, namely specification of standards in terms of performance to be attained rather than in terms of materials and methods to be used. This again was a development in bringing scientific methods of assessment into service. Where by-laws prescribed the area of window to be provided, Ministry regulations specified the amount of light (the daylight factor) to be provided at the place of work. And the amount required was determined by scientific appraisal of the variation in visual acuity which accompanied variations in illumination.

Technically, the Ministry made two advances on what had been done at Hertfordshire. The first was the introduction of the 40 in. grid which gave six times the flexibility of the early Hertfordshire 8 ft. 3 in. Where the Hertfordshire development up to the time in question (c. 1952) had been mainly single-storey primary schools, the emphasis of educational demand was now shifting to the secondary field and bringing with it a requirement for two- and three-storey construction. It was this requirement which demanded the greater flexibility. The second advance was to extend prefabrication into other forms than the light steelwork that Herts. had principally been concerned with. This advance was prompted by the desire to tap further resources for school building, to have more strings to the bow. Two systems using pre-cast post-tensioned concrete were developed; another using cold-rolled steel. A fourth was intended to use the spare capacity of the aircraft production industry, but with the intervention of the Korean War this venture miscarried.

The significance of these advances was not so much their success or failure as the fact that they originated in educational demand and not from any search for flexibility for its own sake, not from any evangelical urge to propagate prefabrication as a dogma. Indeed, in their Amersham project the Ministry Development Group deliberately used conventional methods of wet construction; but again they were prompted by practical considerations—the need to explore ways of rationalizing wet construction so as to improve the output of the smaller building firms who were the mainstay of rural school building and who lacked the resources to take full advantage of prefabricated techniques.

One of the earliest tenets of believers in the machine aesthetic was that factory-produced building components would bring with them the benefits of mass-production, as standardization had done for the motor car. So far, however, these benefits had remained beyond reach; the reason being that even with large building programmes the quantities required were still too small for full advantage to be taken of quantity production methods. Two approaches have been made to this problem, each from a different direction. One school of thought saw the chief obstacle to quantity demand in the fact that components could not be interchanged between one system and another. This school believed that the essential first step towards such interchange must be the discovery of a system of dimensional co-ordination which could be universally accepted. Many other problems besides dimensions prevent such interchangeability, in particular the detail of the junction between one component and another; so much so that those who had been most closely concerned with practical prefabrication, while recognizing the desirability of interchange, regarded it as too distant an objective to merit their turning aside from more immediate and pressing problems. It therefore fell to others to start the long search for an ideal dimensional system. The prime movers here were Mark Hartland Thomas who, in 1955, founded the Modular Society, and Bruce Martin who in the same year was appointed to service the BSI Technical Committee on Modular Co-ordination. The BRS also began to take an interest in the subject and produced a concept of preferred dimensions based on an ingenious pattern of numbers.

The search for the benefits of mass-production led, however, to an alternative solution, to bulk buying by a consortium of local authority purchasers. In 1954, Donald Gibson, who had made his reputation as city architect of the blitzed city of Coventry, moved to Nottinghamshire as county architect. There he found a new functional problem still unsolved—that of mining subsidence. Gibson had served, before the war, with Stirrat Marshall, when they were together on the staff of the Isle of Ely. Finding that the conventional safeguard against mining subsidence was to build massive reinforced concrete foundations, Gibson asked the simple question: why add additional loads to ground which was going to subside under loading in any case? To answer this question he drew two of the best talents direct from Hertfordshire, W. D. Lacey (later to succeed him) and Henry Swain. Fully in line with the new tradition of pressing science into service, he also drew on the resources of Rex Coates, Professor of Civil Engineering at Nottingham University. Together this team devised the building system nick-named 'rock-and-roll,' a system articulated in such a way as to enable the completed building to adapt itself, without damage, to ground movements occasioned by the wave of mining subsidence passing under it. The system was based on the cold-rolled-steel framework which the Ministry Development Group had designed for a school at Belper in 1953–54. The success of the outcome is too well-known and too recent in time to need detailed description here. It is enough to say that its success was sufficient to encourage six other education authorities to join Nottingham in a concerted attempt to exploit its advantages to the full—to form, in fact, the organization now known by its initials, CLASP (Consortium of Local Authorities Special Programme). Thus, where Nottinghamshire, acting alone, had an annual shopping allowance of only £800,000, the Consortium as a whole began with over £2½ millions to spend, an amount which rose steadily until three years later it stood at £7½ million. By this massive scheme of bulk purchase it was possible to take such advantage of quantity discounts that while the national average of school building costs *rose* in the three years from 71s. per sq. ft. to 74s., the cost of Nottinghamshire schools *fell* from 74s. to 68s., despite the fact that the quality of the finished article was considerably above the national average.

There is little doubt that schools formed the ideal vehicle for the new approach. While each differed from the rest, the repetitive experience they afforded led to a steady evolution of ideas as the lessons of one year's programme were applied to the next: ideas always prompted either by changing educational or economic requirements or by the endless search for improved performance, never by the pursuit of stylistic or technical novelty. Then again, the impact of educational method on educational environment was comparatively easy to discern, while the needs of teachers and children were the subject of a much wider measure of agreement (although not of unanimity) than would have been the case with hospitals, for example, where the number of interests to be reconciled—doctors, patients, nurses and so on—would have been so much more in conflict. And for that reason the idea of brief-maker as design collaborator was able to take root and flourish in favourable conditions.

The next great advance in architectural thinking is likely to result when this approach faces the test of application to a wider field; to a field where there is no element of repetition, where the detailed nature of user requirements is less easy to discover and where the ideal briefmaker is more difficult to find.

On the other hand, as laggards climb on to the bandwagon, there is already a potential danger that prefabrication (under its respectable new title of 'industrialized building') might become an end in itself regardless of any real economic or social justification; or worse still, that any prefabricated building, however ill-conceived, might be thought better than a well designed one in wet construction. Such an outcome would deny a philosophy which, while not without ideals, rejects idealism, and is marked above all by an empirical pragmatism. It would also put the clock back; for this new humanisn, although in the main stream of the modern movement has also advanced it in a way which changes and modifies many architectural tenets hitherto accepted without question. First it demands that architecture be regarded comprehensively, not as a matter in which spatial and visual effects predominate, but in which dimensions and inter-relationships are governed primarily by human activities rather than by canons of proportion or taste. Social and economic factors it sees, not as vague general influences, but as active regulators of form. Cost has become a criterion which criticism must take account of; and even detailed inspection of these buildings will only lead to valid criticism if the critic is deeply immersed in the whole complex of problems they set out to solve.

Secondly, there has evolved an entirely new concept of the architect himself—his motives, his methods of work and his relationship to other technologists, to manufacturers and builders and, above all, to those he serves. His motives and ideas no longer stem from abstract concepts or the search for architectural self-expression but from the service of human activities and purposes. And if the pioneers of the movement have hitherto been largely anonymous it is because they have seen from the complexity of such purposes that individual genius must give way before the rarer genius of collective skill.

Tourist Office, Piccadilly, London

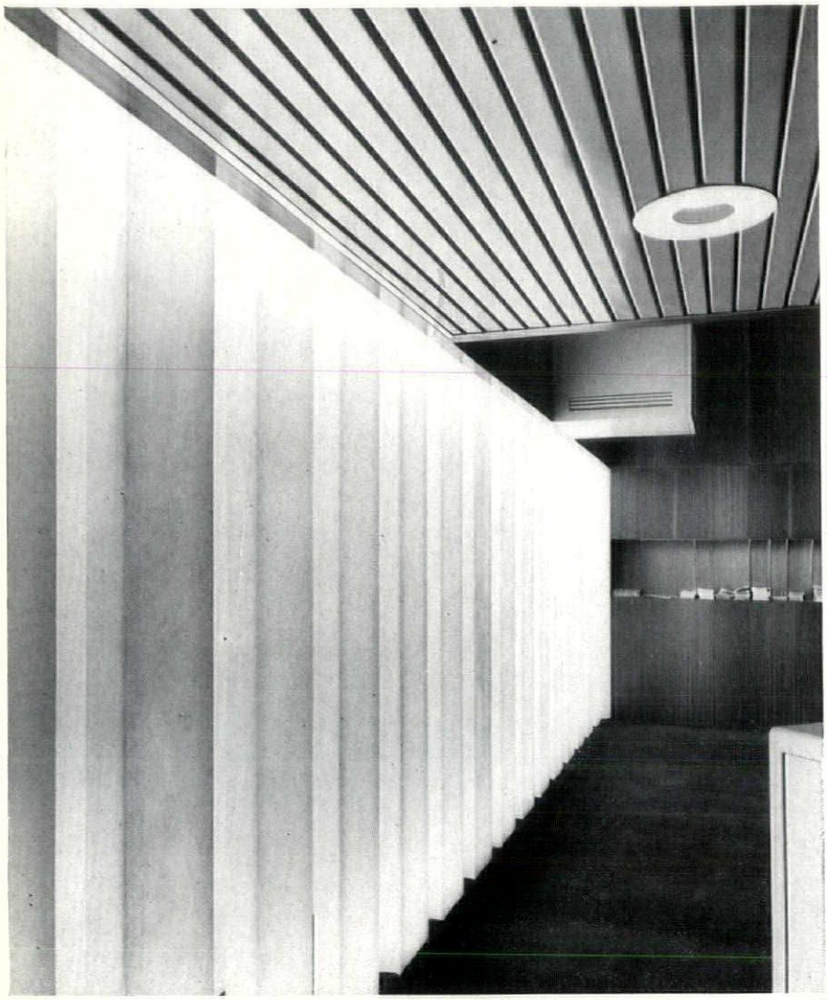
ID
a monthly review of interior design

architects: Ernö Goldfinger and Charlotte Perriand

One of a number of offices connected with various French travel and tourist organisations, grouped in a single building in Piccadilly, but designed by various hands. This one, which deals specifically with tourist information, occupies an L-shaped room in the centre of the block, with its entrance under the arcade which serves all the offices in common.

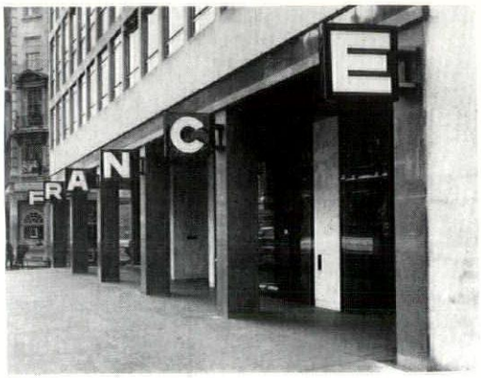


1, looking into the office from the entrance. The counters, with their massive nosings, covered in black plastic, curve in opposite senses, the first convex, the second concave.



2

ID



3

Tourist Office, Piccadilly, London

2, the luminous screen of glass-fibre channel-sections back-lit by fluorescent tubes, across the back of the office. Beyond the boarded part of the ceiling is the housing for a projector which can show films on a screen that pulls down from the ceiling nearer the street front.

3, exterior of the pavement arcade serving the offices.

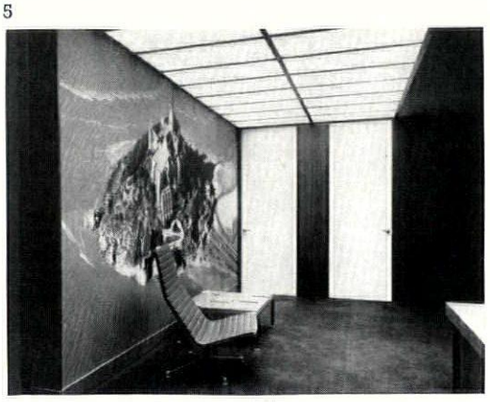
4

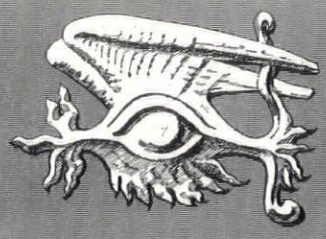


4, looking toward the street—the cinema screen may be seen retracted at the point where the boarding of the ceiling changes direction. On the left are continuous storage cupboards and display shelves for travel leaflets, while the range of doors above can be swung out at right-angles for the display of posters. Beyond the counters is a wall-sized photomural of Vaux-le-Vicomte.

5, another wall-sized photomural, this time of Mont Saint Michel, adorning the entrance lobby of a suite of executive offices, etc., on an upper floor of the block. These offices are also used by the French Tourist Agency and were also designed by Ernö Goldfinger and Charlotte Perriand.

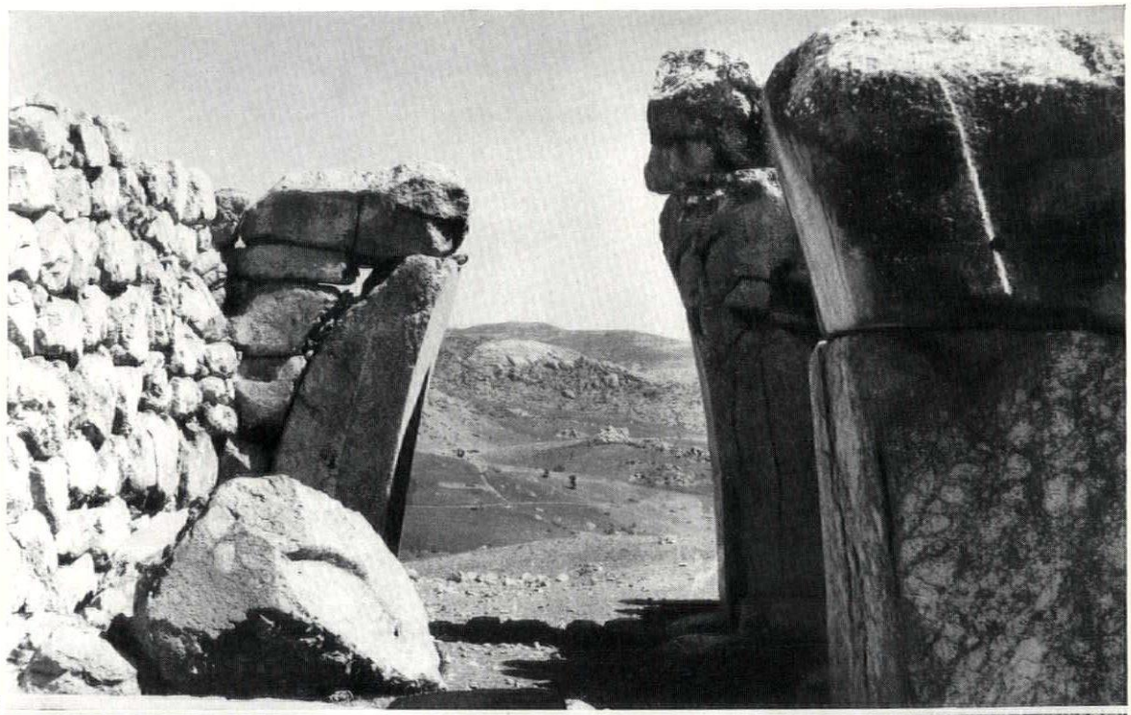
5



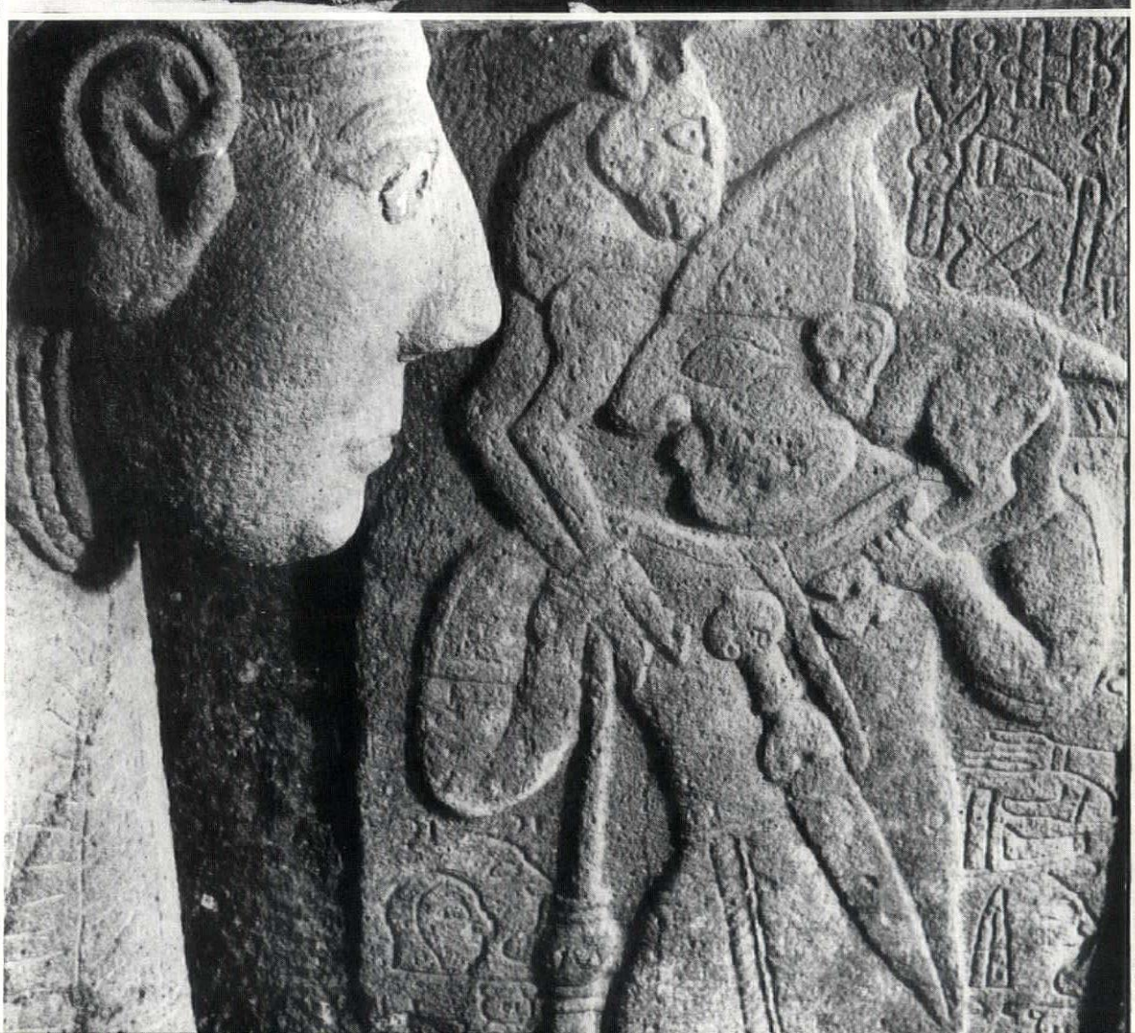


the exploring eye

Most of us know our Hittites too well from the museums: our view of their artefacts is veiled over with gallery dust and tricked out with crafty spot-lighting. But this enigmatic ancient people, who fought their way into the history of the Egyptians, the Babylonians and the Israelites before finally fading from history half a millenium before Christ, also left behind some architectural and rock-cut monuments too large and too complex to be uprooted by cultural looters of the nineteenth century and they remain where they were built and carved, often little-known and rarely seen. These pictures of Hittite monuments in situ in Asia Minor among desolate landscapes where they have remained almost untouched except by weather, are the work of the Turkish photographer, Ara Guler, who has contributed so many brilliant archaeological studies to previous issues of the REVIEW.



1

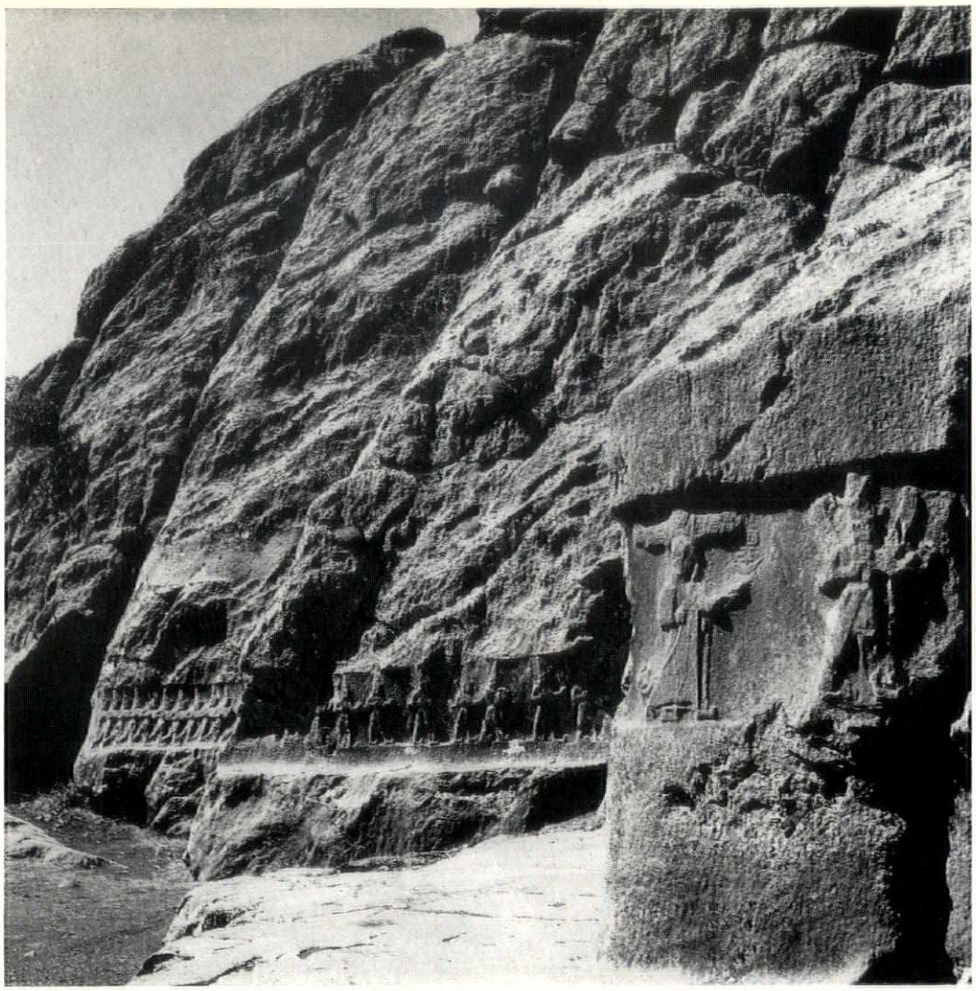


2

1, *the King's gate at Hattusas, the early capital of the Hittite empire—the mouldings on the jambs of this gateway adumbrate the presence of what must have been (even if only simulated structurally) one of the earliest parabolic arches in world architecture, since it dates from the fourteenth century* BC.

2, *a head and a relief from the eighth-century site at Asitawanda, province of Adana. The head, probably from a Royal sphinx; the relief showing a man with a sacrificial animal, an early prototype of the* moscophoros.



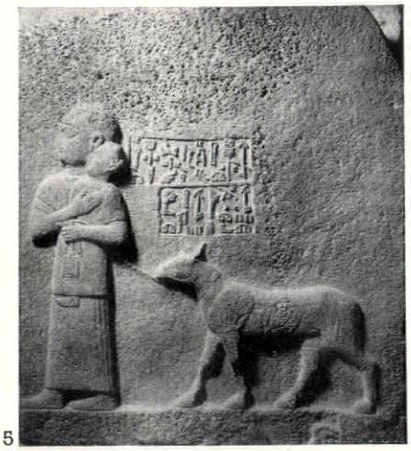


3, *the great gallery of the Hittite temple at Yazili Kaya ('Written Rocks') about six miles from the palace at Hattusas, and dating from the same period. Here, and in the small gallery, elaborate relief friezes of figures of gods and goddesses and kings were carved in the living rock (see also the cover of this issue).*

4, *heads of two statues excavated in 1952 at Kara Tepe, near Adana.*

5, *sacrificial relief of the eighth century from Gilgamesh, gratifyingly simple compared with some better known, more elaborate and more literate reliefs in museums and public collections in Europe.*

6, *relief of a king, from the small gallery of the temple at Yazili Kaya. Weathering and a raking light give it a Romantic, almost Medieval air—but that is not a hawk on the Royal fist.*





TWO HOUSES NEAR WIGAN

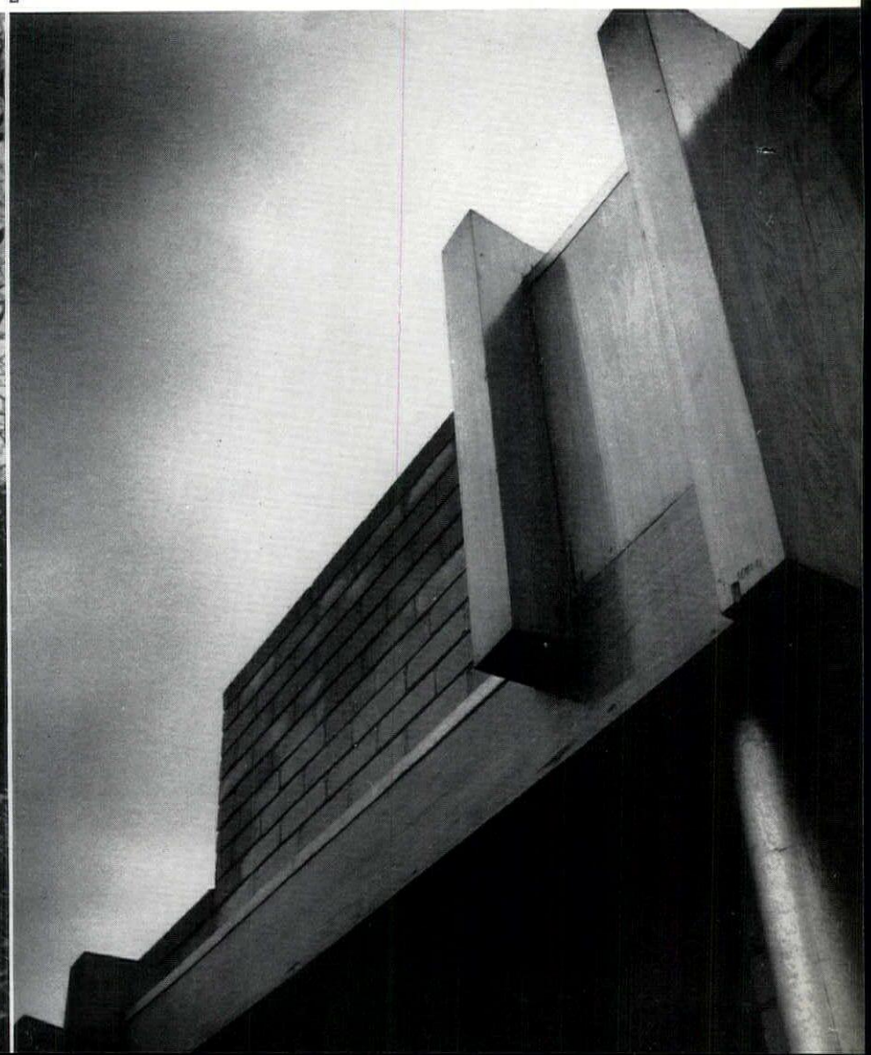
ARCHITECT | **ANTHONY J. GRIMSHAW**

1, the house at Parbold from the south-east. 2, detail of canopy over the entrance porch on the east side.

1



2

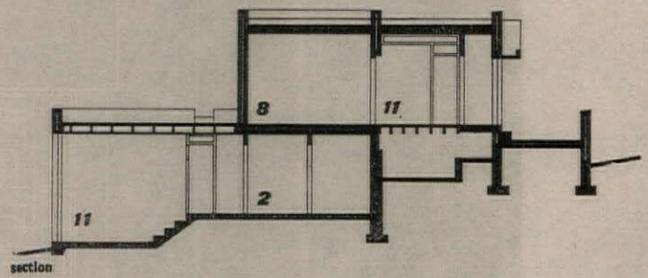


1. HOUSE AT PARBOLD

The clients required a house with one double bedroom, one twin bedroom and one single bedroom for themselves and their two children. The living and dining-room are planned as a single space. The site, which is on the edge of a large residential village, slopes steeply towards the south and west and has extensive views over open country to the coast. Several high mature trees and a hawthorn hedge follow the boundary. Thinly stratified solid rock exists below about eighteen inches of soil, and this suggested a number of different floor levels to avoid excavation. The building is at the highest part of the site.

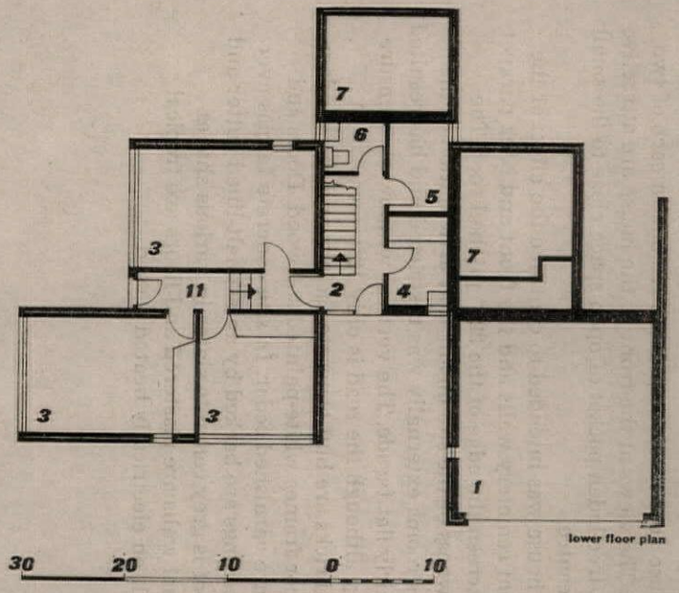
The house is designed as several pairs of parallel walls in two directions, across which the joists span, each space having one glazed open end facing south or west and requiring no lintels. The kitchen only is glazed to the north. Other windows lighting lavatory, cupboards or worktops are no wider than the space between the joists. The form of the house is emphasized by the main walls projecting well above the roofs, and by the horizontal glazing members which tie these vertical slabs in visually. The entrance hall with bathroom, lavatory and cloakroom is situated at the focal point of the composition and is midway between the bedrooms at the lowest level and the living-rooms at a higher level.

The bricks are pale grey concrete facings and the joinery varnished cedar and Columbian pine. No other colour is used externally. The roof is three-layer felt on straw slabs with a final layer of chippings. No plaster was intended internally but this has not been adhered to and white plastered walls predominate internally except in the living-room. Heating is generally by electric skirtings with fan heaters in the bedrooms.

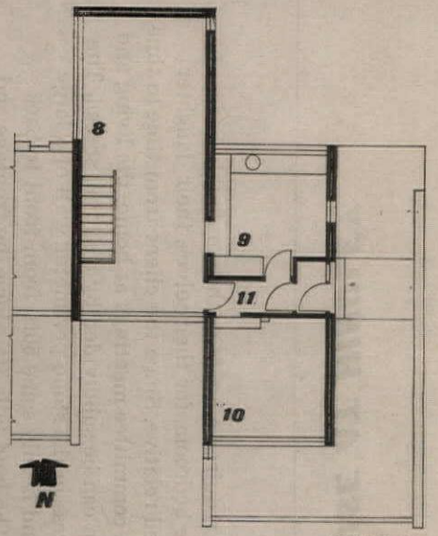


section

key
1, garage
2, hall
3, bedroom
4, bathroom
5, heating chamber
6, w.c.
7, void
8, living/dining room
9, kitchen
10, study
11, passage

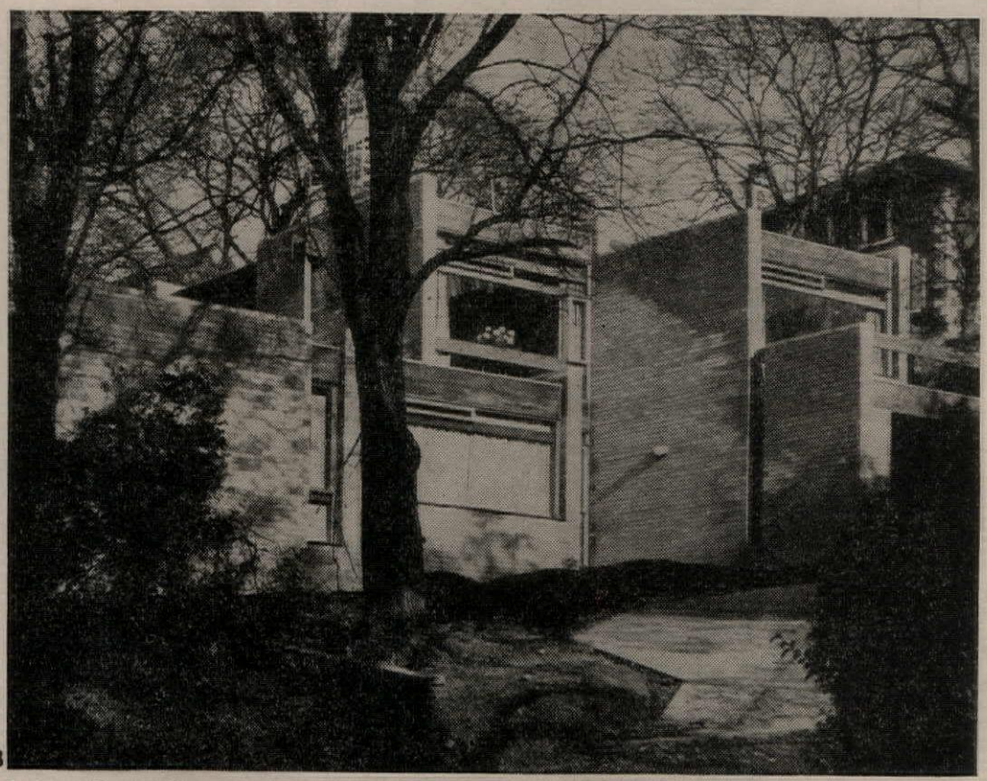


lower floor plan



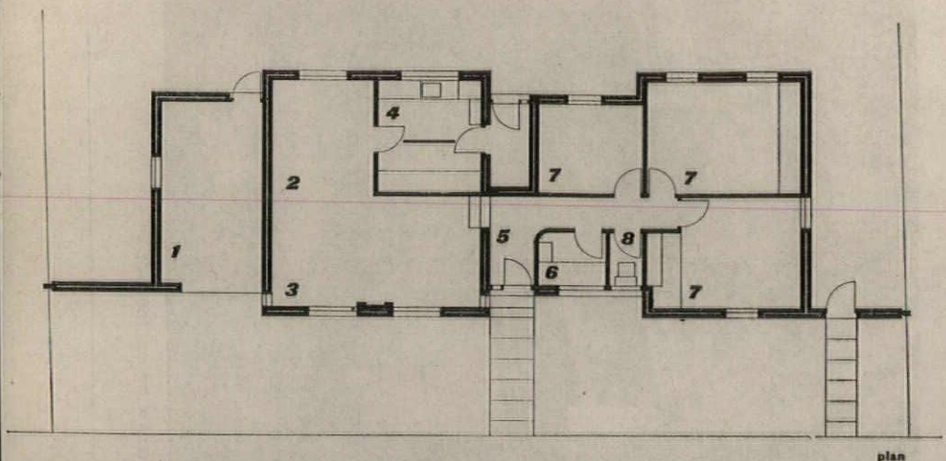
upper floor plan

30 20 10 0 10


3

3, from the south-west with the bedroom wing on the left.

2. HOUSE AT HINDLEY



plan

30 20 10 0 10

key
1, garage
2, dining area
3, living area
4, kitchen
5, hall
6, bathroom
7, bedroom
8, w.c.

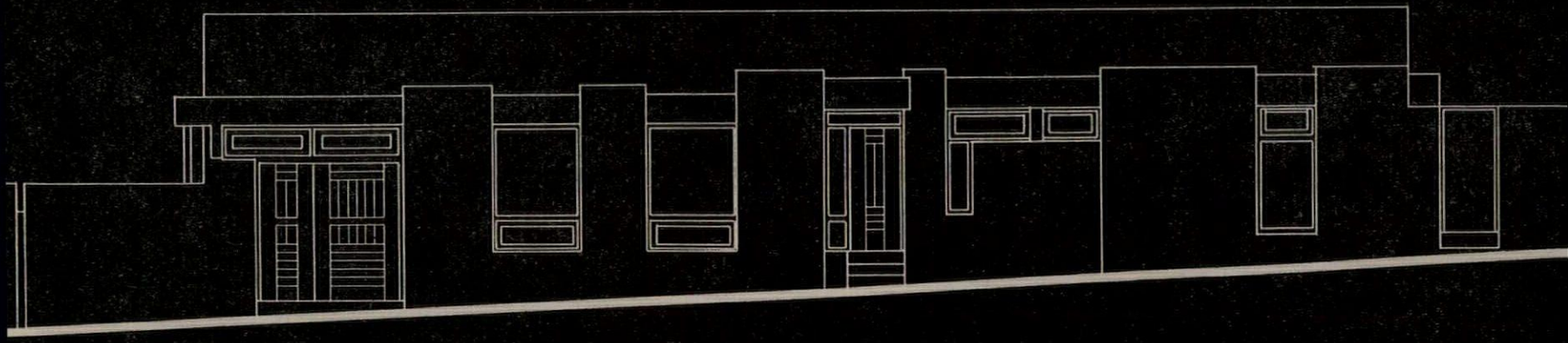
The clients required a house with two double bedrooms and a single bedroom, for themselves, their daughter and a retired relative. Since the client from time to time holds small committee meetings at home, the living and dining-room can be subdivided by a sliding screen. The site is a recess in the stone perimeter wall of a large cemetery and is only some 50ft. from front to back boundary. The land falls 3ft. along the frontage and the house floor levels step down 1ft. 3in. in each of two places. The views at the front of the house are attractive over a tree-laden pocket of open space close to the small town centre.

The house was intended to continue the effect of the adjacent cemetery walls and the front and back parapet walls screen the edge of the 22½° pitched roof. The shallowness of the site meant that articulation of the various rooms externally was restricted and has resulted in a fairly flat façade. The vertical window slots ensure privacy although the road is only 12ft. away.

The bricks are buff concrete facings and the window and door frames white-painted softwood. Doors and gates are varnished cedar. *In situ* concrete fascias over the openings are backed by an asphalt-lined gutter and the roof is grey concrete slates in various shades. Internal walls are plastered and floors are tropical asphalt on electrically heated screed.

for criticism see page 211

front elevation



Two views of the house at Hindley: 4, the garage; 5, looking towards the main entrance.



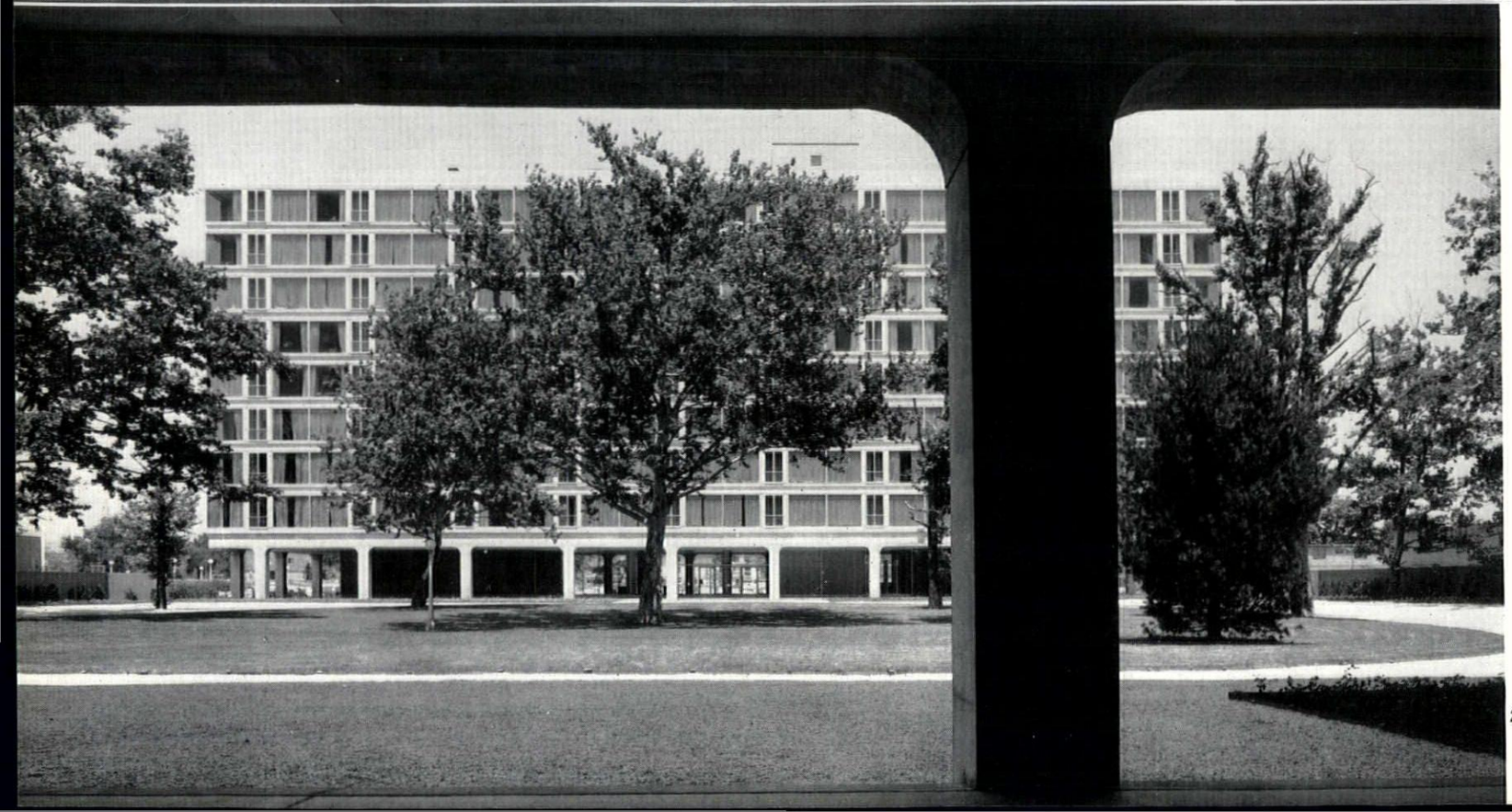
4



5



1



2

criticism

James Marston Fitch

Architect: I. M. Pei

Housing in New York, Washington, Chicago and Philadelphia

The American architect I. M. Pei operates at several levels in the field of urban design: as planning consultant, as independent architect and as 'captive' designer for the huge American real estate firm of Webb & Knapp. Though all his work is unified by a common set of definite, and visually very apparent, principles, it naturally varies with the scope of the task before him. In such urbanistic studies as those done independently for the cities of Rochester and Cleveland we get some glimpse of his aspirations for the cityscape as a whole. In his housing designs—especially in the projects for Society Hill in Philadelphia, and Kips Bay in Manhattan—we can see how he adapts his formal theories of urban aesthetics to the exigencies of modern real estate practice.

At both levels, Pei clearly aims for a kind of lofty simplicity in the cityscape: and his method of achieving this is more that of the sculptor than of the planner. A perfectly rational analysis of objective factors (land use, traffic, building costs, etc.) no doubt, underlies all his major decisions. Nevertheless, one has the impression that his manipulation of land and buildings is inspired more by plastic than by strictly functional considerations. Since great taste and discrimination are the mark of all Peisian work, this sculpturesque approach often leads to extremely dramatic results.

All of Pei's urban renewal work, including the early Mile High Center at Denver, displays this quality. It is very evident in the schemes for Rochester (where the river and its bridges offer the pretext for a *conversazione* of big buildings) and for Cleveland (where—as only his aerial perspective can fully reveal—his long, low apartment blocks are folded into a sort of running Greek key with the towers as centrepieces).

But Pei's search for a dramatic cityscape is perhaps best exemplified at Kips Bay. Here the site is framed by the big, bright New York University Medical Centre to the east, the huge mass and chimneys of consolidated Edison to the north-east, a forest of skyscrapers along the north and western boundary; to the south, low brownstones still prevail. Into this already melodramatic setting, Pei has inserted his own composition—two immense, severely plain apartment blocks, standing in the midst of a huge open platform, surrounded by open air. The effect is astonishing. Emerging from the constricted spaces of the surrounding streets, it is much as if one had stepped into a di Chirico painting. The scale of everything is very large. Pei has taken advantage of the falling grade toward the north to conceal an underground garage. The windowless outer wall of this garage becomes, in effect, a gigantic retainer for the platform on which the northern building stands. Its 600 ft. run is broken only where the driveaway ramps up between curved balustrades which terminate in newel posts, 10 ft. in diameter and 9 ft. high.

In purely plastic terms, such passages in the Pei design may accurately be described as monumental. Their scale is Pharaonic. One can assume that, when the landscaping is complete, the planting will somewhat soften the visual impact of the terrace. But the street beneath the retaining wall will be hot in summer and cold in winter, without visual interest in daytime and frighteningly empty at night. One has the feeling that no pedestrian will ever use it after the photographs are made. And it

Opposite: characteristic aspects of urban housing under the direction of I. M. Pei: 1, *Third Street terrace houses in Society Hill, Philadelphia, looking into the parking yard;* 2, *view of one of the high-rise blocks of Town Centre Plaza, South West Washington, from under the other block. These developments, and others in Chicago and New York from Pei's office, are discussed in the article by Professor Fitch which begins on this page.*

is this problem of the ultimate *viability* of these Peisian spaces that is worrying. They seem based upon a set of almost Platonic premises: a way of life for the inhabitants as formal as the Spanish Court; a climate that is undeviatingly benign—windless, clean, free of ice and snow; an immaculate maintenance which is very rare in real life. This is a landscape more to be looked at than lingered in. It offers little opportunity or incentive for stopping short of the lobby doors.

The glass-walled lobbies themselves, and the loggias which surround them, occupy the whole of the entrance level. Characteristically elegant in line and proportion, and handsomely (if rather spartanly) furnished, they echo the spaciousness of the grounds outside. This opulence is suddenly abandoned, however, when one steps out of the elevator into the upper corridors. These are surprising in their very ordinariness, and disappointing in their lack of daylight and effective ventilation. The apartments themselves, though conventional in plan and rather too deep for their width, do somewhat recall the pretensions of the *piano nobile*. Pei's special system of construction eliminates the beams and columns which create so many awkwardnesses in the usual interior. This feature, and the continuous window walls with their deeply recessed glass, give the major rooms quite an air of space and security. The deep embrasures, which are an integral feature of the structural system, also afford more protection against glare and heat than is usual in such towers.

The result of all this is, at Kips Bay, a discrepancy between the lofty expectations aroused by the exterior grounds and public spaces and the quite ordinary interior reality of the actual dwelling units. Pei's altogether admirable ambition to replace squalor and confusion with serene and noble order defeats itself. Visual coherence, organizational clarity, are important elements in any successful environment, but here their importance has been exaggerated. It is as though the architect has expended too much of his total resources—in land, air, enclosed spaces—upon the public aspects of his design; and too little upon those private amenities—commodious corridors, larger and better proportioned rooms, higher ceilings—which are the essence of true luxury. By the same token, the carefully developed relationships with the surrounding city seem pictorial rather than organic, by their very monumentality more apt to hinder than to help social relations between the project and its neighbours.

One has the same misgivings about the planning at Hyde Park, in Chicago. A new centre is created by placing the high-rise

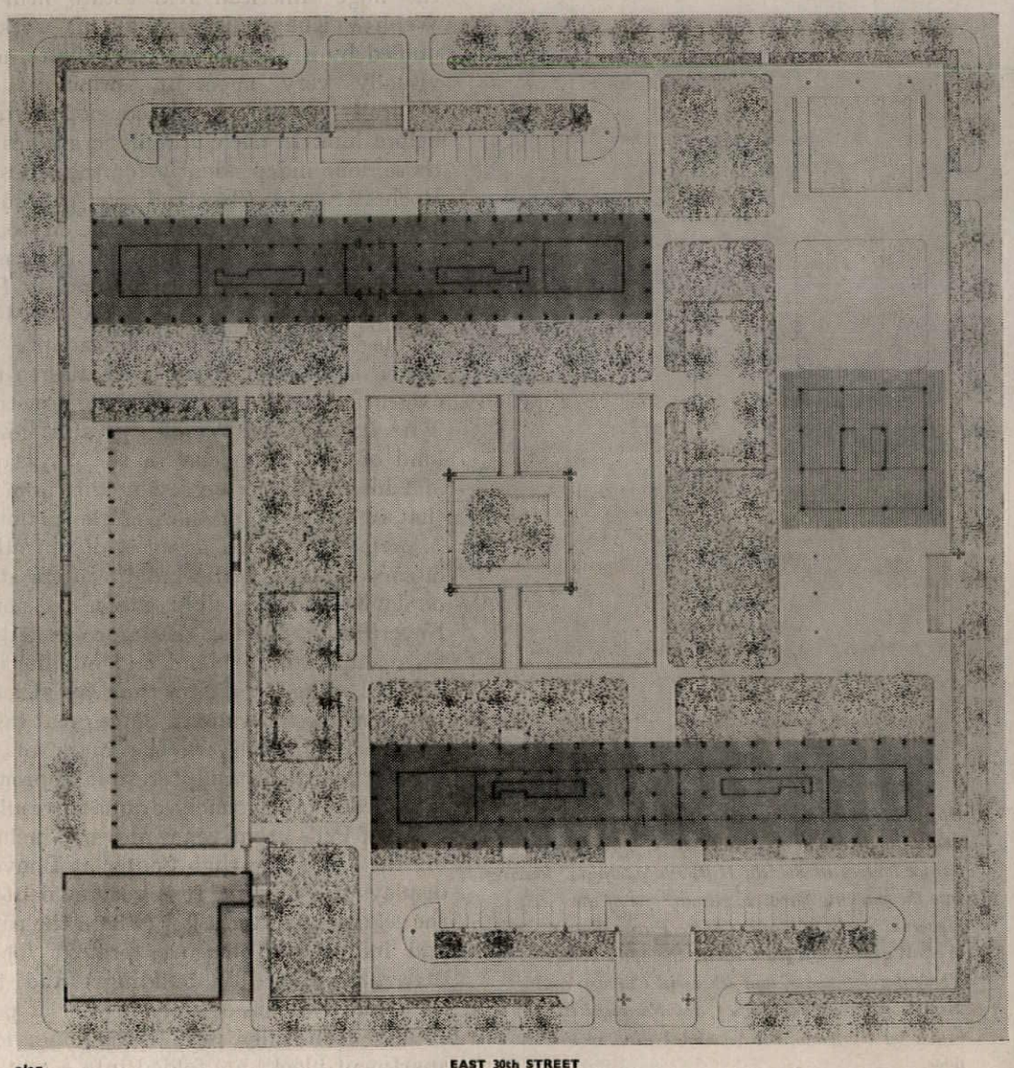
[*continued on page* 199

Kips Bay Plaza, New York



3

3, the two slab blocks at Kips Bay, seen from the existing Manhattan townscape at the corner of Second Avenue and 29th Street.
4, looking into the central plaza of Kips Bay from First Avenue—the block on the left was completed and occupied first, as may be seen from the full installation of tenants' own air-conditioning plant in the spandrels under the windows. The north block was not occupied until fully a year later.
5, the Second Avenue end of the north block—a larger close up, of its south elevation, appears as the frontispiece to this issue, page 156, *and gives a more detailed idea of the architect's design and what the tenants have done to it.*



plan



4



5

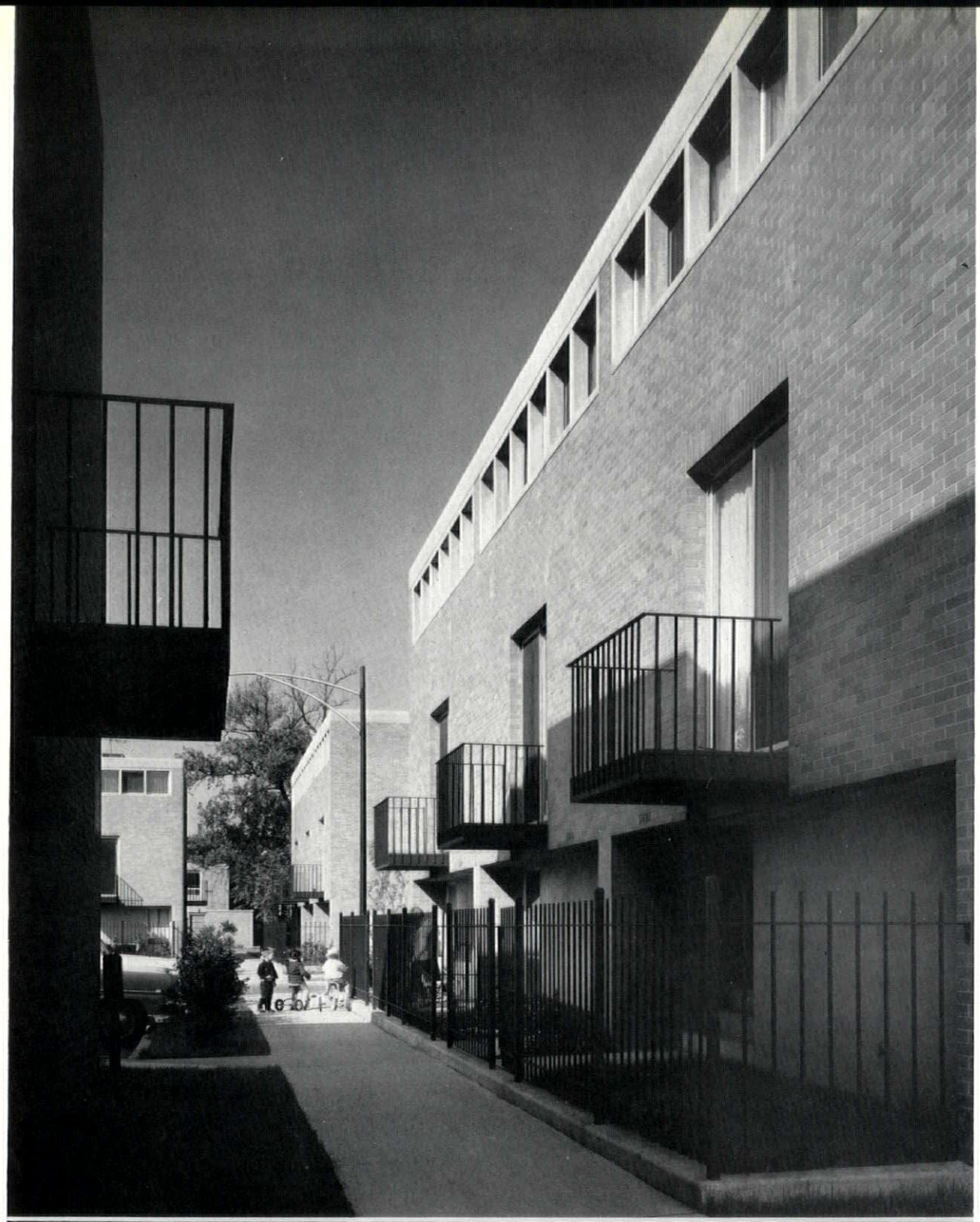
6



7

Town Centre Plaza, Washington

6, *close-up of part of a façade at Town Centre Plaza. The relationship of structure to fenestration is more sophisticated and less relentlessly repetitive than in earlier Pei schemes, though the aesthetic is still one of well-finished concrete.*
7, *the two blocks, from the south. In spite of the more varied and adventurous treatment of the façades, the planning of the site still puts the two slabs in a very simple, parallel relationship to one another.*



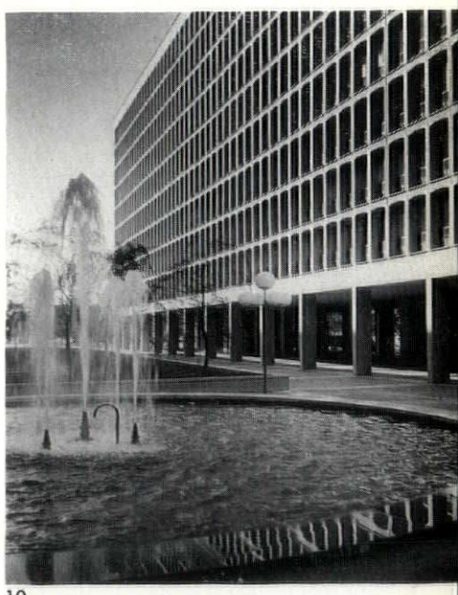
8



9

8, *a pedestrian way among Harry Weese's terrace housing at the north end of South Harper Square.*
9, *the complete square seen from its southern entrance; further terrace housing can be seen in the distance, with the upper part of one of Pei's slab blocks appearing over the roofs of the left-hand side of the square.*
10, *one of the two slabs in the centre of the Hyde Park layout, seen over the fountains of the central plaza. As at Washington, the two blocks are in a simple parallel relationship, but are surrounded by courtyards of terrace housing, designed by Harry Weese and Partners, that are the effective prototype of the low housing at Philadelphia* (*see page* 198).

Hyde Park, Chicago



10



11



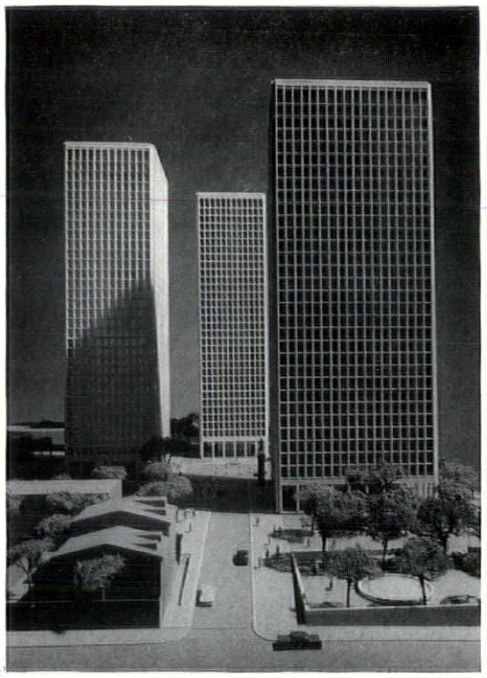
12



13

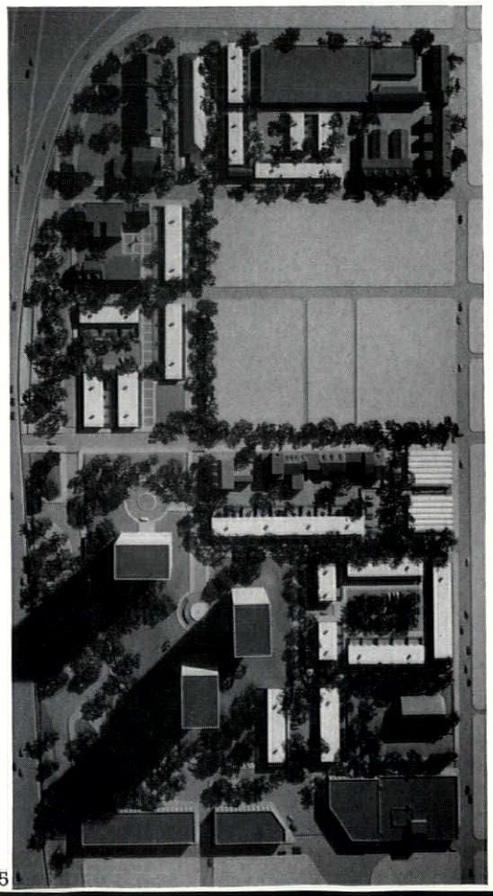
Society Hill, Philadelphia

11, 12, 13, *parking yards, Third Street façades and Jane Jacobs-type neighbourliness in the back yard of Third Street Housing, Society Hill, Philadelphia.*



14

14, *model of the three tower blocks which will give Society Hill economically workable densities, while keeping developments on the fringes of the site down to the scale of existing streets (note houses in extreme background of* 11).
15, *block model from the air, showing the relationship of the tall towers to the lower terraces. Third Street housing immediately to left of towers in this view.*



15

continued from page 194]

apartments in a newly created island in the middle of a heavily-travelled East-West thoroughfare. It was argued, in the original Webb and Knapp presentation, that this device would reduce traffic on 55th Street. This seems unlikely; at most, it will reduce its velocity. In any event, the noise, glare, fumes and physical violence of the traffic will surround the apartments. The landscaped areas seem wholly inadequate buffers against such nuisances, while the traffic will be heavy enough to isolate the centre from its surroundings. Granted the logic of using these high-rise units as the nodal point around which to crystallize a new development, one wonders why the street could not have been depressed to pass beneath them. Underground garaging for the apartments and service docks for the shopping centre could have been simultaneously achieved.

The site planning of the New York, Chicago and Cleveland projects is formal, elegant, inert. Since all three sites are nominally flat, topography imposed no special demands. But orientation to sun and wind is also ignored completely. It may be true, as American technicians never tire of saying, that our heating, cooling and insulation techniques have liberated housing from its historic dependence upon correct orientation (though they tend to exaggerate the efficacy of the first and to minimize the importance of the latter). It remains a fact, however, that the double-loaded corridor plan of the Hyde Park apartments assures that about half of the units will get no winter sun whatever. (Due to the fact that Kips Bay is orientated with the New York street pattern, it will fare better.) The row houses at Hyde Park are organized into patterns as formal as an eighteenth-century minuet. This approach yields scraps of land that, for no very convincing reasons, are labelled as 'playgrounds' and 'commons.'

Judging from its stylistic relationship to his other towers, we can assume that Kips Bay represents Pei's most considered response to the esthetic problems of the tower. But at Society Hill, Philadelphia, we can see his reaction to another set of quite special conditions. Here he was called upon to perform a delicate urbanistic operation—the insertion of a large new redevelopment project into the immediate environs of Independence Hall. In addition to its sentimental significance, the whole area—streets, buildings, even the Hall itself—is built to a diminutive scale. Any successful intervention would require tact, taste and a sense of history. Pei seems to have been fully aware of this and his main decisions have been conditioned by it. The monumental scale of the New York and Cleveland designs has been avoided. A plan at once less rigorous and more open has been adopted; and, judging from the drawings, a certain degree of naturalism is envisaged for the landscaping.

The towers have been grouped at the centre of the tract and cushioned by a large park. This has been at once an economic necessity and an esthetic choice. For, given the returns required by the investor, only high-rise units could yield the required densities. On the other hand, it would have been disastrous to confront that eighteenth century townscape with three 30-storey towers. The intention of the plot plan is therefore to isolate them visually, to place them in the background of most points of view. The new town houses which Pei has disposed around the periphery are part of this same urbanistic aim. And further to soften the visual discontinuity between old and new, a number of the better old houses within the project are scheduled for preservation and renovation.

A critical test of this Peisian strategy occurs along that line of discontinuity where old and new town houses confront each other across a narrow street. How successful will it be?

One such area is now complete—Third Street south of the Philadelphia Mission—and some generalizations seem possible. The eighteenth and nineteenth century houses along the west side of this street have a common scale which derives from an almost uniform lot width of around 20 ft. and building height of 3 to 3½ floors above grade. This basic module is firmly outlined by deep cornices and prominent chimneys and downspouts. But inside this larger pattern a subsidiary one is created by windows, dormers and stoops, all of them regularly-spaced, tall and fairly narrow. The cumulative effect of this, when seen in perspective, is that of a delicate, almost lacy, screen: for which the gentle colours of rosy brick, white woodwork and green shutters seem exactly appropriate.

While wisely refusing to copy these façades, Pei has sought to create new ones which would be visually congruent with the old ones across the street. Since he has used much the same lot size and floor plan, his houses have much the same bulk. They are faced with a brick somewhat darker than the old, their woodwork and stone trim are an off-white. Evidently, it was assumed that these steps, alone, were enough to guarantee the essential unity of the streetscape. However plausible this reasoning might have sounded in the drafting room, it fails in stereometric reality. Unaccountably, the new houses abandon the most characteristic feature of the old façades, i.e. the strong delineation of the party walls. On the contrary, a whole series of devices is employed to conceal the cellular nature of the block. The walls are an unbroken plane from end to end. The arched and recessed entrances are overscaled to read like a block-long arcade. The fenestration is arbitrarily manipulated to form a contrapuntal series of bays. And the top floor windows are detailed to form a continuous unbroken line, partitions and even party walls being masked behind uniform jambs. As a result, they appear as an enormous entablature, uniting the separate volumes below into a single mastaba-like block. The block loses all sense of domesticity. Despite its modest dimensions, it assumes a kind of portentous monumentality that is the antithesis of the airy, hospitable façades across the street. Far from having been preserved, the unity of the streetscape is destroyed.

Given the care and talent that obviously went into this design, it is hard to understand how such coarse and unperceptive solutions were accepted. One has only to look at the garden façades of the same houses to find the obvious source of the error. Here a series of practical considerations (good daylight, privacy, view) find straightforward expression in functionally-disposed elements (big windows, recessed terraces, garden walls). These features 'automatically' yield a much more interesting composition and pleasantly domestic scale. Since the interiors are rationally planned and most carefully detailed, showing none of the affectations of the street fronts, one is forced to accept these latter as the expression of calculated policy. The question is here, as at Kips Bay: what are its premises? What kind of people are supposed to live behind this façade? What sort of life is it supposed to express and facilitate?

In this, as in similar projects in the urban redevelopment programme, there has been some criticism of the propriety of including private houses at all. The argument is that such houses cannot possibly carry their full share of the cost, being twice subsidized—once by the taxpayer whose subventions make the whole programme possible; and again by the tenants of the high-rise units, who pay proportionally more. There is certainly some basis for such reasoning, even where the sales price ranges from $45,000 up, as it does at Society Hill. But here, Pei's reasoning seems entirely correct for supra-economic reasons. The houses serve a vital transitional function between the old and the new. It is a pity that they do not do it more elegantly.

The Society Hill towers are not yet finished, so that any estimate of their ambiental relationships would be premature. However, they employ substantially the same structural system as that at Kips Bay and this system displays that immaculate

detailing which marks all of the work of Pei's office. In this sense it belongs to the Miesian phylum of American design, in which no two members ever join or intersect one another accidentally. Such details, taken individually, may only be visible to the expert. But, taken together, they endow his work with a kind of unmistakable lustre.

The concrete work at Kips Bay shows how the great resources of a large, well-staffed office have been mobilized to solve specific problems in both the physical and the aesthetic properties of the material. As has been pointed out, the structure yields an exterior wall grid with deep embrasures for the glass. This grid, in its even texture and flawless profiles, gives every appearance of being formed of precast members. It is, however, a cast-in-place monolith. For all its purported economies, Pei has found precasting too expensive for the budget. He therefore set about bringing on-site pouring methods under such firm control that no finish treatment of any sort would be required. This was accomplished by extensive experimentation with aggregate sizes, mixing and pouring control, cement colours and various types of formwork.

Since the material is so reliable, and the factors of safety so huge, Pei's research has been motivated as much by aesthetic as by structural considerations. Unlike too many of his contemporaries, he has been aware of the cosmetic aspects (as opposed to the purely physical problems) of ageing. Most urban climates are very unkind to cementitious materials, especially when used in slab form. Crazing, cracking, flaking and erosion, even where they offer no threat to the physical stability of the member, violate clarity of surface and sharpness of contour. Soot and smoke, even where they do not set up chemical erosion, soil and stain the original purity of colour. This ageing tends to violate the aesthetic *raison d'être* of architectural concrete. Failure to anticipate this fact of life makes travesties of the elephant house and penguin pool at Regent's Park or the early Le Corbusier villas around Paris; and is apt to reduce much contemporary concrete to the same sorry state very quickly.

To minimize such effects, Pei has sought to control the colour and texture of his mixes and has paid special attention to pouring and forming techniques. Since he cannot eliminate drip and capillary action, he has sought to control them at expansion joints and 'pour lines'; since he cannot avoid soil and stain, he has sought to manipulate them in his favour by giving vigorous curving profiles to all the members of his exterior walls. The result, he hopes, will be a wall which ages gracefully. The problem is subtle and, though it is ultimately aesthetic, it involves the chemistry of smog and soot; the hygroscopy and capillarity of materials; even the botany of mosses and lichens. It is to Pei's credit that he is one of the few architects working in concrete to have paid serious attention to this problem.



16, *play-sculpture in Kips Bay Plaza.*

In trying to reach a rational and balanced estimate of the ultimate viability of urban projects like these of Pei's, one deals with supra-architectonic qualities for which there is not yet an accepted nomenclature, much less a recognized scale of values. These projects are no longer mere architectural containers for isolated function: they supplant whole sections of complex urban tissue and their task is correspondingly more complex. Such tissue, to be viable, must satisfy a whole spectrum of human need—social and private, somatic and psychic—which lies far below the reach of plastic or pictorial manipulation. These new monumental cityscapes do not facilitate such complex relationships. They are more apt, actually, to impede them because—to borrow Jane Jacob's inspired phrase—they attempt to isolate sacred from profane land uses.

The inherent dangers here are by no means limited to Pei's work. On the contrary, they are common to all American urban redevelopment work and they derive from the legislation upon which the entire programme is built. The norms of this legislation are those of American business. The programme is being executed largely by private capital, operating under very inadequate architectural and urbanistic controls. In such circumstances, major design decisions turn on the question of profitability, the natural tendency being to maximize profits. The projects are, therefore, like Pei's, escalated into the luxury class. Yet, even when viewed within this reference frame, they fall short of their promise, lacking many of the authentic luxuries of urban life: clean air and clean grounds; first rate public transport; freedom from dangerous traffic snarls and ugly parking lots; a cosmopolitan choice of goods and services; streetscapes rich in interest, safe and enticing in all seasons of the year. For all their visual splendour, they are not truly luxurious.

The fact is that urbane amenity is the end result of processes, many of which are simply not the proper medium for artistic invention or subjective expression. These processes may not be necessarily 'ugly' but neither are they interested in becoming 'beautiful.' For, though we cannot expect urban tissue to grow spontaneously, by cellular division, without human intervention or guidance, neither can we expect it to survive a formal manipulation for purely pictorial ends. The problem goes much deeper.

Nobody would question the interest, visual and historical, of early industrial artifacts or engineering installations as objects for study. How many would be curious as why such objects seem today to be so attractive to architects (as opposed to engineers)—or why, for that matter, the editors of the REVIEW share this enthusiasm to the extent of wishing to publish the results? It is certainly something more than the laudable wish to record the neglected or the vanishing, since similar subjects—such as early railway carriages or canal locks of which ample records already exist—are studied with equal care and affection.

Is it just simple nostalgia for the days when we all wanted to be engine drivers, or is it the natural sympathy of every artist for the innocent and hand-made—or at least hand-assembled? Is it an unconscious wish to share in the present-day supremacy of the technologist, or merely the yearning for the enviable unselfconsciousness of the nineteenth-century engineer? (An iron Doric column in a pumping engine is innocent and acceptable; in a bank facade it is sophisticated and suspect.) Is it merely boredom with the orthodox and over-recorded—those eighteenth-century gateways and gothic porches which sometimes look less like buildings than three-dimensional measured drawings, or is it—most likely of all—a free pass to spatial intricacy without the bother of an architectural function such as habitability? You can call it functional because of its mechanical purpose, but as architecture it is delightfully licentious.

In any case, why worry? The main purpose—to exercise the eye in the analysis of relationships, the hand in accuracy of measurement, the mind in the understanding of structure and the heart in love for the subject of study—has been achieved. And as for presentation, once more we are shown how closely related always are architecture and the way in which it is illustrated—the steel engravings of High Gothic, the soft lithographs of Maurice Adams and the crumbling silhouettes of his Edwardian subjects, the filtered skies of Dell and Wainwright and the blinding white walls of the Fighting Thirties. The stiffly elegant hatchings and rulings of engineering drawings admirably catch the spirit of the subject illustrated. At only one point does the stomach of the architect still turn. Not yet can he face—even in the interest of true consistency—the engineers' unspeakable tradition of underlining his lettering.

HUGH CASSON

CROMFORD

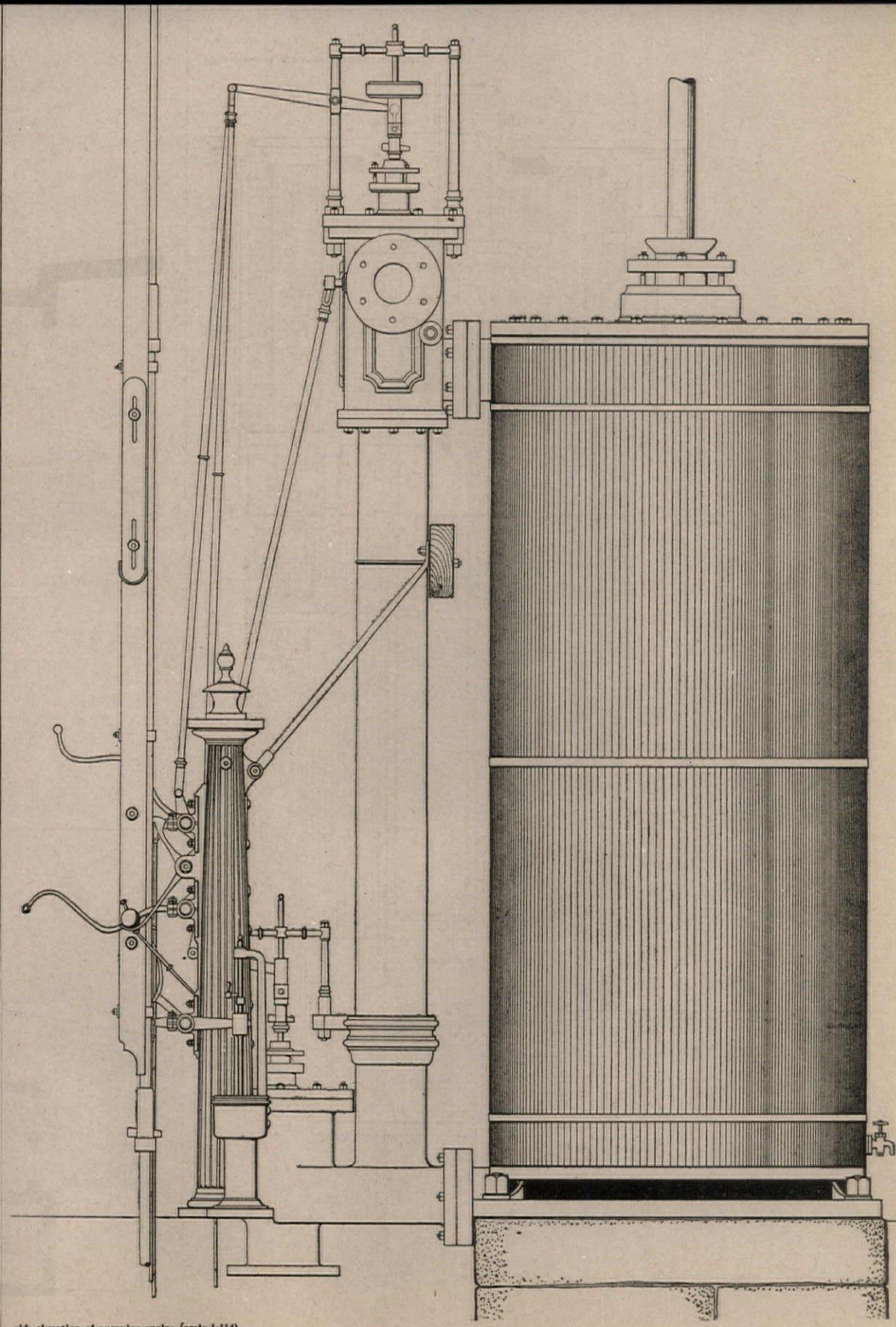
CANAL PUMPING STATION, DERBYSHIRE

Measured drawings by John Mosse, Peter Mosse and Michael Ball

The history of the engine shown in these drawings is available from the minutes of the Cromford Canal Company. It was built in 1845 *after several years of water shortage, caused partly by the building of the Manchester, Buxton & Midlands Joint Railway up the Derwent Valley. The canal itself was built by William Jessop in* 1789 *to serve, amongst other mills, Arkwright's mill at Matlock, the quarries in the High Peak—including Hopton Wood—and the Butterly iron works. There was no suitable site for a reservoir in this steep valley, so the upper reach of the canal is built very deep in lieu of the usual summit reservoir.*

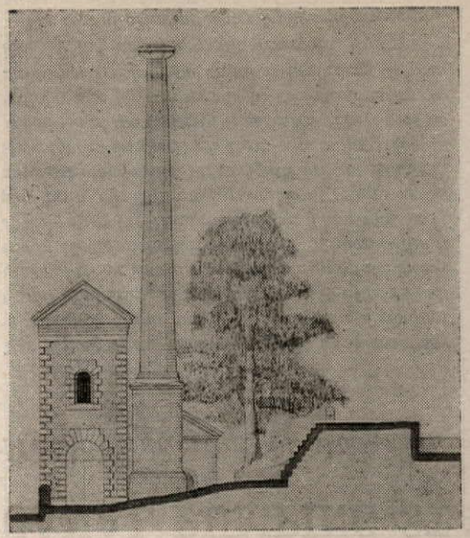
The cost of bringing water by aqueduct was prohibitive, and plans for an engine, to make good losses, went forward after the canal was diverted to make way for the railway. It is possible that the plans had existed from the first, and were only executed when pressure from the railway occurred. However, even though James Watt had died in 1818, *and since his patents had expired in* 1800, *the steam engine had been greatly improved, an engine of Watt's design was erected. The style of the engine house also seems out of keeping with the date.*

The Science Museum agree that this canal pumping engine is probably the only one of its kind still in its original position. The boilers are condemned, but the engine is in going order and the house is sound. It was last moved under steam when the transfer from Railway to Waterway was made in 1948. *The Curator of the Transport Museum has recently arranged a preservation order.*

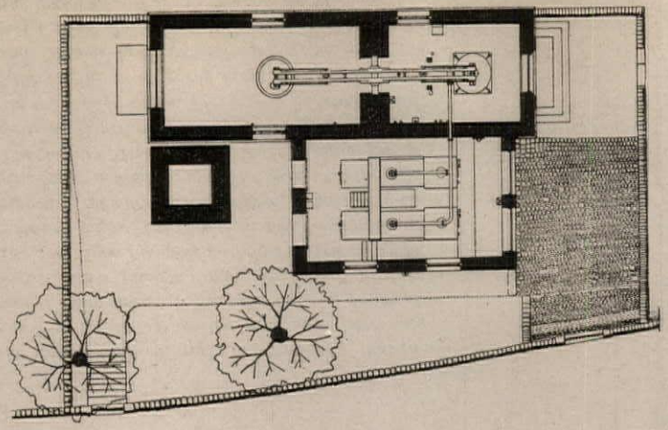


side elevation of pumping engine (scale 1:114)

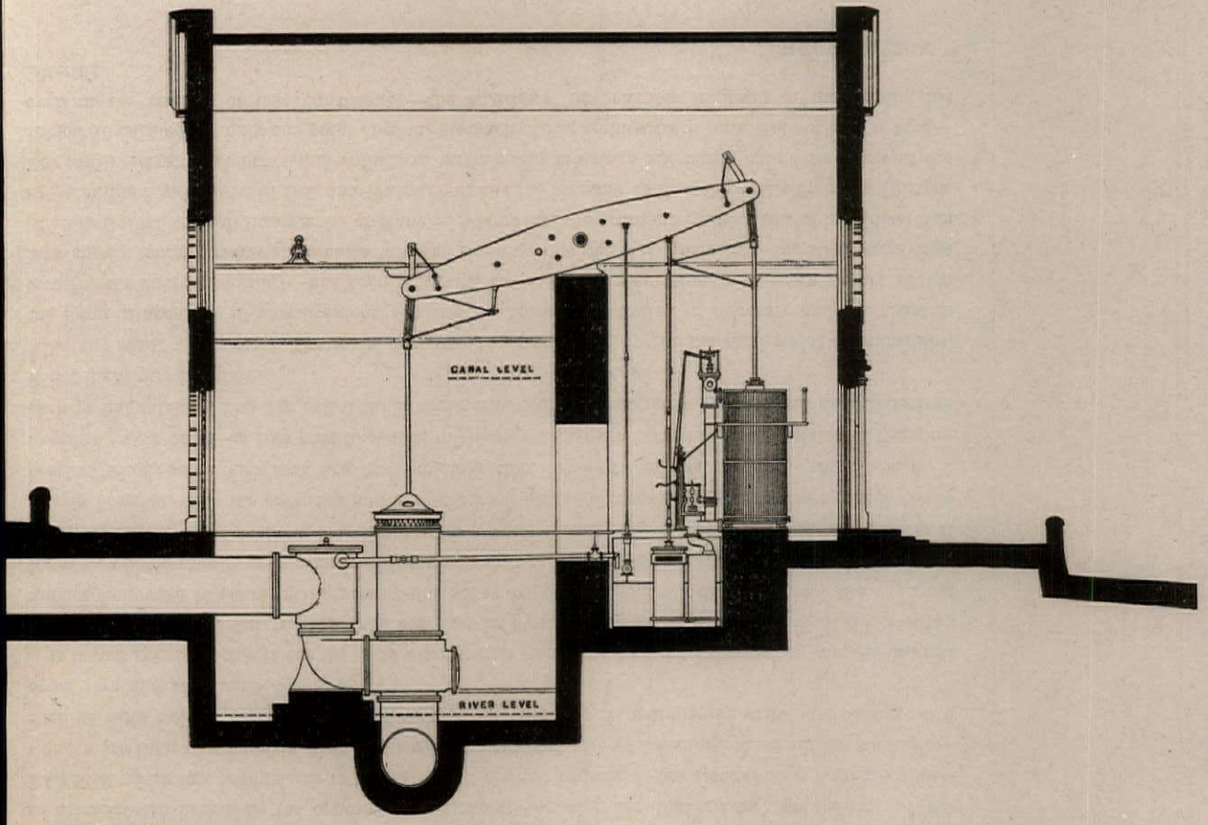
CROMFORD CANAL PUMPING STATION, DERBYSHIRE



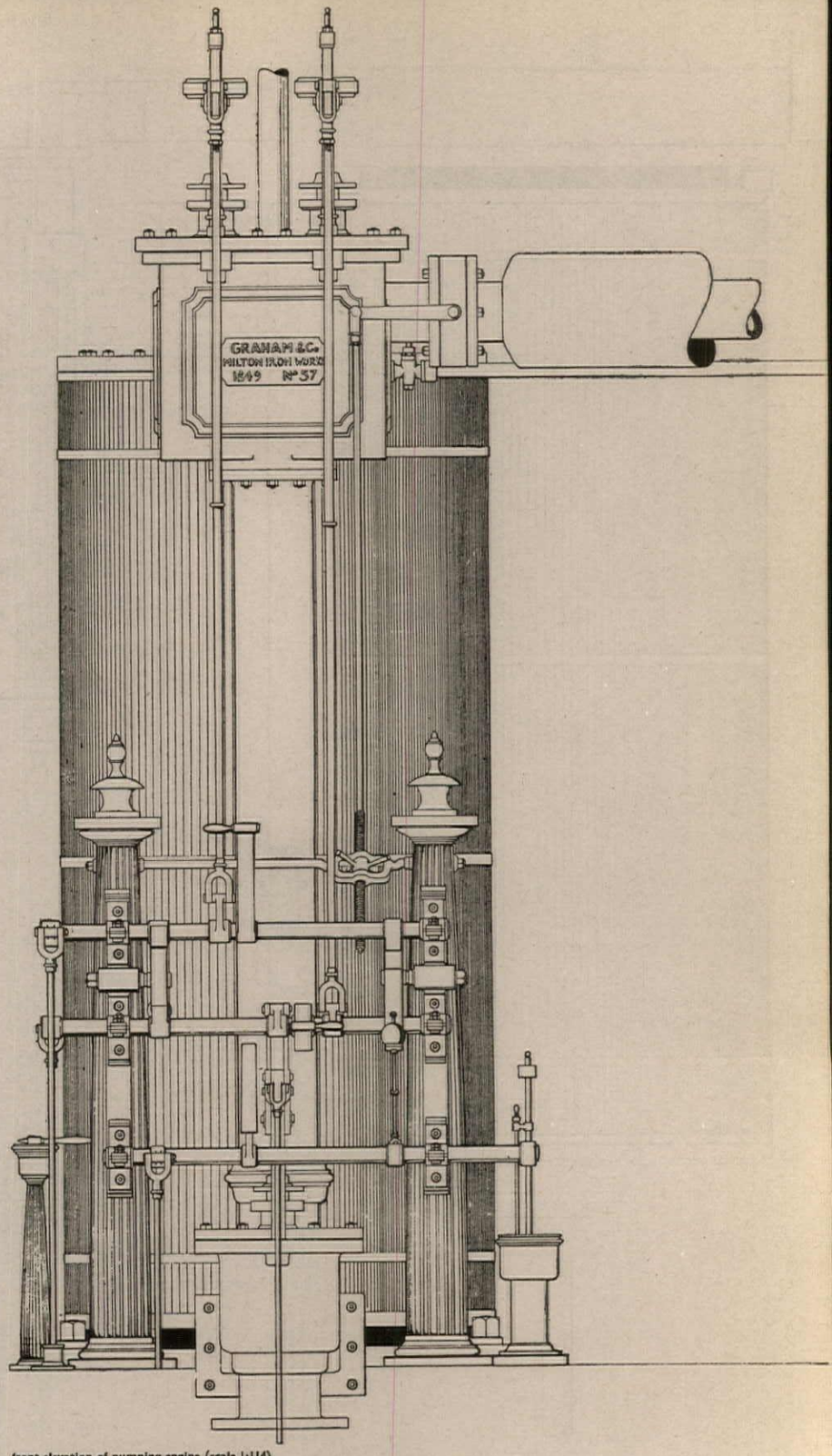
west elevation



plan (scale 1:336)



section (scale 1:192)



front elevation of pumping engine (scale 1:114)

EXHIBITIONS

PAINTING

George Grosz is generally considered to be the greatest and fiercest pictorial satirist of the twentieth century, but the Arts Council exhibition of his paintings, drawings and lithographs revealed the rather surprising fact that his reputation is justified only by the work he produced between 1916 and 1922. Hans Hess, who selected the 165 items in the Arts Council show from a larger group assembled by the Akademie der Künste in Berlin—the city where Grosz did his best work—calls him 'the most powerful political satirist since Goya and Daumier' and would, therefore, one supposes, be careful to make a selection which supported his claim; but he failed to find anything after 1922 which revealed a subversive intention although Grosz went on producing vaguely angry cartoons until at least 1953. Dr. Hess rightly claims that Grosz 'was in the forefront of that revolution which smashed the Wilhelmenian German Empire'—but in adding that 'he saw it rise again in the vilest nightmare mankind has suffered' he omits to mention that he got to the safety of America just before Hitler won the elections, but did not raise his voice against the Nazi regime. Somewhere along the line—and his satire had lost its bite and appositeness some years before he left Germany—he suffered a failure of nerve or a change of heart: he left it to his old friend and collaborator John Heartfield to face up to the 'vilest nightmare' of all, and it so happens that Heartfield's remarkable anti-Nazi photomontages reveal a more brilliant wit and a sharper political intelligence than Grosz's work ever had.

I'm not trying to knock Grosz off his pedestal. Neither of the qualities which Heartfield's work possessed in abundance are necessary to great pictorial satire, and although I would hesitate to put Grosz on the level of Goya and Daumier, his work between 1916 and 1922, like many of Goya's caprices and proverbs, has a cloudy sensuality and sometimes an ambivalence towards what he depicts which lend the satire a morbid poetry.

His work in this period was primarily an expression of the same scorn for bourgeois values which was determining the activities of young avant-garde artists and writers all over Europe as the dead piled up on the Western and Eastern fronts. This scorn found its ablest and most forcible expression in the Dada movement, which was dedicated to total spontaneity, to art by chance and to the annihilation of the entire bourgeois cultural framework. But in Berlin, where Grosz lived, Dada took on a more specifically political character than in Zurich and Paris, and its programme of action, which was a kind of poetic caricature of the Communist manifesto, reflected in an appropriately extravagant way the feverish and desperate atmosphere in the German capital at the end of the war. Its demands included the expropriation of property and the communal feeding of all, the introduction of progressive unemployment to enable the people to 'become accustomed to experience,' the requisition of churches for the performance of Dada poems and the immediate establishment of a Dada sexual centre. Grosz was an active member of Berlin Dada, and in his finest things attempted to marry avant-garde art to social criticism.

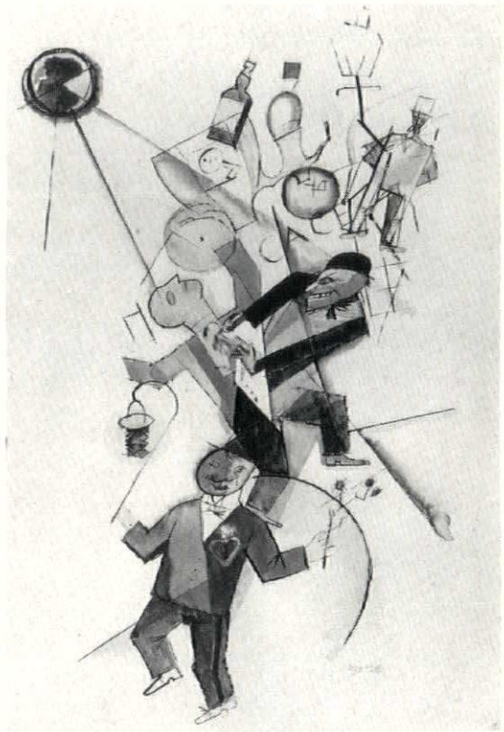
The element in his work which is usually described as 'ferocity' is less a matter of expressionistic distortion than of veristic portraiture applied to the peculiarly gross and brutish German types who were still sitting pretty after Germany's defeat—the Imperial General Staff and the War Profiteers. His watercolour of a General, 1,



1

is not likely to seem an exaggeration to anyone who remembers photographs of Hindenburg as an old man, dressed up to celebrate Hitler's victory. The frightening thing about these portraits of types is that Grosz could have asked the same question that Goya inscribed on one of his etchings of The Disasters of the War—'are they the same species?'

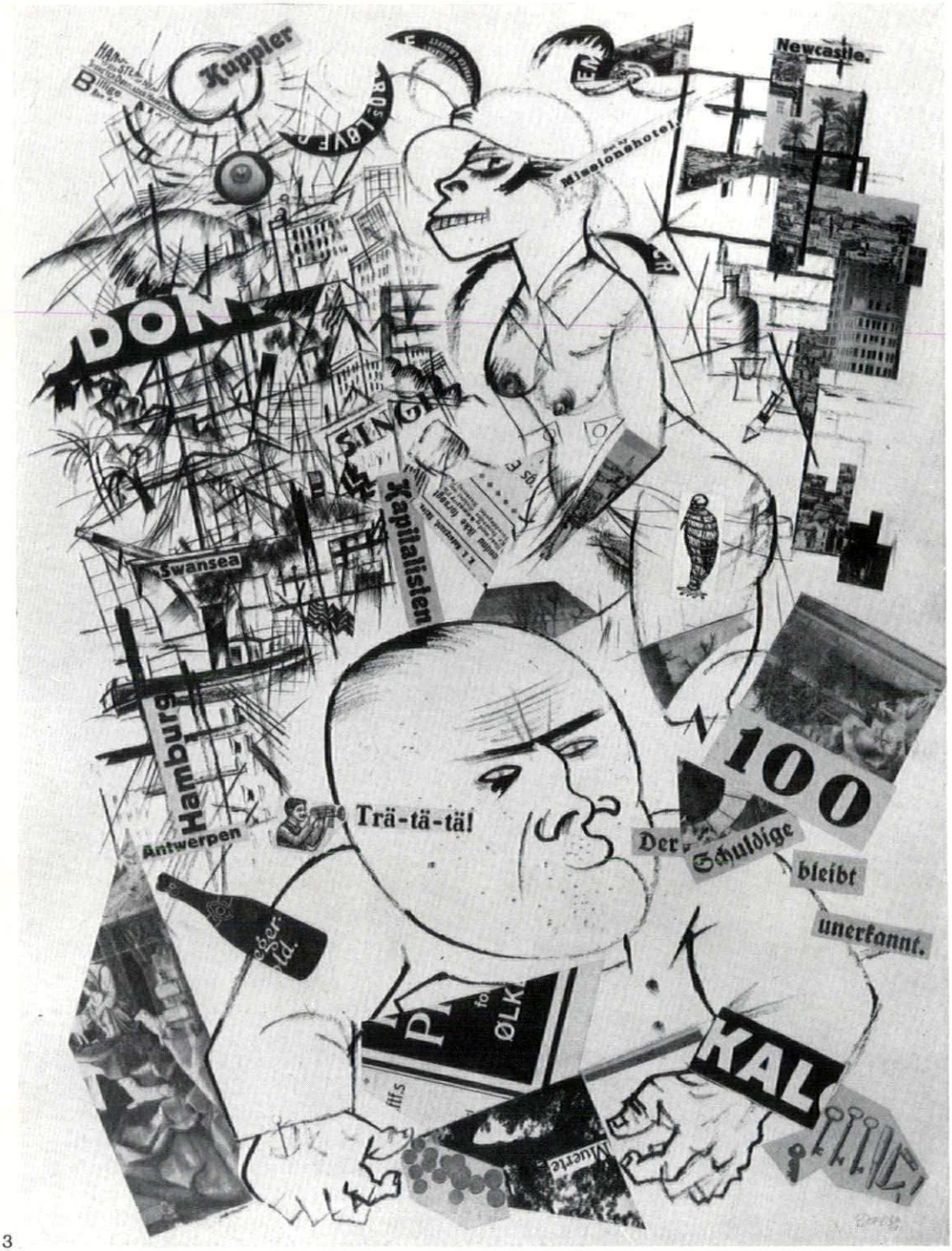
Grosz did not have Goya's command of violent movement but he made very clever use of the transparencies and fractures of Cubism to create explosive compositions. His 'Case G,' 2, drawn in 1918, turns a comment on the night life of the city into a dynamic abstract. I don't know if it's



2

supposed to have a satirical content; the abstract element makes it look more like a lightly lyrical response to violence and disruption.

To all intents and purposes, the beautiful pen drawing and collage of the following year called 'The Guilty One Remains Unknown,' 3, is a moralistic comment on prostitutes who prey on sailors, but the face of the man in the foreground is no less indicative of rapacity than that of the woman moving knowingly through the graphic evocation of European ports, and one can hardly tell whether he's intended as a good sailor or a wicked pimp. The Prostitute is one of Grosz's favourite subjects and is usually in the company of the Profiteer, but in spite of the fact that her face bears signs of his disapproval of her profession, he depicts the rest of her as if, along with champagne and roast chicken, she were one of the good things of life denied to the underprivileged. In other words, it's often difficult to tell whether he's a good socialist attacking social evils or a good dadaist attacking moral hypocracy. When he was no longer an artist of any consequence, he himself absurdly referred to the work of his early period as 'a shower of filthy drawings,' which suggests that, allowing for the distorted and distempered view of his splendidly fiery



3

youth brought about by what I have called his failure of nerve or change of heart, he was well aware of complications in his reformist zeal.

His interest in the Prostitute may well have been provoked by the plays of Frank Wedekind, who believed sexual love to be the driving force in all human conduct, and it's a pity that the Arts Council catalogue was so short of biographical information. What was needed was an intimate memoir by one of his collaborators in Berlin Dada. The prostitute in 'The Guilty One Remains Unknown' very vividly brings to mind Wedekind's Lulu, whose consuming sexuality eventually brought her to a violent end at the hands of Jack the Ripper, and a slightly earlier drawing in the exhibition called 'Rape and Murder in the Acker Strasse' points directly to the influence of Wedekind for it bears an inscription which indicates that he had Jack the Ripper in mind. Grosz was not a particularly good painter in oils and by 1925 was painting very badly, but the outstandingly good example in the exhibition, painted in 1918, depicted the same Jack the Ripper theme.

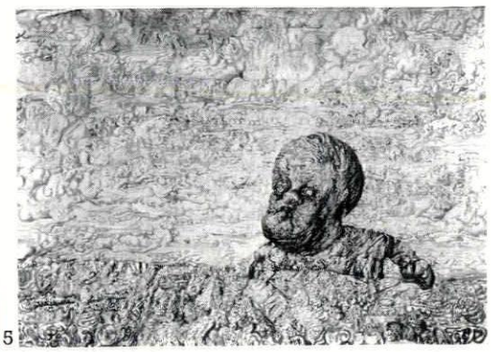
I think that if Grosz had followed his predilections more openly, which would have meant being more thoroughly Dada, he would have made a greater contribution, over a longer period, to the art of our time, and might even have gone some way towards fulfilling the prediction of Richard Huelsenbeck, one of the leaders of German Dada, that the art of the future would present the frenzied cataract of life and be forever 'trying to collect its limbs after yesterday's crash.'

A small but distinguished group of paintings and drawings by some twentieth-century artists who openly and intransigently follow their own predilections was recently exhibited at the Robert Fraser Gallery under the title 'Obsession and Fantasy.' The exhibition achieved a marvellous if somewhat unexpected air of deep stillness and reserve, and the only twitchings and mutterings came from the cluster of small paintings by Dubuffet. There were good examples of Harold Stevenson's lover's-eye-view of anatomical fragments and of Bellmer's delicate pencil drawings of what seem to be hitherto unrecorded specimens of the flora and fauna of day-dream jungles, 4. Dado, a Yugoslav artist



4

working in Paris who has not previously been shown in London, was represented by one strange but compelling fantasia, which conveyed the impression that it was composed entirely of dyed smears of human brain, 5. Other artists who were



5

represented by solitary examples of their work were Bacon and Balthus, and although we associate both artists with compulsively recurring themes, it is perhaps evidence of the poise, the vital stillness that can be achieved only through the pursuit of predilection, that the small head



6

by Bacon and the portrait of a young girl by Balthus, 6, made such positive contributions to the prevailing atmosphere of calm aloofness.

Robert Melville

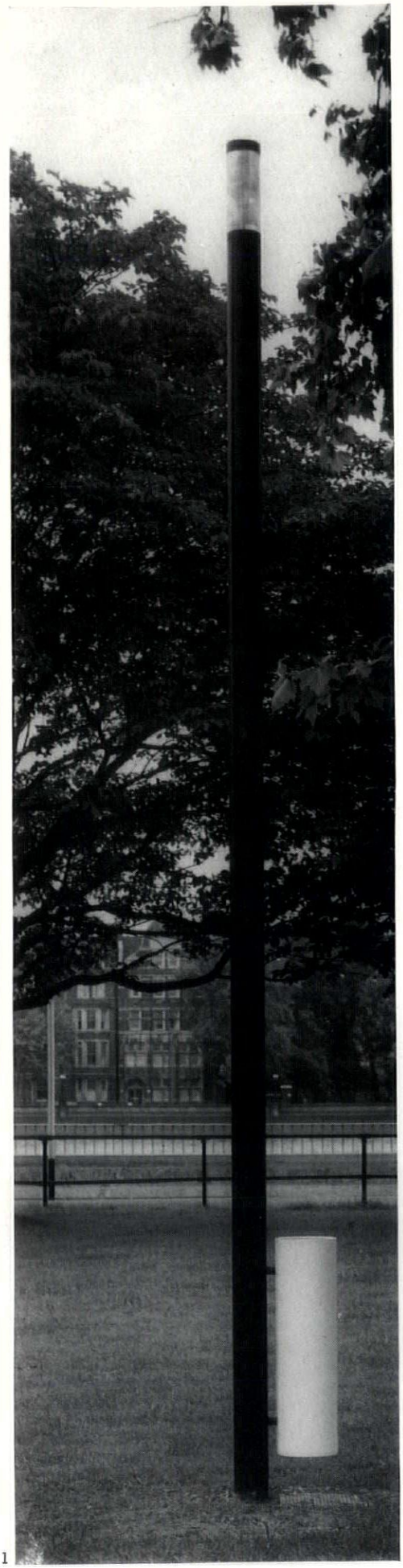
LAMP-POSTS

COMPETITION FOR MANUFACTURERS

A competition is an obvious and sensible way of stimulating the better design of lamp-posts, and when it was recently decided to hold such a competition the Council of Industrial Design, who organized it, very reasonably decided to concentrate on the lamp-posts known as B-type—i.e. the smaller of the two recognized types, suitable for residential and similar streets. There already exist a number of good designs for the larger, A-type, suitable for arterial roads (which, however, does not mean that local authorities can always be relied on to choose the few good designs available—there are also plenty of bad ones).

Another admirable decision was to ask competing manufacturers to submit both B-type lamp-posts (poles and lanterns) and wall-brackets that would pair-up with them—there is a shortage of good designs for wall-brackets, their use needs encouraging and, when they are used, to have them consistent in design with the lamp-posts in the same street or locality is obviously desirable.

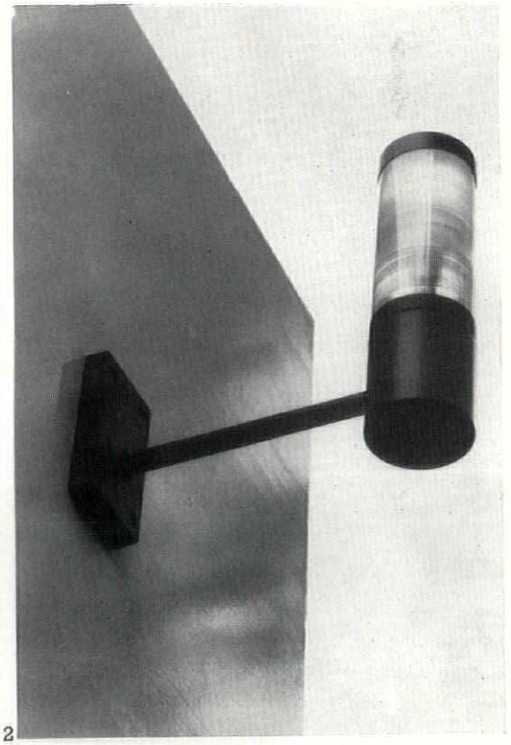
Manufacturers were asked to submit full size, completely finished prototypes in working order. The competition had the support also of the Royal Fine Art Commission, the Civic Trust and the Ministries of Housing and Local Government and of Transport. The three judges were Sir Basil Spence, Professor Misha Black and Mr. J. M. Richards. The judges were advised on the technical and functional aspects of the designs by Mr. K. L. Duncan, senior electrical engineer and inspector of lighting at the Ministry of Transport. The 41 designs submitted were erected for testing and judging in Battersea Park, London, and the 12 designs the judges thought good enough to be awarded diplomas, together with another 6 that they commended, were put on public exhibition, also in Battersea Park, during June and July.



1

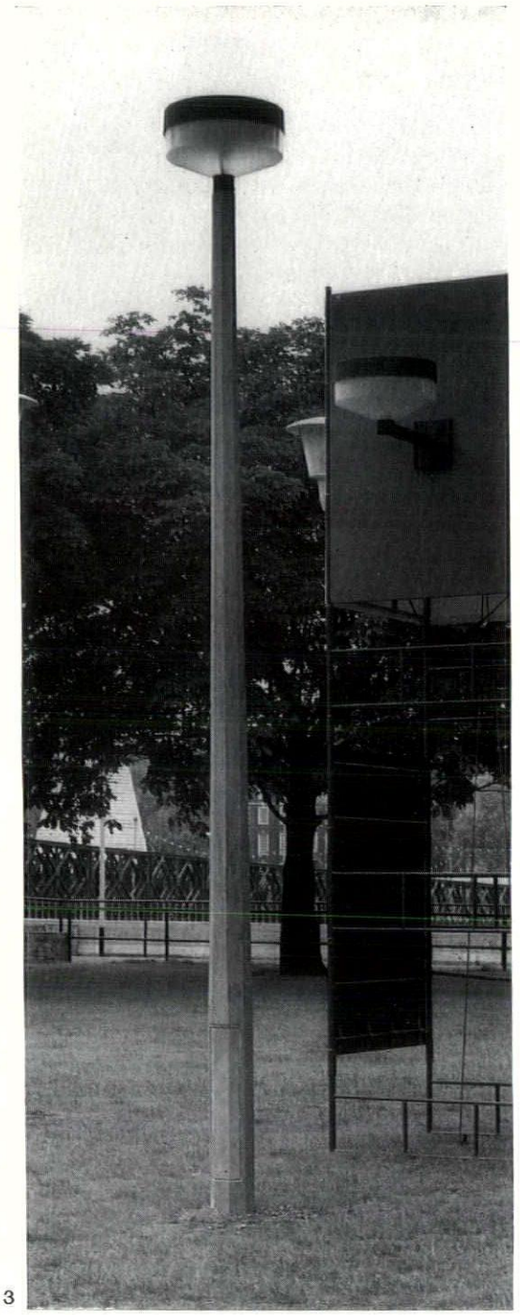
The number of 41 entries was regarded as gratifying and as showing real eagerness on the part of manufacturers to put forward better thought-out designs. On the other hand, the judges expressed some disappointment in the designs themselves. They found that the majority were 'conventional in conception and showed little evidence of fundamental design research.' The exhibition in Battersea Park bore this out: achievements went very little beyond minor improvements to well-tried solutions. Nevertheless, the incentive the competition gave to manufacturers and their designers to study the needs of the B-type lamp-post more intensively can have done nothing but good, and the establishment of a proper relationship between columns, lanterns and wall-brackets represents a real step forward.

It was sad that the one design that appeared at first sight to make a fresh contribution aesthetically, an even-diameter

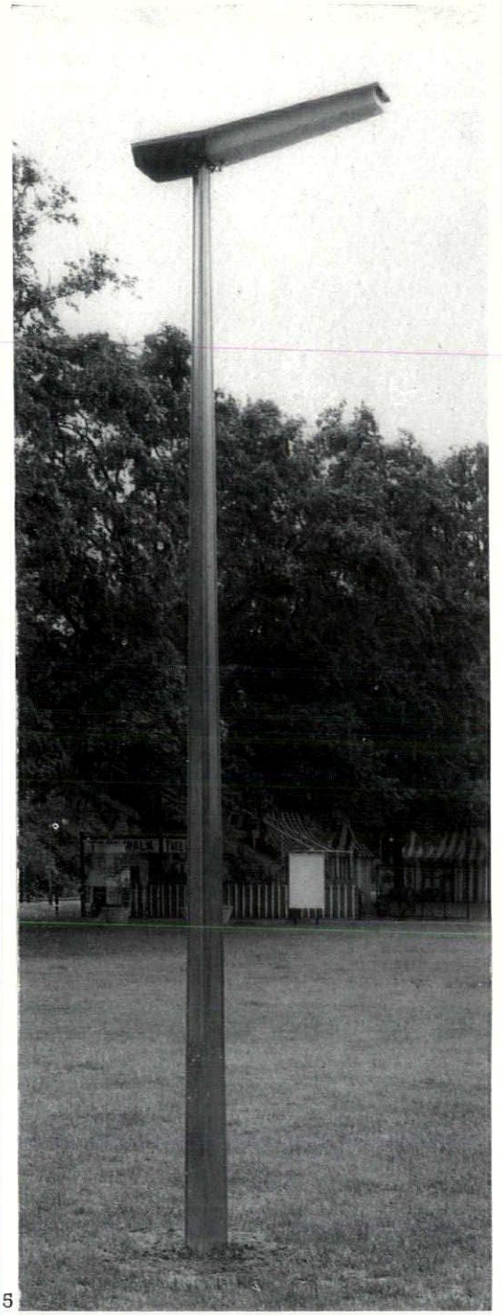


2

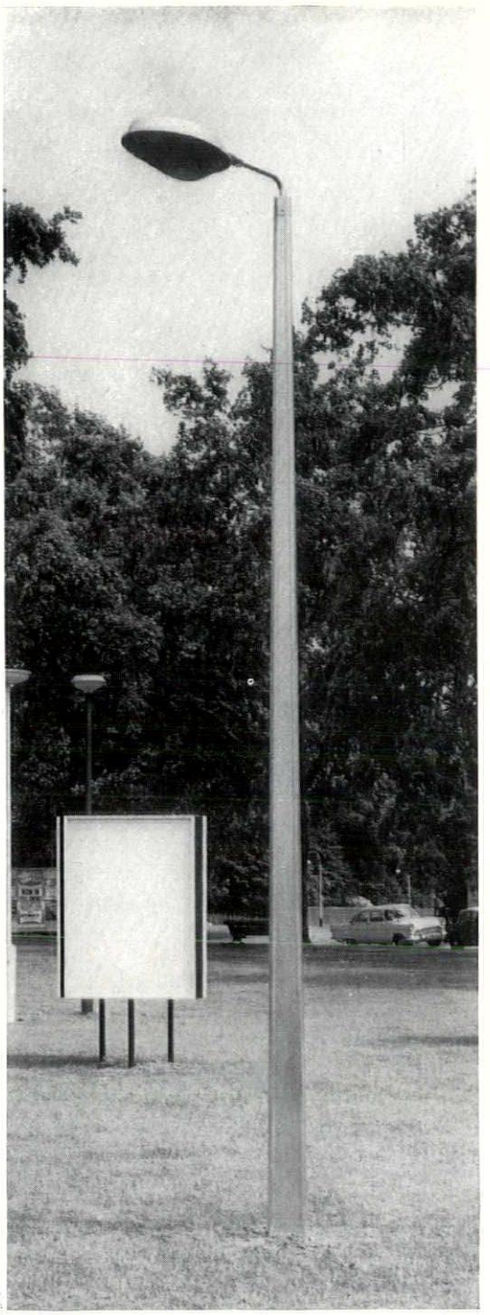
black steel pole, 1 (2 shows the equivalent wall-bracket) could not be given more than a commendation because the optical control of the lantern needed improvement: when tested the light distribution was unsatisfactory. But clearly this was a design worth developing. The designers were Richard Stevens, Peter Rodd and John



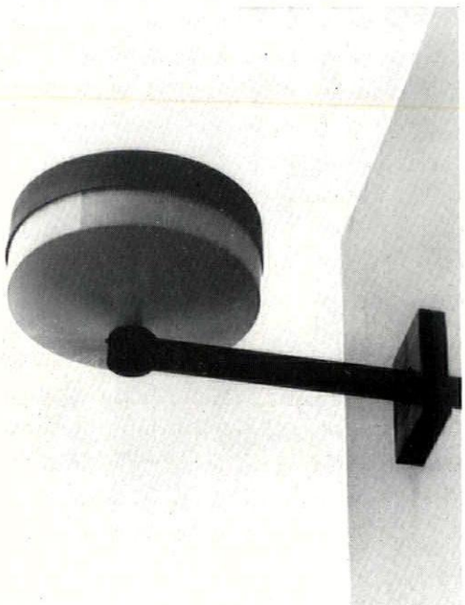
3



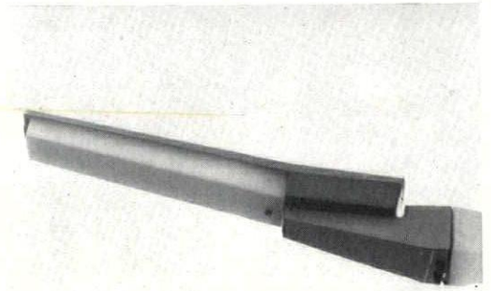
5



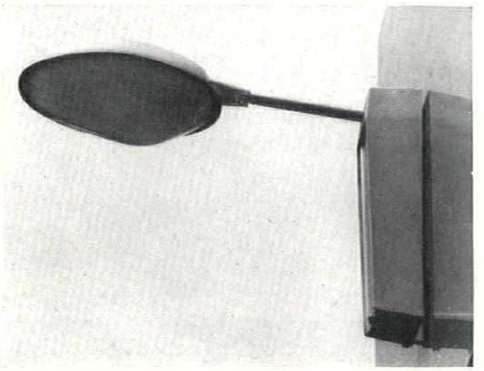
7



4



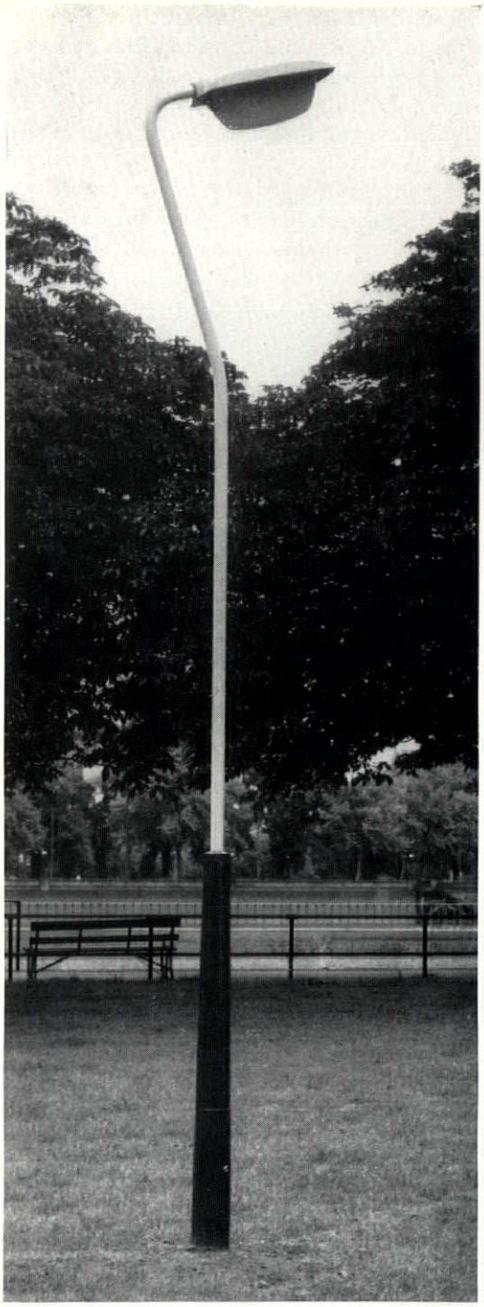
6



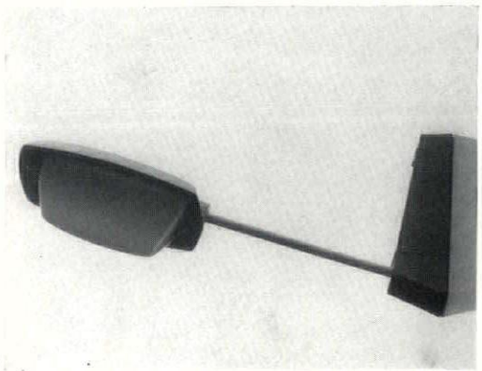
8

Barnes and it was made by Atlas Lighting.

The six sets (lamp-posts and wall-brackets) to which the judges gave diplomas would at least add usefully to the repertoire of respectable designs available, and several contain ideas that, once again, are worth following up. The best of these six are illustrated herewith. 3 and 4, with concrete column and steel bracket (designed by John Ricks; made by Concrete Utilities)—a bold and simple design. 5 and 6, with an aluminium column (designed by Jack Howe; made by AEI)—one of the more adventurous, particularly successful in its column-mounted version. 7 and 8, by the same designer and maker—



9



10

the judges commended the junctions between post and lantern and the incorporation of the control gear in the design of the wall-bracket. 9 and 10, with aluminium alloy column (designed by R. David Carter; made by Metal Developments, Birmingham)—a skilful solution of the swan-neck type of design.

HISTORY

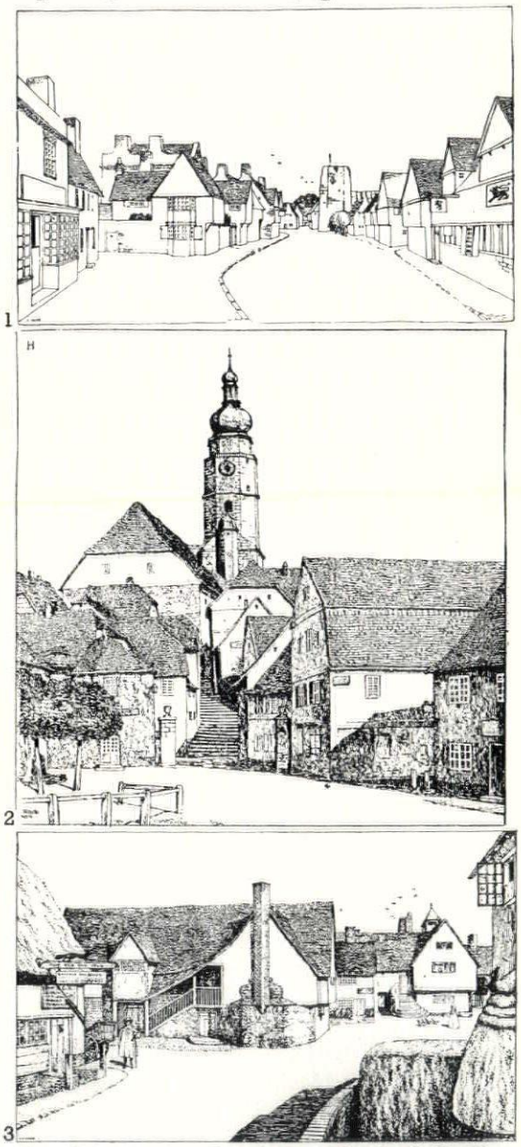
UNWIN CENTENARY

Town Planning in Practice *by Sir Raymond Unwin, the centenary of whose birth falls into this year, was every student's textbook, from the time when it first appeared in* 1907 *until a few years after the second war.*

Checking a loan copy of the first edition at the RIBA I found the following entries: 1947:6, 1948:10, 1949:2, 1950:3, 1951–55:7, 1956–60:2, 1961:0, 1962:0. I tried to confirm these figures by looking at some more copies, and the result was that one copy with older loan entries than the others had 117 loans between 1937 and 1947, while yet another copy registered 20 loans in 1947–49 against 11 between 1950 and now.

There are two reasons for this eclipse. Unwin had become for the new young the label for garden city and garden suburb exclusively, and they wanted to hear of true urban planning. To satisfy this demand architects of the generation between Unwin's and that of the students of about 1950 and after provided new books: Thomas Sharp his Pelican already in 1940 (before the Scott and the Uthwatt Reports and the Abercrombie and Forshaw plan for London), Frederick Gibberd his *Town Design* in 1953, Gordon Logie his *Urban Scene* in 1954. In addition the townscape policy of THE ARCHITECTURAL REVIEW made itself felt, with its plea for informal visual planning, for the *genius loci*, for controlled accident and for intricacy, surprise and the other categories of the Picturesque in the English eighteenth century. Some key features were *Sharawaggi* (January 1944), the Precinct of St. Paul's (June 1955) and *Westminster Regained* (November 1947). The Festival of Britain of 1951 demonstrated this townscape policy in action, and it has in certain respects become the official policy of the Ministry of Housing and Local Government, as their current manuals and guides show.

I had recently occasion for historical reasons to go back to *Town Planning in Practice*, and this re-reading was a surprise indeed. Unwin was no doubt a visual planner *par excellence*, even if he remained a practical man as well and could write with conviction: 'Drainage will not run uphill to suit the prettiest plan' (p. 140). But there is in his book already an illustration of the plan of the Oxford High and a sequence of shots to illustrate how the various vistas follow each other—in fact the Sharp device of his *Oxford Replanned* of 1948. Unwin's sources for performances of this kind are known, he never concealed them: Sitte's *Der Städtebau* of 1889 republished in America—which is symptomatic—as recently as 1945, and Stübben's *Der Städtebau* of 1907. Sitte had been made known to England by T. C. Horsfall in 1904, and that is how Unwin first heard of him, i.e. after he had planned Letchworth. Sitte deals chiefly with *places*, as Unwin called them, in medieval towns, the lessons to be learnt from their seemingly arbitrary irregularities, varied building lines, blocked vistas, general sense of enclosure, and asymmetrical placing of incidents. Unwin took all that over, even if he mostly exemplifies it in terms of the village, the suburb and the small country town. But there it is all the same, and a Florilegium can serve to reintroduce a great visual planner.



Three illustrations from Unwin's Town Planning in Practice: *1, an imaginary irregular town; 2, view of Buttstedt—a German town analysed in detail; 3, an imaginary village where the buildings are square with each other on a curving road.*

'Town Planning to be successful must be the outgrowth of the circumstances of the site and the requirements of the inhabit-

ants' (138). 'The designer's first duty, then, must be to study his town, his site, the people and their requirements' (140). 'A City Survey'—Geddes is here acknowledged (*City Development*, 1904)—'should be prepared before any plan of new development is made. . . . The city which seeks to design its future developments must . . . know itself' for the sake of 'the preservation of its individuality of character (in) its enlarged self' (146).

'Many ancient towns derive exceptional beauty from their enclosure by ramparts or walls. . . . To this is due the absence of that irregular fringe of . . . half-spoiled country which forms such a hideous girdle around modern growing towns' (154). 'Many of the old unhealthy slums are, from the point of view of picturesqueness and beauty, infinitely more attractive than the vast, ugly, dreary districts growing up around our big towns' (4). 'We should secure some orderly line up to which the country and town may each extend and stop definitely' (163), for 'it is not an easy matter to combine the charms of town and country; the attempt has often led . . . to the destruction of the beauty of both' (164). So what it needed is 'areas . . . closely built upon, surrounded by others of open spaces . . . rather than scattering our buildings and spaces' (164). Unfortunately, however, the planner in practice must find solutions 'which do not clash with strong prejudices on the part of the future householders. This will often lead to a greater degree of openness . . . than from a purely architectural point of view might be desirable' (293). Readers of the REVIEW will here remember comments made on New Town prairie planning.

There are other aspects of this plea for enclosure which go beyond the domestic. Buildings in general, including cathedrals and town-halls 'are not seen to best advantage when seen in isolation' (198). 'It is only when we are enabled . . . to measure them by their relation to and contrast with the (surrounding) houses, that we realize the full splendour of their dimensions' (207). Here for the readers of the REVIEW Sir William Holford's precincts of St. Paul's will come to mind.

Exactly as remarkable are Unwin's remarks on the contrived accident which is what Sitte and he were advocating. Unwin writes: 'The town-planner must be on his guard against the supposition that it is easy to design accidents' (260). Much as we admire the irregular *places* of medieval towns, 'it must not be thought that any open space is a true *place*, or that, because successful places are formed of all kinds of irregular shapes . . . any shape will do' (194).

Indeed, and here we begin to move away from Unwin the topical to Unwin the man of his moment, *Town Planning in Practice* is not entirely devoted to the praises of the irregular and the informal. The book—as the actual plans of Letchworth and the Hampstead Garden Suburb, as laid out by Parker and Unwin, confirm—is not a wholly anti-formal book. It advocates a *juste milieu*. Straight roads are reasonable as the main thoroughfares for direct access and to make it easy to grasp the principal pattern of a town (112), but between them must be intimate narrow lanes and pedestrian passages (208). So Unwin draws in one case (253) a set of regular road junctions and contrasts them with irregular ones from German Sitteesque town-plans to show that the visual advantages can in both cases be the same.

But that comment refers to town centres only, and Unwin was, there can be doubt, essentially a planner of residential areas. C. P. Wade's pretty drawings to *Town Planning in Practice* are drawings of cottages, of small towns, small *places*, nothing over two storeys. When Unwin speaks of suburbs he does not mean Bloomsbury. He says: 'There may be said to be two styles of work: the picturesque and the formal or symmetrical. . . . To the picturesque style of architecture irregularity of site and lack of symmetry in arrangement offer no difficulty. English domestic architecture very largely belongs to this class' (368). So that leaves the Georgian century clean out and that more than anything else made students turn away from Unwin's book after the last war and forget a great all-rounder in urbanism.

N. Pevsner

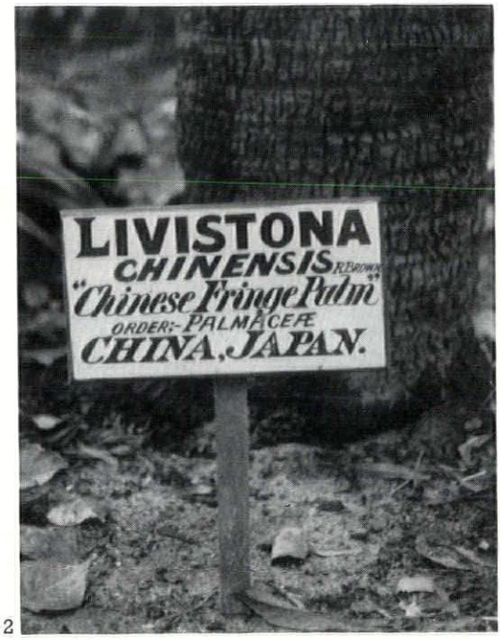
LETTERING

HORTICULTURAL HAND

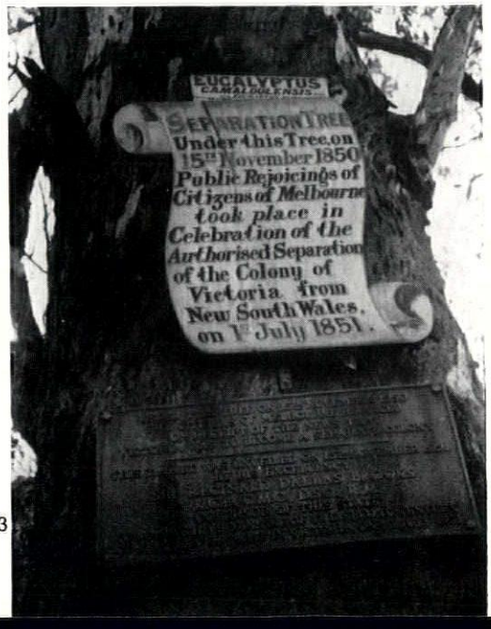
There comes a time in certain unconsidered craft traditions when they pass beyond the critical standards normally applied to human artefacts and enter the realm where they must be considered almost as works of nature. Appropriately enough nurserymen's lettering often falls into this class, and examples such as 1, observed in the Botanical Gardens in Melbourne, Australia, show how a repertory of mixed Latins, Grotesques and rolling Modern Italics have become adapted to the brushwork techniques of the horticultural hand and fused into a single artless typographical image in the hundred and fifty years since they must have been introduced as footnotes to the more exotic acquisitions of Gardenesque design. Though most of the Melbourne examples aim to do no more than label the specimens, 2, or the parts of the gardens, at least one memorializes a popular celebration, 3, which followed the separation of Victoria from New South Wales in 1850—and does so with far greater appropriateness and effect than the genteel bronze tablet below it. Fair enough—the horticultural hand seems far better suited to a commoners' spree on the common grass than do the architectural rigours of monumental bronze.



1

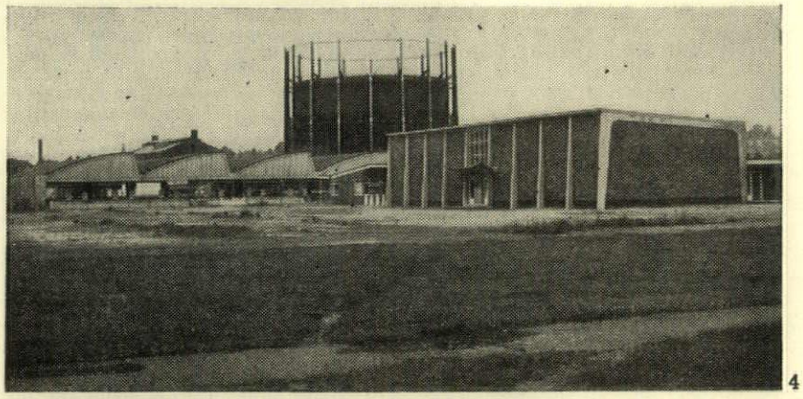


2



3

LOOK OUT

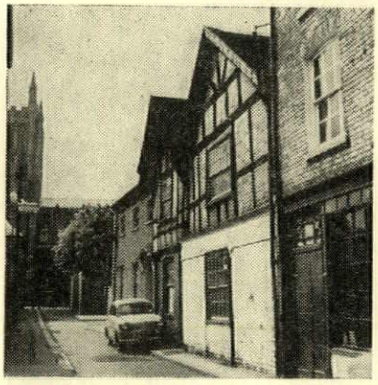


4

This month's 'Look Out' by Ian Nairn is about the six cathedral cities discussed in the feature on pages 165-179 of this issue.

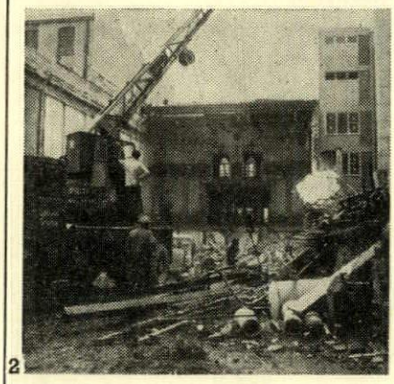
OUTRAGE

HEREFORD
A pleasant half-timbered cottage, 1, much better inside than outside, on the way to the cathedral. It is to be removed for a car park—not by the city, but by the Ministry of Works, purely because it wants more space for GPO vans which use the nearby Telephone Exchange. It is shocking to find this barbarity carried out by a Government body over which the local planning office has no control—one of the infamous 'statutory undertakers.' Undertakers is right, as far as preserving Hereford's character is concerned.



1

HEREFORD
The Kemble Theatre in Broad Street, 2, being demolished to provide a Supermarket. The change may be inevitable, but surely the front, arrowed in 3, could have been preserved as an entrance? On the left is a decent new office block—oddly enough by the Ministry of Works, the same body as is responsible for the outrage in 1.



2

SALISBURY AND WORCESTER
Sad evidences of the decline of provincial architecture. The building illustrated in 4 is Salisbury's new cattle market. That in 5, on a prominent site facing the Severn, is a corn mill. Here is exactly the kind of building which the Victorians served with such honesty and gusto, treated as flabbily as though they were light engineering firms on a trading estate. Mills and markets still mean something to the town and deserve meaningful architecture.



5

SALISBURY
It seems unbelievable that anyone could meddle with 'Constable's view'—the Cathedral seen from Harnham Mill, 6. Yet, getting in the way of the equation of spire and meadows is a brick lump (ringed). At a closer look this turns out to be a teachers' training college in the style of two centuries ago, 'with modifications,' 7, and building of this meaningless pudding is still going on, 8. No doubt it was all done with the best of intentions; the worst crimes often are. All that can be done now is to plant trees in front of it, the bigger the better, so that the old unity can



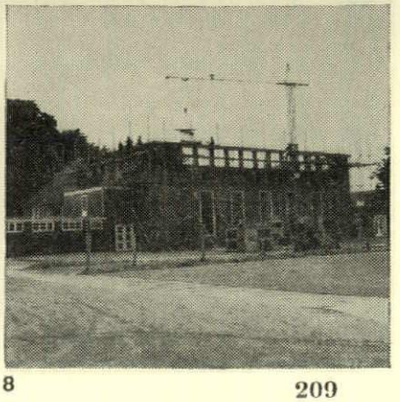
6



3



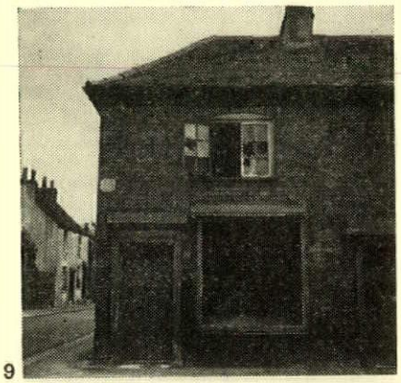
7



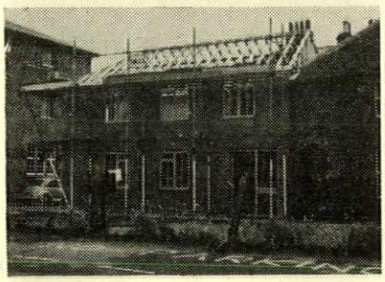
8

be re-established. If man's ingenuity could devise mock-200 years old oaks to partner his mock-200 years old buildings we might be better off.

CHICHESTER
A corner of Summertown, 9, a whole area which has been declared a slum and left to rot for several years whilst the last inhabitants are rehoused. Ironically, this is opposite the Festival Theatre in one of the most sophisticated cathedral cities in the country. The demand here for reconditioned old houses is as high as anywhere, a point neatly



9

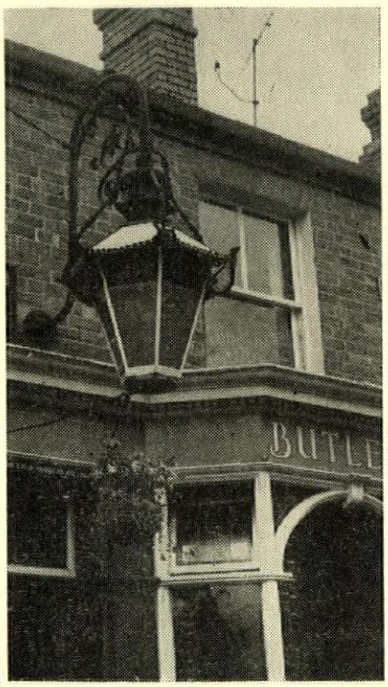


10

made in 10, which is in the city centre. What a pity that Summertown did not get the same treatment.

SOS

WORCESTER
Like Summertown at Chichester, the whole area in front of Shrub Hill Station has been declared a slum, irrespective of detailed condition, and is being pulled

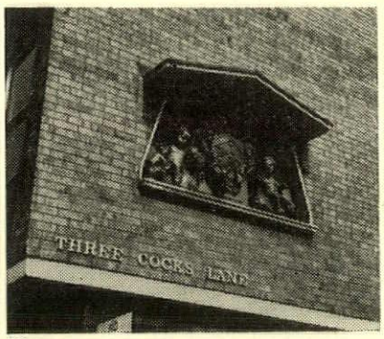


11

down wholesale. Spilt milk: but surely somebody in Worcester has enough feeling to see that at least the best details should be rescued, like this splendid lamp outside one of the neighbourhood's pubs, 11. And unlike all our fumbling, over-intellectual efforts at creating places, this was indeed a neighbourhood. All that is proposed here is light industry. Poor Worcester.

CAUTION

GLOUCESTER
A good idea, to preserve an old coat of arms on the wall of Gloucester's Westgate Street housing. But a dreadful coy sur-



12

round, pointlessly splayed, 12, which almost nullifies the effect. Far too much British architecture has this kind of timid fussiness and its near neighbour, timid brutality. Just do simple jobs simply, and leave well alone.

HEREFORD
The very good town plan for Hereford (see page 179) has proposals for a small precinct around All Saints' Church. But even a small precinct would be too big, as the photograph shows, 13: the effectiveness of the building is the way it provides an unbroken street wall, crockets where one expects a normal roof. A footpath is needed to burrow around the east end where at present there is no way through (arrowed), and a garden like a City of London churchyard could then be provided behind. But nothing more should be done to the street frontage.

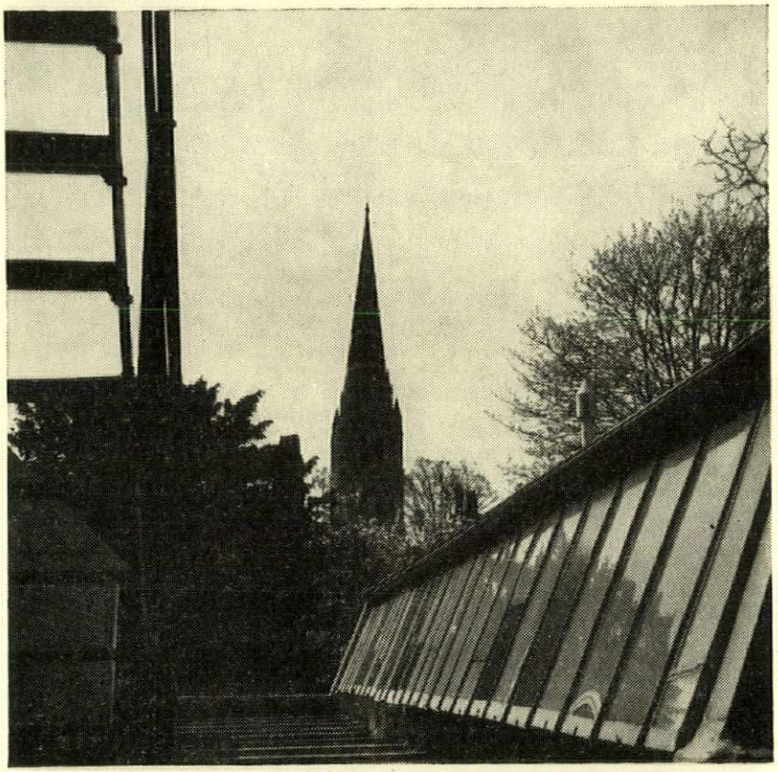
CREDIT

SALISBURY
This is the view of the cathedral that one ought to be able to see but can't, 14. The street gridiron blocks the way entirely, so that there is no public viewpoint and no way through. This photograph had to be taken from the first floor of the Art School. But in Max Lock's new plan for Salisbury, there will be a first floor bridge across the street here which will lead into the close and provide the view without any unnecessary widening.

WINCHESTER
Neat details in Winchester's new car park in St. George's Street, 15. Touches like this are the best indication of a city's self respect, better than any municipal show. Here, there is no fussing about with fashionable motifs for their own sake, just a straightforward but sensitive job of work.



13



14



15

HOTELS AT ANDROS AND NAFPLION (pages 160-164)

The design of modern hotels has reached a reasonable norm from which architects depart at their peril; the standard 'sandwich' section, with two rows of bedrooms enclosing two rows of bathrooms and a central corridor (discussed by Stephen Garrett in AR, October, 1960) is not only economically compulsive if guests are to be offered a bath with every room, but it also makes good human sense as well, since the bathroom units help to insulate the bedrooms from the corridors, and every guest has an equal outlook from his standard bedroom cell. But the mere fact of it having become an international norm means that some architects will feel almost morally obliged to avoid or pervert it, whereas the better solution is to exploit it and make it perform differently according to its site and climatic situation, use and outlook.

The upper parts of the hotel at Nafplion could, literally, be anywhere—they are a classically pure expression of the warm-climate archetype of a standard twentieth-century hotel. That at Andros fails to answer to the archetype only in being small, and effectively single-sided, since the main bulk of the room-accommodation is all on the same side of the corridor, whereas the Nafplion hotel is symmetrical. Given that—even in these romantic and far-away places—the main accommodation of an hotel must follow international norms, it is the arrangement and design of the public rooms, and the whole relationship of the hotel to its surroundings at ground level, that becomes crucial to the design.

At this level of criticism, the first thing to be said is that both hotels seem remarkably appropriate to their sites; the *Triton* at Andros crowded informally close to the water, almost part of the equipment of the harbour itself (has a lesson from motels and marinas been learned here?) and the *Nafplion* hotel standing high and dominant on the bastions of an old Venetian fortification. It lacks, inevitably, the wonderful immediacy of the *Triton*, but it is a less intimate type of hotel, and Nafplion, as the Venetian fort and Crusader castle show, is a site to be commanded from above, with a certain swagger and air of detachment. Both are right in their own sites and for their own type of clientele—how, precisely, do they join on to the site at ground level, and how do the public rooms serve the guests?

Here, the *Nafplion* example seems to have a slight lead—its public spaces, aided by their high-level views out over the sea, have a more calm, cool and uncluttered look than *Triton's* closer and less obviously through-ventilated public rooms. Although the detailing of these areas at Nafplion is the less interesting of the two, it is this fact, more than anything else, which contributes to the better atmospheric effect—the columns are farther apart, bland and less interesting to the eye; most of the surfaces are blond and neutral, and do not leap at the viewer, so that walls appear to be farther apart than they probably are in fact. *Triton's* rather frequent, dark-painted, square-tube stanchions in some areas, like the unrendered *brut* surfaces of the concrete columns, give a busier and more constricted air that is less suggestive of relaxation and coolness.

These last, of course, are Anglo-Saxon, or even more generalized North-European, reactions. For us, the drop in physical and psychological temperature as we enter the lobby of an hotel in the Mediterranean area is its first recommendation, and often its longest remembered quality. Since the bulk of the Greek tourist trade comes from countries to the north, hotels designed for it must be expected to be gentle with tourists in such matters. But before giving the *Triton* a lower rating for this reason, it is as well to remember that while Nafplion can be reached by car, and is thus part of Volkswagen-Europa, Andros can only be reached by boat, which means that an entirely different type of visitor will stay there, arriving probably in an entirely different frame of mind in which the conditioned reflexes of Northern Europe may not count for so much.

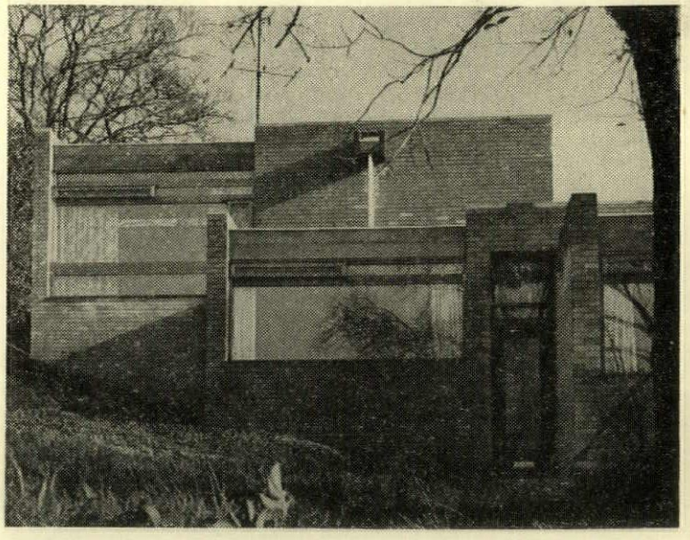
TWO HOUSES NEAR WIGAN (pages 188-191)

A noticeable trend in recent house design is towards the separate and emphatic articulation of the various vertical and horizontal elements, allowing vigorous expression to be given to such techniques as cross-wall construction. Previously most small modern houses relied either on expressing a structural frame and making the most of the wide openings thereby made possible, or on arrangements of windows treated as holes in the wall.

The new aesthetic trend or stylistic fashion—call it what you will—depends instead on the effect of projecting end walls with window lintels (timber or concrete) set back behind the wall surface and on contrasting window sizes including vertical slit windows in the angle formed by cross walls. The style has its own clichés—what style doesn't?—such as an extended battlemented effect along the top of the wall produced by recessing the wall above the lintel in the form of a panel, which is also dropped below the general wall level. This particular device was first used perhaps in the house in the Isle of Wight by Stirling and Gowan (AR, April, 1958), though the general aesthetic attitude on which it is based goes further back, and particularly to that very fruitful source of aesthetic inspiration, Le Corbusier's Jaoul houses.

Materials are usually brick, raw concrete and heavily sized timber (carpenter's timber, that is, rather than joiner's), with the timber as often as not pine, clear-varnished. Inside walls are fair-faced brick, the continuity of wall surface inside and out once again underlines the separate identity of the various structural elements. Raw timber is used inside as well, especially for carpentered open-riser staircases, conspicuously bolted together.

The two houses near Wigan handle this somewhat mannerist style with the absence of fuss it requires and with the close relationship between external geometry and plan form that makes it more than an intriguing fashion. The house at Parbold, with the use it makes of a steeply sloping site, is particularly successful. It has the uneven silhouette that this style has done something to bring back into the small modern house. Details, like the broad flat wooden window-rails (another familiar device) are simple and logical—except perhaps the placing of the letter-box so low down on the narrow glazed front door, seen in 1, that it can be guaranteed to give any postman lumbago.



1, *front of the house at Parbold.*

TOURIST OFFICE, PICCADILLY (pages 183-184)

The intangibility of the product or service offered by a tourist agency makes it difficult to know what pitch or tone to adopt in anything that goes beyond the purely functional. This, no doubt, accounted for the trend to elaborate and

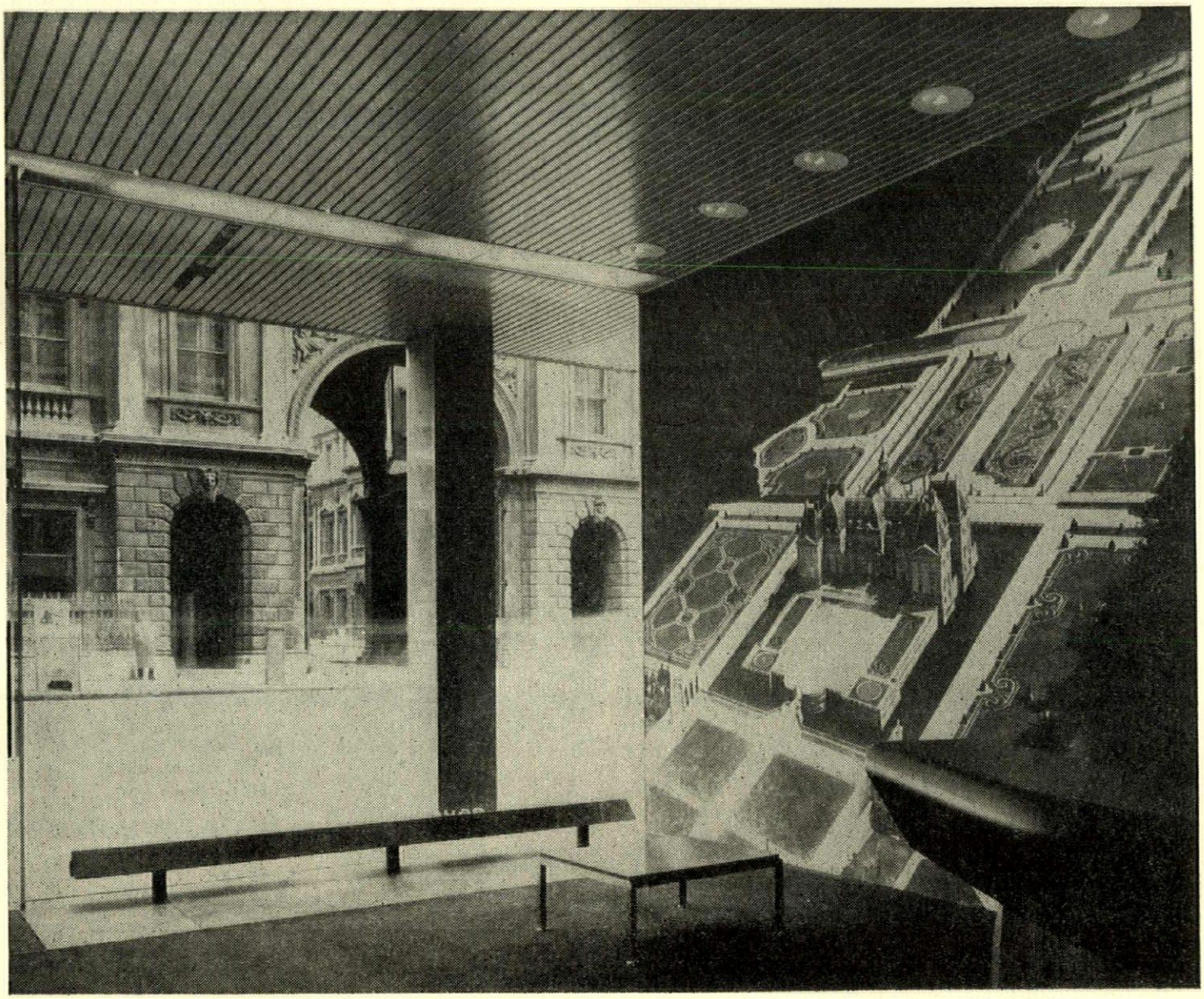
over-ornate solutions which overtook travel offices of all sorts, and airline offices in particular, in the early 'fifties. In the last few years there has been a fairly sharp reaction against these synthetically exotic conceptions, and a move towards more architectonic solutions. Ernö Goldfinger has no need to join this reaction, since this is how he has always designed, and his first French Tourist office, in the Haymarket (AR, April, 1960) appeared before the reaction began.

In the new offices in Piccadilly, he faced a more extensive functional programme than in the earlier version, disposed on more floors of a new, though less interesting, building. His prime task remained, however, to design a workable interior that could stand being looked into from the street. In achieving this, he had the assistance (or hindrance) of a sort of proscenium effect caused by the way in which the external floor-to-ceiling glazing of the exterior (which was Goldfinger's responsibility even when the interior behind it was not) is accompanied by a neutral strip of granite flooring, which sets the interior back some distance from the pavement.

A further distancing is achieved in the Tourist Office by the use of the large photomural of Vaux-le-Vicomte (incidentally, one of the finest architectural photographs on view in London at the moment). This photograph, however relevant to the theme of the office's work, is irrelevant even visually to its physical function of exchanging information and documents across a counter, and its effect is to push the main human and functional interest deeper into the building, into an area where artificial light takes over from natural light even during the day. In this area, objects are seen, by a viewer in the street, primarily in silhouette against the glowing wall of fluorescent light at the back of the office. Under these conditions, the massive, leather-covered nosings of the desks are not only satisfying shapes against which to lean when one is at the counter, but they also make a strong profile against the light background, among the clearly outlined human forms of the staff and customers.

Everything else in the office is either studiedly plain, like the woodwork of the cupboards and racks on either wall, or designedly anonymous, like the Eames chairs and other standard objects of furniture—it is the silhouetted marionette-show of tourist business being done that holds the eye. Clearly, this is an effect that must break down when viewed in the opposite direction against the changing and rather grey light of the London day. But here, the picture of Vaux works with the frameless and unobstructed glass rectangle of the façade to produce an effect which, one must admit, is primarily for architectural sophisticates rather than would-be tourists—alongside the picture of Vaux, one sees a large detail of the façade of Burlington House on the other side of Piccadilly, and the effect is like a double spread in some superbly illustrated edition-de-luxe on architecture.

2, ***photomural in the French Tourist Office.***



SKILL

INDUSTRIALIZED BUILDING

2, Comparison of Systems

Following last month's article on industrialization, this article tabulates information on various systems available in this country. Although it cannot be fully comprehensive, it is presented in a format which is intended to permit ready comparison of systems and make the task of selection that much easier. New information can subsequently be added as and when required.

If national building commitments are to be met, despite whatever mistakes have been made in the past and opportunities missed, it is essential that every reasonable form of construction be used in the future. Some of these will be more fully industrialized than others and with time their number is likely to increase.

The following tables of selected building systems are intended to:
(*a*) indicate the diversity in the degree of approach to industrialization that exists at present, and
(*b*) compare them on common basis.

An abbreviated comparison of this kind does not set out to be either comprehensive or conclusive, but it should allow supplementary information and other systems to be added at later dates.

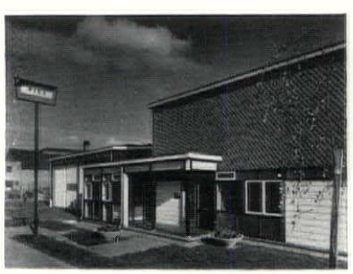
For convenience these are grouped in four categories:
A1 Prefabricated systems developed by public authorities.
A2 Timber systems developed by industry in the United Kingdom.
B1 Concrete systems developed by industry in the United Kingdom.
B2 Concrete systems imported from abroad by industry. (This section will be published in the November issue.)

In Sections A1 and A2 the comparison is based upon the categories of performance standards described in the article on the Nenk method of building in *The Architects' Journal* on March 13, 1963. Two of these categories, namely those relating to robustness and security are not self-explanatory. Their descriptions are as follows:

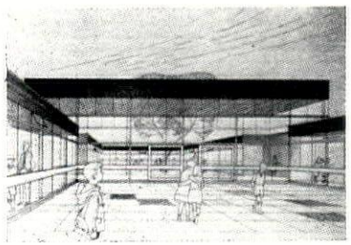
Robustness	Activity in use	Residential.
	Type of user	Individuals with high sense of responsibility; civilian; females; children; married soldiers.
	Behaviour causing damage	Carelessness in moving about building: moving furniture, etc.
	2. Activity in use	Light clerical, educational, recreational.
	Type of user	Individuals and groups of mixed rank with a high to medium degree of responsibility.
	Behaviour causing damage	Carelessness in moving about building in boots: moving heavy furniture.
	3. Activity in use	Heavy clerical; training; heavy recreational; light storage; residential.
	Type of user	Individuals and groups of same rank, with low degree of responsibility and inhibition—permanent or temporary.
	Behaviour causing damage	Extreme carelessness in moving about in boots, and with equipment; hooliganism; maliciousness due to short tempers, group antagonism and boredom; pilfering of fittings.
	4. Activity in use	Industrial, heavy storage.
	Type of user	Individuals and groups with low degree of responsibility.
	Behaviour causing damage	Very careless handling of heavy and clumsy objects; burglary; violence.
Security	1. No security	
	2. Security	

A1 Prefabricated systems of construction developed by public authorities to meet ranges of client requirements

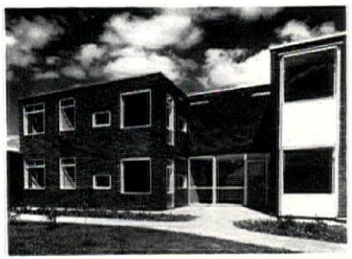
Name of system	*General comment*	*Uses*	*Performance standards*	*Materials/finishes*	*Bibliography*
CLASP (Consortium of Local Authorities Special Programme)	First developed in the Nottinghamshire County Architect's Department, to be built on sites liable to mining subsidence. Subsequently made available through a Consortium of Local Authorities to public authorities and, through Brockhouse Steel Structures Ltd., to private clients.	Schools primarily —but also offices, stores, and other Local Authority buildings.	*Number of storeys:* up to 4. *Ceiling height:* up to 16 ft. for single storey; 8 ft., 10 ft. and 12 ft. for multi-storey. *Maximum span:* 53 ft. 4 in. single storey; 30 ft. 0 in. multi-storey. *Loading:* 60 lb./sq. ft. *Fire resistance:* up to 1 hour. *Sound insulation:* 34 dB. *Robustness:* category 2. *Thermal performance:* 0.20. *Security:* category 1. *Horizontal preferred increment:* 3 ft. 4 in. *Vertical preferred increment:* 2 ft. 0 in.	*Structure:* steel frame; pin jointed; spring braces. *Roof:* timber decks. *Floors:* Ground: concrete slab. Upper: timber boarding. *Cladding:* concrete; boarding; tiles. *Windows:* timber frames; aluminium sliders. *Ceilings:* plasterboard; asbestos; insulation board; fibrous plaster. *Floor finishes:* Ground: wood block; thermoplastic tiles; clay/concrete tiles. Upper: foam rubber base floor covering. *Partitions:* cellular cored plasterboard. *Staircase:* steel strings; timber treads.	MOE Building Bulletin 19: *The Story of CLASP*, 1961. *Architect and Building News*, 15.8.62. *Interbuild, System Building*, 1963.



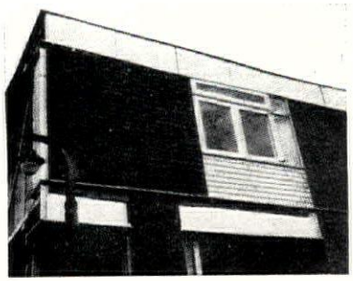
1, *CLASP fire and ambulance station.*



2, *proposed school at Bridgnorth, St. Leonards, to be built on the SCOLA system, designed by Salop County Architect, Ralph Crowe.*



3, *5M System used for old people's flatlets, Stevenage, designed by MOHLG Development Group.*



4, *claddings used in the Nenk System: left, clay tiles designed by Hans Coper: right, lightweight concrete with aggregate finish. The fascia is of concrete and the flashing of extruded aluminium.*



5, *A75 System used for the John Davis Wing of the Central School of Speech and Drama, Swiss Cottage, London: architects, Manning and Clamp.*

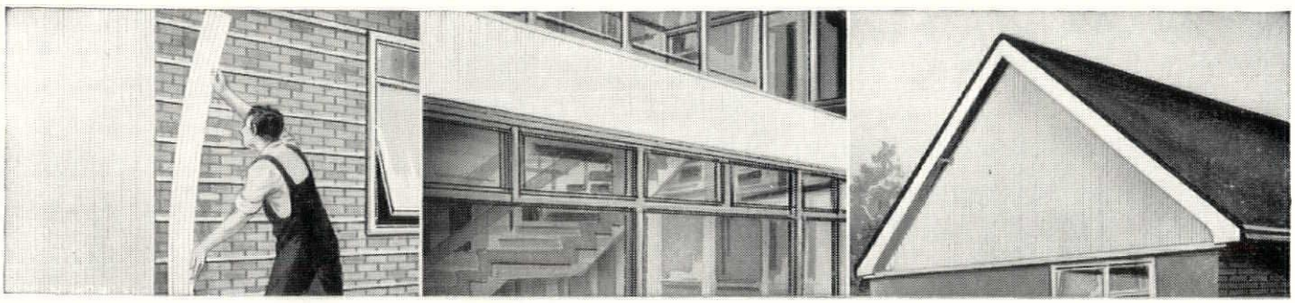
A1 Prefabricated systems of construction developed by public authorities to meet ranges of client requirements (continued)

Name of system	*General comment*	*Uses*	*Performance standards*	*Materials/finishes*	*Bibliography*
SCOLA (Second Consortium of Local Authorities)	Initiated in the Shropshire County Architect's Department to apply and extend the organizational principles first established by CLASP, based upon a new system of construction not designed for subsidence sites.	Schools primarily—but also offices, stores, and other Local Authority buildings.	*Number of storeys:* 4. *Ceiling heights:* single storey: 8 ft., 9 ft., 11 ft., 13 ft., 15 ft., 17 ft. multi-storey: 9 ft., 11 ft. *Maximum spans:* Single storey: 50 ft. multi-storey: 30 ft. *Loading:* 60 lb./sq. ft. *Fire resistance:* up to 1 hour. *Sound insulation:* 35 dB. *Robustness:* category 2. *Thermal performance:* 0.20. *Security:* category 1. *Horizontal preferred increment:* structural: 3 ft. 4 in.; partition: 1 ft. 8 in. *Vertical preferred increment:* 1 ft.	*Structure:* steel frame; pin jointed. *Roof:* compressed flax board; butyl finish. *Floors:* Ground: concrete slab; Upper: concrete. *Cladding:* weatherboarding; slates; clay tiles; concrete. *Windows:* aluminium or timber rails. *Ceilings:* plastic. *Floor finishes:* various. *Partitions:* plasterboard. *Staircase:* steel frame; concrete treads.	*The Architects' Journal*, 25.10.61, 27.6.62, 3.4.63.
5M	Developed by MOHLG in collaboration with CLASP with a view to making it available to Local Authorities.	Old people's flatlets; two-storey housing.	*Number of storeys:* 2. *Ceiling height:* 7 ft. 6¾ in. *Floor height:* 8 ft. 4 in. *Maximum span:* 15 ft. 0 in. *Loading:* 40 lb./sq. ft. *Fire resistance:* —. *Sound insulation:* 50 dB at party wall. *Robustness:* category 1. *Thermal performance:* 0.20. *Security:* —. *Horizontal preferred increment:* structural: 1 ft. 8 in. (5M) partition: 4 in. *Vertical preferred increment:* —.	*Structure:* composite steel/timber. *Roof:* timber deck; felt. *Floor:* timber deck. *Cladding:* timber frame; concrete panels; tiling. *Windows:* timber. *Ceilings:* plasterboard. *Finishes:* traditional. *Partitions:* plasterboard; steel. *Staircase:* timber.	*Interbuild, System Building*, 1963.
NENK	Developed originally in the Directorate General of Works, War Office, and currently in the Directorate General of Research and Development, MOPBW, to meet a wide variety of performances, costs and finishes for a wide range of building types. First project under construction.	Majority of building types (except housing).	*Number of storeys:* 4+. *Floor/Roof heights:* single storey: up to 22 ft. multi-storey: 10 ft., 12 ft., 14 ft. *Maximum span:* single storey: 88 ft. multi-storey: 44 ft. *Loading:* up to 100 lb./sq. ft. *Fire resistance:* up to 2 hours. *Sound insulation:* up to 45 dB. *Robustness:* category 4. *Thermal performance:* 0.20. *Security:* category 2. *Horizontal preferred increment:* 4 in. (× 4 ft. 0 in. for overall size of building). *Vertical preferred increment:* 2 ft. 0 in.	*Structure:* steel space frame. *Roof:* plysheet; insulation, felt. *Floors:* Ground: concrete slab. Upper: concrete biscuits. *Cladding:* concrete panels; various finishes on autoclaved aerated concrete carcassing. *Windows:* timber. *Ceilings:* asbestos insulation board. *Floor finishes:* various. *Partitions:* autoclaved aerated concrete panels; hollow cored plasterboard. *Staircase:* steel strings; concrete treads.	*The Architects' Journal*, 25.4.62, 13.3.63.

A2 Timber systems developed by industry in the United Kingdom

Name of system	*General comment*	*Uses*	*Performance standards*	*Materials/finishes*	*arrangements*	*Bibliography*
A75 A. H. Anderson Ltd., 58 Victoria Street, London, S.W.1	System designed in collaboration with architects and engineers. Originating from a timber system, it is now extended by use of steel frame and concrete floor and various walling materials.	All building types except house and flat construction.	*Number of storeys:* up to 5. *Ceiling heights:* single storey: 8 ft.–16 ft.; multi-storey: 8 ft. or 10 ft. *Maximum spans:* Floors: 25 ft. Roofs: 43 ft. 9 in. *Loading:* 60 lb./sq. ft. *Fire resistance* —. *Sound insulation* —. *Robustness:* —. *Thermal performance:* as required. *Security:* —. *Horizontal preferred increment:* 6 ft. 3 in. *Vertical preferred increment:* 2 ft.	*Structure:* loadbearing timber wall panels with lattice steel beams up to 25 ft. span. Timber columns with steel or trusses beyond 25 ft. up to 43 ft. 9 in. Multi-storey—steel frame and precast concrete floors. Steel lattice beam or steel columns with wood box beams. *Roof:* 1½ in. tongued and grooved boarding finished with 3 layer roofing felt with alternative of concrete floor for multi-storey. *Floor:* timber (finish not included). *Cladding:* vertical boarding and others. *Windows:* softwood. *Ceilings:* various. *Finishes:* various.	Comprehensive building service in conjunction with associate builder—negotiated contract.	*Architect and Building News*, 15.8.62. *The Builder*, 21.6.63. *Interbuild, System Building*, 1963.

[*continued on page* 216



NEW AND MAINTENANCE FREE

The house, shop, office or factory that wants low cost good looks, calls for Marleyclad.
Made of toughened, rigid p.v.c. and specially designed to provide permanent decorative facings, it can be used economically over large areas.
Marleyclad is light and easy to fix. It can be drilled and sawn.
Being rot and weather proof it is maintenance free—especially important to those wishing to cut constantly recurring costs of painting and decorating.
Marleyclad can be used in all types of building, shop fitting and decorating, interior and exterior. It also has countless applications in furnishing, displays, exhibitions etc.
Moneywise too—things look better 'Marleyclad'.

TECHNICAL DATA:
Weight: 8 ozs. per sq. ft. (approx)
Flame spread: No spread of flame. Self extinguishing.
Thermal expansion: 0.043 ins/ft. 100°F, rise in temp.
Colour: White
Size: 8" cover width. Up to 20' in stock. Other lengths to order.

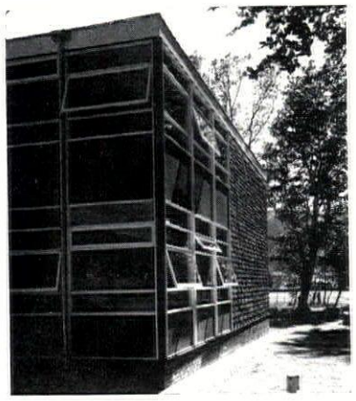
MARLEY clad

Permanent decorative vinyl cladding

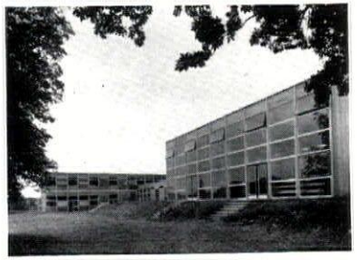
Further information from:

MARLEY SEVENOAKS · KENT · TEL: SEVENOAKS 55255

London Showrooms: 251 Tottenham Court Road, W.1. Barbour Index No. 372. Gorco Bureau Section 17/6.



6, *Derwent system.*



7, *Medway system.*



8, *Middlesex system.*



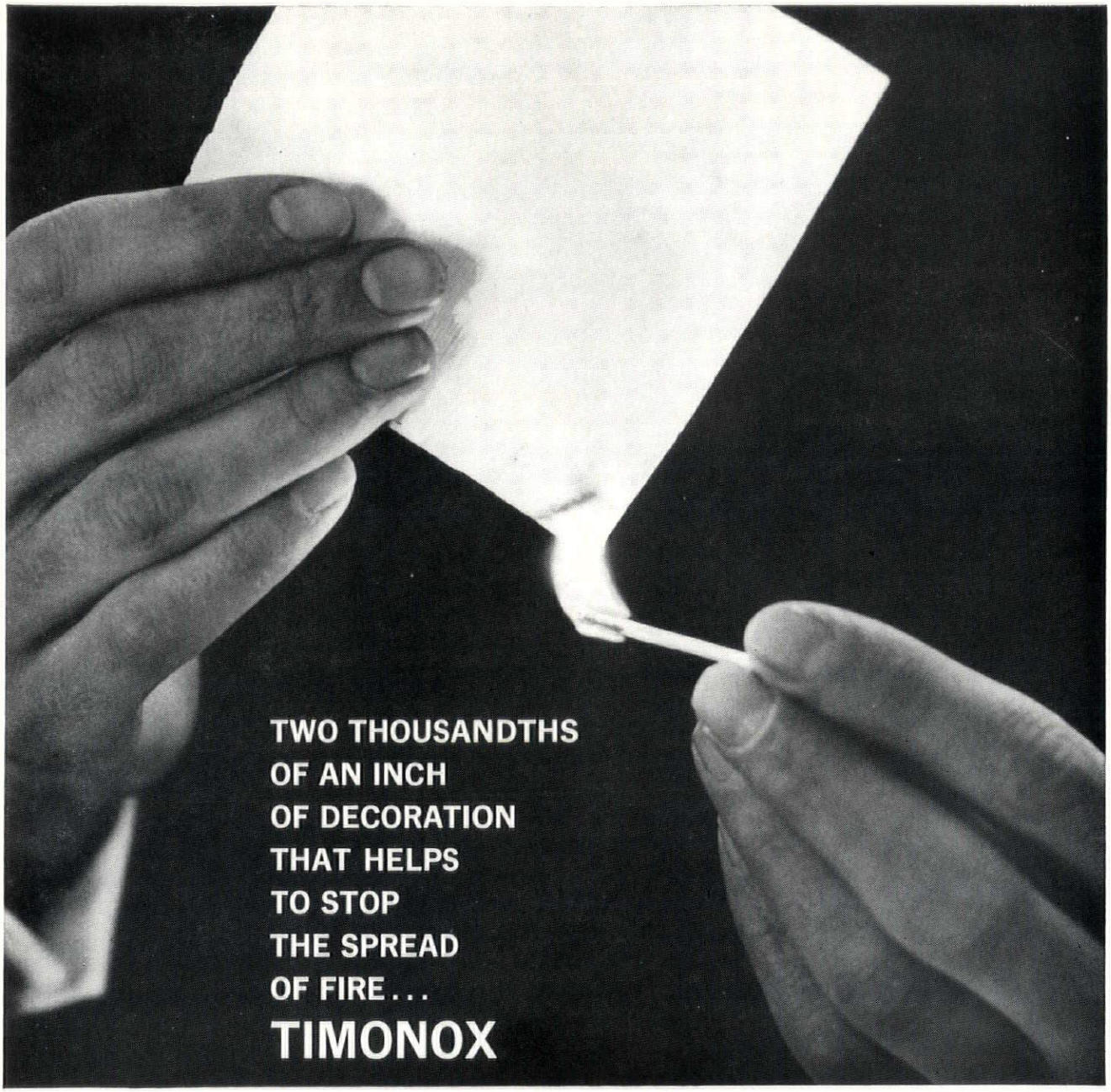
9, *Series 202 system.*



10, *Simms C-DA system used for timber housing at West Bromwich; architect, Alexander Phillip, chief architect in the Department of the Borough Engineer.*

A2 Timber systems developed by industry in the United Kingdom (continued)

Name of system	*General comment*	*Uses*	*Performance standards*	*Materials/finishes*	*arrangements*	*Bibliography*
DERWENT Vic Hallam Ltd., Timber Buildings Division, Langley Mill, Nottingham	A number of marks has been developed by this progressive firm who have now also extended their activities into housing. They have their own architects' department. Many elegant buildings have been built in their systems.	Schools, offices, canteens, halls, etc.	*Number of storeys:* 4. *Storey height:* 9 ft. 4 in. *Maximum span:* single storey: 51 ft. multi-storey: 25 ft. 8 in. *Loading:* 60 lb./sq. ft. *Fire resistance:* —. *Sound insulation:* —. *Robustness:* —. *Thermal performance:* roof: 0.17; walls: 0.15. *Security:* —. *Horizontal preferred increment:* 6 ft. 4 in. *Vertical preferred increment:* 1 ft. 4 in.	*Structure:* softwood column; laminated beam. *Roof:* ply on timber framing; three layer felt. *Floor:* timber. *Cladding:* Western Red Cedar. *Windows:* softwood. *Ceilings:* plasterboard. *Finishes:* various.	All-in service.	*Interbuild, System Building,* 1963. *Architect and Building News,* 15.8.62.
MEDWAY MK5 Medway Buildings & Supplies Ltd., Phoenix Wharf, Rochester, Kent		Schools, offices, canteens, etc.	*Number of storeys:* 1 or 2. *Storey heights:* 8 ft. 3 in., 9 ft. 9 in., 12 ft. 9 in., 15 ft. 9 in. *Maximum spans:* floor: 6 ft. 4 in.–25 ft. 4 in. roof: 6 ft. 4 in.–44 ft. 4 in. *Loading:* 60 lb./sq. ft. *Fire resistance:* 1 hour. *Sound insulation:* —. *Robustness:* —. *Thermal performance:* 0.20. *Security:* —. *Horizontal preferred increment:* 6 ft. 4 in. *Vertical preferred increment:* 2 ft.	*Structure:* timber frame; boxwood columns and beams. *Roof:* timber joists; boarding; three layer felt. *Floor:* timber joists; boarding (batten on expanded polystyrene). *Cladding:* Western Red Cedar. *Windows:* timber. *Ceilings:* ½ in. plasterboard. *Finishes:* ½ in. plasterboard or other sheet materials. *Doors:* flush or glazed.	All-in service if required.	*Interbuild, System Building,* 1963. *Architect and Building News,* 15.8.62.
MIDDLESEX 1B Middlesex Prefabricated Buildings Ltd., Green Lane, Hounslow, Middlesex	Single or multi-storey. Timber framed for single storey; concrete framed for multi-storey. Various marks and developments'	Factories, offices, canteens, schools, etc.	*Number of storeys:* 2. *Storey height:* 10 ft. ceilings. *Maximum span:* single storey: 21 ft. 4 in.–37 ft. 4 in. in 5 ft. 4 in. increments; multi-storey: 21 ft. 4 in.–32 ft. in 5 ft. 4 in. increments. *Loading:* —. *Fire resistance:* 1 hour. *Sound insulation:* —. *Robustness:* —. *Thermal performance:* 0.18. *Security:* —. *Horizontal preferred increment:* 2 ft. 8 in. plan grid. *Vertical preferred increment:* 2 ft.	*Structure:* timber (single storey): concrete (multi-storey). *Roof:* timber and felt. *Floor:* timber. *Cladding:* asbestos sheets on timber frames with mineral wool insulation. *Windows:* timber. *Ceilings:* plasterboard. *Finishes:* various.	All-in service.	*Interbuild, System Building,* 1963. *Architect and Building News,* 15.8.62.
SERIES 202 Swiftplan Ltd., 345 Ruislip Road, Southall, Middlesex	One of a series of prefabricated forms developed by this firm.	Offices, halls, schools, etc.	*Number of storeys:* 3. *Ceiling height:* 8 ft. and 10 ft. *Maximum span:* 20 ft.–40 ft. in 4 ft. increments. *Loading:* 60 lb./sq. ft. *Fire resistance:* 2 hours. *Sound insulation:* —. *Robustness:* —. *Thermal performance:* walls: 0.15. *Security:* —. *Horizontal preferred increment:* 8 ft. *Vertical preferred increment:* —.	*Structure:* steel/timber frame; timber beams to floor and roof. *Roof:* $\frac{3}{8}$ in. ply timber; 3 ply felt. *Floor:* $\frac{3}{4}$ in. high density chipboard on joists. *Cladding:* Western Red Cedar. *Windows:* timber. *Ceilings:* ½ in. insulation board and 4 ft. square hardboard faced expanded polystyrene. *Finishes:* asbestos insulation board internally to external walls. *Partitions:* hardboard faced expanded polystyrene panels.	All-in service, if required.	*Architect and Building News,* 15.8.62.
SIMMS C-DA W. J. Simms, Sons & Cook Ltd., Haydn Road, Sherwood, Nottingham	Permanent multi-storey timber construction, fully protected against insects and fungus	Schools, offices, hospitals, hostels, flats, etc.	*Number of storeys:* up to 3. *Storey height:* as required. *Maximum span:* 13 ft. 4 in.–40 ft. in 3 ft. 3 in. increments. *Loading:* 60 lb./sq. ft. *Fire resistance:* —. *Sound insulation:* —. *Robustness:* —. *Thermal performance:* 0.18. *Security:* —. *Horizontal preferred increment:* 6 ft. 4 in. 6 ft. 8 in. *Vertical preferred increment:* heights as required.	*Structure:* laminated column; ply box beams. *Roof:* felt on compressed straw slabs. *Floor:* timber. *Cladding:* Western Red Cedar. *Windows:* soft or hardwood. *Ceilings:* any sheet material. *Finishes:* various.	All-in service, if required.	*Architect and Building News,* 15.8.62.



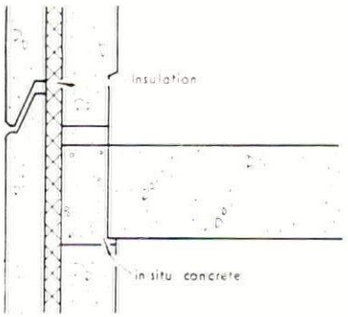
TIMONOX is a flame-retardant paint that has been officially tested at the Fire Research Station and their findings are set out in a leaflet that is available on request. But it is also a paint that anyone with an eye for sheer decorative quality would choose on that account alone.

This combination of flame-retardant and decorative qualities represents a major advance in paint technology. Timonox is at present made in two forms. As an emulsion paint in a wide variety of colours and as a pure white alkyd-resin enamel. In both forms it has quite exceptional opacity so that a high spreading rate is combined with excellent covering power. In both the finish is impeccable. It is an easy paint to use, drying without brush marks.

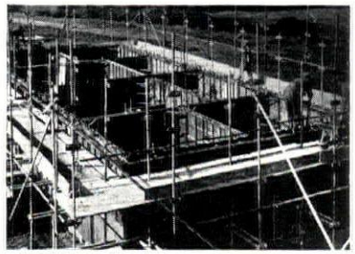
ASSOCIATED LEAD MANUFACTURERS LIMITED

Clements House, 14 Gresham Street, London E.C.2.
Crescent House, Newcastle upon Tyne 1. Lead Works Lane, Chester.

BARBOUR INDEX FILE 170



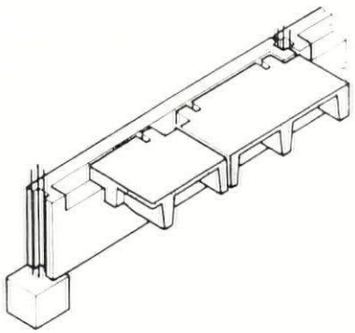
11, *BisonWall Frame system—junction of floor slab and external wall.*



12, *Easiform system.*



13, *G.80 system used for a four-storey office block at Raynesway.*



14, *G.80 system—sketch of floor slab seating on edge beam.*

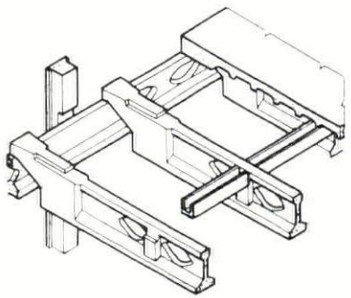
15, *Intergrid system used for Keresley Secondary School; G. R. Barnsley, County Architect of Warwickshire.*



B1 Concrete systems developed by industry in the United Kingdom

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
BISON WALL FRAME Concrete Ltd., Green Lane, Hounslow, Middlesex	Developed from frame intended for high flats; first introduced in 1957; Scandinavian influence through consultations with Malstrom. Available from five factories located throughout UK producing 8–20 dwellings per day. Contracts as small as 24 units possible. All-in service (design/delivery/erection) provided. Claim to some one-third time of traditional construction in erection. Choice of layouts of 4, 6 or 8 flats per floor.	8–20 storey flats.	*Plan:* Basic unit a 2 bed flat to MOHLG standards. Internal wall partitions adjustable in 6 in. increments. *Storey heights:* 8 ft. 4 in. and 8 ft. 9 in. (ceiling heights: 7 ft. 7½ in. and 8 ft. 0½ in.).	*Foundations:* conventional. *Structure:* factory precast storey height panels; external gable walls 3 in. faced concrete/1 in. expanded polystyrene/6 in. structural concrete; internal walls 6 in. structural concrete; floor units—two per room; front and rear infill walls of choice of construction; bathroom and toilet, ducts, staircases, lift shafts, etc., precast in storey heights. *Services:* can be cast with panels. *Finishes:* either incorporated or added subsequently.	*Interbuild*, *System Building*, 1963. *The Builder*, 15.3.63. *Architect and Building News*, 17.4.63.
EASIFORM John Laing Construction Ltd., 4 Regent Street, London, S.W.1	In existence since 1919, having been developed to meet post 1914-1918 war labour shortages. Type plans available if required.	Primarily two-storey housing; and flats up to 4 storeys, but various other building types also.		Essentially the mechanization of traditional methods of pouring concrete on site, using steel shuttering to form cavity external walls and solid partitions into a monolithic structure. Timber upper floors and roof trusses prefabricated as far as possible. Plaster skin finish internally. Cavity external walls made up of 3½ in. natural aggregate concrete, 2 in. cavity, 3½ in. clinker concrete.	*Interbuild*, October, 1962. *Architect and Building News*, 10.4.63.
G.80 Gee, Walker & Slater Ltd., Uttoxeter Old Road, Derby	Developed by Morrison and Partners, architects; Malcolm Glover and Partners, engineers; Gee, Walker & Slater Ltd., contractors; later developments with Building Design Partnership.	Two-storey housing; multi-storey flats; schools, offices, etc.	*Plan:* 3 ft. 4 in. planning grid. *Storey heights:* 20 ft. maximum for single storey.	Precast concrete frame form developed for public buildings. Columns located on 3 ft. 4 in. grid, and up to 20 ft. high in 1 ft. 4 in. increments. Site cast concrete panel form developed at Aldershot for War Office. Panels loadbearing and self-finished. All components to 4 in. modular dimensions. Floors, stairs, etc., precast.	*Interbuild*, *System Building*, 1963. *The Builder*, 3.5.63. *Architect and Building News*, 23.1.63.
INTERGRID Gilbert-Ash Ltd., 45 Notting Hill Gate, London, W.11	Developed originally in collaboration with MOE.	Schools, offices, factories, canteens, department stores.	*Plan:* 3 ft. 4 in. planning grid.	Precast prestressed pin jointed concrete frame. Perimeter stanchion at 6 ft. 8 in. and 10 ft. centres. Primary beams carried on boundary beams, with U section secondary beams post-tensioned between. Floors of *in situ* or precast concrete slabs, 6½ in. or 8 in. square concrete columns in single storey heights. Cladding as required or horizontal precast concrete panels. Precast stairs. Suspended ceilings. Maximum number of storeys 7. Maximum primary span 40 ft. for floors and 60 ft. for roofs.	*Interbuild*, *System Building*, 1963. *Architect and Building News*, 6.3.63

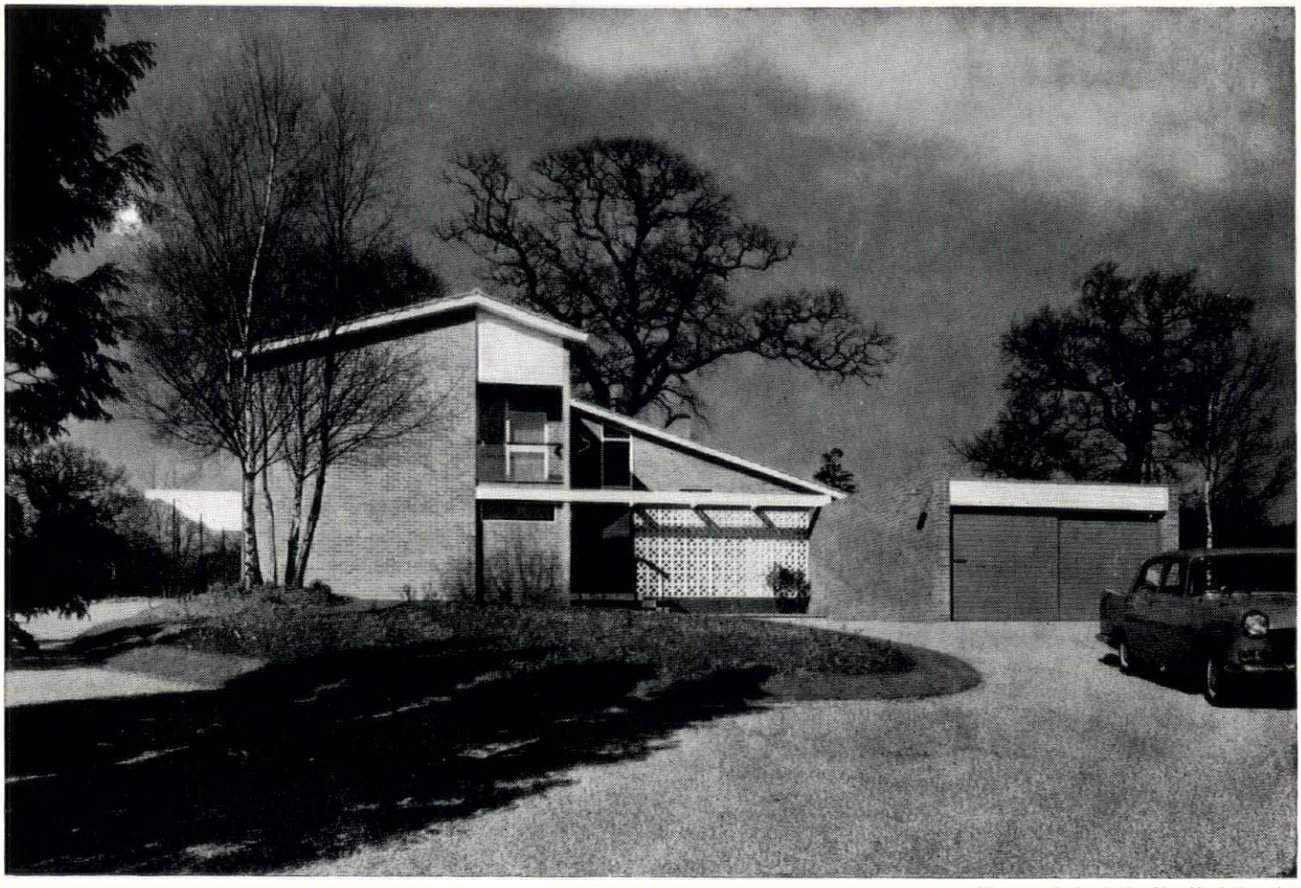
[*continued on page 220*



16, *sketch of the Intergrid system.*

Ibstock FACING BRICKS

from the large colour range . . .



Photography by Archie Handford, Croydon

. . . were chosen for this unusually designed private house at

MEADWAY
ESHER, SURREY

for their pleasant appearance,
durability and reasonable price.

Architects: Powell & Alport.

Builders: Prideaux and Co. (Builders) Ltd.

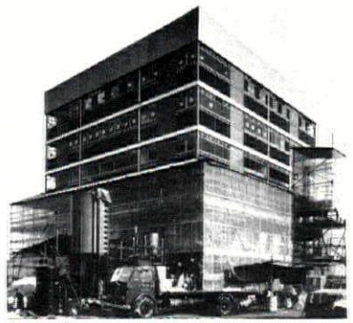
Bricks: 2⅝″ Best Handmade Multi Golden Brown Sandstocks.

Most machine made bricks are readily available — but handmade bricks are in short supply and all orders should be placed as far ahead as possible. We are, of course, anxious to receive enquiries for future deliveries and shall be happy to make reservations against architects' specifications.

Send for full details and sample.

Ibstock **FACING BRICKS**

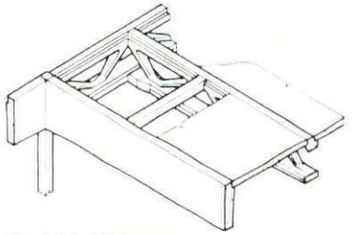
THE IBSTOCK BRICK & TILE COMPANY LIMITED, Ibstock, near Leicester. Telephone: Ibstock 531
London: B.R. Goods Depot, Wright's Lane, Kensington, W.8. Telephone: Western 1281



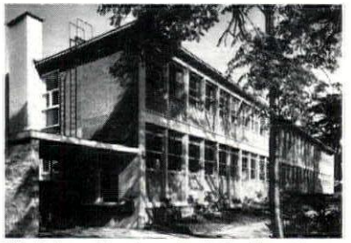
17, *Jackblock system used for 17-storey block of flats in Coventry, showing the building when six storeys had been jacked. Arthur Ling, City Architect.*



18, *Laingspan system used on Russell School, Croydon.*



19, *sketch of Laingspan system.*



20, *Laingwall system—front elevation of Cement and Concrete Association building at Wexham Springs.*

21, *Reema system used for luxury flats, Wallasey Cheshire; architects, Stephenson, Young and Partners.*

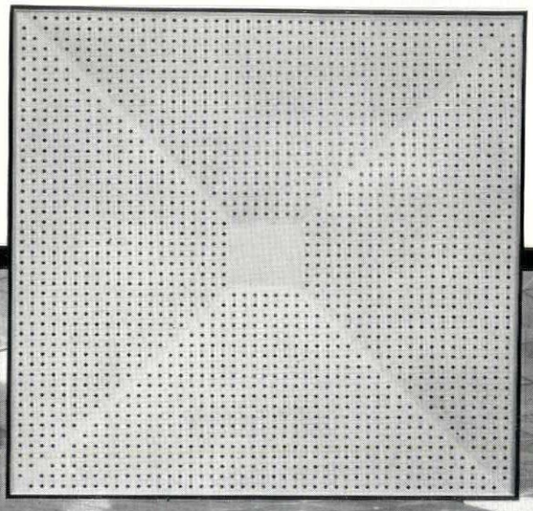


B1 Concrete systems developed by industry in the United Kingdom (continued)

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
JACKBLOCK Richard Costain (Construction) Ltd., 111 Westminster Bridge Road, London, S.E.1	Devised and developed by Costain, first project being constructed in Coventry (97 dwellings—64 × 1 bed, 32 bedsitters, 1 caretaker). Started early 1962—completed summer 1963. 14 storey office block to be built in Brussels.	Multi-storey flats, offices.		Foundation slab and basement 'working' area constructed on piles. Roof and each floor cast in sequence at ground floor and raised on a structural core (containing services, lifts, stairs) by 40 jacks, each of 220-ton lifting capacity, situated in the basement. As core wall construction proceeds, it is underpinned by concrete blocks each 7⅝ in. thick. At each storey level lift another floor is cast. Equivalent of three storeys clad in polythene sheeting to provide factory conditions at ground level. Each level is completed with services as the building rises from the ground. Rate of lift is approximately 1 in. per 3 minutes.	*Interbuild, System Building*, 1963. *The Builder*, 12.4.63. *Architect and Building News*, 27.3.63. *The Architects Journal*, 14.2.62.
LAINGSPAN John Laing Construction Ltd., 4 Regent Street, London, S.W.1	Developed in collaboration with MOE.	Schools, hospitals, canteens, laboratories, etc.	*Plan:* 3 ft. 4 in. grid. *Storey heights:* up to 16 ft. 8 in.	Range of high grade precast concrete components. Prestressed storey height columns, 6 in. by 6 in. up to 18 ft. 4 in. long. Post-tensioned beams made up of 3 ft. 4 in. precast units. Maximum span of 33 ft. 4 in. for floors and 50 ft. 0 in. for roofs. Roof of 1½ in. lightweight slabs with felt finish. Floors of a structural screed on 1½ in. precast concrete plates. Cladding of timber frames or concrete sandwich panels. Timber windows. Precast concrete stairs.	*Interbuild, System Building*, 1963. *Architect and Building News*, 15.8.62, 10.4.63.
LAINGWALL John Laing Construction Ltd., 4 Regent Street London, S.W.1		Multi-storey flats, offices, laboratories, factories.	*Storey heights:* 10 ft., 10 ft. 6 in., 10 ft. 9 in.	Precast panels, beams and slabs, storey height units, loadbearing with external finish. External panels made up of 2 in. concrete, ½ in. expanded polystyrene, 3½ in. lightweight concrete. Various sizes for various storey heights: 4 ft. 9 in. by 10 ft. 6 in. up to 14 storeys 5 ft. 0 in. by 10 ft. 9 in. up to 12 storeys 5 ft. 0 in. by 10 ft. 0 in. up to 16 storeys 6 ft. 2 in. by 10 ft. 9 in.	*Interbuild*, October, 1962. *Architect and Building News*, 10.4.63.
REEMA Reema Construction Ltd., Milford Manor, Salisbury	Assembly by mobile crane of 6-ton capacity for up to 4 storeys. One foreman and 5 labourers per mobile crane.	Two-storey housing and multi-storey flats.		Precast storey height hollow panels with *in situ* filling to form a rigid 'frame.' External walls cavity—1½ in. outer skin, 6½ in. cavity, 1 in. inner skin, ½ in. fibreboard lining. Various integral external finishes. Panels up to 15 ft. wide by 11 ft. high. Internal walls: 3 in.–4 in. solid or hollow concrete panels. Floors: hollow concrete panels up to 23 ft. span. Alternatively, precast concrete beams and timber boarding. Units generally maximum 2–3½-ton weight. Precasting on site or in factory. Doors and windows cast in. Traditional internal finishes. Conventional foundations. Panels reinforced in multi-storey condition only.	*Interbuild, System Building*, 1963. *The Builder*, 10.5.63. *Architect and Building News*, 30.1.63, 15.8.62.
WATES Wates Ltd., 1258 London Road, London, S.W.16	A mixture of industrialized and traditional techniques. The complete freedom of dimensional choice requires the earliest consultation to make a particular selection appropriate to the project. Therefore, pre-contract negotiation is essential. Developed with Ove Arup and Partners as consulting engineers.	Multi-storey flats.		Precast concrete panels cast on site. 7 in. internal cross walls cast *in situ*. External walls 7 in. thick by 8 ft. 9 in. high by 7 ft.–9 ft. wide, with exposed aggregate finish. Precast floors of 7 in. hollow units up to 7 ft. 6 in. long by 4 ft. 6 in.–8 ft. wide. Precast staircases. Block partitions. Traditional finishes Conventional foundations.	*The Builder*, 24.5.63.

ESSE

ACOUSTIC FIRE-RESISTANT CEILING TILES

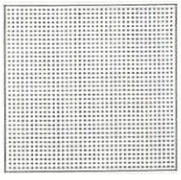


Made from steel panels in the form of flanged trays with infill of insulating material, ESSE Tiles are available perforated (acoustic) or unperforated (non-acoustic) and supplied enamelled in a wide range of colours.

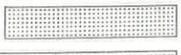
24″ x 24″

Architects: Boswell Mitchell & Johnston

ESSE Ceiling Installation (Design No 8) at Olympia Bowl and Ballroom, East Kilbride



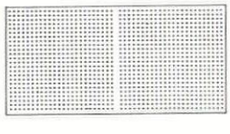
18″ x 18″ and 24″ x 24″



18″ x 3″



36″ x 12″ (also without grooves)



24″ x 12″ (also without groove)

ESSE Ceiling Tiles offer, as well as interesting aesthetic possibilities to the designer, these functional advantages —

1 **Excellent acoustic properties,** especially in the sound range which includes office machine and restaurant clatter.

2 **Strong fire-resistance** characteristics. Official tests show that after 2 hr 10 min at up to 1000°C the load-bearing strength of steel beams above an ESSE Ceiling was not significantly weakened.

3 **Ease of erection.** ESSE Ceiling Tiles are designed for simple 'snap-in' fitting into galvanised steel supports.

4 The patented dished profile of Design No 8 ensures that no buckling or distortion occurs—even in heated ceilings—due to expansion and contraction.

ESSE **SUSPENDED CEILINGS**

SMITH & WELLSTOOD LTD Acoustics Division Scott's Road Paisley
London: 63 Conduit Street W1 Manchester: 26 Cross Street 2

THE INDUSTRY

Wall mounted convector radiators

Diffusion Radiator Co. are marketing a range of wall-mounted fan convectors for use with hot water central heating systems, 1.



These are all 22½ in. high and, therefore, are very useful for siting under windows. The fan projects the warmed air slightly downwards to give a good coverage of the floor and reduce temperature gradients. The controls (on the panel of each radiator) give three fan speeds and six temperature selections and each unit can be provided with a low water temperature cut out and a remote wall mounted room thermostat as extras. Outputs vary according to the mean water temperature and the fan speed. Model 25, with water temperature at 170°F. and at the highest fan speed, gives 28,300 Btu and costs £56 10s.
Diffusion Radiator Co. Ltd., Island Farm Avenue, West Molesey, Surrey.

Factory-built kitchens

Industrialization and productivity are in the air. Systems proliferate and much ingenuity is being expended on research and development.

One such new development is a prefabricated kitchen system by Whittingham and Mitchel Ltd. This consists of a wide range of kitchen fitments, cupboards, drawer units, sinks, even cookers and refrigerators. These are manufactured to a set of basic standard dimensions and assembled into complete kitchen units on a basic framework with all plumbing and electrical work so that the final unit, 2, can be fitted and fixed with minimum effort.

Development, originally for the Barbican scheme in London, was in conjunction with Chamberlin, Powell and Bon, architects, and G. H. Buckle and Partners, consulting engineers. The idea has obviously arisen from similar thinking which produced the Swedish 'Heart' units. These are completely prefabricated bathroom and kitchen units but include all walls, floors and ceilings. This British development has obviously to be fitted into a pre-built carcase. As such, of course, it allows much greater flexibility within the limits of its dimensional system.

It is on this point of dimensions that the greatest problem is likely to be found. The basic planning dimension of the system is 1 ft. 10 in. The reasons behind this choice were probably quite logical in terms of the original brief. It might even be said that no great difficulties should be experienced in traditionally constructed and planned buildings, but, with the widely growing acceptance of the 4 in. module and the almost certain use of this module in industrialized building, this system would seem to be quite voluntarily limiting its market.

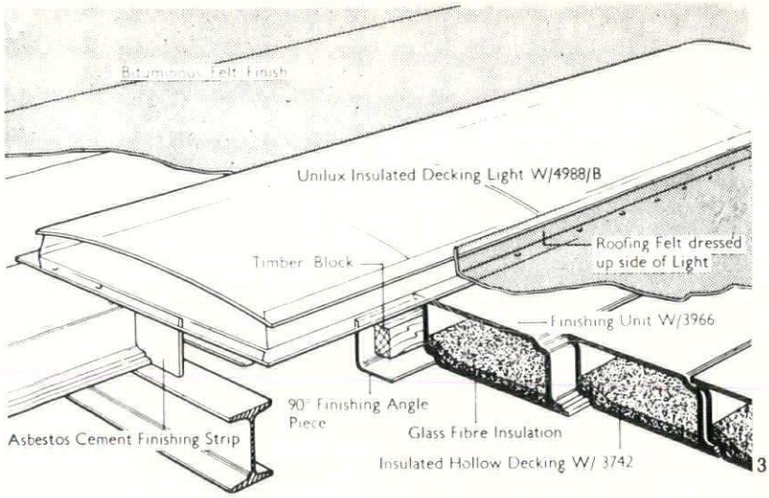
Such units as these, would in principle, be ideal for use in such work as the MOHLG Sheffield houses, but these houses use a 5M basis, i.e. 1 ft. 8 in., so there the use of these units is virtually impossible.

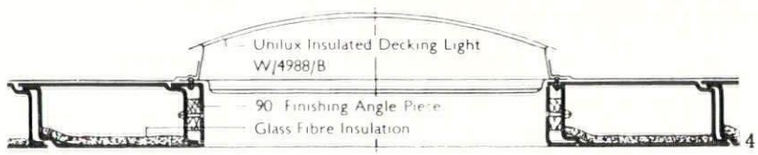
Of course, for Whittingham and Mitchel Ltd., this is probably their first venture into the mad building world and at first sight this dimensional problem may seem insignificant. One feels, however, that as things are going they would be well advised to go into the matter more deeply.

This virtual inexperience in building matters has probably worked for them too in enabling them to bring a fresh, uncluttered approach to a tricky problem and there seems no doubt that in several ways this is what they have done.
Whittingham and Mitchel Ltd., Bridge Wharf, Chertsey, Surrey.

New decking catalogues

UAM, continuing with their admirable series of A4 sized SfB catalogues, have now put out three on decking. These deal with 3 in. metal-reinforced, 5 in. metal-reinforced, and insulated hollow decking, 3,4, respectively, and each contains under a single cover all the architect, the structural engineer, the builder, the stockist and the quantity surveyor could possibly want to know about the product in question. But this is done in so orderly a way that each of these enquirers can find out what he wants to know without waste of time or a sense of visual indigestion.





It goes without saying that each volume gives a clear picture of the associated detailing involved when using the product, including in each case the correct way of incorporating rooflights—always very critical with decking. These brochures are an essential architect's reference: UAM have given a most useful lead to the industry.
The UAM Group of Companies, Tolpits, Watford, Herts.



CONTRACTORS etc

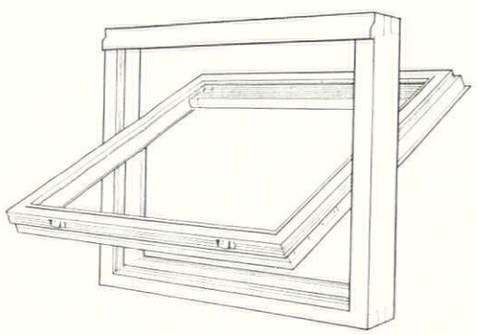
Tourist Office, Piccadilly London. *Architects:* Ernö Goldfinger and Charlotte Perriand. *General contractors:* J. Jarvis and Garmack & Co. *Sub-contractors: Acoustic ceiling:* Panther Ceilings Ltd. *Coffee table frames:* Wessex Guild Ltd. *Curtains:* Elys. *Dampa ceiling:* Anderson Construction Co. *Dictaphones:* Dictograph Ltd. *Electrical:* J. and R. Bush Ltd. *Fibreglass channels:* Verplex. *Furniture:* Rymans Ltd., S. Hille & Co. *Furniture and fittings:* D. Bianco & Co. *Glass:* James Clark & Eaton Ltd. *Granite paving, marble flooring:* Anselm Odling & Sons Ltd. *Heating:* James Slater & Co. *Ironmongery:* A. and I. Chart & Co. *Illuminated floor signs:* Knight Electrics Ltd. *Lettering:* Gordon House. *Louvred light fittings:* GEC (Lighting & Equipment) Ltd. *Mechanical stacker:* Rolatruc Ltd. *Metal shelves:* Tuckers and Edgar. *Mural photoprints:* Autotype Ltd. *Office equipment:* Roneo Ltd. *Photomural lighting:* Allom Heffer. *Projector:* British Films Ltd. *Screen:* Andrew Smith Harkness Ltd. *Sliding door gear:* R. Henderson Ltd.

House at Parbold. *Architect:* Anthony J. Grimshaw. *General contractor:* E. Geary & Son Ltd. *Sub-contractors: Roofing felt:* Vulcanite Ltd. *Bricks and copings:* Edenhall Ltd. *Slate cills:* Bow Slate & Enamel Co. *Double glazing:* Pilkington Bros. Ltd. *Roof insulation:* Stramit Boards Ltd.

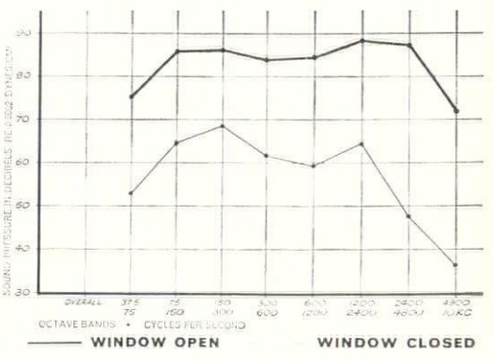
House at Hindley. *Architect:* Anthony J. Grimshaw. *General contractor:* E. Geary & Son Ltd. *Sub-contractors: Sliding door:* Marley Tile Co. *Bricks and copings:* Edenhall Ltd. *Slate cills:* Bow Slate & Enamel Co. *Concrete slates:* Hardrow Slate Co.



design v. the ton-up boys



How many decibels to the gallon? Carda doesn't care. The noise made by these tearaways is a mere murmer compared to the noise conditions in which Carda have been tested.
Carda windows in the B.B.C. Office in the main building at London Airport were scientifically tested against the ear-splitting roar of Comets and DC-8's. The graph shows the difference that Carda windows make in these extreme conditions. Carda copes effectively with any kind of noise.



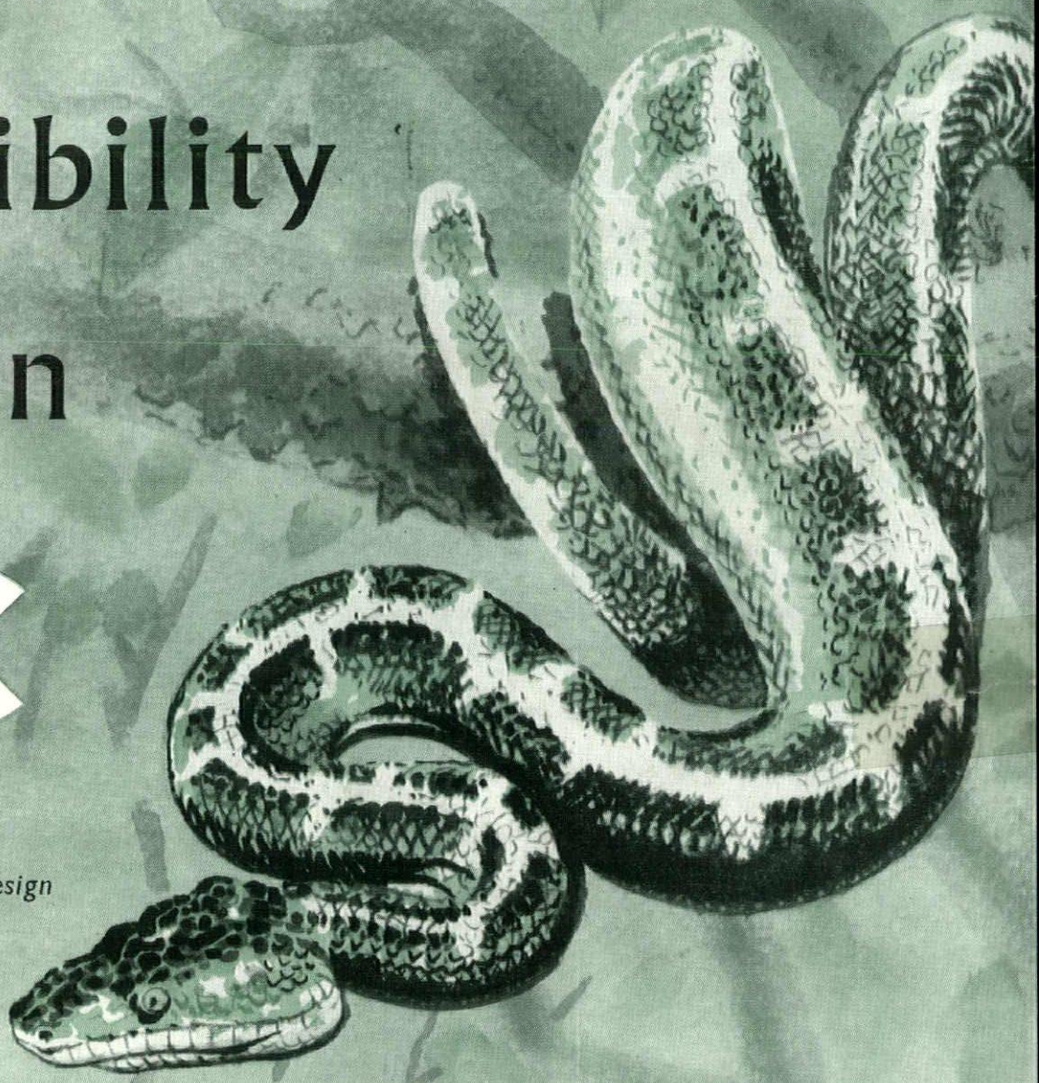
Carda
WINDOW

Full information from
Holcon Ltd A [illegible] Company
119 Gelderd Road, Leeds. Telephone 29554
London Office: 94 Baker St., W.1. Telephone WELbeck 9296

Reinforced Concrete for flexibility in design

BRC

Specialists in Reinforced Concrete Design and Suppliers of Reinforcement



THE BRITISH REINFORCED CONCRETE ENGINEERING CO. LTD., STAFFORD

London, Birmingham, Bristol, Chelmsford, Leeds, Leicester, Liverpool, Manchester, Newcastle, Cardiff, Glasgow, Dublin, Belfast, Bulawayo, Calcutta, Johannesburg, Lagos, Singapore, Vancouver.

Export Sales: 54 Grosvenor Street, London, W.1

H-W.1077

YEAR III

YEAR V

YEAR XV

IAL ISSUE OF THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 800 OCTOBER 1963 FIVE SHILLINGS

UNIVERSITIES



'DRAGONZIN'

THE NEW NAME IN GALVANISED STEEL

To meet the growing demand for tight-coated galvanised steel, The Steel Company of Wales introduces the 'Dragonzin' range.

A continuous galvanising line of the very latest design has been installed at Port Talbot.

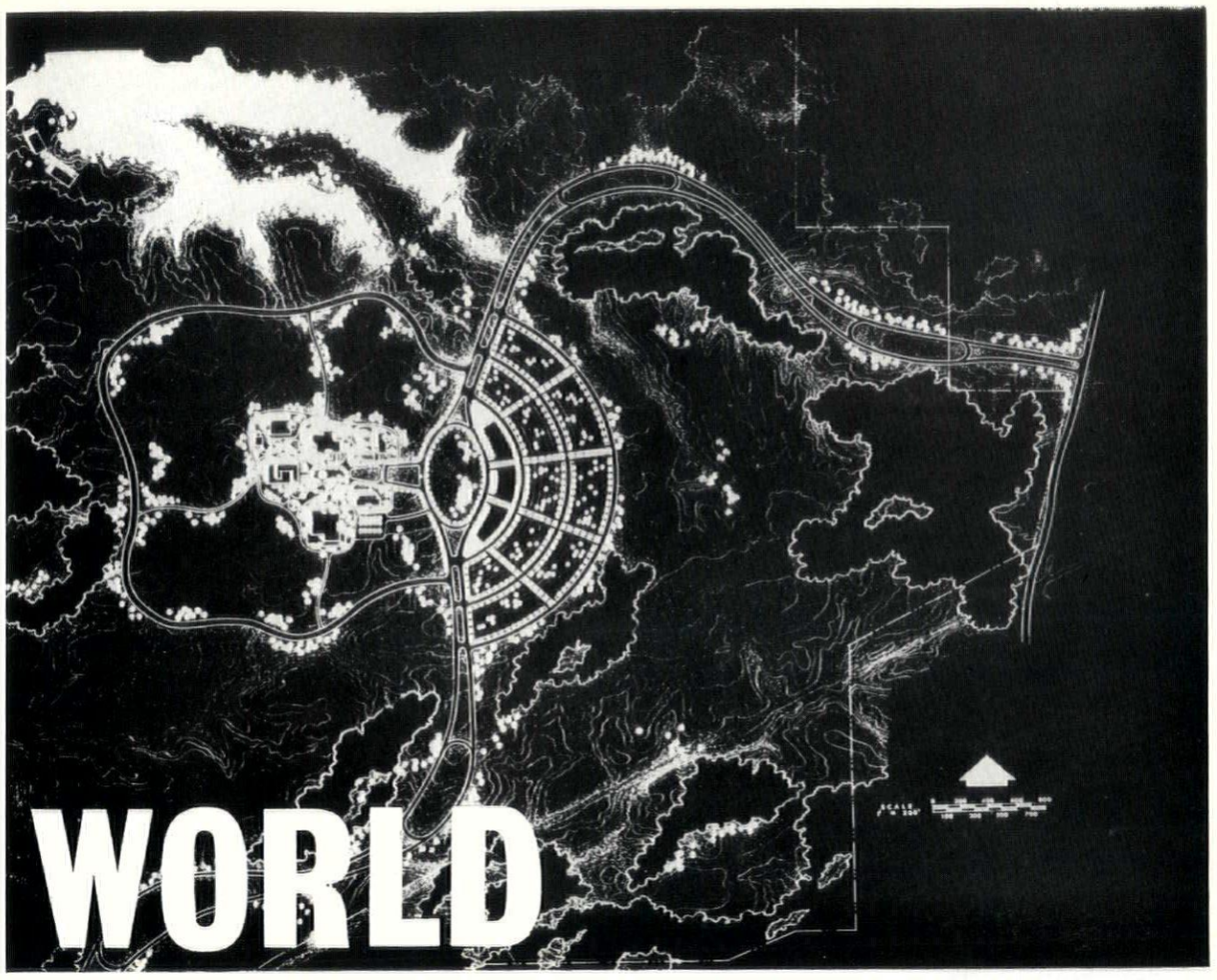
From this new plant 'Dragonzin' is now available in both sheet and coil form.

To obtain a copy of the 'Dragonzin' catalogue please write to: The Sheet Sales Manager, (Section L), The Steel Company of Wales Limited, Abbey Works, Port Talbot, Glamorgan.

THE STEEL COMPANY OF WALES LIMITED

A WORLD OF UNIVERSITIES

USA



1

This month's special edition of *World*, in honour of the Universities issue, begins with a project that is the exact antithesis of most things that Europeans and Englishmen in particular, think of as a University—an isolated campus in a rural setting, but entirely innocent of any kind of residential accommodation for students. This is not a sin of casual omission—the absence of residence is programmatic and considered, and the result of the interplay of unusual personalities and specialized social and geographical causes.

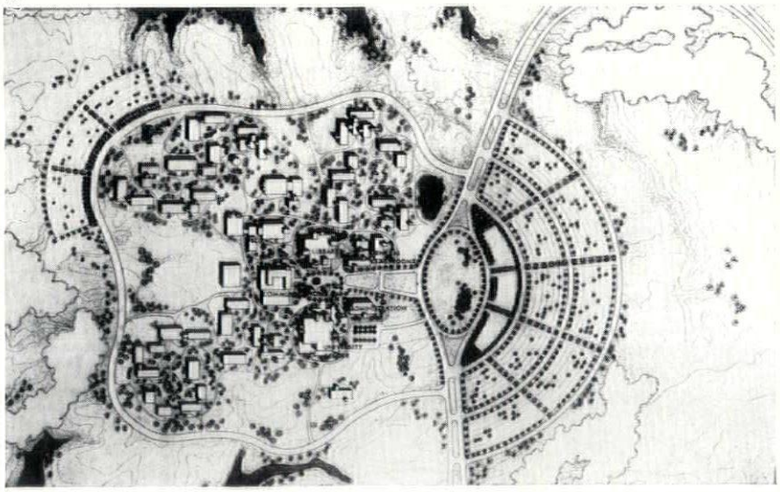
Edwardsville is, needless to say, in the USA; but the state of Illinois, where it is located, may be said to have made the creation of new universities into a flourishing state-industry, with strong overtones of social improvement and economic reconstruction of derelict areas. In this case, the derelict area is the rural hinterland of East Saint Louis (itself one of the New World's most depressing industrial jungles). The campus is located just off the floodplain of the Mississippi, in a rolling tree-dotted landscape that might be mistaken for some parts of Surrey. The sponsoring body is Southern Illinois University, Carbondale, best known as the academic base for Buckminster Fuller's operations, but deserving fame equally for the experimental approach to education of its President, Delyte Morris, who has sponsored, among other things, radical experiments in mechanized teaching combined with revolutionary curricula in the 1962–63 Experimental Freshman Year, already in process of becoming a legend.

SIU's appreciation of the situation around East Saint Louis was of a major educational famine in an area where both average-family and public economics made it unlikely that many students would be able to live away from home. If the idea of a residential component could be abandoned, students would be more widely dispersed over the area of available part-time employment but would still be able to afford to participate in a car-pool with other students and commute quite long distances to and from university.

The master plan that arises from these considerations, site and circumstances is notable on several counts. Firstly, and from the very first phase, 1, it openly recognizes something that most other American university plans have muffled over: that its prime function is to reduce a car-borne community to a reasonable academic velocity—walking pace. No half-hearted motoring inside the campus—cars are to be parked on arrival in the great fan of tree-screened parking that lies in a slight declivity below the campus, and from then on students walk. Even when the scheme has been expanded to its final size, 2, the parking will lie outside the ring-road, and the teaching area inside it.

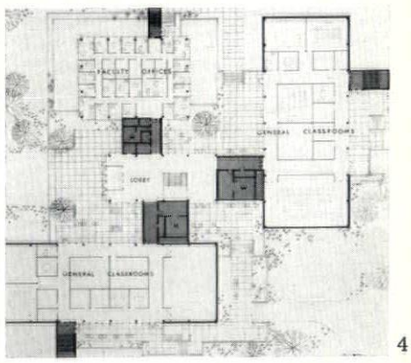
COMMUTING CAMPUS

2

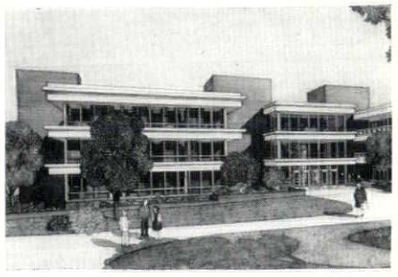




3



4



5

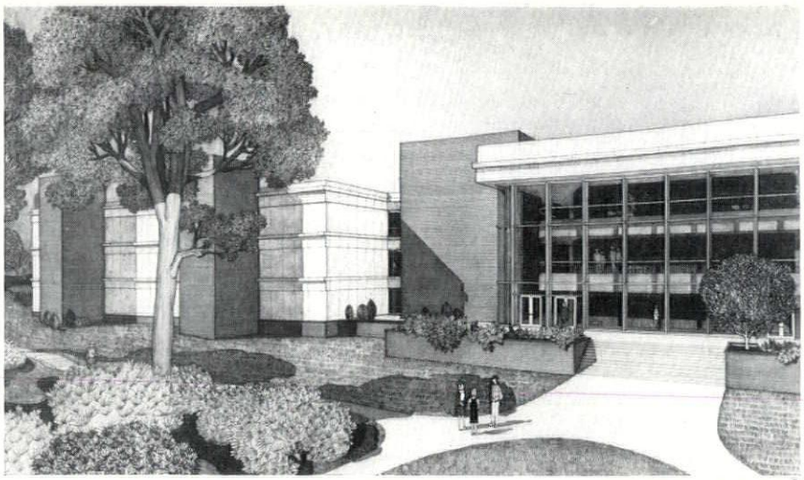
It takes a certain amount of determination, not to say bloody-mindedness, to maintain so hard and fast a division between car and not-car areas in a culture where creeping automobilism tends to flatten all boundaries, and this determination comes, now and henceforth, chiefly from one man—Gyo Obata, of Hellmuth, Obata and Kassabaum (architects of the Saint Louis planetarium, AR, June, 1963). Not only was he responsible for the master-plan, but the design of all the buildings will come under his hand as well—probably the first time in the US that an entire university has been designed by one man. The organization of the teaching programme will be non-departmental, and the accommodation can therefore be arranged by functional type—all class-rooms in one block, all labs in another, etc., and the first phase of the University has therefore been designed as a cluster of six substantial buildings round a fairly small green, 3. Excavation for the first of these buildings, the general class-room block, 4 and 5, began some five months ago, and the others will follow in fairly close order.

All will follow a generally Kahn-like *parti* of teaching floors with windows and blind service towers, though even

EDWARDSVILLE

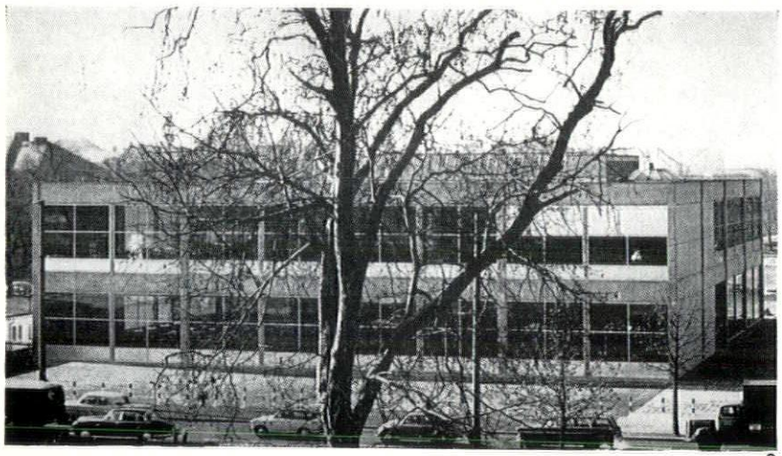
the science building, 6, in no way resembles the Philadelphia laboratories —partly because of the use of very large floor areas, and partly because of the difference in exterior detailing, of which a sample has already been mocked up on the site, 7. The other buildings in the first phase will comprise administration, students' union, library and what is termed a communications building.

Edwardsville represents a concept that would probably seem very alien even to the most advanced of the new British universities, but to have so radical a project actually built and functioning will provide a useful point of reference and comparison for our own radical propositions.





6 7

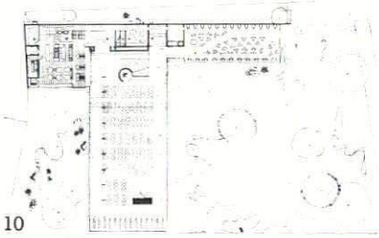


8

GERMANY

MENSA

The good old latinism *mensa* seems to suggest something that becomes increasingly German about universities of the German persuasion—difficult to pin down but involved with the German tradition of student eating and living. The tradition must be firmly grounded, for it is currently surviving some very un-traditional architecture. *Bauwelt* recently (28, 1963) illustrated three examples that show *mensae* in a most distinguished modern light: at Frankfurt am Main, 8, a straightforward, fully air-conditioned rectangular box, with north-light monitors over the kitchens, 9, and seating for some 1,200 students, architect Ferdinand Kramer; at Freiburg im Breisgau, a romantic yet



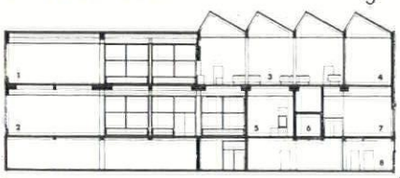
10

Freiburg



11

Frankfurt



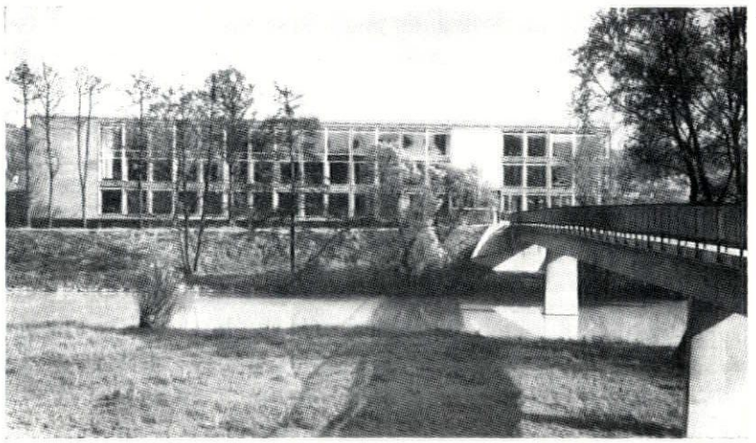
9

Miesian glass space-cage, 11, whose elegancies seem to have survived the attentions of a number of architects while credit for the design goes to the local Stadtbauamt, a less regular plan, 10, than a view of the glazed gable end might suggest, feeds 2,500 students per diem; and the Studenthaus at Marburg, 13, which is more than a *mensa* and more nearly comparable to the Union building of an English red-brick university in the functions it has to perform. A stage at the end of the large dining room, 12, will strike a familiar note, even if a specially built footbridge leading over a river direct to the main entrance of the building (right in 13) sounds an exoticism. All three of these buildings, it will be noted, are additions to existing universities and are to some extent comparable in siting and function to many projects and completed buildings in Britain, illustrated in this issue or not. *Bauwelt* may have picked its examples with care, and ignored some less worthy, but these, at least, establish pretty tough and competitive standards of comparison for recent British work.



12

Marburg



13

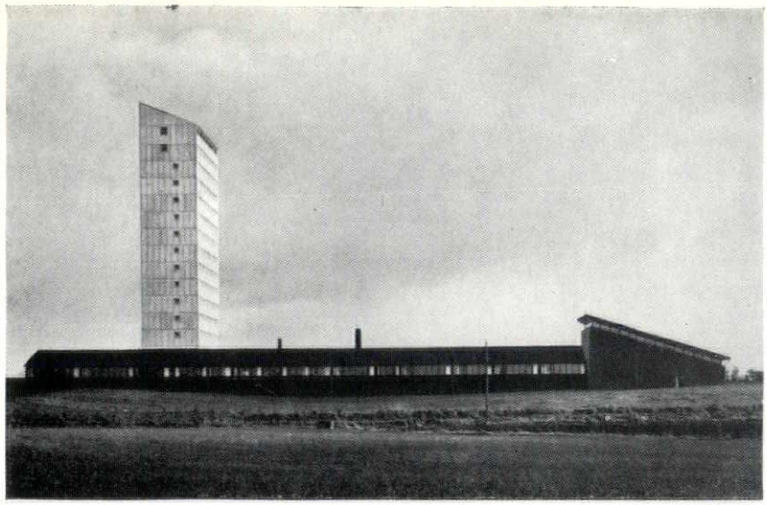
DENMARK

COURT & TOWER

Less formal universities, temporary, crash-programme or whatever, may look like a number of things, but some humane propositions may be discerned in the collegiate group, 14, over page, at Herning, Denmark, designed by Viggo Moller-Jensen and Tygge Arnfred, illustrated in *Arkitektur*, 3, 1963. The design is collegiate only in the sense that it is arranged in courtyards and contains a 'college' in one of the current English senses of the

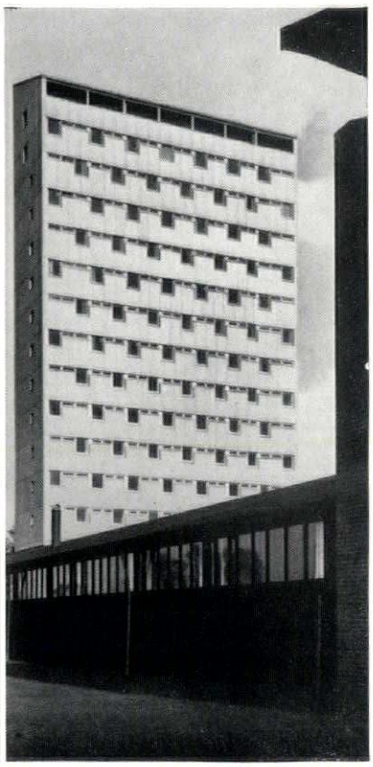
FORUM on COLLEGES

It may seem late in the day to compliment *Architectural Forum* on its March issue but the hour is appropriate—it dealt very largely with US university and collegiate buildings, beginning with Le Corbusier's Carpenter Arts Centre at Harvard (to be the subject of a Criticism article in a future issue of AR). There were some other unusual structures. The crafty old hands of Ernest J. Kump were responsible for the deceptively simple Cabrillo



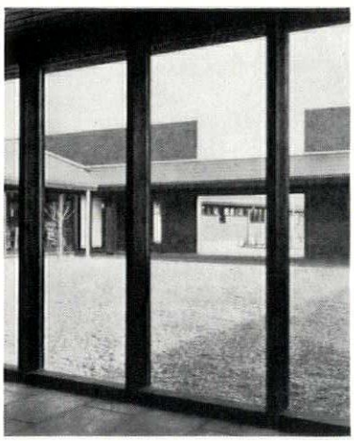
14

HERNING

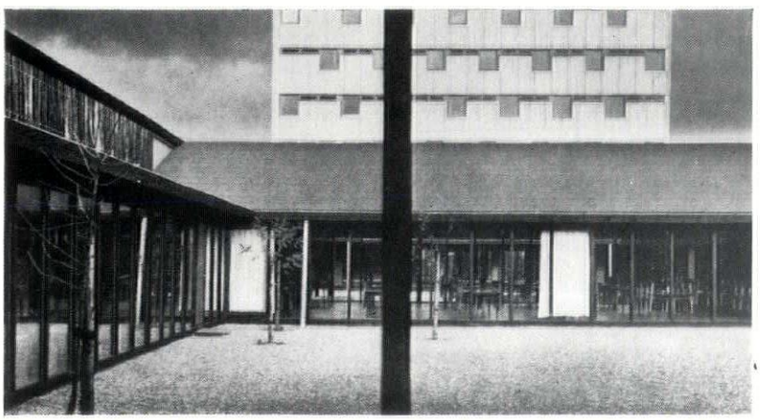


16

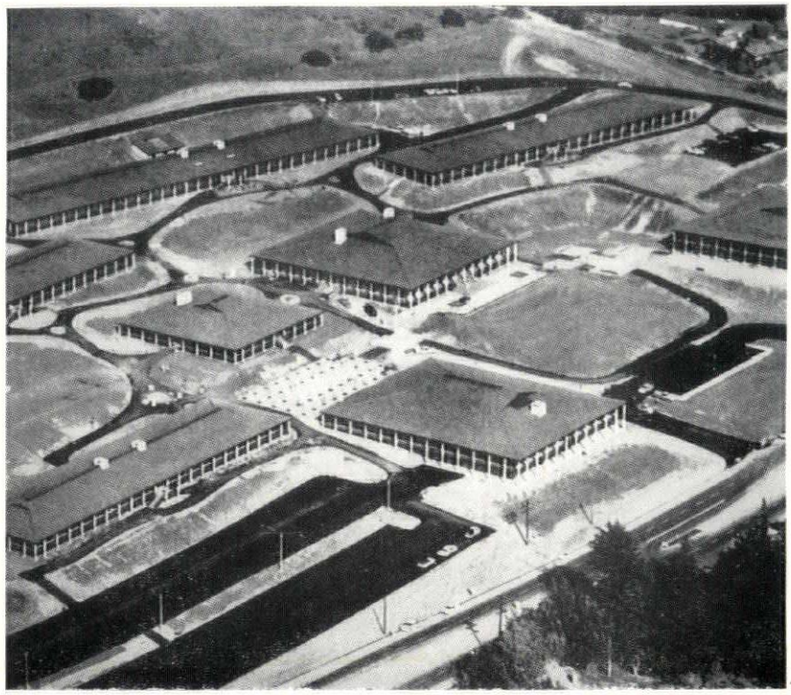
word—in fact it is classrooms and teaching spaces that make up most of the accommodation around the courtyards, 17, while the student living spaces are in the tower, 16, clad in a corrugated aluminium skin. Neither this aluminium, nor the much exposed woodwork of the other areas is in fact either lightweight or temporary, but the use of both materials suggests ways in which temporary and lightweight solutions might be used. The detailing is better than the standard run of temporary structures has to offer, but mass production might alter this situation while the overall conception of the design offers, it will be observed, the right discrimination between student accommodation which is permanent in form and conspicuously gives the character of the place, and teaching areas which, being at ground level, can be altered or rebuilt as needs dictate. Or does it? Such patiently detailed structure and such elegantly contrived enclosures, 15, do not suggest the possibility of revision. Even so, these are the sort of architectural terms in which adjustable planning of the teaching spaces might well be expressed.



15



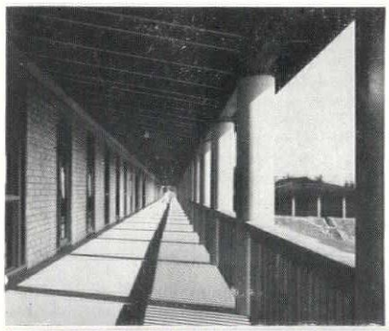
17



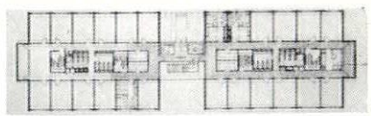
18

Cabrillo

19

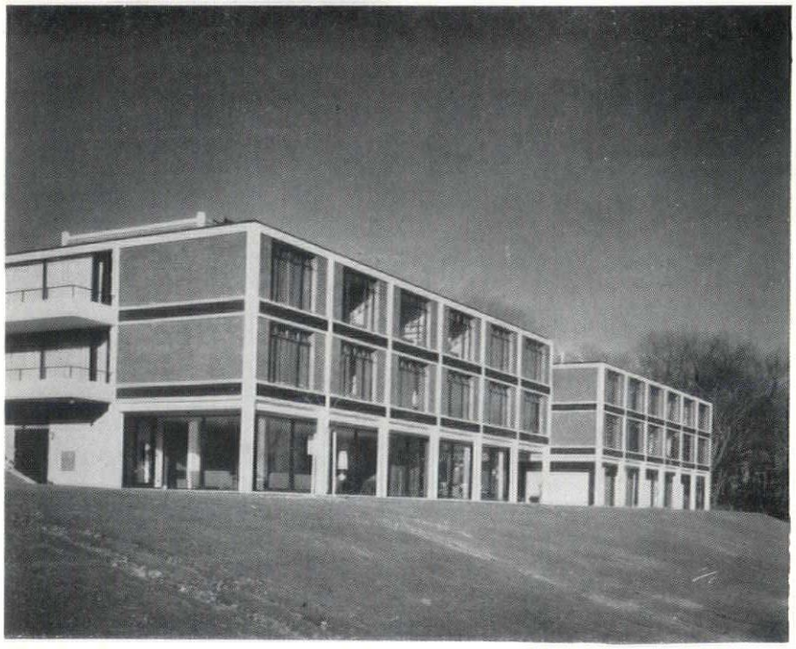


College, 18, with its freely grouped single-storey blocks, each wrapped in a shaded colonnade, 19, terracing down a hill-side. An almost English flavour, by contrast, emerges in the Hillside House dormitory, 21, at Briarcliff by



20

Briarcliff



21



22

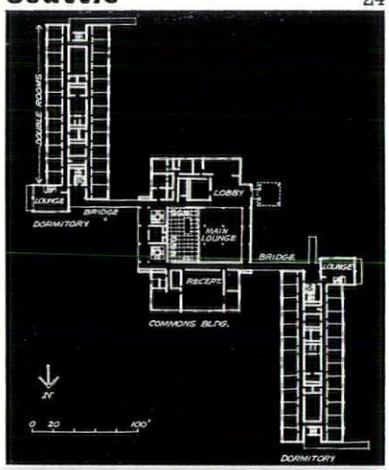


23

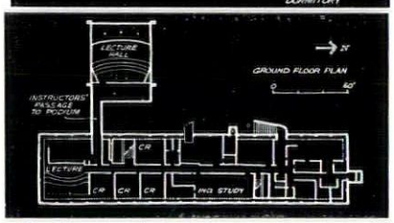
COLLEGES/USA

Sherwood Mills and Smith; though what is important here is the use of a sandwich plan, 20, seen even more forcefully in the living wings, 24, of the centrifugal symmetry of the plan of Young, Richardson and Carleton's new women's residence-halls, 22, 23, at University of Washington, Seattle. A most interesting planning innovation is the blank-walled laboratory block, right in 26 (left is a demonstration-auditorium) of the Olin Hall of Science at Colorado College, Colorado Springs. Behind the blank wall, the architects—Caudil, Rowlett and Scott—have placed a duct and services volume which wraps right round the entire block, 25, in the form of a double-wall with its two leaves about four feet apart.

Seattle

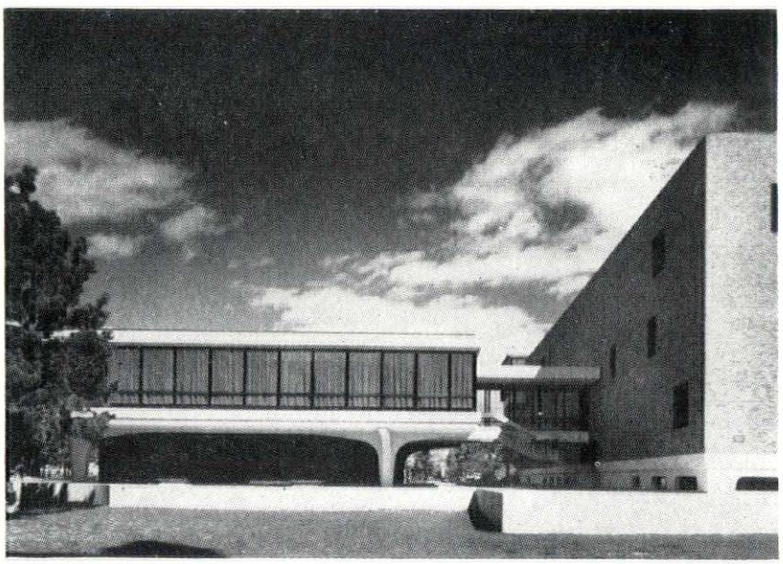


24



Colorado

25



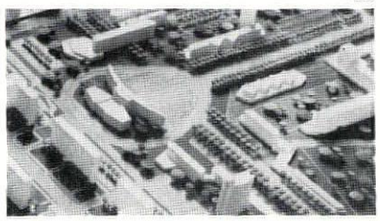
26



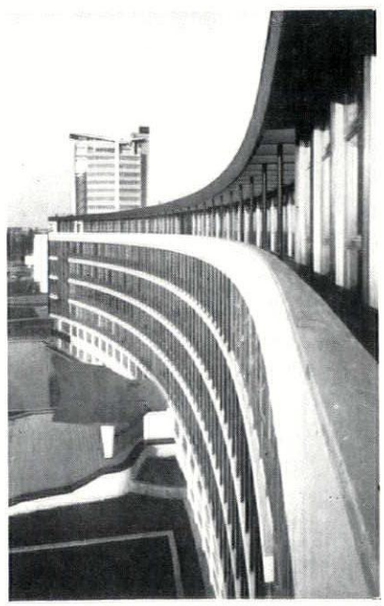
27

FRANCE

TOWERS



28

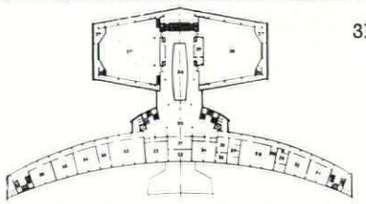


29

L'Education Supérieure is not usually taken to mean physically higher education, but the tower of the sciences, 27, in the University of Strasbourg extension, gives seventeen storeys of vertical dimension to the study of chemistry. It forms part of the intensely formalistic composition (model in 28) of Roger Hummel's group of institutes and faculties clustering round a dominant axis that is stopped off by the wide curve of the new faculty of law, seen in 29 with the chemistry tower (which lies off axis) beyond it. The forms of all the major buildings are complex and effectively axial—the tower stands edge-on to the centre of the plan of the science institute, while the convex face, 30, of the law faculty has a



30



31

complicated extension housing paired auditoria, 31. The whole conception runs (as set out in *l'Architecture Francaise*, 249–250, 1963) against the grain of currently informal Anglo-Saxon sentiment on both sides of the Atlantic, but gibes well with the centralized French conception.

views and reviews

MARGINALIA

KNIGHTSBRIDGE CLUSTER

The accompanying picture, 1, is a model of the new Knightsbridge Barracks, designed by Sir Basil Spence to replace the present barrack buildings on the same site. It takes the form of a picturesquely modelled chain of buildings, well designed to be seen obliquely up and down the street. Though it will replace the not very distinguished Victorian barracks by something more sophisticated, the new range of buildings will preserve at least some of the rugged quality of the old.

The most controversial aspect of the project is the 30-storey tower near the western end of the site, containing the married soldiers' quarters. It has often been said that the Government ought to forbid high buildings round the perimeter of the Royal Parks where they spoil the verdant view and make the parks seem smaller; yet here, it might be objected, is the Government itself, instead of setting an example, sponsoring a high building virtually within the boundaries of Hyde Park.

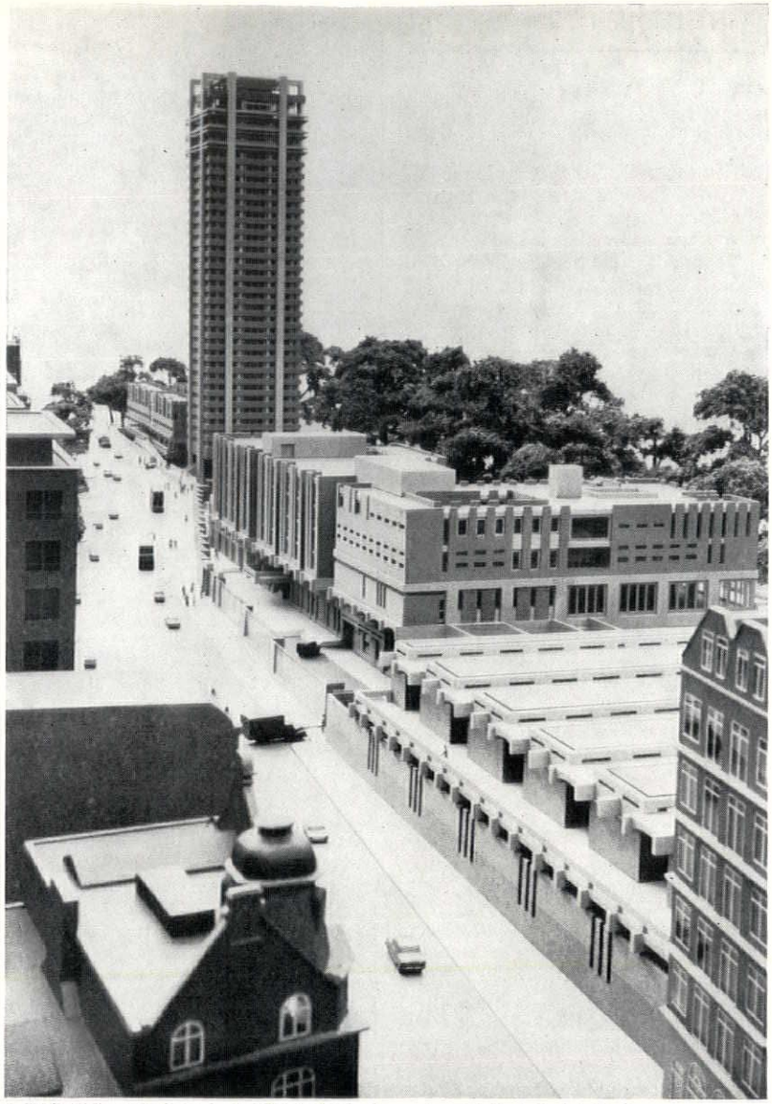
Two arguments can nevertheless be put forward in favour of the tower. One is that it is a genuine tower of reasonably elegant proportions and thus far less damaging than the slab-shaped blocks that high buildings often consist of. The other is that if London has to accept high buildings they should be planned in clusters rather than punctuate the skyline singly at regular intervals, and that Sir Basil Spence's tower will form part of such a cluster, since it will be seen with the group of towers planned by Mr. Guy Morgan as part of the commercial development a little farther east, at the top of Sloane Street, which has recently been given planning permission.

These arguments do much to justify the form Sir Basil Spence has given to his group of buildings. The tower has allowed him to keep the other buildings relatively low, and to reserve space on the ground for the riding school and stable yard. The latter is large enough to mount the two squadrons of cavalry in their proper order, which is not possible in the existing yard. To economize space, however, the stabling (for over 270 horses) is in two tiers, linked to the stable yard by ramps. Sir Basil has made skilful use of the slight fall in the ground, placing the stable yard at the Park level and making room for the guardroom, unit shops, stores and garage beneath it on the Knightsbridge side.

LONDON UP TO DATE

A correspondent has sent the AR a copy of a new guide to London, written in Italian and published in Venice,* which is remarkable for including modern buildings along with the usual sights and antiquities. They seem on the whole to be well chosen and the comments on them to be sensible, and some of them (e.g. a Roehampton housing block, the Royal College of Art, the US Embassy in Grosvenor Square, etc.) are the subjects of line drawings that decorate some of the pages. How much more useful to have modern architecture incorporated in a conventional guide-book than in a separate, specialized publication as though it was a matter of no concern to the ordinary tourist.

* *Guida di Londra e Dintorni*. by Renzo Salvadori. 390 pages. Venice: La Via Edizioni Internationali, 1963. UK price, 15s.



1, *Sir Basil Spence's design for the Knightsbridge Barracks, with Hyde Park behind.*

GROPIUS AGAIN

In the March issue we published an article by Dr. Pevsner on van de Velde and Gropius. At the end of this a reference appeared to a letter published in the American *Journal of Architectural Education*. It was written by Mr. Dearstyne and also concerned with the early days of the Bauhaus. Professor Gropius replied to this letter, and we reprinted his reply in our June issue. Meanwhile Mr. Dearstyne has replied once more and Professor Gropius has replied to that reply. As this last letter—and may it be the last—contains some interesting information, a summary follows here.

Professor Gropius endeavours to prove by means of long past articles of his, some never republished after their first appearance, that he never lost sight of industrial design as against craft. In November, 1911, he wrote that 'the craftsman's profession is dying out' and that the craft 'is slipping more and more into the realm of industry.' 'Since the machine is lifeless, the artist must come in right at the start' and 'conceive the fitting form for the product.' In 1913 (*Erkbund Jahrbuch*): 'The manufacturer must be intent on . . . giving his products the noble quality of the former craft product on top of the advantages of the machine process. . . . Exactness of form, clear contrasts, clear order of the component parts, rhythmic repetition and harmony of form and colour will become the aesthetic tools of the modern designer.' In 1916 (see Wingler, p. 29): 'The artist can only prevent the imminent danger of the decline of form by coming to terms with the machines, by making them subservient to himself.' This will 'of necessity lead to a close collaboration between the business man and the technician on the one hand and the artist on the other.' Spring, 1919: 'We can reach our aim only, if arts, crafts, and industries interpret each other. The crafts and also the industries need a fresh influx of artistic creativity.' October, 1919: 'The aim of such workshops (i.e. the teaching workshops of the Bauhaus) is to help all crafts and industries (and) to provide a suitable training ground for the rising generation of craftsmen and industrial workers. . . . They want to create models, the particular quality in workmanship and form of which should bring commissions into the country for the benefit of all crafts and industries.'

On the strength of these passages Professor Gropius concludes that 'the student must learn how to use craft tools before he can understand machine tools'—i.e. the student entering the Bauhaus in 1919—but, he adds, such a development towards industrial design 'was my intention from 1919 on. . . . My basic trend of thinking of the role of the crafts as a means to an end only has never changed since the beginning of my professional activities. . . . The emphasis on crafts during the first three Bauhaus years was a first logical and necessary step.' Van Doesburg's stay at Weimar in 1922 had therefore nothing to do with the changeover to a greater stress on industrial design.

STREET FURNITURE

The Council of Industrial Design has published a useful 8½ in. by 6 in., 124-page handbook giving a complete list of approved street furniture designs. They are grouped under lighting-columns, lanterns, litter-bins, bus-shelters and outdoor seats, and then under the name of the manufacturer. Each item is briefly described, identified and dimensioned and at the end of each section are photographs of selected examples.

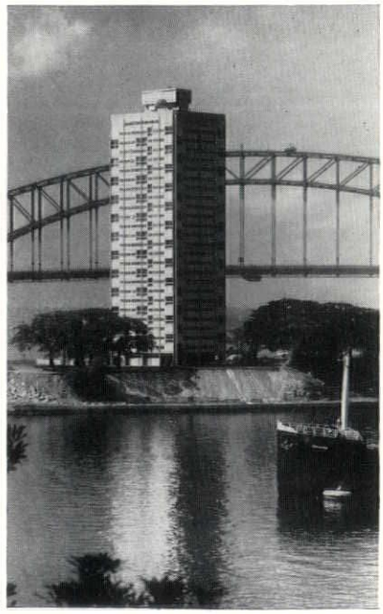
The handbook also serves as a reminder that street furniture is one British category of design that has made notable strides forward in the last few years, largely owing to the influence of the COID and its permanent street furniture committee.

CORRESPONDENCE

FLATS AT SYDNEY

To the Editors.

SIRS,—It is excellent to have critical articles in the REVIEW and hence a pity to find fault with the generally sensitive and well balanced appraisal of the flats at Blues Point, Sydney, 2, by



2

Harry Seidler, which appeared in your July issue. However, it may be held that a certain degree of pungency is required and that fundamentals should not be clouded over. Perhaps in this respect, since we are here concerned with Australia, there is a lesson to be learnt from the forthright comment of the news-sheet *Cross Section* which Melbourne University, God bless it, sends periodically to us expatriates, and which has already, I think, been praised in your pages.

The fact is that the flats at Blues Point, so excellent architecturally when considered *in vacuo* are, in the context of what was and still is in places one of the most magnificent natural landscapes in the world, a disaster. There they stick up like a sore thumb, all the more visible in their pale cream brickwork in the clear Australian air, nervously poised in their isolation, far too close to the water, far too close to the tip of the point (which, low-lying here, sweeps up grandly to a height of several hundred feet), far too close to the centre of the harbour, a ruthless jerk to the rhythm of the landscape, but not yet large enough, as is the Harbour Bridge, to become a dominant element and thereby be acceptable.

Unfortunately this point was not made clear in your photographs, which confined themselves to the architecture *per se*. Your critic, equally unfortunately, whilst aware of the landscape, would appear to consider it only as something to be developed (that odious word), 'An opera-goer . . . will see,' he writes, 'Seidler's tower block framed in the curve of the bridge structure, the only building visible beyond it. By its very form the Blues Point tower must focus this view by virtue of its height and location.' But isn't the harbour enough? Must every view be 'focused' by an added building. And if so, is clarity a virtue? Perhaps there is something to be said for that dreary and demoded word 'unobtrusiveness.'

It all rests, of course, with the initial landscape, and on its character or lack of it depend the liberties the architect should take. In this case the landscape is first class, and there are approximately two million people in their neighbourhood to look at it. There are three possibilities: the building can be unobtrusive (or better still, invisible), x+o still equals x; it can fight with its surroundings, x−y=o; it can co-operate with its surroundings and create a greater whole, x+y=z. It is perhaps trite to mention examples of the first and third categories, but they tend to overlap, and range from Burley Griffin's almost invisible houses in Northbridge, Sydney, through the Japanese temples in Kyoto (so superbly set against the tree covered hillsides), Admiralty House in Sydney again (that neglected masterpiece of siting) to Mont St. Michel and the Acropolis. Only where the site is characterless, where the opera, so to speak, is unimportant, should the prima donna carry on regardless and can we, the audience, applaud.

Yours, etc.,

W. L. Yuille.

London, W.C.1.

BOOK REVIEWS

STORY OF SYDNEY

THE SYDNEY SCENE, 1788-1960. *By Birch and Macmillan. Melbourne University Press 1962. 47s. 6d.*

The Australian aboriginal is said to be one of the few surviving links with our Stone Age ancestors. Yet the nation we know today as Australia, white man's Australia, is little more than 175 years old. Modern Australia grew out of a number of separate settlements established one after another around the eastern and southern coastline of this vast antipodean continent. Each has grown to become the capital city of a state of the Commonwealth of Australia. Of these early settlements, the first, the most colourful and the biggest is Sydney. Only a Melbournite would deny that a history of Sydney is in many ways a history of Australia. We have to thank Alan Birch and David MacMillan for compiling this documented history of Australia's first city. It describes the establishment as a penal colony of the early British settlement on the shores of Port Jackson 175 years ago and traces its growth into a sprawling metropolis of two million people. It is a companion volume to *The Melbourne Scene*, 1803–1956 by Grant and Serle.

The book is divided into five parts, covering the main periods of development: establishment of a settlement, 1788–1841; colonial capital, 1841–1868; the suburbs overtake the city, 1868–1900; a city in transition, 1900–1932 and the period of planning, 1932–1960. The authors have chosen to present their story as a series of eye-witness accounts, a technique which has the advantage that, with a minimum of effort, the reader is transported into the time and atmosphere of the period about which he is reading. Here is an example: 'Our passage, you may have heard by the first ships, was tolerably favourable; but the inconveniences since suffered for want of shelter, bedding, etc., are not to be imagined by any stranger. However, we have now two streets, if four rows of the most miserable huts you can conceive of deserve that name. Windows they have none, as from the Governor's house, etc., now nearly finished, no glass could be spared; so that lattices of twigs are made by our people to supply their places. At the extremity of the lines, where since our arrival the dead are buried, there is a place called the church-yard; but we hear, as soon as a sufficient quantity of bricks can be made, a church is to be built, and named St. Phillip, after the Governor.' (Letter from a Female Convict, Port Jackson, November 14, 1788.) But such a technique has its shortcomings. Although each of the five parts of the book is preceded by a commentary by the authors on the social, political and economic development of that time, the effect is fragmentary, leaving the reader with a general feeling for the succession of changing moods developing over this period, but with no clear picture of it as a short but dynamic patch of British history. This effect may be precisely what the authors intended. But surely one of the duties of an historian is to interpret events, and Messrs. Birch and MacMillan could well have imposed themselves more frequently and forcefully on the reader.

None the less the book is thoroughly to be recommended not only to Sydneysiders themselves (especially those who live in exile) but also to serious students of Australian history. It is well illustrated from contemporary prints and photographs.

Jim Tanner

POETIC REALIST

VELASQUEZ: A *Catalogue Raisonné. By José Lopez Rey. Faber and Faber.* 12 *guineas.*

This will for long be the standard authority, and Dr. Lopez Rey, who is Professor of Fine Art at New York University, has added to his *Catalogue Raisonné* a scholarly and sensitive account of the *Work and World* of the Spanish master, in which he pertinently cites passages, not only from the *Arte della Pittura* by Francesco Pacheco, who was the teacher and became the father-in-law of Velasquez, but from countless other contemporary critics and observers. He surveys the work of Velasquez by the stages of his life—Seville, the two Italian Journeys, the Court, his office of Chamberlain, his knighthood—and the categories of his work—the *bodegones*, the royal portraits, the equestrian portraits, the allegorical compositions, and so on.

Out of this survey we see, spotlighted by the plates, the character of King Philip IV, of his first and second families, of his great Prime Minister Olivares, and for instance of the poet Luis de Gongora by whose remarkable portrait Velasquez first gained recognition at Court. The result is a memorable impression of the passage of history and of contemporary attitudes, from which emerges a sense of the attitude of Velasquez himself. This great poetic realist, described by Manet as '*le peintre des peintres*,' is seen as one of the most skilful and subtle practitioners of the art of painting who ever put brush to canvas, being as inspired as he was deliberate, and knowing that poetry to tell must have its roots in reality.

It is, of course, the two hundred and twenty pages of plates which turn a fascinating history and scholarly catalogue of facts into a book which enables us to judge and enjoy the scope of the painter's achievement—though not, alas, without colour to feel its full effect. One cannot help thinking how fascinating a synthesis of the *Work and World* could be made for the television screen to accompany the relative plates, especially when transmission in colour becomes possible.

Professor Lopez Rey's diplomacy ably supports his scholarship. As the owner of a painting from the School of Velasquez (a *Bodegon* or scene in a humble eating-house) I am able to bear witness to the thorough way he examined our picture when he came down to see it in Wiltshire. Chancing later to see him just before the appearance of the book, I asked him what conclusion he had reached regarding our particular version of *Three Men at a Table*. He replied with characteristic tact that he considered our Pissaro superb and would never forget it. The *Catalogue Raisonné* is equally clear without ever being dogmatic where there can be no certainty. The titles of those pictures considered to be definitely by the Master's hand are shown in larger capitals than the rest. The facts and previous opinions (notably of the late August L. Mayer with whose catalogue a concordance is given) are set out, and the reader is left to judge for himself with the available evidence at his disposal.

Bryan Guinness

SPACE TO LOOK DOWN ON

LANDSCAPING FOR FLATS. *Ministry of Housing and Local Government Design Bulletin No. 5. HMSO. 8s. 6d.*

This, the latest in its series of design bulletins, is intended by the ministry principally as a guide to local authorities; an illustrated 'how to do it' manual on the treatment of space around high-density flats. It sets out to convince councillors and all those responsible for new buildings that well-designed outdoor space is just as important to the flat dweller, who is often looking down on it, as the interior design of the flats themselves; that all mod. cons. are still not enough if the surroundings are substandard.

The dreary landscaping of so many large housing estates bears witness to the need for such a guide; for this is still a side of housing too often neglected. False economy, apathy, lack of imagination result in those familiar windblown, litter strewn deserts; inhospitable wastelands which provide no integration between buildings and landscape and give no joy to anyone. After all, space in built-up areas is really so valuable, both physically and financially, that every bit of ground must look valued and considered.

In a praiseworthy effort to combat indifference, the bulletin shows in detail how the familiar elements of paving, grass, trees, shrubs, walls, etc. can be designed and combined to produce attractive environment. This is supplemented by maintenance advice, such as how to prune rather than mutilate trees and how to prevent worn grass at path edges and short cuts; indeed, how to avoid many of the common mistakes which make for scruffy surroundings. A full appendix gives practical information on construction of fences, walls, paving, choice of plants and trees, comparative prices and information on maintenance. In addition there is a useful bibliography for those who want to know more. Throughout, the emphasis is rightly placed on robustness and an understanding that children will want to swing on things.

This is an informative, worthwhile booklet, but unfortunately it falls down over the choice of illustrations. These should have been picked with great care, for the object must surely be to inspire to make people say 'yes, we ought to have that.' Here, there are only about three photographs which are likely to inspire anyone while many are either fussy or dull; and some even contain dubious detailing which could be copied just as easily as the good. It is useless for the text to say 'attractive and designed imaginatively' when the adjacent picture contradicts this. Elsewhere some stodgy writing tends to obscure good sense, as for instance, 'design and space requirements for play and cars relative to other uses.' Bureaucrats need no encouragement in this sort of thinking but rather constant reminder that they are dealing with people not machines.

Kenneth Browne

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

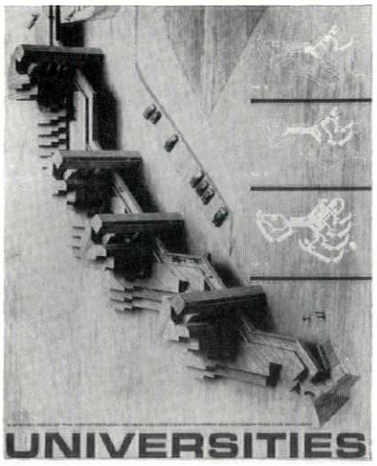
VOLUME 134 NUMBER 800
OCTOBER 1963

SUBSCRIPTION RATE: *The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada $10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto, via V. di Modrone 18, Milano; Librerie Dedalo, Via Barberini 75–77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of 27s. 6d. Postage 2s. 9d. extra on the completed volume.*

Directing Editors	*J. M. Richards* *Nikolaus Pevsner* *H. de C. Hastings* *Hugh Casson*
Executive Editor	*J. M. Richards*
Assistant Executive Editor	*Reyner Banham*
Assistant Editor (Production)	*William Slack*
Features Editor	*Kenneth Browne*
Technical Editor	*Lance Wright*
Assistant Editor (Counter-Attack)	*Ian Nairn*
Staff Photographers	*De Burgh Galwey* *W. J. Toomey*
Advertisement Manager	*George Dunn*

ACKNOWLEDGMENTS

COVER: *Behr Photography.* FRONTISPIECE, *page* 230: *Henk Snoek.* ADDITIONS AND EXTENSIONS, *page* 236: (*top*) *Elsam, Mann & Cooper;* (*bottom*) *John Maltby.* UNIVERSITY HOUSE, SHEFFIELD, *pages* 239–243: 1, 4–8, *Henk Snoek;* 2, 3, *Galwey Arphot.* IMPERIAL COLLEGE, LONDON: HALLS OF RESIDENCE, *pages* 244–249: *John Donat.* UNIVERSITY OF ABERDEEN: DEPT. OF NATURAL PHILOSOPHY, *pages* 250–251: *Studio Morgan.* UNIVERSITY OF LIVERPOOL: FACULTY OF ARTS LIBRARY, *pages* 252–253: *Colin Westwood.* UNIVERSITY OF EDINBURGH: VETERINARY FIELD STATION, *pages* 254–255: *Henk Snoek.* QUEEN'S UNIVERSITY, BELFAST: STUDENTS' CENTRE, *page* 256: *William F. Little.* SITE, GROWTH AND PLAN: *page* 260, *Alfred Cracknell; page* 262, *Behr Photography.* UNIVERSITY OF SUSSEX, FALMER HOUSE AND PHYSICS BUILDING, *pages* 265–274: *Henk Snoek.* UNIVERSITY PREVIEW: *page* 275, *Sydney W. Newbery; page* 276, *Galwey Arphot; page* 277 (*bottom*), *Russell Jarvis; page* 278 (*bottom*), *Patricia Cain; page* 279 (*top*) *and page* 280 (*bottom*), *Edward Leigh; page* 282 (*bottom*), *Colin Westwood.* STUDENT LIVING, *pages* 289-298: 3, 4, *Toomey Arphot;* 19, *Lennart Olson.* STUDENT FURNITURE, *pages* 300–302: 1, 2, 10, *Brompton Studio;* 3, 4, *Dennis Hooker;* 8, 9, *Clareville Studio.* THE INDUSTRY, *page* 304: 1, *C. & E. Photography.*



The cover shows part of an outline block-model of the student accommodation envisaged in Denys Lasdun's plan for the new University of East Anglia, and superimposed on it, three stages in the implementation of the plan for the whole university. Though neither is to be taken as a detailed proposal for building, both embody concepts of natural growth and natural patterns of human association such as are discussed in Lionel Brett's article on pages 257–264 and Michael Brawne's on pages 289–298.

UNIVERSITIES

a special issue of The Architectural Review

CONTENTS

223 **World**

227 **Views and Reviews**

230 **Frontispiece**

231 **The Universities Build**

233 **Educational and Social Objectives**
Asa Briggs

236 **Additions and Extensions**

239 **University House, Sheffield**
Architects: Gollins, Melvin, Ward and Partners

244 **Imperial College, London: Halls of Residence**
Architects: Richard Sheppard, Robson and Partners

250 **University of Aberdeen: Department of Natural Philosophy**
Architects: J. Douglass Mathews and Partners

University of Aberdeen: Animal House
Architects: George, Trew and Dunn

252 **University of Liverpool: Faculty of Arts Library**
Architects: Bryan and Norman Westwood and Partners

254 **University of Edinburgh: Veterinary Field Station**
Architects: Michael Laird and Partners

256 **Queen's University, Belfast: Students' Centre**
Architect: Robert McKinstry

257 **Site, Growth and Plan**
Lionel Brett

265 **University of Sussex: Falmer House and Physics Building**
Architect: Sir Basil Spence

275 **University Preview**

283 **The Universal University**
The Editors

287 **Cost Control**
David Parkes and Stirrat Johnson-Marshall

289 **Student Living**
Michael Brawne

304 **The Industry, Contractors, etc.**



THE UNIVERSITIES BUILD

New men in their new setting—the students on a balcony in the recently completed University House at Sheffield, opposite  *will probably be the first generation of students whose academic environment is neither Gothic, Classic nor Revivalistic but dominantly modern. The current wave of building and rebuilding in British universities, the founding of new ones and the raising of other institutions to university status, have produced an unprecedented situation in British university architecture, a situation which favours modern architecture and forms both the occasion and the subject-matter of this special issue of* THE ARCHITECTURAL REVIEW.

At no previous time in the history of British architecture could one have spoken of university building as a large part of the profession's activity. For four hundred years, a scattering of distinguished and undistinguished figures have designed a library here, a chapel there, but none could be said to be university specialists. Even in the nineteenth century there was no period when architectural practice could be said to be largely taken up with universities.

But, in the decade since the competition for the new buildings for Sheffield university—of which the second phase is illustrated on a later page—the situation has begun to change in a spectacular manner. A leading office without a university or at least a university-building on its drawing boards now seems an oddity, a subject for comment and conjecture. In sober fact, a numerical accounting of the number of working practices and the number of university jobs at present designing or building, will show that the present effort in academic architecture is not a very large part of the total architectural output, measured in pounds, shillings and pence. But in terms of prestige and architectural significance it is, at present, one of the dominant areas of design.

The reasons are not far to seek. Over and above the intellectual standing which automatically attaches to seats of higher learning, the present phase of activity is chiefly concerned with the modernization of universities and a rejuvenation of the university image. A new and dynamic generation of younger dons, called to positions of command by the needs of the new universities being built, and by normal processes of staff turnover in the older universities being extended and improved, has given a new intellectual tone to university patronage. The objective of university architecture is no longer to house new men and new

functions in buildings approximating to the appearance of older functions. The air of ivy-girt traditionalism has blown away.

The aim now, however it may be phrased by the client or the brief, is to make universities contribute visibly to the progressive aspirations of the nation. Extensions and reconstructions of the older universities, even Oxford and Cambridge, while they frequently attempt to honour the special mode of life and teaching that has grown up under the collegiate dispensation, no longer ape the forms of the collegiate past, and the most conspicuous successes in the difficult art of collegiate infill have been carried off in styles that British university architecture has never seen before.

In the newer universities, particularly in the post-war generation that began with Keele, the educational emphasis is consciously on experiment. Even where a fairly conventional desire for monumentality has guided patrons and architects, the monumental solution has been new at least in plan and detail, as at Sussex. But in most of this newest generation, the architecture has been expected to keep exact step with revolutionary approaches to the university's life and teaching programme. At all levels, from the details of infilling in older institutions to the first planning of new ones, an atmosphere of experimentation pervades, an atmosphere extremely congenial to modern architecture.

This experimentation may not match that customarily associated with the ephemeral architecture of exhibitions, but it contains the deeper satisfaction of being concerned almost entirely with new ways of housing and organizing human communities. Right through this special issue, from Professor Briggs's opening article to Michael Brawne's investigations of study bedrooms, we are concerned with the way in which students shall live, individually, socially, and during the hours of direct instruction. University architecture in the nineteen-sixties in Britain has released, and is consuming, a long pent-up flood of interest and skill in the planning and shaping of total environments. It commands, and exploits, the whole gamut of architectural activities.

This, much more than mere fashion or quantity of investment, is the crucial reason for university-building's dominant place in the professional life of architecture today. The extremism of some of the solutions being proposed at present means that this may be a crucial period in university design. What is built in the next decade may influence university-building for a century. In so far as it deals with the environments of complete communities it may influence other fields of design—notably housing and hospitals—almost as deeply and for almost as long.

But it will also have to absorb and make sense of a number of revolutionary trends, besides new concepts of the shape and organization of the university community. One, for certain, is the increasing mechanization of the more mechanical parts of the learning process, which may find all departments, not just the sciences, geared to the rates of change and expansion that are now commonplace in electronics as well as demanding new building types in which mechanical learning can be humanely pursued. Another, for certain, is an accelerating rate of increase in the number of students admitted yearly. We may be a long way yet from the reality of university education for every citizen, of the sort discussed later in this issue, but recent extensions of university and quasi-university education to more and more of the British population have established a momentum that may not be capable of being stopped until universal university education is achieved.

Because of this situation—nearly everything being in the melting-pot—special significance attaches to the projects for new universities of which half a dozen are now being planned or built in Britain. This issue, therefore, lays emphasis on them, and in the opening article Professor Asa Briggs, Dean of the Department of Humanities at the new University of Sussex, concentrates on the problems they pose and the opportunities they open up, while later in the issue Lionel Brett discusses the new universities in terms of the planning ideas they exemplify.

Sussex is the only one of these to have reached the building stage. The buildings so far completed there are illustrated in this issue; also a group of new buildings at existing universities chosen to demonstrate the architectural standard the best university work is now setting and the variety of problems with which it presents the architect.

By any standards, we are at a unique and historic moment in the evolution of universities in Britain, and of their architecture. If the present dynamic should be slowed through economic cowardice or administrative folly, the frustrations ensuing could poison the life of the country for decades, but if it is allowed to run and gather momentum, then neither the mind, nor the face of Britain will ever be the same again.

Educational and Social Objectives

The Thinking Behind Britain's New Universities

Asa Briggs

Much has been written about the educational and social implications of creating seven new universities. One new university would be one new university: seven represent a major change in what is beginning to be thought of for the first time in this country as a 'university system.' With great freedom to develop their own curricula both in arts and sciences, some at least of the new universities are likely to become centres of academic innovation. What they do will influence older universities, including Oxford and Cambridge. In other words, they will not simply represent attempts to satisfy the inexorable demands of Bulge and Trend in a decade of unprecedented university expansion. They will represent for posterity the twentieth-century conception of a university.

Four dominating themes have already received widespread attention in discussions about the founding of new universities and in the experience of Sussex, the first of the seven.

1. New universities start with no sense of inferiority or of impermanence;

2. There is a revolt against what have come to be regarded as 'traditional' single-subject honours degrees and against the rigours of a departmental system;

3. Particular attention is being paid to the educational process itself—not only to the content of a university education but to ways of teaching and learning;

4. There is much new thinking about the role of residence and the best ways of organizing conditions of living and working. These four themes can each be illustrated from the pre-history or more recent experience of more than one of the new universities. Indeed, while it is likely that each one of them will have its own 'image' and there may be very real structural and educational differences, say between Lancaster and York, the general public still thinks of the new universities as a cluster, collectively different from Oxford and Cambridge on the one hand and 'Redbrick' on the other.

In some ways they are a cluster. All have depended on local initiative. They have not simply been located in particular places as part of a policy of national educational planning. Local sponsoring committees have had to plead their case with the University Grants Committee. All have then proceeded according to the same formula. The University Grants Committee has set up Academic Planning Committees to provide 'expert' academic guidance in the pre-Charter period and in the early years of growth. All then pass *via* Royal Charter to full university status, undergoing no system of tutelage. All are expected to reach a 'target' figure of 3,000 in ten or twelve years, although there have been conflicting opinions as to what will happen after that target is reached. All include both arts and science undergraduates, most of them on a fifty-fifty basis.

Each one of these features of the new universities could be challenged. Arguments have been advanced that they should have been sited in quite different kinds of places, that an initial target of 3,000 is wrong, that the University Grants Committee has left them to find too much money from outside sources, or that they have not quite the full freedom to develop that at first sight seems apparent. Yet the four themes which have

rightly received public attention may be considered far more important than the issues of contention, and on the issues of contention the unsuccessful views are open to at least as many objections as the views which have shaped public policy.

The lack of a sense of inferiority or impermanence is of basic importance. In the history of the provincial universities created earlier in this century there have been gloomy decades of financial stringency and deep undercurrents of psychological (and social) inferiority. Considerations of status have influenced their history at many different points—in their choice of students, in their ability to attract academics, in their buildings and in their pull in the outside world. This is not to deny that some of them have had outstanding scholars and exceptional academic achievements or that there was often a rugged grandeur in the very conception of a civic university located in the heart of an industrial city or that since 1945 there has been a marked change in their general condition as many of them have become not simply local but genuinely international institutions. Nor is it to overlook the fact, which is so often overlooked in discussions about university expansion, that the incremental growth of the greatest of them during the next ten years will be greater than the absolute growth of any of the new universities. It is a matter of fact that many of the legitimate claims they can make about their place in the academic world receive far too little public attention. Yet when all the evidence has been taken into account the new universities start on the crest of a national wave. They attract publicity, sometimes too much of it. They have a powerful appeal to academics and to students. They do not conceive of themselves as *merely* meeting a national need. Just because of the way in which they are constituted and possibly because of where they are sited, they start not with the facts of under-privilege but with the hope of becoming the best institutions that their academics can envisage. They want to capture not only their own students' imagination but the imagination of a wider public. Their psychological *elan* is a feature of the academic mood of today.

Their desire to create *the best* is strengthened by deep mistrust of the conventional pattern of university education. The new universities are not merely imitating or extending what is happening elsewhere but re-thinking fundamentals about what a university is and what it can do. In Sussex, the first academics were able to build their academic edifice on the sound foundations laid by the original sponsoring committee. In other universities there may be tension between the original sponsors and the academics who actually get down to the job. If too much is settled before the academics arrive, then trouble will be bound to follow. Already there are many signs, however, of a general tendency to scrap 'departmentalism' and to experiment with new kinds of degrees. Sussex, followed by East Anglia, is organized not in departments but in Schools of Study. The Schools, which are not super-departments, seek to provide an education which combines the study of a specialism with an understanding of its general orientation. In addition to specialist papers in the final examination there will be common papers prepared for by different groups of specialists within a School. York, which is to retain departments, is developing combined degrees.

The reasoning behind the revolt against departmentalism is partly administrative and partly academic. Administratively, a rigid departmental system multiplies boundaries, creates frustration, encourages conflict and wastes academic manpower. Academically, it draws thick dividing lines between 'subjects' which are often best treated together. There are social arguments also about 'new students' and 'demand for new graduates' which suggest that large-scale university expansion based on the multiplication of single-subject honours degrees would neither satisfy students nor appeal to their future employers. The very rigidity of the structure of existing universities is leading many academics to move away from them, including Oxford and Cambridge, to new ones. More important than the attractions of site—seaside or cathedral close—is the sense of freedom to create afresh. So long as the new universities can offer this sense of freedom they will attract good academics, even outstanding ones, and thereby establish themselves on good foundations. Without such power of attraction—which may depend partially also not so much on site as such as on educational services and public amenities associated with situation—the new universities would become mere service stations meeting a national need. They would never become centres of innovation or research.

Closely associated with the redesigning of curricula is the increasing attention being paid in the new universities to the educational process itself—not only to the content of university education, but to the ways of teaching and learning. The size and anonymity of the large lecture class are being challenged. So, too, is the passive attitude towards the assimilation of new knowledge. Experiments are being made with tutorials, not because there is a tutorial system in Oxford and Cambridge, but because the tutorial system has great educational advantages. It is not treated as a panacea, however, and it is being supplemented by seminars, practical 'workshop groups' and other forms of study. American techniques are being carefully studied. Both Essex and Lancaster have already declared that it is part of their purpose to survey their own educational procedures, to find out far more about how undergraduates work and learn. Is their motivation different from that of other students in other educational institutions? Is it true that their ways of life are much closer than they used to be to non-students in their own age-groups?

This approach to the sociology of university education implies that universities, unlike many universities on the Continent, are consciously socializing agencies. It has practical implications. The design of university buildings and the priority in which they are built reflects such conceptions of general university purpose. Similarly dependence on a tutorial and seminar system not only gives great immediate importance to the university library but involves new ideas about the design and equipment of studies and the overall use of space. At this point the first and second themes which have emerged from the recent discussion about new universities link up with the third. The unwillingness to make do with merely temporary buildings and the desire to continue to capture students' and outsiders' imagination influences conceptions of what buildings should be. The wish not merely to create work space but an attractive working environment comes into play.

It would be absurd to dismiss the psychology of all this as 'monumentalism' or 'status seeking.' There is probably far more critical discussion about the relationship between buildings and curriculum in a new university than there ever can be in the harassed conditions of a large-scale rapidly growing existing university. Most academics in new universities carry with them memories of how they think matters of this kind were mismanaged in the institutions to which they were previously attached. They welcome a big site as much as the University Grants Committee welcomes a big site, although they are probably quite sharply divided in theory about the relative merits of 'urban universities' closely related to their town or city environment and universities in adjacent country or suburb.

The siting of universities depends in large part on the availability of living accommodation, although this criterion played no part in the creation of Keele and would play a far smaller part if the response to the demand for increased university places was an emergency programme attaching students living at home to their nearest university. Most universities like to have a proportion of their undergraduates living in 'university residences,' but the availability of large numbers of small hotels and lodgings in Brighton undoubtedly influenced the University Grants Committee in its willingness to approve of the foundation of a new University of Sussex.

Because of the unwillingness or inability of the University Grants Committee to be more generous in provision of living accommodation to new universities than it is to under-privileged existing ones, the residential schemes of the new universities will have to depend to perhaps too great an extent on private benefaction. Fortunately there are signs that some of them are thinking about the kind of accommodation required—its scale and its variety—at least as radically as they are thinking about new curricula. The University of East Anglia has suggested one answer: York with its 'colleges' a different answer. Given, however, that the new universities as at present constituted will all seek to develop residential accommodation, much of it on new lines, they will want adequate land and they will scarcely dare, even when they are relying on private benefactions, to put up buildings at a cost significantly higher than that which would be acceptable to the University Grants Com-

mittee. Only Oxford and Cambridge Colleges can afford such a luxury and are actively gratifying it.

If the account given of the influences shaping current plans in new universities is fair, there are undoubted elements of tension in the situation. Will they get as much money as they need or may they be crippled by an academic variation on the theme of 'fair shares for all' which will only widen the gap between Oxford and Cambridge and the rest? Will they be allowed to make all the innovations they wish? Will Coventry, for example, be able to create a university pattern quite different from that of Sussex in the light of local circumstances and different challenges? Will they be able to cope with a rate of growth which entails doubling the number of academics each year for a number of years? Will they be able to make the kind of use of their sites, many of them very beautiful sites, which their academics want or will they be strait-jacketed into accepting something less good —with an odd 'prestige building' or so, as administrative parlance has it? If new universities are right in claiming that they are not merely meeting an immediate need but representing for posterity the twentieth-century conception of a university, then they will not want simply to be 'superior versions' of schools. They will want to develop their own identity within the comity of universities. How will the Robbins Report affect all this? There is a great national need, and it is the task of the Robbins Committee not only to assess it but to suggest remedies. There may be divergences between the teaching and research aspirations of the new universities and the educational programmes laid down for the nation as a whole.

It would be foolish, however, to overstate the tension. Relations between existing universities and new ones have been good, and there has been recognition of a common challenge. At the same time, both Sussex and York have begun to establish close relations with other educational institutions in their neighbourhoods. There is a firm belief in the 'unity of education' and 'the continuity of the educational process' inside the new universities. It is almost as striking an element in their philosophy as the distrust of rigid departmentalism inside the university.

Actual experience in a particular new university, as distinct from taking part in theoretical discussions about new universities in general, persuades me of four additional points.

1. An enormous power and responsibility rest with the first batch of academics. They should be free to discuss such matters as the pattern of studies or the role of departments without having the pattern forced upon them. The decisions they reach will be the more effective if they rest on searching argument and not on imitation of other people's procedures, not even the procedures of other people in another new university. There is no single blue-print. Early decisions will have a tremendous influence on the whole pattern of the future, and this means that the appointment of the first academics is of strategic importance. It will have to be recognized (unhappily) that some of the fiercest critics of the new university will be people who tried to get jobs there and failed.

2. There is so much work in the first few years of a new university that there must be a realistic scale of priorities. These are best determined inside the university and not as a result of the operation of massive pressures from outside which are always strong when the institution is still small. A proper plan of growth based on carefully calculated logistics—relating, for example, staff numbers to student numbers, distribution of staff to likely distribution of students, building plans to academic growth, and all of these to finance—is essential from a very early date. The more the logistics can be settled soon for a quinquennial period, and the less they are determined by crude considerations of bargaining power, the more successful the plan will be.

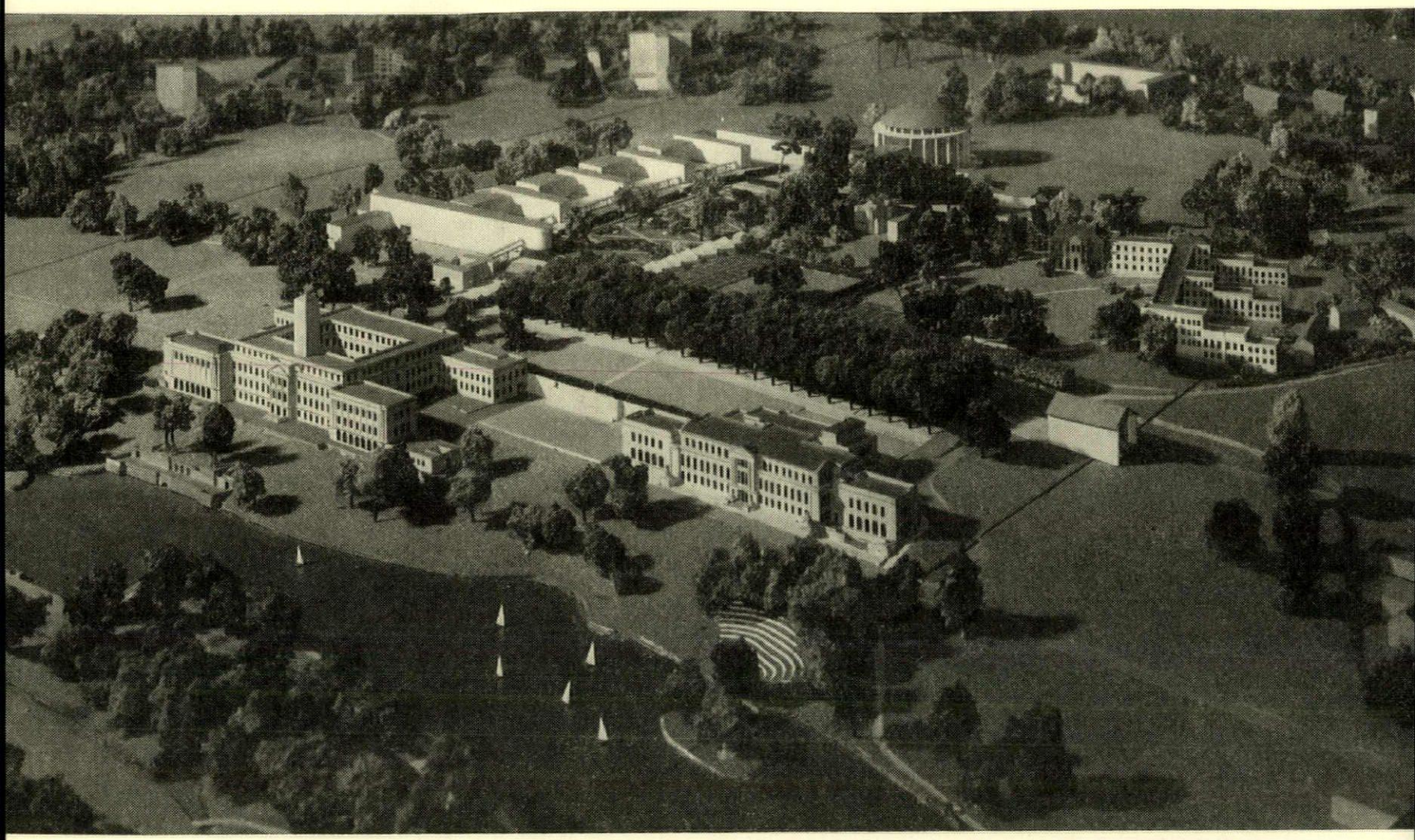
3. *Elan* is as necessary as planning, and it will depend upon a feeling of genuine participation on the part of both academics (being recruited from quite different backgrounds) and students. Planning must somehow be reconciled with open discussion, and how best to achieve the reconciliation tests all the arts of university government.

4. Flexibility is one of the most necessary ingredients, both in relation to staffing and to building, particularly when there are time lags between inception and realization during which new academics are constantly being appointed. A new university, if it is wise, is planning for future change, and it should be possible within agreed frameworks (see 1) to allow for changes even of direction. It should also allow for as much free space inside buildings as possible: an inflexible buildings plan in a period of rapid growth will cause great frustration.

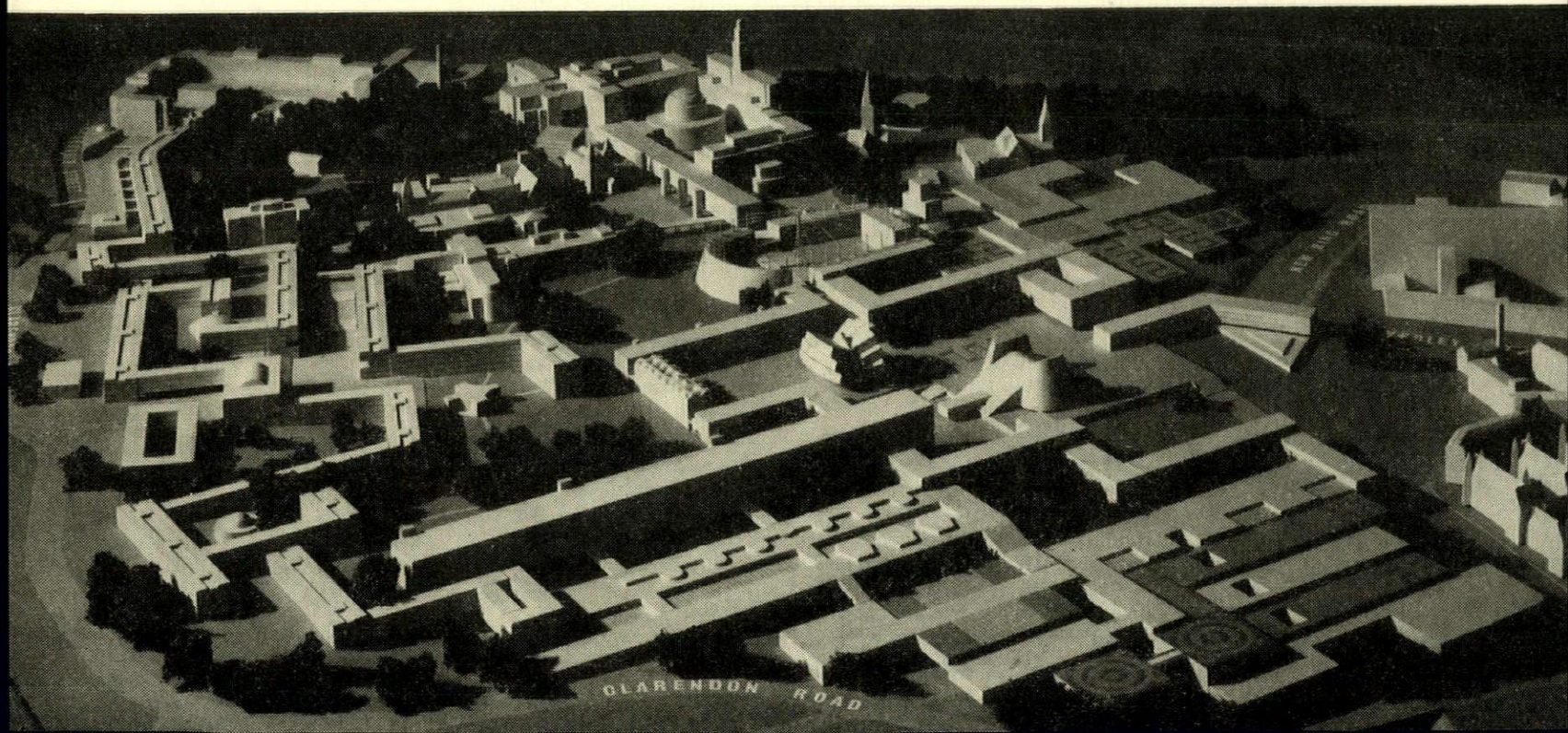
When the British programme of university expansion is seen in international perspective as part of a world-wide education 'explosion,' as a French writer has called it, many of the points mentioned above assume their proper relative importance. We should never forget, in thinking of our seven new universities, of the huge expansion across the Atlantic of a great university like the University of California. Breadth of experience should encourage greater flexibility of thinking in Britain. Because our seven new universities share the attributes described in this article, it should not be beyond the range of national vision to conceive of quite different patterns of development, of the transformation of other educational agencies into degree-giving bodies, for example, or of a rich development of the Colleges of Advanced Technology. There is no reason to conclude even as far as new universities are concerned that the target figure of 3,000 has some kind of mystical significance. It was conceived as a minimum rather than as an optimum figure—to give universities an adequate range of academic faculty—and if a first target of a different size were set it would probably not be impossible to achieve it.

It should be remembered, however, that a target say of 10,000 in ten years would demand a totally different approach to siting, to buildings, to curriculum and to organization. It would be difficult, given such a target, to expect a new university to be a centre of innovation or to attract as impressive an academic staff. Far from breaking down departmental boundaries, it would be able to achieve its rate of growth only if great power were delegated from the start to its departmental heads. There would be no time to avoid overlapping, and departmental heads would have to be encouraged to get on with their build-up as fast as they possibly could. Buildings would have to be erected quickly and at low cost, and there would have to be a very rapid rate of obsolescence. As little time as possible would have to be spent on searching internal discussion, and there would be little time to experiment with radically different curricula.

Planning a different kind of new university on these lines, in a city as big as London, for example, would be an exciting task, but it would be a very different task from planning Sussex or Kent. The danger may be that the two tasks (and targets) will become confused, and that we shall be expected to develop new universities which have neither of the two extreme sets of advantages. It is because I believe that new universities are necessary in the 1960's and 1970's not only to provide more university places but to act as centres of innovation, to serve long-term as well as short-term needs, that I think that the seven new universities deserve the fullest possible support, financial as well as moral, during the first critical years of their growth.



New buildings in existing universities, which are the subject of the article opposite and the illustrations that follow it, have to adapt themselves to a wide variety of sites and conditions. These models show the two extremes. Above, Nottingham, occupying open parkland where the planning problem is one of placing buildings in the landscape, the main concern of Mr. G. A. Jellicoe when he prepared this exemplary plan in 1955. *Below, Leeds, embedded in an industrial city, urban in character and facing stringent expansion problems. This is Chamberlin, Powell and Bon's development plan of* 1960. *One feature both these universities—and many others—have in common is a formally planned nucleus (left at Nottingham; top of picture at Leeds) which it is difficult to reconcile with the more flexible type of layout demanded today.*



Additions and Extensions

New Buildings in Existing Universities

Stated simply, and in the roundest figures available—the expenditures approved by the University Grants Committee—Britain's investment in new buildings (and extensions) in existing universities has jumped from a steady £12,000,000 per annum four years ago, to just on £30,000,000 today. Over the same period a substantial part of the £17,000,000 continuing programme of rebuilding Imperial College was also realized, but this is the only part of the total that is producing anything like a visibly new total environment for any university—the rest has been shoe-horned into existing university cities and suburban campuses, where it may make no immediately appreciable effect whatsoever. In some cases it may be more discreet not to notice the buildings constructed out of this money anyhow, but for the most part the sudden growth in expenditure has been marked by an equal improvement in architectural quality. The output of good new buildings in older universities is now such that it would have been impossible to find room for the whole of this year's crop in the present issue of the REVIEW without crowding out other important matters—two were published in April, following a group of four in Cambridge last November, many of the projects on pages 275–282 are due for completion soon, and there may be more to publish before the year is out.

But this combination of increased quantity and improved quality has been achieved under circumstances that are peculiar to the British university system—so peculiar, in the other sense of the word, as to make any systematic accounting of the achievement impossible. What has been achieved is the result of much patience, ingenuity and special kinds of understanding, applied in circumstances and on sites that exhibit the most unpredictable variety. What is an existing university? Is it Oxford, or is it

Keele? Southampton or St. Andrews? Each of these is a university in being, to which buildings are being added, but they have nothing else in common. Their administrative systems, their governing bodies, their teaching programmes are so different as to represent almost irreconcilable concepts of a University. The architect's commission may have come from a university that thinks and acts like a vast monolithic corporation, or from a diminutive Oxbridge college, perennially jealous of its privileges, land and views of green meadows. The topography into which the new building must fit may be a slice off Merton Field, a terrace of run-down houses in Liverpool or a slope near the Royal Fort, Bristol.

Nor do the functions of these additions show any community of scale or nature—the new work may be a couple of sets of rooms dovetailed into an existing college garden, or a major computer installation on a virgin site outside the town. For better or worse, each is a unique extension of an equally unique facility for research and teaching, adapted to an equally unrepeatable combination of educational need and financial opportunity, conditioned by the monumental ambitions of individual men—a professor, or a dean, a bursar or, no doubt, an architect. The uniqueness of this situation needs to be kept in mind; whereas there may be general rules of procedure and criticism for housing, say, or primary schools or petrol filling stations, there are no such general rules that apply to new buildings in existing British universities. Even nominally similar building types, such as student residences, vary from college quads at Oxbridge, by way of pseudo-colleges elsewhere, to halls of residence conceived as little more than neutral filing cabinets for sleeping examinees-to-be, and the present reaction against this last concept of student residence has come nowhere near producing any standard alternative solutions.

Behind all these various differences there lies, of course, the intensely individualistic psychology of the British universities. Their independence is perhaps their most treasured attribute; its preservation becomes almost a fetish on occasions. Any bright-eyed crusader who hopes to persuade them to pool their resources and talents, or to amalgamate their building programmes into some sort of consortium, CLASP-fashion, in order to get better value for money out of their new buildings, will pretty certainly find that he has his head against a brick wall. The idea commands only the most minimal support among the universities, even if some of the University Grants Committee staff favour it. Whether the nation at large can continue to allow universities this latitude, particularly as the university system ramifies and develops into something more like a recognizable system, remains to be seen, but the situation is not likely to change much while Oxford and Cambridge continue to set an example of jealously guarded privilege.

These two senior universities, of course, with their cramped and monument-thronged settings and shortage of land for expansion, have better reasons than most to insist that their building needs are unique and incapable of being fitted into national programmes, but even so, one can now begin to distinguish three broad classes of needs, which apply to all existing universities, red-brick, ivy-mantled or otherwise. The first is the need to maintain a decent environment for working students even while the student population expands explosively. This may involve one university in building collegiate quads, another in remodelling the union buildings, and others in operations that amount almost to urban renewal projects, as happens whenever Liverpool or Manchester expand into their slum surroundings, or when Imperial College embarks on a scheme the size of that at Prince's Gardens. The resultant architecture will differ, but the sphere of operations in terms of human data and human expectations is pretty well the same throughout.

Secondly, there is the battle for book-space. In spite of all forms of education automation, the book remains the prime implement of instruction in all British universities, while the increasing number of students requiring access to books is being raised to a second power, almost, by the increasing flood of new books published. The pressing need to accommodate more students and more books is provoking fresh thinking about the relationship of book to reader, and about the physical distribution of books throughout the university—more, smaller and scattered libraries seems to be the trend.

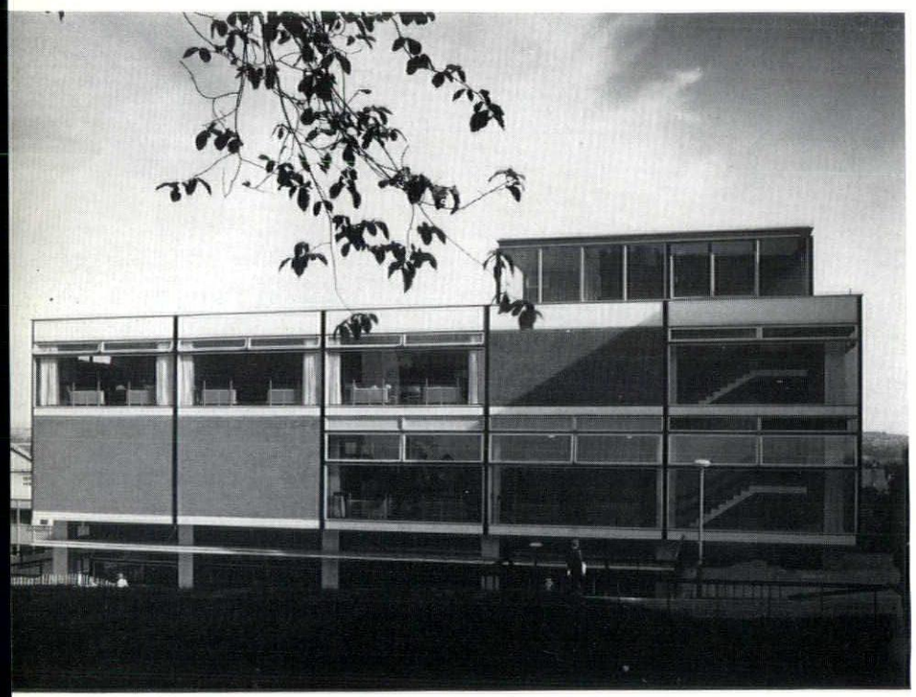
Thirdly, the demands of the sciences. Here, all existing universities are equal. The increasing size, specialization and expendability of science buildings are problems that confront Oxbridge and Redbrick alike, and make a peripheral, suburban location of laboratories almost inevitable. Irrespective of the type of building to be provided—and the variety increases almost daily—science presents most British universities with town-planning problems that are very similar and very pressing, except that the older universities are really hard-pressed for building land that is reasonably handy for other departments. The expansion of these other departments continues, of course, in all universities, but has not presented problems of remotely comparable magnitude or complexity so far—such problems will doubtless occur, with the arrival of machine teaching, but their day lies beyond the reach even of the projects published later in this issue.

Architects: Gollins, Melvin, Ward and Partners

UNIVERSITY HOUSE SHEFFIELD

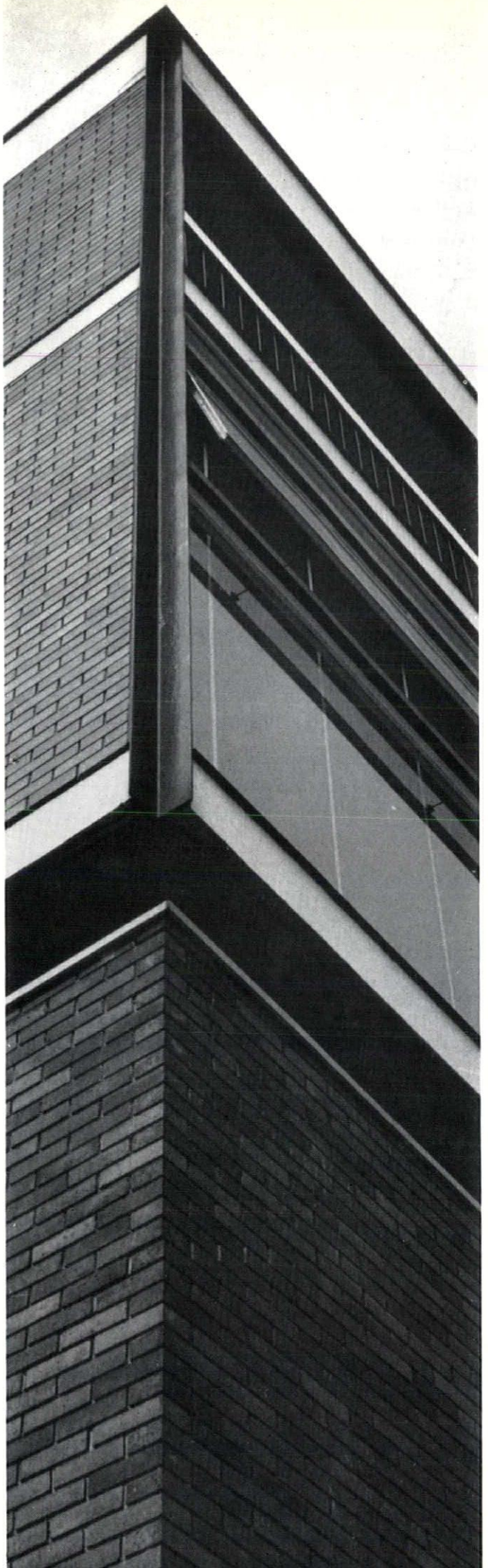
1, the south-west corner.



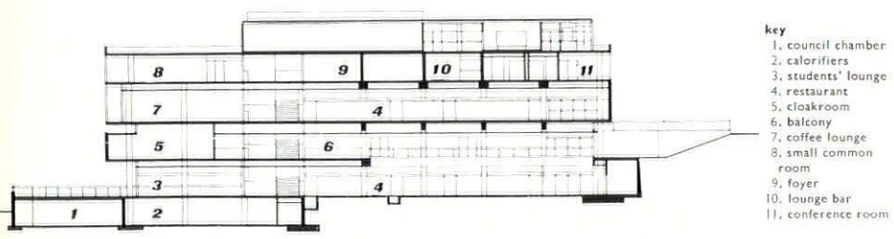


2

2, from the north, with the conference room on the left of the top floor and the second-floor restaurant underneath. 3, detail of the south-west corner showing the 6 in. by 6 in. black corner angle, grey facing bricks and white mosaic fascia bands.



UNIVERSITY HOUSE SHEFFIELD



section

key
1. council chamber
2. calorifiers
3. students' lounge
4. restaurant
5. cloakroom
6. balcony
7. coffee lounge
8. small common room
9. foyer
10. lounge bar
11. conference room



4

4, the large common room on the third floor. The ceiling is of perforated aluminium acoustic strip, which is used almost throughout the building, and the columns are faced with aluminium strips. The carpet is mottled grey and the wall on the right is fair-faced plaster. 5, the fifth-floor foyer which has a timber strip floor. In the background is an obscured glass screen with ventilation grilles above.



5

6

6, the ground-floor restaurant; the balcony at first-floor level is faced with white mosaic. 7, the third-floor bar; the wall on the right is faced with vertical timber strips and the bar itself is of leather. 8, top of the main staircase; the wall on the left is of blue-green mosaic and the one on the right is of white melamine-faced laminate.

7

8

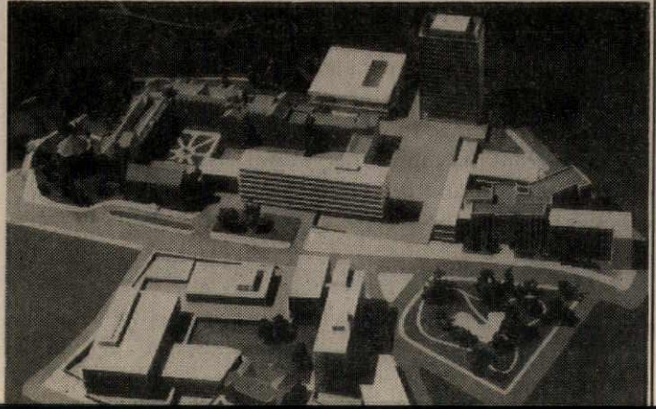
UNIVERSITY HOUSE SHEFFIELD

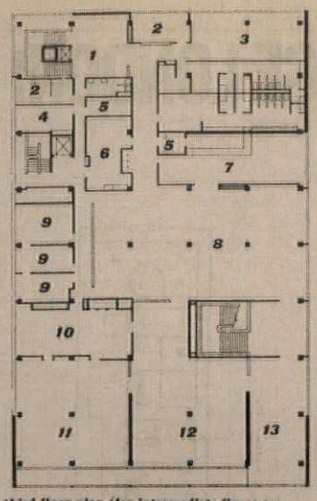
The completion of University House carries the Gollins, Melvin and Ward master-plan for Sheffield University an important stage further, since it is one of the key buildings in the area south of Western Bank, the main road which divides the expanded university site in half. The dominant buildings of the re-planned university, such as the library (AR, December 1959) and the Arts Tower lie on the northern side of Western Bank, and those on the southern side are intended to act as a foil to them, and mostly take the form of low rectangular blocks. An assessment of user requirements, especially the need for kitchens and serveries to be directly adjacent to both the restaurants, and for the new work to link up with the existing Union Building, suggested large floor areas but no particular need for great height, which fitted in well with the general intentions for this area, but the steep fall of the site coupled with intricacies of room-planning which had to be satisfied without recourse to top-lighting (because of the possibility of adding floors later) called for considerable ingenuity in the designing.

In bulk, the new work comprises a link block, directly attached to the Union Building and containing extensions to the Union's accommodation, and a larger block, with different elevational treatment (though continuous with the link) lying at the western side of the site, adjacent to Glossop Lane. Part of the added accommodation for the Union lies within this block, at the basement floor level. Above it is the students' refectory with its kitchens, etc., and there is a general-users' refectory on the second floor, the intervening floor being occupied by cloakrooms, while the third floor is devoted to the Senior Common Room and its ancillaries. As far as practical, internal spaces flow freely into one another with the minimum of physical restriction so that large numbers of students can move easily within the block.

The structure is of reinforced concrete, with the columns normally at twenty-foot centres, though this dimension is varied for the outer bays of the main block and in the link. Externally the buildings are very largely glazed, partly to satisfy the need for natural lighting wherever practicable and to take advantage of a southern aspect, and partly in order that the block shall look as insubstantial as possible and not compete with the dominant structures of the new group. The occasional areas of opaque walling are generally of dark brick, relieved by bands of white mosaic or grey obscured glass.

Model showing final layout of university area.





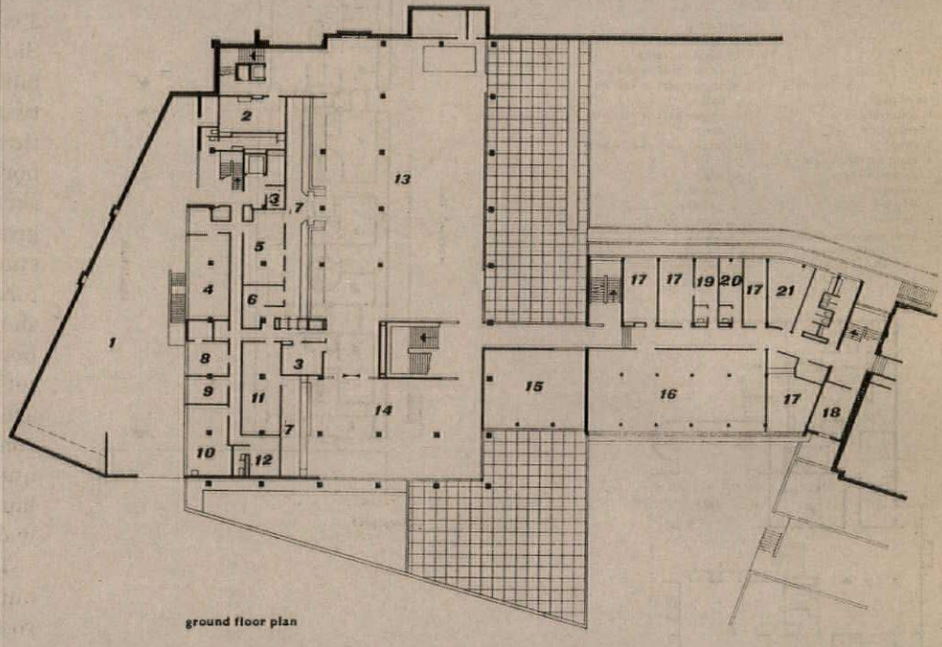
key

basement
1. billiards
2. table tennis
3. calorifiers
4. cellar
5. council chamber
6. male common room
7. lounge bar
8. card room
9. chess
10. vending machines
11. transformers
12. audio room

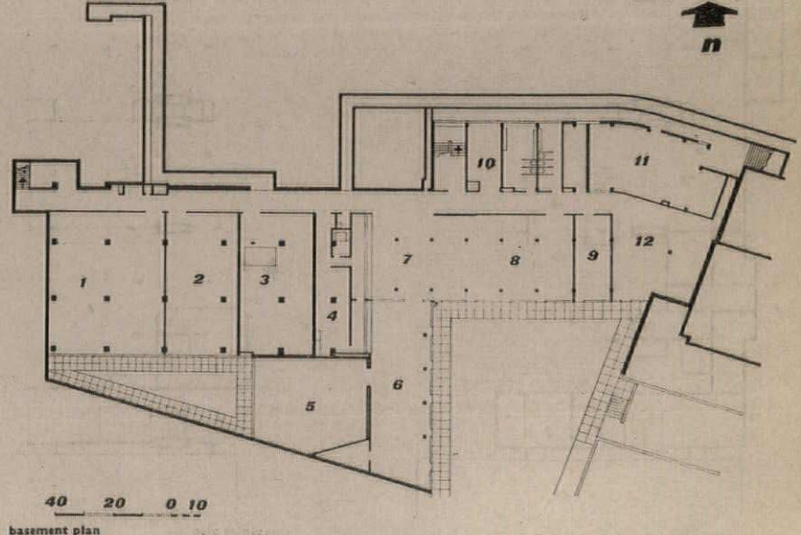
ground floor
1. yard
2. workshop
3. office
4. vegetable preparation
5. wash-up
6. kitchen
7. servery
8. butchery
9. hardware
10. general store
11. sandwiches preparation
12. rest room
13. restaurant
14. students' lounge
15. women's common room
16. joint common room
17. committee room
18. darts
19. president
20. vice-president
21. general activities

fifth floor
1. visitors' waiting area
2. office
3. conference room
4. rest room
5. store
6. cellar
7. bar
8. foyer
9. dining
10. servery
11. main dining room
12. large common room
13. small common room

third floor plan (for intermediate floors see text and section on page 240)



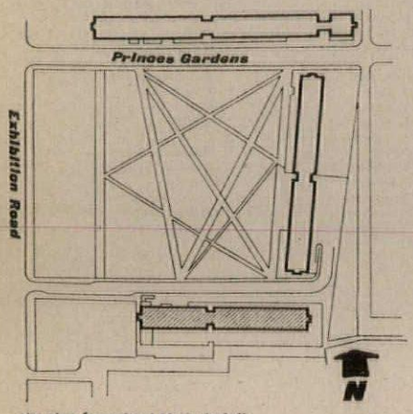
ground floor plan



40 20 0 10

basement plan

IMPERIAL COLLEGE LONDON: HALLS OF RESIDENCE



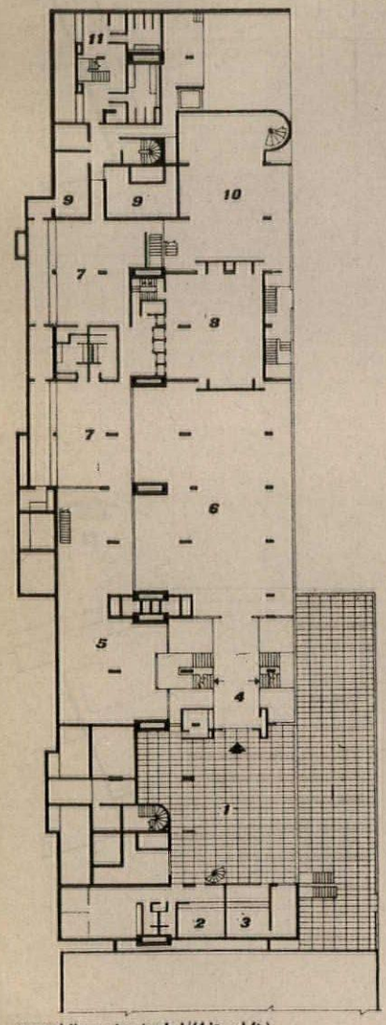
site plan (completed block shaded)

key

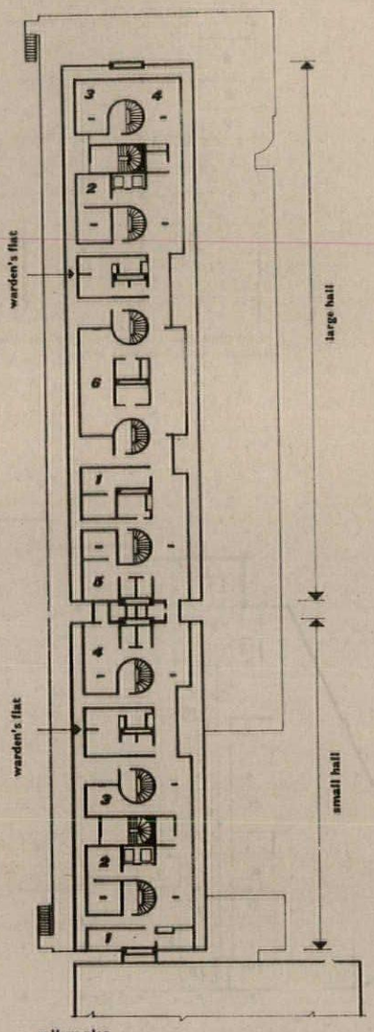
ground floor
1, courtyard
2, reception
3, shop
4, main entrance hall
5, common room
6, refectory
7, buttery
8, servery
9, beer and wine store
10, staff dining room
11, staff cloakroom

mezzanine
1, upper part of courtyard
2, main entrance
3, committee rooms
4, upper part of entrance hall
5, upper part of common room
6, upper part of refectory

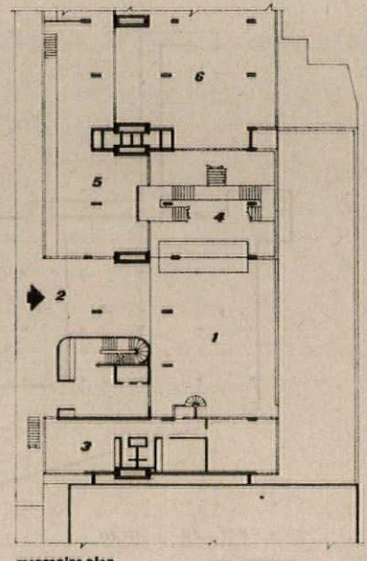
gallery
1, laundry
2, gallery
3, committee
4, quiet
5, games
6, common room



ground floor plan (scale 1/64 in. : 1 ft.)



gallery plan



mezzanine plan

The purchase of three sides of Princes Gardens by Imperial College gave an opportunity of providing halls of residence for their students on a site with mature trees and lawns immediately adjoining the College. It was decided to develop the site on more or less its original terrace lines and retain the sense of enclosure given by the square.

The road along the north of the gardens is a through road leading to Ennismore Gardens, but the roads on the east and south have been closed to the public making the square a pedestrian precinct. The south road is reduced in width and gives access to the main entrance and car park. On the east side the road is being grassed over and the gardens extended up to the buildings.

The College wished to have the students grouped in halls of residence each of about 100 to 150 men under a warden and each with a separate identity. The South Side, the first to be developed, gave the opportunity of building four halls of residence, two for 120 men and two for 72 (later to be enlarged to 120). Generally throughout the scheme, the halls are planned in horizontal layers, one set of communal rooms being set under three floors of study bedrooms. Stairs are grouped along the communal floor, each one serving 24 study bedrooms, eight per floor. This unit of eight rooms forms a 'set' with its own lavatory, bathroom and shower. The hall, therefore, is built up from the horizontal grouping of three-storey stacks of 'sets,' each set connected by stairs to the social and recreational area which provides the point of entry to the hall. The communal or 'gallery' floor contains common rooms, quiet rooms, small kitchen for student use, students' laundry, drying room, deputy warden's flat, etc. The four wardens' flats are on the roof.

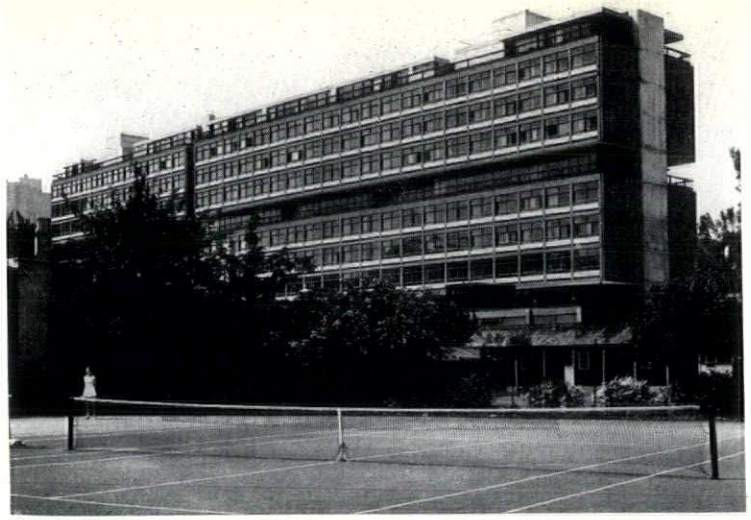
The study-bedrooms for the students were the outcome of considerable research when several mock-up rooms were built and furnished in order to assess working requirements. A built-in wardrobe and washbasin are provided and a precast terrazzo window seat runs the full length of the window wall with a hot-water convection heater beneath it.

Since the same levels are to be maintained for the 'gallery' floors to all three sides of the square, and the site falls about ten feet towards the south, the lower gallery floor on the south block is raised above the level of the square and, in the space thus created, there have been placed the large common rooms, butteries, bars, refectories, etc., for students and members of the academic staff. The common rooms and refectories are planned for a population of 1,500-1,600, and they will be used by the College as a whole and not just for the students in halls of residence above them.

The structure is in-situ reinforced concrete. The loads are carried on columns, some hollow, which run at 38ft. centres from the top to the bottom of the building serving as heating, ventilation and electrical ducts. The floors span between these columns, or are cantilevered off them.

1 (facing page), the completed block from the mews on the south side.



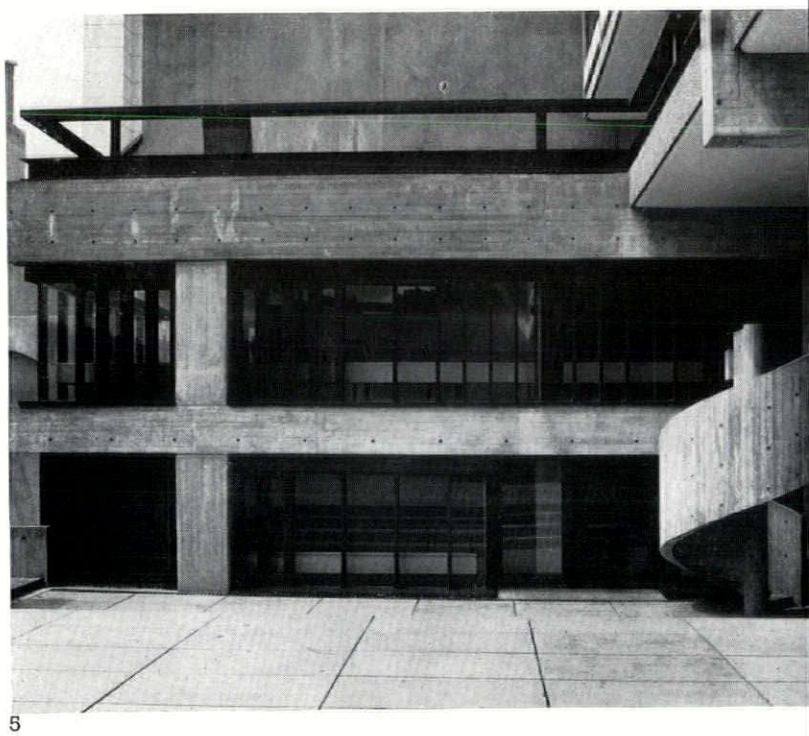


4



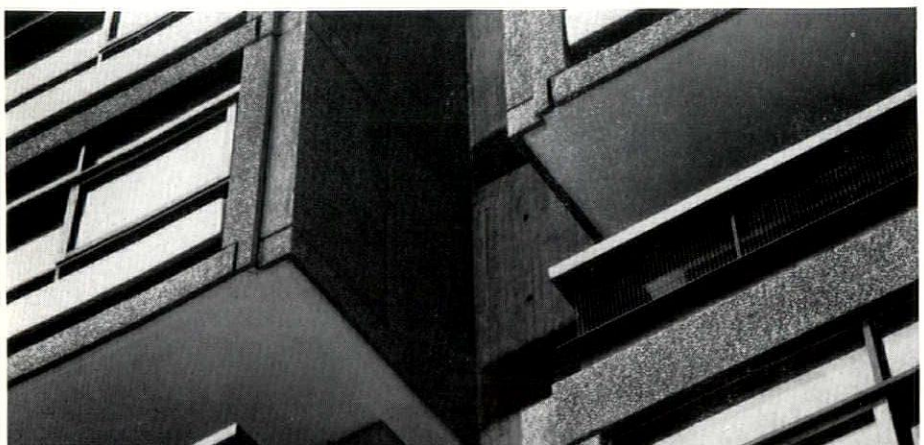
2

2, exterior of the staircase from the staff dining room. 3, detail of the study bedroom floors, which are clad in precast concrete units faced with Cornish granite; all units are faced with Norwegian quartz. 4, from the south-east. 5, looking west in the open courtyard towards the reception offices. 6 (facing page), staircase complex in the entrance hall.



5

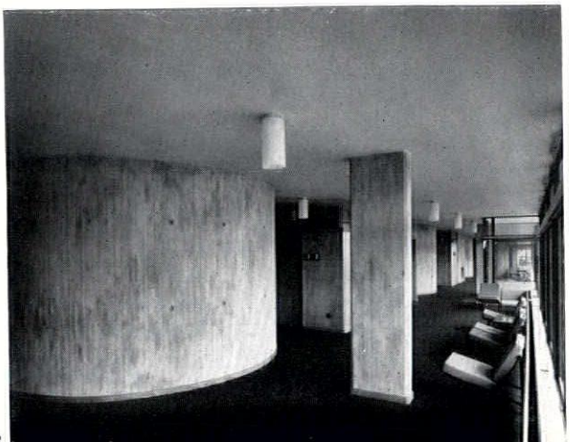
IMPERIAL COLLEGE LONDON: HALLS OF RESIDENCE



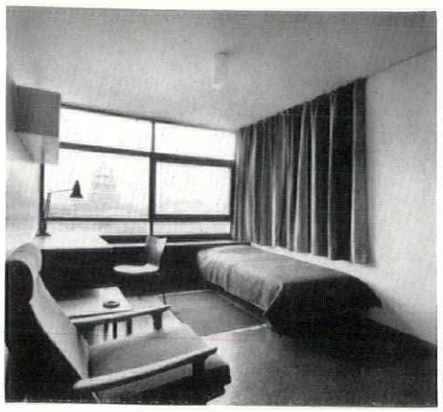


7

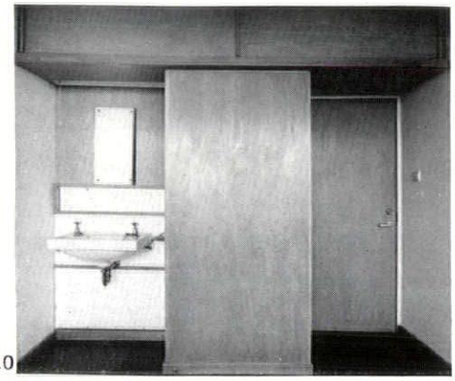
7, view from the ground floor: students' common room below, refectory at mezzanine level. Columns and beams are exposed reinforced concrete, panelling is generally British Columbian pine. 8, looking along one of the gallery floors.



8

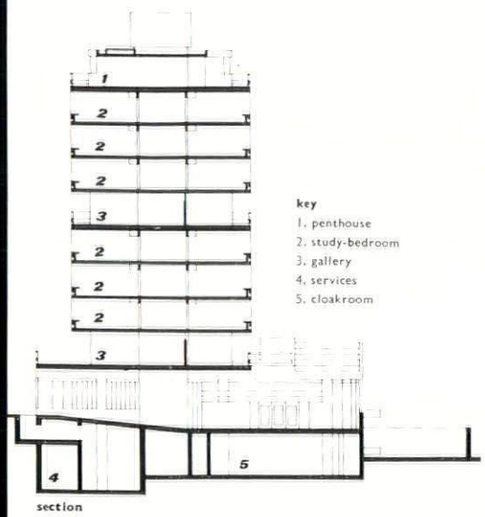


9



10

9, typical study-bedroom. Each measures approximately 9 ft. by 15 ft. 6in.—for a plan of an eight-room set see page 294. 10, built-in wash basin and wardrobe in a study bedroom. 11, general view of the refectory. 12, servery in the refectory.

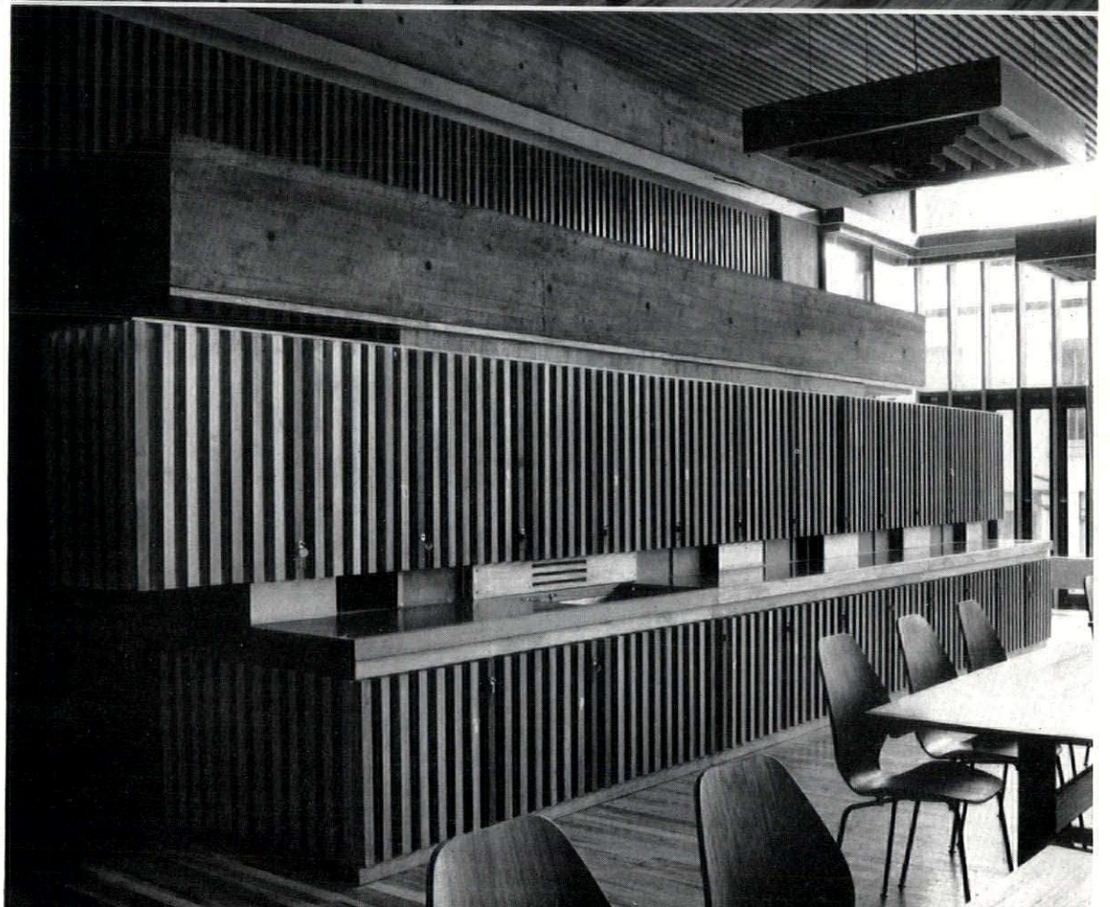


section

Photographs by John Donat



11



12

architects: J. Douglass Mathews and Partners

UNIVERSITY OF ABERDEEN:

1, from the south-west, with the domed lecture theatre between the two laboratory blocks. Construction is of precast reinforced concrete components; spandrel panels between structural mullions contain double-glazed window assemblies and armoured glass units held in bronze frames.
2, close-up of the lecture theatre showing the covered way which links the three blocks.



1

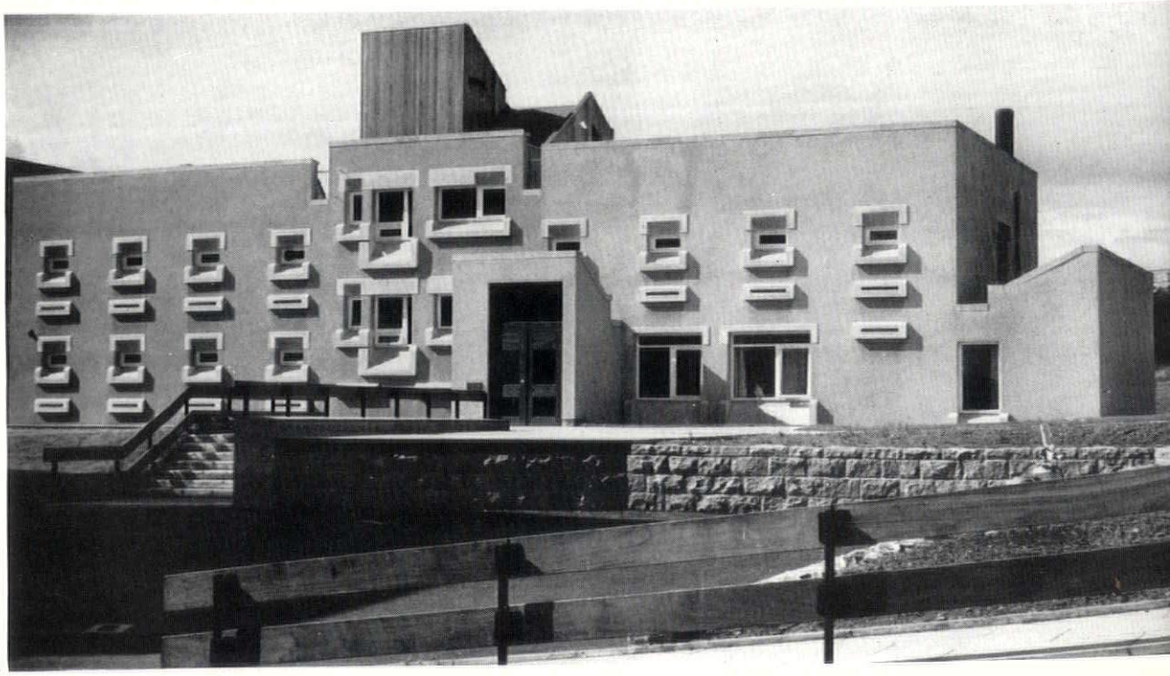


2

architects: George, Trew and Dunn

UNIVERSITY OF ABERDEEN:

1, from the north. The external brick walls are covered with rough grey rendering, with moulded precast lintels and sills of white concrete. Window frames are white painted soft-wood. Heating and ventilating is by drawing air into each room through radiators by way of the external slits.



1

DEPARTMENT OF NATURAL PHILOSOPHY

This is one of several new buildings in the development plan for the University Lands in Old Aberdeen. Its siting conforms to the overall development plan prepared by Sir Robert Matthew, the consulting architect to the university. It completes a group of buildings round the existing chemistry building which are closely related by levels and landscape work.

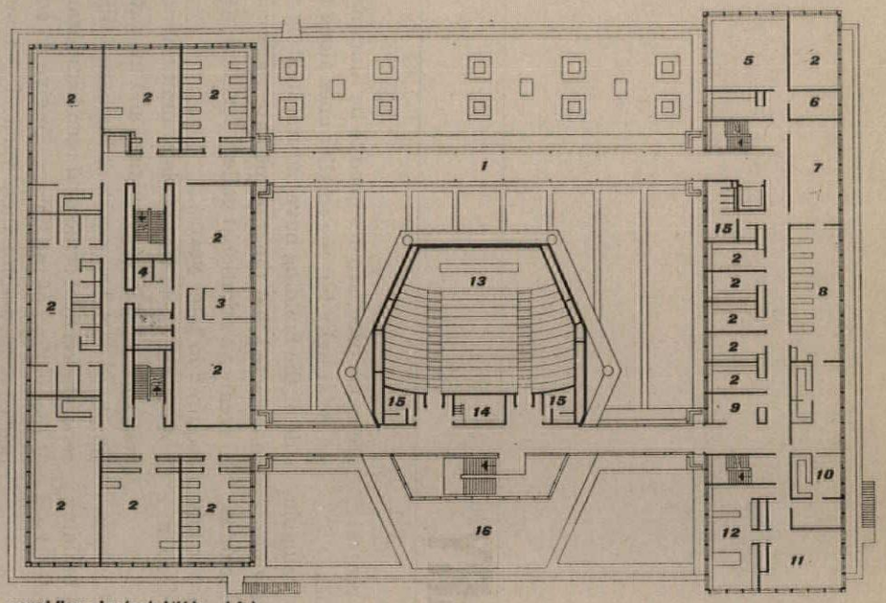
The aim was to provide teaching and post-graduate research facilities, as well as accommodation for the individual advanced and basic research which is carried out by the academic staff.

The separate functions of teaching and academic research required a design that would include a number of self-contained blocks within one building. Also, it was necessary to have the three lecture theatres in a central position to the main entrance hall so that those from outside the department would have controlled access.

This balanced composition of the teaching block and academic block about the main entrance hall and lecture halls stands on a podium base which extends under each block to provide the large lower ground floor area which is necessary to meet the particular requirements of a complex set of physical and vibration-free conditions in the experimental areas. The working of these experimental areas depends on their close relationship with the engineering workshops, which make and maintain much of the specialised equipment.

The main lecture theatre and entrance hall are the centre of the building, roofed by an irregular hexagon-shaped domed roof. This dome consists of double curved 2½in. thick triangular shells spanning between perimeter arches and intersecting curved ribs.

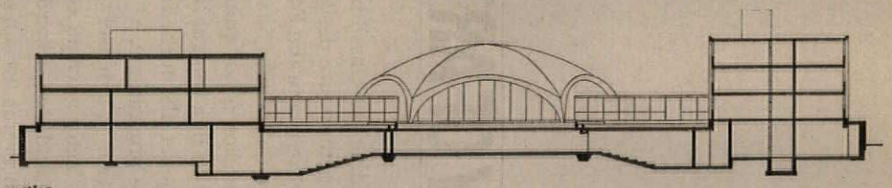
Partners in charge, E. D. Jefferiss Mathews and E. J. Hill. Assistant architect for dome, A. M. Cutler.



ground floor plan (scale 1/64 in. : 1 ft.)

key

1, covered way
2, laboratories
3, demonstration room
4, dark room
5, lecture room
6, office
7, common room
8, library
9, discussion area
10, secretary
11, professor's office
12, professor's laboratory
13, theatre
14, projection room
15, w.c.'s
16, pool



section

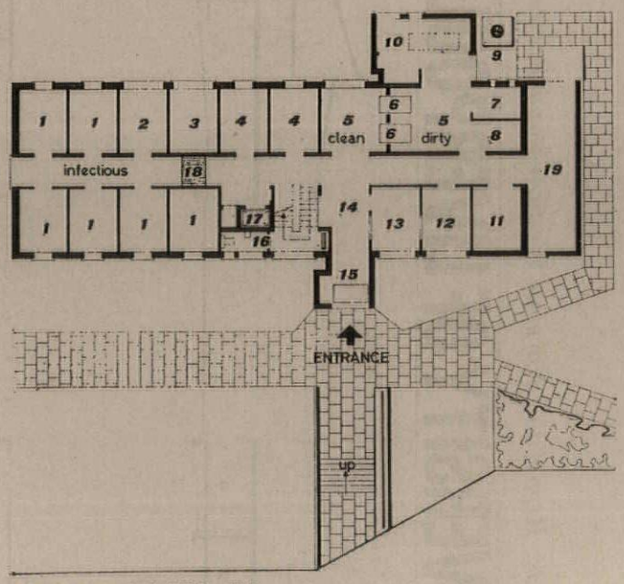
ANIMAL HOUSE

The function of the building is to house a number of small animals required for medical research and to provide facilities for experiment and observation. Little natural light is desirable in animal rooms.

In planning the building, account had to be taken of the following possible future developments. Firstly, the building might have to be doubled in size over the next few years; direct linear extension is possible to the north-west, or a new block or wing can be added to the south-west. Secondly, if the "infected" department is developed medically, further precautions will have to be taken, involving the installation of separate plenum heating for this area, and a complex system of 'pass through' for staff. Lastly, all the cross walls between rooms had to be removable to give flexibility.

Precast concrete ground floor, and in situ concrete first floor and roof slabs, span between outer brick walls and central spine wall, while sub-divisions are formed with 4½in. non-structural brick partitions.

Service consultants, Donald Smith, Seymour and Rooley; structural consultants, F. A. Macdonald and Partners; quantity surveyors, John Dansken and Purdie.



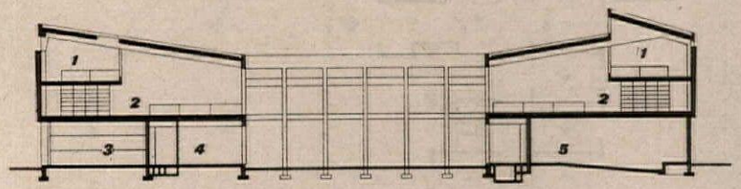
ground floor plan (scale 1/16 in. : 1ft.)

key

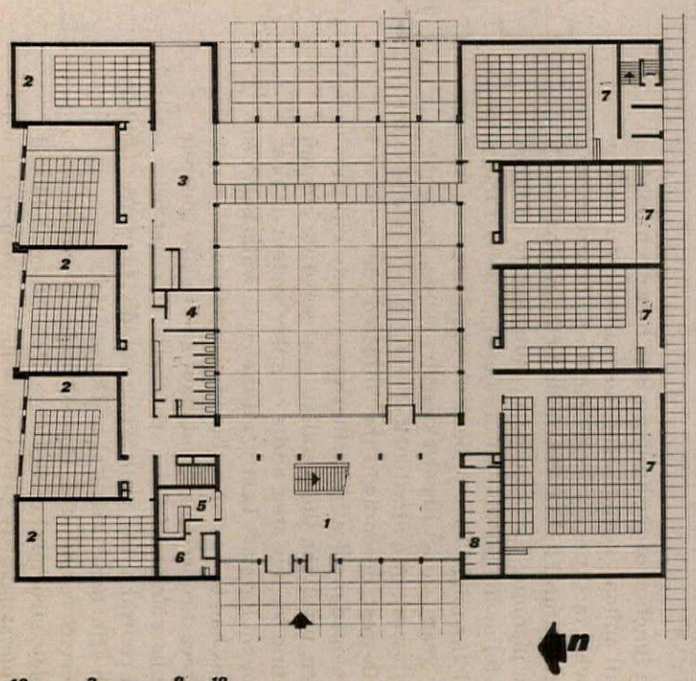
1, animal room
2, post mortem room
3, minor procedures room
4, quarantine room
5, working area
6, autoclaves
7, washing room
8, clean stacking
9, chimney
10, incinerator chamber
11, store
12, staff room
13, records room
14, entrance hall
15, draught lobby
16, w.c.
17, lift well
18, air lock

architects: Bryan and Norman Westwood and Partners

UNIVERSITY OF LIVERPOOL: FACULTY OF ARTS LIBRARY



section



40 2 0 10

ground floor plan

The building is a class library as opposed to a central one and is therefore designed to house the books currently in use in the Faculty of Arts. Really valuable books are unlikely to be in this particular collection, and expansion is not quite such an important factor as it would be in a central library, but nine lecture rooms for use generally in the faculty had to be provided in the same programme.

The site is in a densely populated semi-derelict area, and this factor gave an additional reason for a building which would look inwards rather than outwards. The objection to this was an obvious tendency for the building to shut itself away from the ordinary coming-and-going of students, but this has been overcome by placing the library at first floor, the lecture rooms at ground floor level, and allowing free circulation straight through the building with two wings standing on colonnades. The library becomes a square, with an open courtyard in the centre. The external walls are solid and will be covered with bookshelves, and further bookstacks will be placed at right-angles all the way round. The reading spaces are in the area adjacent to the inner courtyard and the walls here are almost entirely of glass, with further lighting from the ceiling. The roof is a single pitch, sloping inwards, allowing for a gallery round the perimeter. The large lecture rooms, where visual aids are much used, are designed to be illuminated solely by artificial light, but the smaller ones along the north side of the building have natural lighting and are so constructed that the intermediate walls can be removed to create an additional gallery for the library if required in later years.

A special effort was made to limit the number of materials used in construction, and the exterior consists simply of dark brickwork at the base with tamped concrete vertical structural members forming the whole of the walling of the library. To give an additional degree of modelling, these vertical members (which resemble sheet piling) are inclined at various angles as can be seen from the photographs. Since the building will be surrounded by higher ones in due course, the roof had to be specially designed and a new profile of asbestos roofing was evolved in conjunction with the manufacturers. This will not only give good modelling when seen from above, but it also enables the very large concrete beams which span the library to be housed within the convolutions, thus avoiding any apparent upstands. Internally, there is very little decoration, the walls being covered in books and the ceiling being simply lined with sawn boarding backed by a glass wall acoustic blanket. The windows at each end of the galleries are in stained glass with a simple pattern of vivid colours designed by Gillian Rees-Thomas.

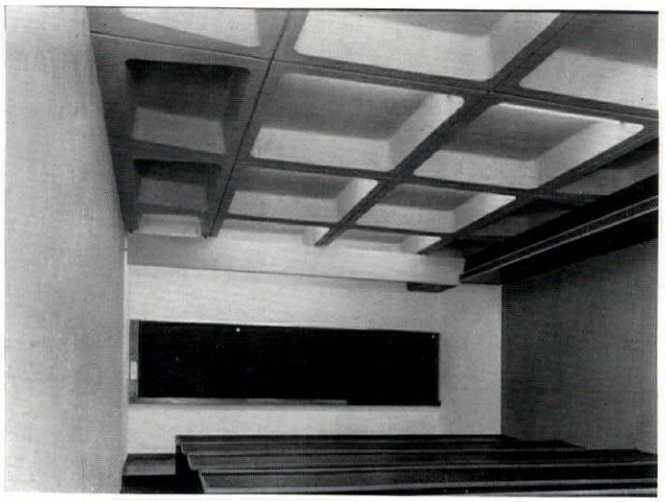
key

ground floor
1. entrance hall
2. lecture room
3. students' common room
4. female rest room
5. porter
6. lecturers' prep.
7. lecture theatre
8. cloaks

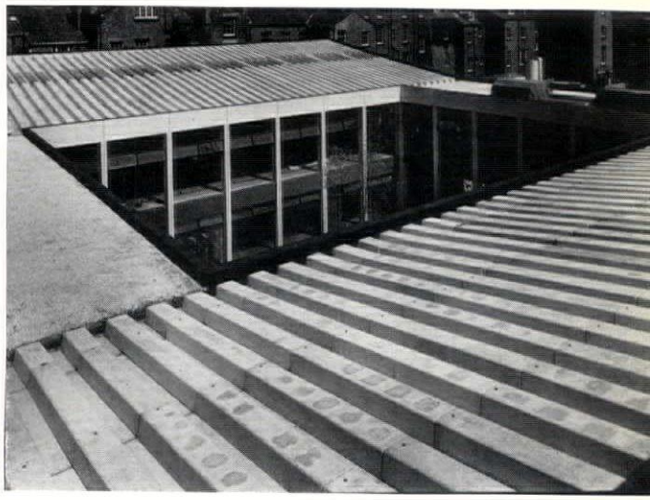
section
1. gallery
2. reading room
3. lecture room
4. students' room
5. lecture theatre



2



3



1, the south reading room. 2, one of the lecture rooms. The ceiling is designed to cover the loading from the library above, forming permanent shuttering ; the concrete coffers accommodate the reinforcement (note splays to margins) and also lighting units. 3, the roof and internal courtyard. 4, the entrance side from the north-west.

cts: Alan Reiach and Partners

VERSITY OF EDINBURGH: VETERINARY FIELD STATION



th wing seen from the east. 2, from the south with the laboratory wing on the left.

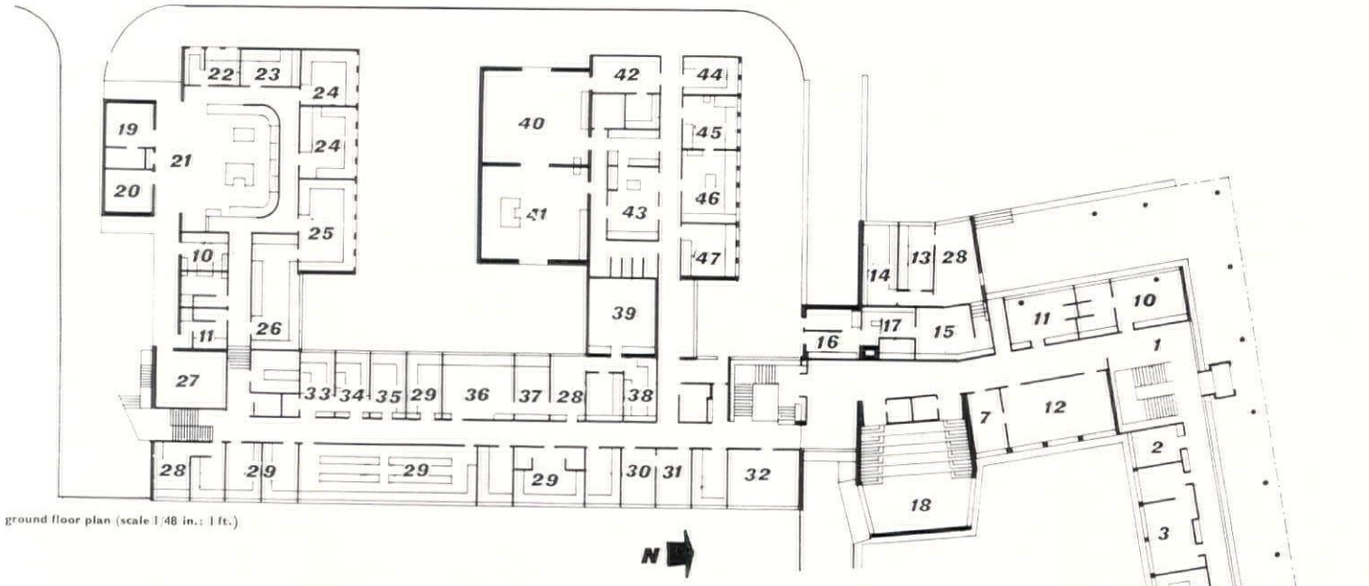


A new field station to enable practical field work and laboratory research to be carried out in country surroundings: the present college buildings in the city do not allow of such facilities. The site chosen is situated some six miles from the city centre in farmland belonging to the Edinburgh Centre of Rural Economy. The main building has been erected between two existing farms used for experimental work by this college.

In planning the veterinary field station, four major factors had to be considered. First, the need to incorporate as much existing accommodation as possible without disturbing the overall plan of the new building. Secondly, the desirability of placing those departments which require direct use of livestock on ground floor level. Thirdly, the possibility of the construction of the building in two stages, and, lastly, the allowance for possible future expansion. The scheme falls broadly into three parts, namely, the teaching and research building, the animal hospital section, and farm accommodation.

The teaching and research building has been placed in two two-storey wings approximately at right-angles to each other; the principal lecture and demonstration theatres being planned at the junction between the two. In order to effect a satisfactory separation of everyday student access from administration and public access, the student entrance is planned at the junction of the two wings off the main service area to the west. Here, in addition to normal cloaks and lavatory provision, are the clothes and boot-washing rooms, planned so that no dirt is carried into the working part of the building. An ambulatory clinic is planned near this focal point as well, close to the garage.

On the ground floor of the building, fronting the main road and directly accessible from the entrance hall, is the general office administration, reading rooms, and staff rooms, etc. The latter are placed in a small private wing to the south away from noise and traffic. The Department of Veterinary Hygiene and Preventive Medicine occupies the whole of the first floor of this north wing. The lecture theatres are placed in the link between the north and west blocks. Animal access from both the farm accommodation and from the hospital has been achieved by placing the demonstration theatre below the large lecture theatre at ground level and



ground floor plan (scale 1/48 in.: 1 ft.)

key

1. entrance hall
2. janitor
3. main office
4. reading
5. librarian
6. library
7. kitchen
8. lay staff common room
9. professional staff common room
10. male students' changing
11. female students' changing
12. students' common room
13. surgeon
14. pharmacy
15. assembly
16. boot wash
17. boot dry
18. animal demonstration
19. cold room
20. mortuary
21. main post-mortem theatre
22. sterilizing
23. photography
24. diagnosis
25. fixation
26. processing
27. incinerator
28. office
29. laboratory
30. professor
31. secretary
32. female lay staff retiring room
33. sterilizing
34. post mortem
35. inoculation
36. workshop
37. mixing and store
38. dark room
39. studio
40. main preparation
41. main operating theatre
42. x-ray
43. sterilizing and laundry
44. small animal recovery
45. preparation
46. operating
47. instrument

providing a covered way beneath the building leading to the farm unit to the east and the hospital area to the west. The boiler house is placed beneath this link block, directly accessible from the underpass and at a strategic point between the two wings.

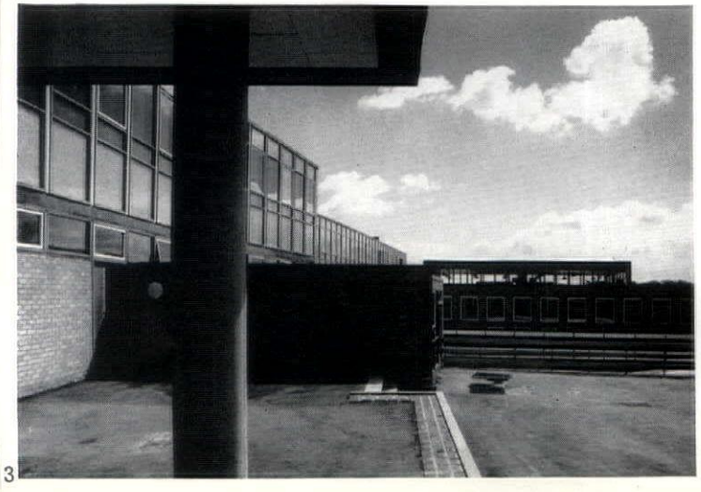
By taking advantage of the fall in the ground to the south, the west block is planned at a slightly lower level than the rest of the building. This west wing contains all teaching departments other than veterinary hygiene and preventive medicine, those that require direct access to animals being placed on ground level. Veterinary surgery has its operation suite planned in a single storey wing at right angles to the main block and with direct access to the 'animal yard' on the west. Pathology likewise has its post-mortem room and ancillary accommodation similarly planned and incinerator facilities are adjacent.

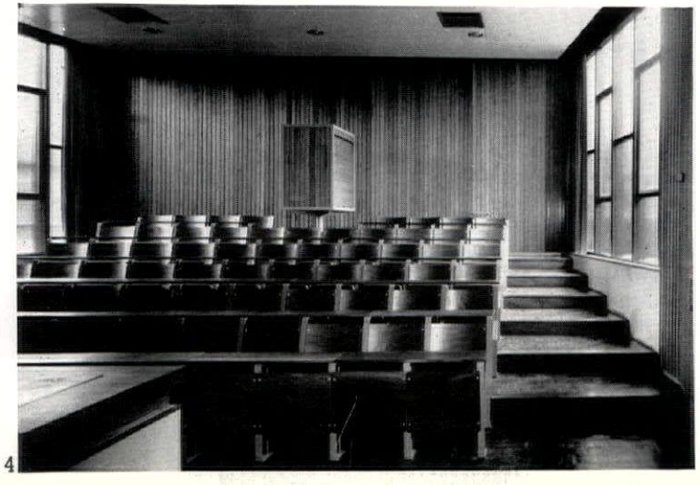
In the animal hospital, loose box accommodation is planned to open off the 'animal yard' to the west of the building, while the isolation unit is well separated from the rest of the hospital. Small and large animal accommodation is combined in hospital and isolation units. The farm accommodation is to the east of the building and adjacent to an existing farm. Considerable use has been made of prefabricated farm building elements. Care has been taken to preserve the trees which are a feature of the site.

The teaching and research blocks are of reinforced concrete framed construction with lightweight outer wall cladding, the main structural and intermediate supports being planned on a 5ft. module enabling flexibility in laboratory layout and planning. In certain positions, conventional brick cavity walling has been used, with a facing brick outer leaf. Floors are reinforced concrete slabs. Ceilings are of insulating board panels, removable for access to services within the ceiling space. Heating is low pressure hot water from oil-fired boilers, the heating elements being above the ceiling panels in laboratories.

Partner-in-charge, G. A. Macnab; senior architect, J. R. Oberlander; assistant architect, R. Dawson. Structural engineers, Blyth and Blyth. Mechanical services, Ramsay and Primrose. Quantity surveyors, Reid and Gibson.

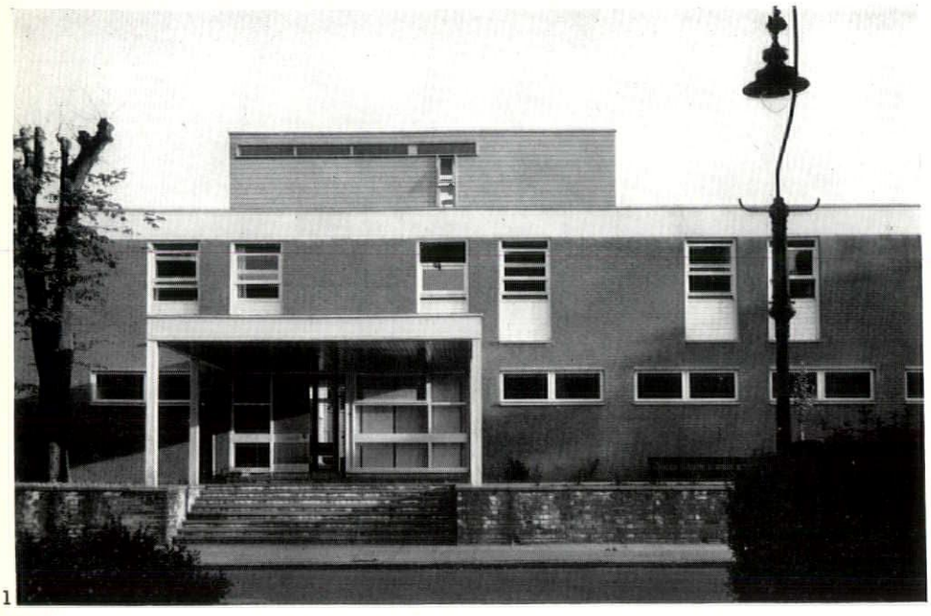
3. the surgery wing from the north. 4, interior of the lecture theatre.



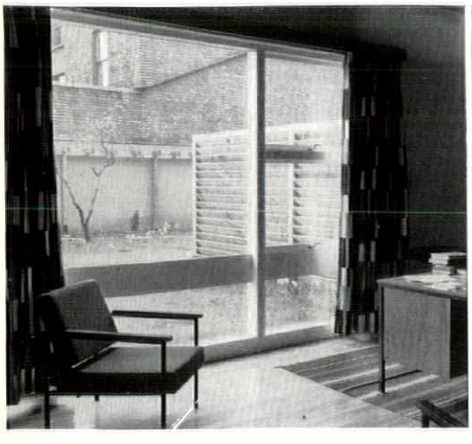


architect: Robert McKinstry

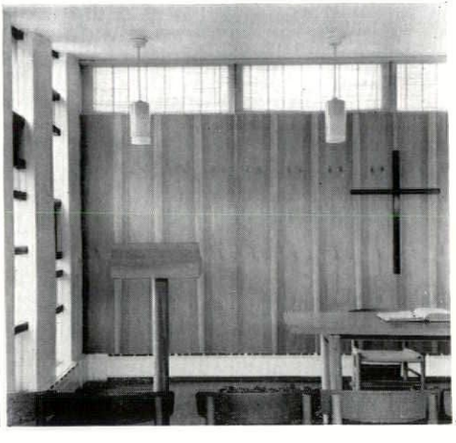
QUEEN'S UNIVERSITY BELFAST: STUDENTS' CENTRE



1

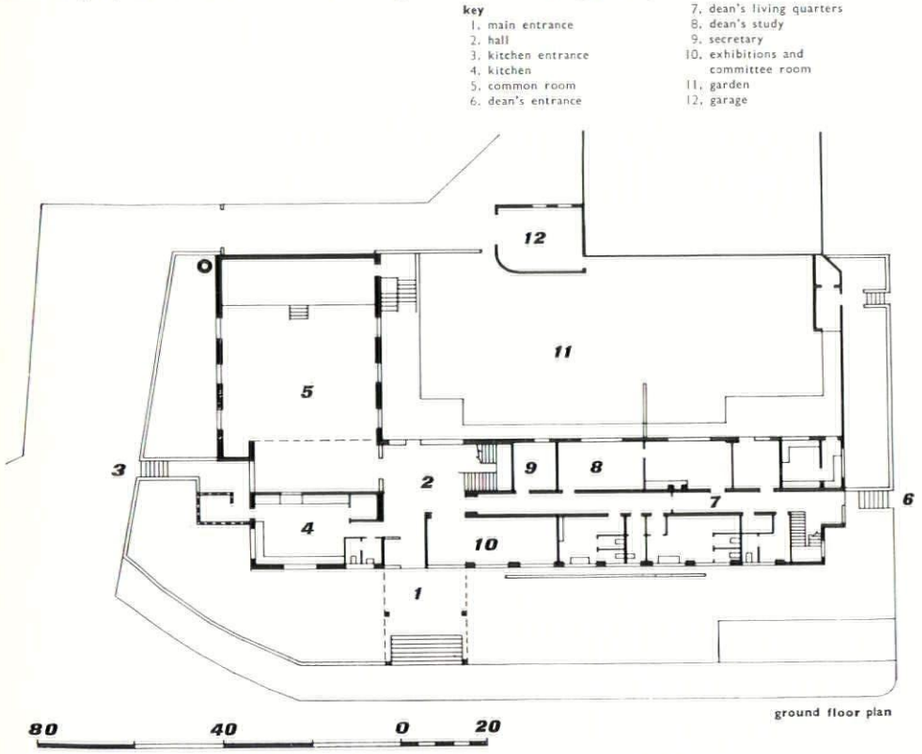


2



3

1, the main entrance side with the chapel on the roof. 2, the Dean's study. 3, interior of the chapel; the lectern and community table were designed by the architect.



ground floor plan

The building, which is for the Presbyterian community in Queen's University, is raised up some 3 ft. from pavement level and the main entrance is reached by a flight of steps under a canopy. On the ground floor there is the main common room which serves as a large students' lounge, coffee room, dance hall, lecture room and cinema, with a seating capacity of about 250. The kitchen is closely linked to the common room, and the platform, which usually accommodates the dance band, can be shut off by concertina shutters for use as a table tennis room. The committee room can be opened up to form an extension of the entrance hall when small exhibitions are staged. The Dean's offices face on to the sunny enclosed garden away from the road and the Dean's own study communicates directly with his living quarters at the west end of the site.

On the first floor there is a small library, and leading off the top lit central corridor are ten students' study-bedrooms each with built-in wardrobe and washhand basin. The chapel on the roof, seating about 35, was originally planned so that it could be omitted if sufficient funds were not forthcoming.

The construction is mainly loadbearing brickwork: 11in. cavity exterior walls and 9in. spine walls carry in-situ-cast reinforced concrete floors and roof. The common room-hall has 15in. cavity walls carrying steel beams supporting a timber and woodwool slab roof and the chapel and tank room on the roof are timber-framed. Local steam-cured concrete bricks are used throughout, the facing bricks having a rough texture and a natural mushroom colour which is repeated in the pointing. A flush fascia of precast white concrete panels is carried round the main block. All windows are of timber painted white, as is most of the timber lapboarding.

The entrance hall has walls of exposed brickwork; the floor is finished with polished concrete paving slabs and precast terrazzo strips matching the terrazzo finish to the main staircase. The common-room-hall has exposed brick walls; the floor is of maple strip and the suspended ceiling is faced with textured acoustic tiles. The library is close carpeted, and the study-bedroom floors are finished in cork tiles. The timber-framed chapel is finished on the inside with a hand trowelled sand-cement plaster finish painted white. The wall behind the communion table is panelled in Swedish pine, the floor is of highly polished dark blue quarry tiles. The vertical side windows have panels of coloured glass. Heating is by low-pressure hot water to radiators and skirting heaters.

Quantity surveyor, W. H. Stephens & Sons. Structural engineers, Kirk, McClure & Morton.

Problems of Planning the New Universities

Lionel Brett

The distinction between Client's Brief and Realization is hard enough to draw in the case of the individual building. In the case of a complete community like a new town or a university it is even misleading to try to draw it, since between the idea of a university and its embodiment interaction takes place as soon as pencil is put to paper, and will go on as long as the community and its buildings coexist on the ground. However, since any argument has to be artificially confined, this one will be confined, as far as possible, to means and not ends.

The new English universities I shall be discussing were all authorized by the University Grants Committee between 1958 (Sussex) and 1961 (Kent).* All were to reach within ten years a student population of 3,000 (of whom two-thirds were to live in) with the probability of continued expansion thereafter. All five were true multi-disciplinary universities, and all five would, I believe, subscribe to the First Proposition I quote from the York Architects' Report (which is itself, incidentally, an outstanding intellectual exercise).

'The university is essentially a society of individuals living and working together for the advancement of learning and the dissemination of knowledge at the highest possible level of intellectual achievement and spiritual aspiration. The society must embrace those who teach as much as those who learn and those who work to extend the limits of knowledge, and it must encourage contact between all the sectors of its population.

'What follows from this is that the university must be housed within a limited compass and that there should be provision for a clear hierarchy of groups from the individual to the whole so that it can have sufficient cohesion to operate as a community. There should be no rigid demarcation between the places where the members of the university work and the places where they live and have their homes, and there must be provision for residence within the university complex for the maximum possible number of teachers, students and staff of all kinds. Facilities must be provided for natural and unforced association and the easy formation of groups through a wide variety of work and leisure activities.'

In taking this first look at some lines of advance towards a twentieth-century academic community it seems natural to do it under three heads:

1 Geographical—the site.
2 Biological—structure and principle of growth.
3 Environmental—the architectural embodiment.

Geographical

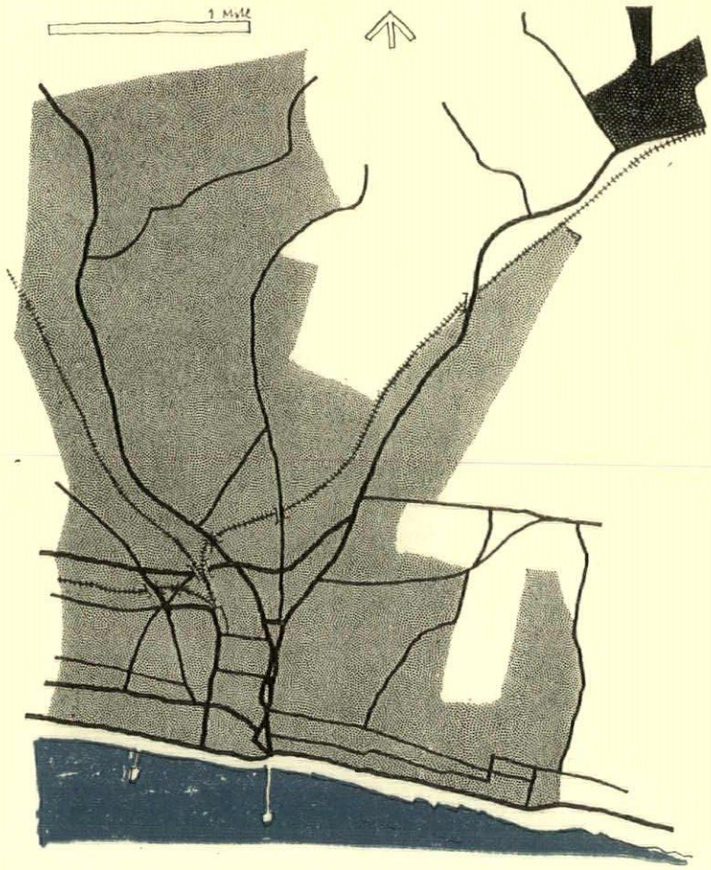
These are not civic universities, and are only regional to the extent that some relationship between their distribution and the regional distribution of population obviously existed in the minds of the UGC. Four out of five are in the south-east, which aligns them firmly with the overwhelming majority of national development that is *not* going into

*Date	*University*	*Consultant architects*
1958	Sussex	Sir Basil Spence
1960	York	Robert Matthew, Johnson-Marshall
1960	Norwich	Denys Lasdun
1961	Essex	Architects Co-partnership
1961	Kent	Sir William Holford

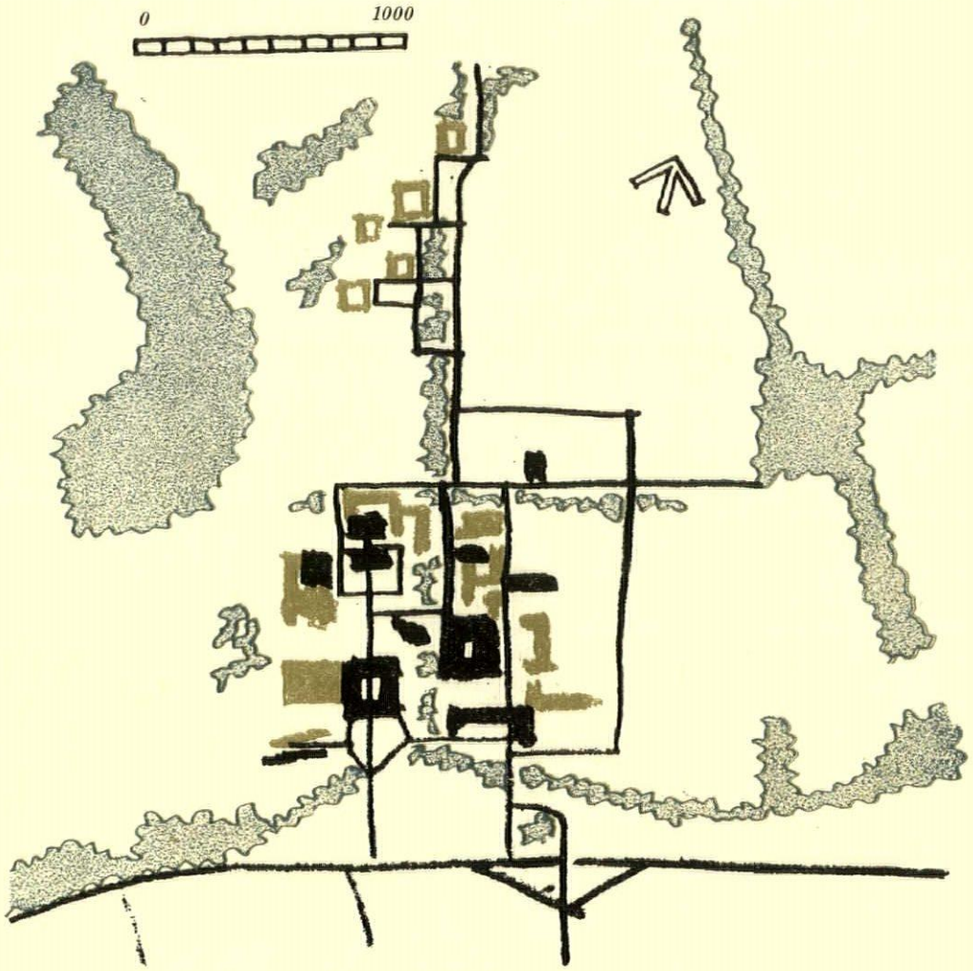
the Development Areas. But while not civic in origin or finance, it was inevitable, both for their prestige as status symbols and for their own needs for lodging and servicing, that large towns should claim them. The choice of medieval cathedral cities for three of them was no doubt made with an eye to the European university tradition and in a vague hope that University Towns on the pattern of Cambridge and St. Andrews might emerge. If so, the Norwich Enquiry (January 5, 1961) firmly put paid to any such nostalgia. The choice (compromises apart) lay between a riverside slum area ripe for renewal and close to the city centre, and a golf-course a mile-and-a-half out on the suburban fringe. Whatever may have been privately said about the preferences of the UGC, its public attitude was correct and neutral. It was left to a few architects and local amenity societies to plead for a truly urban university as an enrichment of both city and student life, or at the very least for a proper and public appraisal of the pros and cons. The promotion committee came out unequivocally for the virgin site, and it is difficult to imagine any group that carried executive responsibility not plumping for space and simplicity and playing fields on the doorstep, as against the complex and costly jigsaw puzzles of urban renewal.

The Norwich decision seems to have settled this issue for good. York, smaller in scale and more congested, could find no central site to compete with the owner's offer of Heslington Hall, a compact and well-planted 180-acre estate on a south-west slope very similar to the Norwich site in its relationship with the city. At Colchester and Canterbury local landowners vied with one another in offering green-belt estates, resulting at Colchester in the choice of Constable's Wivenhoe Park, the most attractive but the most isolated of all (three miles from city centre). At Canterbury the selected site is on the fringe, overlooking the little city from the north, and it could be argued that a university that may grow to 10,000 is too large a cuckoo for this particular nest. But even when (as pre-eminently at Lancaster and possibly at Coventry) an apparently ideal central site existed, local committees found it impossible to resist offers from outside their boundaries which often included a mansion and outbuildings capable of housing the infant university during the first two difficult years. By then the charms of Arcadia had been conspicuously enhanced by the first buildings of Sussex University at Stanmer, a vintage chalk and beech parkscape acquired by Brighton Corporation after the war, and four miles from the city centre. The new universities of the sixties were apparently to be uniformly ex-urbanite.

Any activity (with the exception, no doubt, of pure contemplation) that takes itself out of the city or refuses to come into it, impoverishes the city and impoverishes itself. For the city, it is the loss of youth in its streets and pubs and coffee-bars, the loss of a bit of help in shouldering the burden of urban renewal, the loss of a bit of variety and vitality in the townscape. For the



Site plan showing relation of University of Sussex (dark tint) to Brighton.



Sketch layout plan of the University of Sussex (architect, Sir Basil Spence). First-stage buildings (including Falmer House and the physics building, which are illustrated on pages 265–274) are black; final-stage buildings are brown.

university it is the subtle threat of a new kind of public-school-style segregation among goal-posts. Yet even if one accepts the principle of a journey-to-football, one has to recognize that a university is not a tidy user of inner-ring urban land. Its growth is unlikely to phase in neatly with the obsolescence of existing buildings on the site, and its science component, as a space user, is as unpredictable and explosive as any industry: it would be absurd to land posterity in a repeat performance of the present science-building drama at Oxford and Cambridge. From the science buildings at one end of the scale to the residential buildings at the other a university requires a spectrum of flexibility which is more likely to be obtainable in a wedge penetrating a city radially than in a wodge at its centre. This, in a rough and ready way, is what many of the older red-brick universities have settled into, but the precedent of dispersal and a nine-to-five student rat-race is not encouraging.

These are some of the factors on both sides of the equation of university siting in relation to city planning. They are complex and intriguing enough to lead to a variety of solutions, and the really sad thing about the five examples under review is that they have all arrived at virtually the same answer. Sussex and Essex will join other green-belt institutions such as prisons, training colleges, hospitals and crematoria. York, East Anglia and Kent stand a better chance of being gripped by the growing city and even eventually of giving it, in conjunction with higher-density second-growth suburbia, a hard edge. But it's campus life, and not the café table, for them all.

Biological

Complexes of buildings that take their cue from the inevitability of change are rare in architectural history. Urban growth has generally been on an entirely unsophisticated additive principle deriving from radiating land values, accompanied by as much infilling and thickening up as regulations would allow. Renaissance Oxford and Cambridge grew in this way as much as London did, but it worked better because of the unifying effect of the more-or-less standard quasi-monastic collegiate layout and because of the happy relationship between buildings and spaces that quadrangular planning creates almost automatically so long as buildings remain of walk-up height. Such 'master plans' for growth as have existed since the Renaissance have been of two kinds. Commonest was the one-piece concept like Wren's plan for London or L'Enfant's for Washington, based on the vague hope that gradually people would come along and build it. Countless such projects (there was a great boom in them after the war) sleep in the dead stores of architects and institutions, and universities possess their share. Much rarer was the principle, conceived by Sixtus V for Rome and attempted by William Burley Griffin at Canberra, of establishing a constellation of interrelated landmarks or growth points. If these were cleverly chosen geographically there was a good chance of their being compelling enough as catalysts to outlive all changes of architectural taste and give the city an immutable basic structure. Meanwhile the intervening spaces could be furnished and humanized by plantations of trees.

It is in such terms as these that the architects of new universities have had to think. Their growth period was, of course, to be much faster, but it was not to be so fast that the elegance of the process (as in a normal building operation) could be ignored. Students were going to have to pass their whole academic career in the midst of it. It would be as inept to examine evolutionary systems of this kind in merely teleological terms as in purely logistical ones. We have to picture a beautiful process—a phenomenon hitherto more meaningful to scientists than to artists. Perhaps because of the unfamiliarity of the problem (in contrast to the siting problem), the architects have come up with a crop of totally different solutions, no two alike. I take them in chronological order, giving each a code-name which conveys something (though of course an over-simplification) of their nature.

1. *Campus: Sussex*

The site is a chalk combe opening southwards to the main Brighton-Lewes road, hung round with clumps of dark beech and threaded by a narrow spinney. In a fine summer it bakes hard and grows tiring like any downland landscape. In the next combe, just over a low crest, is the plain 1750 stone house of the Pelhams, in a grander parkscape now smoothed and open to the public. This house was too small to house students; inevitably it is to be the administrative headquarters of the university.

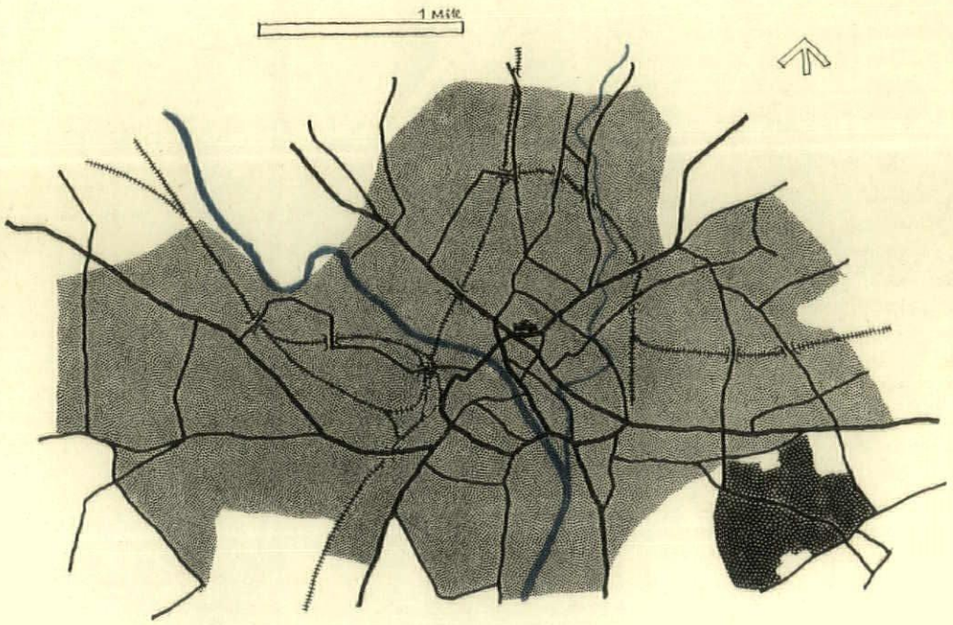
The principle of growth was to start with a core building, which in the early stages would house the whole communal life (both undergraduate and postgraduate) of the university, as well as non-science teaching. Grouped with it round a central pedestrian campus, embraced by a service road and related by orientation and a shared architectural vocabulary, are the traditional elemental components—Chapel, Library, Arts, Physics, Chemistry, Biology, Engineering. Extension could be outwards across the perimeter road, residence as an appendage feeling its way northward into the downs. A modest group of huts provides for minor decanting.

This is the traditional growth principle: outward extension from a firmly established and strongly individual centre. It is a principle which the early New Towns (for example) had to sacrifice to their great detriment. It has one conspicuous flaw, which is that any such central space and its enveloping buildings will be too large at the beginning or too small later on, or even both. Cautionary examples, among which Melbourne is perhaps outstanding, exist all over the world. They consisted at the outset of a handsome set of prestige buildings in the best style of their day, and within half a century they have been swamped in essential additions, 'temporary' huts, fences and parked cars in every remaining cranny. One must hope that the precedent established for Falmer House of future internal expansion controlled by the existing structural grid of the building will be followed just as systematically and rigidly over the campus as a whole. Even so, any such closed system has built-in limitations.

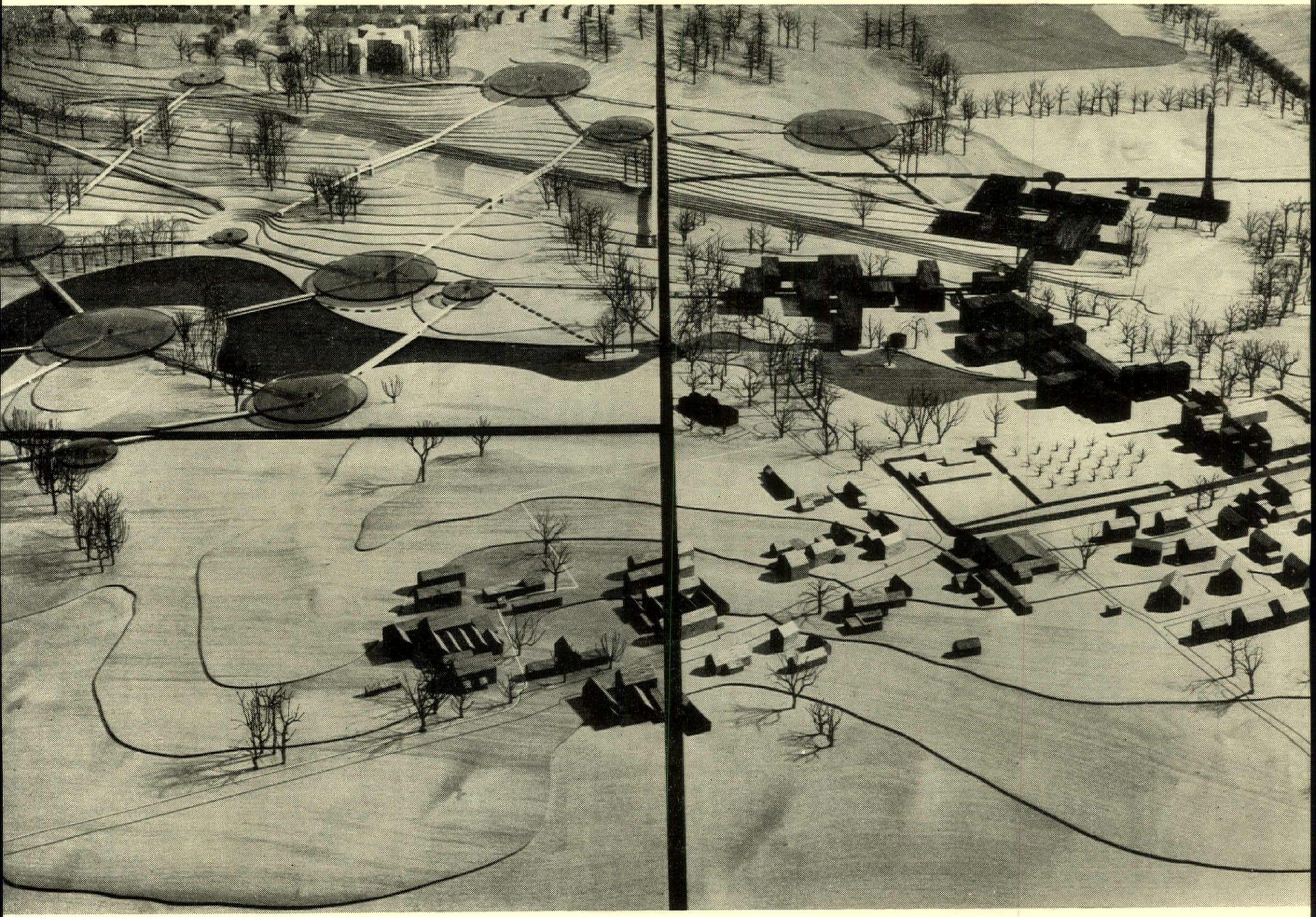
2. *Molecular: York*

A tree-dotted south slope falling to flat fields watered by a streamlet, a mansion with its surroundings, a roadside village: components that would have attracted Repton. And sure enough the architects propose a winding lake and romantic planting (though they turn their backs, perhaps missing a trick here, on the village).

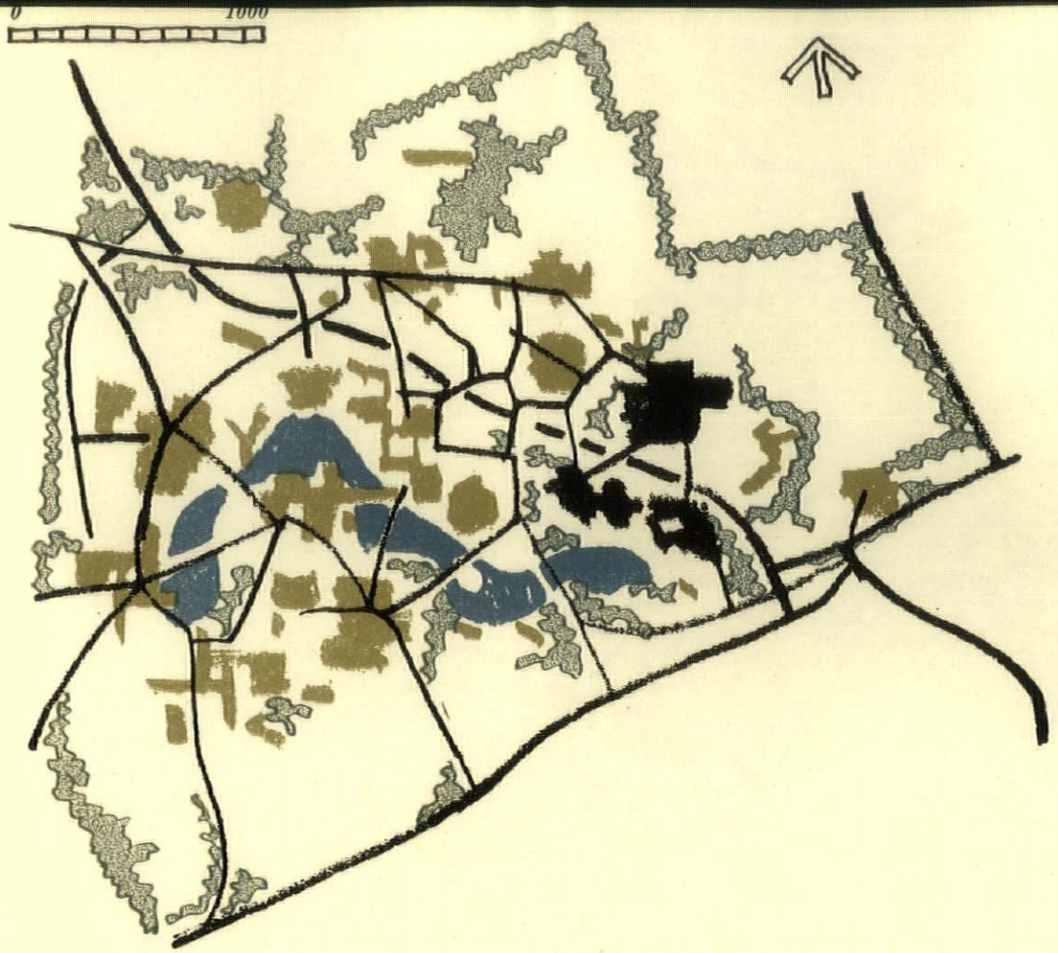
It would be absurd to try to condense into one paragraph the closely reasoned report in



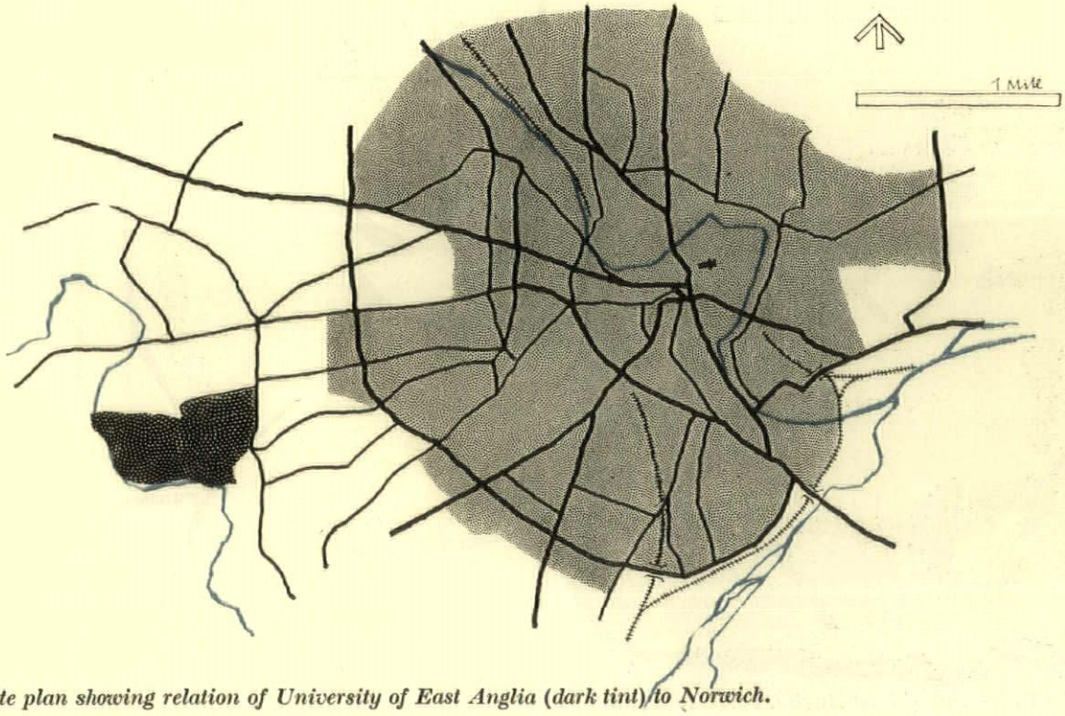
Site plan showing relation of University of York (dark tint) to city.



Model of the University of York (architects, Robert Matthew, Johnson-Marshall and Partners) looking north—see layout plan on opposite page.



Sketch layout plan of the University of York. First-stage buildings black, final-stage buildings brown.



Site plan showing relation of University of East Anglia (dark tint) to Norwich.

which the growth principle for this university is established and argued. Its elements are the Oxbridge collegiate principle (including in each college lecture rooms and seminar rooms for general use, and necessitating a close and compact grouping of colleges), non-science teaching buildings with some internal flexibility, science teaching and research buildings requiring extreme flexibility both internal and extensive, and central buildings such as the university hall, library, theatre, etc. These elements are grouped in triplets consisting of two colleges and a science group linked by non-science buildings and embracing one of the central buildings, whose uniqueness is exploited to help identify the triplet. The triplets are then interrelated so that the maximum of intercommunication takes place and so that the science groups can mutate and expand, and the whole complex is spread across the site in a segment radiating from the old buildings of Heslington Hall, which houses the infant university in its infancy and will administer it in its maturity.

The molecular diagram which symbolizes this complex is like those to which laymen have grown accustomed in connection with nuclear physics, and it is extremely elegant. Like all good science, it is a moving example of analysis and imagination at grips with a complicated process full of loose ends. By sacrificing the traditional concept of a central campus, the growth of the university can be serial rather than centrifugal, one area can be civilized at a time, and each triplet will seem complete in itself.

'The tripartite nature of the complex is partly the result of quantitative considerations, and partly an acknowledgement of the fact that among the basic building units both hierarchy and duality are to be avoided as both tending to promote social and academic segregation. All the units are of equal status, and from each unit all other components of the complex are directly accessible.'

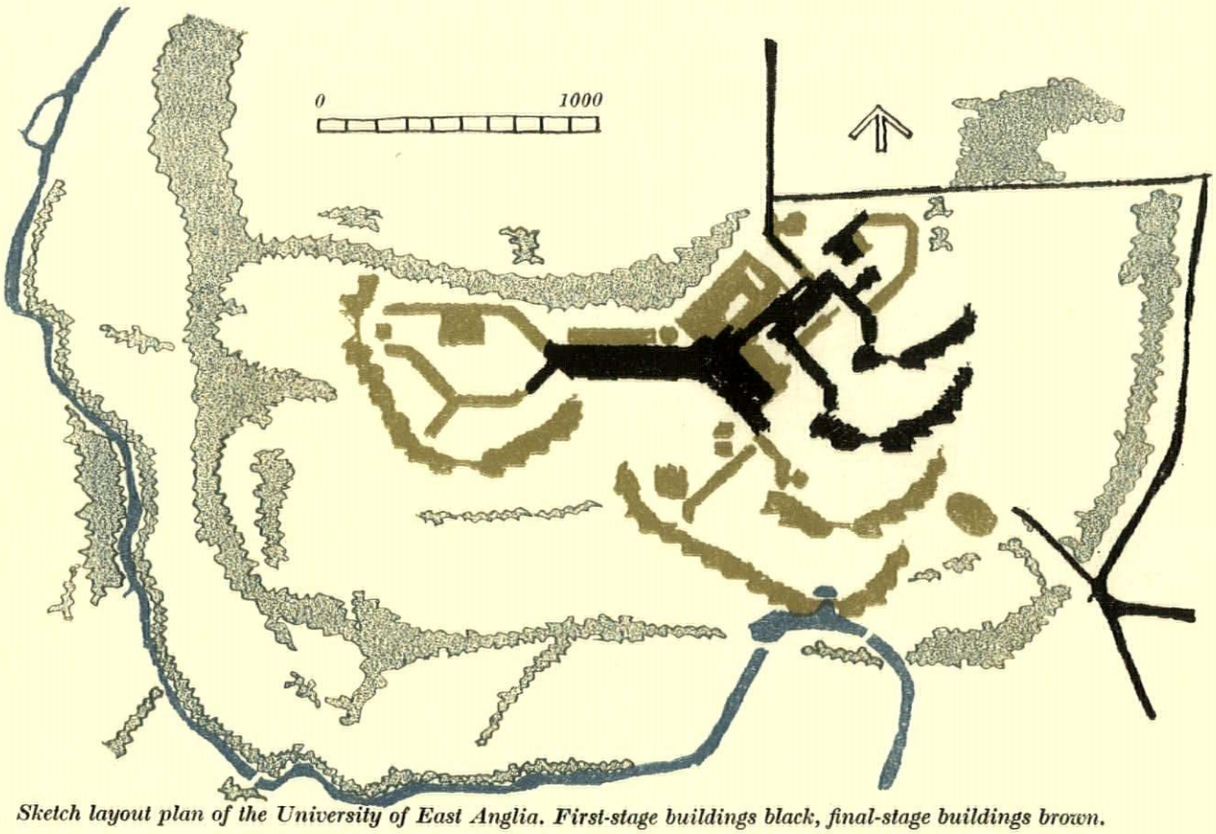
If this is a sacrifice, I think the case has been made for it. A theoretical objection to the molecular approach is that in thinking in terms of solids rather than voids it tends to treat the spaces between buildings as secondary, which may lead to visual leaks as well as to waste of space. Time will show.

3. *Concentrated: East Anglia*

The site is the Norwich municipal golf course on the fringe of suburbia, with wide southern views, falling gently to the willowy marshlands of the river Yare. At weekends the river banks are popular and dotted with fishermen.

Though site and relationship with city have much in common with York, nothing could be more unlike than the design philosophies of these two universities. Denys Lasdun's very first step was intuitive. Prospecting the site like a settler, this, he decided, is where I pitch my tent, and on this red spot on the map will be the heart of the new organism. This will be the 'market place,' where all paths cross, and where are located the central organs of the university—Senate House, Library and University House.

Model of the University of East Anglia (architect, Denys Lasdun) looking north-west.



Sketch layout plan of the University of East Anglia. First-stage buildings black, final-stage buildings brown.

Social cohesion is ensured by the decision to abandon the 'college' principle and concentrate all common rooms and refectories at the centre. From this hard-paved and lively acropolis descend a 'cascade of urban spaces,' giving access to the long limbs of the Schools of Study conceived as groups of cognate academic disciplines, socially intermediate between the university as a whole and the particular group of rooms in which students and graduates live. These groups of rooms are located in tiered redoubts swinging out from the extremities of the schools of study like the limbs of spiral nebulae. Between them, swaths of scythed grass penetrate deep into the heart of the organism. The falling contours allow pedestrian decks, Sheffield style, to take off from the crest and give access to quite tall buildings below them and above. Compactness is thus intensified. The veins of this beautiful organism are to fill with blood, pumped systematically from the heart, over a fifteen-year period. It will be noticed that once again description finds itself borrowing scientific metaphors—in this case biological instead of physical. This is a risky pastime. We are concerned with a building programme which will not reach finality in fifteen years, or perhaps ever. It should certainly be possible, over this initial development period, to control growth with no more departures from the master design than those which give vitality and variety to the fabric of a great cathedral. But will the monument then be what people want? This is the question that hangs over this deeply felt and imaginative concept. It would be ironical if the vaguely disposed campus universities were found in the long run, because of their very imprecision, to have a higher survival value.

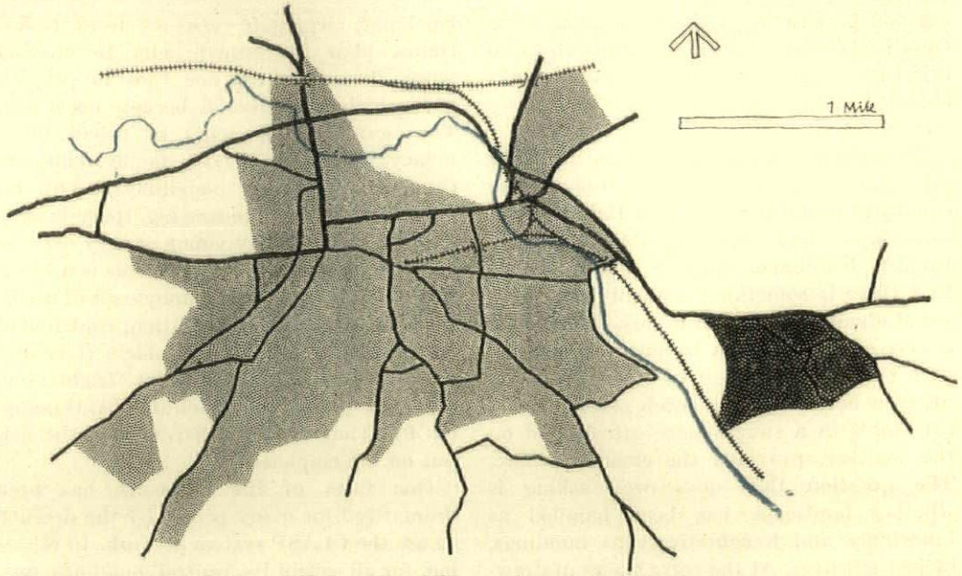
Essex and Kent

Two new universities, both in advanced stages of planning, remain: Essex (at Colchester) and Kent (at Canterbury). But at the time of writing details of the designs were not available for publication.* Only their sites are illustrated herewith in relation to the nearby city, as in the case of the three universities already discussed.

Essex will be in the beautiful landscape to which Professor Gombrich gave so much attention in *Art and Illusion*. At the heart of its 200 acres is a gently bending valley with a stream emerging from a lake and watering the finely timbered park. This is a true green belt university, and the only one of the five likely to remain so.

The Kent site is the converse of Sussex, a ridge instead of a valley and a geographically dominant relationship with a small (though growing) medieval city. The university concourse will look straight at the cathedral across a mile of suburbia and a quarter mile of the original city; its setting—good farm land with belts of trees, but no big house to help out. The nucleus of the university is in fact still homeless. The layout is still tentative, but it will be surprising if Kent does not exploit its chronological advantage to get the best of all worlds.

*It is hoped to illustrate and comment on the architects' preliminary design for Essex in next month's AR. *Editors.*



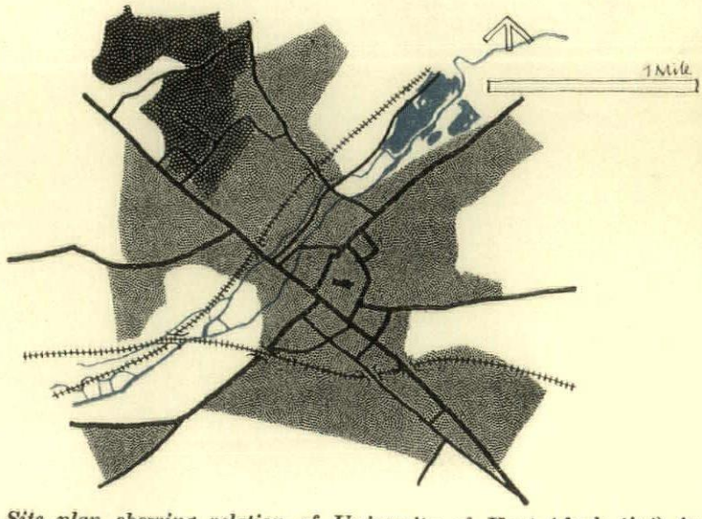
Site plan showing relation of University of Essex (dark tint) to Colchester.

Environmental

The line I have tried to draw between the diagrammatic and the environmental aspects of the new universities has already shown signs of breaking, which is not surprising as it is an abstraction alien to the unified nature of architecture and to the mental make-up of any architectural writer. Before finally crossing it, one should in fairness make one or two reservations.

The most obvious is that it is anomalous to appraise in similar terms the architectural character of one university that already has its most important buildings on the ground and of another that is nothing more at present than a preliminary outline development plan. Inadequate justice will be done to the one, and rash assumptions made about the other. The justification is that every line an architect puts on paper has environmental implications.

It should not, secondly, be inferred from what has been said about intensity of use or its opposite that any of these universities even approach American standards of scatter and sprawl. By those standards, all these layouts are compact and even miniature. The difference of approach between them is between those who believe they can define and control volumes, communications, park-



Site plan showing relation of University of Kent (dark tint) to Canterbury.

ing and growth in precise terms and those empiricists whose experience leads them to reject such rigidity as hubristic and unworkable. It is a familiar distinction in almost any human activity.

Theoretically there is no need to take sides. Back of these two approaches are two equally respectable sources, the Italo-German townscape and the eighteenth-century English landscape. Anyone who imagines that there is something draughty and anti-social about buildings in a park should take a look at Sussex on a summer's day, even with the few students it has: whether social life goes better under a beech clump or at a café table in a snug square can depend on the weather, provided the choice is there. The question that does need asking is whether landscape has been handled as knowingly and imaginatively as buildings, or just left over. At the early stages of drawing, buildings get a ruled line, landscape tends to be some 5B squiggles. But architects will always deny negligence and swear to the approved answer.

All the same, townscapers will find themselves reacting against the campus universities. Is not a university a kind of town, should it not be required to accept the conventional wisdom on town design? In one sense, of course, it is. It has to relate home and workplace and the traffic between the two, provide for the daily minutiæ and occasional drama of social intercourse, resolve the conflict between privacy and loneliness, segregate vehicles from pedestrians, plan for growth, etc. In another sense, it can be the one time in people's lives which is memorable because *not* urban. The normal components of urban life—money, rush-hour, school, family, children, competitiveness—are mercifully absent. Its population is the free-ranging, space-hungry element, not the very young or very old who look for a warm corner. So if this is a town, it's a special kind, with a unique set of needs. Each architect, in conversation, contributed a formulation. 'Rubbing shoulders' (Lasdun), 'Identify' (Derbyshire), 'Not frightening' (Spence), 'Memorable' (Holford), 'Anti-pomp' (ACP). They would differ not on the list, but on the emphasis.

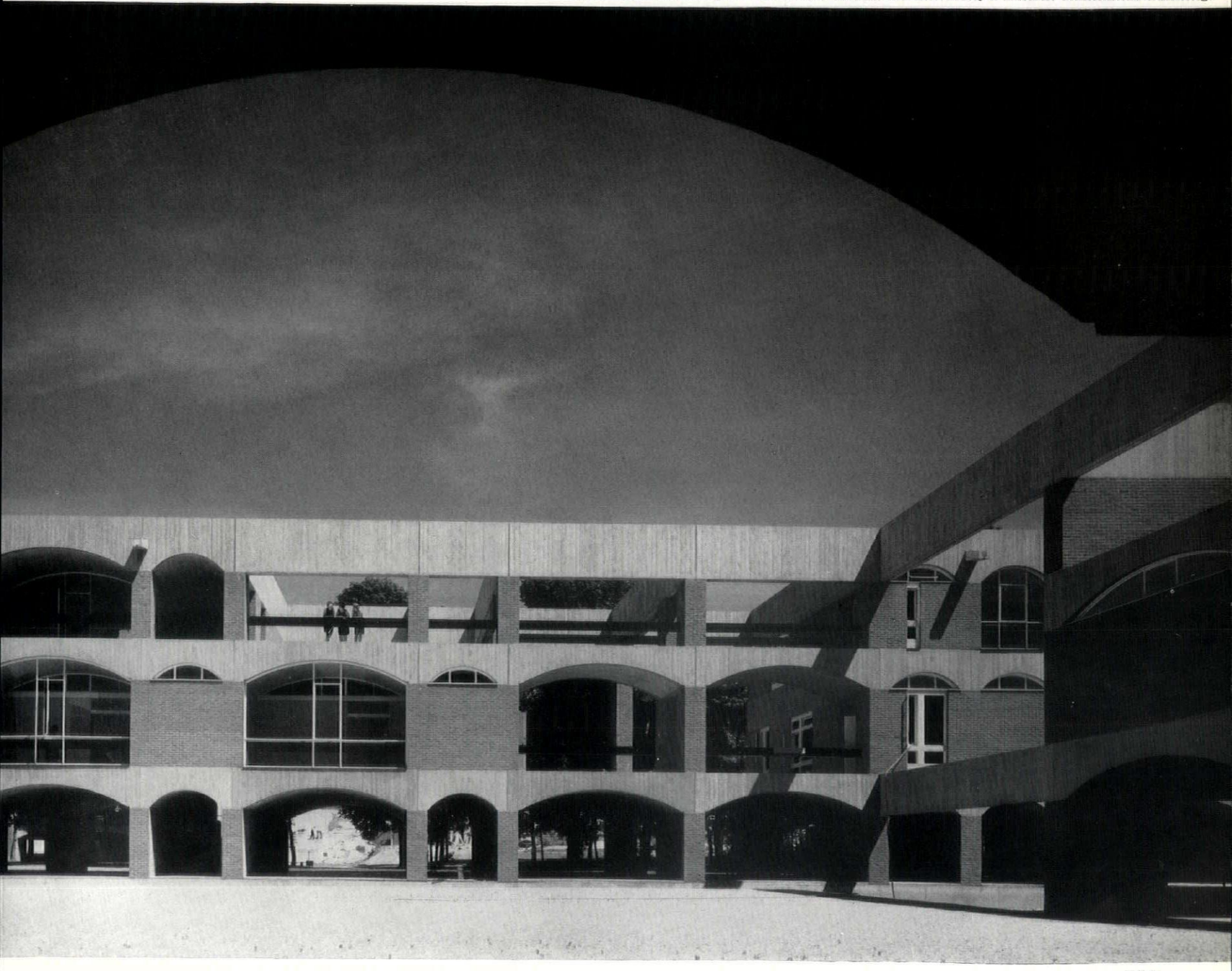
One facet of the difference has been dramatized for many people by the decision to use the CLASP system at York. In rejecting, for all except its 'central' buildings, one-off architecture, the architects implicitly reject the one-off emotional experience. The university is equated with the understated Georgian town, with its standardized terraces and occasional steeple or portico. At the other extreme is the Physics Building at Sussex, which is, like the rest of Basil Spence's domesticated Corbu-Colosseum, unquestionably memorable if 'not frightening'. In between, the rationalists (Essex and Kent) propose, I understand, industrialized systems for science blocks, traditional methods for residential and central buildings, arts a query. Out on his own, Lasdun has in mind for his great citadel a closed ad hoc structural system, a kit of parts available to any designer. These differences cut across the town-campus differences, thereby complicating and enhancing the satisfactorily confused scene.

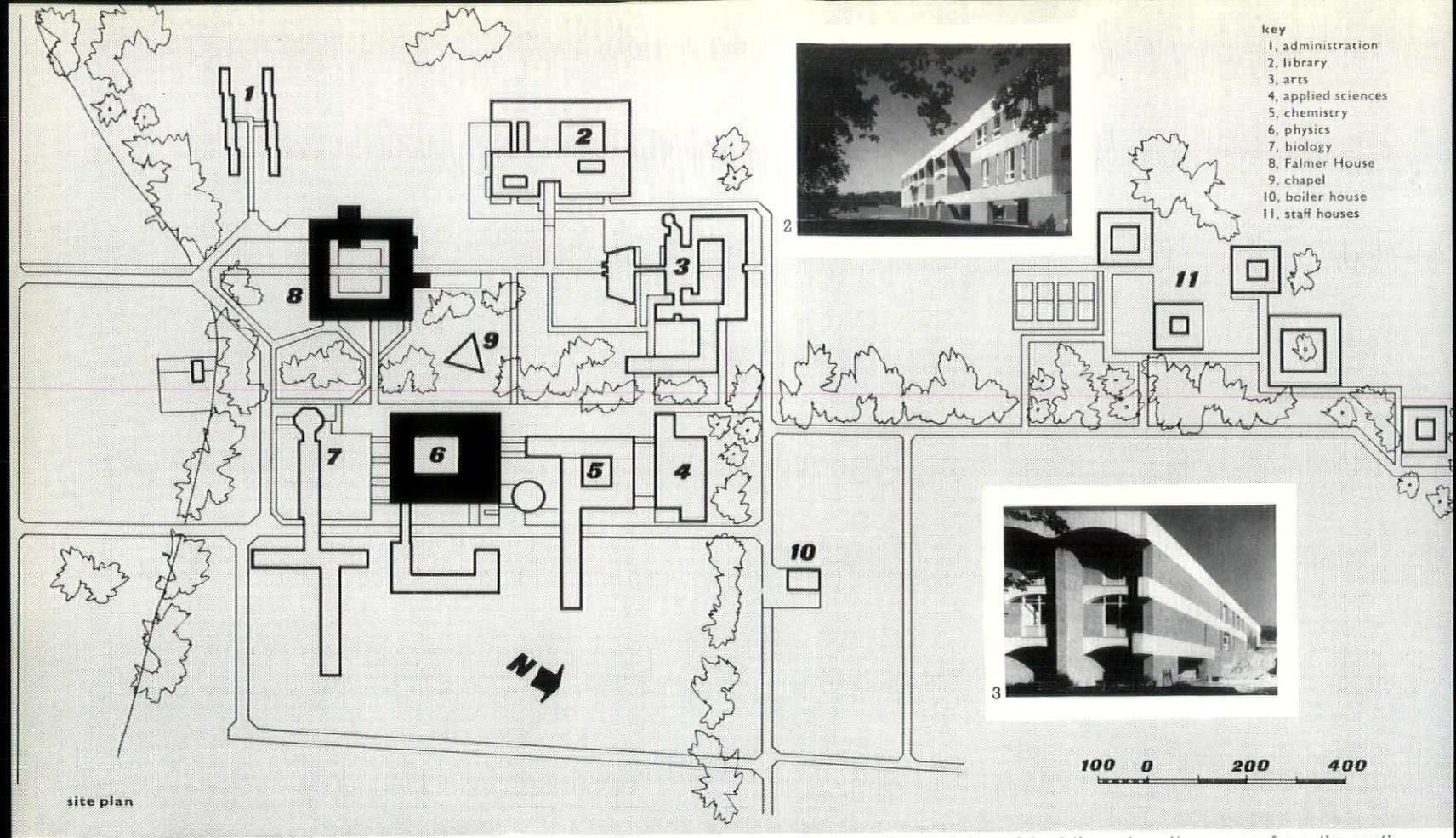
Coming down off his fence, the critic appends a verdict. There is no rationale except the aura of Oxbridge in this build-up of one's university years as something privileged, deserving more expensive architecture than one rates as a schoolboy or a young couple. We should applaud the UGC's determination to plod on in the footsteps of the MOE, undeterred by the catcalls of the architectural elite. If CLASP, or any other system, can save money by speed, without unacceptable environmental, functional or maintenance sacrifices, its low emotional voltage should not be held against it. These are admittedly relative terms, but all except the last can be evaluated. It follows that the concept of a university as a special kind of town, with the combination of ordinariness and uniqueness that that implies, is closer to its needs than the concept of an institution, however impressive or arcadian. But not necessarily a satellite town out on its own, islanded in parks and playing fields. The new university interpolated into a great city, or revitalizing a moribund small town, are still valid ideas waiting for re-interpretation. The great thing is that the idea of a university should not settle into a thought-proof groove.

architect: Sir Basil Spence

NIVERSITY OF SUSSEX: FALMER HOUSE AND PHYSICS BUILDING

1, the internal courtyard at Falmer House, the university's central communal building.





2

3

2, Falmer House from the east. 3, the physics building from the west. 4, model of the university campus from the south. In the plan above, the two finished buildings are shown black.

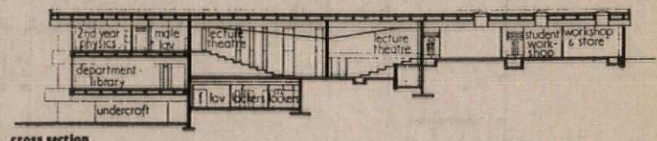
UNIVERSITY OF SUSSEX: PHYSICS BUILDING

The University of Sussex, at Falmer, a few miles outside Brighton, is the first of the new generation of British universities to be founded, and is the most advanced in building, having two major structures completed on the site, while few of the others have yet turned their first sod. The site, a valley among substantial trees and rolling hills, was felt to be unsuitable for towers, and the predominant tendency of the architecture is horizontal, large rectangular blocks around their own internal courtyards, grouped to form larger courts, their pink brick and exposed concrete structures being glimpsed among the greenery of the trees.

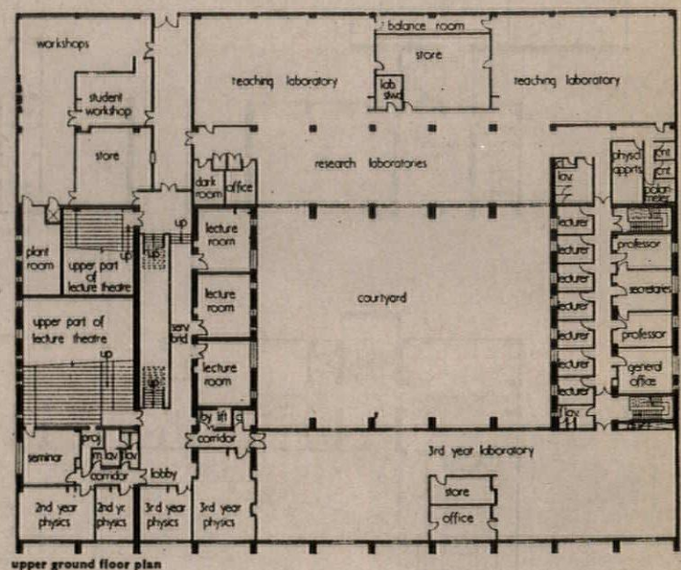
In this first phase, the entrance courtyard is that enclosed by Falmer House, the social focus of the university, with refectories, common rooms, games rooms, etc. The second courtyard is enclosed by a number of separate buildings, including Falmer House itself, the physics building, which is also complete, and by the arts, chemistry and applied sciences buildings, and the library. All this area is restricted to pedestrian circulation, but is enclosed by the first loop of service roads, which gives access to car parks distributed casually under trees, the aim being to make the cars invisible from the pedestrian precinct. A main services duct also serves the ring of buildings around this Great Court.

All the buildings in this first phase are to use a structural system that depends on pre-cast concrete vaults, columns, beams and floor-slabs, produced in the casting yard that has been set up on the site. Concrete foundations are poured in-situ, and the pre-cast columns that are set up on them have dowel joints and can only accept vertical loads, lateral stability being given by the brickwork. Main beams and edge beams span forty feet between these columns, and support secondary beams which, in their turn, carry timber or pre-cast concrete floors. Where necessary, these secondary beams become hangers for the curved pre-cast concrete vaults, and are monolithic with them. There are three basic standard sizes for these vaults, spanning ten, fifteen or twenty feet, and curved gable beams are used to close the vault-ends. Where necessary to support heavy loads or special structures such as staircases, the system is varied to include elements poured in-situ as required. Surfaces of concrete work are smooth for the vaults, which are cast in steel moulds, and rough for vertical surfaces which are cast in sawn plank moulds. Brick is the other main material, with some special surfaces faced in knapped flints in pre-cast panels. Copper is used on some roofs, and window frames are in steel where windows are arch-topped, and generally in painted soft-wood for square-headed openings.

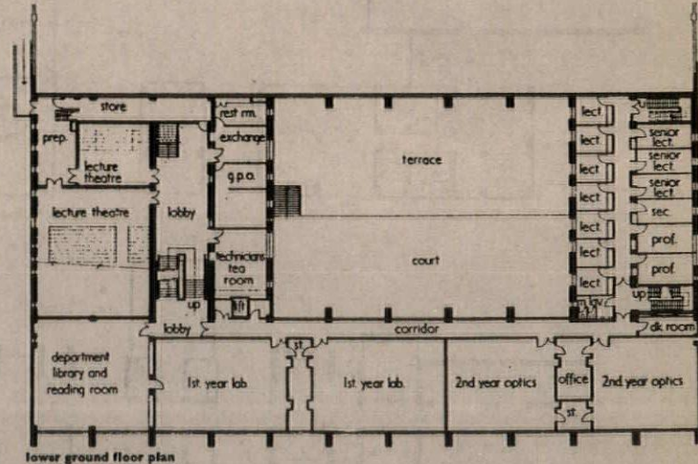
Falmer House is the first building to be encountered when entering the university and serves as an introduction to the rest in more than one sense. Most conspicuously it introduces the theme of vault-and-column structure in a very varied way, beginning with an entrance arch thirty-six feet high. The entrance path continues through the courtyard and out the other side into the Great Court, but within the rectangle of Falmer House, it is separated from the buildings by a moat running round the inside of the quadrangle. Students' rooms, refectory, etc., are reached by a staircase rising from an entrance hall by the inner gate of the court, and are planned as a sequence of intercommunicating



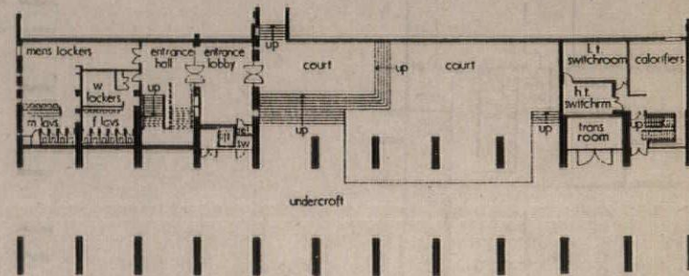
cross section



upper ground floor plan



lower ground floor plan

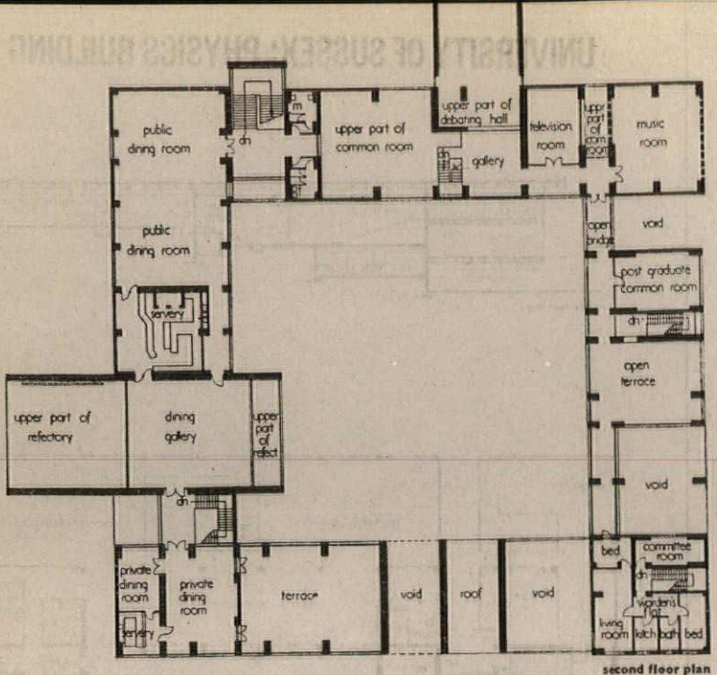


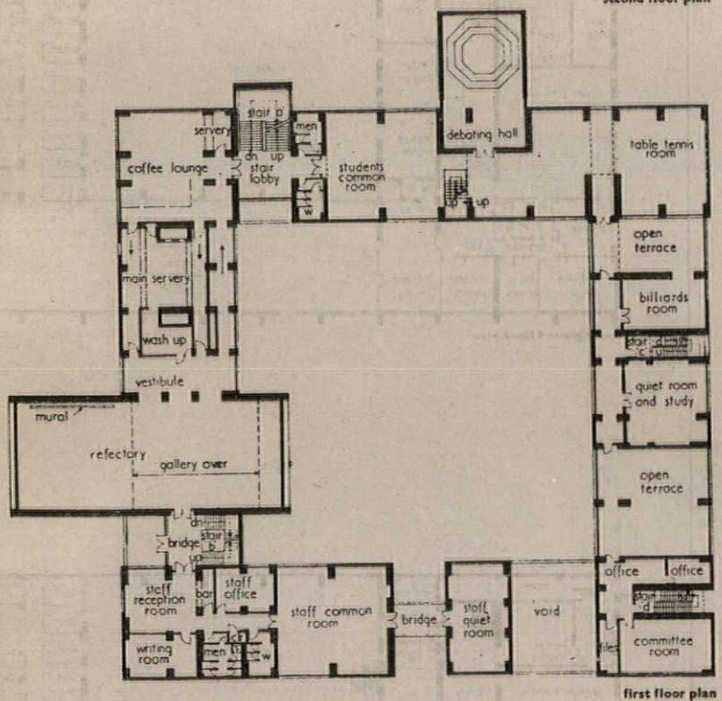
undercroft plan, physics building (scale 1/64 in: 1ft)

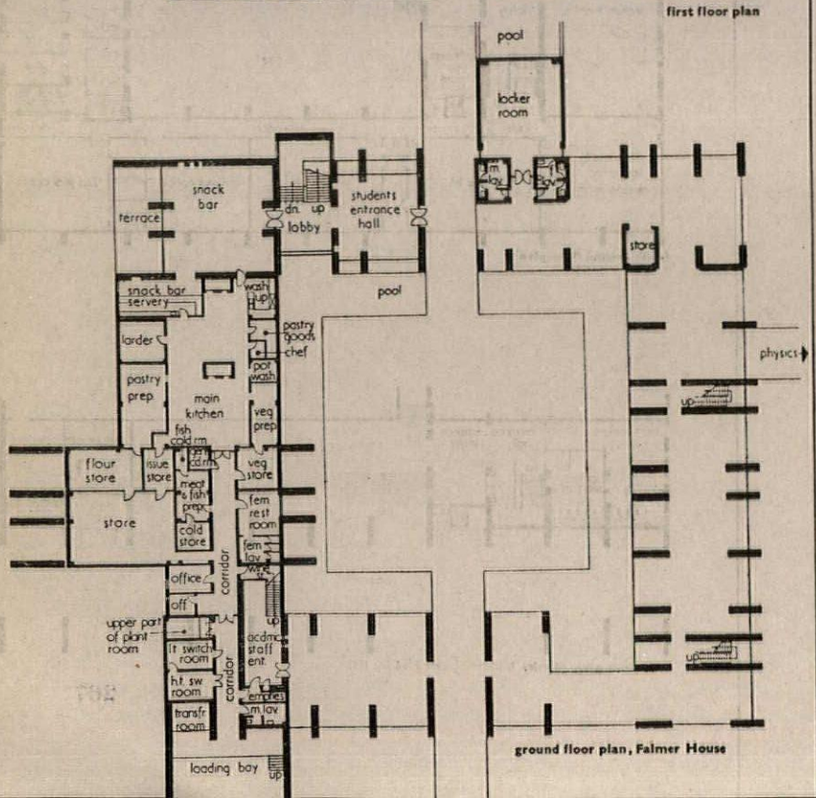
spaces, rather than rooms served by corridors, and all on upper floors, the ground floor consisting (apart from a student snack-bar) chiefly of undercrofts and kitchens, stores and workspaces. The refectory can accommodate three hundred students at a sitting, with provision for academic staff on an upper balcony, but there are other and smaller dining spaces for both students and staff on other floors. The debating hall with its octagonal speakers' pit rises through two floors, with a gallery opening from the upper level of the common room. Flooring in the upper storeys is of hardwood strip, structural walls of fairface brick, non-structural partitions of plasterboard on studding. Room for later expansion is provided by various unroofed and unwalled spaces that function at present as open terraces.

The physics building (plans overleaf) is the first teaching block to reach completion, and its design had to be put in hand under the common disability of all such buildings in new universities: the detailed intentions of the professor could not be known because he had not been appointed, yet the building had to be ready for him to move into soon after appointment. The initial functional breakdown had therefore to be simple: entrance hall, lecture rooms, etc., on the north side; teaching laboratories and tutorial rooms on the west; workshops and research on the east and staff offices on the south. The structural grid of twenty-foot square vaulted bays is arranged with the main beams running parallel with the fall of the slope, which is sufficiently steep to give an entrance undercroft beneath the main working floor, while the middle fall of the site gives the added height under the main roof needed for lecture theatres. The teaching laboratories are on the three-storey side of the block, while the workshops and research spaces are on the single-storey side. This is the side on which future extensions are intended to take place, new accommodation being built beyond the service road and service duct, but linked to the present buildings by a pedestrian bridge.

Associate architect, Gordon Collins. Senior assistants, Francis MacKenzie, Nigel Grimwade. Structural engineers, Ove Arup and Partners. Services engineers, Steensen, Varming and Mulcahy. Quantity surveyors, Reynolds and Young.



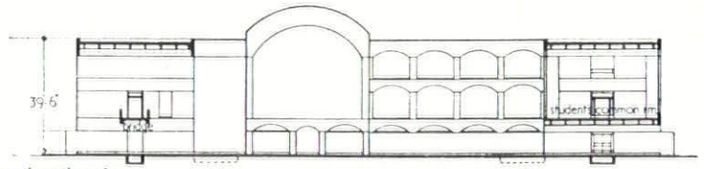




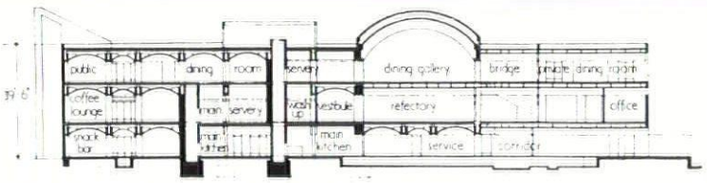
UNIVERSITY OF SUSSEX: FALMER HOUSE

5 (facing page), looking out of the internal courtyard under the 36 ft. high arch on the south-east side. The first floor on the right is the staff common room, with an open-air terrace above.



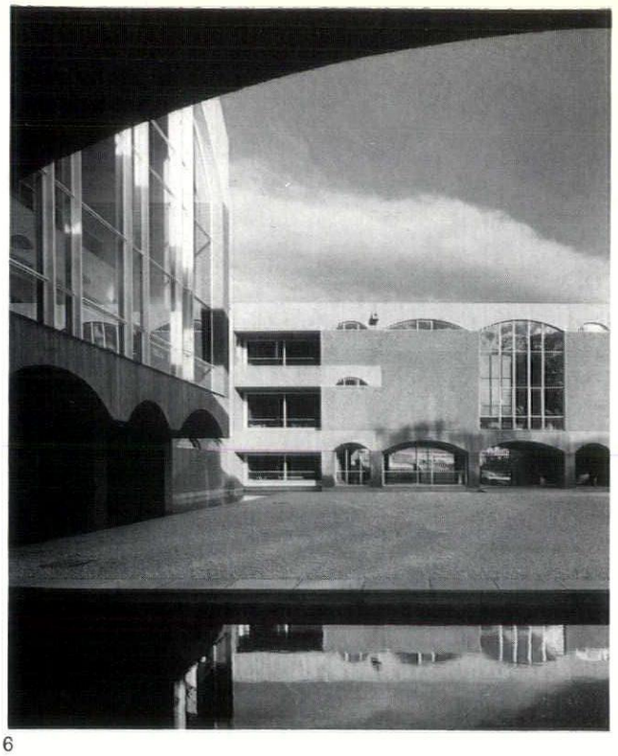


south-north section



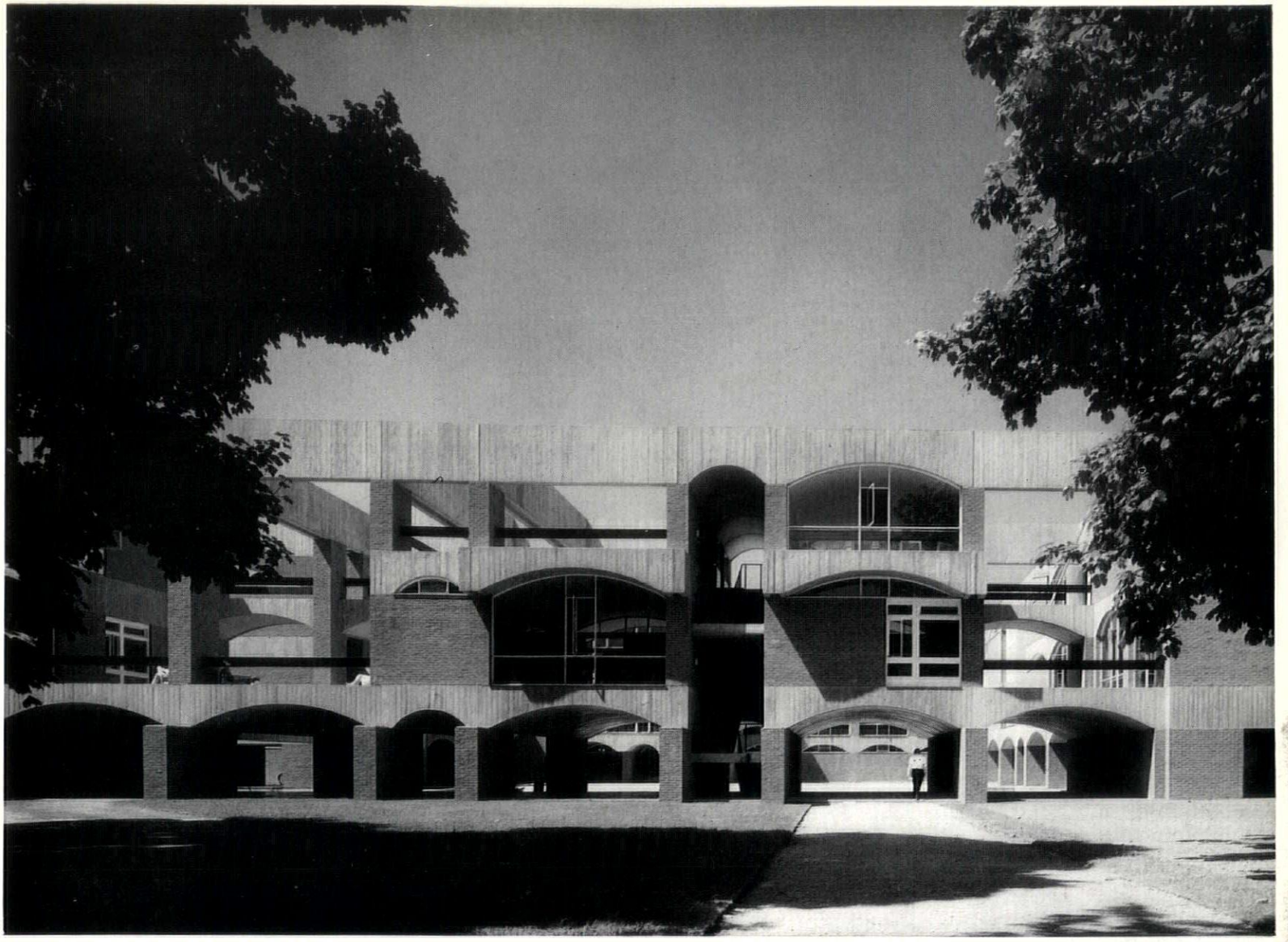
north-south section

6, looking north-west inside the internal courtyard of Falmer House, with the refectory on the left. 7, the refectory seen from the east, with the entrance arch on the left.



6

7



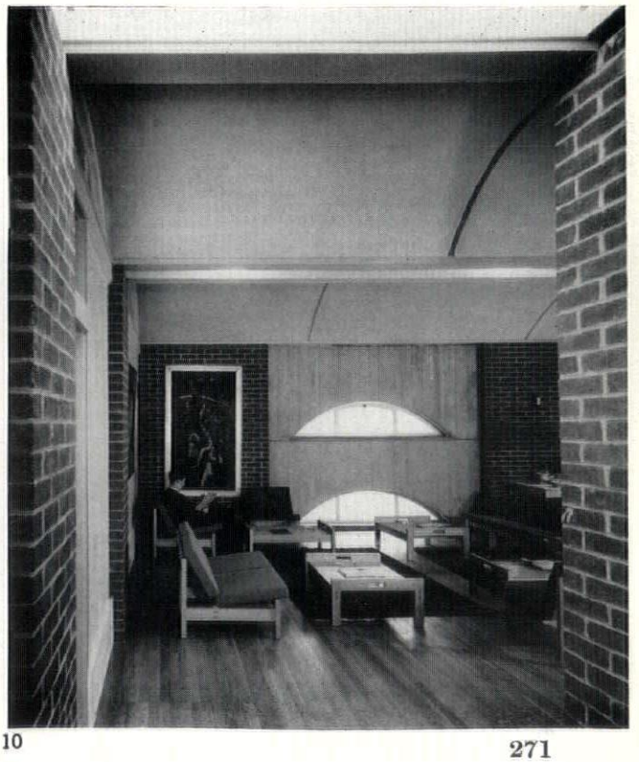
8

UNIVERSITY OF SUSSEX: FALMER HOUSE

8, the west elevation of Falmer House. 9, the gallery at first-floor level in the refectory. 10, the senior common room reception area on the first floor.



9



10

11

FALMER HOUSE



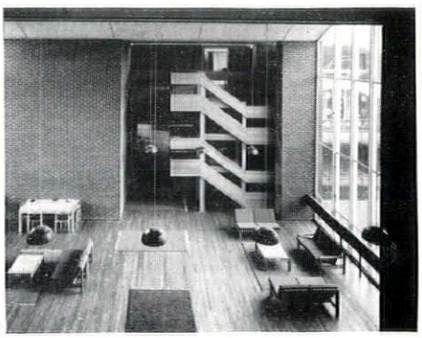
12

11, the debating hall which rises through two floors. The ceiling is of Western Red Cedar and the floor is White American Oak; in the cavity behind the perforated brickwork is acoustic quilting. 12, the refectory; the painting is by Ivon Hitchens.



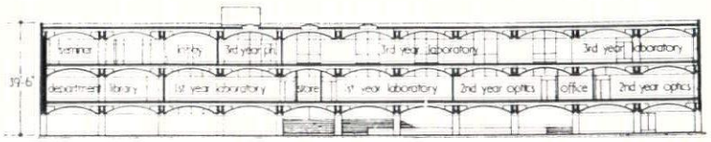
13

13, the main staircase in the north wing. 14 the wooden staircase which leads from the students' common room to the gallery of the debating hall. 15, general view of the common room.



15

14

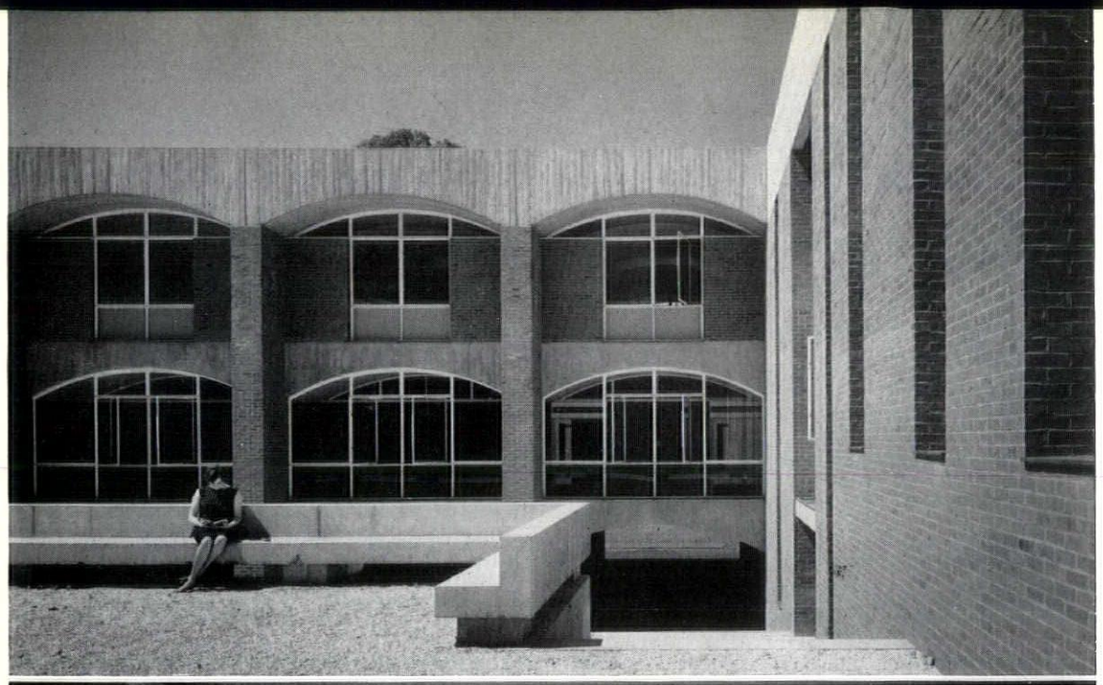


long section through physics building

UNIVERSITY OF SUSSEX: PHYSICS BUILDING

16, the physics building from the west: the open undercroft allows for the fall of the site.

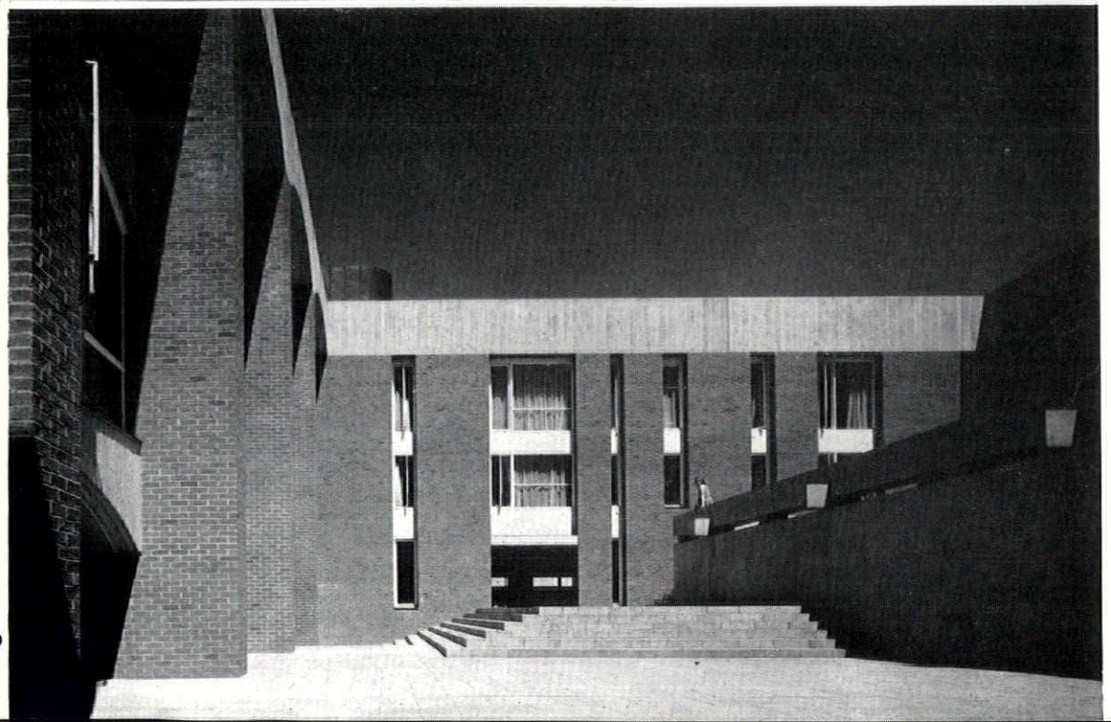
UNIVERSITY OF SUSSEX: PHYSICS BUILDING



17



18



19

17, the west wing of the physics building from the terrace.

18, the library on the lower ground floor in the west wing.

19, looking north inside the courtyard with the terrace on the right.

photographs by Henk Snoek

UNIVERSITY PREVIEW

As the pace of university building increases, the variety of building types increases and the range of solutions widens within each type. The extensions and additions to existing universities and colleges which are illustrated on the following eight pages are at various stages between project-approval and completion at the time of going to press, and give some idea of the uninhibited nature of the university buildings that will be completed in Britain in the next few years.

ST. ANTONY'S COLLEGE, OXFORD: DEVELOPMENT PLAN

architects: Howell, Killick, Partridge and Amis

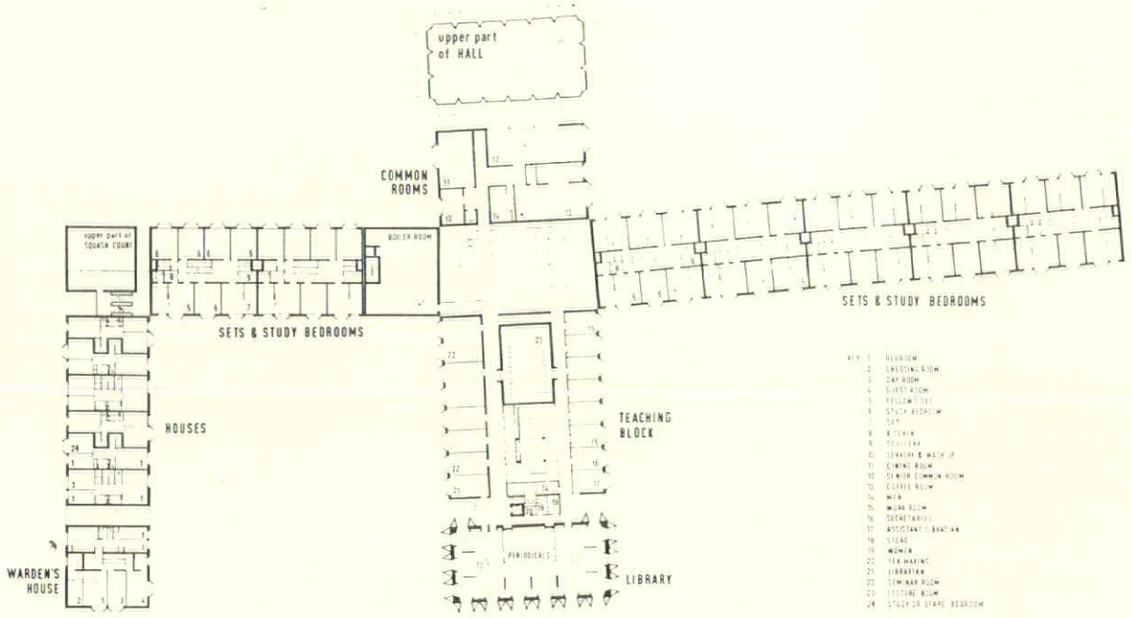
Few projects could better illustrate the spirit of adventure unlimited that seems to be sweeping out traditional academic caution in British university architecture, than the massively sculptural forms proposed for the library and hall of St. Antony's, Oxford. Their justification in this instance, is that the library is a unique facility of St. Antony's and will stand hard up to the Woodstock Road, marking the public entrance to the teaching block behind and the rest of the college beyond. The raising of the library on two-storey high columns creates an entrance-portico underneath it, and also accommodates the porter's lodge.

In spite of the formality of this, the College's public face, the overall planning is informal and for good reason: the College at present inhabits existing Victorian buildings on the site, and building will have to begin on unbuilt areas so that no accommodation is lost at any stage in the redevelopment. As a further aid to operational flexibility during the rebuilding period, the scheme has been so devised that rebuilding can take place in almost any order, beginning with any part.

The main parts of the layout (see plan over page) are: the south residential block, with sixty sets, fifteen study-bedrooms, fifteen Fellows' sets, four guest rooms and five scouts' rooms, grouped around five staircases, each with a teaching room at ground-floor level. At the northern end of this



From the Woodstock Road, library and entrance at right



St. Antony's College, Oxford

continued

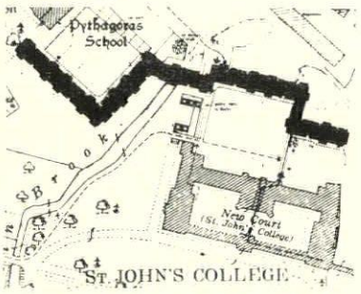
block are two wings, the westerly containing the main teaching areas and the libraries, with college offices under, and top lit lecture halls in the centre of the block. The easterly wing contains common rooms, dining rooms and the hall, whose external treatment balances that of the library. The hall itself stands at first floor level and is thirty feet high, with indirect daylighting.

North of these cross wings there will ultimately be an L-shaped block of mixed residential accommodation which should also contain a sick bay and squash court, and terminate in a house for the Warden by the Woodstock Road.

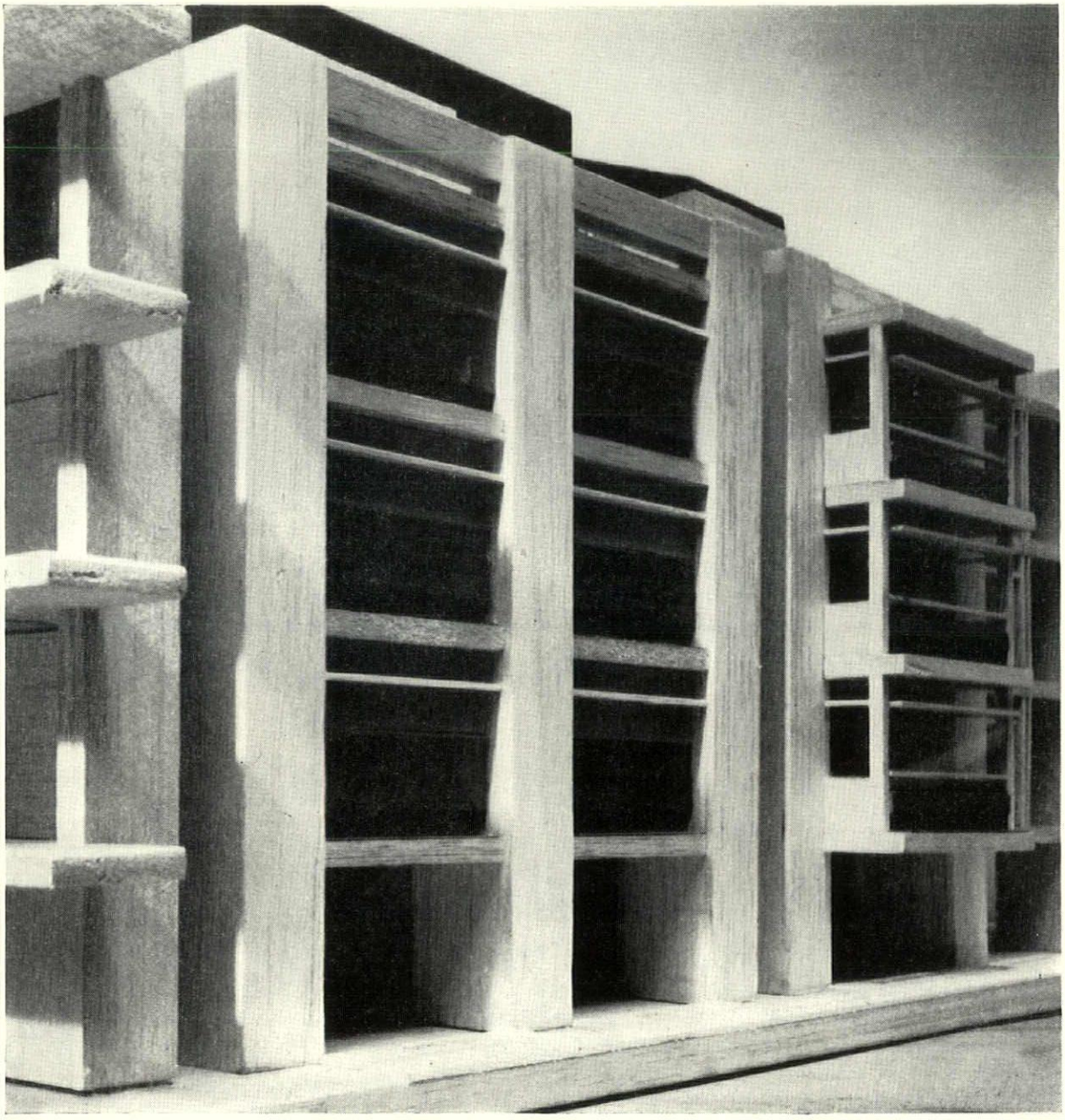
ST. JOHN'S COLLEGE, CAMBRIDGE: NEW RESIDENTIAL BUILDINGS

architects: Powell and Moya

A classic case of collegiate infill, on a less exactingly diminutive site than the same architects' notable work at Oxford, but deeply entangled with sacred greenery, famous views, the river and sundry other features of Cambridge that rebuilders are always enjoined to spare. Only a very bold scheme could be considered under such circumstances, and the architects have therefore continued the St. John's tradition of leap-frogging over water. Where New Court took St. John's to the far bank of the Cam, the newest work is to start on the same bank, straddle the Bin Brook, and connect with the School of Pythagoras and Merton Hall.



The building is to take the form of a lengthy four-storey articulated block which, while never containing courtyards itself, gives the effect of courtyards by its confrontations with other buildings, and thus continues the pattern of sequential courts established in the older parts of the college. The articulation of the plan with its numerous changes of direction com-



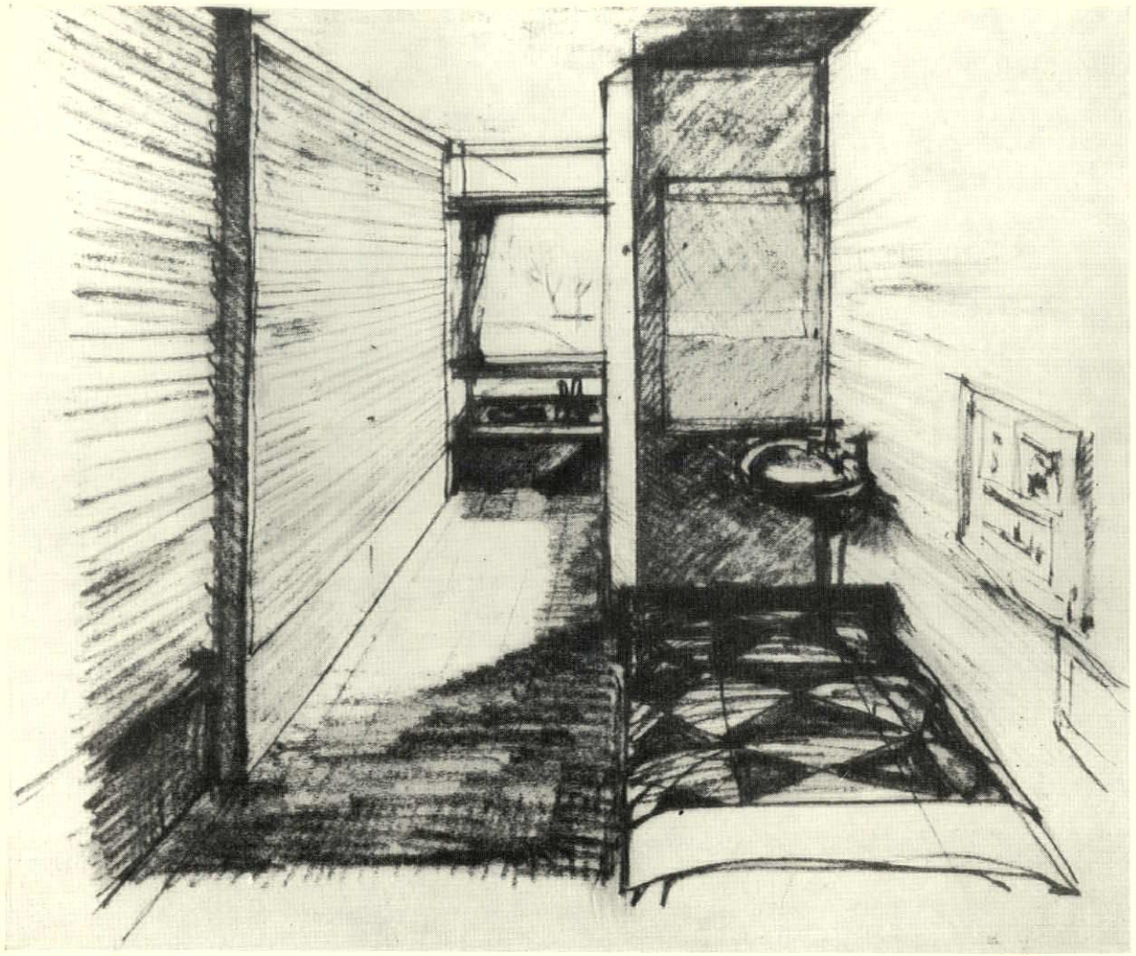
Model of typical structural bays

St. John's College, Cambridge

continued

bines with, and exploits, an irregular roof-line to give, first, a suitably broken silhouette such as seems to be essential for assimilation into the existing townscape and, secondly, a greater variety of types and orientations of accommodation than might have been possible with simple slabs under a continuous roof-line. This varied accommodation comprises 124 two-room sets (of two different basic plans), twelve rooftop studio sets, fifty-five bed-sitting rooms, and eight Fellows' sets of two different basic plans. Six sets and two bed-sitters are served from each staircase-landing.

The external articulation of this schedule of accommodation is strong and simple, consisting of powerful masonry-faced piers (containing ductwork) in Portland stone, and exposed bush-hammered concrete floor-slab edges, sills, transomes and mullions. The alternation of flat-faced and projecting bays follows naturally from the symmetrical clustering of the different room types round the stairs, but is frequently interrupted by changes of direction and is therefore never seen as a merely repetitive system—a solution which gives the picturesque total effect many recent university projects on both sides of the Atlantic have sought, but not at the cost of logic and habitability in the disposition of the living quarters.

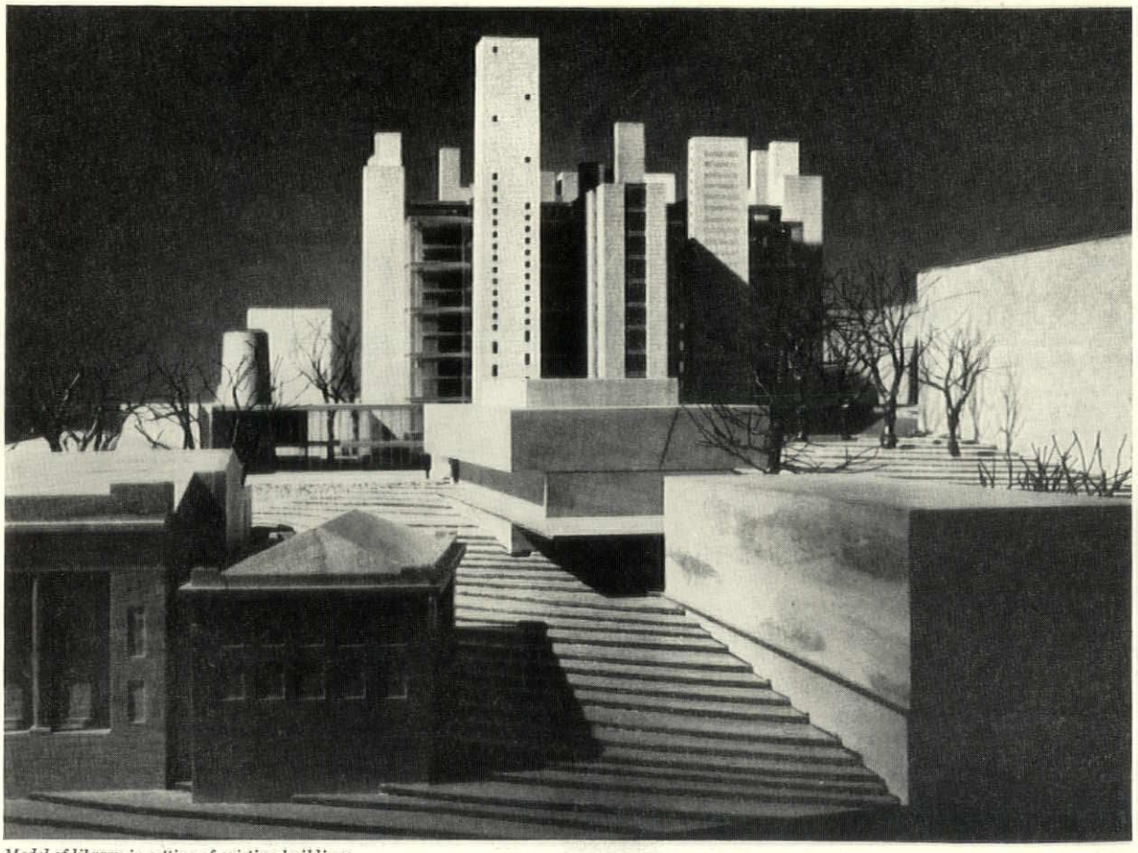


Perspective of through-plan set

UNIVERSITY OF GLASGOW: NEW LIBRARY AND ART GALLERY

architect: William Whitfield

Gilbert Scott's original buildings for Glasgow University, the subject of some controversy at the time of their design, now form, incontrovertibly, the setting with which this library group has to accommodate itself. The hilltop site rules out self-effacing solutions, and the design must therefore become the dominant—particularly in silhouette—of both the old work and the new developments that are to follow, without losing sympathy with the old. The Kahn-like solution of blank-walled service towers (less programmatically disposed than at Philadelphia) clustering around the library floors, is self-justifying in this circumstance—the towers provide strong vertical emphasis on the flanks of the building without requiring great height, while the irregular levels at which they terminate give the kind of outline that the site demands, particularly in views from those parts of Glasgow which see the university as a skyline feature. The art galleries, clustering around the foot of the library, will be a more private contribution to the interior townscape of the university.



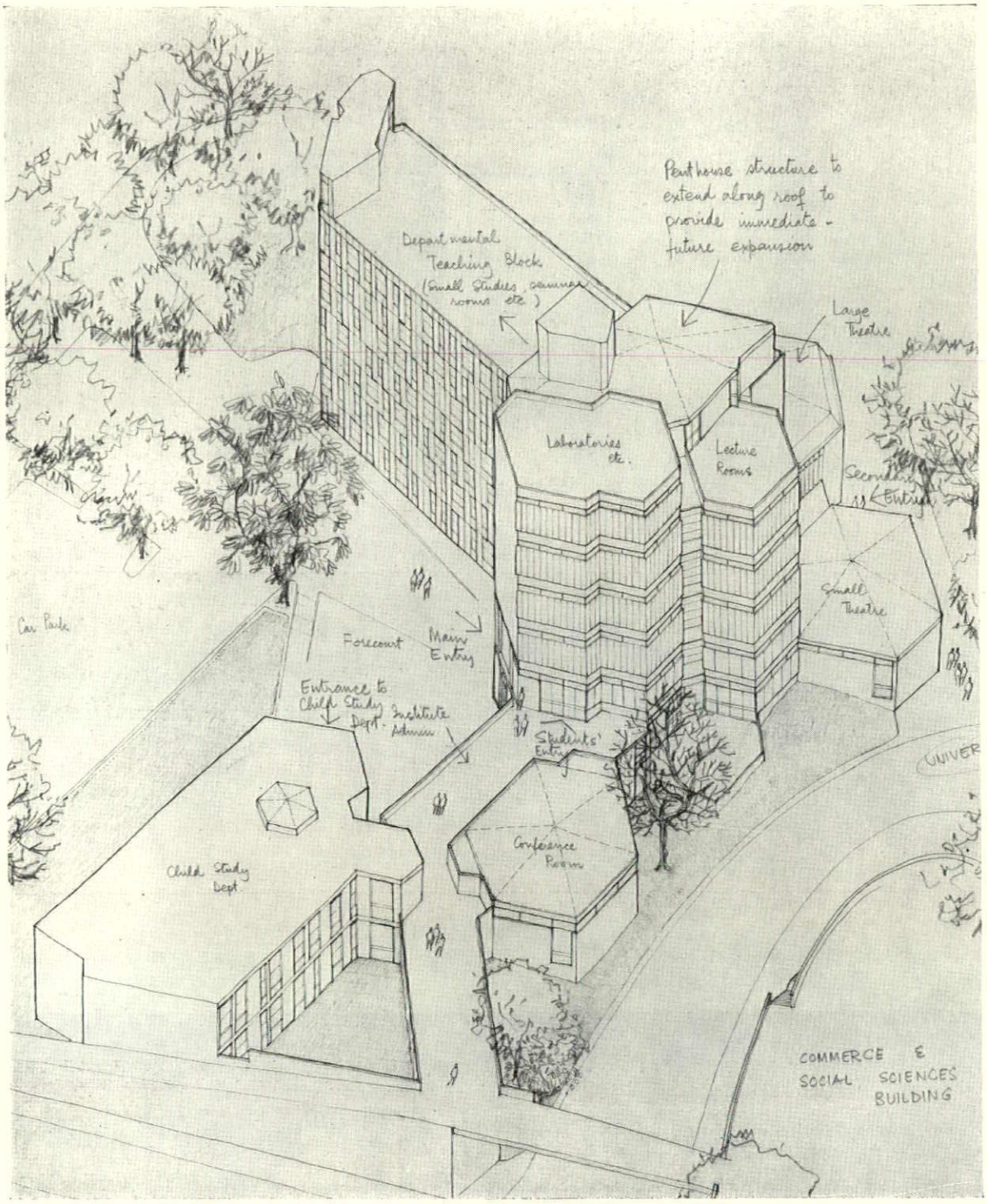
Model of library in setting of existing buildings

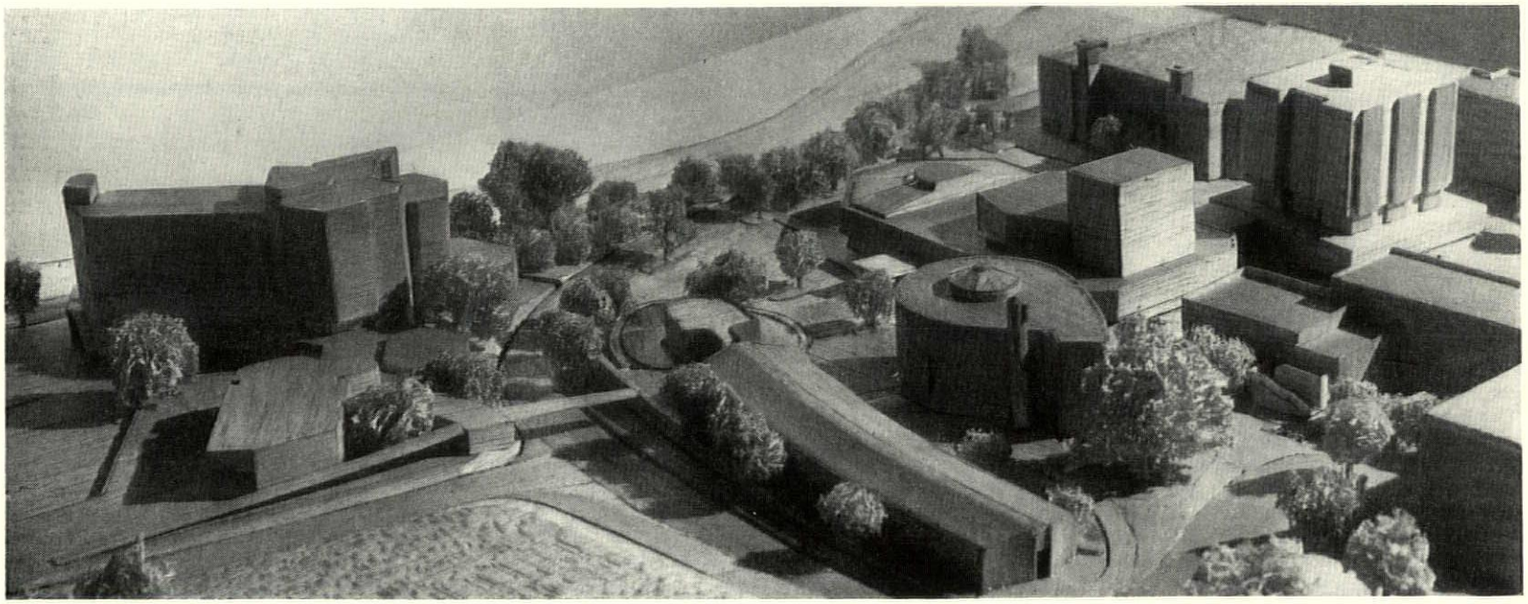
BIRMINGHAM UNIVERSITY: DEPARTMENT OF EDUCATION, INSTITUTE OF EDUCATION

architects: Sir Hugh Casson, Neville Conder and Partners

In the University of Birmingham the Department of Education and the Institute have a tradition of close association that makes them practically a single organization, so that a single large building complex was appropriate. The result is a cluster of work-spaces arranged in polygonal blocks up to seven storeys in height, located on the eastern boundary of the Academic Site area, and reached by a footbridge over the university road, opposite the proposed Commerce and Social Science buildings (centre foreground in the model below).

The footbridge enters over the administration link-block with the child study department on one side and the conference room on the other. Public access to the conference room and the two lecture theatres, however, is at ground level from a forecourt on the side away from the university. The laboratories and small lecture rooms of the departmental teaching block rise above this main entrance hall, and the smaller studies and tutors' rooms form the tall wing that flanks the forecourt. As far as the teaching life of the university is concerned it is this departmental teaching block that is the main focus of interest and the footbridge therefore serves it directly, but the child study department is to have a separate entrance from the forecourt, which follows logically from its deliberate separation from the rest of the buildings, out of deference to its highly specialized functions in clinical psychiatric work with younger children.





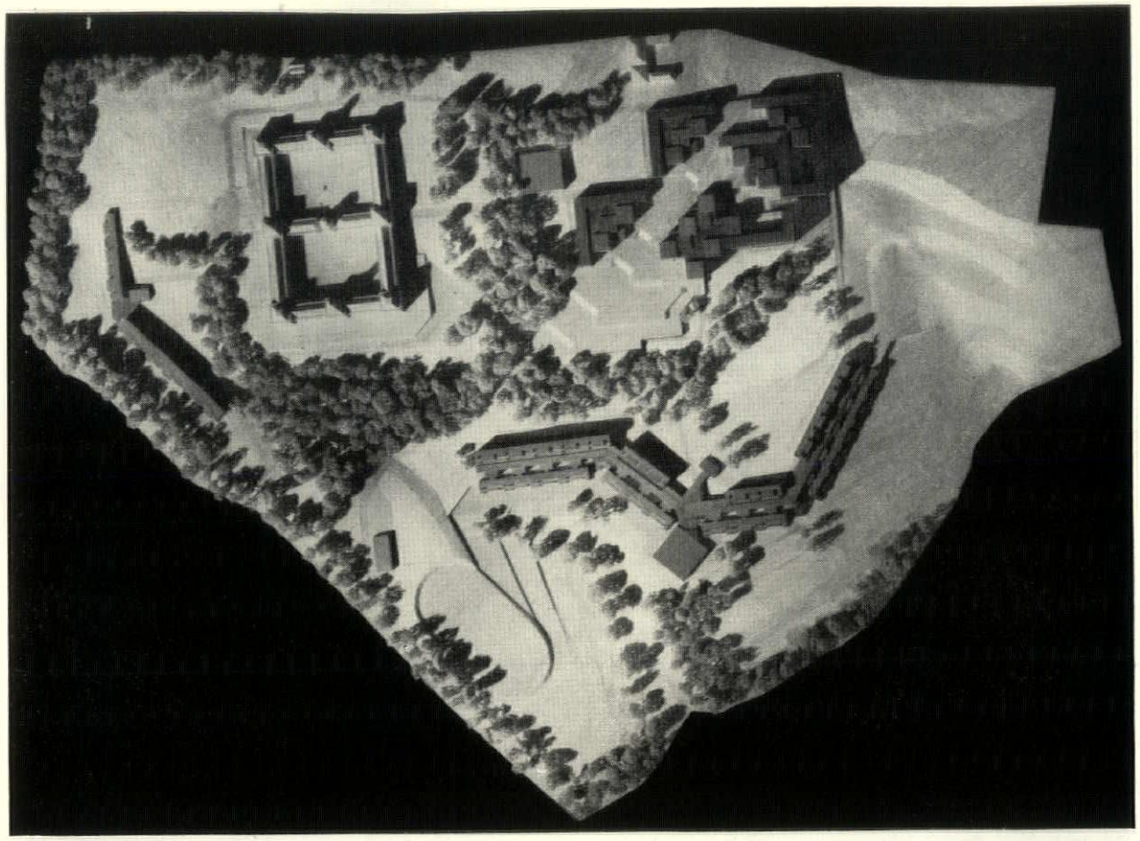
Model, showing education building (right) in relation to eastern part of University

ROYAL HOLLOWAY COLLEGE, LONDON: RESIDENTIAL AND FACULTY BUILDINGS

architects: Sir Leslie Martin and C. A. St. J. Wilson

Although still waiting for orders to proceed with building, this large and comprehensive scheme was designed two or three years ago now, but retains its interest because it is widely regarded as the ancestor of several architectural solutions currently in favour for university work, notably the use of the staggered section for residential blocks, and their disposition in long linear configurations bent in plan to exploit the contours or to give some sense of enclosure without having recourse to formal courts and squares.

In this site model, the old collegiate buildings are clearly recognized by their turrets and double quad plan, the new teaching accommodation is clustered around an extension of the old building's cross axis to the right, and the new residential work in two loops, lower right, and to the left of the old buildings. As will be seen, this is a major redevelopment project, rather than an infill or extension.



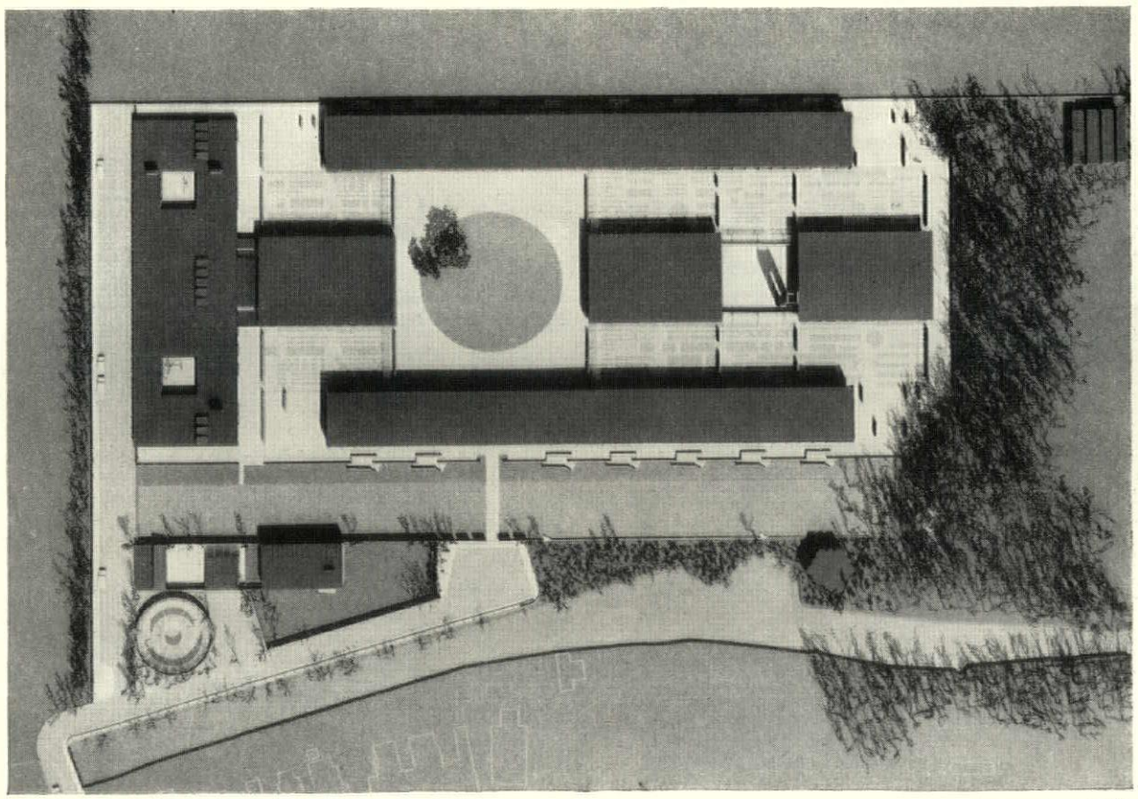
Model of complete site as redeveloped

ST. CATHERINE'S COLLEGE, OXFORD

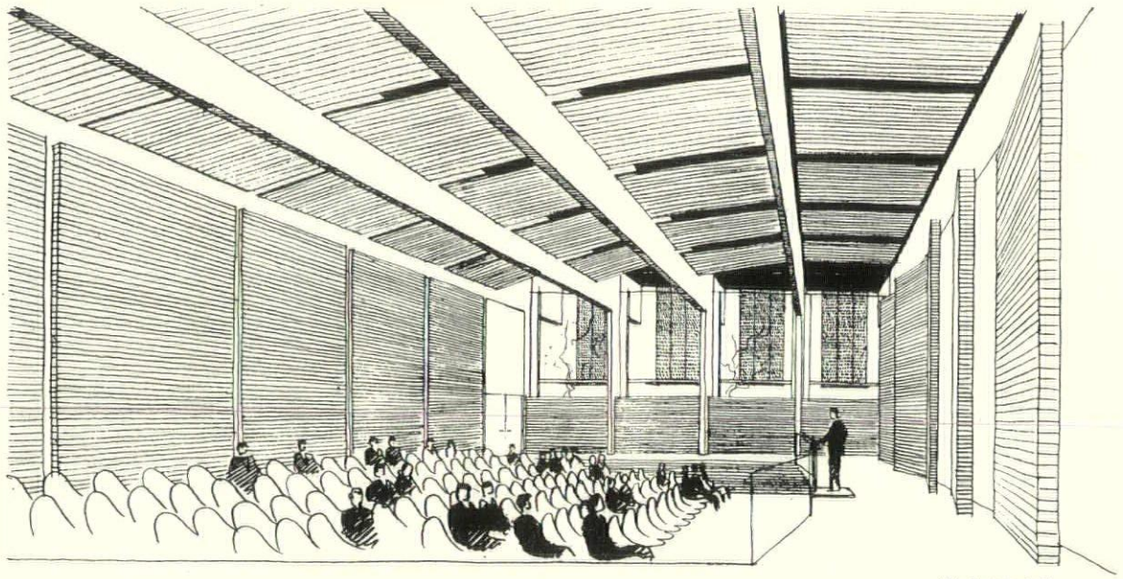
architect: Arne Jacobsen

Due for completion in the near future, St. Catherine's has been, at various times, the most controversial of recent university building projects, less for its architecture than for the appointment of a foreign architect to design it. Jacobsen's highly international style, however, is less likely to appear exotic in the Oxford scene than that of some British architects who may be building there in the coming decade, and the simplicity and directness of the plan is likely to go on recommending itself to English common sense long after the fuss over its Danish designer has died away.

As the plan appears at the right, the two long residential blocks, accommodating a total of 400 men, lie across the picture, with the dining room, library and lecture hall (in that order, from the left) between them, and the common-room block lying across axis at the left. Ancillary structures lying between the river



Plan view of model

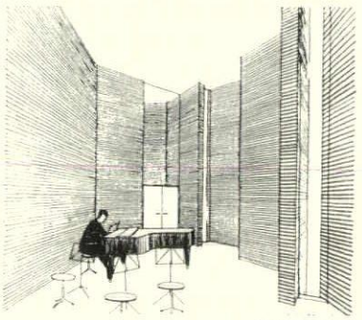


The lecture hall

St. Catherine's College, Oxford

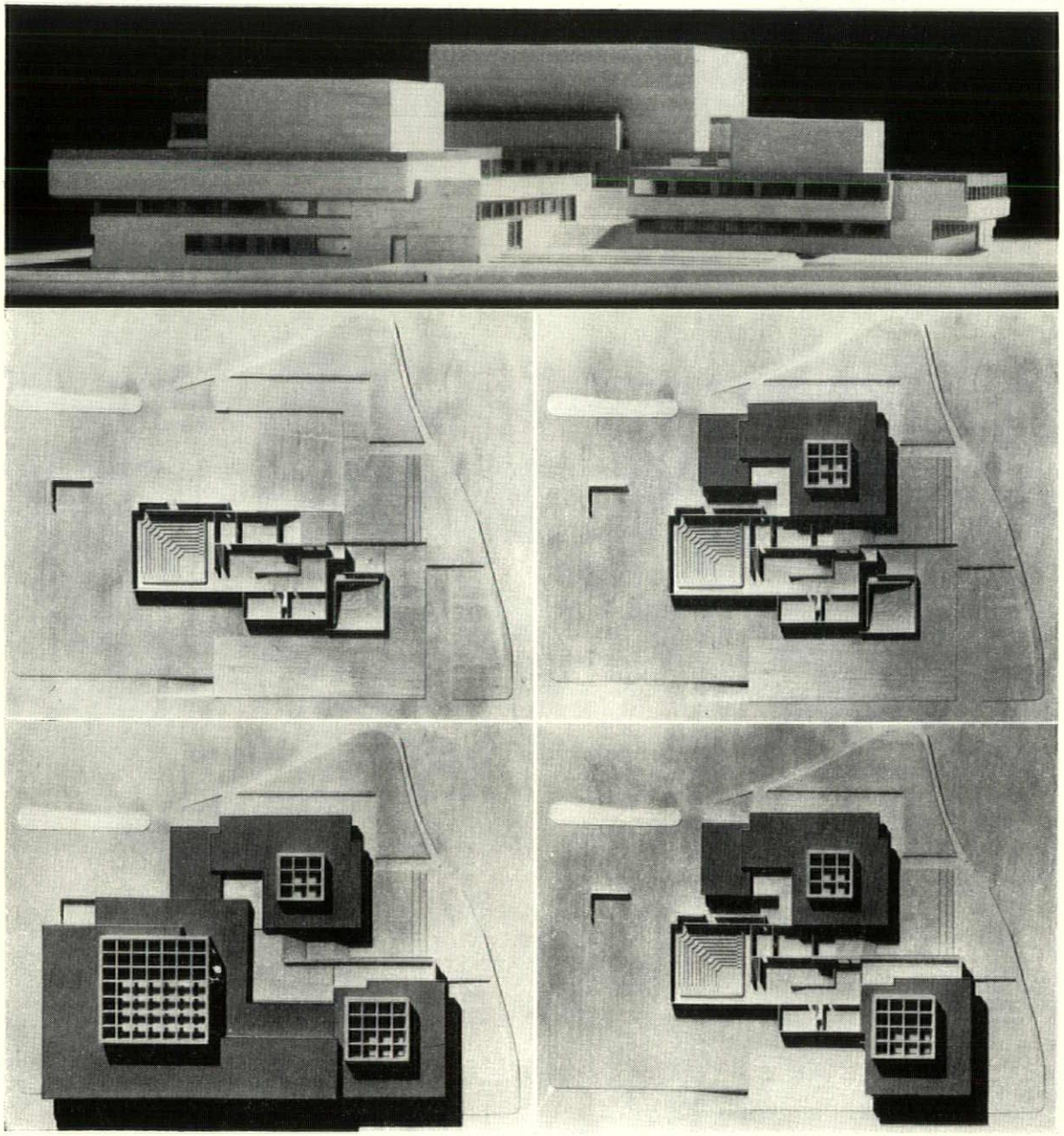
continued

and the moat along the side of the western residential block, include a house for the master and a polygonal building for music practice. Construction largely in brick and exposed concrete, but with bronze accents in the hall, library and lecture room.



A music room

The complete group, from the entrance side



Development of the plan, clockwise from top left

UNIVERSITY OF OXFORD: LIBRARY GROUP

architects: Sir Leslie Martin and C. A. St. J. Wilson

Located between St. Cross Road and Manor Road, an elaborately terraced cluster of interlocked buildings amply provided with monumental flights of steps connecting the open terraces, this multi-faculty complex epitomizes some of the most intellectualized concepts current in British university design today. First, that communal and basic facilities shall form a common base to more specialized structures—the shared accommodation used by all three faculties (lecture halls, etc.) is buried under the rest of the building at lower ground floor level. Secondly, a spiral hierarchy of growth—though here the sequence of increments is not concerned with a phased building programme (as at Fitzwilliam House, page 281) but with the relationship of differently sized institutions. Reading the illustrations at the left clockwise from the lower ground floor plan (top left) these institutions are: the Institute of Statistics, the Faculty of English, the Law Faculty. The additive sequence of the size of the top-lights (3 by 3 squares, 4 by 4 and 7 by 7) that appears in the model derives from the given space requirements of the programme, rather than a mathematical game, but may well survive into the built version because of the third basic intellectual concept built into the scheme: that circulation and structure and working environment should be indivisible and visually self-explanatory, as demonstrated in Michael Brawne's article on libraries in AR, October, 1961.

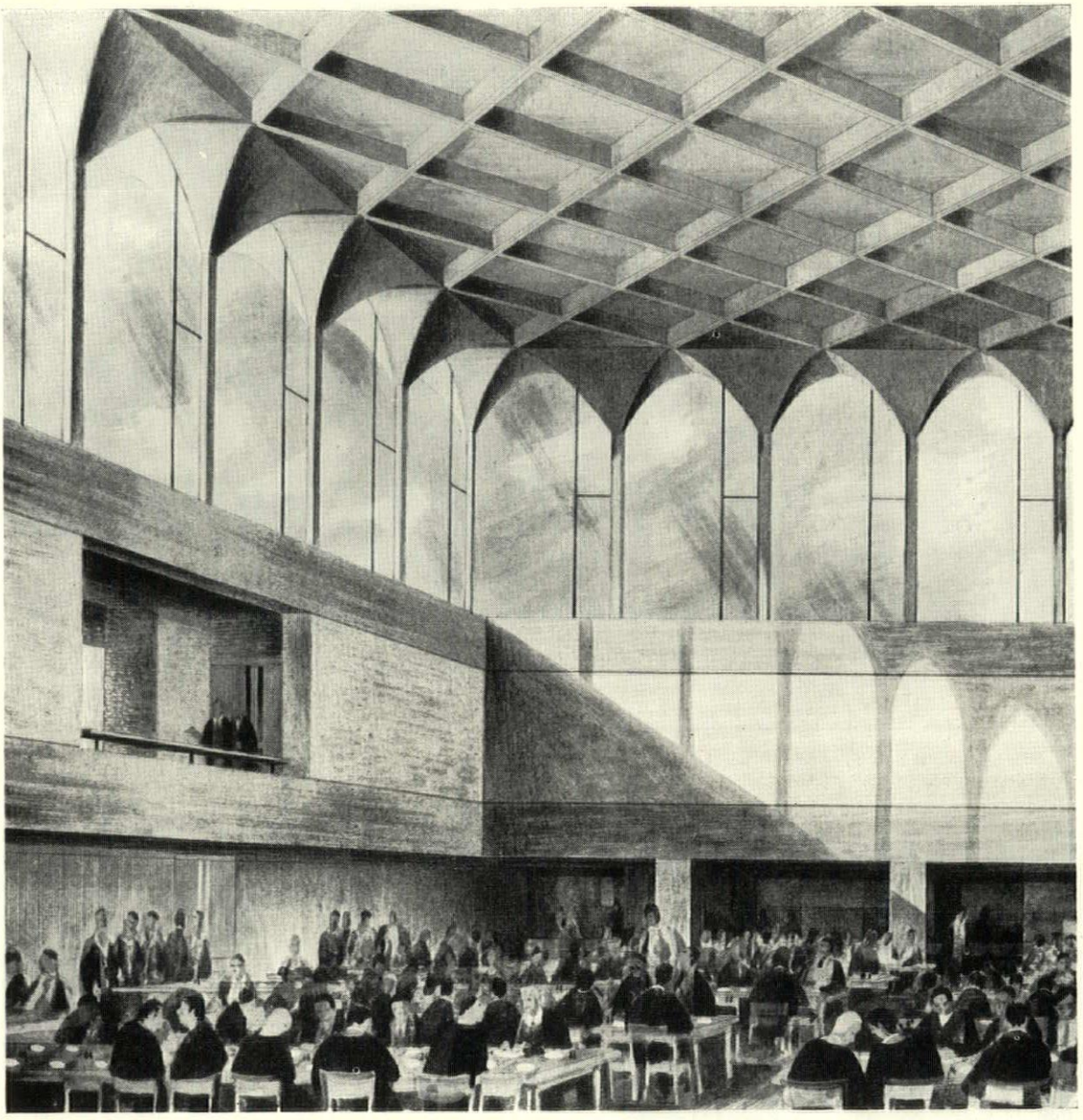
UNIVERSITY OF CAMBRIDGE: FITZWILLIAM HOUSE

architects: Denys Lasdun and Partners

The classic among spiral growth-plans in recent British university design, Fitzwilliam House is something of an anomaly among university institutions—a residential house without collegiate status in a dominantly collegiate university. However, it seems likely that this anomalous position will have been tidied up before the present plan has advanced very far, and Fitzwilliam will be a college before the spiral plan has had a chance to close back on itself.

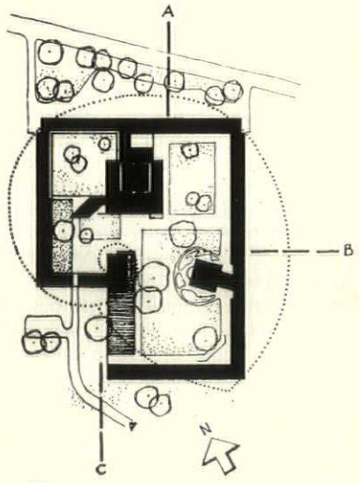
The phases of the construction are shown below, identified in order as a, b and c, and it will be noted that the corporate elements of the plan such as the hall, library and so forth, while they all lie (literally) within the first phase since they will be necessary from the very beginning, will still be in a significant and comprehensible relation to the rest of the scheme when the second and third phases are built. Indeed, the third phase, by effectively closing the large court, will somewhat enhance their positions as organic focusing points for the whole plan.

The hall, properly for an institution with collegiate ambitions, is the primary point of focus, but contrary to the collegiate tradition of two-room sets, the accommodation conforms to what is fast becoming the national norm of 120-square-foot study bedrooms, which will eventually house some 350 resident undergraduates. The problem of securing good sound insulation between study bedrooms within the limits of an economical structure, has been resolved by using load-bearing nine-inch brick cross-walls, and a low maintenance exterior has been achieved through the use of fairface brick, copper roofing and varnished timber window-frames.



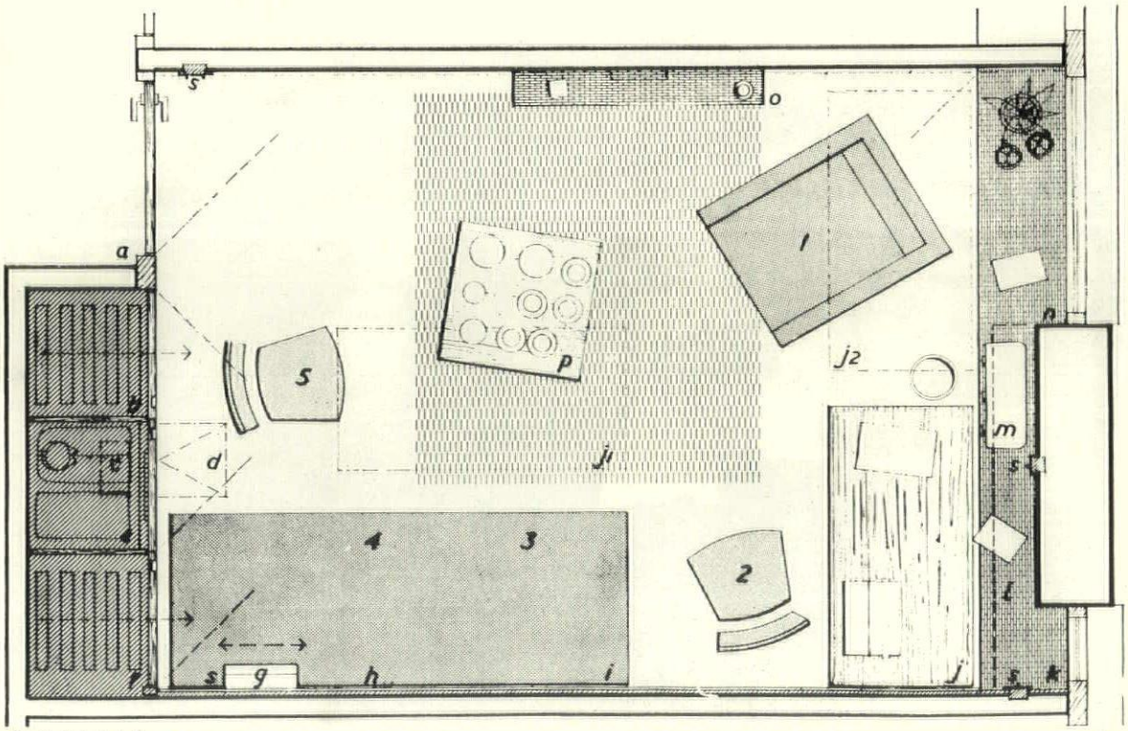
Part of the main hall

Phases of the growth-plan

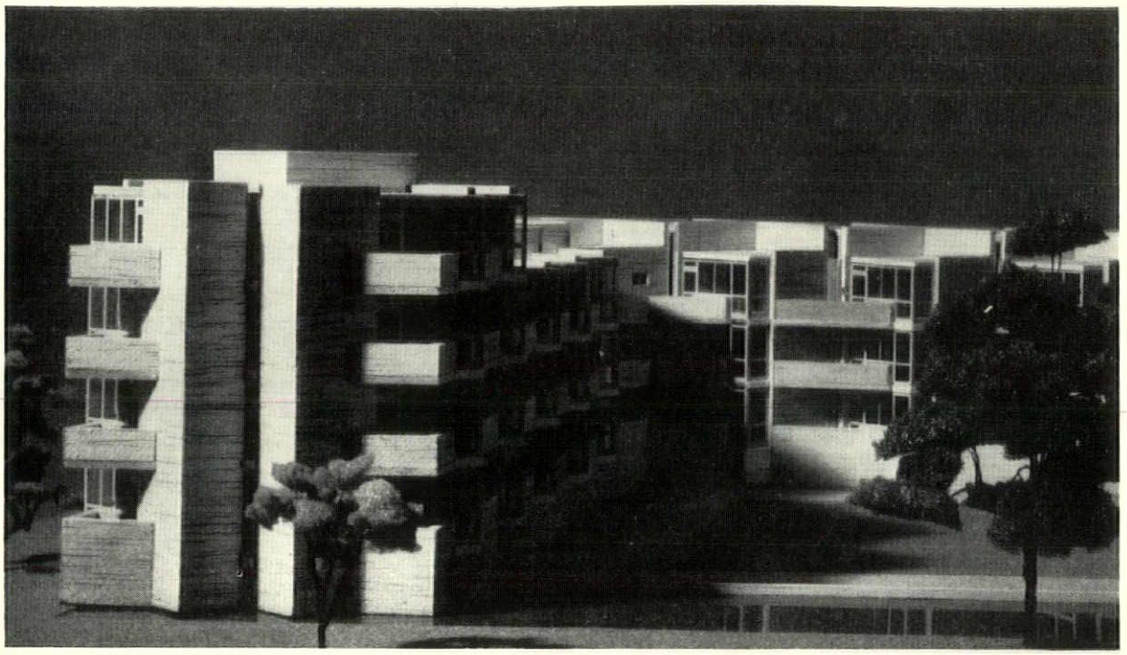


key

a, lobby
b, wardrobe
c, electricity meter in cupboard at low level
d, hinged flap over meter cupboard: when lowered, forms bedside table with recess
e, wardrobe cupboard over meter cupboard
f, cupboard
g, bedside light
h, pin-up panel of fibrous board
i, divan bed
j, work table (1) (2) alternative positions for work table
k, small window at low level
l, terrazzo window ledge
m, place for radio set
n, main window, shelving for large books and periodicals
o, mantel shelf over electric fire
p, occasional table
s, lighting switches



Typical study bedroom



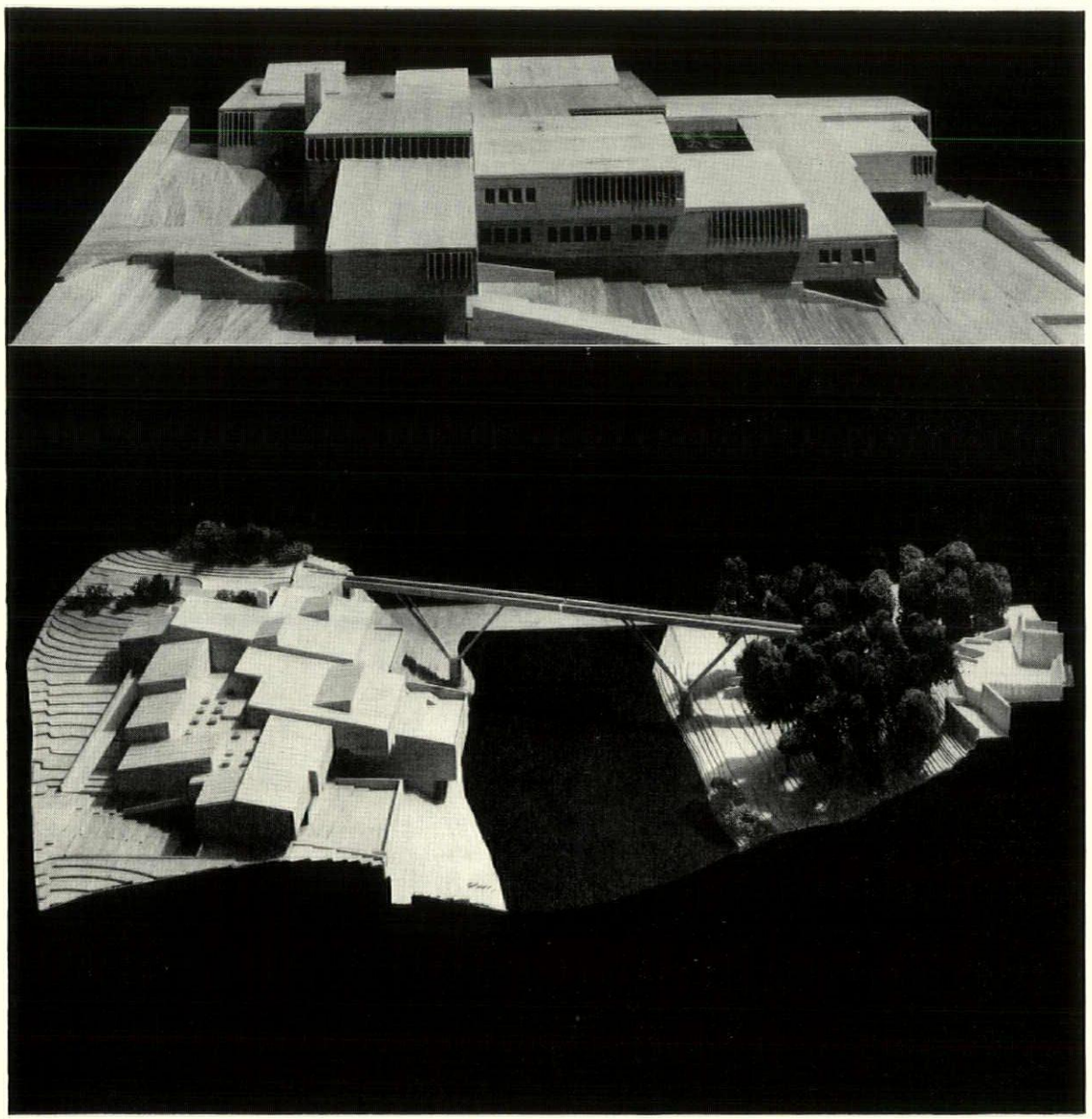
Phase two and part of phase one

JESUS COLLEGE, CAMBRIDGE: RESIDENTIAL EXTENSION

architect: David Roberts

A two-phased extension lying at the end of the Waterhouse wing, but notable primarily for its arrangement of the sets at forty-five degrees to the run of the block—hence the triangular projection of the balconies and upper windows and the apparent twin-stairs at the ends, which are, in fact, the exposed corners of a stack of rooms, the stairs always rising through clusters of four sets in the centre of the block. The diagonal disposition of the rooms also ensures that no two sets have a common partition between them, but meet corner to corner. The total accommodation of the complete scheme will house seventy-three undergraduates on seven staircases, with a sick-bay and two sets for resident Fellows. Construction (now under way) is in load-bearing brick with *in situ* concrete floor-slabs.

Model views, the lower showing the site and new bridge



UNIVERSITY OF DURHAM: DUNELM HOUSE

architects: Architects Co-Partnership

On one of the most exciting and difficult sites that have come up in recent university building, facing Durham Cathedral across the river Wear, and connected to the cathedral bank of the river by a bridge that is one of the most original designs produced, so far, by the office of Ove Arup (who is also the engineer for Dunelm House). Because of the site (which adjoins a public garden as well as the river) the buildings have been kept low, which is not always easy when serving staff and student-club functions that will need large volumes for cafeterias, etc., but the fall of the land makes excavations and terracing necessary in two directions, and this enables the building to step down the slope and present a low, domestic exterior on the landward side. The pitch of the roofs is standardized throughout the building, and no services or equipment break the roofline, due to ingenious use of the terraced section.

Construction is in concrete, using locally produced foamed slag, and partly in-situ, partly pre-cast, including pre-cast roof slabs sixteen feet long by two inches thick—a sample structure has been mocked-up on site, for investigation. Internal finishes will be simple and as found, chiefly exposed concrete and quarry tiles, with pivoted, rather than hinged, doors and windows. The flat part of the roof will probably be planted with a herb lawn, since it can be overlooked from a number of points.

The Universal University

A Leap into the Future

The Editors

The schemes and projects, plans and propositions discussed in this special issue, so far, reveal an unprecedented condition of expansion for the British University System, as we may now properly begin to term it. A scattering of ancient institutions, each *sui generis* and incapable of comparison in detail with any other institution in the country—not even their daughter colleges which grew to university status in the last century—are being submerged in a large-scale provision of educational facilities that is already within sight of the achievement of one university to every two administrative counties. It is recognized that this is a major educational convulsion, and symptoms of alarm at threatened standards, of attempts to regain lost prestige, and of growing pains generally, are as common as cut-throat competition for the services of first-class staff.

But this is only a major convulsion by the close and comfortable standards of the accepted concept of a university. By the standards of the country at large, it is a storm in a port-glass. By comparison with the national effort that made universal literacy available in the nineteenth century, the present efforts to extend the availability of university education are derisory, a standing reproach to every post-war government that has claimed to possess an 'educational policy.' In fairness to ourselves as people, and to those sizable sections of the human race that still look to us for leadership of one sort or another, we must extend the universality of the word *university*, and make it mean an education that is available to all men. Nothing less is tolerable in the name of democracy and the right of every man to realize his own full potentials; nothing less than universal university education is acceptable in the name of national survival and the full exploitation of the talent available; nothing less is practicable in the present complexity of public business and the depressed condition of public life; nothing less can unfumble the wasted benefits of the painfully bloodless revolution that has occupied British society since 1910.

To satisfy this minimum universal requirement of a university education for all, would clearly be an operation of a totally different order to that which has been discussed so far in this issue or even what may be proposed in the Robbins report. Even the most revolutionary of the projects illustrated, the most advanced constructional techniques discussed, would be inadequate for a programme of such scope. They might well have a part to play, and lessons to impart, but they could only form a fraction of the total effort which would, of necessity, have to be revolutionary in content and methods. Revolutionary because time would be a critical function of an operation like this—at some stage in the progress from legislation and realization, there would have to be a mighty leap forward in order to avoid demoralization. From legislation to accomplishment in a programme of this size might take a century by conventional university-building techniques; the politics would go sour, the administrators would go out of their minds, the waiting millions would become apathetic or violent. Somewhere, early in the proceedings, there would have to be a colossal and sudden increase in the number of workable university places avail-

able, and this could only be achieved by planning and building techniques unthinkable under present university conditions, based on fundamental and original rethinking of what a university is and how it educates.

Desert island disciplines

The past has left us many allegories of university education, some of which—like Palladio's Olympic Academy—actually came to exist in reality. Attractive though they may be as pastoral visions, they belong to a world that saw higher education as the privilege of an élite, the badge of prescriptive command. Allegories of the higher education of a democracy are few and, where convincing, are not pretty, though for this reason it is the more necessary to face them. Thus, William Golding's brilliant novel *The Lord of the Flies* has been read, with justification, as an allegory of the re-emergence of savage atavisms, the collapse of social decencies. But it owes much of its force to the fact that it might equally well be read, by persons who were not Sunday-paper liberals, as a parable of the creation of social order, Hobbes's *Leviathan* redone by Rousseau, for it shows Golding's colony of schoolboys cast away on a tropical island evolving their own Social Contract on the basis of a political realism appropriate to the state of savagery to which their new environment condemns them. In coming to terms with the naked facts of power, the tribal structure of command, these desperate adolescents are seen giving themselves—wastefully and bestially no doubt—the kind of education for living that only the young can give one another. It is not a pretty picture, but it is a convincing demonstration of the creation of those relationships that nominal equals must thrash out among themselves if they are to live other than in anarchy.

This, ultimately, is what university education has always been about from the very beginnings of universities at the end of the Dark Ages, and the literary record is massive evidence of the fact. But university students, for all they form communities of nominal equals isolated from their normal social contexts and family ties, have always had certain advantages that Golding's castaways did not possess, advantages that make the difference (narrow, as student riots show) between the groves of Academe and killing grounds of primitive ritual. The enrolled undergraduate enjoys an environment that has been loaded and controlled in his favour (though the controls may be effected through an oppressive proctorial system); he has access to the accumulated wisdom of the human race (though it may only be through the desiccated categories of the Law); he is exposed to personalities of wisdom, profundity and power (though they may be only college servants) and he has some sort of contact with the rest of the family of man (though he may have to scale walls at midnight to enjoy it).

These advantages are crucial, no doubt, but only in so far as they serve and feed the life of a student body. Those who have lived through the growing pains of a new university, who have survived student revolts in academic schools of architecture, who have witnessed the unpredictable florescence of a seminar or summer school, will know that the scholarly mood, the intellectual tone of a university is set more by the students than the staff. There have been years at the Ecole des Beaux-Arts whose brilliance—against the run of staff quality—is a matter of historical record; and what influence might even so luminous a mathematician as Levi-Civita have exercised on the rise of nuclear physics without the corporate brilliance of the Fermi generation of students who worked under him?

Housing all manner of talents

The first function of a university then, is to create a student body, and the second is to make an environment in which it can flourish. A number of students living at home are not a university, merely belated school-children. But once they have been taken away from home, they are not converted into university students by simply packing them into boxes labelled *college* or *hall of residence*. Some of the world's greatest student bodies have flourished in the jungle conditions of latin-quarters, bed-sitters and communal chummeries in great cities like Paris, London and New York, and still do. The physical environment must fit the corporate and individual qualities that give the student body life, and if it is unlikely that the Oxbridge mixture of contemplatives and hearties could flourish in the wide-open conditions of UCLA or in the mass-politics implicit in the design of the University of Mexico, this does not mean that these last are any the less universities in the true sense of a flourishing student body teaching itself to grow up.

We are, in any case, discussing universities for all, the universities of democracy, and this means evolving student bodies and student environments to suit all manner of talents. Nothing less is acceptable as a university programme today. To object that not all our citizens are mentally equipped to profit by university education is to miss the point, and over-rate the purely academic training conducted there, which could equally well be conducted by other means and often is. But even at that academic level we are already committed as a nation to the proposition that everyone can, and must, benefit by academic exercise beyond school leaving age. A great part of our teenage population is already receiving education that varies from a dim caricature of humane studies (English and Civics in day-release colleges) to the best vocational training any university can give (Diploma courses at Colleges of Advanced Technology)—the first hesitant and utterly inadequate steps toward universal university education, even if the university Establishment is still too snobbish to recognize even CAT's as their peers and equals.

But the inadequacy of, say, the day-release programme lies less in its academic content than in the absence of the residential component. It offers young workers only the dry skeleton of a humane education without giving them the opportunity for flesh and blood participation in the life of a student body. As a result, most of them have to devise *ad hoc* universities of their own, quitting the parental hearth with its continuous television and nagging, in order to learn to live by social collision with their own kind in coffee bars, gang-fighting, ton-up caffs, jazz festivals and the like. It is all very well for social moralists to complain of the commercial exploitation of teenagers and their spending power, but pop-culture beamed at their own age group is the only really humane education most of them will ever acquire under the present set-up, and if the results are occasionally as sanguinary and atavistic as those of Golding's marooned brats, the blame lies largely with those who maintain still that the underprivileged are unable to benefit from a university education.

This belief in inability to benefit is, in any case, the expression of a vested interest, now too cautious to admit in public that it is a class interest, a snobbish belief. Courses must be found from which every type of mind can benefit even while its owner is benefiting socially and psychologically from membership of a student body. Indeed, if there is a single overriding argument in favour of universal university education, it is that it may help demolish the hierarchies of class—to lift the young out of the more squalid rural (and urban) slums, from featureless one-class suburbs, from class-conditioned family entanglements, and present them to one another on some neutral and desirable ground, would be to undermine the whole structure of custom-sanctioned ignorance of how the other halves live that supports the class-edifice of British society. This might not be sufficient, immediately and of itself, to break the present Oxbridge stranglehold on access to the avenues of power and command. It is doubtful if those seemingly self-perpetuating hierarchies of Oxford and Cambridge graduates who still occupy the upper echelons in government, industry and the civil service would be seriously disturbed at first by educational upheavals elsewhere, but it is clear that the two older universities themselves are concerned for their position already and—with the best will in the world—it is difficult not to see Peter Laslett's recent proposals for the elevation of Oxford and Cambridge to all-graduate, all-research status as an attempt to maintain some sort of crucial difference between Oxbridge and the rest of the university system. But even so, it might not work. The mechanisms of the redistribution of esteem are unreliable and little known, but introducing a mass or popular element into them can produce unexpected results—as witness the vanished leadership of Savile Row in the field of men's fashions, and the emergence of a new dispensation in which teenage aristo and prole apparently agree the mould of fashion by simultaneous telepathy and Savile Row must follow suit. The mass distribution of sartorial sophistication and sartorial courage appears to be the key factor here, a similar mass distribution of educational sophistication and cultural courage might sap away the little pyramids of educational snobbery on which

the greater pyramid, topped by Oxbridge, is based.

A nation of missing specialists

But what are the student bodies to do with their time while enjoying the benefits of their own company in suitable stimulating surroundings? They will, without doubt, be doing precisely what universities were created to help them do: acquire vocational training. The nature of the preferred vocations has varied throughout the history of universities: the Middle Ages trained clergy, clerks, doctors and lawyers; the Baroque epoch trained surgeons and mathematicians and navigators; imperialist Britain bent humane studies to the needs of training lawgivers and administrators, and, since the Reform Bills, has used the same studies to raise up the corps d'elite needed to direct the creation of a literate nation. Now we are trying to break the dominance of a humane-studies Establishment in the universities in order to clear the decks for a crash-programme of technocrat training. This has always been training for the top, but—as a nation—we are hopelessly undertrained at all levels, and most disastrously so at middle levels of responsibility and reward—another consequence, no doubt, of a stratified and class-ridden educational system as much as of the anti-specialist mythology of entrenched humane-studies interests. At present, the great fault of British education is its excessive generalization, for we leave school with what is hopefully referred to as a 'knowledge' of perhaps a dozen subjects, each of which would be a full-size full-time discipline in a university. But the bulk of the population never have the chance to pursue any of them beyond a GCE smattering and discover what they are really about.

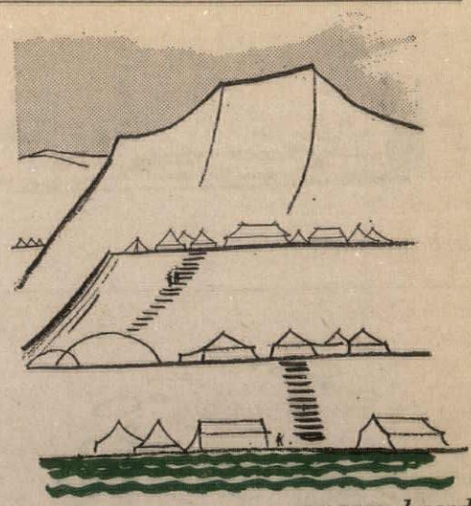
If every citizen is to have the opportunity to pursue a specialized subject in a manner consonant with his own temperament and intellectual equipment, some radical revision of teaching methods and redeployment of teaching staff is indicated. The numerical problem will be immense, and in itself seems inevitably to imply extensive mechanization of the teaching process. But there is already a problem of staff usage that goes deeper than any numerical problem: the present university teaching set-up is failing in the job it claims itself uniquely capable of performing. Narrowly beamed at what are termed academic minds, it customarily fails to educate even these, and is satisfied merely to cram them with information. A genuine exercising of any student mind involves taking it outside its normal sphere of operation so as to increase its depth and flexibility. This, machine teaching and programmed text-books are not equipped to do; the student needs to be exposed to genuine tutorial experience in embarrassingly small and intimate groups. These need not necessarily meet in the traditional book-lined study nor even over chintzy tea: if a geology student can be most effectively confronted with his subject as one of a roped party on a Welsh crag, then that is where he should meet his tutor; if he is a sociologist, then a Monday-morning 'clinic' with the Kilburn Giants team of encyclopaedia sales representatives may be the appropriate location, rather than an upper room in Houghton Street. If these desiderata of direct personal confrontation under conditions of maximum effectiveness are to be met, even with the present size and type of student population, there must be more tutors and they must be allowed to teach. With so-called non-academic minds being admitted to universal universities, the need for very effective personal guidance will be increased by far more than the numerical ratio of increased student numbers, and staff will have to be that much more wisely and creatively employed. Much of their time is now taken up with administration, but infinitely more of the total of teaching man-hours is wasted on mere hackwork, the manual labour of education, the inculcation of facts and formulae, which is merely the grown-up equivalent of chanting multiplication tables in unison.

All this systematized information can, and should, be taught by means of programmed texts and teaching machines. Such a proposition will doubtless be decried as American mechanization, or even inhuman Soviet collectivization, but the fact remains that the best way to guard the humane value of the teaching relationship is to eliminate sub-human drudgery from it. A lecture that can be followed from last year's notes debases the concept of a lecture, reduces the lecturer to the level of a parrot or talking machine, and takes up time that he should be devoting to original research or tutorial teaching.

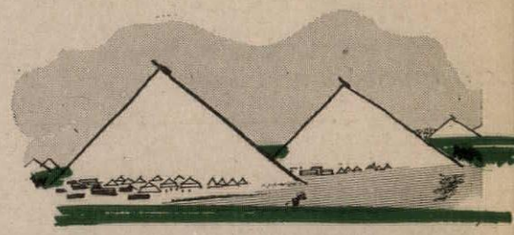
But when the quantitative effects of universal university education are added to these considerations, then a massive programme of educational mechanization becomes inevitable if standards are to be maintained. Whatever the values of personal contact, a class on the Theory of Continuous Creation given by a harassed graduate who is furiously mugging up the subject out of paperbacks to stay one jump ahead of the class, is not to be preferred to lecture on the same subject, videotaped by Professor Hoyle at his leisure and relayed to two million students over closed-circuit television.

The crash programme

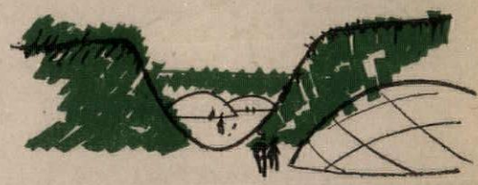
The mechanization of university teaching implies an architectural revolution in university design; the need to offer universal university education, before it is too late to do any good, implies a far greater architectural revolution which will subsume the consequences of mechanization. A crash programme is required, and this means that we must step out of the present monumental and semi-monumental categories in which university architecture is still discussed and planned. Nor, in this situation, will it be sufficient to mechanize the process of creating monuments by the use of techniques such as CLASP. This does not mean the end of the monumental university—the variety of universities which universality implies means that every conceivable building type will have its place. But every non-monumental possibility must be examined, beginning with the taking over of existing accommodation such as abandoned atomic research centres,



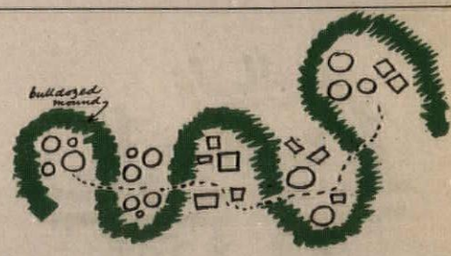
quarry based



in lunar landscape (china clay tips)



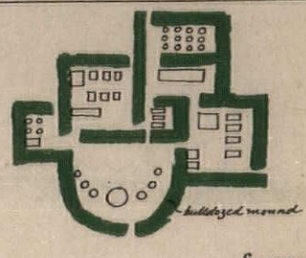
in bulldozed landscape



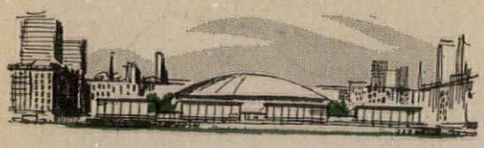
informal plan



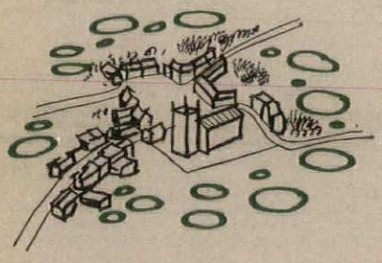
section



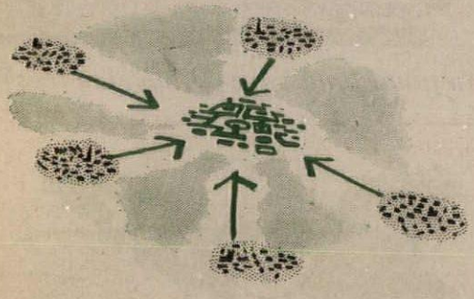
formal plan



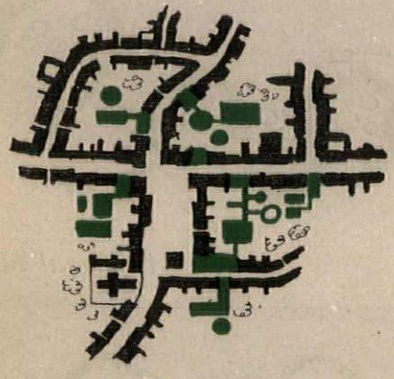
urban renewal



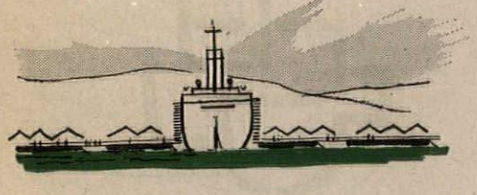
wrapped round village



camp as urban centre



infill in a small town



on obsolete liners

or holiday camps out of season—Scandinavia already has student hostels that function as tourist hotels during the vacations.

Temporary and lightweight constructional techniques need to be explored far beyond the present timid range—not merely hutted universities but tented ones may prove serviceable for the right subjects, the right mental regimes and in the right place. Wide-span construction techniques such as those employed in aircraft hangars could provide bulk space that could be subdivided by even cardboard partitions if the subjects and disciplines were quiet ones—much as the Experimental Freshman Year at Southern Illinois has worked in cardboard carrels in the half-completed student union building. Many obsolete ocean liners would form serviceable small universities as they stand, offering above-average space-standards in the study-cabins and levels of mechanical servicing beyond the dreams of most Academic Development Committees. A caravan university might even move to its subject-matter on suitable occasions, giving new force to the medieval image of a student body rising and moving off like a flock of starlings.

The crash environment

It is one thing to create student accommodation and teaching plant, but if the result is not a fit environment for a student body, the outcome might be little better than moving the *Lord of the Flies* indoors. The greatest inherent advantage of the monumental concept of a university is that when it is done properly the environment comes with the buildings. Hutted, tented, hangared, caravanned, domed or packaged universities are not likely to have this possibility built in, either at the physiological level of sound insulation, or the psychological level of creating viable group spaces between the buildings. It will therefore be necessary to site them in landscape environments that are in themselves stimulating or agreeable to compensate for the architectural deficiencies of the structures, to group them in such a way as to segregate noisy and anti-social functions and encourage sociable activities, and to manipulate the land-form itself to improve the effects of such grouping. This last point needs careful and imaginative investigation; large scale earth-moving is quick nowadays and relatively cheap. As we have seen from open-cast mine workings, it can transform a landscape out of all recognition within a week. The results have usually been disastrous, but this may be the hour of the bulldozer's atonement, creating terraced universities on the shores of flooded gravel workings, fantastic terrain sculptures by the square mile in which clusters of huts could nestle as in the palms of giant hands, or simply throwing up bunds and dykes to define functional and human limits in the endless spaces of an open plain.

But there is also the human and social environment to consider. Given a student body, housed in a suitable environment—whether clad in ivy or glassfibre—exposed to teachers of quality, and with the wisdom of the race in its libraries and microfilm files, it still cannot be left bombinating in a social void. Students taken from the pressures of their home environments cannot be left in a total human vacuum. The university must have contact with men and history outside its own personnel and its own group biography. It might, for instance, be attached to some existing institution that already has a tradition of learning or culture about it, such as an adult education centre or a country house open to the public. It might be installed as a kind of infill, either in some existing small town or a decayed historical centre, such as Ironbridge. It might enter a small city as an urban renewal project (or even a great city, as with IIT in Chicago) or it might be wrapped completely around an existing village or used to bring a cluster of existing village sprawls into a comprehensible unity. Again, the university might become an urban centre for a district that lacks such a facility, the LCC might create one of its expanded towns as a University town (Thetford was a lost opportunity here) or a combined campus and shopping centre might be created in, say, the Manchester-Liverpool conurbation. . . .

Yet, for all that, the pure camp might still have its attractions, if it was set in a sufficiently stunning landscape; it might possess great conviction, as a symbol of the determination to give university education to every voter, and—given these—its very isolation might, under special circumstances, prove to be its greatest virtue as a university, giving the quiet needed to concentrate on study and to cultivate personal relationships

But the real point is variety, not for its own sake, but to suit all temperaments, exploit all talents, teach all subjects, and to make the fullest conceivable use of all technical and constructional resources in the creation of university environments. The universal university must be various in form, structure and organization not only because of the variety of human types going into it, but because the crash programme required to create it must be able to use every sector of every industry that can be regarded as constructional, from earth-moving to extrusion moulding, from cardboard to concrete. Men who spent the war inventing inflatable dummy artillery have spent the peace creating prefabricated schools. The university programme could use some similar radical intellects even on its present modest scale, but raised to the power of universality it will need the kind of adrenalin-powered emergency talent that Britain is thought to specialize in producing in times of national crisis—and getting ourselves properly educated may yet prove to be an emergency of Battle of Britain magnitude.

Financial Policy and Architectural Quality

David Parkes and Stirrat Johnson-Marshall

Strict cost limits have helped to produce a successful school architecture, but the view is frequently expressed that university standards of architecture are damaged by the application of financial discipline. On the face of it the application of cost limits to a social programme of building seems as valid for one building type as another, but before considering their effect on universities it is perhaps worth reviewing the nature of controls that have been used for schools for the past 14 years. Inevitably they are closely linked with other administrative arts such as programming, and so this examination will concentrate on principles at the risk of over-simplification.

During the late 'forties it was clear that the nation required a great many new schools in what appeared to be an almost impossibly short time. As the money available was insufficient to provide the kind of architecture which educators and architects then regarded as adequate for their purpose, the authorities were faced with a problem of unprecedented size, speed and complexity.

Whilst the Local Educational Authorities were responsible for designing and building schools, the duty of the Ministry of Education was to set minimum standards of space and physical environment and to share out the meagre monetary resources in a way which was both fair and seen to be fair.

In these circumstances it was necessary that any cost framework to be devised would have to be simple, practical and be of an incentive rather than a restrictive nature. Both money and time being short, it was felt that the best approach lay in the reduction in size of buildings if this could be achieved without impairing their educational efficiency. Any contributions of this kind could only result from concentrated and combined work by the client and his architect. The Ministry of Education, therefore, established an Architects and Buildings branch in which responsibility was jointly shared by a senior administrator and an architect. Senior educationists (inspectors of schools) were seconded to the branch, which also included quantity surveyors. It then became possible to bring to bear on the problems of school architecture the combined skills of client, designer and cost-predictor in a closely knit development group.

Ideas for the better use of space in different types of schools quickly developed and were tried out in buildings designed by the group in association with Local Education Authorities, who shared enthusiasm for the work. Among other things these designs indicated that the total number of square feet required for most schools was far fewer than had been thought necessary. For example, analysis showed that corridors accounted for 30 per cent of the area of most pre-war schools. As approximate costs per square foot of the required quality of structure, fittings and finishes were established simultaneously, it would have been possible to impose cost limits ordaining the number of square feet, the cost per square foot and hence the total permissible cost of each school. Control of this kind would have been restrictive and illiberal. The early work of the development group showed that many ways of achieving better value for money needed to be explored jointly by clients and their designers, and that the Local Authorities should be encouraged

to engage in this stimulating work.

The cost limits that emerged defined the minimum amount of essential (educational) space to be provided and a reasonable maximum cost per pupil of the whole building. Thus between the ceiling of total cost and the floor of minimum teaching area the client and his architect had opportunities for choices. They could, for instance, provide the minimum teaching area at a cost of £4 a square foot or a larger area if they lowered the cost to £3 10s. 0d. a square foot. Furthermore, if joint work and better design achieved a reduction in, say, circulation area the gain in space could be used to enlarge or enhance teaching spaces.

Whilst it would be wrong to assume that the Ministry of Education's cost controls for schools are faultless, they have seldom frustrated architects of real ability. On the positive side they have, for instance, encouraged the development of the technique of cost analysis and cost planning which originated in the development group. Properly used this skill is a vital tool in the designer's hands and one which invests architecture with a wider authority.

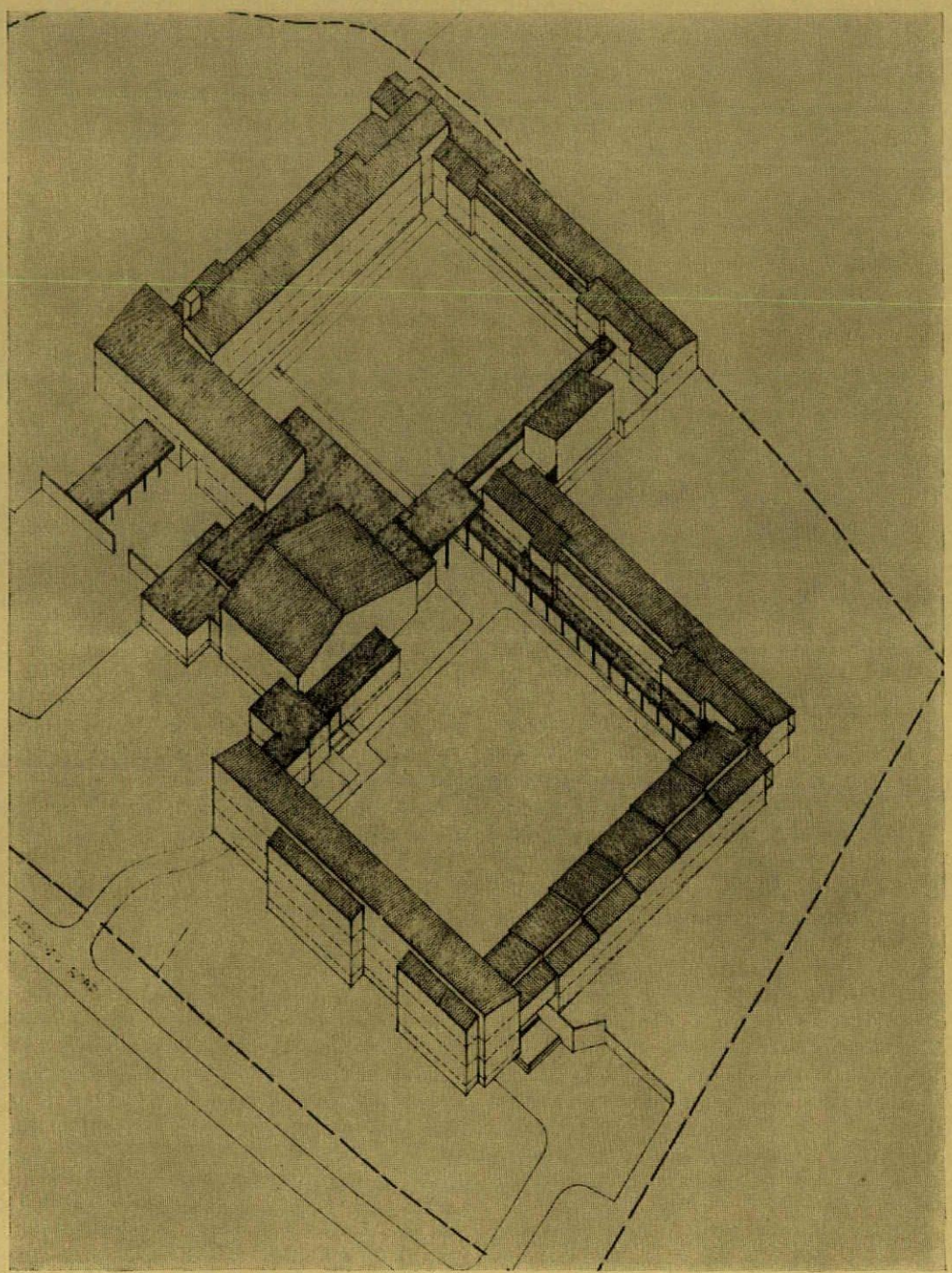
The university building programme is probably as urgent now as the school programme was immediately after the war, and the University Grants Committee occupies a comparable position relative to the universities as the Ministry of Education then did to the Local Education Authorities. However, the Ministry of Education had certain advantages not enjoyed by the University Grants Committee. The University Grants Committee does not have its own minister of cabinet rank, until a few years ago its building programme was small and its staff is also relatively small. There is no body of educational opinion comparable with that of the Schools Inspectorate. Concepts of architecture appropriate to the needs of higher learning vary widely from one university to another. The architectural needs of universities are more complex than those of schools and the building requirements of research departments vary infinitely.

Thus the establishment of viable cost limits for every type of university building must be extremely difficult, but in the circumstances the UGC has surely done very well. By using its architects to design an experimental building it has been able to work out precise cost limits for study bedrooms. It has drawn heavily on the study of existing costs of various building types and the cost targets produced from them have helped to ensure consistency between projects. But the establishment of limits has sometimes had to precede the UGC's description of the functions of the building whose cost they control.

The shortage of central guidance, the autonomous nature of each university and the inexperience of some architects have contributed to the tendency for many university buildings to be designed with insufficient regard to cost.

School architects had the Ministry's Building Bulletins to use constructively in most discussions with clients. There are few equivalent documents for the university architect, who has to do his best to meet the client's requirements without the confidence of knowing that they bear a close relationship to the available budget. A tendency for the requirements to outstrip the money often results, and its avoidance calls for tough cost planning techniques and a close working association with the client at the highest level. This is not always realized by the universities. With new universities this problem is often aggravated by the inevitable late appointment of key staff so that requirements are uncertain at the beginning of a project and are expanded at a relatively late stage of the design. In this situation central guidance would at least ensure that the initial cost assumptions were well founded.

Cost control and cost planning techniques, when properly applied, are unlikely to damage the standards of university architecture. They are far more likely to help it by equating the client's needs with his purse. However, if they are to be applied to most types of university building much work needs to be done quickly. It could be done by a powerful UGC development group composed of senior representatives of the skills of administrator, educationist, architect and quantity surveyor. If the group is to produce results quickly, all its members should be experienced in educational building and in the art of development. The UGC and the Ministry of Education between them have the men.



A hall of residence at Reading University, left, designed by the Architects Group of the University Grants Committee and now nearing completion, marks the first appearance in university architecture of the kind of design practice evolved in schools architecture in response to disciplines such as cost control, which forms the subject of the article above. *The hostel will hold* 205 *students, and illustrations of one of its study-bedrooms, fully furnished, appear on page* 291.

Student Living

Approaches to Residential Planning

Michael Brawne

To say that universities change and grow may be to labour a truism, a truism, however, whose implications are often neither welcome nor willingly elaborated. In this, as in so many other ways, university design has all the attributes of urban planning.

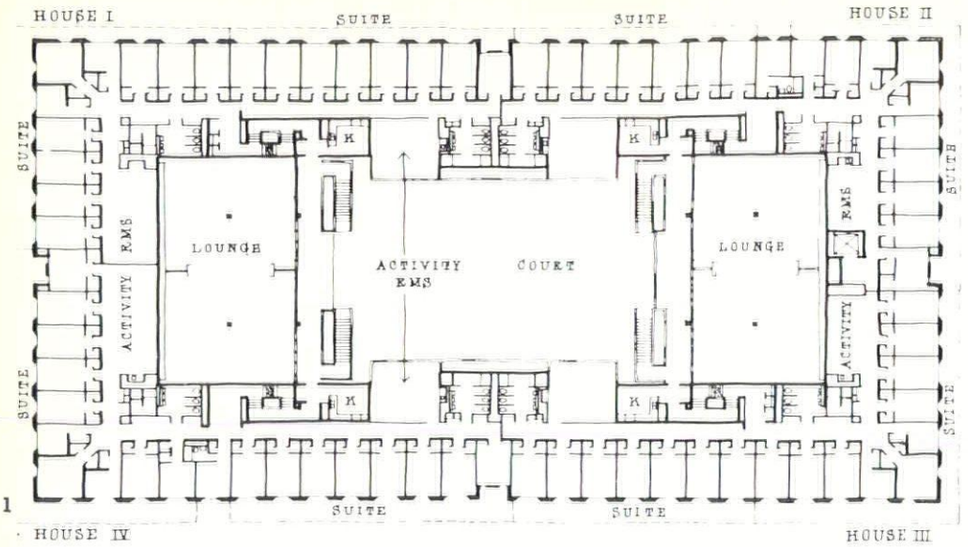
Within such a pattern of change and growth there is as a rule a variation in the rates at which the various parts change and grow; there is a hierarchy of permanence. In university planning the hierarchy goes undoubtedly from students' rooms to science research space; laboratories are obsolete long before study-bedrooms. The area allocated to student living can therefore be assumed to have the greatest fixity and to have, as a result, significant repercussions on the university plan.

This presupposes, of course, that an area will in fact be allocated to student living, that the university will have some form of student residence within its boundary. But even if such an area is not allocated or the question simply ignored, students do after all have to sleep somewhere. The effective boundary of the university is thus merely enlarged to take in that area in which students have their lodgings. The effects of such dispersal are well-known and in any event important to any university environment.

For as long as universities follow a pattern in which those taught move towards those teaching and their associated experimental and research equipment, there will be a positive economy in the greatest possible closeness of the various parts. This pattern of student movement is a strongly recognizable characteristic of any university town. It is likely to persist despite tuition by television or the use of teaching machines as long as face to face contact is considered necessary for a two-way response and there is a need to manipulate equipment which cannot be made available to each individual.

The dispersal of students among the available lodgings of the town is in any case becoming increasingly difficult as our society's growing affluence makes it less and less necessary for households to supplement their income in this way and the desire for a self-contained and wholly private living unit can be put into effect. The provision of the student's room, though not necessarily as a corollary its supervision, becomes as a result a university responsibility. This is quite apart from the mystique which, particularly in Anglo-Saxon countries, surrounds the notion of a residential university and the great academic and social benefits which are supposed to be gained from it.

The relative fixity of student accommodation—very similar rooms have been adequate for centuries and are likely to continue to be so—suggests that within any university plan these assume an architectural significance beyond their purpose of providing shelter. They can, because of their permanence, assume a controlling function; they can most easily be the elements which provide a continuity and which make the university a unique place. This is, of course, based on the possibly challengeable assumption that universities, like nursery schools, pubs and all other places of human resort, are unique and that there is a social and visual virtue in such particularity. It is the exploitation of this capacity which, after all, has given



1

1, 2, *the traditional college quadrangle becomes here an enclosed five-storey space and the centre of communal activity. Eero Saarinen and Associate's design for a women's hall of residence at the University of Pennsylvania in Philadelphia consists of an outer ring of study-bedrooms organized vertically in four houses of between* 160 *and* 180 *students each, with two suites of rooms for* 16 *to* 24 *students per floor. This peripheral zone is shielded by an inner ring of service rooms, activity areas and kitchenettes from the lounges on the second floor overlooking the central court and the ground floor dining room and snack bars.*

Student Living

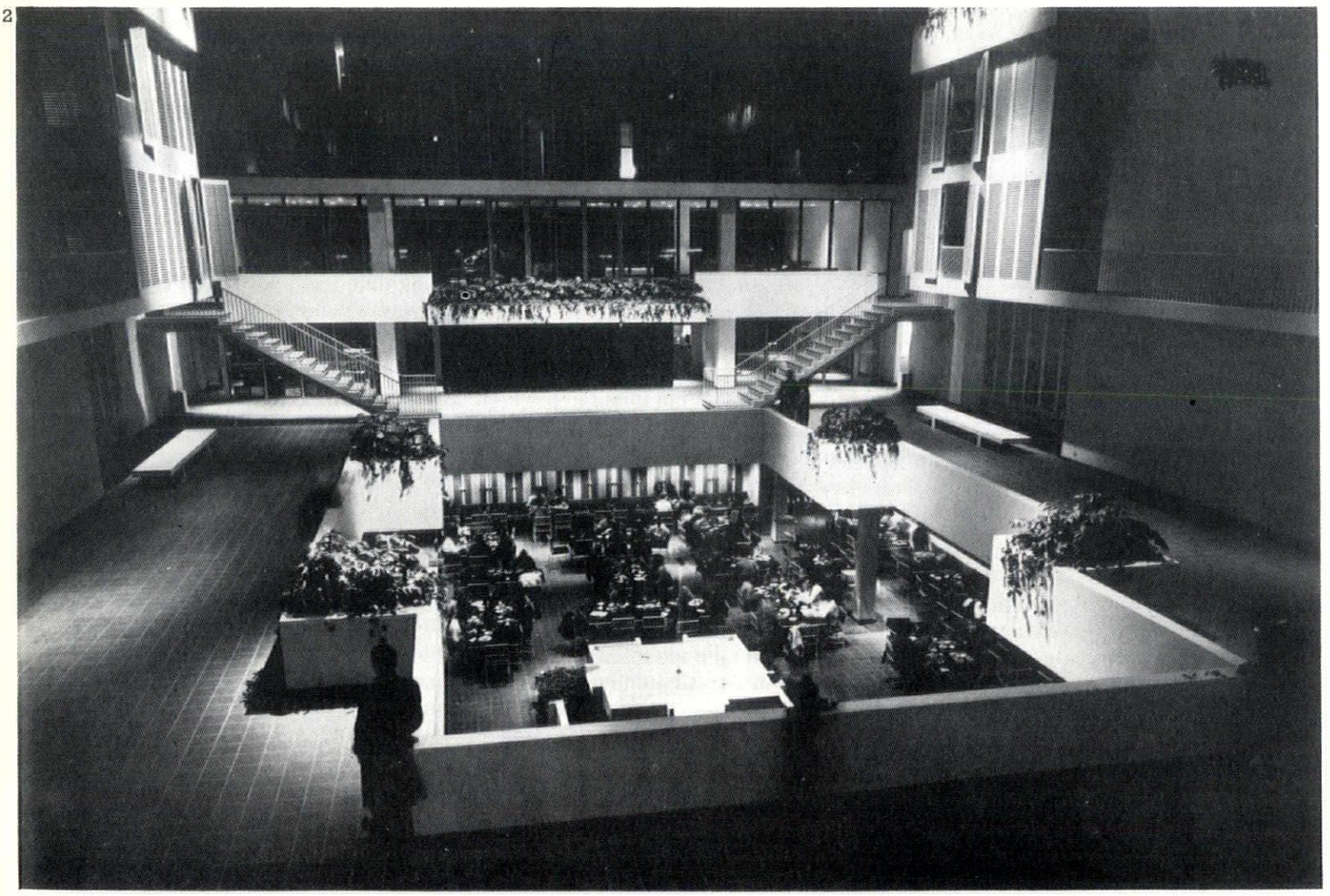
Oxford and Cambridge their peculiar character. Any notion, therefore, of putting students into hutted camps in order to save six months building time would, on this count especially, appear to be a grave error. Nor does it seem necessary within the terms of this country's economy.

At York, the fix given by groups of rooms is made to be the centre of each of the eight nodes which make up the plan, each being a unit of living and teaching. At East Anglia lines of rooms define the periphery of the university and set up a pattern of pedestrian movement related to the sloping site. The use of relatively permanent forms to create centres, to delineate edges or define routes represents obviously only a few of the possible alternatives. The whole vocabulary of clusters, of stem development and of route buildings, for instance, now well documented by Team X (*Architectural Design*, December 1962) is at once relevant.

Within the total university plan the consideration of student living space is thus crucial both as a planning idea and as an architectural form. Both aspects will be considerably affected by the social organization thought most appropriate. Three main variants are currently in use.

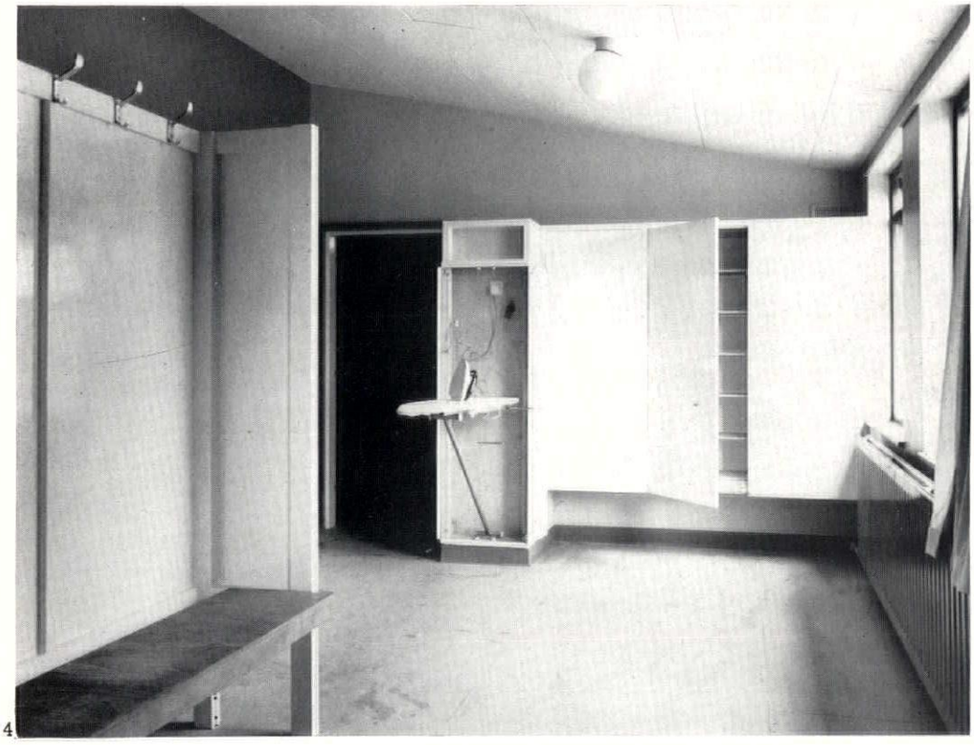
The college system is, of course, by far the most hallowed but also the most open to challenge. The notion of a largely self-contained unit existing within the university with considerable academic, financial and administrative independence is in fact difficult to put into effect. The system is, for example, greatly undermined by the

2





3



4

3, 4, 5, the first building by the Architects' Group of the University Grants Committee was an exercise in proving that the UGC allowance per student can be converted into a building rather than an exploration of the problem of housing the continually increasing student population. The Hall of Residence at Reading places study-bedrooms divided by 4½ in. brick walls on one side of a corridor and service rooms on the other. Groups of eight or nine students share a large pantry, 4, containing a sink, grill, coat rack for wet clothes, food cupboards and an ironing board cupboard. All furniture in the rooms, 3, is loose and can be arranged by the students; bookshelves and pin-up boards slide between picture and dado rails.

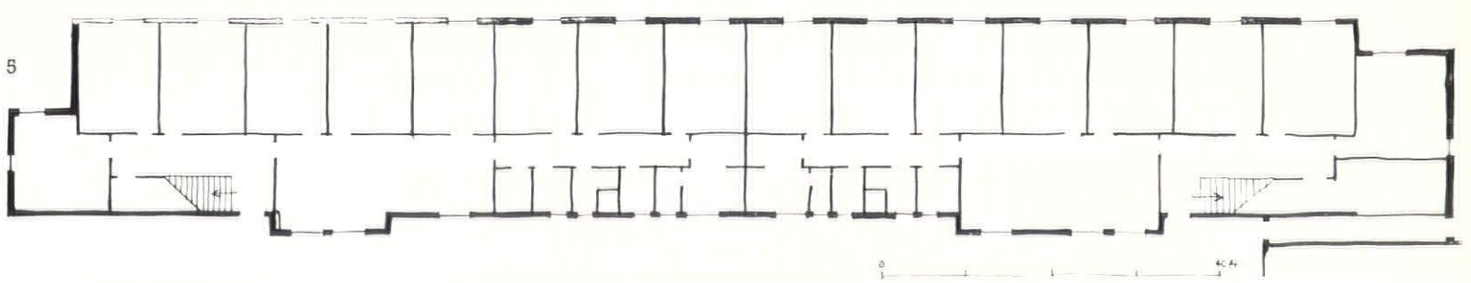
needs of science teaching; while it is possible to discuss Greek syntax or even dissect botanical material within a college room, it is impossible to carry out experiments in nuclear physics. Moreover, the high level of specialization which takes place in all subjects and the need for equipment even in the arts faculty—the use of computers in linguistics for instance—rules out any degree of self-sufficiency.

The hall of residence was a nineteenth-century invention, a sort of college substitute which was to preserve the social semblances without the academic, financial or administrative realities. This flavour of gentility has been obvious in most of its architectural manifestations as well as its internal organization, and its second class position within the university structure has been greatly deplored, most recently and authoritatively perhaps in the Niblett Report (University Grants Committee: Report of the Sub-Committee on Halls of Residence; HMSO 1957).

Both the college and the hall of residence are inward looking communities—secular monasteries—which function properly given a considerable degree of social cohesion and a willingness to submit to a discipline. Neither attribute is necessarily common among present-day students nor, what is more, necessarily even desirable.

The student dormitory or hostel as generally understood is a kind of university barrack in which a large number of students can be given a room under university control without having to follow the social routine of the college or hall of residence. In this sense it allows of a more anonymous existence with all the virtues and disadvantages that this entails. Where it usually fails is that its organization is too amorphous since there is socially no need for any functional association between its inhabitants. The possibility for some social grouping is, often because of its architectural make-up, made difficult and there is a noticeable absence of recreational or academic facilities.

These three alternatives, although widely different in their assumptions and usually also in their architectural results, have, however, in common the starting point that students' rooms need to be under university control, that they are an only slightly maturer version of the public school house



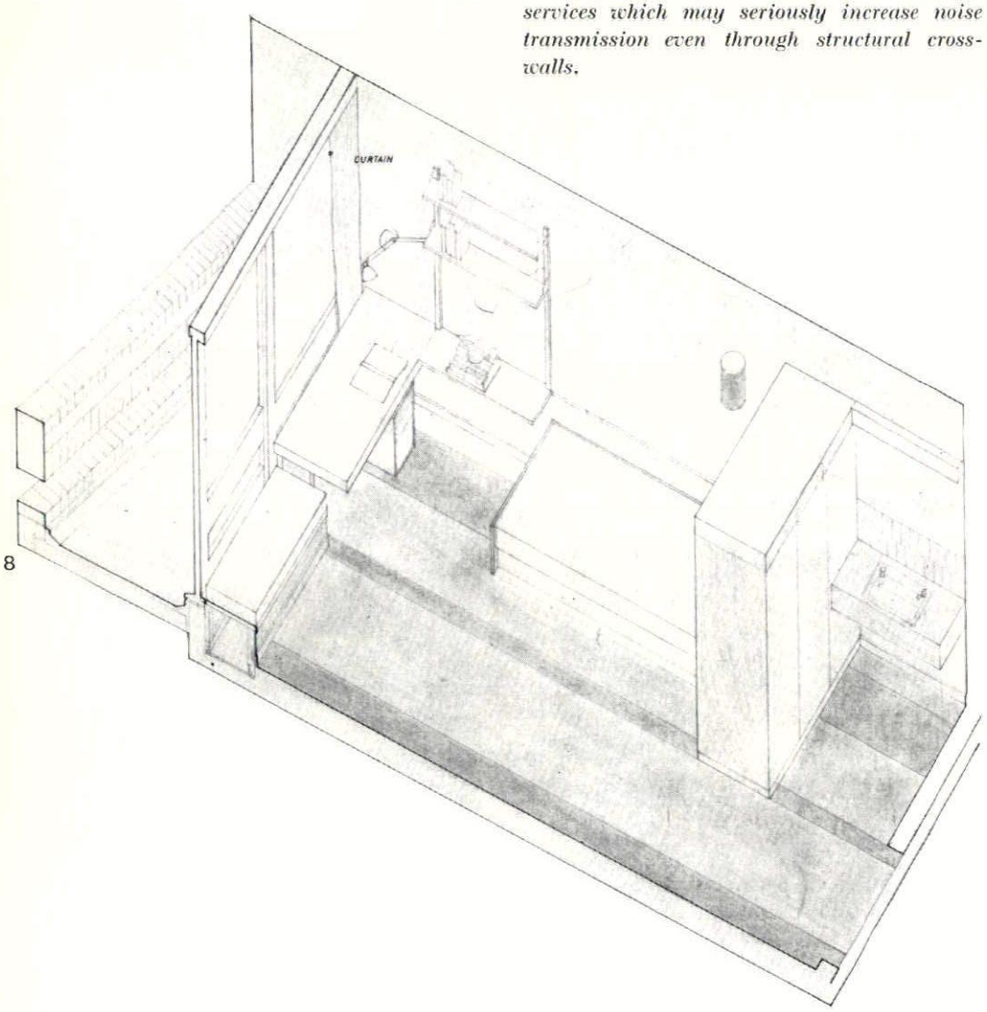
5



6

Student Living

6, 7, 8, *Gillespie, Kidd & Coia's mock-up of a typical room to be built for the University of Hull shows, amongst other things, the difficulties which the introduction of a basin imposes on room planning. The washbasin is usually included because it makes the room easier to let for conferences in the summer. The basin, like the heater, also poses problems of noise, particularly through the continuity of services which may seriously increase noise transmission even through structural cross-walls.*

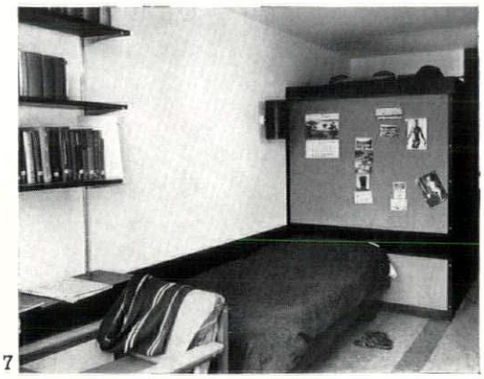


8

system. Though this may in many instances in fact be historically the case, it does not necessarily represent the only or even the most desirable solution.

A. H. Halsey, summarizing the surveys on student living at Sheffield by P. H. Mann and G. Mills, and at the Imperial College of Science and Technology by P. Linstead, G. A. Barnard and M. McCreath in the *Universities Quarterly* (Volume 16, No. 1, December 1961), suggests that 'it is also noticeable that student preferences, as revealed by the Sheffield figures (with a third wanting some kind of university or non-university bed-sitter), indicate a greater flexibility of requirement than is provided by conventional halls of residence.

'When preferences for recreation as well as for eating and sleeping are considered together, the desire pattern of living suggests the polyglot excitement of a rather athletic Latin quarter rather than the uniform regimen of hall, lecture room and university library. And the Latin quarter is perhaps the most attractive solution to the conflict between collegiate ideals and technological pressures under modern urban conditions.' These desires are certainly not surprising



7

when the currently very much earlier maturity and the very much lesser social uniformity of students is taken into account. The increasing proportion of women at universities has obviously also been influential since not only do they appear to prefer a more independent form of living, judging at least by the Sheffield statistics, but their presence shatters the cohesion of the previously predominantly male society.

What this suggests is some arrangement in which the university builds and rents accommodation but does not try to impose a community structure through supervision and the deliberate mixture of staff and students. As Mrs. Jean Floud, of Nuffield College, has remarked, these after all 'have nothing in common except their work.' It is in the laboratory, the seminar and the tutorial that personal relationships can be established because there is a functional basis there for their occurrence. The Gulbenkian Educational Discussions reported in the *Universities Quarterly* have amply confirmed this.

As a result of visits to Scandinavia by a number of interested groups these notions are now beginning to be considered in this country. Several projects illustrate the experimental probings towards such a conception. In its most usual form it consists of a dozen rooms clustered about a

sort of farmhouse kitchen and such a grouping is then repeated on several floors. This kitchen-living room becomes the functional focus of a small student unit. Its size, apart from any leanings towards the duodecimal system, is based on the belief that a dozen represents a face to face unit small enough to be close knit yet sufficiently numerous to allow for some variety and choice within it.

The Vice-Chancellors' Committee reporting in 1948 on the 'Planning of University Halls of Residence' also recommended 12 study-bedrooms opening off a stair or corridor as an optimum group.

Twelve is also, in terms of planning, a number which, given that all rooms are on one floor, produces an economic relationship of study-bedrooms on the perimeter to bathrooms, etc. designed as internal spaces. This is obviously fortuitous but significant in any design done within the strict limits of the UGC grant.

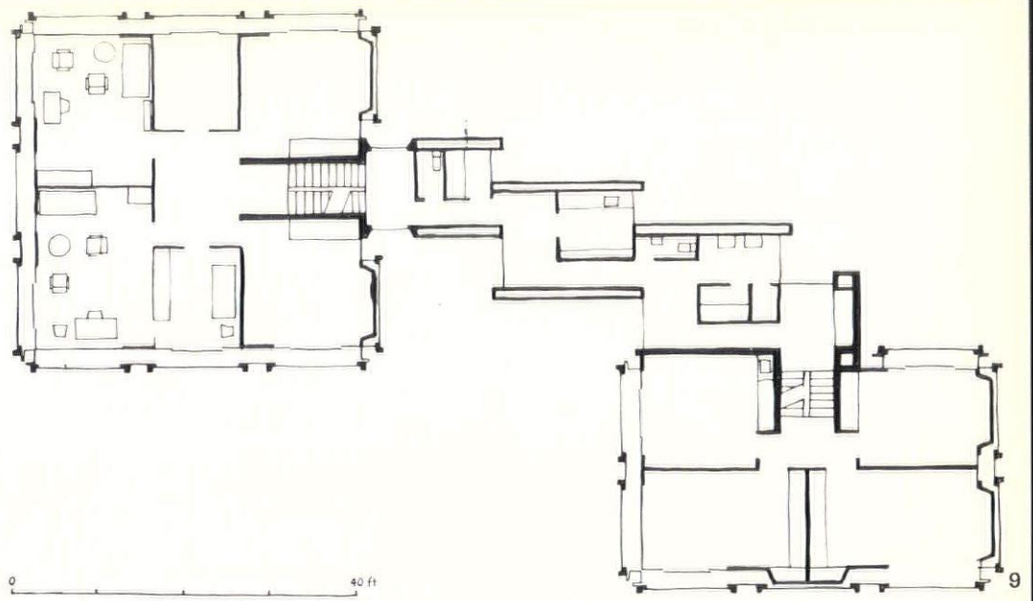
Four or five such units may share a games room or some other space in which extrovert noisiness does not become anti-social. Beyond that their next focus is a university one: their department or school, the library, dining rooms, clubs and societies. Their associations are, therefore, not the result of a choice made before entering the university as in the case of the college, or at the beginning of an academic year as in the case of the hall of residence, but develop and change throughout their university stay. Hearties may dine in one place, poets in another and the same person belong to both groups.

The importance of such a less-fixed social and architectural organization is also that it allows for rather more change. The allocation of space as between men and women is, for instance, more variable; groups of 12 rooms can often be converted rather simply into three or four flats for married students, and if a college system should after all be the most desirable way of organizing university life, it can always evolve from and with these 12-room nuclei.

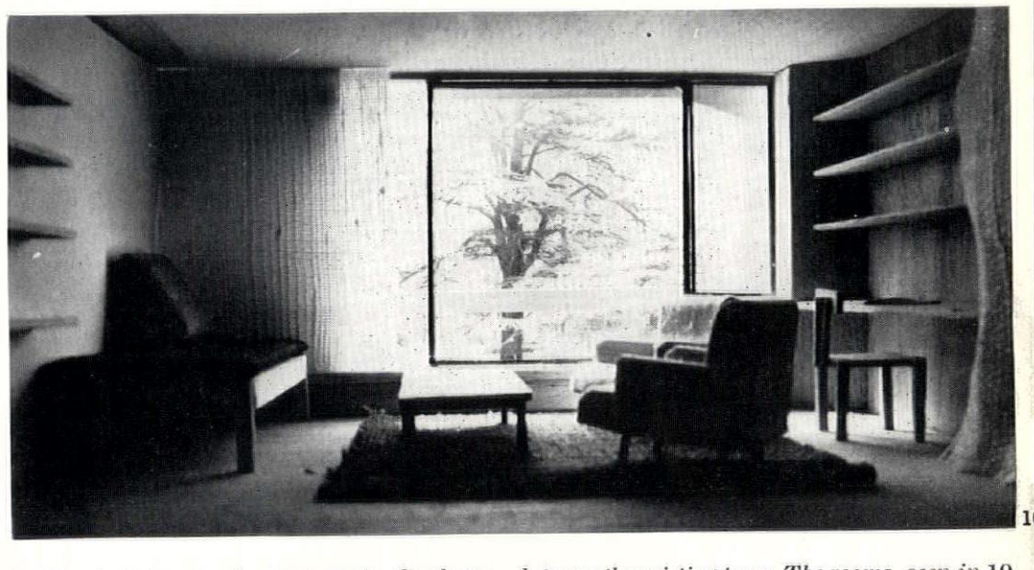
Ideas on the pattern of university association have shifted somewhat the same way as those on urban links. The carefully stepped hierarchical progression from street to neighbourhood to sub-centre to town centre considered mandatory in post-war new towns is tending to give way to a simpler grouping of street or square or precinct to main town centre. And the reasons are very similar: our associations and friendships are with those with whom we have something more in common than proximity.

The architectural implications of such a shift are formidable and not necessarily immediately welcome. A college or even a hall of residence is a group of sufficiently disparate elements—study-bedrooms, hall, chapel, library, master's lodge—to form a small world which can have an independent architectural existence. The difficulties of the 12-room system are the difficulties of suburbia; small cells or at best units of small cells with no very marked difference between them and no obvious punctuation between one group and another.

As a result the characteristics of fixity and place-making which students' rooms possess,

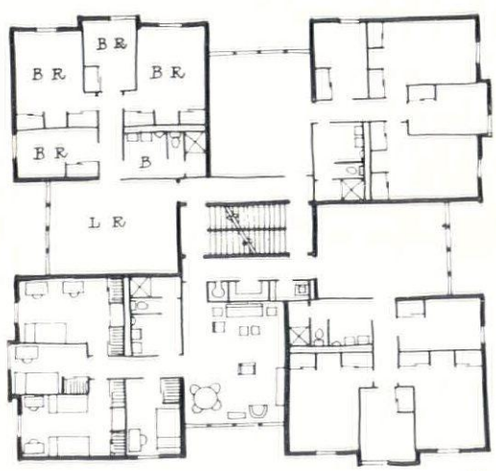


9



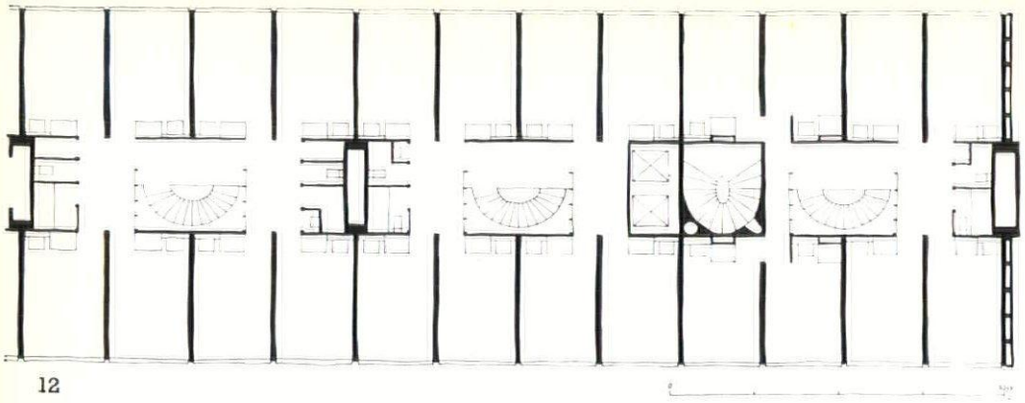
10

9, 10, short towers of rooms at the Graduate House for Corpus Christi, Cambridge, by Ove Arup and Partners (Philip Dowson, architect) are linked at half-level by further towers of service rooms. These are staggered so that different relationships between the main towers are possible and the buildings can weave between the existing trees. The rooms, seen in 10 in model form, extend visually beyond the glass wall to the precast concrete frame carrying the projecting floors. The top left-hand room is a typical study-bedroom and is about twice the size of a minimum UGC room; the two rooms below it are a Fellow's sitting room and bedroom.



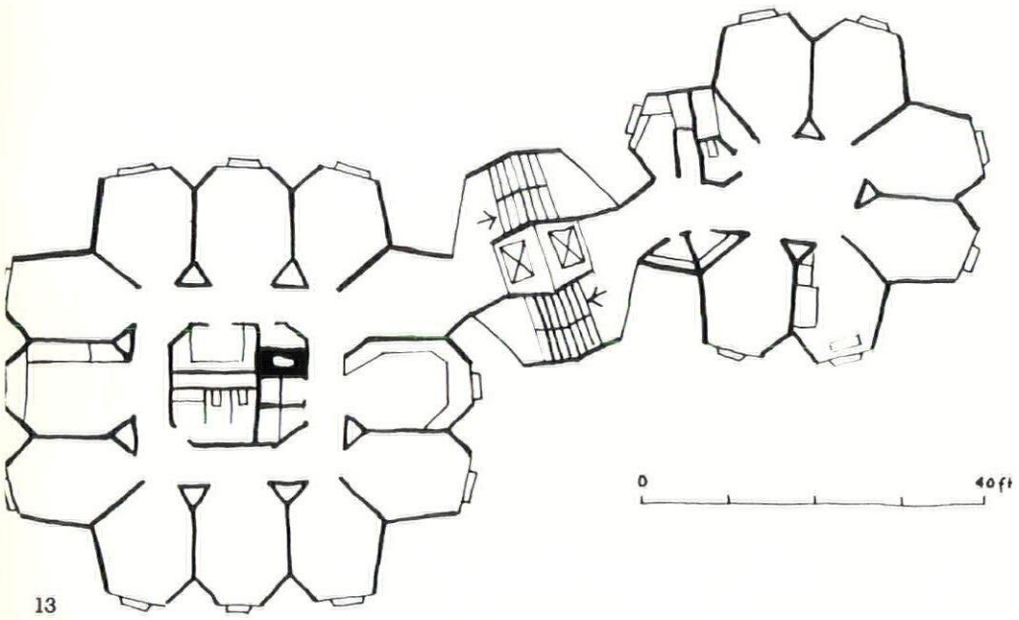
11

11, Four-storey towers of rooms are arranged in this case round a central scissor stair. Each social unit consists of two single rooms and two double rooms (one of these has bunk beds so that only one bed appears on plan) and a large living room-study. Three such buildings were designed by Hellmuth, Obata and Kassabaum for Washington University, St. Louis, Missouri.



12

12, *the long block for Imperial College by Richard Sheppard, Robson and Partners just completed on the south side of Prince's Gardens (illustrated on pages 244-249). It consists of halls of residence having their communal rooms on the first and fourth floors. Three floors of rooms in units of eight grouped about a staircase rise from these main levels of horizontal circulation which are also the lift stops.*



13

13, *the Teachers' Training College, Loughborough, by Gollins, Melvin, Ward and Partners. The building houses 300 students in two connected towers; the larger 22-storey unit contains 200 female students, the smaller 17-storey one contains 100 male students. Structural precast concrete elements create the outer and inner walls.*

Student Living



14

14, *the Fallowfield Residential Development for Manchester University by Building Design Partnership. A dozen rooms have as their social focus a kitchen-living room in which students can make tea or even cook breakfast or supper. Students thus meet through a functional association. A similar group of rooms occurs on the opposite side of a staircase and lift well.*

assume a considerable and added importance. The role which rooms can perform within the total university plan provides a logic for their design and positioning and in many cases is able to resolve their architectural dilemma; they cease to be suburbia because they need no longer be amorphous building units between nowhere and nowhere. The need for such a discipline seems doubly important since students' rooms can be a considerable proportion of the total built area. Given the assumption of the York and East Anglia plans that two-thirds of the student population is in residence—a proportion not quite reached by Oxford and Cambridge (52 per cent and 55 per cent) slightly exceeded by Durham (68 per cent) and only surpassed by Keele (100 per cent) among British universities—this accommodation will occupy, on the basis of minimum UGC allocations, between two-fifths and a half of the total university floor space. (The ratio varies, depending on the proportion of science to arts teaching space.)

The spaces between buildings, however important, are not the only part of the university environment. The planning of individual rooms and the relation between them is equally crucial and, of course, not unrelated to the first problem. Students' rooms are used for a great many purposes and a great deal of time is spent within them, so that they deserve the closest possible design attention.

Most room planning is in this country based on the assumption that each student will have a room of his own. This is far from being the case elsewhere. The shared room is the rule rather than the exception in the United States and American findings quoted in a report from 'Educational Facilities Laboratories' called *College Students Live Here* suggest moreover that 'students who have one roommate do more than half of their studying in their rooms; those in single rooms, slightly less; and those with more than one roommate, substantially less.' There is presumably some pressure to conform which students exert on each other. York will experiment with a number of shared rooms.

Statistically, room planning is in most cases in this country ruled by whichever University Grants formula happens to be in use; at present it is one based on the study-bedroom as a unit of currency equal to £945. Certain minimum standards of accommodation have to be met, 110 sq. ft. for instance for the nett area of the study-bedroom, and these legal minima tend, as is so often the case, to be also the achievable maxima. Tutors' rooms, bursars' flats, dining halls and so on are all various multiples of this study-bedroom unit of currency.

The planning criteria of the room, apart from the rather obvious need for glare-free light and heat adequate for a sedentary occupation, with some individual control over both, are based largely on the necessity for a single room to have a number of rather different functions: study, sleeping, entertaining. The traditional college set separated these out into distinct spaces. Different functions may, of course, go on simultaneously

in adjacent rooms. Sound isolation is thus of extreme importance.

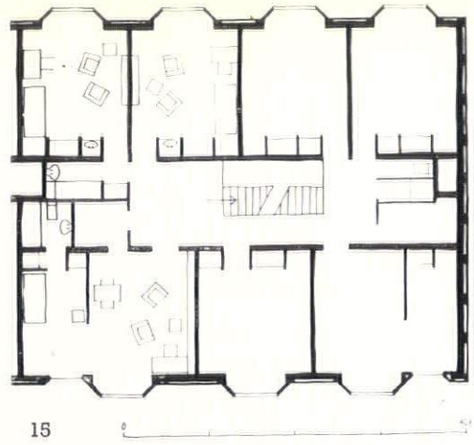
This can be achieved by mass, discontinuity or a combination of both in the form of buffer zones. Mass is the easiest to achieve since loadbearing fireproof walls of concrete or brick will serve both as supports and as isolating elements. Sound transmission through windows, doors and along ducts may still, however, cause difficulties and must be taken into account. Discontinuity, to be effective, requires considerable design ingenuity; each room needs to be in fact a suspended box. Nor are the hollow spaces created particularly useful for services since these are rather minimal. Buffer zones, while in many planning problems the most effective barriers, are seldom so in the case of student housing since the ancillary spaces—bathrooms, kitchens, laundries—are themselves noisy areas. Only storage spaces—cupboards, trunkrooms, cleaners' rooms—would be valuable but their total area is rarely sufficient, particularly under UGC finance, to provide a buffer to each room.

Many room relationships both as between study-bedrooms and between these and their servant spaces are possible, and a large proportion of these is feasible within the flexibly defined limits of the UGC formula. Typical units or floors from recent examples in this country and elsewhere are illustrated herewith.

These are all part of larger groupings, of colleges, halls of residence or dormitories. Colleges, of course, vary enormously in size; at Cambridge, for example, Trinity is a community of just over 850, Peterhouse of about 240. At York each college will have about 300 undergraduates and 100 graduates and academic staff. A unit of 400 was arrived at, as Andrew Derbyshire explained in a recent article in *The Times Educational Supplement*, for reasons based on both social and architectural criteria. The Niblett Report suggests between 80 and 180 students as a desirable size for halls of residence with around 120 as the optimum. Some American reports advocate residential groups of between 35 and 50 students. The wide range in the size of actual and recommended groupings suggests that within these there are in fact smaller effective sub-groups which are the basis of the social structure. The 12-room system accepts this and gives it architectural recognition.

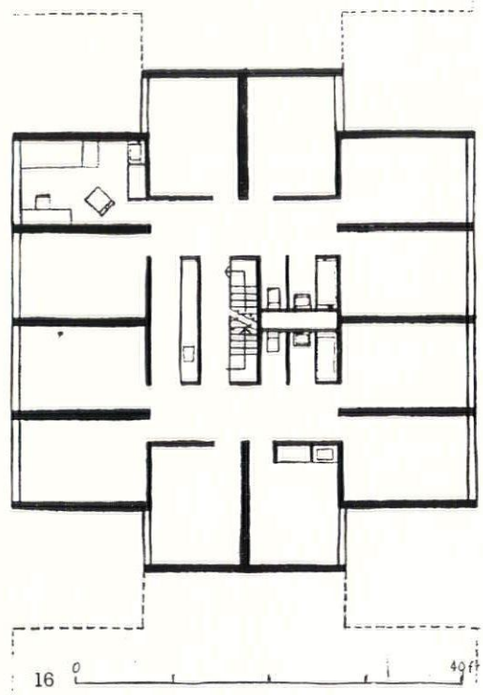
The emphasis on student living as a highly corporate activity is obviously rather less with the 12-room system, and this may have some architectural benefits on the room itself. There is a strong tendency at present to worry about the agglomeration of the cells rather than the cell itself. Very few of the plans so far published show a detailed consideration of the room as a highly multi-purpose space. This is very much a matter of spatial organization on plan and section and of furniture; of usable wall area, of room proportion, of possible furniture groupings and of the pieces themselves; of providing even in this minute volume some congruence between defined space and use.

Although the room may have to be let in the summer to conference participants or become, as is so often the case in Scandinavia,



15

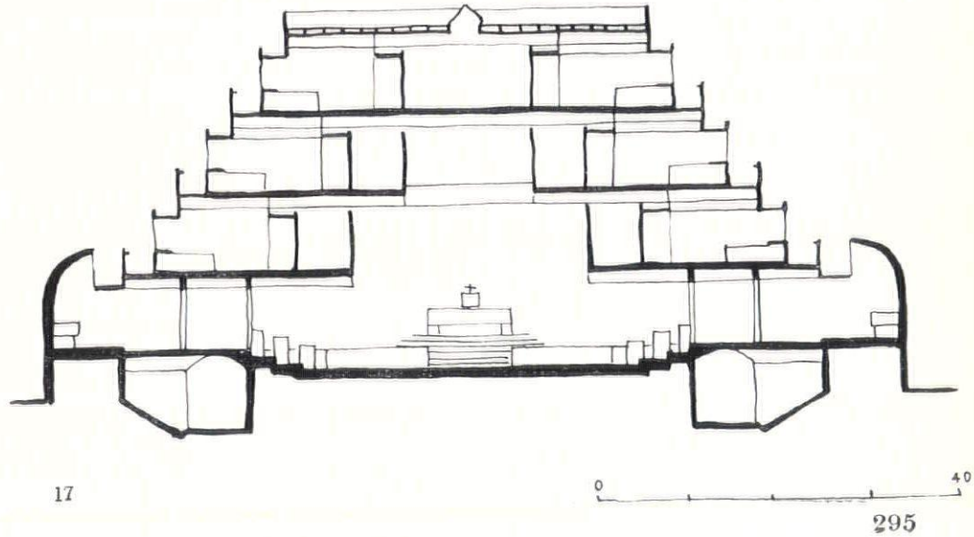
15, a typical staircase unit at St. Antony's College, Oxford, by Howell Killick, Partridge and Amis; five study-bedrooms and two Fellows' sets. The set in the bottom left-hand corner consists of a study, bedroom, bathroom and kitchen. Such a variety of accommodation on a single floor follows the traditional college pattern. The number of service rooms consisting of a bathroom, drip-dry cupboard, w.c., shower and scullery, in this case (in addition to a basin in each room) of necessity considerably modify the traditional plan form. *See also page 275.*



16

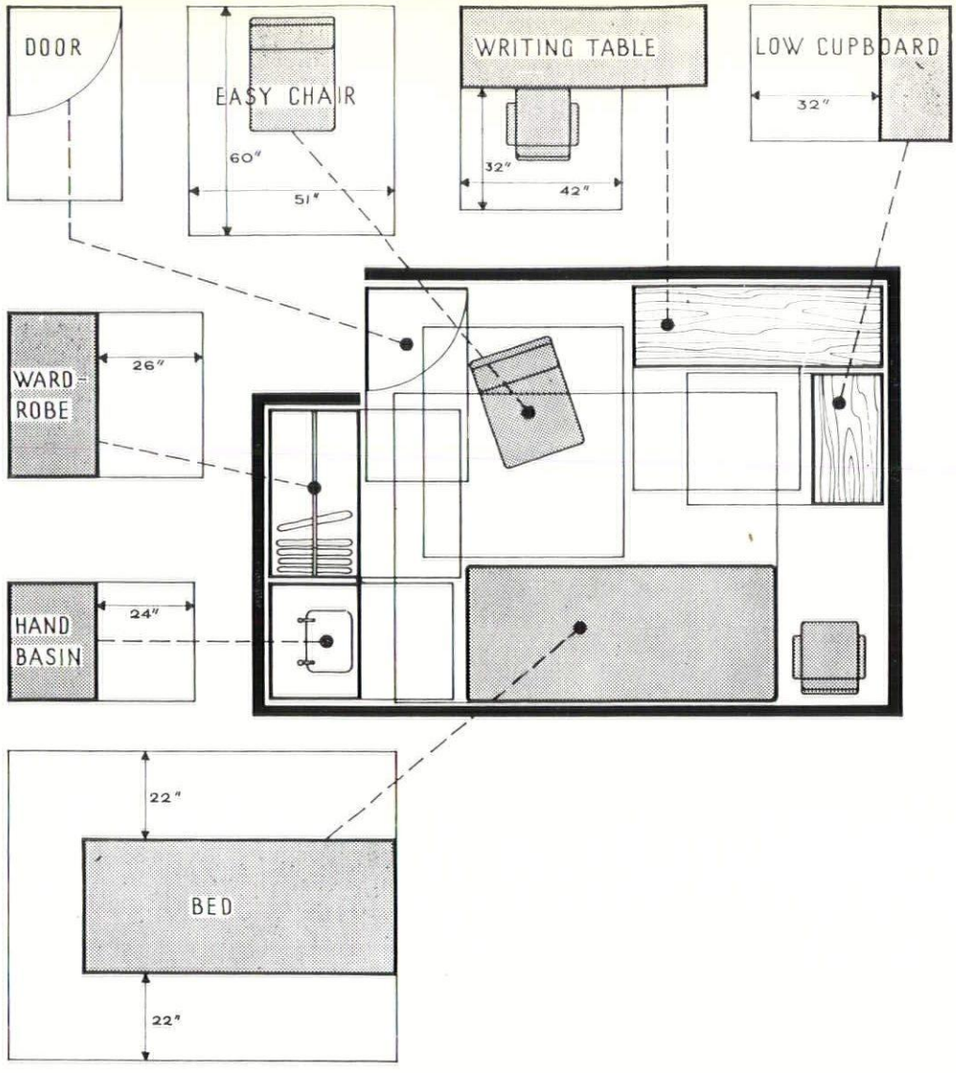
16, twelve rooms around a central stair, two bathrooms and a pantry forming a kind of Greek cross and joined to further such units, shown dotted, to enclose a courtyard at the West Midlands Training College, Walsall, designed by Richard Sheppard, Robson and Partners. On the ground floor the units are joined to each other by a covered way going through the linked short arms of the cross.

17, part of a design for a seminary overlooking the Clyde at Cardross by Gillespie, Kidd and Coia. Students' rooms step back as at the new building for Caius College, Cambridge, by Sir Leslie Martin (AR November 1962.) only in this instance they do so from both sides to roof over a central spine of communal rooms consisting of a chapel and refectory. Each study-bedroom has a shallow concrete vault.

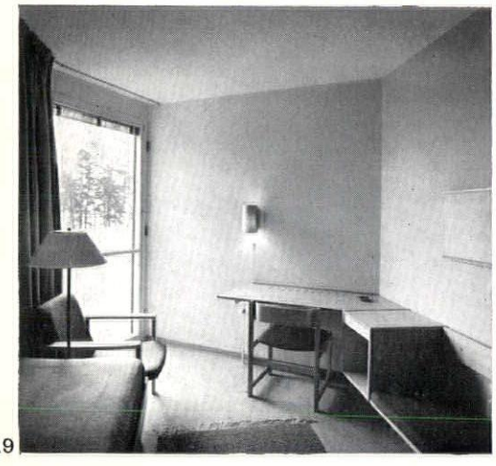


17

18



18, studies by the London County Council Architect's Department of the access space necessary for various pieces of furniture in a study-bedroom and their permissible overlapping. Although these are drawn as rectangles, it does not follow that the room itself need be rectangular. At Anders Tengbom's Training Centre near Stockholm, for instance, 19, *a desk, cupboard and built-in seat fit into the oblique corner of a study-bedroom.*



19

20, Louis Kahn's alignment of three squares along their diagonal at Bryn Mawr, Penn. This allows the study-bedrooms to look on to open ground but directly connects the three principal internal spaces: common room, hall and restaurant. As in Saarinen's design, 1, *and at Cardross,* 17, *study-bedrooms and communal areas form a hierarchy of connected spaces.*

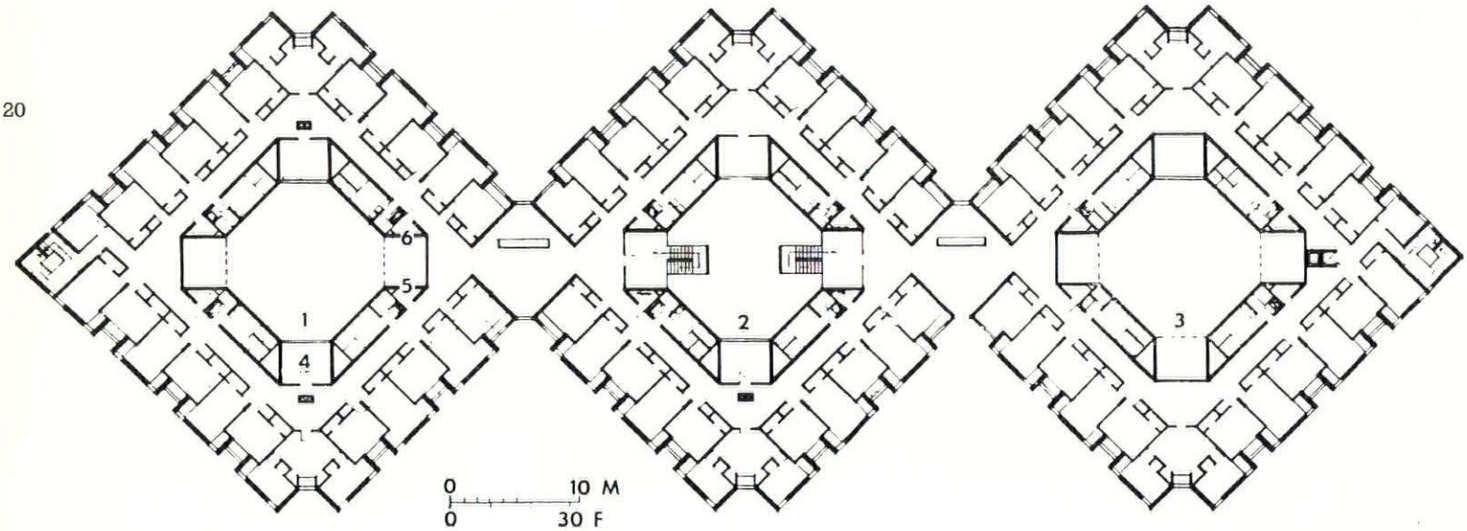
part of a hotel in order to keep staff and remain financially solvent, it is in no sense a long-stay hotel room. It is a student's living space—the term study-bedroom really places far too much emphasis on only two functions—and must as such be a private world capable of accepting the personal imprint of the occupant yet itself be sufficiently positive to suggest a definite and unique place, a space designed for its tasks.

What makes Le Corbusier's project for student housing designed in 1925, 22, 23, so important and remarkable is that it starts from the notion of such an ideal personal world. The seven new universities have the very great opportunity of putting this attitude into practice, to go beyond it and to link it, what is more, to a university plan which acknowledges and exploits the special characteristics of fixity of such spaces in a growing and changing environment.

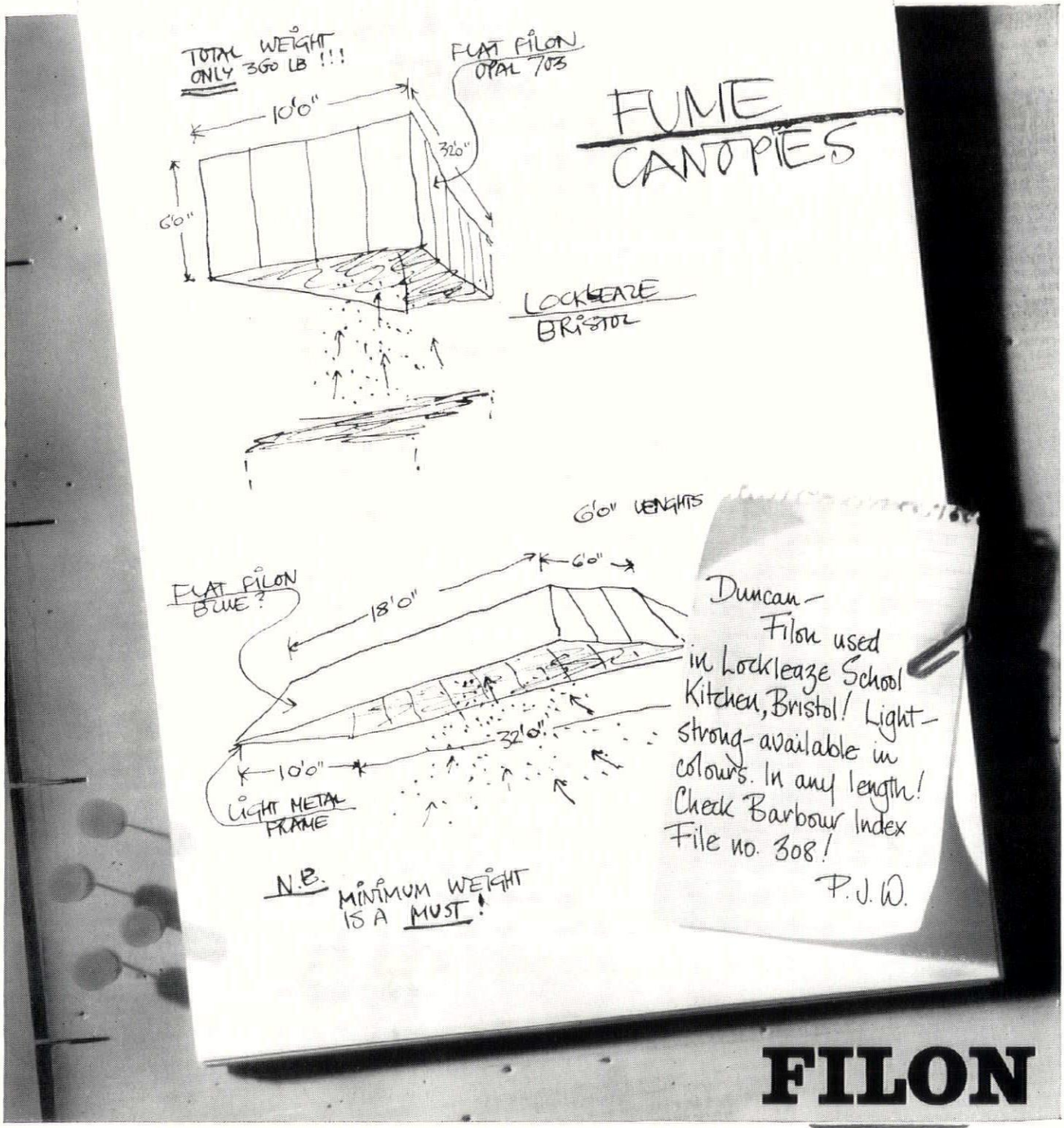
Their tasks would be made a great deal easier in this respect if the finance of

(*continued on page* 298)

20



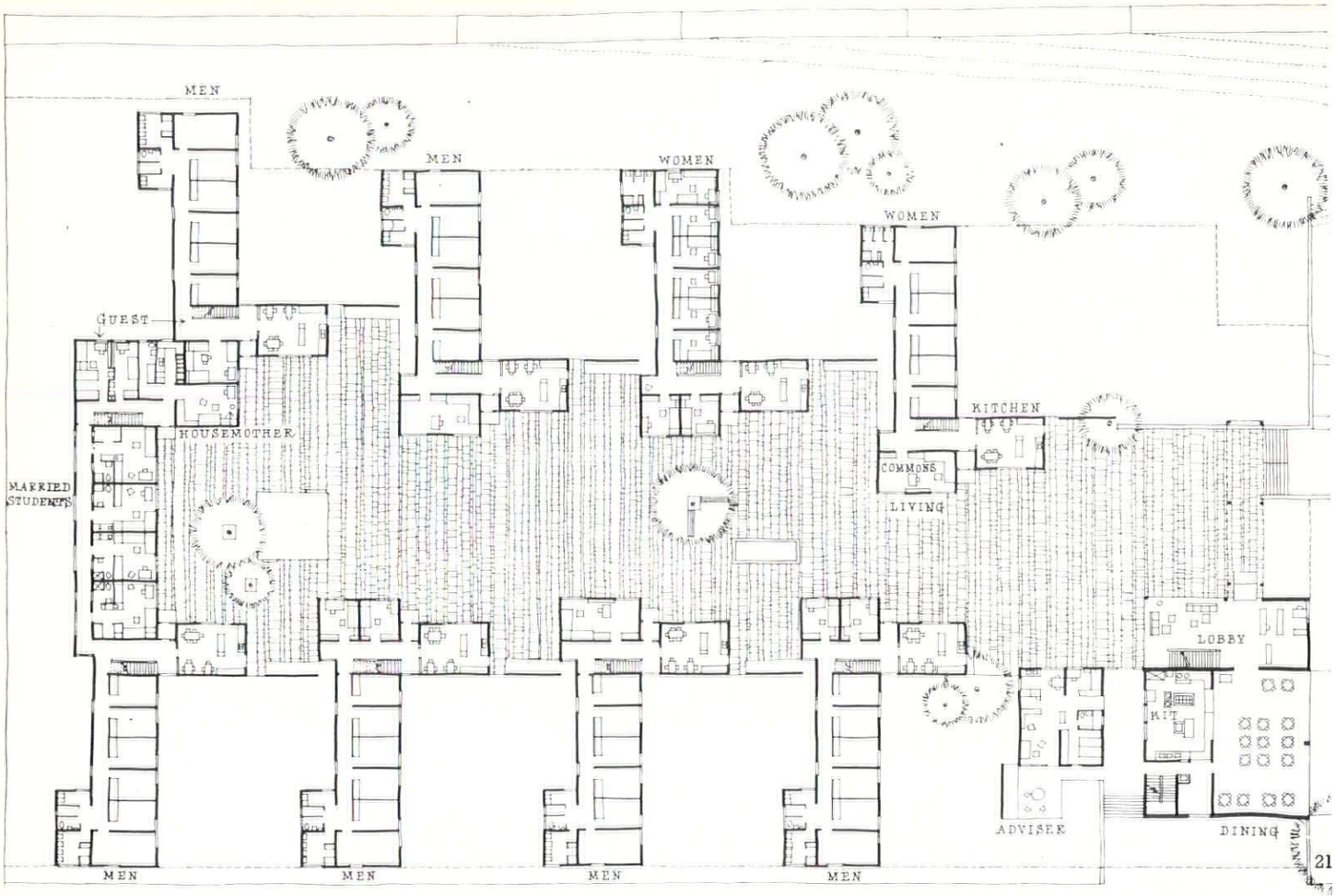
PAGES FROM AN ARCHITECT'S NOTEBOOK:



B.I.P. REINFORCED PRODUCTS LIMITED

Streetly Works · Sutton Coldfield · War · *Telephone: Streetly 2411*

A MEMBER OF THE TURNER & NEWALL GROUP

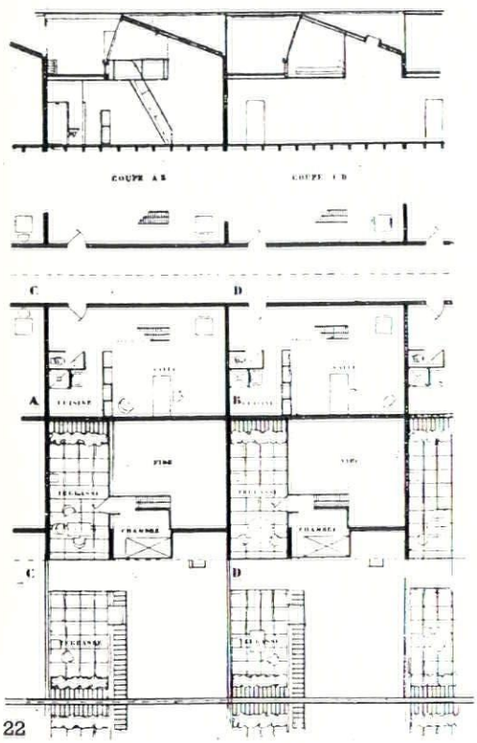


21

(*continued from page* 296)

student housing were not dependent on the whim of charitable subscriptions but were from the very beginning part of the UGC administered treasury grant. The system by which the new universities are in their early stages UGC financed for their teaching and communal buildings only requires urgent revision.

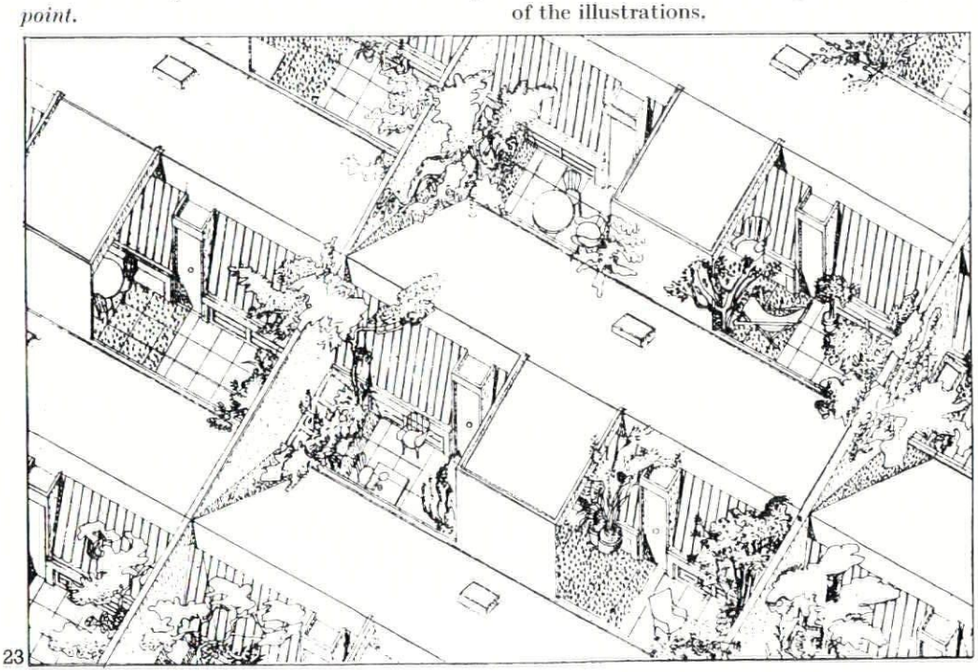
21, *Peter Ehrecke's prize winning design for student housing at the University of Technology, Berlin-Charlottenburg, recognizes that a student community does not consist of single students only. Two-storey buildings of similar design facing a paved square house a cross-section of the population.*



22

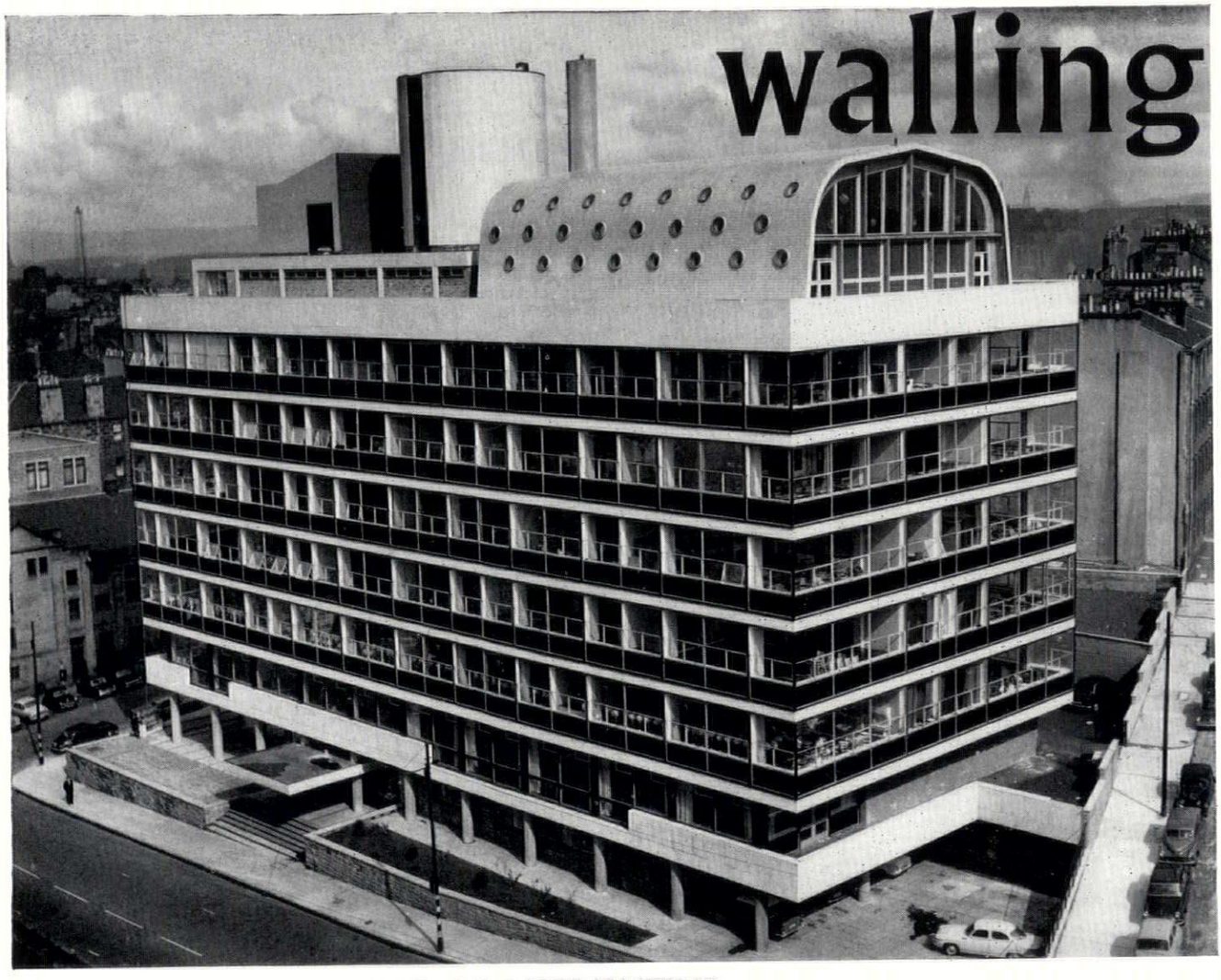
22, 23, *Le Corbusier's design of* 1925 *takes the student dream of an attic studio as its starting point.*

ACKNOWLEDGMENT: I am very grateful to Mr. Edward Cullinan for help in finding some of the illustrations.



23

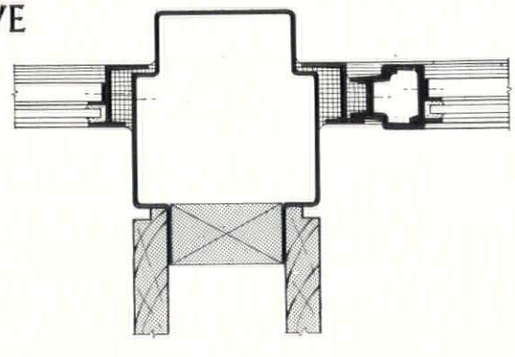
HOPE'S curtain walling



STOW COLLEGE OF DISTRIBUTIVE TRADES, GLASGOW

Wylie, Shanks & Partners, Chartered Architects

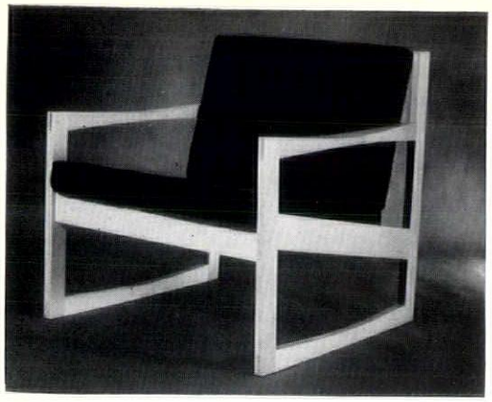
Curtain Walls in rolled steel sections with pressed steel mullions as detailed alongside, all hot-dip galvanized after manufacture



HOPE'S WINDOWS
The Name Guarantees

HENRY HOPE & SONS LTD
SMETHWICK, BIRMINGHAM
& 17 BERNERS ST., LONDON, W.1

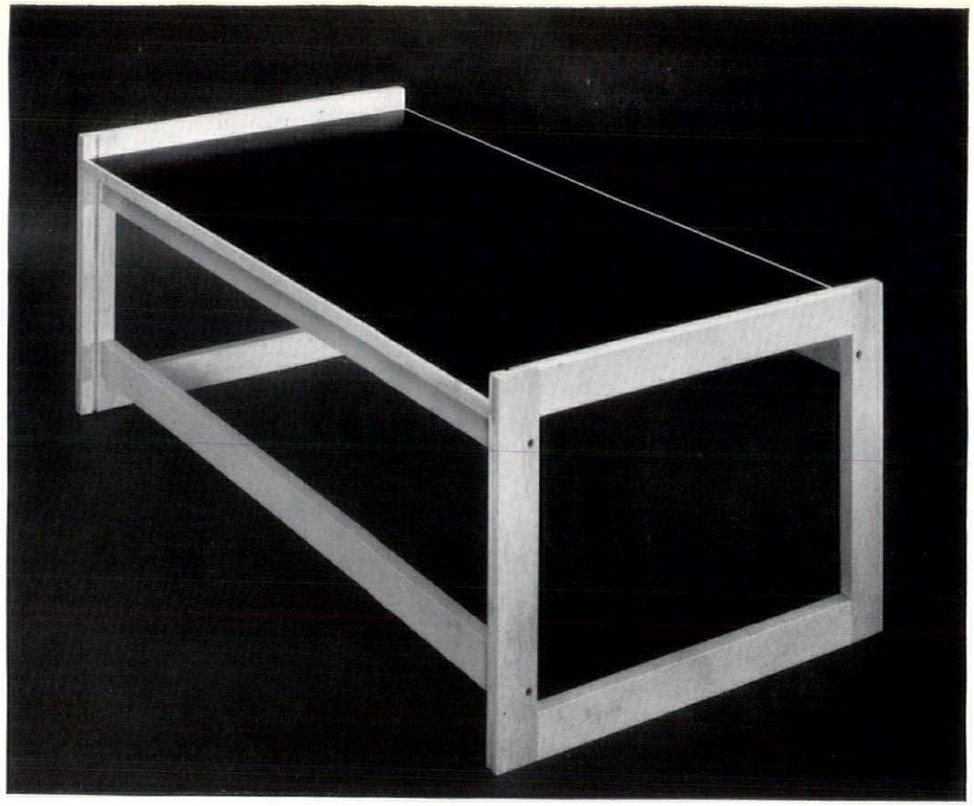
Send for Catalogue 396



1

Student Furniture

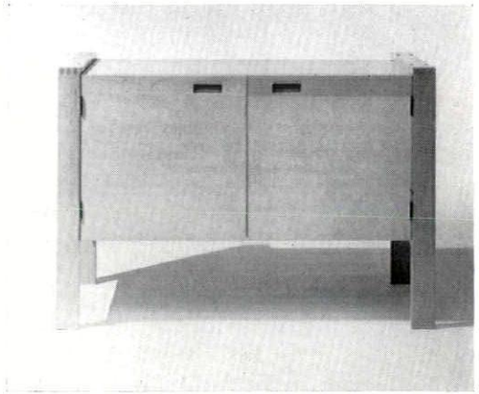
The present wave of university expansion has provoked the development of a number of ranges of specialized study-bedroom furniture. Here, 1 and 2, armchair and low table by Olivex, designer Dennis D. Harcourt; 3 and 4, drawer-chest and cupboard unit from the 'Combination' range by Design Furniture, designer Roland Gibberd.



2



3



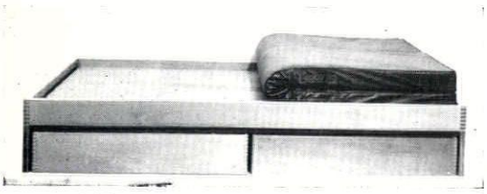
4

One of the most complete and best-designed ranges is that produced by the Lord Roberts Workshops to the design of R. D. Russell, extending from desks and chairs, 5, through armchairs, 6, and beds, 7, to wardrobes and hanging cupboards.

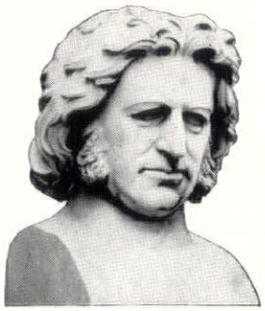
5



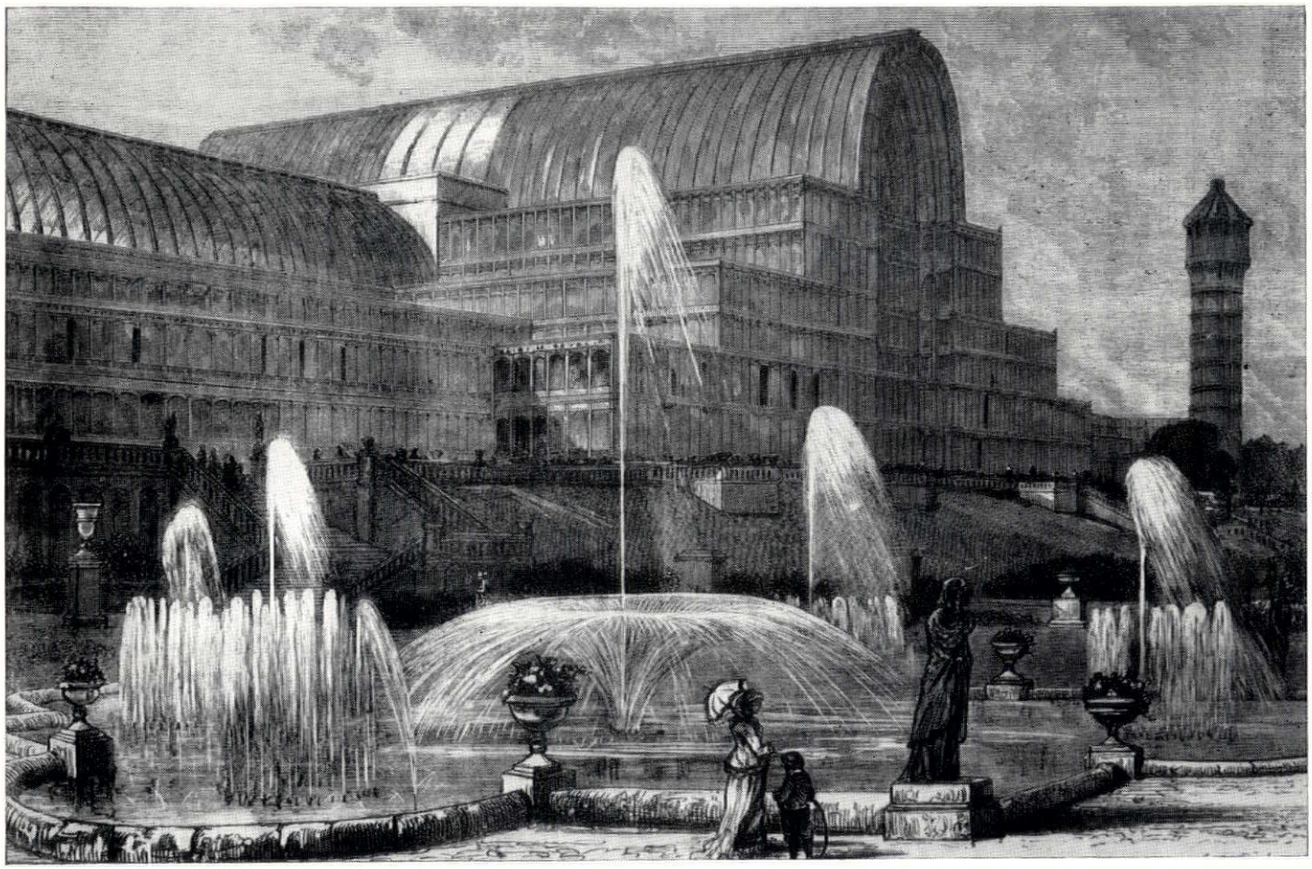
6



7



Sir Joseph Paxton would have chosen Wates for freedom



PRESENT-DAY ARCHITECTS, who—like the creative artists of earlier times—think of aesthetic man as the most important module in building design, now have a sympathetic interpreter in Wates. Sir Joseph Paxton, with his glorious concept for pre-fabrication in iron and glass that became the Crystal Palace, would certainly have chosen Wates for freedom.

How is it possible to foster creative architecture by industrialised methods of building construction? Because the Wates System invites the designer to create his own concept of commercial offices, tall flats, factories . . . and only then makes the moulds to pre-cast the concrete components.

The Wates System not only gives unique freedom: it is cheaper and faster than building systems that impose a narrow choice of components on the architect.

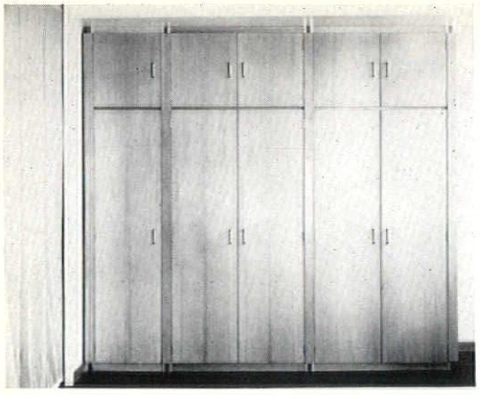
Whenever possible, Wates pre-cast on site. Components are manufactured within yards of the positions they will finally occupy. Transport costs are saved. Bottlenecks and delays eliminated. Breakages are minimal with no expensive remakes, no dubious patching.

Pre-casting on site means output of various components can be adjusted to actual need. The Wates System is flexible, adaptable.

Costs are cut. Times are cut. The whole building cycle is compressed. Owner, architect, and above all, the eventual occupiers derive benefit from the Wates System of industrialised building. We would be very glad to discuss with you how our system can help to solve your problems.

WATES build

Wates Limited, Building & Civil Engineering Contractors, London, SW16. Telephone: POLlards 5000. London · Birmingham · Dublin · New York

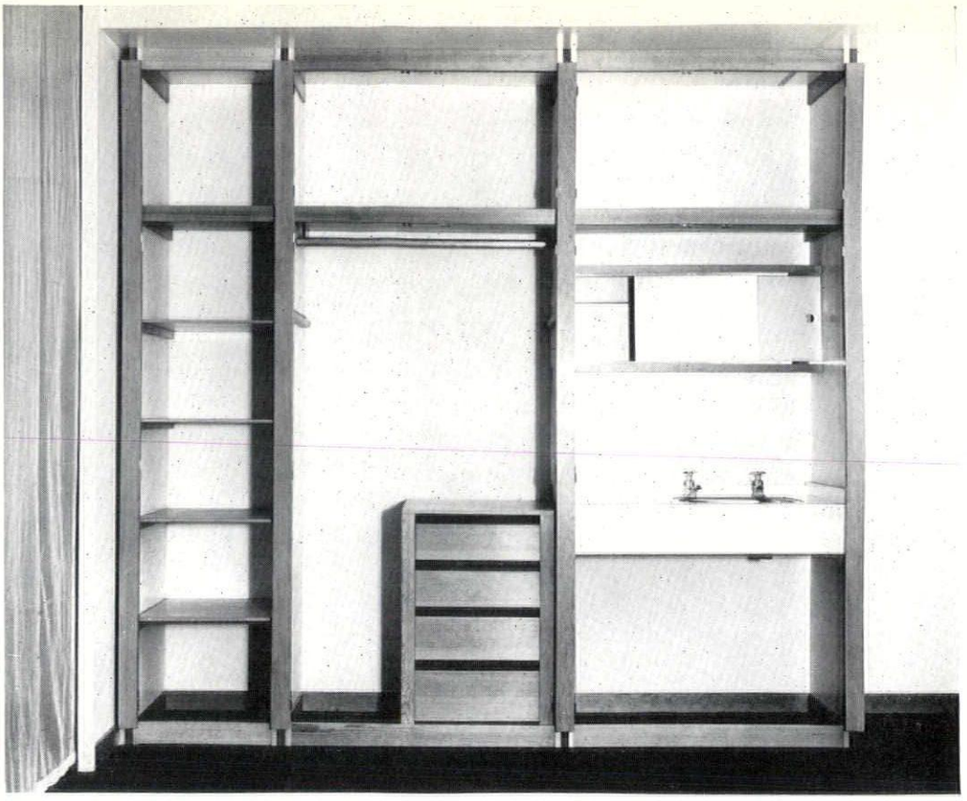


8

Student Furniture

8, 9, *further examples of the Design Furniture 'Combination' range assembled from standard modular structural units, which can be used to build cupboarding in various widths.*

10, *set of Olivex 'Modulo' furniture (also designed by Dennis Harcourt) assembled into a wall unit: more and more study-bedroom ranges are coming within the area of system furniture.*



9

10





The Opera House, Covent Garden — carpeted throughout in a design specially created by the late B. C. Baltazanos and woven in Crown Saxony Wilton. Crossley Carpets are a frequent choice for theatres, hotels, restaurants and office buildings alike. For information about design, colour and quality, send for full details of the Crossley Contract Service*. Crossley Carpets are available through leading contract furnishers at home and overseas.

Showrooms in Halifax, London, Birmingham, Manchester, Liverpool, Leeds, Newcastle, Glasgow, Belfast & Bristol

CROSSLEY CARPETS

** John Crossley & Sons Ltd., Dean Clough Mills, Halifax, Yorks.*

THE INDUSTRY

Calculated brickwork

Readers will remember the Skill articles last year in which Donald Foster, of the Clay Products Technical Bureau, discussed comparatively European and British experience in calculated loadbearing brickwork. The reasons behind the apparent reluctance of architects and engineers to use this form of construction are probably fairly deep-rooted but equally probably inexperience and lack of information are the most likely main causes.

In an attempt to bridge this information gap between CP 111 on the one hand and the usual manufacturer's brochure on the other, the Sussex and Dorking Brick Company, part of the Redland Group, has presented a report on calculated brickwork. Information is full and very fairly presented with graphs, tables, etc. Anyone likely to be using this type of structure, whether he is intimately connected with the calculations or not, would be well advised to obtain a copy so that he can at least discuss the problems from a firm grounding of basic knowledge. The booklet is obtainable from *Sussex and Dorking Brick Companies Ltd., Graylands, Horsham, Sussex*, and *Redland Holdings Ltd., Redland House, Castle Gate, Reigate, Surrey.*

Tiles in Bristol University

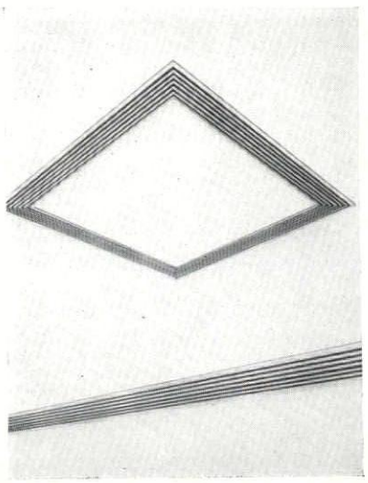
For the new School of Chemistry at Bristol University, Carter Tiles have produced, to a design by Peter McCulloch, of Ceramic Consultants, a special series of screen printed tiles.

The tiles run from the top to the bottom of the main stair well in the building, 1. Based on an idea of the architects of Courtaulds Technical Services, the tiles are designed to give the dramatic effect of textile drapes hanging from the sixth floor down to the ground. So that this effect could be achieved the joints between the tiles have been carefully staggered. The colouring of the semi-matt tiles is dark olive green, orange and brown against an off-white background.
Carter Tiles Ltd., 44 Bloomsbury Street, London, W.C.1.

Ceiling diffusers

Liniavent diffusers are linear type diffusers designed for ceiling or wall mounting. Made up in 6 ft. lengths, they are designed so that lengths can be butted together and aligned to read as a single fitting of any required extension. Lengths can also be obtained mitred at the ends 2, so that a fitting can run round all four corners of a room.

There are four models. Two of them are 'one way blow' (i.e. the vanes direct the air in one way only) and are 3½ in. and 6½ in. wide; and two are 'two way blow' and are 7 in. and 13 in. wide.
RCM (Air Distribution) Ltd., 151 Great Portland Street, London, W.1.



2

Double glazed units

The Insulation Glazing Association, a relatively new trade association, have just issued what we may fairly call a code of practice on insulated glazing. This is confined to glazing with factory made, hermetically sealed double glazing units up to 20 sq. ft. in metal or wood frames and the greater part of its contents relate to the handling of these units on site and to the business of fixing them into their frames. It is, however, of great value to the architect to know the minimum requirements of the sealants to be used and what the manufacturers expect of the surrounding structure. Fixed lights of more than 20 ft. super create special problems (whether framed in wood or in metal) and this size is reduced to 16 ft. super for pivoted lights and to 8 ft. super where lights are hung. These sizes, the "code" points out, *can* be exceeded, but this causes much head scratching. This kind of document is very useful to architects. The full title of this one is *IGA Glazing Requirements and Procedures for Double Glazing Units* and it is obtainable free from *Insulation Glazing Association, 6 Mount Row, London, W.1.*



1

CONTRACTORS etc

University House, Sheffield. *Architects.* Gollins, Melvin, Ward & Partners. *General contractor:* Tersons Ltd. *Sub-contractors: Precast terrazzo w.c: partitions, treads and landings, tile paving:* St. James Terrazzo Tile Co. *Precast granolithic treads and landings:* Girling Ferro-Concrete Co. *Slate:* North Wales Slate Co. *Danish panelling:* A. Wardle & Sons Ltd. *Timber flooring:* Hollis Bros. & Sons Ltd. *Flush doors:* F. Hills & Sons Ltd. *Translucent doors:* Parker, Winder & Achurch Ltd. *Dampa ceilings:* R. F. Morrison & Co. *Blinds:* Tidmarsh & Sons. *Mastic sealing and weather proofing:* Mann-Reddington Ltd. *Steel curtain walling:* R. O. Wright & Co. *Metal windows, doors, louvres, etc.:* Mellowes & Co. *Metal door frames:* Henry Hope & Sons Ltd. *Steel clothes lockers:* W. B. Bawn & Co. *Metal balustrading:* Grundy Arnatt. *Passenger and goods lift:* Hammond & Champness Ltd. *Suspended ceilings:* Expanded Metal Co. *Metal frame glass hoods:* Williams & Williams Ltd. *Aluminium cladding to columns:* Alcan Industries Ltd. *Anodizing cladding to columns:* Coleral Products Ltd. *Mechanical services installation:* Z. D. Berry & Sons Ltd. *Glass and concrete roof light:* Lenscrete Ltd. *Cloakroom fittings:* Neville Watts & Co. *Fire fighting equipment:* Rex Fire Prevention Ltd. *Counter, etc., to lounge bars, beer store and cellars:* Gaskell Chambers (London) Ltd. *Landscaping:* En-Tout-Cas Co.

Imperial College London: Halls of Residence. *Architects:* Richard Sheppard, Robson & Partners. *General contractor:* Wilson Lovatt & Sons Ltd. *Sub-contractors: Heating and ventilating:* Andrews-Weatherfoil Co. *Architectural steel work, balustrades:* W. G. Gaze & Sons Ltd. *Grill flooring:* Grill Floors Ltd. *Wood strip and rubber flooring:* S. Bennett & Son (Flooring) Ltd. *Precast concrete cladding and stairs:* Stent Pre-Cast Concrete Co. *Internal sliding screens:* P. G. Allday & Co. *Bar fittings:* Gaskell & Chambers Ltd. *Curtain tracks:* Silent Gliss Ltd. *Ironmongery:* A. G. Roberts & Co.

University of Aberdeen: Department of Natural Philosophy. *Architects:* J. Douglass Mathews and Partners. *General contractor:* Alexander Hall & Son Ltd. *Sub-contractors: Mechanical services:* G. N. Haden & Sons Ltd. *Lifts:* J. & E. Hall Ltd. *Electrical services:* James Scott & Co. (Electrical Engineers) Ltd. *Hydraulic hoists:* Access Equipment Ltd. *Ceilings:* Tentest Co., Applied Acoustics Ltd., Expanded Metal Co., Ltd. Turners Asbestos Cement Ltd. *Blackout and sun blinds:* J. Avery & Co. *Mechanical doors:* Bolton Gate Co. *Metalwork:* James Brown & Son., P. Buyers Ltd., E. Coules & Sons Ltd. *Special bronze castings:* Meigh Castings Ltd. *Roofing to dome:* Evode Ltd. *Roofing and tanking:* Limmer and Trinidad Lake Asphalte Co. *Faced granite work:* Robert Gibb & Son. *Window glazing components and curtain wall:* Henry Hope & Sons Ltd., Holoplast Ltd. *Suspended framework:* Haveringham Engineering. *Lighweight screeds:* Isocrete Co. *Doors:* Leaderflush Ltd., Charles Spreckley & Co. *Door furniture:* N. F. Ramsay & Co. *Laboratory bench fittings:* Sintacel Ltd. *Mechanical chalkboards:* Westland Engineers Ltd.

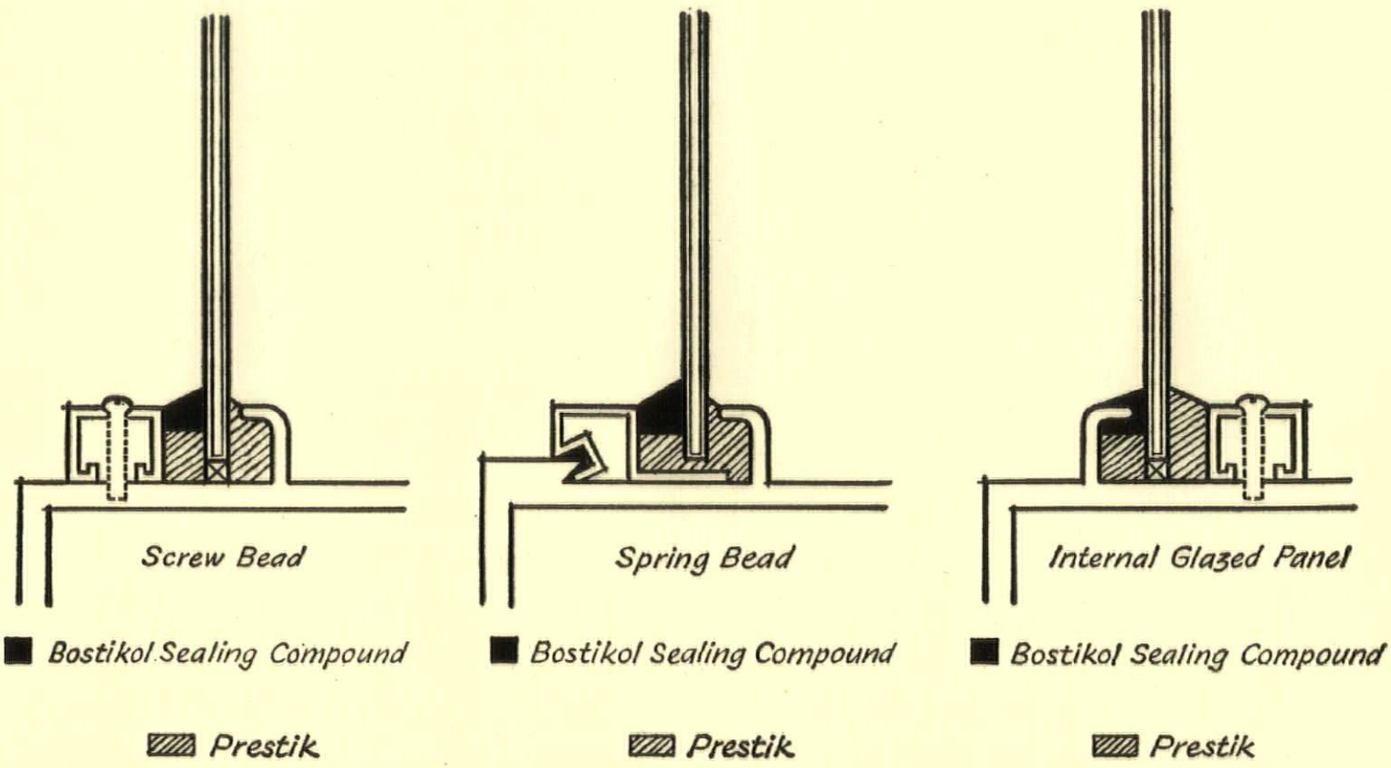
University of Aberdeen: Animal House. *Architects:* George, Trew and Dunn. *General contractor:* Peter Cameron (Builders) Ltd.

University of Edinburgh: Veterinary Field Station. *Architects:* Alan Reiach & Partners. *General contractor:* Crudens Ltd. *Sub-contractors: Laboratory fittings:* W. & J. R. Watson. *Heated ceiling installation:* Stilsound Insulation Ltd. *Linotol jointless flooring:* Matthew Thom Ltd. *Fencing, pens, gates, overhead runways:* Geo. W. King Ltd. *Fixed seating:* Race Furniture Ltd. *Furniture:* Hille of London Ltd., Conran & Co.

Queen's Universitiy, Belfast: Students' Centre. *Architect:* Robert McKinstry. *General contractor:* Thronbury Bros. Ltd.

University of Sussex: Falmer House and the Physics Building. *Architect:* Sir Basil Spence. *General contractor:* James Longley & Co. *Sub-contractors: Structural:* The Modular Concrete Co. *Hardwood strip flooring:* S. Bennett & Son (Flooring) Ltd. *Lifts:* Marryatt & Scott Ltd. *Copper roofing:* Frederick Braby & Co. *Laboratory and joinery fittings:* Victoria Joinery Ltd. *Plate glass doors:* Steele's (Contractors) Ltd. *Blinds:* Deans Blinds (Putney) Ltd. *Terrazzo stairtreads and pavings:* London Mosaics Ltd. *Ventilation ducting steel platforms:* Hotchkiss Engineers Ltd. *Vinyl tile floors:* GC Flooring Co. *Ironmongery:* G. & S. Allgood. *Lecture theatre seating:* Race Contracts Ltd. *Revolving chalkboards:* Wilson & Garden Ltd. *Overhead door closers:* Forson Design & Engineering Co. *Dining tables:* Conran & Co. Ltd. *Stainless steel tableware:* J. & J. Wiggin Ltd.

NUMBER 1 – GLAZING SEALS



Finding the right sealing compound

These days it's not easy for the architect or the builder to keep bang up-to-date with the latest improvements. This is especially the case with sealing compounds, where the already large number designed to do specialists' jobs is steadily increasing. That's why 'Bostik', who have just about every sealing compound you require, have prepared these notes on the **four main types** of sealing compound.

'Prestik' preformed sealing strips will maintain a flexible seal against years of weathering. They expand and contract with the joint that they're sealing, will not harden, get brittle or shrink. All grades exclude dust, rain and snow: the special grades resist petrol and oil.

'Bostik' butyl-based mastics are made from a butyl rubber base which gives permanent elasticity. They have very good ageing and weathering qualities, and strong adhesion to most building materials. Some form a dry tack-free surface in a few hours and a tough resilient seal in a few days, others remain tacky. They will not shrink, crack or slump.

'Bostik' gun mastic is based on oil and resins and provides a good general-purpose, easily applied sealant for joints which will not be subject to large movements.

'Bostikol' sealing compounds are based on polysulphide synthetic rubber. Applied in liquid form, they cure in position without shrinking and form a tough, permanent, weathertight seal to resist all arduous conditions met in curtain wall structures. A wide choice of grades provides different physical characteristics to suit different conditions.

One last word about 'Bostik' research: if you've any problems to do with sealing or bonding building materials, don't hesitate to get in touch with us. It's our job. We may have solved your problem already. And if we haven't, we'll get down to it right away.

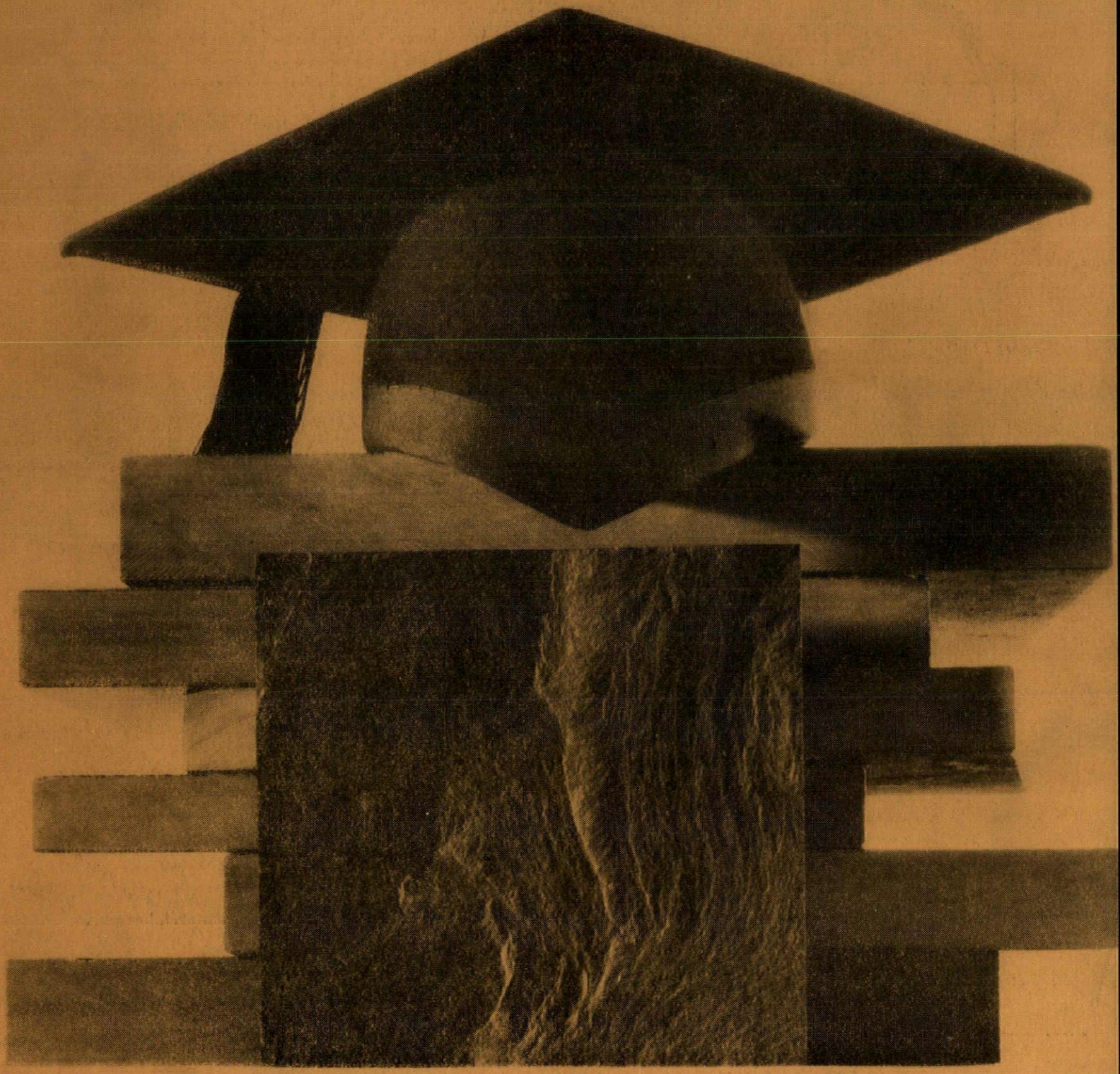
Write to: Building Advisory Dept., Bostik Limited, **Leicester.**

Bostik

The words 'Bostik', 'Bostikol' and 'Prestik' are trademarks registered in the U.K. and many other countries. Manufactured by Bostik Ltd., Leicester, England.

Printed in Great Britain for the Proprietors of "The Architects' Journal," of "The Architectural Review," and of "Specification" (The Architectural Press, Ltd.) 9-13, Queen Anne's Gate, Westminster, S.W.1, by Knapp, Drewett & Sons Ltd., by appointment to Her Majesty the Queen, Printers, Kingston-on-Thames.
Editorial illustrations engraved by The Engravers Guild Ltd., Windsor House, 23/26, Cursitor Street, London, E.C.4.
Entered in the New York Post Office as Second Class Matter

Wincilate goes to college Aberystwyth, Birmingham, Cambridge, Durham, Edinburg Leeds, Liverpool, London, Nottingham, Oxford and Sussex are among the universiti where 'Wincilate' selected slate has been used to good effect on recent buildings. 'Wincilat quarried and selected from the finest slate, machined and finished to the most exactin standards and fixed by experts retains its form, texture and colour under the severe conditions. 'Wincilate' is a tested, traditional material ideally suited to today's architectu The Wincilate Group, The Town Hall, Bow Road, London, E3. Telephone Advance 22((The Bow Slate and Enamel Company Limited, Aberllefeni Slate Quarries Limited, Tl Slate Fixing Company, Lloyd Quarries Limited, Goddard and Son, Manorian Limite

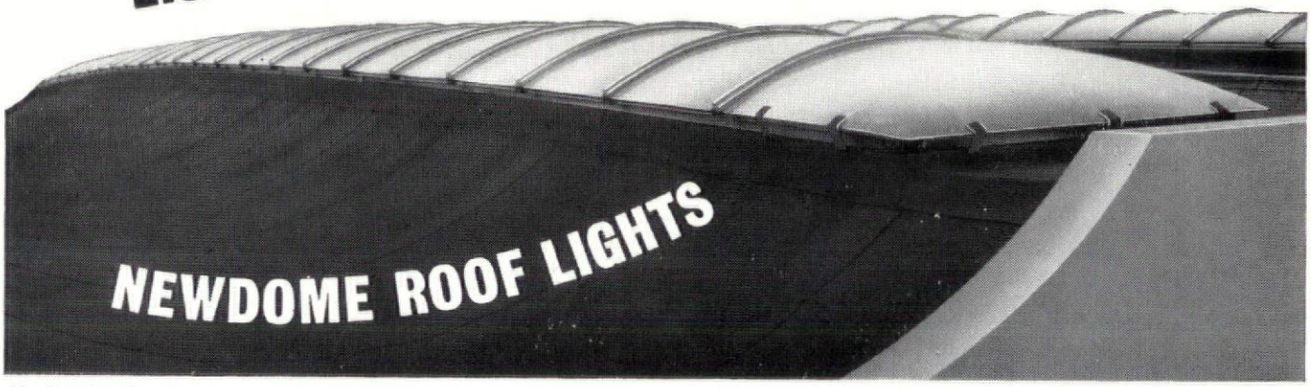




AR

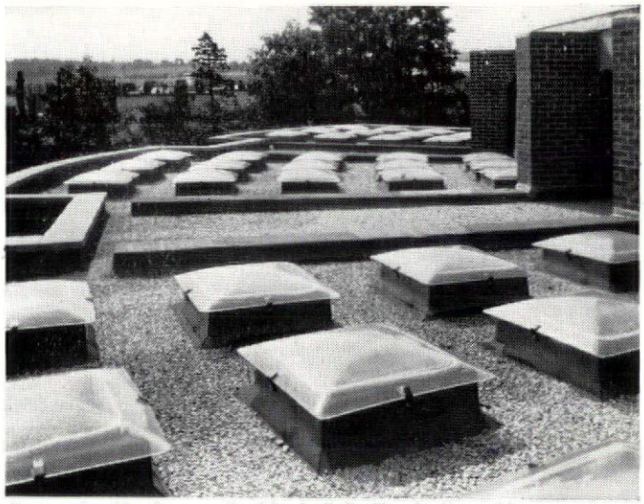
THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 801 NOVEMBER 1963 FIVE SHILLINGS

THE MOST DURABLE AND EFFICIENT FORM OF NATURAL LIGHTING

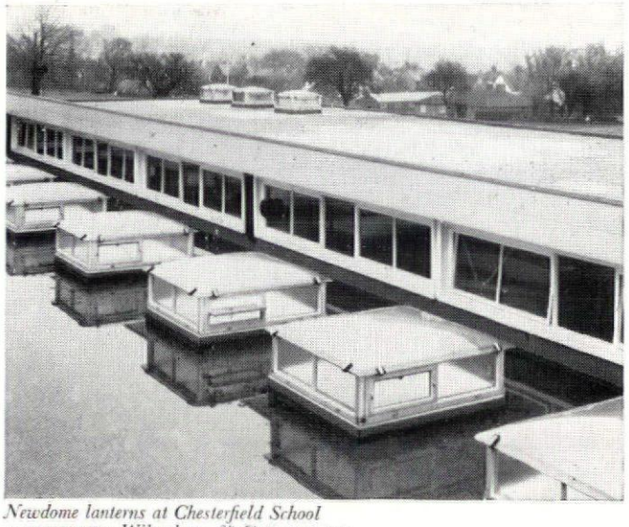


Newdome barrel rooflights at Municipal Laundry, Coventry. ARCHITECTS: *City Architect, Coventry.* GLAZIERS: *Glass (Coventry) Ltd*

Maximum value is obtained from natural lighting when Newdome rooflights are specified. There is no maintenance problem, no leaking, no rusting, no painting, no warping, no discolouring. Newdome units are easily cleaned, fire resisting and durable.



Rectangular Newdomes at St. Mary's R.C. Church, Dunstable
ARCHITECTS: *Desmond Williams and Associates* FFRIBA
GENERAL CONTRACTORS: *R. Willis & Sons*



Newdome lanterns at Chesterfield School
ARCHITECTS: *Wilcockson & Cutts* FFRIBA
GENERAL CONTRACTORS: *A. Mason (Contractors) Ltd.*

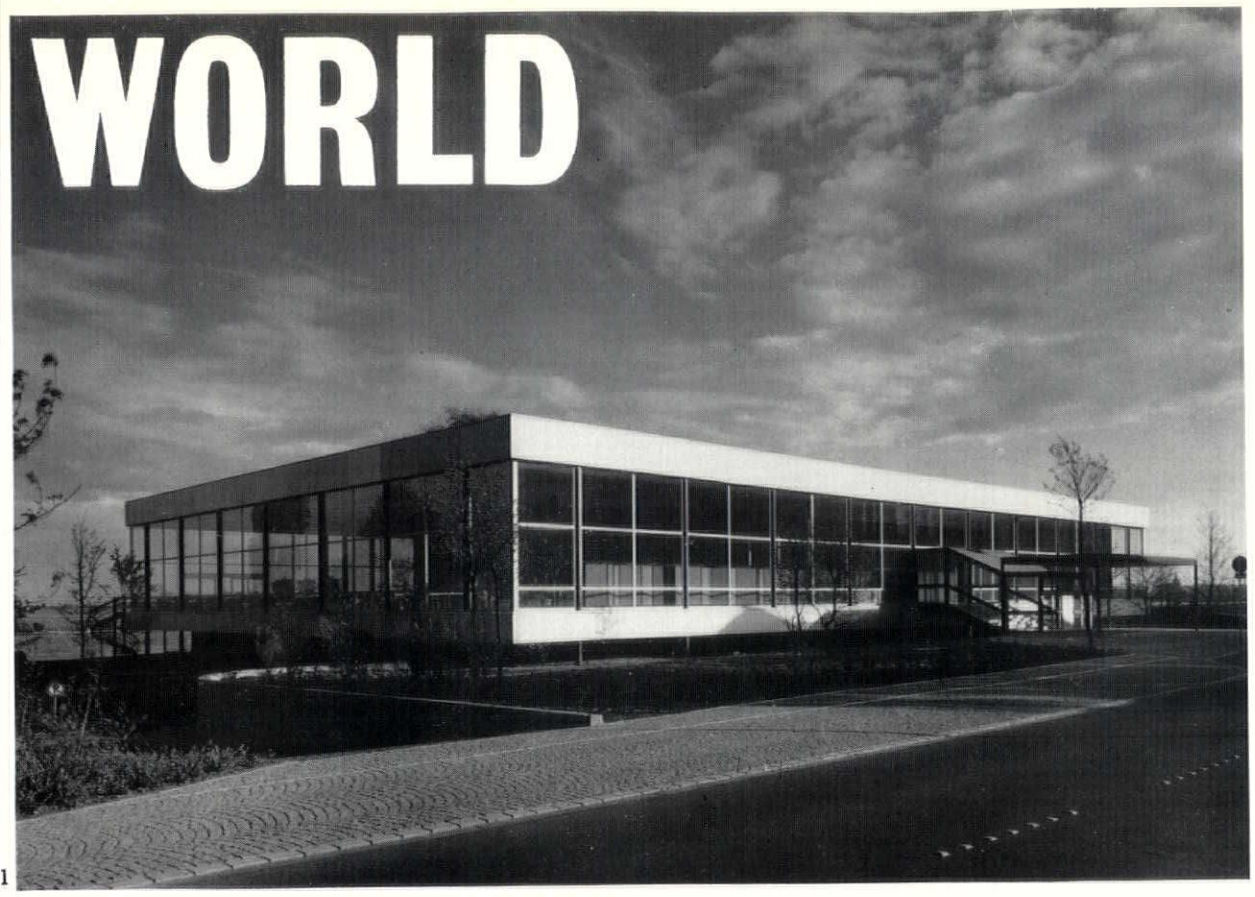
VISIT STAND 242 ROW H, GROUND FLOOR, AT THE BUILDING EXHIBITION

NEWDOME
TRADE MARK

G & B GARDNER & NEWTON LTD
P.O. Box 45, 17 George Street, St. Helens, Lancashire
Telephone St Helens 22189. Telegrams Bender, St Helens

Member of the GLASS BENDERS ASSOCIATION

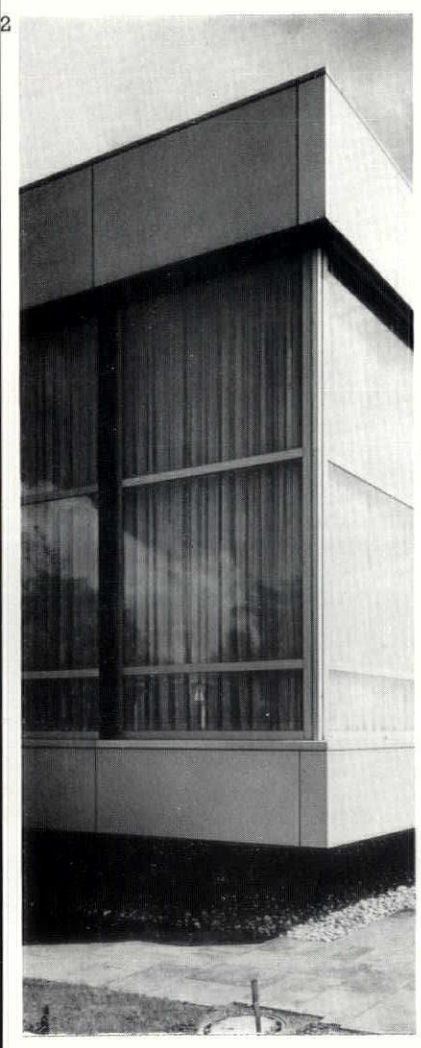
WORLD



1

SPEISEHAUS

works canteen in Krefeld

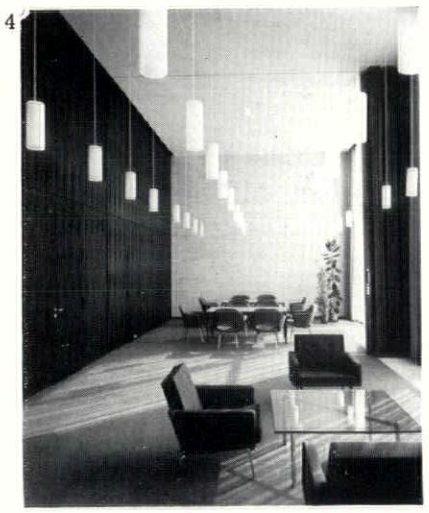


2

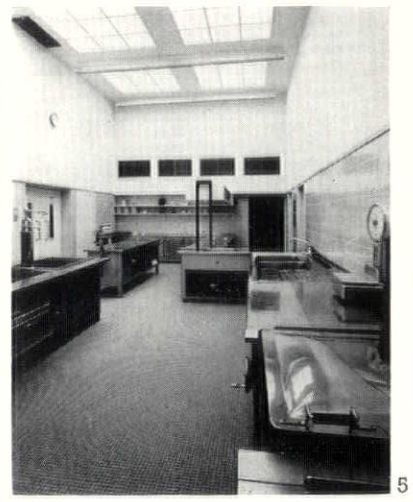
Neat, beautifully detailed and admirably sited on the bank of the Rhine, the staff canteen of the Bayer Chemical works in Krefeld, 1, breathes unmistakably the air of enlightened industrial welfare that has been for so long one of the more reliable supports of modern architecture in Germany. Its location in Krefeld might lead observers to suppose that it must be the work of Pfau or Eiermann, but, in fact, this studiedly reticent detailing, 2, is the work of Hentrich and Petschnigg, and some of the interiors reveal their touch not only in the liberal use of sheer volume, 3, but also in the positively *Staatsoper* standards of furnishing, finishing and design in some of the private dining rooms, 4. The arrangement of the plan turns relentlessly on the proposition that all public and private dining rooms should lie on the perimeter and enjoy outward views, and this has entailed packing all the kitchens and serving spaces on to the top-lit centre of the plan, 5, or in the lower floor. Whether or not this plan has disadvantages from the point of view of the psychological health of the kitchen staff (a point on which recent drama may have made the British oversensitive) it gives a nice logic in the differentiation of the various kinds of eating spaces and their relationships to the kitchens.



3



4



5

WERKSCAPE

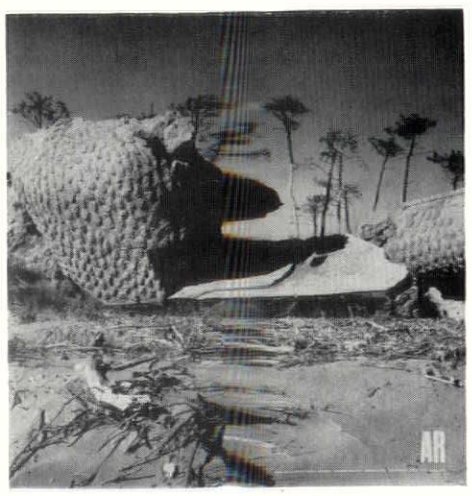
The appearance of studies of Townscape in the pages of our austere Swiss contemporary *Werk* will doubtless cause dismay among those who have regarded the elevated puritanism of the Swiss as a bastion against the (to them) romantic aberrations of townscaping. However, they need not worry overmuch as yet—although *Werk* (July, 1963) starts out with a model statement that 'Townscape . . . has introduced to us the notion of the city and its environs as a totality excluding the collaboration neither of time nor of chance,' the very abstractness and circumlocution of this statement shows that *Werk* is still some way from the insistence on the supremacy of the eye and of the individual place that have always the two firm feet on which the REVIEW has taken its stand. Much of what *Werk* publishes under the heading of *Stadtlandschaft* (Townscape), consists of ideal projects which are a long way from the kind of face-to-face consultation with the genius of the place that was the basis of Gordon Cullen's pioneer studies—there are only two pictures of inhabited streets in the whole issue, and one of those is English. Something closer to the real thing appears in a long article on *The Architecture of Chance* by Benedikt Huber, which does occasionally reflect a mode of vision, 6, that reveals the



6

ACKNOWLEDGMENTS

COVER: Eric de Maré. WORLD, pages 305–308: 1–5, Inge Goertz-Bauer; 6–9, *Werk*; 10–13, *Domus*; 16–22, *Bauwelt*; 23–30, *L'architettura*; 31–38, *Techniques et Architecture*. VIEWS AND REVIEWS, pages 309–311: 6, Salisbury Journal. HOUSING, CAMBERWELL, LONDON, pages 317–323: Galwey Arphot (plans by courtesy of *Architect & Building News*). UNDER TENSION, pages 324–334: 1, 2, P. E. Guerrero; 4, Joseph W. Molitor; 6, Ezra Stoller Associates; 18, Mark Strizio; 19, Central Press; 20, Corke and Clabburn; 21, Julius Shulman; 22, *Bauen+Wohnen*; 25, USIS; 26, Henry Kahn; 27, Tranquille; 28, 29, Galwey Arphot; 30, Zintgraff; 31, David Hirsch; 32, Don Morgan; 35, Martin Cook. EXPLORING EYE, pages 335–337: Eric de Maré; TRICKS OF THE TRADE, pages 338–340: 1–3, Toomey Arphot. INTERIOR DESIGN, pages 341–345: 1–5, John Donat; 6–8, 10, Toomey Arphot; 9, 11, John Maltby. LEONARDO AND BRAMANTE, pages 346–351: 1, 6, 10–13, 15, 16, 18, the Warburg Institute; 5, 8, 17, 19, Courtauld Institute. OFFICE BUILDINGS AT CORBY, pages 352–356: Galwey Arphot. MISCELLANY, pages 359–364: Exhibitions, 5, 7, R. B. Fleming; 6, R. G. Lock. Architecture, Colin Westwood. Shrubs, Donald F. Merrett. LOOK OUT, pages 365–366, Nairn Arphot. CRITICISM, page 368: Toomey Arphot.



This month's cover *shows the ruins, not of some ancient middle-eastern dynasty, but of World War II fortifications in the south of France. Photographed by Eric de Maré, they form the subject of this month's* Exploring Eye, *pp.* 335–337.

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

VOLUME 134 NUMBER 801
NOVEMBER 1963

SUBSCRIPTION RATE:—*The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada $10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto, via V. di Modrone 18 Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of 27s. 6d. Postage 2s. 9d. extra on the completed volume.*

Directing Editors — *J. M. Richards, Nikolaus Pevsner, H. de C. Hastings, Hugh Casson*

Executive Editor — *J. M. Richards*

Assistant Executive Editor — *Reyner Banham*

Assistant Editor (Production) — *William Slack*

Features Editor — *Kenneth Browne*

Technical Editor — *Lance Wright*

Assistant Editor (Counter Attack) — *Ian Nairn*

Staff Photographers — *De Burgh Galwey, W. J. Toomey*

Advertisement Manager — *George Dunn*

CONTENTS

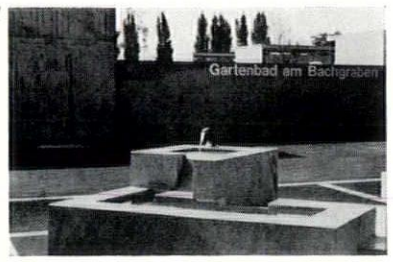
305 World
309 Views and Reviews
312 Frontispiece
313 Inner Circle: *Edward Hollamby*
317 Housing, Camberwell, London: *Architect, F. O. Hayes (Camberwell Borough Architect)*
324 Under Tension: *Robin Boyd*
335 Exploring Eye
Concrete in Decay
338 Townscape
Tricks of the Trade, 1: *Ian Nairn and Kenneth Browne*
341 Interior Design
Art Gallery in London: *Architects, Ahrends, Burton and Koralek*
Plastics Showroom, South London: *Designer, Noel Lefebvre*
346 Leonardo and Bramante: *Peter Murray*
352 Office Buildings at Corby: *Architects, J. Douglass Mathews & Partners*
357 Contemporary Draughtsmen 4 = *Roger Limbrick*
Miscellany
359 Exhibitions
361 Architecture
363 Shrubs
365 Look Out
367 Criticism: this month's buildings
369 Skill
System Building, 3
Comparison of Continental Systems
374 The Industry
378 Contractors, etc.

Swiss Townscape

right sympathies for a true townscape approach.

Yet the Swiss, with their immense capacity for bothering over little things and getting the details right, ought to have a natural aptitude for some aspects of townscape in practice. One of the schemes illustrated fully justifies this belief—the Bachgraben bathing station in Basel, 9, designed by Otto and Walter Senn, with its detailing sympathetically adjusted, 7, and 8, to a variety of functions. One occasionally sees touches of these qualities in real Swiss towns, but not often enough.

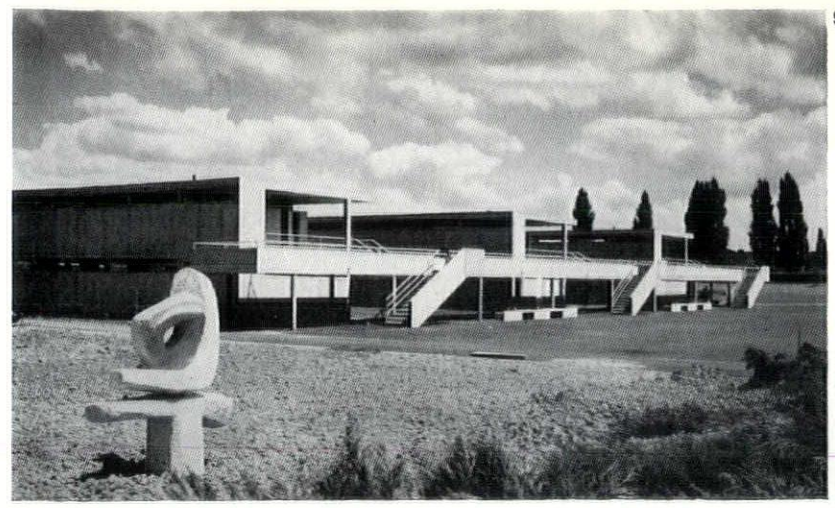
7



8



9



BRAVURA

modern style returns to Italy

At a time when Italian design seems to get more and more neurotic and tentative, it is particularly good to see something as well and as relaxedly done as the new Herman Miller/da Padova showroom in Turin, 10, by Giorgio Host Ivessich. Gio Ponti's editorial congratulations in *Domus* (404, 1963, which illustrates the scheme) seem fully justified, for here is a species of Italian plastic wit—in the remodelling of the Miller trademark in three dimensions, 11—that seemed to have died out a decade ago, and a modelling of interior space which is rich and artificial, 13, and yet seems to be entirely straightforward—it even seems possible that Ivessich managed the vaults this way, 12, not in order to prove some point about the inadequacies of the International Style, but because he liked the look of them that way. Ponti speaks of a *bravura* in the way in which Ivessich has not respected the *ambiente pre-esistente*, but has re-architected it into the spaces of an ideal modern dwelling, and that grand old operatic word *bravura* seems to describe pretty accurately what is missing from so much Italian architecture today.

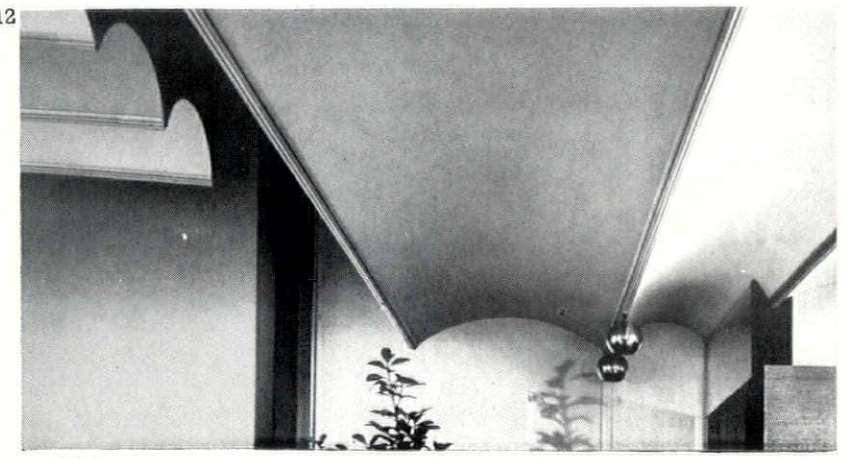
10



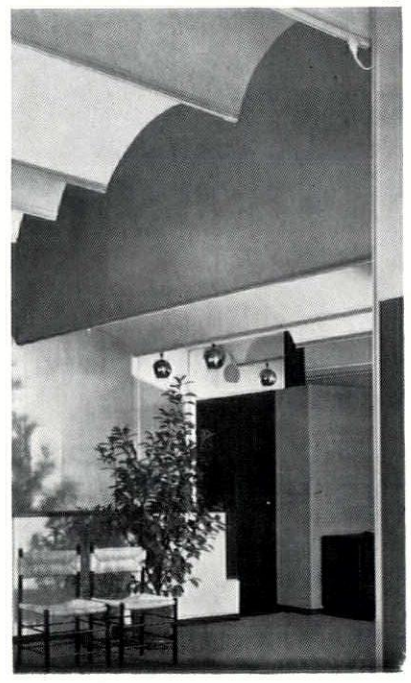
11



12

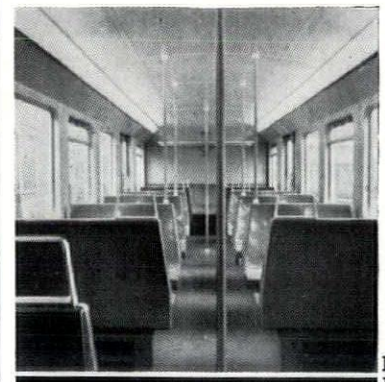


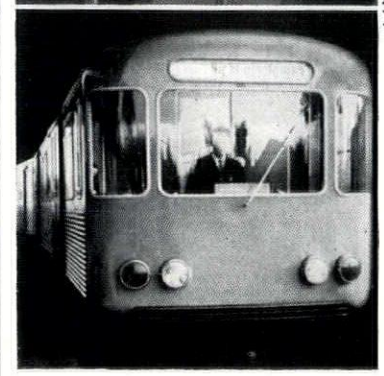
13



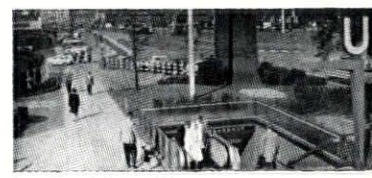
HAMBURG UNDER-GROUND

Elsewhere in this issue, Edward Hollamby discusses the effects of the underground railways on the growth of London. Two months ago *Bauwelt* (31, 1963) discussed and illustrated the extensions to the U-Bahn in Hamburg, an exercise best known so far for the elegant rolling-stock designed for it at the HfG at Ulm, 14 and 15.





Bauwelt's publication of the architecture shows that it is well up to the same standard, the stations marked externally by a splendidly simple and obvious symbol, 16, very cool and

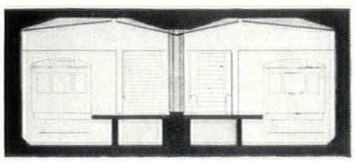


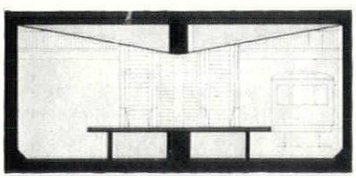
U-BAHN

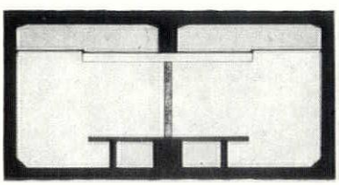


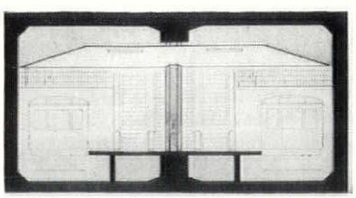
17

simple at platform level, 17, with a considerable variety of ceiling forms fitted into almost identical tunnel sections, 18, 19, 20 and 21, by a number

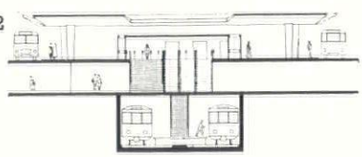

18


19

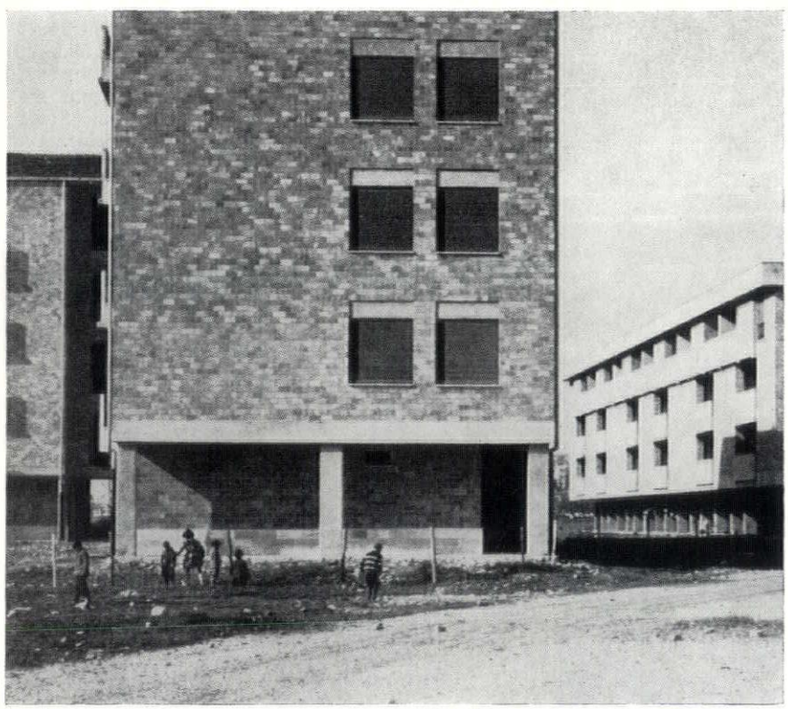

20


21

of different architects. The most complicated of these is the interchange between U-Bahn and bus-station at the Wandsbek-Markt, a neat piece of sectional organization, 22, by the engineering staff and the architect Heinz Graaf. The same issue also previews proposed urban rapid transit systems for Frankfurt and Düsseldorf.


22

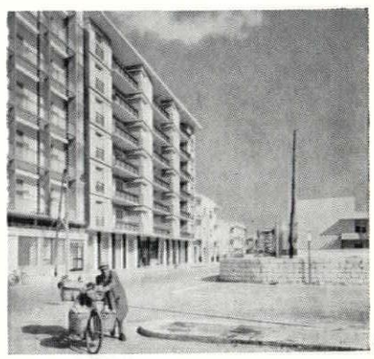

23


24

ROMAN SCHOOL

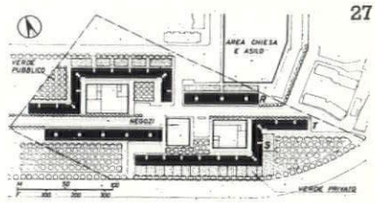
recent work by Studio di Architetti e Ingegneri

Even the Italians now comment on the absence of Italian buildings from the consciously opinion-forming Italian architectural magazines *Casabella* and *l'Architettura*. The latter has made amends of some sort by publishing a group of symptomatic works by the Roman group calling themselves simply *Studio di Architetti e Ingegneri* (basically the Aymonimos and the Rossis) and treating them as examples of the 'Scuola Romana.' The group of works gathered together for publication (*l'A*, 93, 1963) comprises a palazzina in the suburbs of Rome itself, 23;


25


26

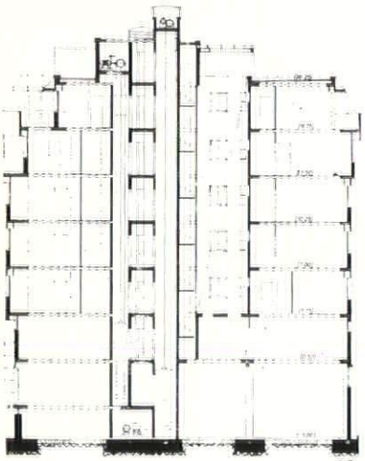
large street-fronting developments in Lecce, 25, Rome, 26 and Brindisi: an Ina-casa development in Foggia that manages to break away from the corridor street solution, 24 and 27;



27

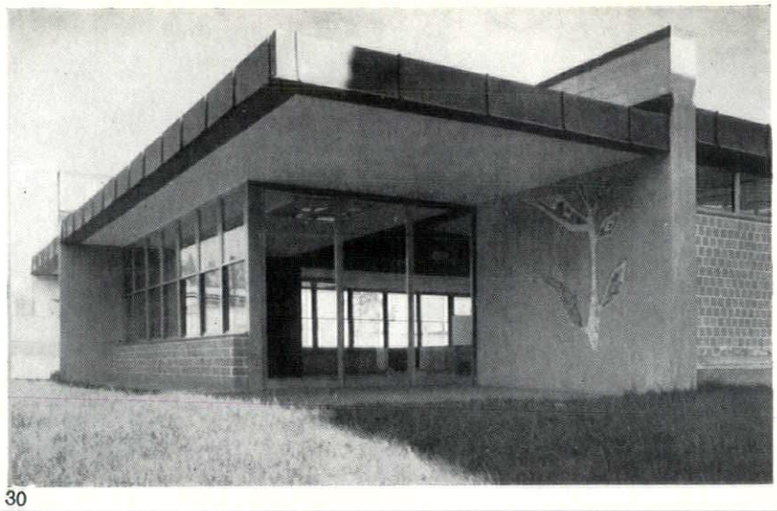
and a pavilion-school, 28, for polio victims outside Rome. Whatever didactic and ideological programmes Manfredo Tafuri's presentation may try to load on to these works for purely


28

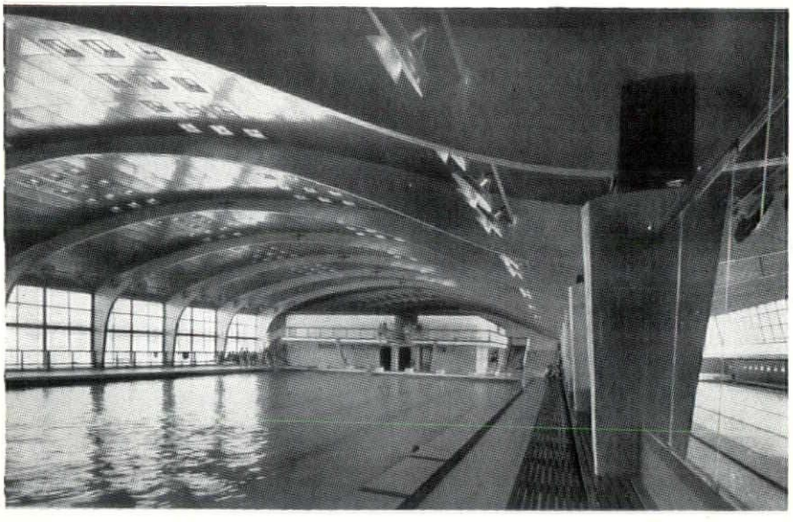


29

local and polemical reasons, their interest for non-Italian readers must lie in the fact that they are nothing extraordinary, but the solid professional middle run of honest and responsible Roman practice. Eyebrows will certainly be raised in other countries on discovering that the group should have had recourse to such a device as a light-well in the planning of the palazzina, 29, and it is doubtful if thousands of foreign students will rush to click their cameras at much of the mass-housing, yet the general standard is one that no town need be ashamed to have attributed to its school, and the Franco Vandone pavilion is a modest contribution to that erratic but attractive modern Italian tradition of sympathetic school design, 30, that begins with Terragni's *asilo* in Como.



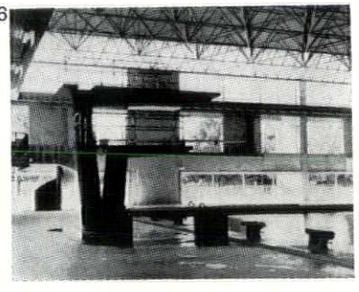
30



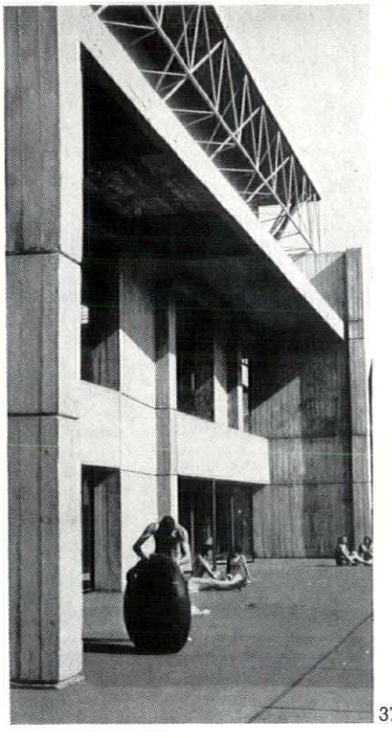
31



35



36



37

POUR LE SPORT

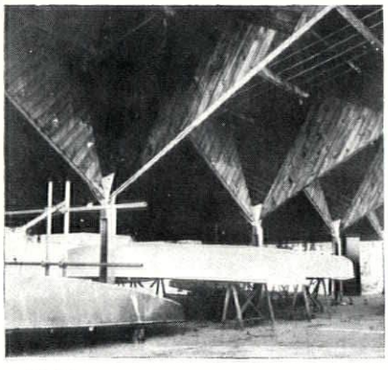
Another massive special issue from *Techniques et Architecture*, this time (June-July, 1963) on building for sport. The coverage as wide as ever, dominated at first sight by sophisticated laminated wooden arches such as that over the swimming pool at Joinville, 31, by Bovet, Berthelot and Cuzol, and bowling alleys of varying degrees of fantasy. But tucked in among all this are two other matters of more than usual interest. One is constituted by the boat-stores and other nautical structures of Gomis and Raymond: one at Draveil (Seine) with a roof structure in nailed wooden trusswork, 32, 33, the other a complex of sheds, hostels, etc. on the Ile de Penfret off Concarneau, the hostel accommodation being grouped around an existing farm that has been partly rebuilt, while the other buildings are in a cluster beside the sea and include another fine boat shed, 34.

The other major matter arising from this particular issue is the unlikely confrontation of constructional idioms attempted—with almost complete success—by the team of Maillard, Ducamp, Thomas and Sylvano, who were responsible for the design of the swimming pool alongside the Stade Francais at Boulogne-sur-Seine. On top of a conventionally massive and Corbish concrete structure, 35, they have placed a space-frame, 160 feet square, which is equally conventional in its own tubular idiom, but a complete stranger to the structure below, 37. Although there is a visual incongruity in some views of the pool, 36, the space-frame, designed by the engineer du Chateau, tops off the composition satisfactorily in most views and really comes into its own at night, 38.

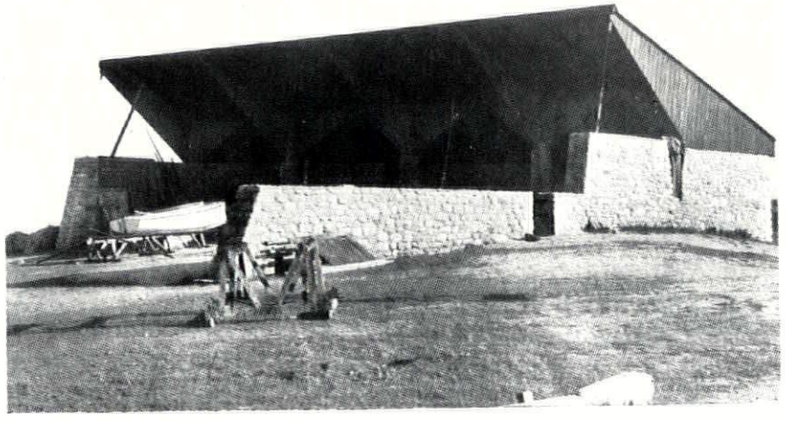


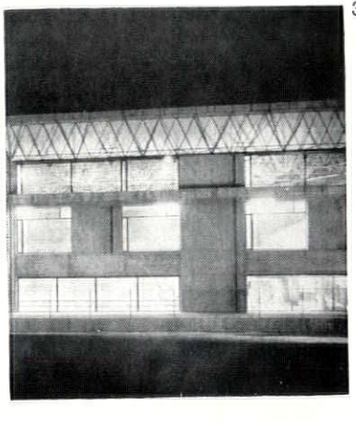
32

34



33





38

views and reviews

MARGINALIA

UNIVERSITY OF ESSEX

In Mr. Lionel Brett's article on the new British universities, published last month,* it was explained that the designs for the University of Essex at Colchester (architects, the Architects' Co-Partnership) were not then available for illustration and comment. It is now possible to show the accompanying sketch plan indicating the architects' first conception. Mr. Brett comments:

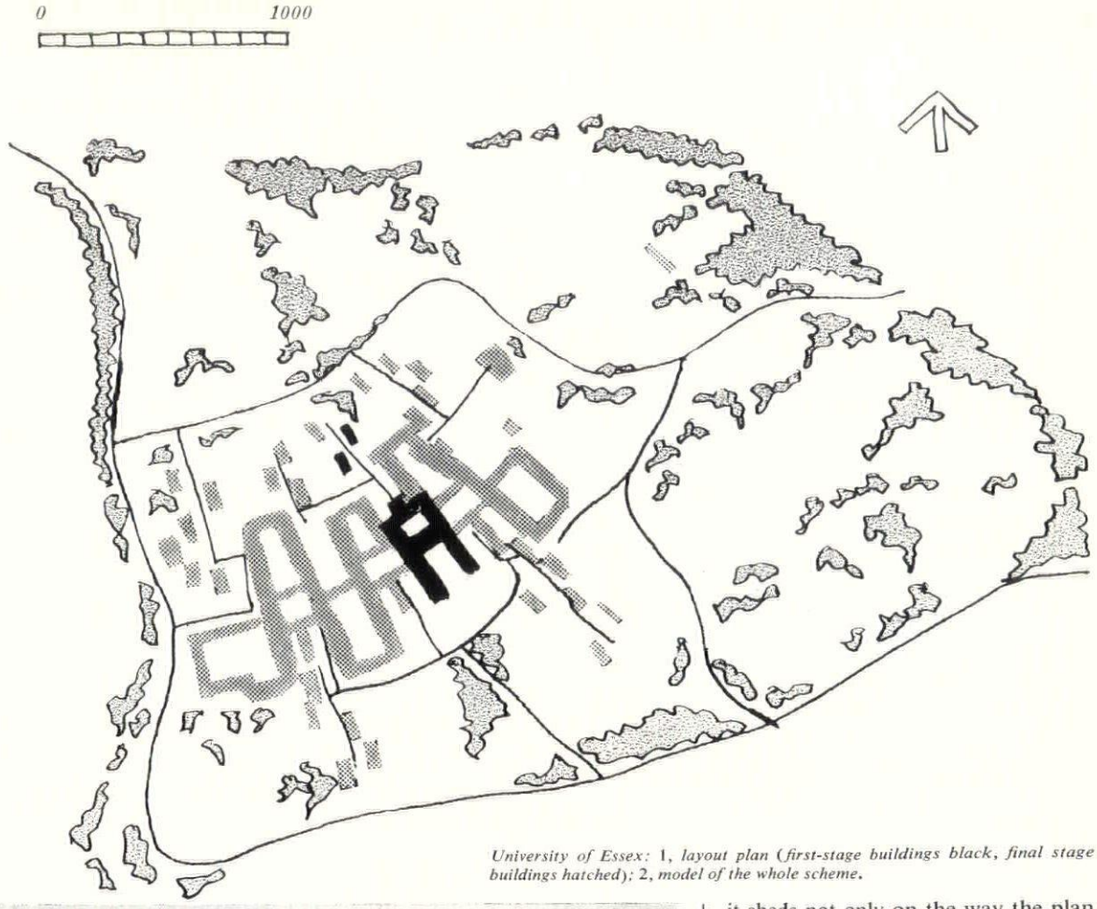
The architects describe the basic planning concept as a 'three-dimensional fishbone.' The lakes are extended into the heart of the university, and from its foot the curving backbone consists of a service road below and a pedestrian mall above. The mall, as at Norwich, is the main-street of university life, and consists of a connected series of smallish concourses or 'vertebrae,' falling in gentle 5 ft. steps in sympathy with the fall of the valley bottom. The main 'ribs' of teaching and social buildings connect directly to these concourses (and to the service network below), and are extensible outwards from their ends. At the head, and on the edge of the lake, is the administrative centre. Freely disposed among the ribs are residential and study towers, not 'colleges,' for the university accepts the Norwich principle that students should live in small groups of a dozen rooms on a floor, sharing a kitchen, supplemented by a restaurant, the atmosphere being that of flats in a high-density town rather than that of colleges in a campus. The effect will in fact be urban rather than institutional.

Essex, like Kent, was a later starter than the other three, and not surprisingly combines some of their attributes. The vertebrate growth principle, with a pedestrian deck, is familiar to town planners and was the basis for the plan for the central area of Hook. It should theoretically, while avoiding the drawbacks of each, combine the open-ended flexibility of York with the strongly centralized character of East Anglia. Its own handicap, which they both cleverly avoid, is that of all inner-orientated organisms and persons—an untidy exterior! Nearly every pedestrian shopping centre is a cautionary example.

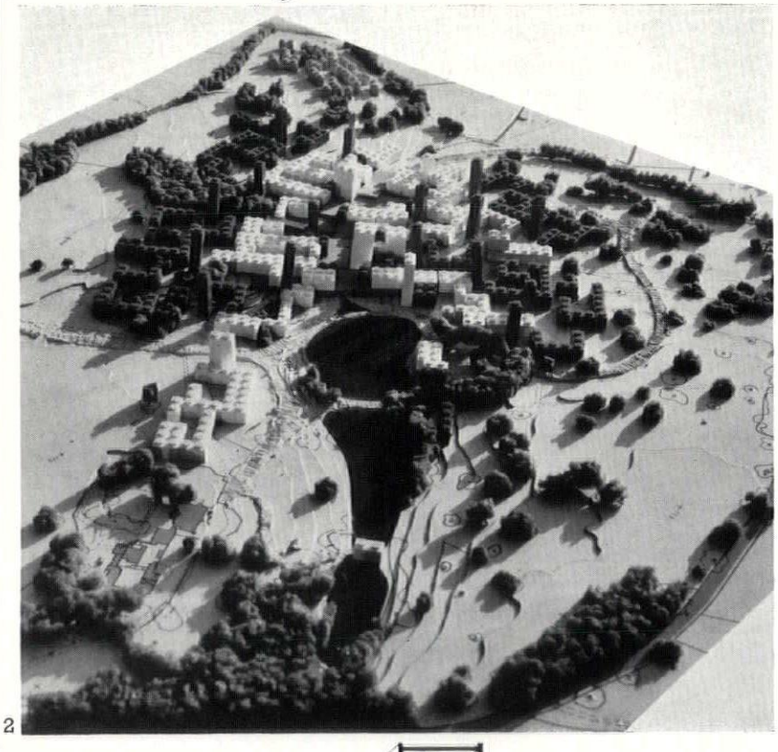
LEEDS MASTER-PLAN REVIEWED

The very comprehensive plan for the redevelopment and extension of Leeds University, drawn up by Chamberlin, Powell and Bon (AR, July 1960) is the subject of an interim stock-taking report which, unfortunately, appeared too late for inclusion in the Universities special issue of the AR in October. It is a document that deserves to be recorded, however, for the light it sheds not only on the way the plan itself has progressed, but also as a record of the present state of opinion on university planning and architecture. Under the title of *University of Leeds Development Plan Review* 1963 (published by the University) it records the development of the master plan itself as work on it has proceeded, and on certain ancillary projects that are essential to the plan, such as the traffic underpass on the inner ring road; it records the completion of some small buildings connected with the university; but, most important, it records the elaboration of the designs for certain residential blocks and the Mathematics Court, an inner quadrangle composed of the Mathematics and Geology blocks, the Senior Common Room and a proposed Botany building, with a tower of cantilevered lecture theatres forming the fourth side. Here, and especially around the stepped concourse between the maths block proper and the computer building, 3, a number of ideas about university design that have been floating about ever since the Sheffield competition ten years ago, appear to be on the point of crystallizing into architecture that can be built at last—buildings evolved from a skeleton that combines

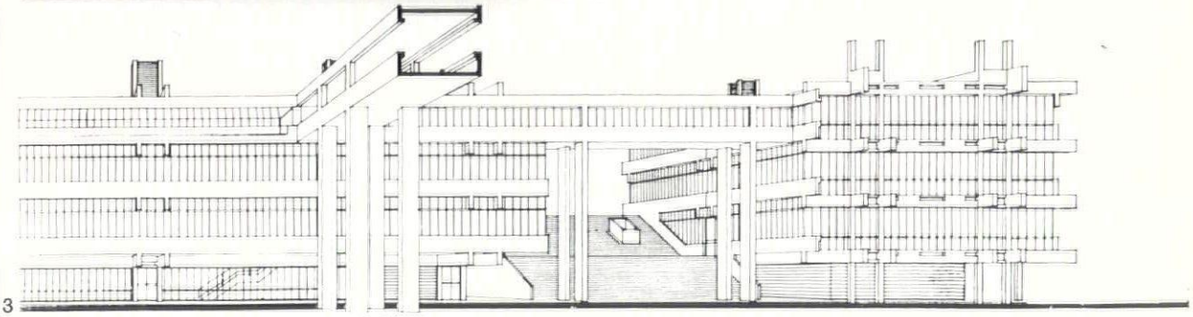
* 'Site, Growth and Plan,' by Lionel Brett. AR, October, 1963.



1



2



3

University of Essex: 1, *layout plan (first-stage buildings black, final stage buildings hatched);* 2, *model of the whole scheme.*

University of Leeds: the mathematics/geology building.

services and structure, the communications-grid in the air, and accidentally-monumental spaces formed by broad flights of steps connecting the main levels of the site.

LOB

The Location of Offices Bureau, the setting up of which was announced in Parliament earlier this year by the Minister of Housing and Local Government, has now opened its offices (in Queen Anne's Mansions) and started its activities by publishing a booklet, 'London Outward Bound.' Its purpose is to encourage the decentralization of office employment from congested areas in central London. It will promote publicity and research and provide an information service.

The arguments in favour of decentralization are well known and accepted by most people. LOB's booklet sets them out well and should be taken more seriously than its unappetizing design and its facetious illustrations may suggest. LOB promises, in addition, to collect and make available information about the experience of firms who have already moved their offices out of central London, which should prove useful. It is ironical that this bureau should be set up by the Government just as it announces a project for building for its own use vast blocks of offices in Horseferry Road in an already over congested area.

OBITUARY

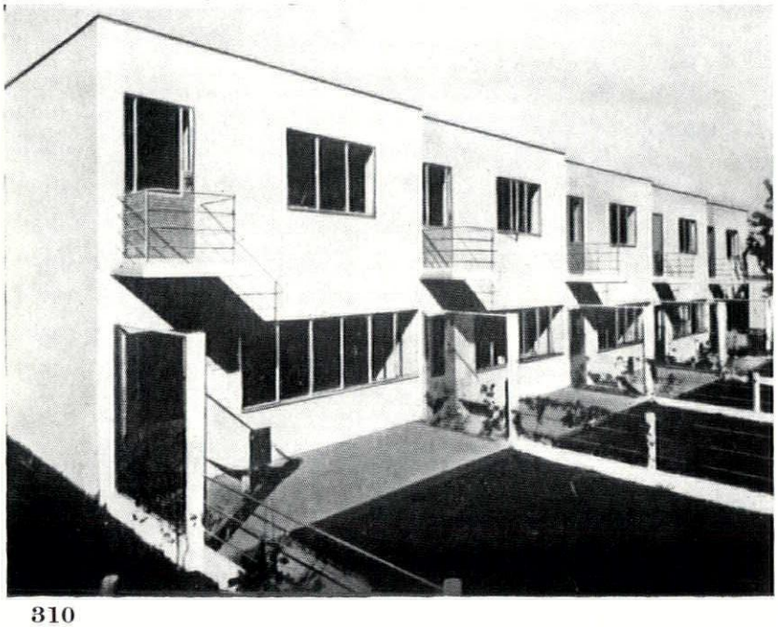
J. J. P. OUD: 1890-1963

The death, earlier this year in his mid-seventies, of Jacobus Johannes Pieter Oud, has robbed the Modern Movement of one of the very first architects who were able to put modern precepts to work on the city-wide scale and in the socially responsible manner that were among the Movement's aspirations. Becoming city architect of Rotterdam in 1918, at the sensationally early age of 29, he was involved in problems of mass housing and the planning of complete neighbourhoods at a time when the other masters of the modern movement were still busy with visionary and expressionistic sketches that were to bear little relation to anything that was ever built on the ground. That the work done at this very early date still looks so convincingly modern is, of course, largely due to his involvement with Theo van Doesburg and *de Stijl*, though his personal style had already begun to show a puritanical and rectilinear trend even before his encounter (through van Doesburg) with Rob van t'Hoff and the influence of Frank Lloyd Wright.

But his relationship with *de Stijl* was an unhappy one and he resigned in 1921. By nature he had less of the visionary and extremist about him than the rest of the group, and his most characteristic and pondered writings, such as the essays collected in *Hollandische Architektur*, reveal a practical man with a strong sense of the materials of which buildings are made, and a middle-of-the-road attitude to the world in which they would have to be built. Furthermore, his position of municipal responsibility inevitably separated him from the free spirits and revolutionary fervours of the progressive movements ('He was always refusing to sign manifestoes,' complained van t'Hoff). Nevertheless, his workers' housing at the Hook of Holland, designed in 1924, is justifiably regarded as one of the key landmarks in the rise of Modern Architecture, even though it was ridiculed by van Doesburg. Mies van der Rohe's allocation to Oud of a terrace of five model cottages at the Weissenhof exhibition of 1927, 1, confirmed his position, and Henry-Russell Hitchcock's pioneering article on him, published in Paris in 1931, brought him to the attention of an even wider public.

Nevertheless, it becomes increasingly difficult for most students of modern architecture to accept Professor Hitchcock's later elevation of Oud (in *Architecture: Nineteenth and Twentieth Centuries*) to a position of eminence in his generation equal to that of Mies van der Rohe, Gropius and Le Corbusier. His later work was apt to be an embarrassment to his earlier admirers and former disciples, while to most younger Dutch architects he appeared little better than the exponents of the despised 'hand-shake style,' the compromise-modern pioneered by Dudok that was prepared to go more than half-way to meet current standards of official taste. The final verdict on him will not be easy to make, but even if it finally comes down against most of his architecture, it will not be able to rob him of his historical importance.

4, *houses at the Weissenhof exhibition*, 1927, *by J. J. P. Oud.*

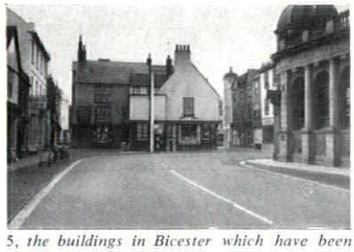


CORRESPONDENCE

TOWNSCAPE IN BICESTER

To the Editors.

SIRS,—I am sorry to have to report that since I wrote the article on Bicester that I hoped would be so persuasive (AR, March, 1963), the deplorable thing has happened: the



5, *the buildings in Bicester which have been demolished.*

small block of buildings that did so much to preserve the town's identity has gone, the corners are straightened out and traffic can roar through at a high old rate. It will be able to go even faster when someone realizes that one end of the King's Arms is also a bit in the way and makes the normal kind of decision. Meanwhile, it's fair to say that one now gets a good view of two nice houses which were once hidden; but the intimate closeness has gone for ever, and the rather windy spaciousness that has been created instead is not much of a recompense. Thus do bits of the essential England get eroded in the interests of something that no one has ever been able to name.

Yours, etc.,
A. H. GOMME.
Aylesbury, Bucks.

BOOK REVIEWS

NEXT-CENTURY LONDON

LONDON 2000. *By Peter Hall. Faber and Faber. 55s.*

There has never been a book on London to compare with Mr. Peter Hall's *London 2000*: a bewilderingly erudite assembly of scholarship, factual knowledge, hard calculation and sentiment, all imaginatively woven into a picture with prophetic, and at times, sci-fi-ish zest. Hard sense enlightened by imagination (or the other way round) is rare and good, but because of its rip-roaring many sidedness, *London 2000* is a thoroughly difficult book. It is also a most important book and has already done more to stimulate discussion than any other study of London for many years.

Mr. Hall's thesis is that previous planners—Barlow, Abercrombie and the lot—have tried the impossible in attempting to control London's size. The drift south-east is the inevitable expression of immutable economic forces and is good in itself: only south-east England can provide the social, economic and communications environment which A.D. 2000 conditions will require. We must accept this, even if we dislike the tendency, because one cannot mess around with these god-like economic forces—at the most we can 'bend' them and by the use of mainly taxation contrivances, cajole population, industry and traffic into optimum positions and forms.

Mr. Hall's new London would be a region of 4,412 square miles with a vast accretion of industry and population between 4½ and 6 millions more than in 1961. This figure is fantastically beyond anything previously suggested as possible or desirable. The 'new' people would largely be housed on present agricultural land in 25 new towns and expanded towns between 35 and 65 miles from the centre. Central densities would be reduced to 60 per acre with exceptional high density commercial concentrations. Multi-level urban communications and traffic segregation would be highly developed with trans-regional highways for industrial traffic and commuters, planned so as not to penetrate the centre but to veer off or halt short of it on a 'radial-tangental' system. The whole of the 4,000 square miles would be within the commuter complex and, indeed, Mr. Hall envisages commuting to London from across the Channel.

Although Mr. Hall's picture has its science-fiction elements, it is not 'unrealistic' and is big-scale and imaginative. Criticism is easy on several grounds. One can accept with reluctance the concept of south-east concentration, which Mr. Hall substantiates with a wealth of economic and social argument, but there are many details which are wildly speculative. No one can safely forecast the form and performance of motor transport, even over a short period of 40 years, or what developments will be possible in rail and air transport. We may not even know much about the form of houses or, more fundamentally, the form of social organization and family and communal life. In his calculation of these things, Mr. Hall is cautiously conservative, and many architects and planners will react sharply against the primary concept of 60 persons per acre residential development largely in houses with small gardens in central London, involving inevitably the sacrifice of the Green Belt and much agricultural land, but Mr. Hall argues his case in detail and protestants must read it.

On the big social-economic tendencies, Mr. Hall is almost unbearably self-confident. 'Unknowables,' he says, have been ignored 'because it is improfitable to speculate on them.' A few weeks after the publication of *London 2000*, the Registrar General corrected his population forecasts for A.D. 2000 from 55,646,000 to 63,774,000—an 'error' of 8 million on 50. The new figures endorse Mr. Hall's thesis, and in a *New Society* article he cheerfully accepted them; but dare we suggest that even this basic demographic calculation and others besides may still be speculative? Nor can we sit down under this complete submission to uncontrollable

'economic forces,' and accept the writing off in economic, social and cultural terms of all but a favoured 4,000 southern square miles of Britain. So far economic forces have largely been uncontrollable because not fully understood; we must acquire political and scientific skills not only to control our economy but positively to design it.

One cannot appreciate the great importance of Mr. Hall's book if one concentrates on its details, or even on the main thesis, and neglects its brilliant polemical force. As a challenging and thorough-going, documented and illustrated attack on our niggardly, nibbling approach to planning, it is an achievement of incalculable value.

E. J. Carter

GOOD FORMS

THE DESIGN OF FORMS IN GOVERNMENT DEPARTMENTS. *HMSO.* 21*s.*

The following quotations are from the blurb on the inside of the dust jacket: 'In Britain about three million people are engaged on office work and all use forms of one sort or another. They write on forms; read information from them; copy from one form to another; file forms; pull them out again; fold them and despatch them. . . . This book treats a form as one of the most important tools of the office and urges that it should be designed to do whatever is required with the minimum effort from all involved. It is concerned mostly with government forms (which represent perhaps one quarter of the total output of forms) and, while dealing with all aspects of design, it pays special attention to the question of ease of completion by members of the public. There are chapters about the collection and assembly of the information needed before attempting a design, and of the matters then to be borne in mind in evolving a draft. The special features of forms which are to be used with particular types of equipment, e.g. accounting machines, addressing machines, punched cards, filing systems and so on are thoroughly examined, as well as design features which facilitate copying or aid calculating, checking, comparing, filing, etc. Much attention is given to typography and layout as an aid to the production of an attractive and easily used form.'

This is, if anything, an understatement. The book is unbelievably comprehensive and of inestimable value to administrators and those few designers concerned with the production of forms however complex. It has, however, one grave fault: instead of saying 'when you have decided on the broad outline of your form, get in a typographer to work out the detailed design,' it says instead 'a complete guide to the subject of typography is beyond the scope of this publication, and on many matters the advice of HMSO should be obtained. Some knowledge of typography will, however, help the forms designer to draft material which is practical to set up in type and which will not be unattractive in appearance.' The next twenty pages consist of a potted course in typography. This is simply not good enough. You cannot teach typography in twenty pages, and anyway why try? Are there not plenty of starving typographers only too ready to help?

Ian Bradbery

HISTORY OF STYLES

THE ARCHITECTURE OF ENGLAND FROM PREHISTORIC TIMES TO THE PRESENT DAY. *By Doreen Yarwood. B. T. Batsford.* 84*s.*

A bulky volume which must have involved assembling a vast quantity of facts, dates and illustration material; yet one must question whether it was all worth doing. The Banister Fletcher approach to architectural history, which regards architectural evolution almost wholly as a matter of changes in style, has long been regarded as inadequate, but here is a new historical volume that goes through the same unrewarding exercise all over again. Its classifications and descriptions are on a stylistic basis, with emphasis on styles of embellishment. There is little analysis of a building's function or of social and industrial change. Architectural change is treated as though it was a game played among architects for its own sake.

The difference between Mrs. Yarwood and Sir Banister Fletcher (apart from the latter's deep, if sometimes misdirected, scholarship which has to be contrasted with Mrs. Yarwood's inexpert and often pointless descriptions of buildings) is that she is concerned only with England and that she brings the story forward to this day. This was a useful thing to attempt, particularly as regards the nineteenth century, and she has performed the task painstakingly if not very discriminatingly. She makes no distinction between significant and insignificant modern buildings. Some she presents without comment; on others she makes rather naïve comments of a largely subjective kind. These are simply random personal opinions based on no very evident architectural understanding or historical perspective.

In spite of its bulk (688 pages of text and line illustrations and 70 photographs—very well taken photographs on the whole), the book contains surprisingly little essential information. The style of writing is commonplace; so are the hundreds of line drawings that comprise the bulk of the illustrations.

J.M.R.

LAY INTERIORS

INTERIOR DESIGN. *By Elaine Denby. Country Life.* 63*s.*

This is a book (to misquote a Q.C. in a recent obscenity case) which can safely be put into the hands of one's servants or one's daughter. Impeccable parentage (Country Life); handsome to look at (the 150 photographs are well chosen and well reproduced); no strain upon the intellect (the text is methodical rather than enlivening in flavour); worthy in intent but titled, alas, far above its true station. Planned, the author tells us, as an historical survey of the subject for the layman, it remains basically this, and the chapters tacked on at the back—a publisher's suggestion?—dealing with design principles, colour and materials, never rise above the standard of the advice columns of a woman's magazine. Not, in fact, a book for architects or scholars. There are only three plates and—a fatal omission when writing about interior design—no sections.

H.C.

AFRICAN ANTHOLOGY

NEW ARCHITECTURE IN AFRICA. *By Udo Kulterman. Thames and Hudson.* 84*s.*

This volume contains some excellent photographs of modern buildings in a number of African countries, but as an anthology it is curiously inconsistent and disappointingly uninformative. Apart from a general introduction about the African architectural background, the text consists of a paragraph devoted to each country, in which certain statistical information is given and the country's architectural development commented on. These paragraphs include the Union of South Africa, although the book illustrates no buildings from there, and Egypt, although only one building is illustrated: the Hilton Hotel in Cairo, by an American architect. No mention is made of Portuguese Africa, in spite of the fact that the work of Amancio Guedes in Laurenco Marques is among the most interesting and original in the whole continent.

The bulk of the book consists of 184 photographs of buildings or models of projected buildings. Less than a quarter of the buildings are accompanied by plans and there is no description whatever: simply the name of the building, the location and the architect. Sometimes not even the purpose of the building is given.

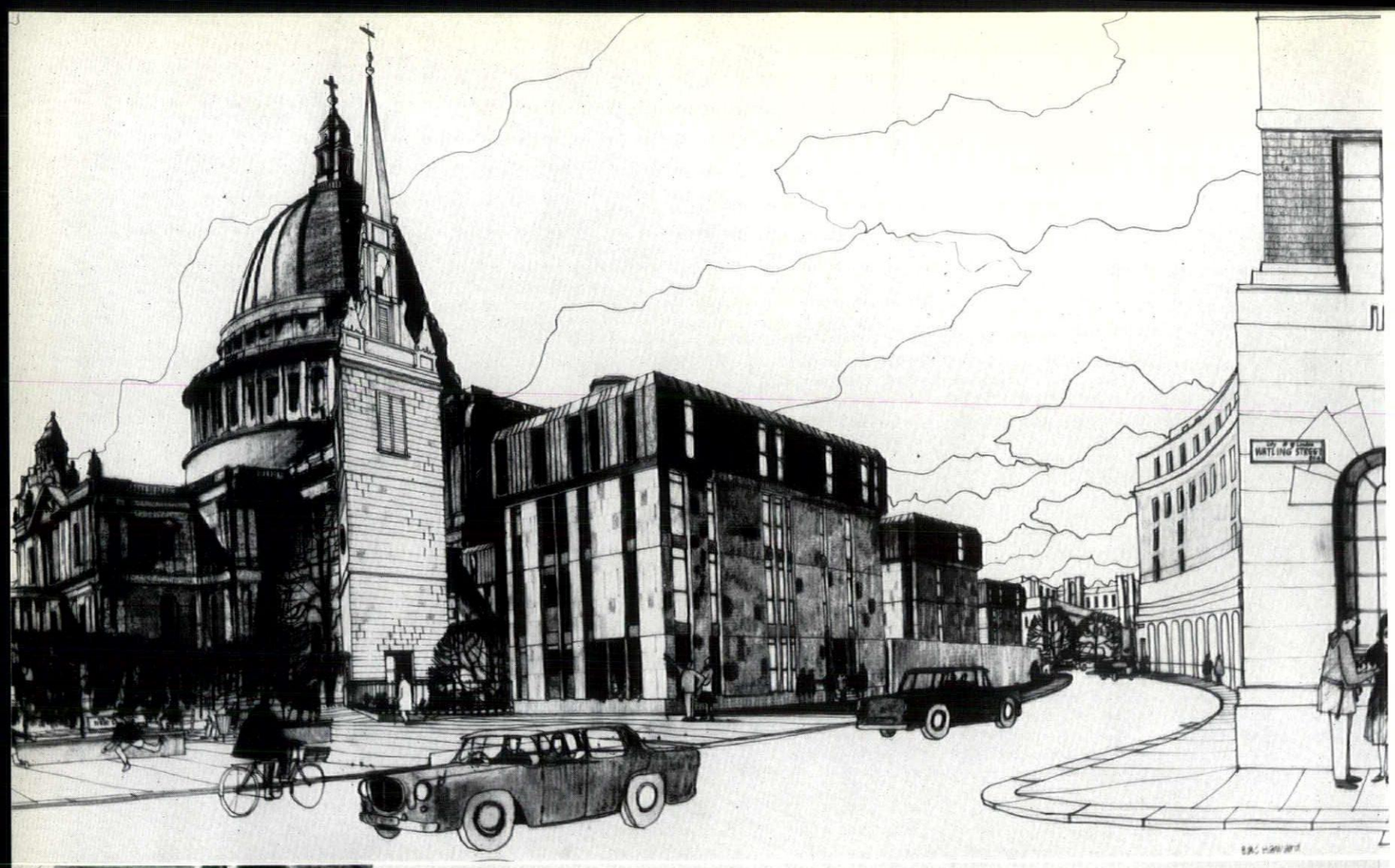
The book, which appeared first in Germany, gives the impression of having been compiled without first-hand acquaintance either with Africa or with the buildings shown in it. There is some first-rate architecture being produced in Africa, notably in Ghana, Nigeria, Morocco and Algeria, and some surprisingly interesting work being done in more backward countries like Ethiopia and Cameroon. It deserves less superficial attention than this.

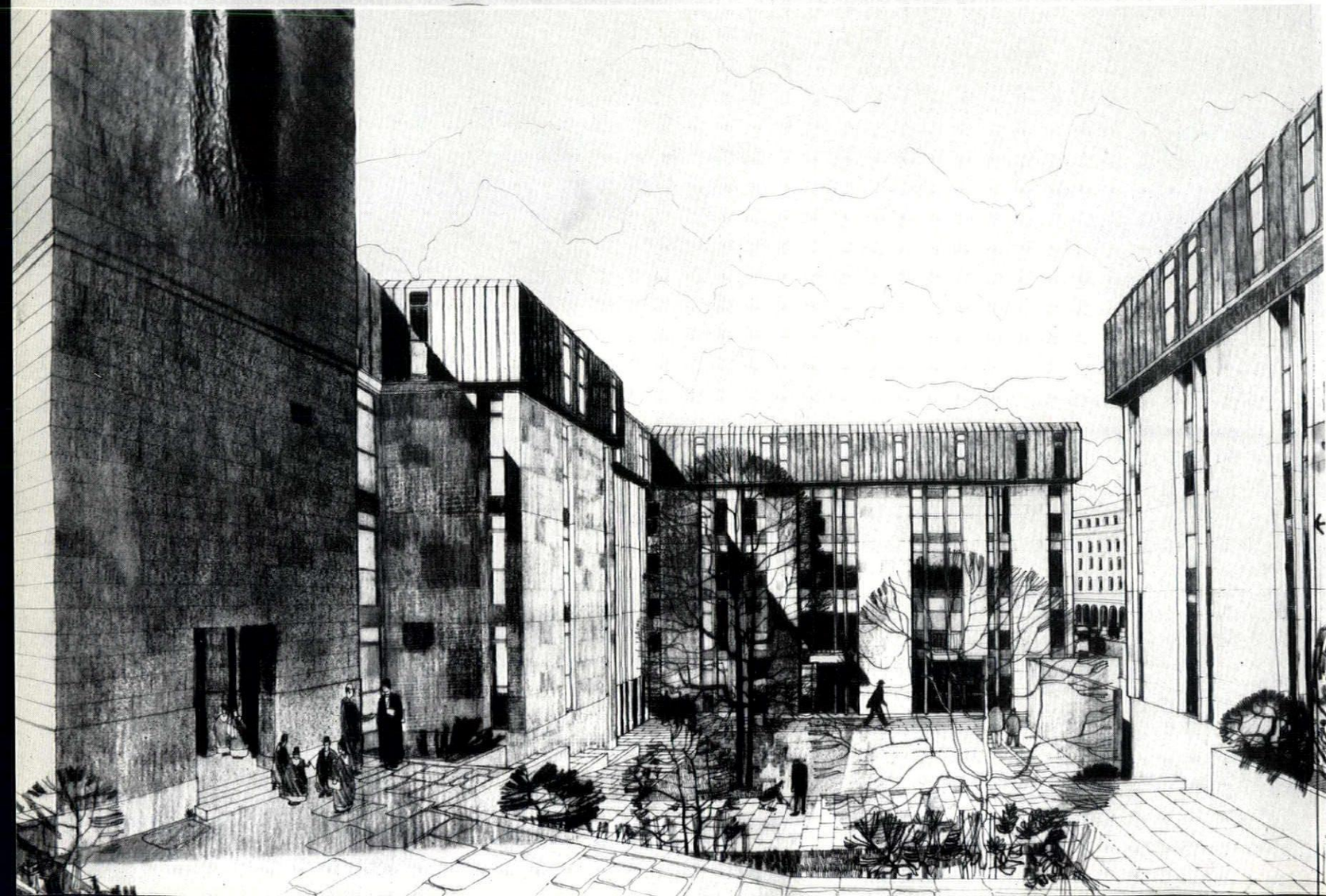
J.M.R.

The recent article on cathedral cities by Ian Nairn and Kenneth Browne (AR, September 1963) complained of much inappropriate and insensitive rebuilding Here, by contrast, 6, is a well designed and suitably discreet piece of infill in one of the cities: Salisbury. It is a shop and office block just completed to fill the gap between two old buildings at the High Street entrance to the Close. Architects, Robert Potter and Richard Hare.

6

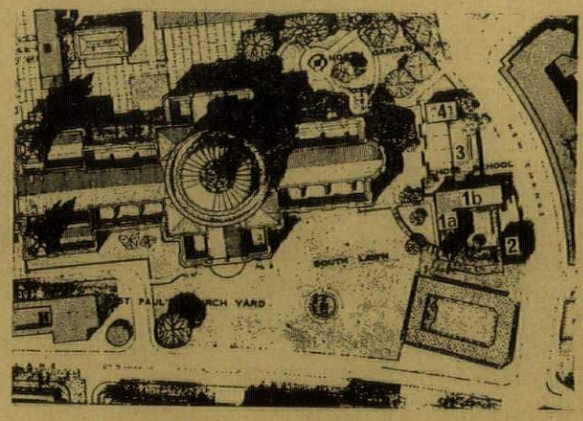



WATLING STREET



Work is shortly to start on the new St. Paul's Cathedral choir-school, sited between the magnificently baroque east end of the cathedral and the wholly unworthy Bank of England offices, fronting New Change, which were built in neo-Georgian style just after the war. Following the recommendations in Sir William Holford's 1946 *plan for the precincts of St. Paul's, the tower of St. Augustine's, Watling Street, the only part of this Wren church to survive the bombing, is to be incorporated in the choir-school. The group of buildings has been designed by the Architects' Co-Partnership, who won a limited competition organized by the Ministry of Housing and Local Government and the Dean and Chapter after a design by the late Lord Mottistone had been rejected on the Royal Fine Art Commission's advice. The drawings opposite*  *show: top, the buildings from the corner of Cannon Street and New Change with the tower of St. Augustine's on the left; bottom, looking across the sunk garden towards the main residential block with the base of the church tower again on the left. The buildings are in Portland stone with the projecting attic storey sheathed in lead.*

The plan on the right shows the new choir-school incorporated in the Holford layout. 1a *and* 1b *are the L-shaped residential block, the short arm of which adjoins the tower of St. Augustine's.* 2 *is a separate block of flats for the sub-organist and other cathedral staff.* 3 *is a single-storey block containing the assembly-hall and music-practice rooms and* 4, *on the far side of a sunken playground, is the classroom block.*



Edward Hollamby

INNER CIRCLE

One hundred years ago London's first underground railway was opened, and this event—one of the most significant of the railway building activities of the time—was duly celebrated during 1963. Exhibitions were held at Neasden and Charing Cross, articles were written, *The Times* issued a special supplement.

Dr. Beeching, however, must have been too busy working on his now famous report, the most significant exercise in technocratic Ludditism of the present day, to have noticed the irony of the coincidence of these two events in railway history—the celebration of the centenary of the first underground railway and the intended publishing of his own report on railway closures. Yet if the construction of the Metropolitan Railway is worth noting at all, it is more because of the lessons to be drawn from a close look at the effect of the urban railway system in London on the developing 'town plan' of the metropolis, than a nostalgic sigh for an event in railway history.

Certainly the construction of the 'Met' represented one of the few attempts to use a railway as a positive measure of town planning. It was thus envisaged in the report of the 1846 Royal Commission, set up to consider the 'London traffic situation,' with an area of reference—typically inadequate—just including the City and West End and a small area south of the Thames. When the Commission issued its report, it recommended among other things, 'the construction of a railway encircling the metropolis and connecting main line termini.' In 1854 an Act was passed for the building of a 'Metropolitan Railway,' which was to join the main line at Paddington to King's Cross, with a branch to the General Post Office. This line, opened in 1863, was extended to Moorgate in 1865 and a junction with the main line at King's Cross was opened in 1868. Further links were made to Farringdon Street and in 1864 to Hammersmith, as the 'Hammersmith and City Railway' owned jointly by the Great Western and Metropolitan Railway Companies.

There was considerable excitement when the 'District Railway' was incorporated with powers to construct a line for Kensington to link with the Metropolitan in the City and so form the southern segment of a railway encircling the metropolis. By 1884 the last link, between Mansion House and Aldgate East, had been formed and London had in its own way, by planning at different levels, achieved its 'ring,' a town planning feature that Paris had in its Grands Boulevards adapted from the line of ancient fortifications, and that Vienna somewhat later consciously planned. Soon *Let's go Underground* became a popular song.

The Kensington High Street to Gloucester Road section of the District Line was opened in 1868 and later extended to Hammersmith, but terminated at a different level from the 'Met,' and with a separate station. This lack of co-ordination was typical of the damage caused by Victorian *laissez-faire*. Indeed, the underlying reason for the 'Inner Circle' as it later came to be called, was the need to connect the independent main line termini, both for goods traffic and for passengers. The termini had originally been planned as ends in themselves, and Brunel's view that railways should be quite separate and independent systems was not seriously challenged in the early days of the growth of the London railway network.

However, London can be considered lucky to have escaped some of the most nightmarish proposals of the time, such as the proposed railway down the middle of the Thames, and another designed to proceed down the middle of the new Victoria Street to Westminster Abbey. Fortunately, too, the proposal of the City and West End Railway and Terrace Company for its 'railroad along the banks of the Thames from Hungerford Market to London Bridge,' came to nothing. Fortunate, in that it saved the north side of the Thames from the fate of its south bank. Paradoxically, the building of the Met-District-Circle line—in itself a piece of logical and empirical planning—assisted the efforts of the various southern companies in their mad struggle for supremacy, which involved costly competitive battles for key stations on the north bank, creating three railway bridges across the Thames and a chaos of viaducts, bridges, curves and crossings to litter the south bank and large areas of Southwark and Lambeth. Undoubtedly unbridled *laissez-faire* was the main cause of this disaster for the future planning of London, but almost equally so was the lack of any appreciation of the implications of the fantastic rates of contemporary population growth and economic expansion on the future pattern of London. London was still seen as a metropolis north of the Thames.

With the exception of the Met-District-Circle lines, the same haphazard pattern followed in the linking of the new—and too many—termini. The Waterloo and London Bridge terminals could not easily be reached by the Circle and District lines, except by a lengthy and circuitous route, and so the Bakerloo 'tube' was envisaged in 1892, at first to link Baker Street and Waterloo. But this was not the first 'tube.' In 1890 the City and West End Railway had been opened by the Prince of Wales. Extending from King William Street to Stockwell via the Elephant and Castle, it proved a practical demonstration of the 'shield' system of tunnelling pioneered by James Henry Greathead. Of equal significance was the fact that Mather & Platt Ltd., of Manchester, had contracted to provide electrical equipment for the motive power of the trains. This was the first electric 'tube' railway. This railway, now a branch of the Northern line, was extended to Clapham Common in 1900, Euston in 1907, and, after a struggle with the Southern Railway for the Surrey suburban commuter market, to Morden in 1926. London's second 'tube' was the Waterloo and City Railway, opened in 1898 and connecting Waterloo with the City at a station just east of Mansion House. This was followed by the 'Central London' from the Bank of England to Shepherd's Bush—the most successful and technically advanced of the pioneer tubes, allowing, that is, for such minor teething troubles as the fact that the rolling stock, when delivered, was found to be too large for the tunnels.

When Charles Tyson Yerkes was released from an American jail for technical embezzlement offences in Philadelphia, he re-established his fortunes by electrifying Chicago's tramways, and retired to New York with $15,000,000 in cash. It would be no exaggeration to say that this dynamic American did more than anyone to establish the London of 'tubes' and commuters, suburbanites, dormitory dwellers and straphangers that we know today. Indeed, Yerkes was noted for his dictum 'it is the straphanger that pays the dividends.' One of his American agents, when surveying the route for the Hampstead Railway with Dalrymple Hay, the British engineer, is said to have replied to the Englishman's cautious objections to terminating at Golders Green, where there were few existing houses, by telling him that in the USA the railways were built first and the people soon followed. And so they did in London too—Rassmussen's idealised 'scattered city,' of Clough Williams Ellis's menace of the 'octopus,' whichever way you look at it, was stimulated by the policy of deliberately creating a commuter traffic. The old railway systems had been directed primarily at the inter-town traveller, but the companies soon came to realize the importance of suburban traffic, and exploited it to the full. At first this was done by constructing suburban stations on the main lines, where they passed through outlying villages and townships. The convenience this afforded to the populations of what might be called the 'old suburbs' quickly resulted in the growth of dormitory populations. The railways began to realize the great value of this regular daily travel from the point of view of regularly expanding receipts. By providing new lines, and later electric trains—Southern Electric and tube extensions—and by using the device of cheap fares, they themselves created much of the traffic which poured in increasing numbers into the central area to work in the morning and out again in the evening. This process was at first a gradual one. Sometimes services developed originally for quite different reasons, created a suburban demand which the railways were glad to supply. The London,Tilbury and Southern Railway was originally built to carry Londoners (note that 'Londoners' still meant London north of the Thames) to Tilbury, whence they could be ferried across to the pleasure gardens at Rosherville, near Gravesend. It was hoped also to carry large-scale imports from Thames Haven. In fact, neither of these traffics grew to any large extent, and it was the rapid growth of Southend—a secondary objective of the promoters—that was the main cause of the company's prosperity. A similar example is provided by the repercussions of the erection of the Crystal Palace at Sydenham on London Bridge terminus and on the route of the London, Brighton and South Coast Railway. This line, which served the new pleasure garden, also stimulated the growth of suburbs all along its route. The Alexandra Palace at

Muswell Hill in 1876, and the Wembley Exhibition in the 1920's, had a similar effect.

But the real floodgates to subtopian sprawl and 'straphanger civilization' developed in the 1920's and 30's. In 1902 the first major step towards a co-ordinated underground railway system (note, not a planned system) was the formation of a new company —the Underground Electric Railways Company of London Limited. This company was created by the joint efforts of Yerkes and Edgar Speyer, senior partner of Speyer Brothers, bankers of London. The UERL became the main vehicle for the commercial expansion of the 'tube' business, and many famous names in London's transport history made their reputations in its service—Albert Stanley, Lord Ashfield, Frank Pick. In 1933 the London Passenger Transport Board was formed—the offspring of Herbert Morrison's London Transport Bill of 1930.

Under the UERL the expansion of the tubes into the surrounding districts of London was pursued vigorously. New dormitory suburbs were fostered in Middlesex and Surrey. Those at Ealing, Hounslow, Edgware and Morden were followed by expansion into Essex, and this policy was pursued as energetically by the LPTB as by the UERL before. In Kent, the Southern Electric did the same, extending suburban sprawl as far as Dartford.

The existence of these transport tentacles stretching out into the countryside around the capital, opened up land for dormitory housing but also made the West End of London accessible to a vast new population. Agricultural land values soared on the outskirts, and urban values in the centre; and a pattern of land use was established in which the 'place to live' and the 'place to work' became more and more specialized zones of human activity, pushed further and further apart. Perhaps the Abercrombie 'London Plans' could have shown the way out, but the panacea of New Towns within the orbit of the London regional radial lines was, in the conditions of 1943/44, seen as the only way to relieve post-war housing pressure. The London County Council used the established suburban systems to make possible the location of large new housing estates in the Green Belt itself. And then, with the Government's approval, produced a Development Plan which, with massive increases in office zoning at the centre, gave further stimulus to the trends of the 20's and 30's. Post-war development in the London region placed appalling demands on a railway system designed to be under continuous strain (it's the straphanger that pays the dividends). Yerkes's dictum dominated transport planning philosophy, and in an inverted form lies behind the so-called rationalization of Beeching.

The need for a Regional Planning Organization has been consistently argued by town planners and enlightened administrators, aware of the worsening planned chaos of London's situation. It is clear, however, that any system of regional planning divorced from the control of transport planning itself, will be reduced to frustration and failure. The now projected Greater London Authority will have the desperately needed strategic planning powers for at least the built-up area of the region, but will be at the mercy of the Ministry of Transport as present intentions in the London Government Act seem to imply. Nothing less than a totally new sort of Development Plan, involving a new conception of the problems of population distribution, employment and transportation in the conurbation, will be necessary if the growing mess of London's planning situation is to be cleared up, before further growth of population in the region in the next decade creates an urban explosion.

Present transport and planning policies coincide only in so far as they appear mutually to aggravate the situation still further. For example, the closing of the Crystal Palace High Level Railway by British Railways coincided with the building of a fine new LCC international sports centre and a proposed international exhibition site at Crystal Palace; one result of this closure being the requirement by the planning authorities for car parking on a scale which could only be provided if massive engineering roadworks were carried out. But the clearest example of the diametrically opposed policies being carried out by planning authorities and British Railways, emerges when one considers the office policy of the LCC (and, it should be said, of the Government too) and the policies of the railways as the greatest carriers of commuter traffic into London. The LCC, aghast at the congestion created by the growth of office employment in Central London, at first encouraged decentralization to suburban centres (though without reducing the office zoning in the centre), in order to create employment nearer to the homes of suburban commuters. This policy, which of course was operated independently of the control of railway services, has now apparently been dropped on the grounds that any extension of office employment in London at all will lead to an increase of commuter travel from beyond the Green Belt. Yet such an increase can only come about by increases of residential zoning without employment provision, by the planning authorities beyond the Green Belt, and by the increased provision of rail facilities for commuting—which, it must be admitted, the British Transport Commission is only too willing to supply; indeed, the BTC is constantly endeavouring to improve long distance commuter services.

A further example is afforded by the Victoria Line tube now being constructed. The London Travel Committee which was appointed by the Minister of Transport to consider measures to relieve congestion on the roads and railways leading into and out of Central London, concluded that the construction of the Victoria line was the best way of achieving this objective, and in its 1959 report stated that:

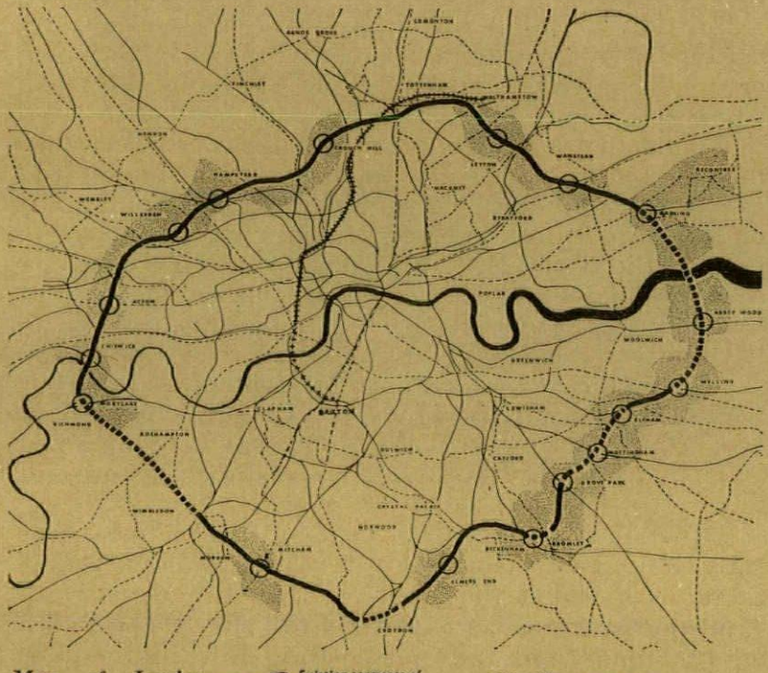
'The construction of the Victoria line would be the most effective means of relieving the severe peak hour congestion on many of the present Underground services and of providing Londoners with quicker and more direct travel within the central area of their city *and from the north-eastern suburbs to the important business and commercial quarter in the West End.* The line will also improve the rail links between Victoria, *with its extensive network of rail services to the southern suburbs and coastal towns* [author's italics], and the West End. The line will not only meet present needs by linking the northern main line termini with the

West End and Victoria, it will help to handle the increased number of passengers using these stations as British Railways' modernization schemes are completed.'

The reasons advanced for constructing this line, in fact, are very little different from the motives which led to the construction of so many of London's underground railways, the effect of which has always been to increase rather than reduce congestion. The Victoria line is another radial line which will bring an increased number of commuters into the Central London area and will inevitably add to the congestion within that area.

The railways do not play an important role in non-radial journeys to work, the overwhelming majority of which take place by road. A glance at a map of the railways shows why. The lines are almost entirely of a radial nature and there are few interchange stations outside the central area. There are, in fact, many non-radial lines not open to passenger traffic, or at present under-used, such as the old North London line running from Richmond to Hampstead (proposed for closure by Beeching).

There is a strong case for improving non-radial services that already exist, and for introducing new services by re-opening lines at present restricted to freight movement only. By constructing new linking



Map of London showing proposed 'Outer Circle' railway linking suburban centres.

sections of comparatively small mileage, an orbital railway system could be created with far less difficulty than the urban motorways already being contemplated. A proposal for such an 'Outer Circle' railway with interchanges to all the important existing radials was proposed and illustrated as part of a study on the 'Crisis in Transport' in the Winter 1961–62 edition of *Keystone* (see diagram).

If the £55 million that is the estimated (1959 prices) cost of the Victoria line had been used instead on improvements to give orbital travel facilities, it could have made a real contribution to relieving congestion in the central area.

However, the essential prerequisite of such a proposition as the 'Outer Circle' railway referred to above is the preparation of a completely new sort of Development Plan. Increases in office employment and entertainment facilities in the new sub-centres, and a new approach to residential densities in the suburban areas, would be necessary to generate the cross-flows in commuter patterns so desperately needed to offset the 'in-out' pendulum of London's present journey to work patterns. It would also require the courage to go back on much of Central London's office zoning and literally convert large areas back to residential. Such a plan would envisage centres like Brixton, Hammersmith, Erith, Bromley, Harrow, Croydon, Watford and Walthamstow, among many others, as major centres of office employment and shopping *surrounded* by residential areas, forming genuinely interconnected 'Townships' within the 'City Region'—the realization of SPUR's by now well-known slogan.

Can one reach any conclusions from a study of London's railway system after a century of development? The one thing that stands out clearly from any such study is that transport operation cannot continue to be accepted in the context of large cities on a purely financial basis, and that *transport planning and operation* can only be isolated from town planning objectives at great social cost. The very bones of a modern city are contained in the structure of its public transport system. The irony of the situation in which Los Angeles now finds itself, clearly demonstrates this to be so, and its authorities are now having to contemplate creating a public transport system to bring some order into its motorized chaos. It will be interesting to see the final form of the Los Angeles solution, especially as there seems to be a tendency for most large cities to build internal railway systems on the nineteenth-century pattern, regardless of size or plan form.

In the case of Toronto, for example, a largely 'cut and fill' line, commenced in 1954, runs under Yonge Street, one of the most heavily trafficked Toronto thoroughfares, much in the same way as our Central or Piccadilly lines were developed and with similar motives—as a purely remedial traffic measure, carried out without any pretence of rational town planning. Stockholm, with its linear 'Tunnelbana' has, however, carefully planned its suburban satellites in relation to the city proper, to work on the basis of a rational internal linear railway, operating on a shuttle system. Paris is experimenting with express tubes to link the main line stations and provide interchange links with the old 'Metro' in a sort of Haussmann plan—only underground.

From all this it can be clearly seen that there is a great need for research into the internal railway systems of cities and city regions, into the integration of town planning and operational factors, and their resulting influence on the forms which large towns—and especially city regions—must take if urban society is to survive its own physical pressures and contradictions.

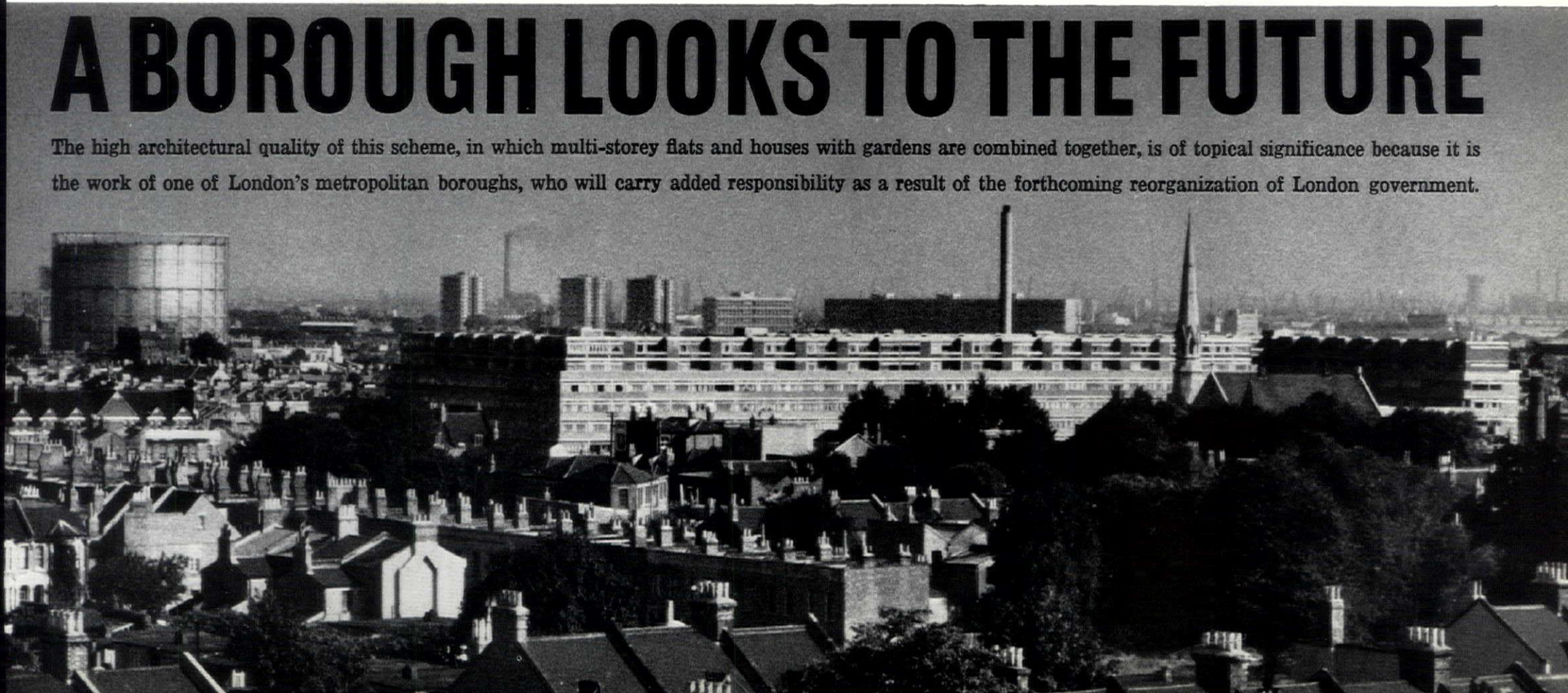
HOUSING, CAMBERWELL, LONDON

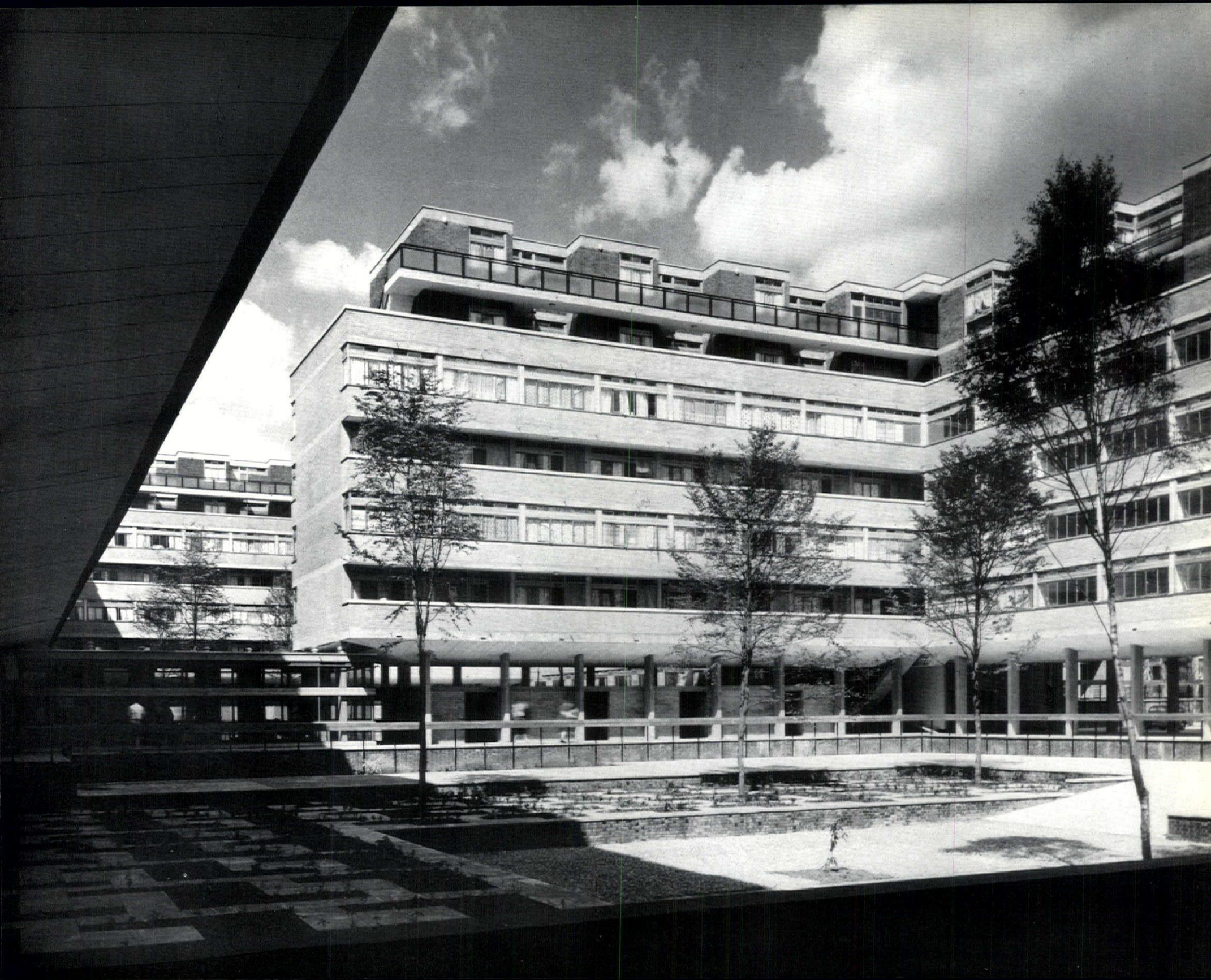
ARCHITECT | **F. O. HAYES (Camberwell Borough Architect)**

1, looking north-east across Camberwell, with the housing described here in the middle of the picture and the London docks in the far distance.

A BOROUGH LOOKS TO THE FUTURE

The high architectural quality of this scheme, in which multi-storey flats and houses with gardens are combined together, is of topical significance because it is the work of one of London's metropolitan boroughs, who will carry added responsibility as a result of the forthcoming reorganization of London government.





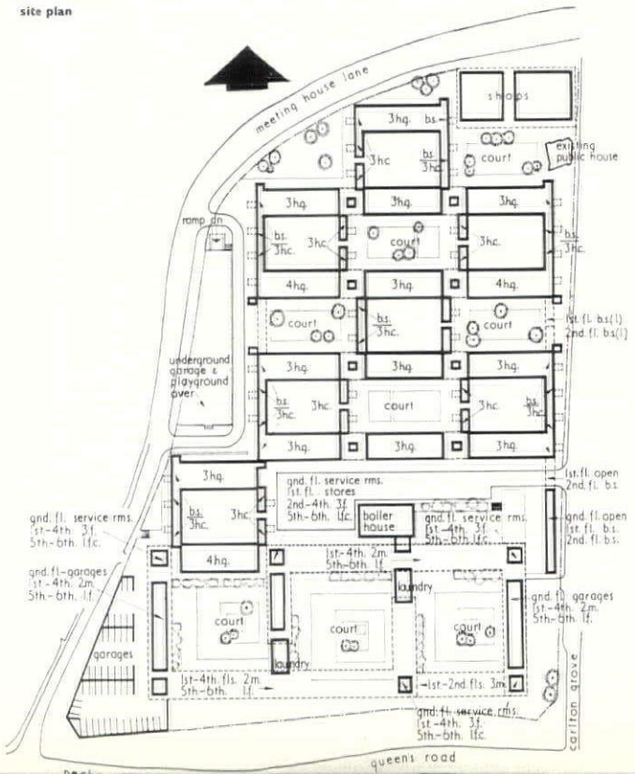
This housing scheme at the junction of Peckham High Street and Meeting House Lane provides 524 dwellings at a density of 136 persons to the acre. The type of accommodation is mixed: 308 of the dwellings consist of flats or maisonettes in seven-storey blocks arranged in squares on the southern (High Street-Queen's Road) part of the site; the remainder consists of two- and three-storey houses, arranged round smaller squares on the northern part.

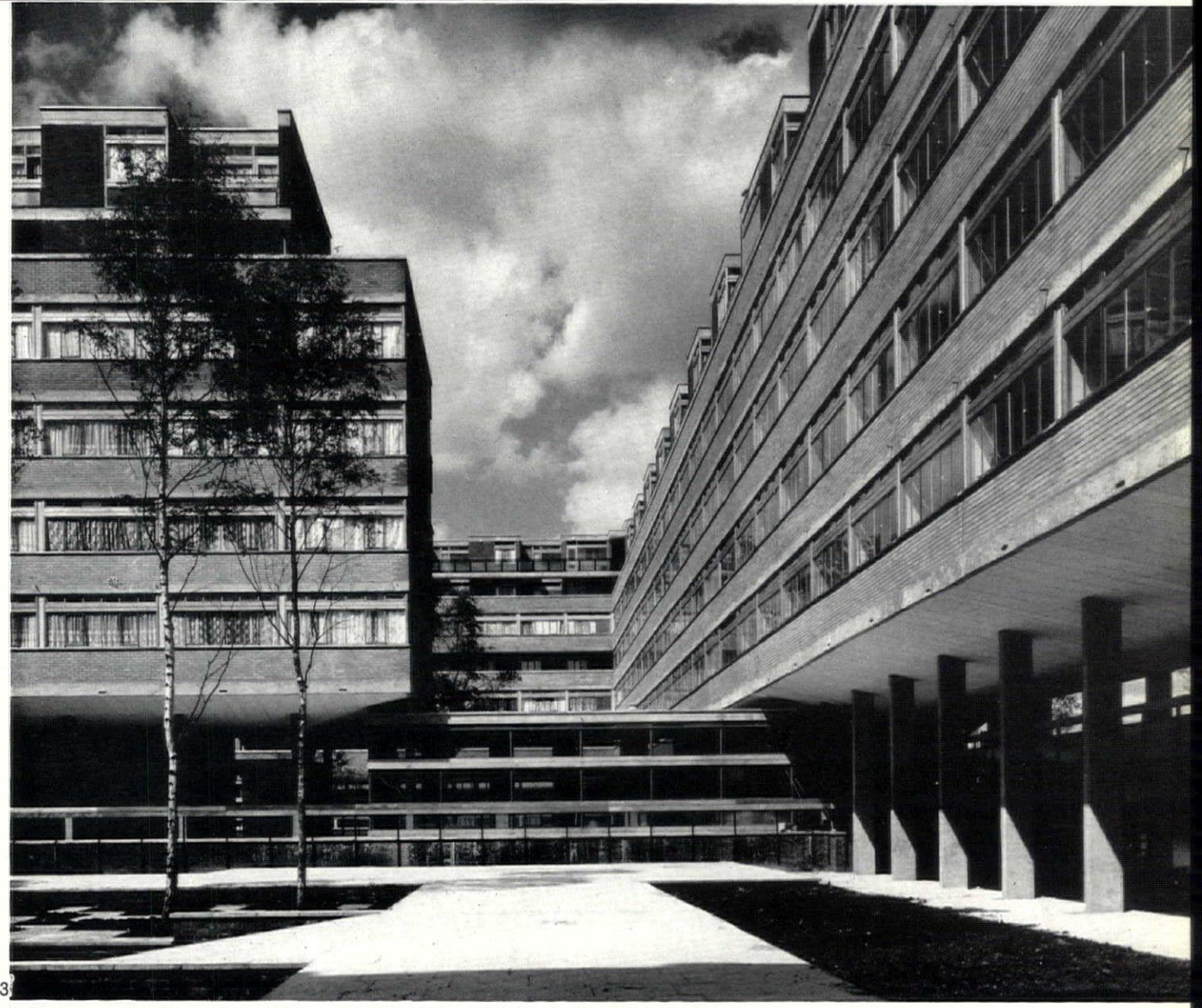
In the northern part there is also a group of eleven shops, a doctor's surgery and a public-house that already existed at the north-east corner. Otherwise the architects had the advantages of a completely cleared site, the trees at present on it having been subsequently planted with the help of the Civic Trust.

The seven-storey blocks contain flats or maisonettes of four basic types: 98 one-bedroom flats, 182 two-bedroom maisonettes, 21 three-bedroom flats and seven three-bedroom maisonettes. The blocks of houses also contain four different types: there are 130 two-storey, three-bedroom houses, 27 three-storey, four-bedroom houses, 16 three-storey, two-bedroom link houses and 39 bed-sitting rooms. Over the shops are 10 one-bedroom flats. There is covered garage space for 101

HOUSING, CAMBERWELL, LONDON

site plan





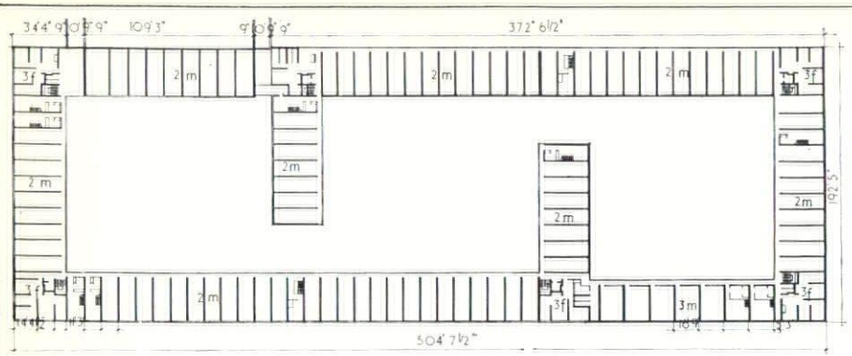
2 (facing page) and 3, views of the courtyards formed by the seven-storey blocks.

cars and parking space for 42 more. A boiler-house supplies central heating to the whole scheme. Tenants' laundries are provided at three points.

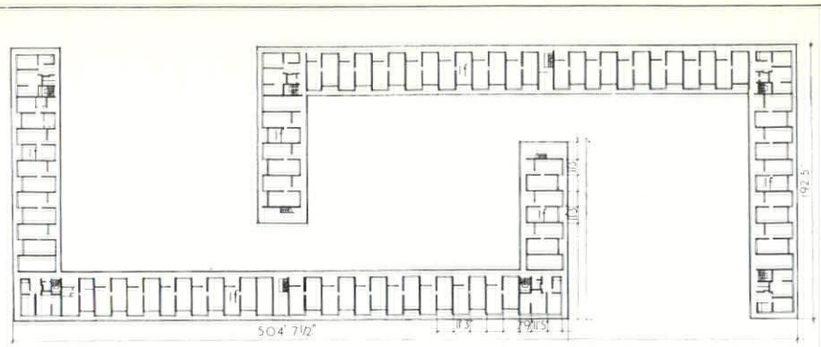
Vehicular access to the scheme has been confined to the perimeter roads, except for a service road and parking area between the high and low blocks. Pedestrian circulation among the flat blocks is by walkways under the blocks, the squares between blocks being paved and planted as communal gardens. The walkways have acoustically-treated ceilings to reduce noise when they are used as covered play-spaces by children. The open squares between the house blocks are also paved and planted, but serve also for pedestrian access to the houses. The roof of the underground garage on the west side of the site forms an additional large playground. 115 of the houses have private gardens which are screened from public view within the internal squares. They are reached by a central footpath crossing each square.

The buildings are of load-bearing brick on piled foundations with concrete and timber floors. The houses are of cross-wall construction, with external walls either tile-hung or timber-framed and glazed. Roofs are timber, covered with felt on wood-wool slabs.

Deputy borough architect, H. P. Trenton (in succession to Hugh C. Connell). Structural engineers, W. V. Zimm and Associates. Quantity surveyors, Oswald E. Parratt and Partners.



first floor plan, seven-storey block



fifth floor plan

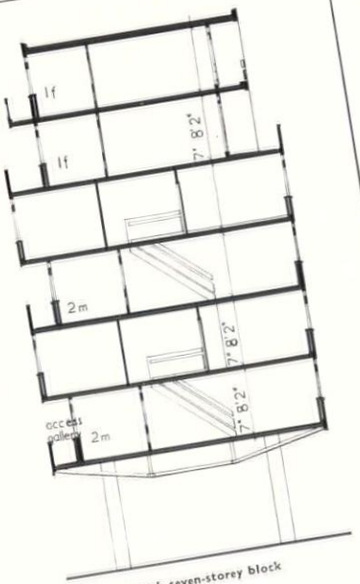
4



4, the south side of the seven-storey blocks. 5 (facing page), part elevation of a typical seven-storey block.



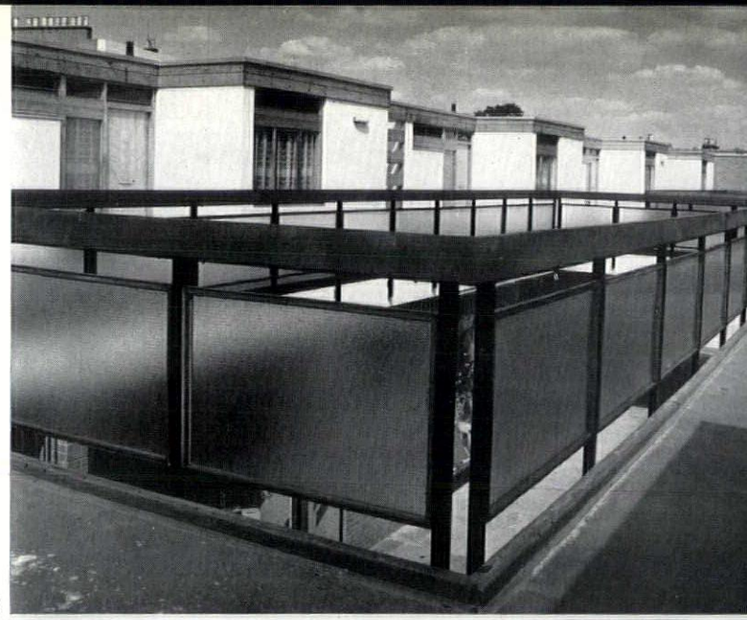
plan of three-bedroom flat



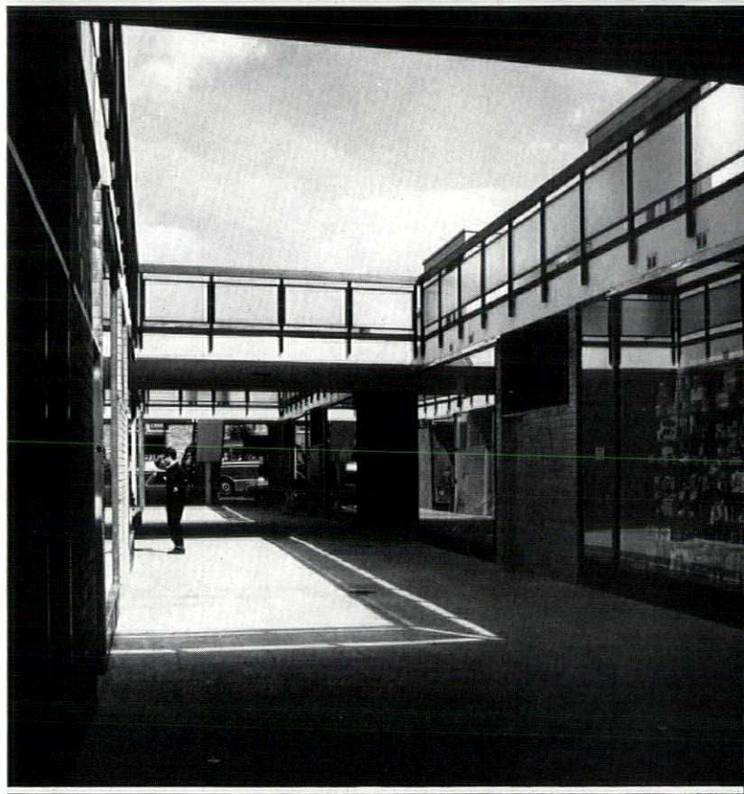
section through seven-storey block



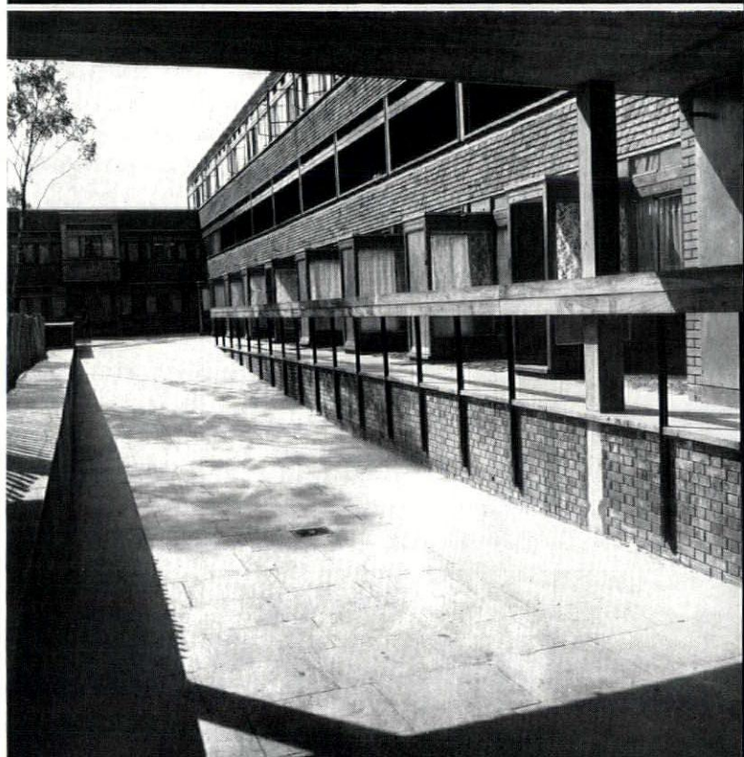
6



7



8



9

6. the group of shops on the north side of the site. 7, one-bedroom flats over the shops. 8, looking through one of the shopping courtyards. 9, terrace of three-storey houses.



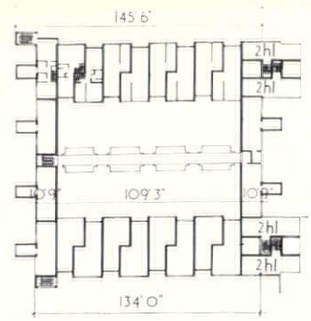
plan of shops (scale 1/48 in. : 1 ft.)

HOUSING, CAMBERWELL, LONDON

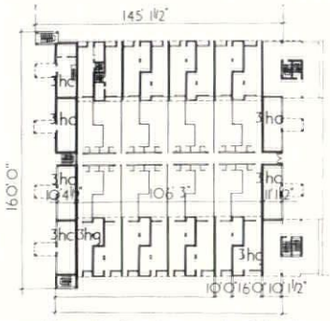
photographs by H. de Burgh Galwey/for criticism see page 367



10



first floor plan


145 1½"
3ha
3ha
3ha
3ha
160'0"
3ha
3ha
3ha
3ha


4:39

Robin Boyd

UNDER TENSION

Eero Saarinen's Yale Hockey Rink, 1, 2, opposite tensile construction passed from the status of an engineering novelty to that of architecture. In the article below, Robin Boyd, himself the designer and occupier of a suspended-roof house, considers the rise of tensile architecture in the light of a recent book by its outstanding visionary and philosopher, Frei Otto, *Zugbeanspruchte Konstruktionen*, published by Ullstein in Berlin.

World War II created a diversion which allowed modern architecture to escape from the box practically unnoticed. Before that, no matter how freely any walls might wander or curve, the final enclosing element—the roof—was essentially box-like: a flat lid. In the architectural Standing Orders of the war period, *Space, Time and Architecture*, Giedion could write, 'The dome of San Lorenzo presents the case of an architectural vision that goes to the very end of constructional resources. The situation today is just the reverse. There are available to us constructional possibilities which we have not been able to exploit to anything like their full extent' (p. 61). He referred to 'the unsolved vaulting problem of our period,' and advised, 'All that is needed are architects who know how to stir the imagination of the engineer' (p. 407). In no time after this the stirring began in earnest and Giedion must have felt at times like biting his tongue off. One by one the *avant-garde* looked up to the roof. Overhead, out of reach of the practical hands of time-and-motion experts, was exciting promise of an honourable escape from the functional discipline.

In short, what happened during the wartime pause in building was a transference of attention from walls to roof. Although the architects might not have realized it at the time, the significance of this change of emphasis was that it made necessary a *rapprochement* between the master designers: the architect and the engineer. Earlier twentieth-century essays in plastic form were tentative enough to be muddled through practically without consultants. Gaudi's and Mendelsohn's plasticity was as superficial as a thick sauce poured over conventional structure. Even the wanton walls of the common-room at the *Pavillon Suisse* were roofed by a thick flat slab, the computations for which would not baffle the most modest architectural office. But the idea of plastic structure in a roof curving threateningly overhead demanded much more than schoolboy mathematics and sent the architect, about 1950, back to the engineer, humble if not yet completely cap-in-hand.

The engineer's response was good. As a matter of fact while he was away working on his own he had developed, after some sad failures, a proficiency in two important new branches of structure. One of these was shell concrete, which had hardly been used in building apart from the parabolic vault of Maillart's Cement Hall in 1939. Its unexplored prospects seemed enormous, especially when one thought of possible applications of advanced solid geometry—and the engineer could help the architect here too, by actually suggesting shapes. The excitement that followed has already been discussed (in 'The Engineering of Excitement,' AR, November, 1958).

The second branch of engineering structure that had been practically ignored by architects was in some ways even more exciting. This was tension. The principle of tension structure was not new, of course. Its use goes back behind the grass rope spans across Tibetan gorges to some of the earliest human shelters slung between trees. Even in terms of modern engineering it was old. Steel suspension bridges were some of the proudest and most spectacular exhibits which the engineering profession produced at intervals over the century after Thomas Telford's Menai Strait bridge of 1826. Nor was tension a new principle in everyday building construction. For centuries it was well understood that the most conventional structures harboured tensile stresses, and that their strength could be greatly boosted by introducing metal at points so affected, preferably when no one was looking. Older than the chains that bind St. Peter's dome are numerous buildings that can now be called tension structures by virtue of their reliance on iron tie-rods and S-plates.

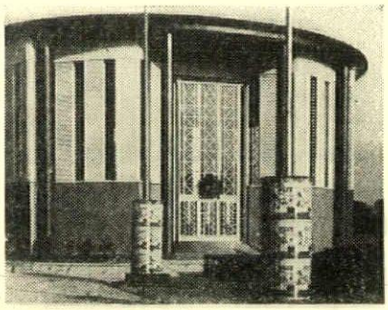
Every conventional structure nowadays has some members that act at least some of the time in tension, just as every one of the buildings which we now call tension structures have some compressive members. What distinguishes the latter type is not simply a higher proportion of tensile members, nor an architectural emphasis on these. The key is flexibility. A structure seems to qualify for the tension title if its main members are by nature limp, worthless in compression, and rely on tension to hold them rigid enough for the job in hand. Cables, rods and thin steel flats have been its usual media in recent years. Even on these terms, tension was not new in 1950. The idea of making suspended flexible cables an architectural theme was pioneered between the wars by Simon Breines and Joseph van der Kar in their entry for the Palace of the Soviets competition in 1932, and by Bernard Lafaille in a French Pavilion built at Zagreb in Yugoslavia in 1935. The latter gave a bold demonstration of the simplest kind of suspended roof. It was a cylindrical building covered by a shallow saucer of sheet steel resting on a single cartwheel of cables—the form probably used by the Romans for the *velarium* over the Colosseum.

The Zagreb pavilion was a building of considerable temerity which was apparently protected by its comparatively modest diameter of 110 feet. It innocently ignored the problem which today preoccupies much suspension design. Fifteen years after it was built, when architects began to examine cables again as a means of climbing out of the box, the innocence was gone. The image of serene catenary curves was haunted now by a nightmare vision of Tacoma Narrows Bridge. The vision was of an elegant half-mile ribbon of hanging roadway fluttering in a medium wind, undulating, and finally racking itself to bits. The ugly tangle in the Tacoma water in 1940 was a terrible lesson not to underestimate the phenomenon of flutter.

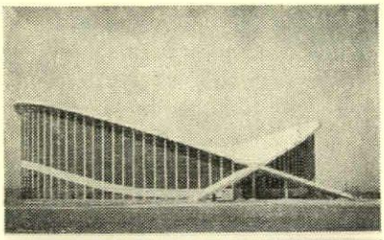
The problem in building roofs was to find something more positive than the simple action of gravity to counter the upward pull of the suspension cables. This led to the idea of introducing more cables with a counter—downward—pull, thus developing a dynamic equilibrium irrespective of gravity. This might be marked as the subtle point of change between suspension and tension structure.

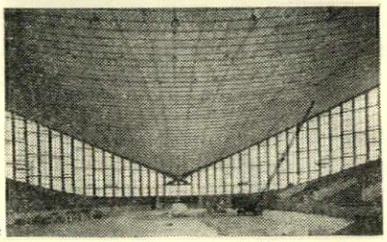
One of the first buildings to adopt the principle, and quite the first one to break into the architectural press, was Matthew Nowicki's livestock pavilion at Raleigh, North Carolina, in 1952. It deserved its fame, for it was essentially and eloquently a tensile concept, as single-minded as a student's project in cane and rubber bands. What was more, it worked. Its saddle of prestressed counteracting cables weathered two major hurricanes shortly after completion, and laid the spectre of Tacoma.

UNDER TENSION

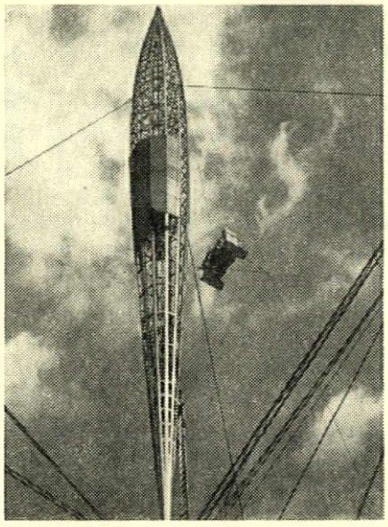


3, *exhibition pavilion, Zagreb,* 1935. *Lafaille's steel velarium concealed in a classical drum.*

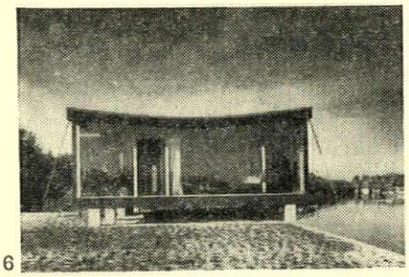




4, *state fair pavilion, Raleigh, North Carolina,* 1952, *first of the modern suspended roofs; Nowicki and Severud.*



5, *Skylon, for the* 1951 *Festival, London, by Powell and Moya; an early popular success in tensile structures.*

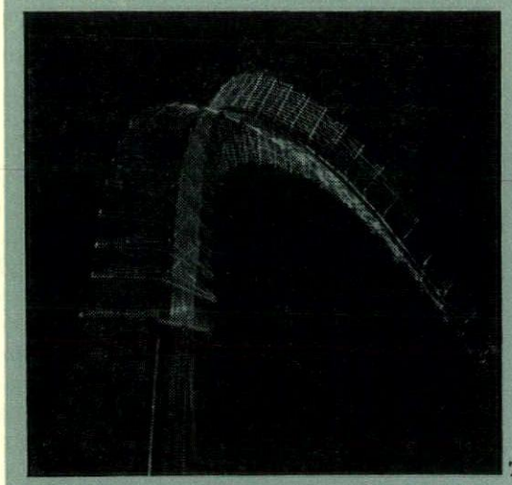


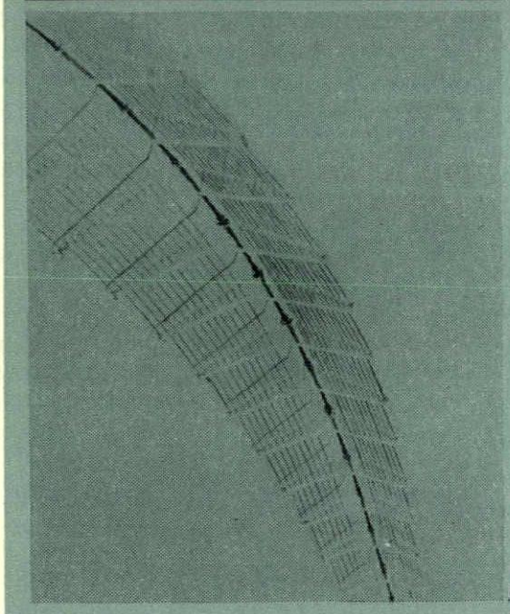
6, *house in Florida, by Rudolph and Twitchell,* 1954; *instrumental in launching both Paul Rudolph and small tension structures.*

Fred Severud, who supervised the pavilion after Nowicki's death, went on immediately to less fashionable success with a weighty concrete-composite saddle over a cafeteria at the Corning Glass Works, designed by Harrison and Abramovitz. Frei Otto, who visited Severud during the work at Raleigh, went home to Germany to build, and encourage the building of, several tension roof structures, and to celebrate the arrival of the new structural system in *Das Hangende Dach* (The Hung Roof) published in 1954. Otto stressed the problem of anchoring tension structures, explaining that the economies gained in the lightness of the span may be lost on the buttressing required to hold the ends, and he suggested tying the ends of tension cables to existing natural or artificial buttresses: for instance, roofing a valley by anchoring cables in the surrounding hills.

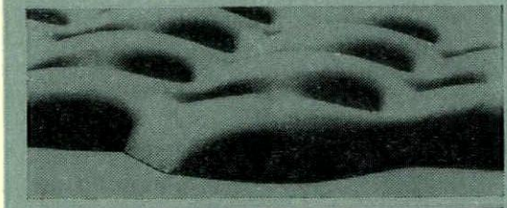
Yet, as often happens, the roving eye of the progressive architect was not caught by these worthy attempts to conquer the structural and economic complexities so much as by one or two quite modest structures which ignored most of the engineering problems, but caught the spirit of tension with style. One of these was Powell and Moya's Skylon of 1951 for the Festival of Britain, the 'dangerous toy' whose suspended cigar demonstrated effectively the aptitude of tension for acrobatic balancing feats. Another about the same time was even smaller: Twitchell and Rudolph's tiny house of about 800 square feet on the edge of a Florida bayou, a glass box shaded by louvres and covered by a catenary bow that shot Paul Rudolph, in his early thirties, into the front rank of the rising generation of post-war architects. The span of the catenary was so small—less than 22 feet—and the effects of wind buffet and suction consequently so slight, that the structure could get away without stabilizing devices. The steel flats supporting the roof deck hung simply, almost limply, between wooden posts which were guyed back by steel rods to the ends of protruding floor beams. The beams, rods, threads, plates and nuts were all openly displayed. Because of the diminutive scale the structure had no engineering excitement. Moreover it did not carry resounding conviction from the logical or practical points of view, for there are easier ways to span 22 feet. The success of this nice little cabin was won entirely on architectural grounds. It was an early demonstration of the essence of tension structure in visual terms. It threw some light on a neglected branch of architectural aesthetics, in which complementary values to those of conventional compression structures might apply.

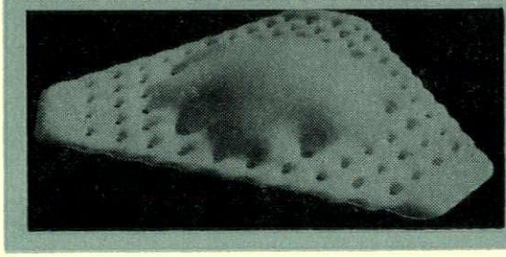
Every traditional ethnic division of architectural beauty one can bring to mind was based on some sort of empathy with earthbound solidity and stability. The modern movement's rebellion against such conservatism rather fizzled out after a bold start with pilotis and cantilevers. The attraction of those devices to artistic





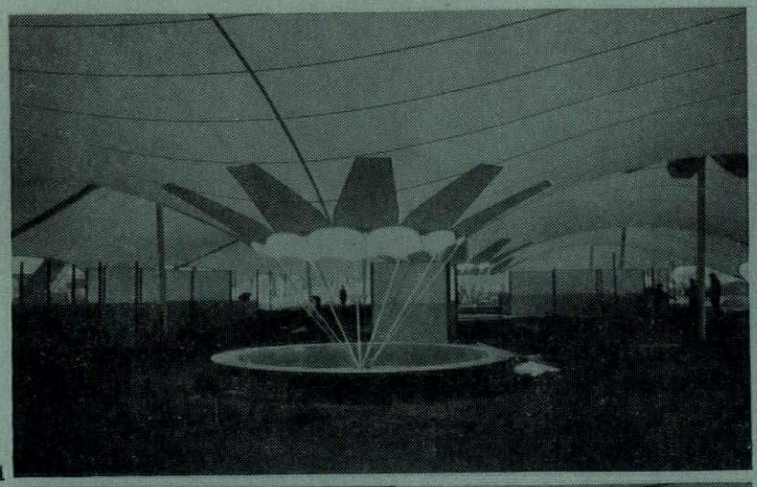
The tensile and pneumatic inventiveness of Frei Otto



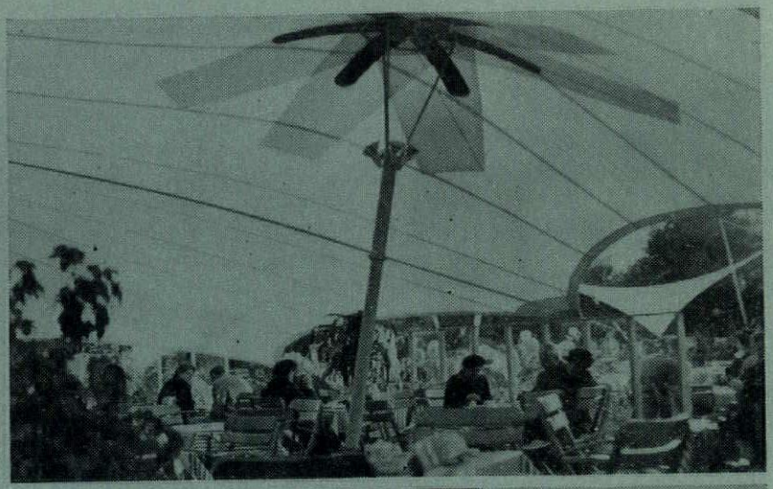


rebels of the early twentieth century was that they enabled mass to have practically no visible means of support. They borrowed the excitement of the magician's art of levitation, and the effect usually was a statement of defiance of the classical rules, even without the non-supporting caryatids of Highpoint. The architectural quality of tension structure is clearly different again. The means of support are likely to be as apparent in their own distinctive way as a row of classical columns. Tension is not the way of the magician, but of the trapeze artist, on the breathtaking high wires under the big top.

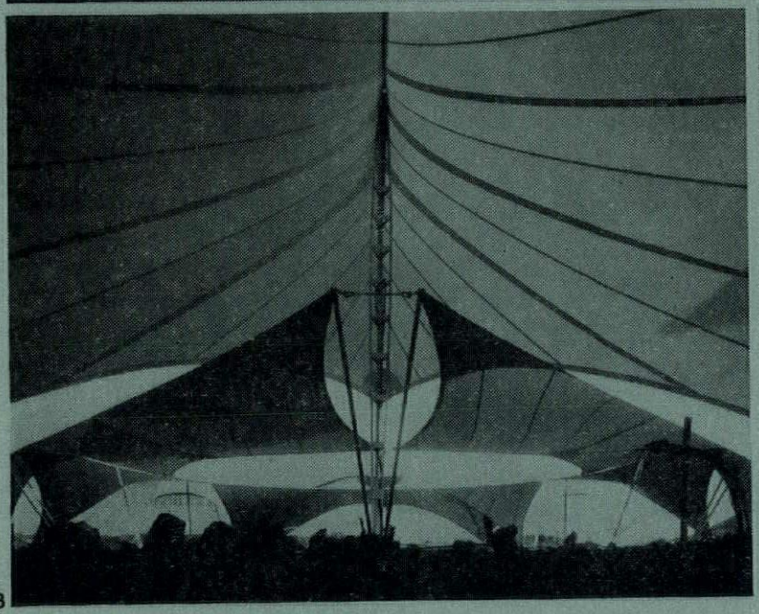
The rational enjoyment of architecture would be increased if one could subscribe unconditionally to Nervi's statement that



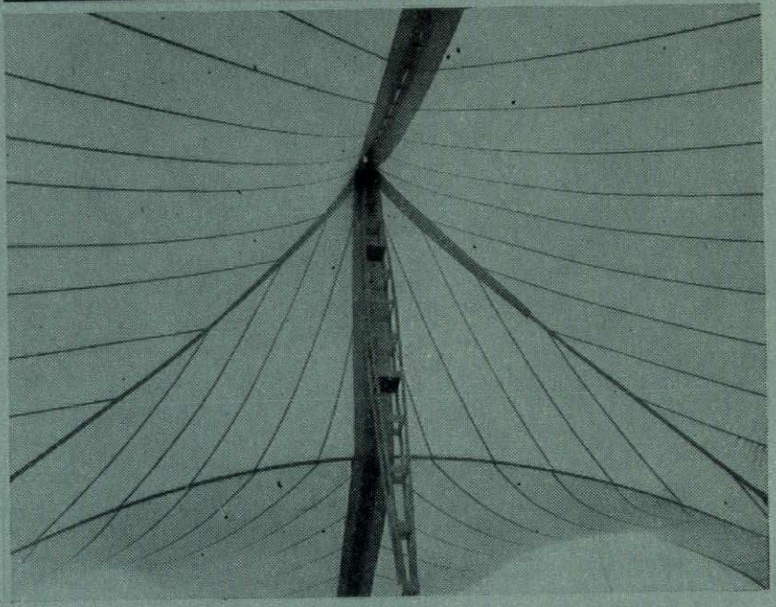
11



12

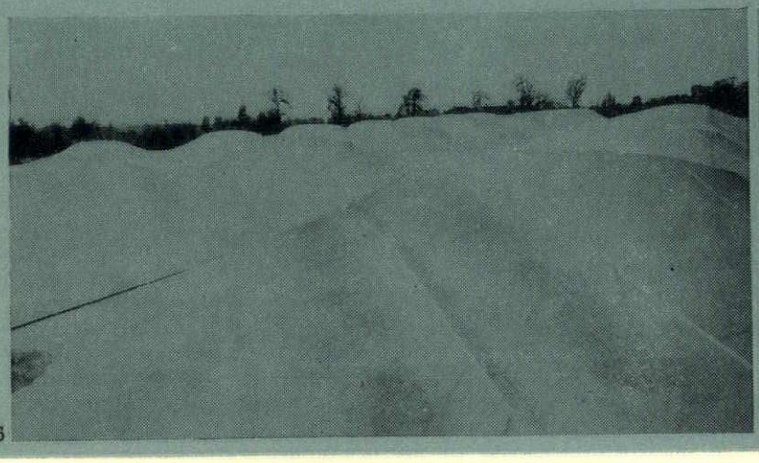


13

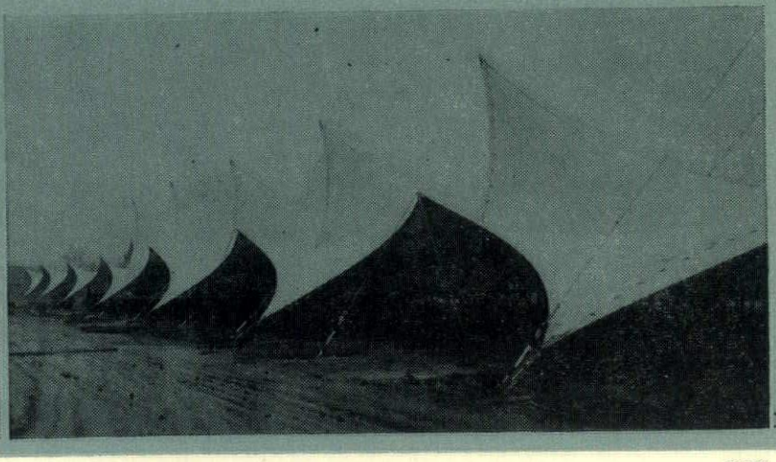


14

7, 8, *flexible jib of swan-neck crane project.* 9, 10, *two projects for pneumatic structures, the upper membranes restrained by internal guys to give a quilted form to the envelope.* 11, 12, 13, 14, *elements of support and restraint in typical tented structures developed by Frei Otto and his colleagues at the Entwicklungsstätte für den Leichtbau, Berlin.* 12, *the cafe at the Interbau exhibition, Berlin,* 1957; *the others are details from various tented structures at the Hamburg Garden Exhibition.* 15, 16, *tents by Frei Otto; at Interbau and Hamburg.*



15



16

'the intuition and sensitivity to statics which in a more or less confused form may be found in all people are satisfied by those structures which immediately reveal the play of forces and resistance. . . .' Unfortunately some admirable compressive structural systems are inherently secretive. Both sides of a concrete shell, for instance, can never be seen at the same time. Thus even the eye of the *cognoscente* has no means of judging how elegantly thin or clumsily thick the shell is and must rely on prior information or the unreliable evidence of the edges. But in tension structures, at least, the play of forces and resistance are instantly revealed under normal circumstances. Unless the structure is shamefully clothed, tension is inclined to explain itself in a most articulate way. The tensile member communicates its task and some impression of its load with clarity to the dullest child familiar with the behaviour of string or wire in his toys. Such thin members cannot conceivably be pushing; unquestionably they are pulling or being pulled. And the way such thin pieces drape themselves, or droop under weight, or bend suddenly at point loads—or if freed spring straight to the shortest cut between two points which want to separate—this behaviour makes up the language of tension.

A few short essays or statements were made in this language in the early nineteen-fifties. It was the season for tension. Students laboured over projects in matchsticks and cotton. Progressive designers strung almost anything from the ceiling: bookshelves, tables, shop counters. Three separate continuous catenary systems were used for a house near Melbourne by Kevin Borland with engineer Bill Irwin in 1952. They were made by draping reinforcing mesh over convenient supports and spreading a thin layer of concrete on top. With spans of modest scale and methods of guying back at the ends literally down to earth, the tension structure proved to be a manageable and remarkably economical challenger to any of the cheapest conventional cottage constructions.

By this time it was apparent that two rather different practical applications of tension were emerging. One was two-dimensional, as used most directly in the Rudolph house. In this the tension system acted only in a series of vertical planes, or portal frames. Usually each of these was formed by a catenary slung between two props which on the outside were guyed back diagonally to some kind of ground anchor.

These portal frames were then connected laterally by conventional rigid ties. This system promised immediate economical, utilitarian results within the capacity of ordinary building practice and applicable to ordinary buildings, multi-roomed and rectilinear. In the second application, as seen in the Raleigh livestock pavilion, the tension system was three-dimensional, finding equilibrium between counteracting pulls from all directions. Usually the tension members were flexible cables and the cradle to which they were anchored took a fine exciting shape in solid geometry. This system promised to be the more glamorous sister, applicable mainly to the enclosure of big public spaces whose functional shape was more or less indeterminate.

In 1956 in Melbourne Bill Irwin was engaged on a major structure of each kind. In the first category, he completed an Olympic swimming stadium with architects Borland, Peter McIntyre and John and Phyllis Murphy, and with the architects Yuncken Freeman he began the three-dimensional Sidney Myer Music Bowl. The pool building was exemplary 2-D tension design. The compressive props were sloped at about 35 degrees and were the principal functional members of the concept, for they also carried the spectator seating, facing the central pools. The back guys dropped vertically. The roof between the props was not made of flexible cables, for too much vibration would have carried through to the seating. Instead the wide space was spanned at each structural bay with a light diamond-shaped truss, which was stiff enough to resist objectionable vibration. Tightening of the vertical guys post-tensioned the horizontal trusses.

The music bowl shelter was an equally good example of 3-D tension. It lay within a fold of parkland that offered ground anchorage on three sides to a tension roof whose purpose was to shelter an orchestra stage and a few thousand people in favoured seats. Only two compression members were required. They finished as cigar-shaped props to hold a mouth open on one side to a larger audience on the lawns behind those seated. The cables were strung in counteracting tension, as at Raleigh. The main, longitudinal, members swept up from the ground at the rear of the stage to a massive cable strung over the props and forming a lip to the mouth. Lateral cables were pulled over the top and tied down each side. The shape was not precisely predetermined.

Cable lengths were adjusted to mould the form to the architect's taste and the engineer's two guiding rules: to maintain a double curve at all points and something close to a right angle at all cable crossings. Finally the upper cables were tightened, pulling down on the draped longitudinal cables and prestressing the system. The covering of aluminium-faced plywood panels was tailored to the cable grid. The heaviest live load that ever strikes the structure in practice puts the system, not into greater tension but into compression, since the long, draped lower cables suffer an additional tensile load which is only a fraction of the relieving or compressive force enjoyed by the upper cables.

About 1957 both the freshly proved kinds of tension structure were applied in many buildings throughout the world. Two-dimensional systems were adopted by some airports for no reason but economy. At Kansas City, for instance, acres of column-free housing for aircraft were created by hanging corrugated concrete roofs of enormous size like wings from either side of an unimaginatively utilitarian workshop block. Also in 1957, Hugh Stubbins promoted the simple cross-cabled saddle to its first monumental task, in the Congress Hall of Berlin. Somehow it did not seem ideally cast for the role, and the inherent delicacy in the light roof was finally lost in concrete compromises with the massive structure below.

In the year 1958 developments came faster. Eero Saarinen completed his famous Yale hockey-rink, with its central humped spine and symmetrical saddles, a characteristic piece of his Expressionist sculpture in extension of an engineering concept. Saarinen managed to retain the lightness of the cable web, and almost made the tensile and compressive elements jell into an architectural whole, although three stabilizing guy wires to the top of the spine on each side stood out rather rudely, refusing to accept the architect's discipline.

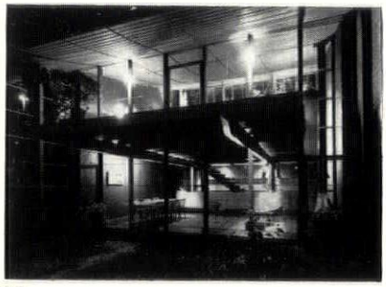
Also in 1958 another celebrated architect tried his hand with tension: Edward D. Stone built the US Pavilion at the Brussels Fair. He introduced a sub-category of three-dimensional tension structure. This type embraces all the different attempts in the last five years to rethink and perfect the earliest and simplest form of tension roof: the wheel over the pill-box. In the past the wheel was simply a cartwheel made with flexible, radial cables. This soft cartwheel was draped, Dali-style, over open space.

It trusted to gravity to hold it down and to luck to keep it from excessive vibration. About 1957 some rather crude if successful efforts were made to prestress it. For instance the soft cartwheel over a circular stadium at Montevideo, designed and built by L. A. Mondino, L. I. Viera and A. S. Miller, was loaded with thousands of bricks during construction. While thus extended, the precast slabs that lay on the cables were grouted; then the bricks were removed. The main advance at Brussels was that stability came from a geometrical cable system capable of being prestressed.

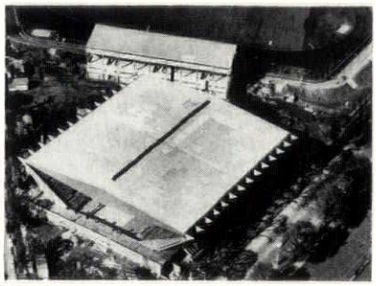
[*continued on page* 338



17



18



19

UNDER TENSION

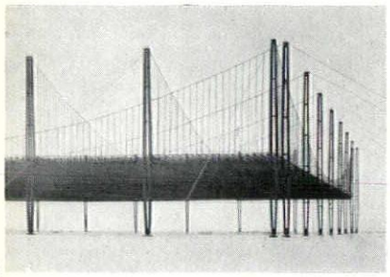
17, *house near Melbourne by Kevin Borland; engineer, Bill Irwin.*
18, *Robin Boyd's own house, Melbourne (see also AR, November* 1960).
19, *Olympic Stadium, Melbourne, by Borland, McIntyre, Murphy and Murphy, with Bill Irwin as engineer.*
20, *the great triumph of Bill Irwin and the Melbourne School—the Sidney Meyer Music Bowl, Yuncken and Freeman, architects.*
21, *roofs of Bavinger House, Norman, Oklahoma, by Bruce Goff.*



21

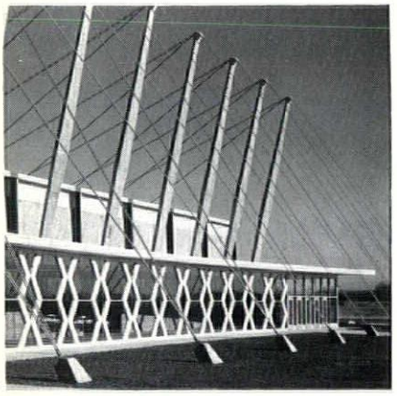
20

UNDER TENSION



22

22, *projected exhibition-hall structure, Chicago, by Alfred Caldwell.*
23, 24, *Central Washington College gymnasium, by Ralph Burkhard; engineers, Anderson, Birkeland and Anderson.*
25, *pneumatic pavilion for the US Atomic Energy travelling exhibition; architect, Victor Lundy; engineers, Walter Bird and Fred Severud. This was the largest of a series of major structures in which Bird, and his Bird-Air system, have been involved* (*see also illus.* 31).

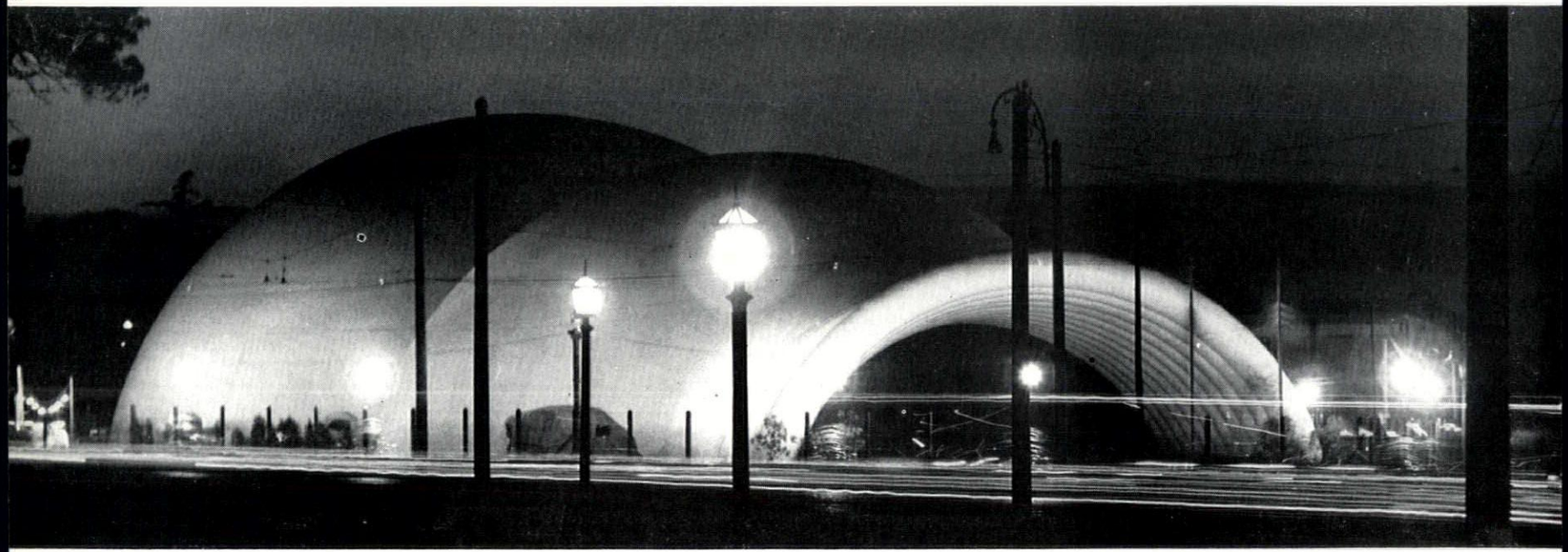


23

25



24



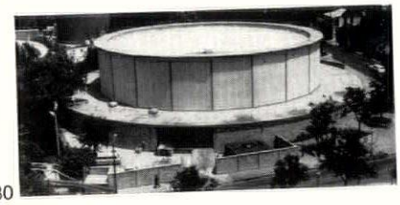


26

26, *Congress Hall, Berlin, by Hugh Stubbins and Associates.*



28

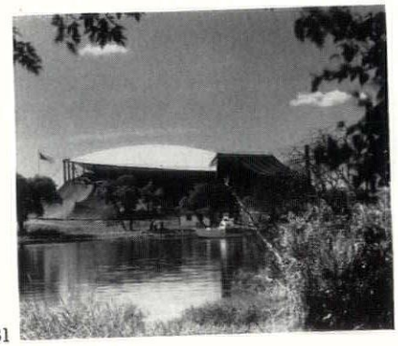


30

27, *Utica Memorial Auditorium, by Gehron and Seltzer, employing Lev Zetlin's system of unequal pretensioning.*

28, 29, *US Pavilion, Brussels exhibition, by Edward D. Stone.*

30, *Villita Assembly building, San Antonio, O'Neill Ford and Associates.*



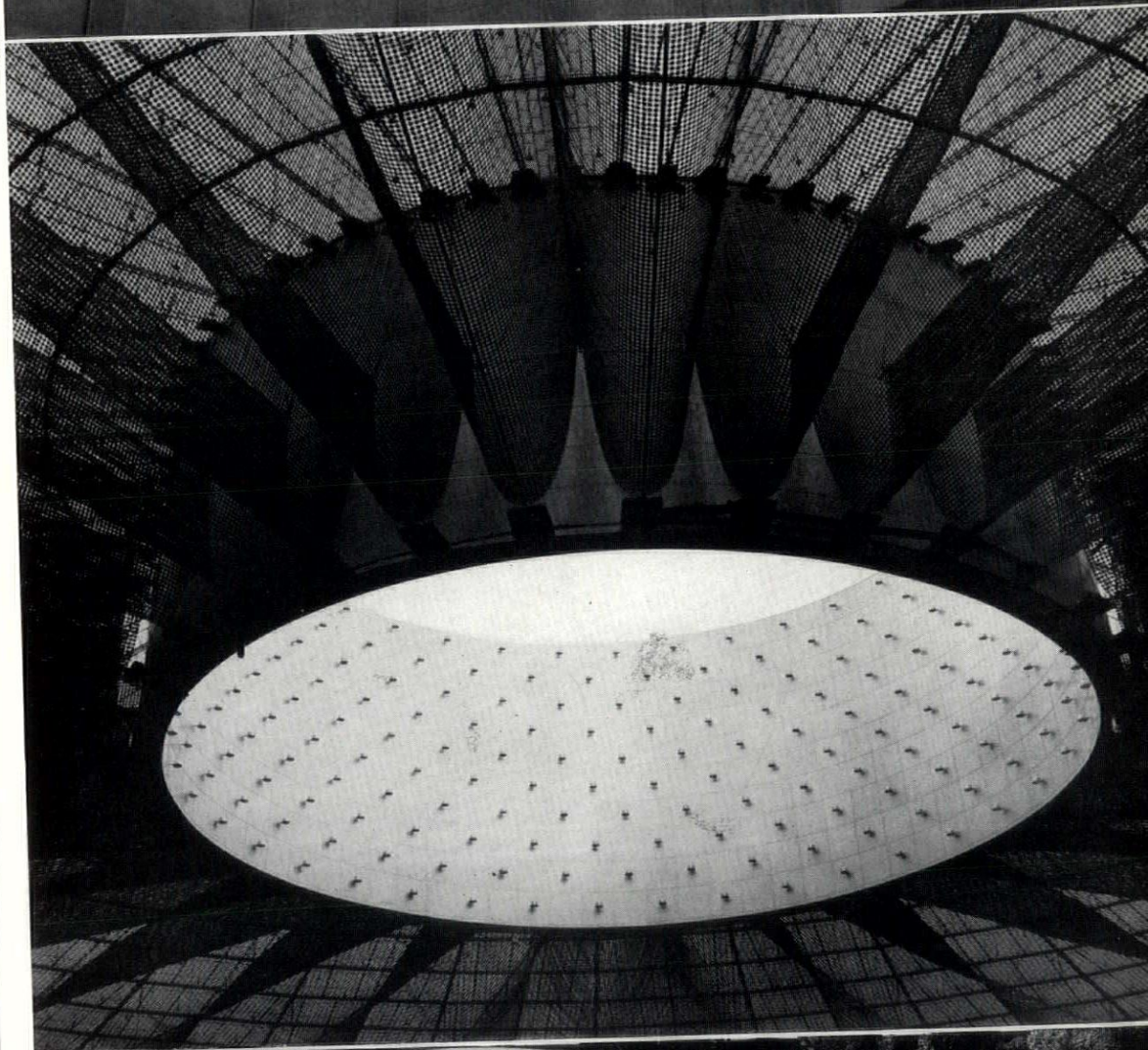
31

31, *Tent theatre, Boston, by Carl Koch and Margaret Ross; engineers, Walter Bird and Paul Weidlinger.*

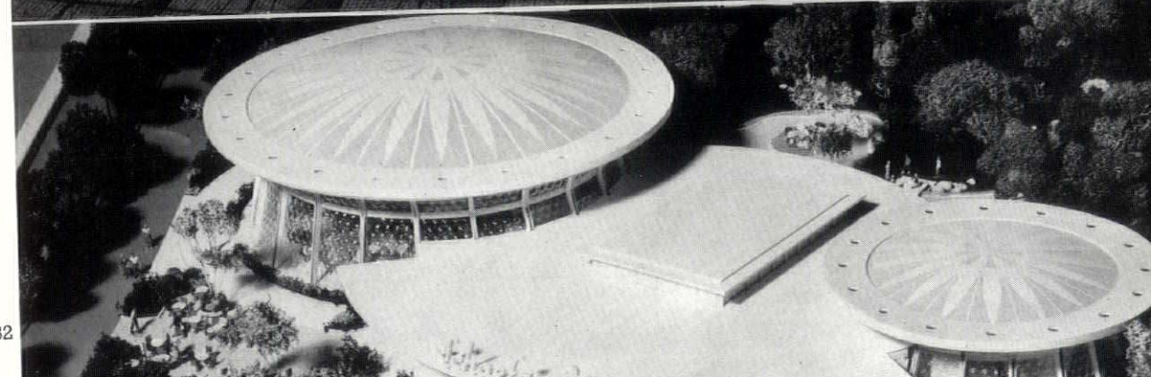
32, *Schaeffer Centre Exhibit project, by Eggers and Higgins with Walter Dorwin Teague.*



27



29



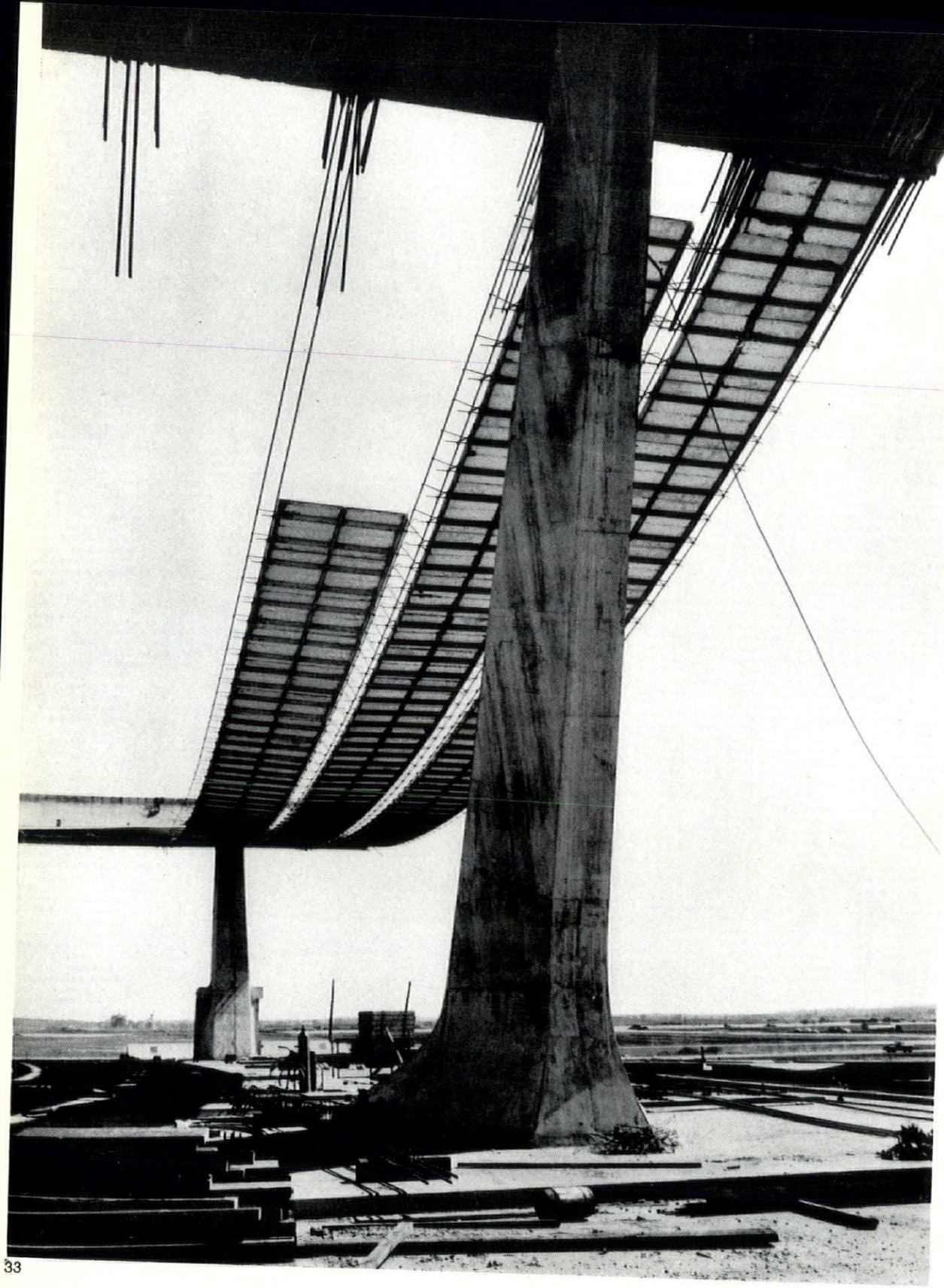
32

UNDER TENSION

33, 34, *two-dimensional suspended roof of Washington (Dulles) airport terminal, by Eero Saarinen and Associates, the most elaborately monumental use of a plain* hangende Dach *to be made so far in any part of the world.*

35, *transparent plastic pneumatic dome of parabolic section; experimental project by Arthur Quarmby and students at Bradford Regional College of Art.*

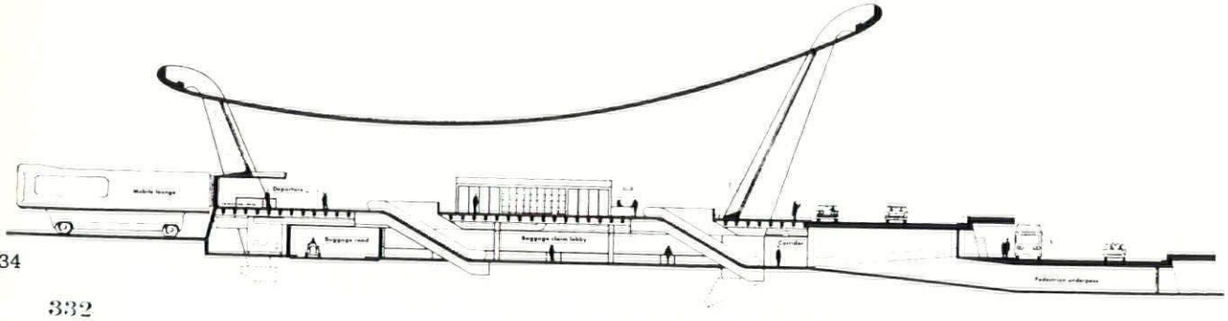
33



35



34



continued from page 328]

The 330-foot span of the pavilion was roofed with a double system of spokes, radiating from the top and bottom of a central cylindrical tension hub to an outer compression ring. It was a rigid, triangulated system, as in a bicycle wheel, which naturally was the name immediately given to this kind of roof. An incidental improvement was that the top of the roof was now conical instead of concave. Rainwater now drained to the outside wall where it could be disposed of simply. This eliminated the old embarrassment of having to convey the water that collected in the centre out to the perimeter by means of hanging pipes.

About the same time, engineer Lev Zetlin, working on the Municipal Auditorium for Utica in New York State with architects Gehron and Seltzer, invented a subtle improvement. He tied two systems of unequally prestressed cables together by rigid vertical spreaders. The natural frequency of each set of cables being different, they will be out of phase in any wind-induced vibration and one set will always damp out any vibratory tendencies of the other. Zetlin, patenting the system, remarked that it could be suitable for spans of any distance between about 200 and 1,800 feet.

Other new theories came to light in 1958. Led by Robert Le Ricolais at the University of Pennsylvania's school of architecture, students all over the world began exploring the field of tension and minimal surfaces, as demonstrated fascinatingly by the activities of soap films on twists of wire. Le Ricolais was not impressed by the wheel form, whether cart or bicycle, even over circular plans. He believed that triangular grid systems of cables without central tension rings were more promising.

Paul Chelazzi made one of the few proposals for the adaptation of tension principles to multi-storey building. He demonstrated a variation on an old device, which he called the 'Suspenarch.' This is a sort of coathanger for office floors. He proposed that it would sit on the top of the lift or service towers, erected first, and would drop tension cables to carry a stack of ten or so floors below. The 'Suspenarch' has a rigid top member bent in an arch and a cable connecting the ends, which sags the same distance as the arch rises. Arch and cable are connected at any suitable number of points along their length, and tension rods drop from the points of connection. The introduction of a light load-spreader like this, to substitute for a skyhook at the top of a building, improves the economical chances of tension in multi-storey work. Chelazzi became enthusiastic enough to envisage the idea developed in convenient stages up to a 300-storey tower, as innocent of architectural considerations as most visionary towers, including Frank Lloyd Wright's, have been innocent on the structural side.

But the man to leave all others behind in visionary projection of the tension idea was still Frei Otto. He pressed on from his studies of mechanically stressed membranes to the logical next step: pneumatically stressed membranes. His researches took two paths. One had been pioneered in Britain during the first World War by F. W. Lanchester, who realized that the increase in normal air pressure required to hold a big balloon inflated was slight enough not to cause discomfort to an occupant. During the second war this idea had been revived and in the nineteen-fifties balloon shelters served many practical purposes in a semi-experimental way. Blown-up plastic membranes were made as silos, sun-traps over pools, and shelters for conventional building operations in severe weather. The balloon shelter also had strong attraction for American travelling-exhibition designers, because it was the first structure since the teepee that could be rolled up and taken with you. In the US Atomic Energy exhibition which opened at Rio de Janeiro in November, 1960, a balloon consciously became architecture for perhaps the first time. Like a great, obese, waisted white slug it sprawled on the grass, the clever prophetic creation of architect Victor Lundy, with construction by Walter Bird, assisted by Fred Severud.

The other path of pneumatic structure pursued by Frei Otto was the way of the air-cushion. In this system the designer leaves the occupant normally pressurized but creates a rigid shelter over him by maintaining pressure between the double skins of a flexible covering. In its simplest, earliest form it was no more than a giant elevated circular air-cushion, supported all round, a technical advance along the same lines as the first dished tensile roof. This kind was elegantly demonstrated in an outdoor theatre built in 1959 for the Boston Arts Centre, again by Walter Bird, this time with architects Carl Koch and Margaret Ross, and engineer Paul Weidlinger. In more advanced applications the construction is divided up into some system of comparatively small and manageable pneumatic cushions.

Frei Otto took both these ideas and after much laboratory work with bewitching bubbles, cushions and balloons he published in August, 1962, the first comprehensive report on pneumatic structures, *Zugbeanspruchte Konstruktionen* (Tensile Structures). Although this book was labelled only Volume One, Otto blew up the two pneumatic ideas seemingly close to bursting point, producing a breath-taking collection of schemes for super-bubbles containing harbours, reservoirs or cities. He also examined balloons stiffened by concrete and a variation in the form of 'Sail Shells,' which may be catalogued about halfway between shells and balloons. He studied further the all-important details of ground anchors and he gave over the centre section of his book to a most thorough mathematical study of membranes under load by Rudolph Trostel. But the main interest in his profusely illustrated work still centred on the visual implications of pneumatic shapes, the bulbous curves that are familiar enough now in and around swimming pools expanded to vast proportions. In the course of his experiments he produced, with diverse practical demonstrations or applications in mind, multiple balloons with various strange effects. The most common was some fairly orderly geometrical variation on the buttoned cushion or rubber air-bed themes, but the more advanced suggested other images from modern life: perhaps an inner tube straining through a worn tyre, or an eiderdown after a sleepless night. The associations were invariably non-architectural. Frei Otto's book heralded a medium of building that has no apparent reference to any style known previously outside science-fiction, nor to any canons of taste or judgment, nor to any recognizable aesthetic experience.

Thus architecture has come to acknowledge tension as a major structural principle with unexplored applications and untold potentialities. Certainly it should be added to shell concrete and space frames in the top drawer of fine things for special occasions. But apparently, unlike the other two, it has more mundane value as well. It offers ample scope for visual inventiveness to maintain the interest of creative architects, and it holds out vague but tempting promises of economics to workaday builders. After 1958 nothing could hold back the steady growth of the tension principle wherever big spans were called for. A giant hangar at Idlewild Airport was built in 1959 at a cost claimed to be 60 per cent less than a conventional structure. In the same year, the first wholly supported cable structure on the west coast of the USA, a gymnasium at Central Washington College by architect Ralph H. Burkhard and engineers Anderson, Birkeland and Anderson, won a local AIA Award of Merit. In buildings such as these, tension structure was visibly growing more assured. The Tacoma traumas were past. Tension began to belong in the workaday building industry.

But even now tension is very young and carrying a load of youthful problems. It is inclined to concentrate on rather exhi-

bitionist achievements and neglect its opportunities and duties in simpler fields such as housing. No significant development has followed its early successes in small buildings. Lacking co-ordinated research, its techniques are often quite crude: for example, the use of loads of bricks for prestressing even the smart-looking Villita Assembly Building in Texas. Then the novelty of some of the shapes is inclined to defeat them after a first successful showing. The most experienced architects, who should be coaxing the tension movement forward and helping to perfect its language, often will avoid using the striking shape again simply because it has been done before. Again, while schemes like Chelazzi's and Otto's send the mind racing ahead to all sorts of exciting possibilities, in practice tension is thwarted in many kinds of buildings by the requirements of fireproofing. The bulk of the thinnest fire protection tends to cheat the method of its main advantages in spinning silk-thin webs. More basically, from the engineer's viewpoint, the field of tension still has large unchartered areas. The behaviour of tensed materials is still by no means fully understood, even under laboratory conditions, not to mention the hazards of freak conditions in the field. The more enticing 3-D shapes usually cannot be analysed by conventional or any other known mathematical methods and the engineer sometimes must return to the spirit of the Middle Ages, feeling his way far out beyond the numbers. The architect of course is used to this sort of adventure, but nevertheless he would be happier to feel a confident engineer striding surely beside him in the dark. And even if the engineer was entirely confident in tension design the architect would still have plenty to do on his own account to reach understanding of the character of this reversal of familiar stresses.

The *rapprochement* between architect and engineer after World War II was welcomed immoderately by some idealists who believed that it heralded the end of the art-science split and the reappearance of a single master-designer: architect and engineer rolled into one, to the great benefit of building. But this worthy wishful thinking is hardly more logical than an argument that all other consultants—ventilating, acoustical, plumbing and so on—also should be rolled into the paragon. On the contrary, the extra complexities introduced by all the new structural methods are more likely to increase the number of separate building specialists. And if the architect is to justify his own position as the top specialist, the specialist designer and controller, he must do his homework. To be able to design successfully in tension he should understand at least the laboratory behaviour of tension, if only to know when to call the engineer. And no less urgently he should understand the visual qualities of tension character, which is a sort of negative version of compression character.

As already noted, the involuntary character of any correctly designed tension member is not pushing, but obviously pulling. A major part of the conscious area of architectural design in tension must come from the visible degree of the pull as shown most clearly by the curves of the cables or membranes, especially when a curve changes in mid-length under a change of load. The first aesthetic rule of the genre is that structural tension need not be transmitted into emotional tension. Structural tension's mood, conveyed primarily by the visible pull of the members, ranges from the exceedingly highly strung down to a relaxed droop. In the selection of tension for any job, the quality of the visible pull is worth at least as much consideration as the economics and the flutter.

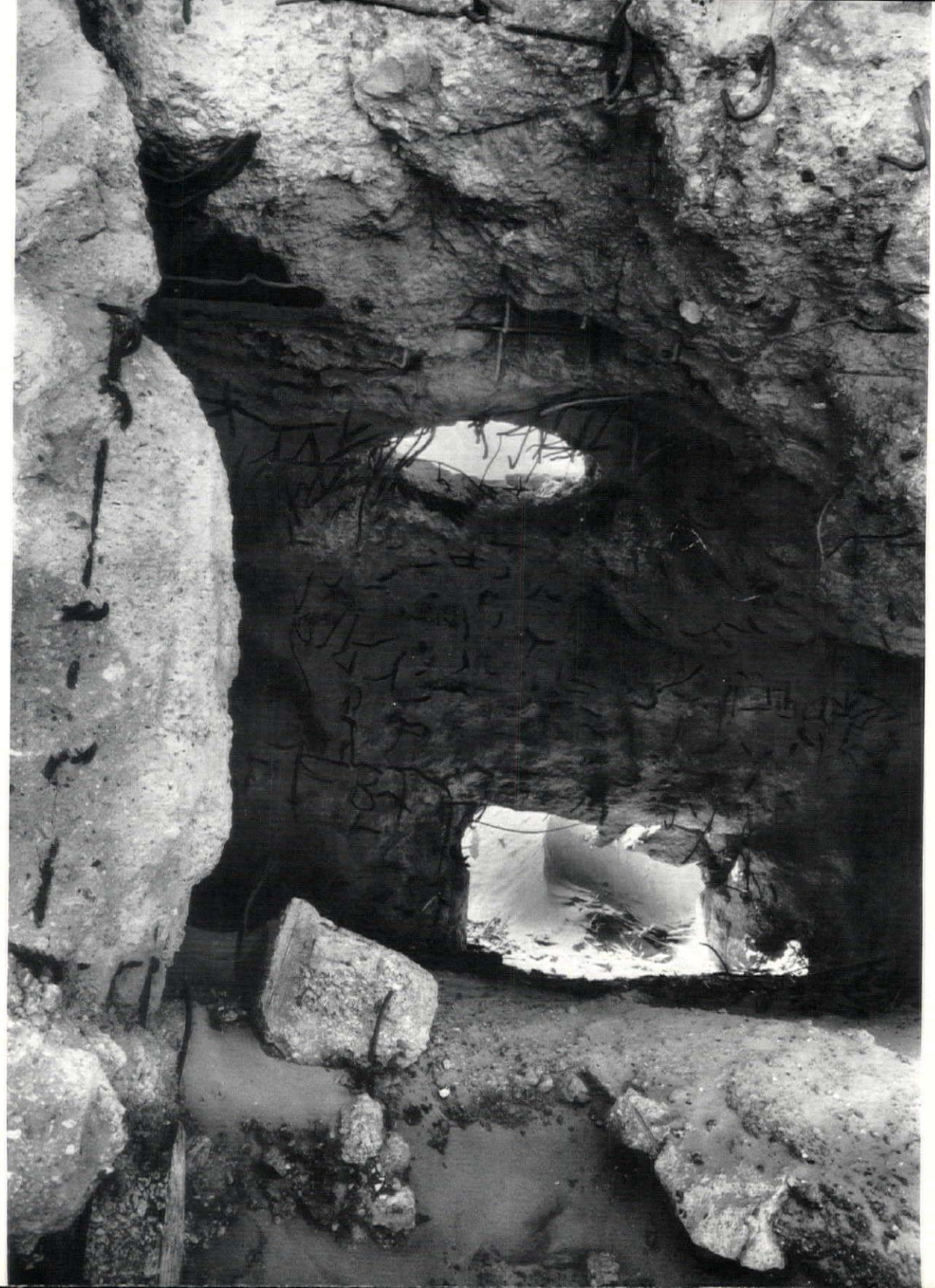
Writing under tension, in a house with a tension roof built in 1958, I can suggest that there may be numerous reasons for adopting it not connected with economics or big spans. In the case of this house the tension was symbolic. Here was a family plan based on convictions of anti-togetherness: parents' and children's blocks were planned to be separated by a court for mutual privacy. Yet it was still intended to be one shared home, and a tension roof covering both blocks and spanning the central court to carry sunshades, seemed to symbolize this in a suitably naïve way. Today the cables almost literally hold the family together.

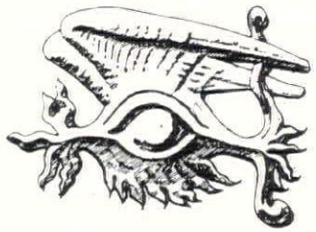
In tension design the candid exposure of the structure is more than merely a moral or artistic nicety; it is practically obligatory to the peace of mind of those sheltered. While an exposed tensile member is likely to communicate its task with remarkable eloquence compared with most stolid compressive members, concealed tensile structure is likely to produce forms which seem alarmingly defiant of natural laws, at least to eyes accustomed to compressive behaviour. The need for some sort of false ceiling may do the damage, as in the case of the neat bandbox of the Villita Assembly Building, where an almost continuous ring of tidy acoustic panels slung under the drooping cables at a contrary angle give a misleading suggestion of some insecure dome-like compressive structure.

For the same reason the frank exposure of tensile details is important to visual understanding. The joint between any two things in compression needs no explanation or celebration. The eye understands that the two things—suppose they are bricks—are being held together by the force. Now, it is often quite practical to treat joints between two things in tension with no more visual fuss than a joint between bricks. Perhaps they can be held together by a secret weld, or the joint may be hidden behind some sheathing. But the empathetic eye is undoubtedly made uneasy by such concealment. It knows the two things want to separate and is not really satisfied until it sees a firm grasp by one tensile member upon another, or upon something solid. Any direct and unselfconscious expression of this quality automatically produces the most eloquent explanation of the balance of forces. And the effect is so different from anything known in compression structure that it promises the emergence, if treated well, of a new detail style, architecture's first prehensile style.

More fundamentally, and much more importantly, the idea of tension seems now to be feeling its way to a formal expression, and this expression threatens the most cherished principles of form as known in this civilization. The predictable shapes of cabled membranes were an exciting novelty in the fifties, but even the hyperbolic-paraboloids were capable of conforming to known concepts of grace and beauty. Now some of the shapes proposed in the more advanced reaches of the tension movement overturn practically all accepted values. Far more organic than the state ever approached by the most poetic compressive structure, the pressurized building is made in the image of a blood vessel, in man's image, though not, it must be admitted, in the image of the nicest looking man one has ever seen. Perhaps only because they are so young and inexperienced the balloons often tend to look so old and fat. An unemotional constructivist approach to this kind of structure will frequently lead not to dullness but to a gross visual clumsiness which, seen through our conditioned eyes, can hardly be called anything but ugly. Yet in this kind of ugliness there may be one of the first really new keys to an escape from the historical vision that has been offered since the eradication of ornament. If that seems to be overstating the case, at least this can be said:

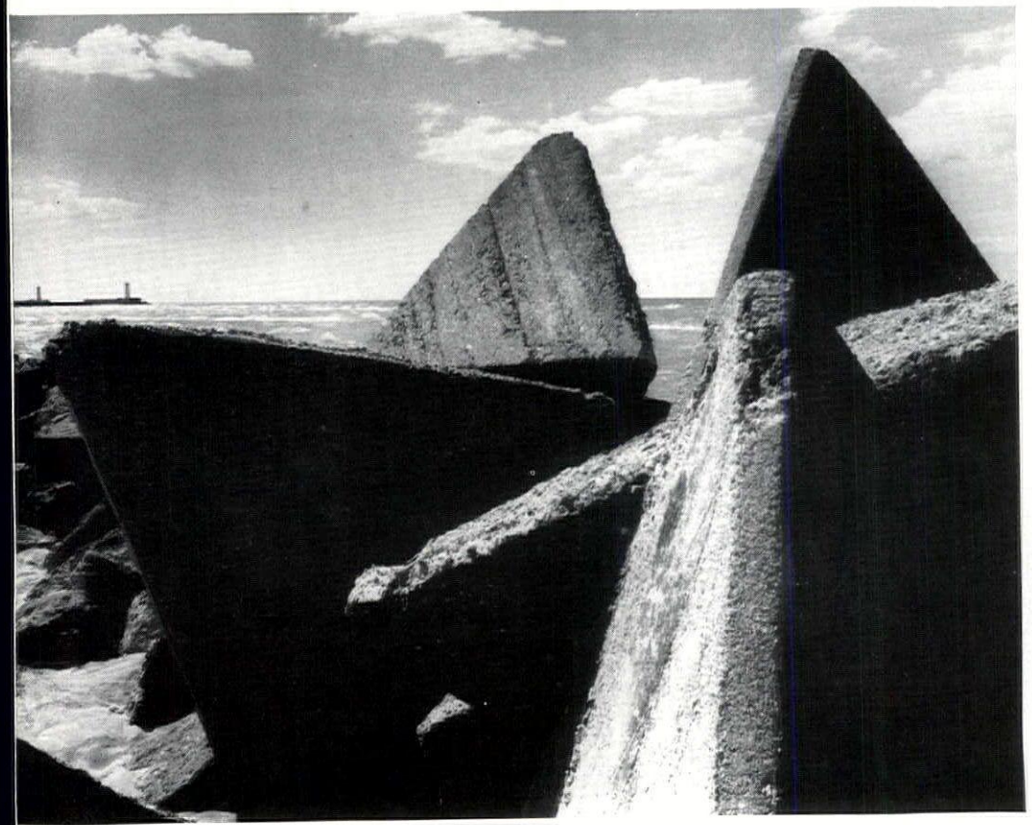
The salvation of architecture from its present backslide into irrelevant romanticism lies, most of us will admit, in the artistic understanding and development of all practical new ventures in building science. And tension now promises the most revolutionary means of broadening the genuine expressive range of the medium that has turned up since the romantic tail began wagging the modern architectural dog.

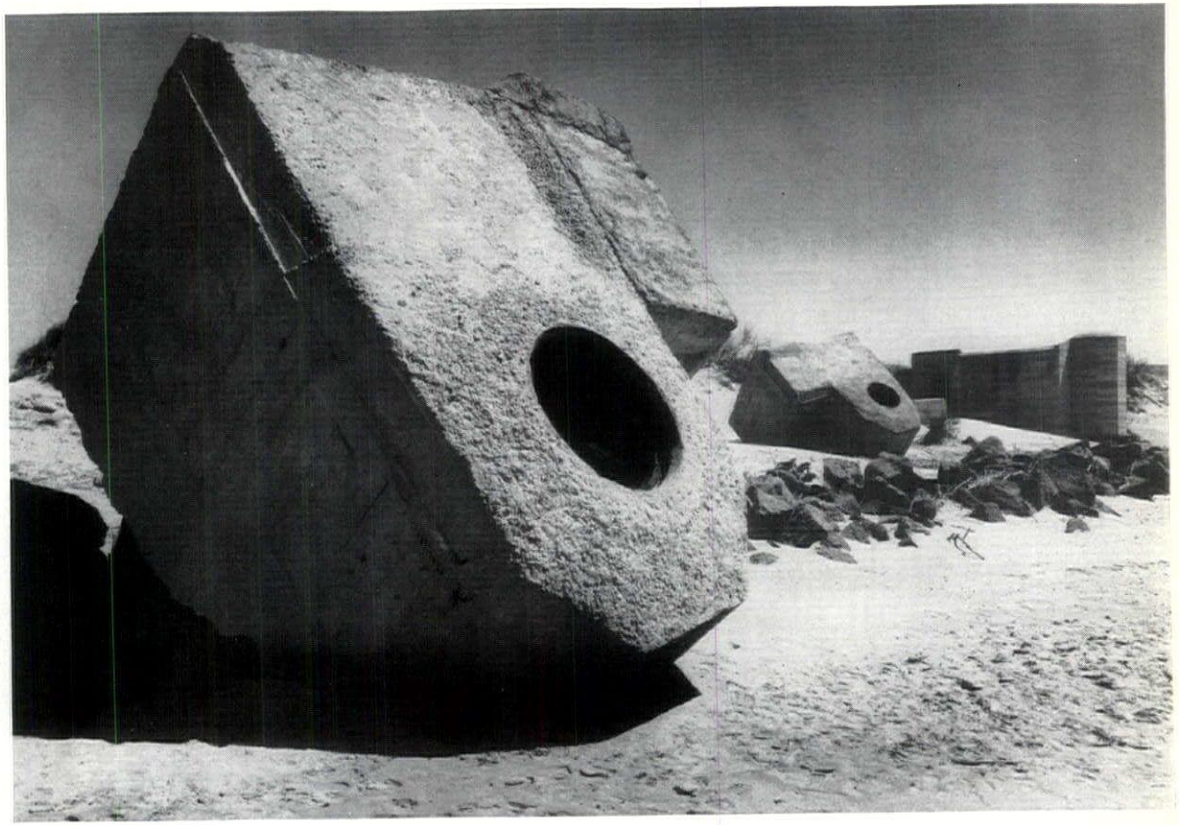


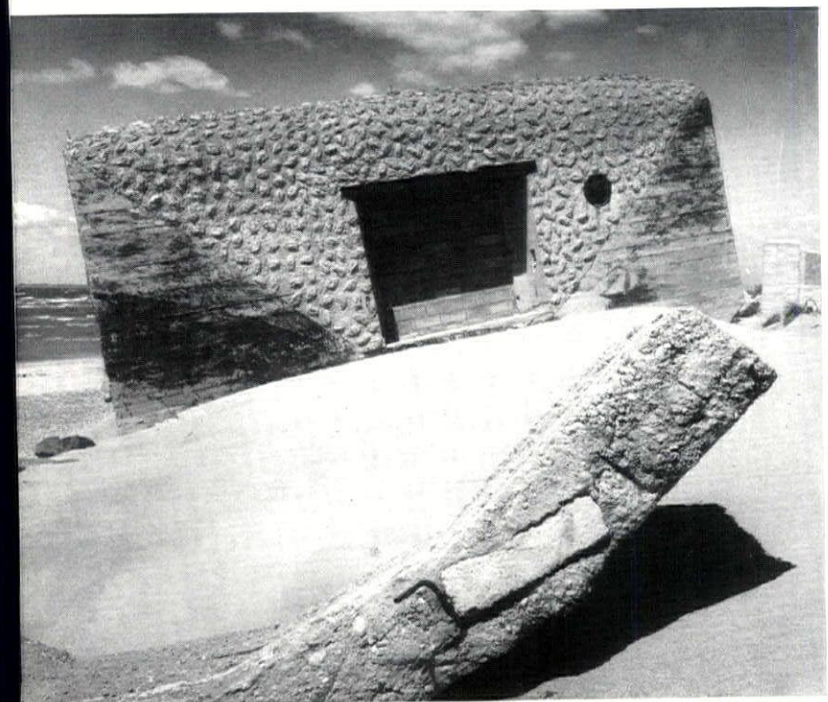


the exploring eye

These concrete ruins were photographed this year by Eric de Mare, who comments 'At first these war relics at Agde on the Languedoc coast prompt the question, "Why don't armies clear away their messes when they have finished with them?" Then one sees what marvellous play sculpture many objects make for children on holiday; also useful windbreaks for sun worshippers, and free bathing huts. Finally the visual drama of the ruins, which stretch along about a mile of Mediterranean coast, strike one, and the camera comes out. Some are like stranded and rotting sea monsters, full of strange forms and textures. The romantic tradition of picturesque ruins amidst wild landscape make one appreciate them the more; so does the surrealist approach to Daliesque deserts. Some like ancient tombs by the Dead Sea; others have gone back to nature as rocky caves. Interesting also perhaps to the concrete technologist, who may know very few examples of the effects of time and weather (and explosion) on reinforced concrete founded on sand.'

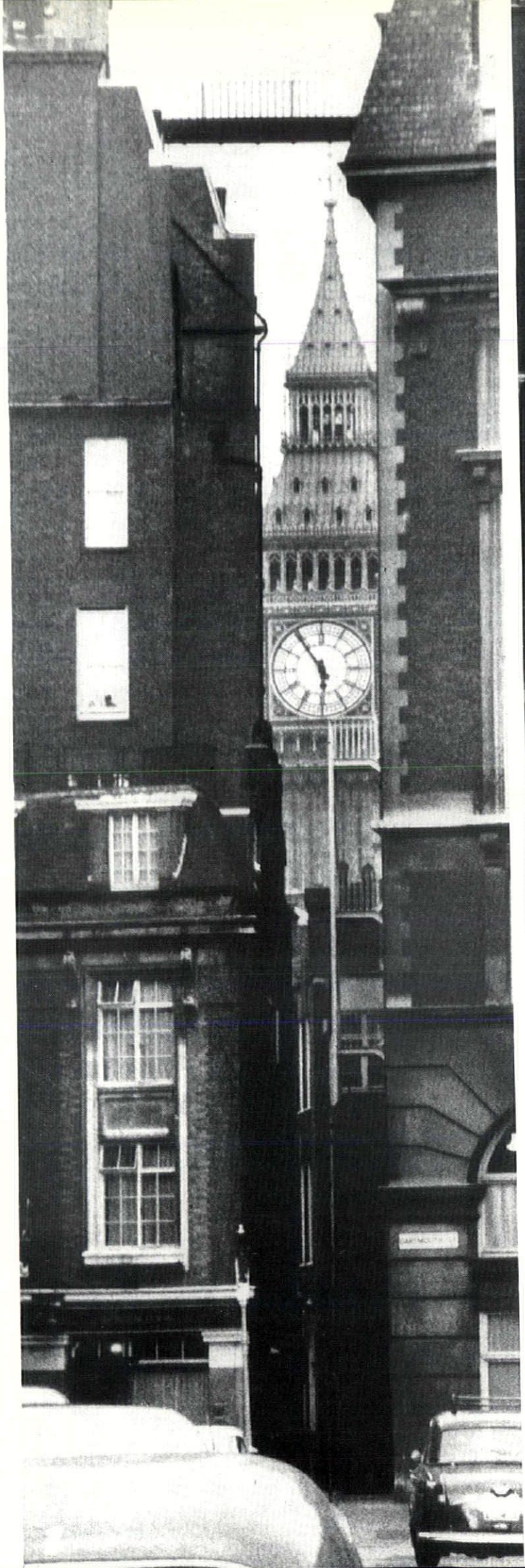


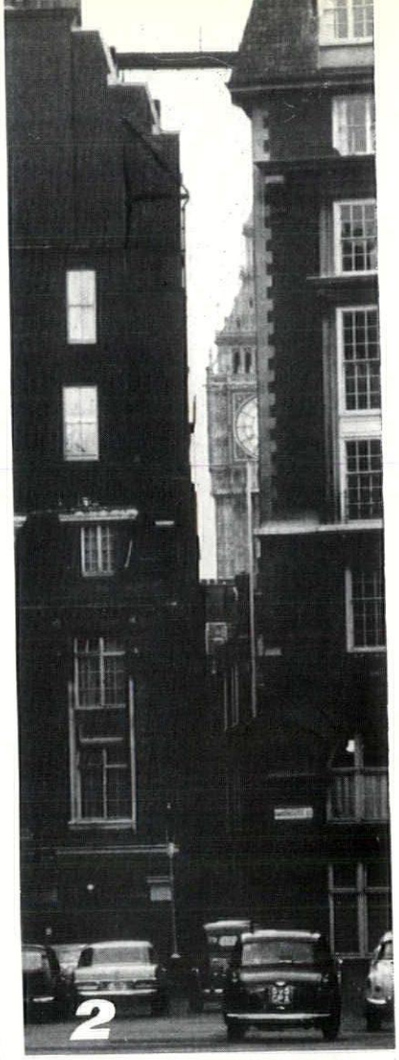


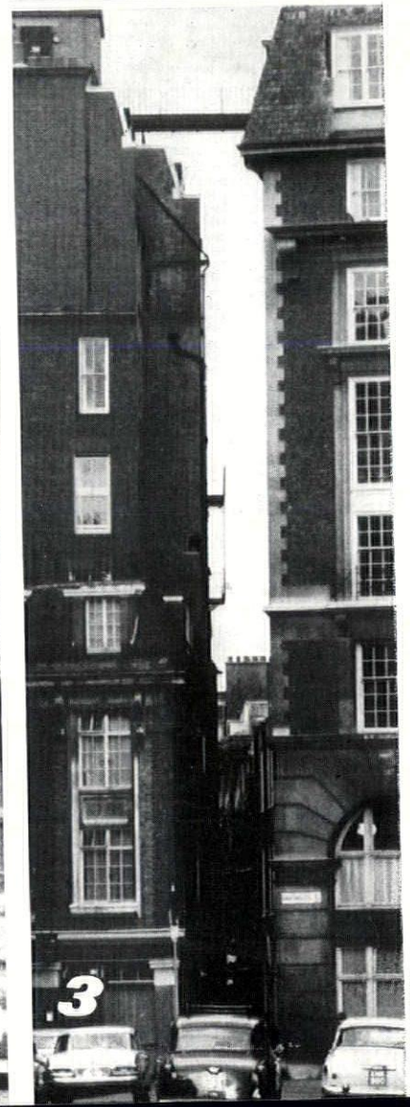












TOWNSCAPE

TRICKS OF

1. Lewisham St. S.W.

After fifteen years of hard work by the REVIEW, townscape receives at least lip service from the professions. Architects and planners are prepared to use words like enclosure, surprise and multiple use. But they are apt to remain words. The enclosures don't enclose, the surprises don't astonish, the multiple use turns out to be one pub on an isolated plot with the landlord wondering where his trade has gone.

In other words, the message has got over but the syntax has not. To underline this, and to suggest that we are so far only scratching the surface of this quintessential problem, is the purpose of these series of small features, entitled 'Tricks of the Trade,' of which this is the first. They will show that words which may sound simple actually depend on effects as complex as the innards of a watch or an aircraft engine.

Education begins outside the REVIEW'S front door—literally. At the eastern end of Queen Anne's Gate there is an alley called Lewisham Street, which has Big Ben at the end of it. Simple, you might say: draw straight lines direct to the tower. Enclosure, surprise, even multiple use (you never know when they're going to zone a place for public clocks, these days).

Well, no it is not quite like that, not even from the first glimpse, from the far end, shown on the left. You can get the tower bang in the view, ***1,*** if you juggle it, but only for a moment. Indeed, a moment is enough, otherwise it would outstare the place. Three paces to the right and it is edging out of the view, ***2,*** no longer Big Ben and the mother of parliaments. Two more paces and it has gone altogether, ***3,*** nothing is left but a great glaring slit of air.

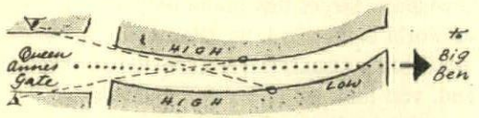
Lewisham Street does not run straight at the tower and is not quite straight itself. The combination makes possible a complete tune where the straightforward axis would only have provided one note. Just because it is off-centre, Big Ben recedes behind the sides as you get closer, popping downward like a telescope folding up, ***4.***

From halfway down Queen Anne's Gate, the alley claims you, with the alley's own symbols: two high-level stairways, one dark and the other light. If you step aside, then it performs a conjuring trick. Big Ben is only

Ian Nairn
Kenneth Browne

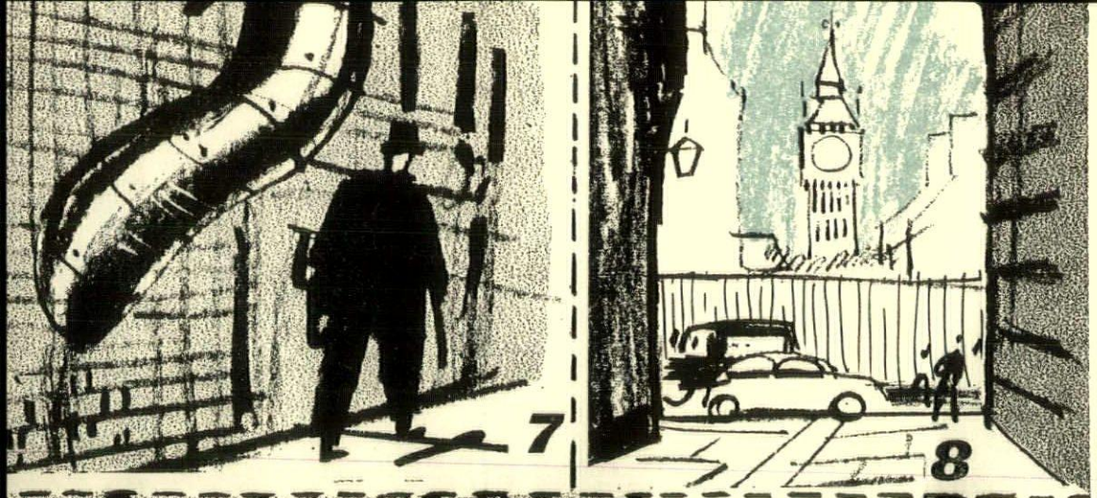
THE TRADE

visible for a few feet in the middle. On either side, the view is closed by the high walls: three different axes for the price of one.

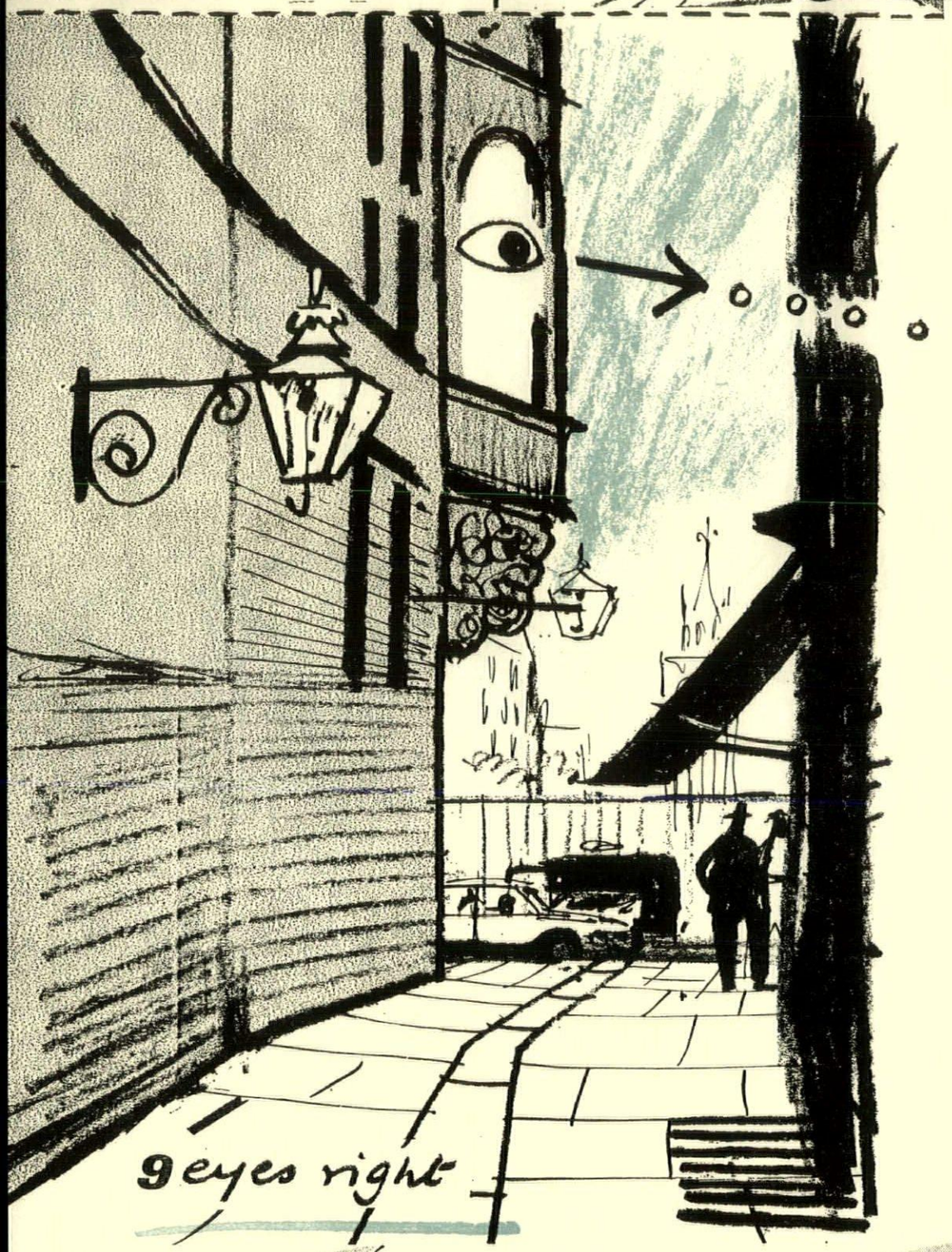


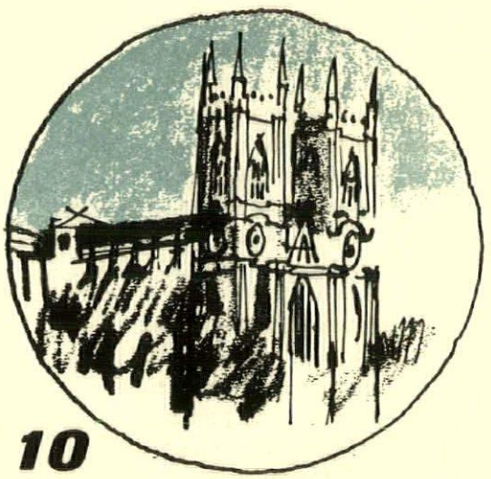
This is an eloquent banana; and Big Ben, meanwhile, has shrunk into the background. Inside the alley it is going to shrink further. But first there is an entrance, *5*, which brings you up short. The focus of vision needs to be changed, so the quoins and pilasters bring you up short, dreamers down from the clouds, each brick now brutally close and real. (Accident? Yes, but unless we design with equivalent subtlety modern architecture will go down in history as the style that was all promise and no performance.)

The alley, in fact, will absorb you completely. The banana is made up of a funnel and a bend, with a reverse bend at the other end. Near enough to a straight line for a view through to be possible at all times, yet nowhere near monotony. Always, one side or the other claims you.



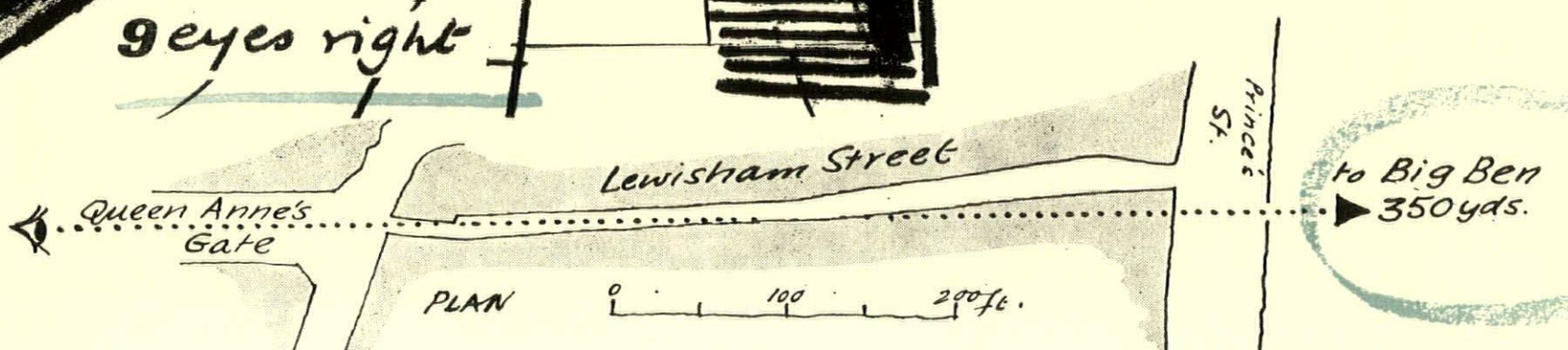
Big Ben disappears altogether and its place is taken by the fire escape, ***6.*** Take your eyes or mind off it and look down, and you see a monstrous pipe, ***7,*** God's colon, the bowels of a thousand office-workers made visible. Clearly, this is no place to linger. . . . . And so you don't. Hurrying along, abstracted now, chained to the surfaces of things you can touch and walk on. Lewisham Street has made its point. The outer world comes in later than it might on a strict visual analysis: suddenly, near the end, you look up and see Big Ben again, ***8,*** complete, but no longer dominating as it did in the first view. It seems to have shrunk to being no more than a handsome monument.





But Lewisham Street hasn't finished, though it has finished with Big Ben. Three street lamps on brackets start to turn your eyes right, and so does the pattern of the floor. The building at the end of the street has an oriel window at forty-five degrees which clinches things, ***9.*** By the time you are out of the alley, all your interest has been deflected to the right, gently but firmly. And here, after all this, is the climax—not Big Ben but Westminster Abbey, ***10.***

A continuous flirtation with one object has ended up in a permanent attachment to something quite different. A play within a play: a dance around an axis which turns out at the last minute to be quite illusory. It has the flickering mastery of a plot by Congreve, and it could have been just a straight route, part of a pedestrian pedestrian precinct.



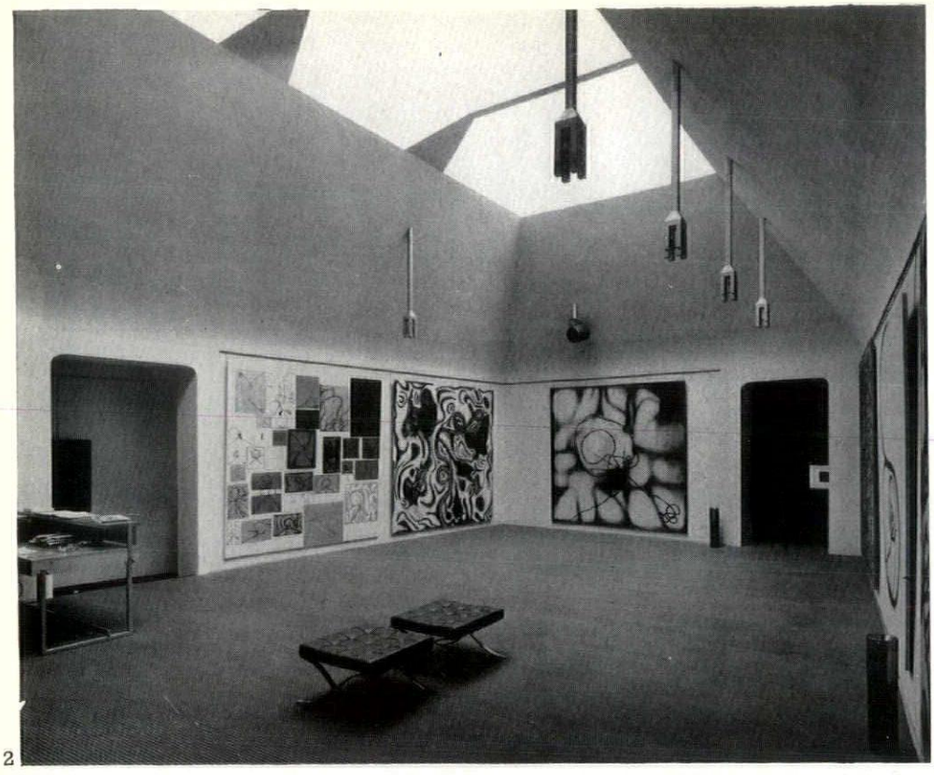
Art Gallery in London

architects: Ahrends, Burton and Koralek

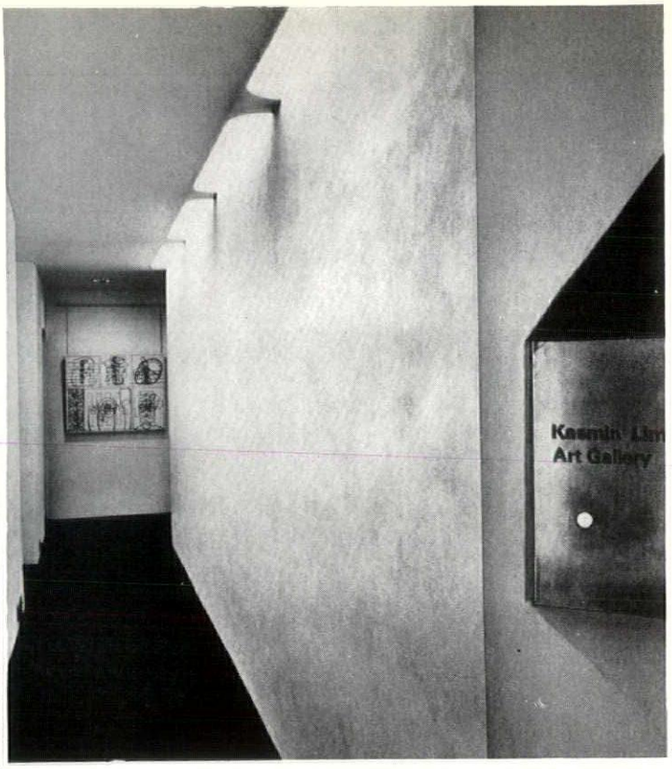
ID
a monthly review of interior design

1, the gallery seen from the store room.

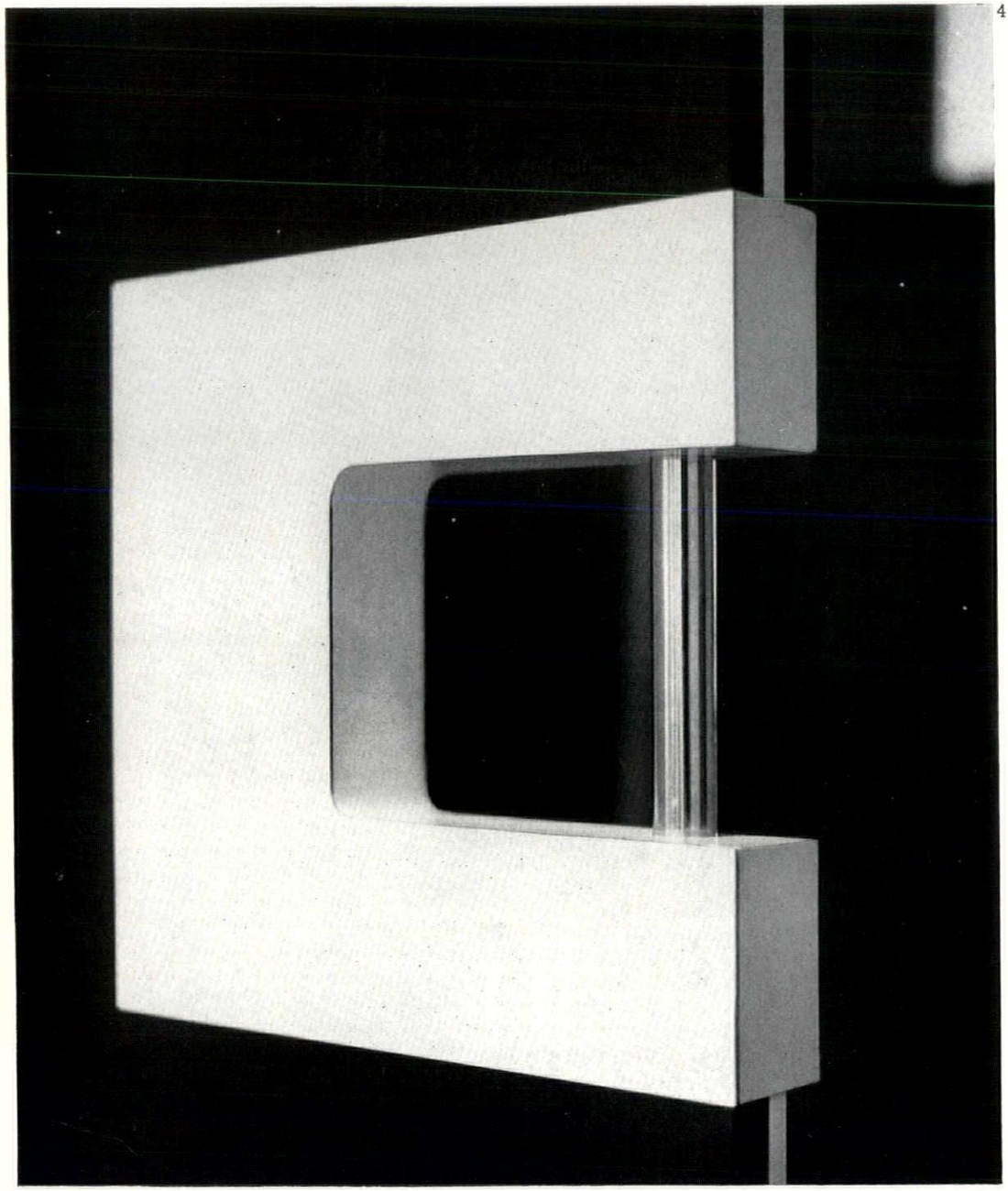




2



3

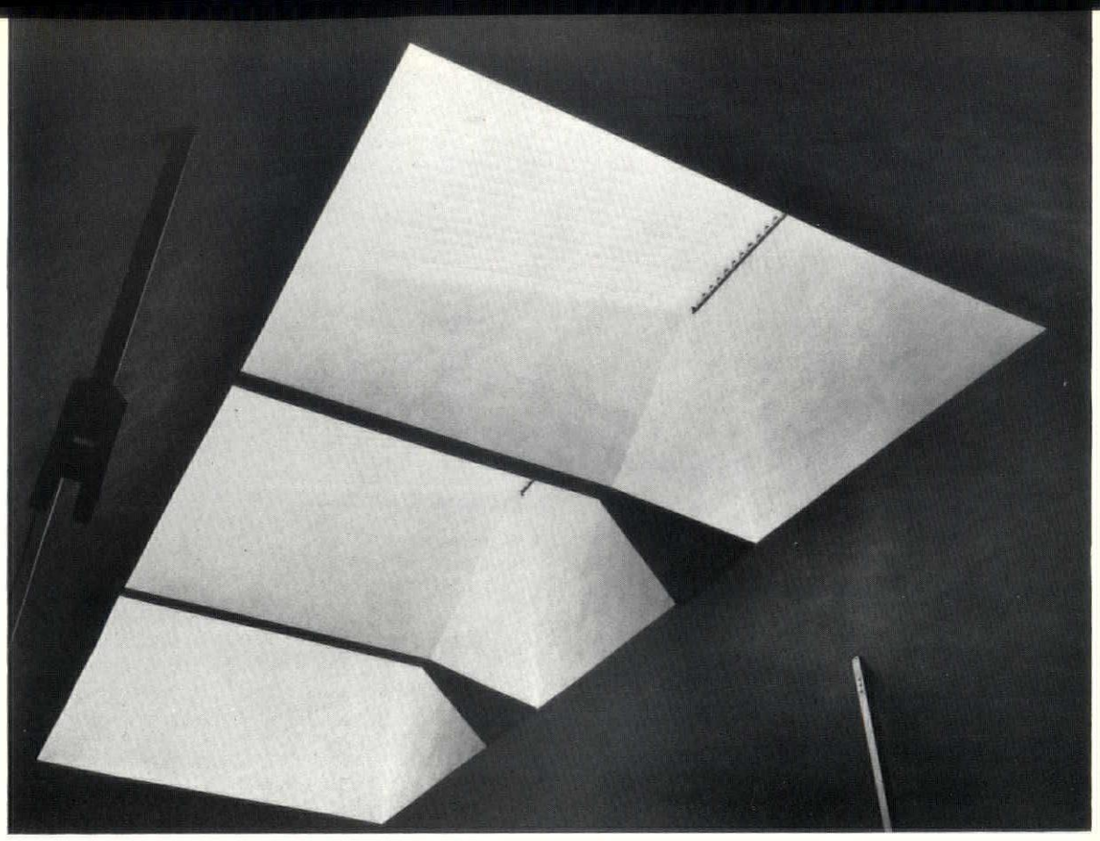


4

The Kasmin Gallery inherits the site of an older art gallery in Bond Street, reached by a long corridor from the street, and its form in section derives in part from the need to fit it within the structure of the original gallery, and to reorganize the fall of light from its glazed lantern. An adjoining room, reached directly from the gallery, has been fitted with racks and serves as a picture store.

2, general view of the gallery, with the entrance at the left and the door to the store at the far end. The walls are of fibrous plaster which is carried directly up on to the sloping ceilings, from which hangs a system of metal bearers into which bars can be slotted to carry light-fittings.
3, the corridor which gives access to the gallery from the street, seen from the front door. Illumination is provided by fluorescent tubes above the slots on the right.
4, handle of the sliding door to the picture store.

for criticism see page 367



5, the visible lantern in the centre of the ceiling—the external lantern above it is symmetrical, but cannot be seen because of the sloping venetian blind which controls the fall of light.



Plastics Showroom, South London

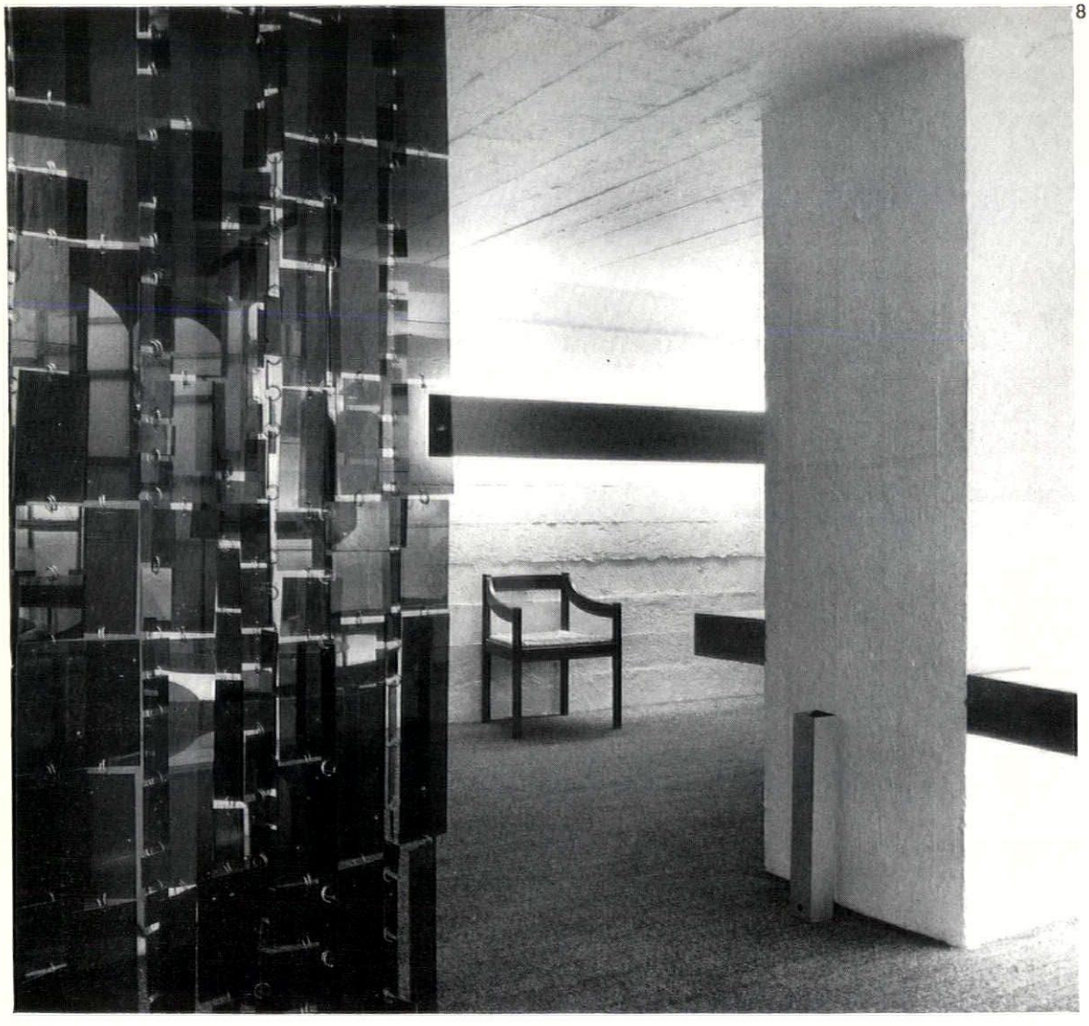
designer: Noel Lefebvre

Since it occupies a former air-raid shelter in the basements of a converted warehouse in Kennington Road, the Xlon showroom was well endowed with the exposed brick and plank-shuttered concrete surfaces that are currently in vogue, even before its transformation was put in hand. The outstanding skill of the conversion lies in rendering this subterranean space, both habitable as an office and sympathetic, as a showroom, to a range of products that vary between the austere and the elaborately fanciful.

6, transparent plastic direction plate at head of stairs down to showroom.



7



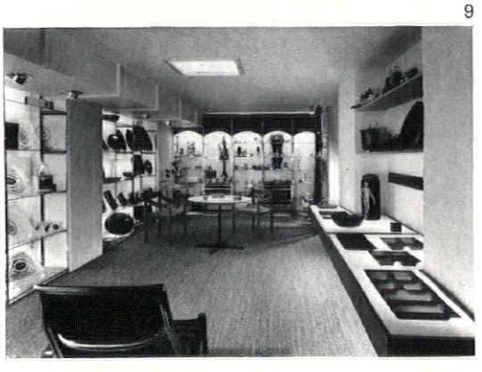
8

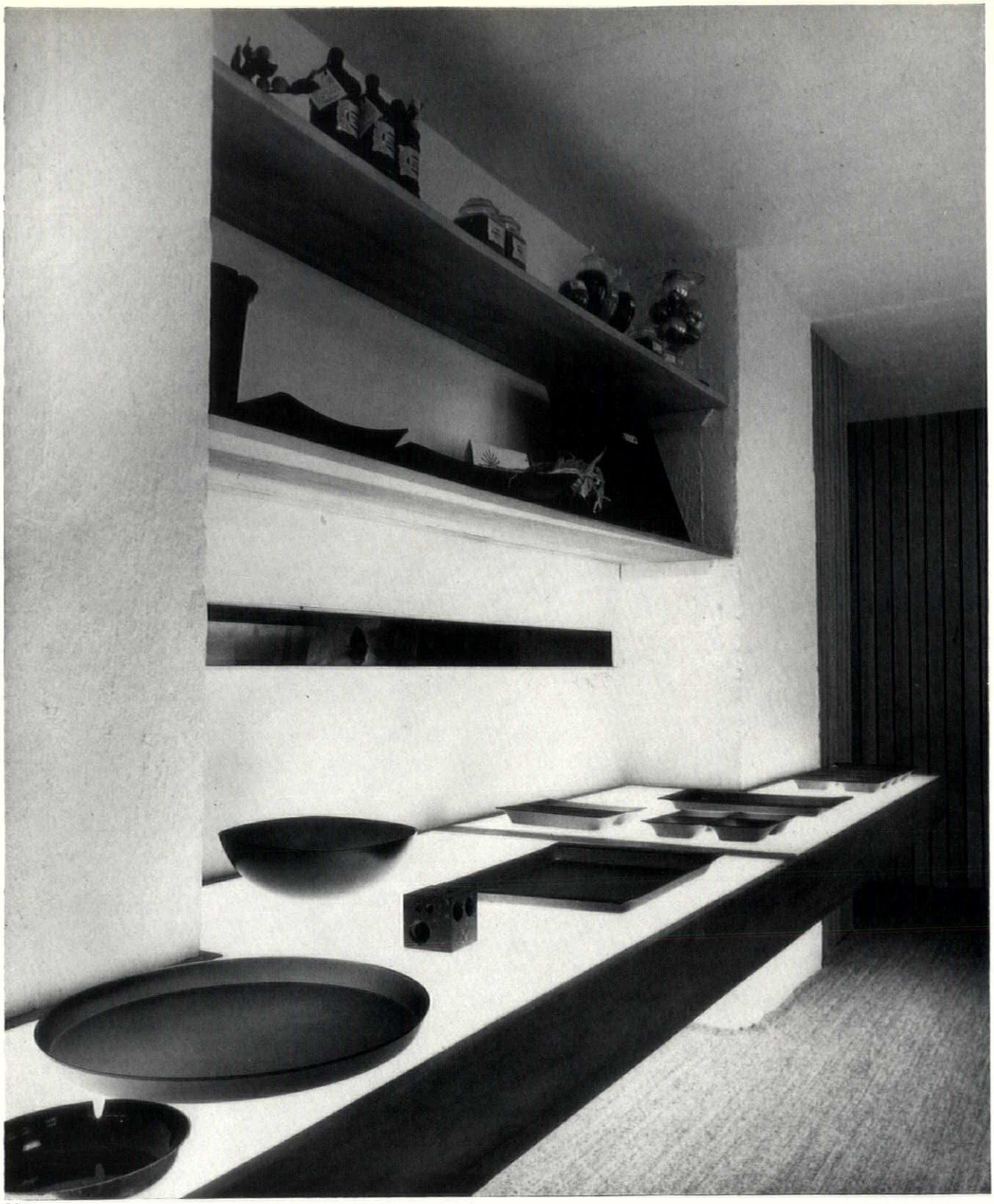
7, transparent display shelving, top-lit but also spot-lit from projectors in the trunking in front, on the long wall of the showroom side.

8, screen of multi-coloured plastic offcuts by the foot of the stairs—they are linked by metal rings and hung from a rail which is just out of the picture. The back wall of the office area beyond, illuminated by raking light from the masked fluorescent strip, gives an idea of the wall surfaces ' as found.'

9, general view of the display side, looking back toward the entrance.

9





10

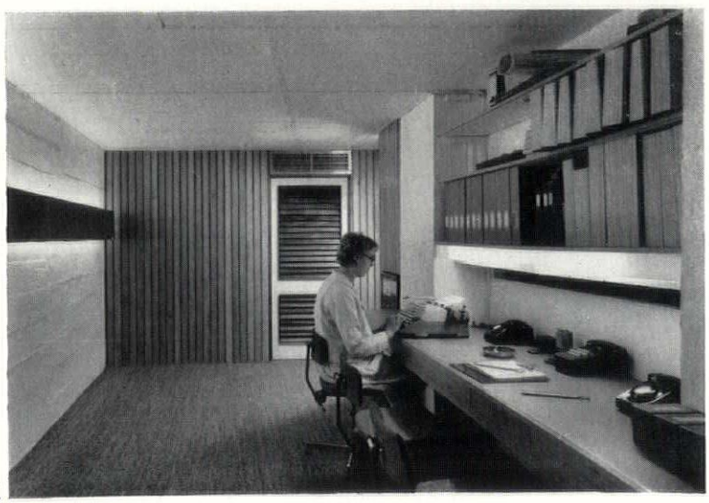
ID

plastics showroom, South London

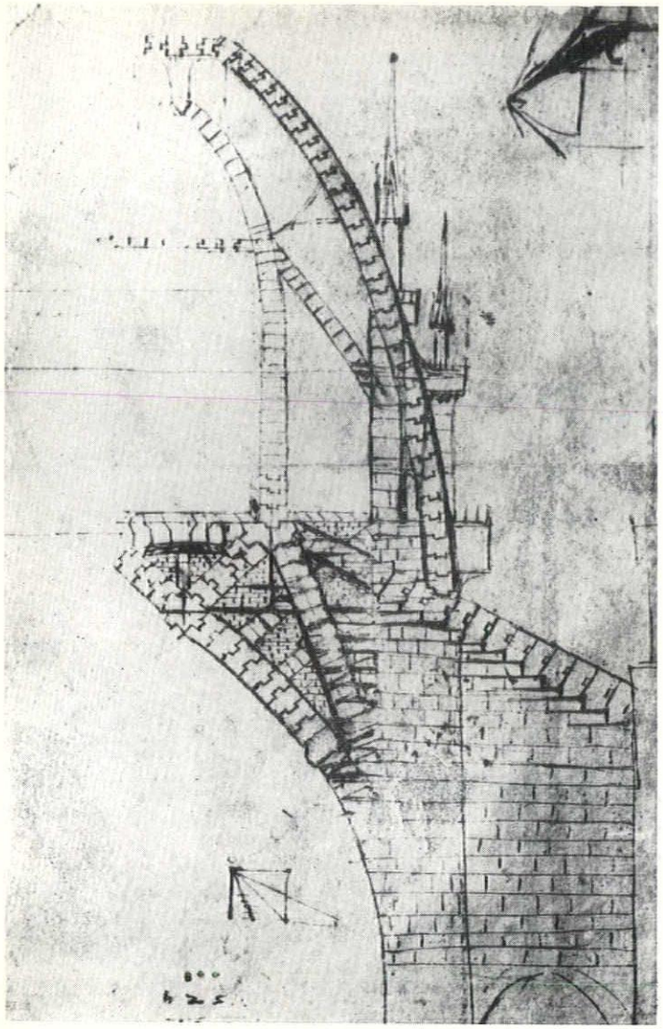
10, the central display fitment, cantilevered from the two concrete piers that occupy the middle of the showroom. The deep shelf has a translucent top and is lit from below, while the screen between the piers that ensures a degree of privacy for the office side is relieved by a viewing strip of coloured plastic.

11, a general view of the office area. The planked walling and louvred doors at the far end cover ventilating and heating equipment and other mechanical services.

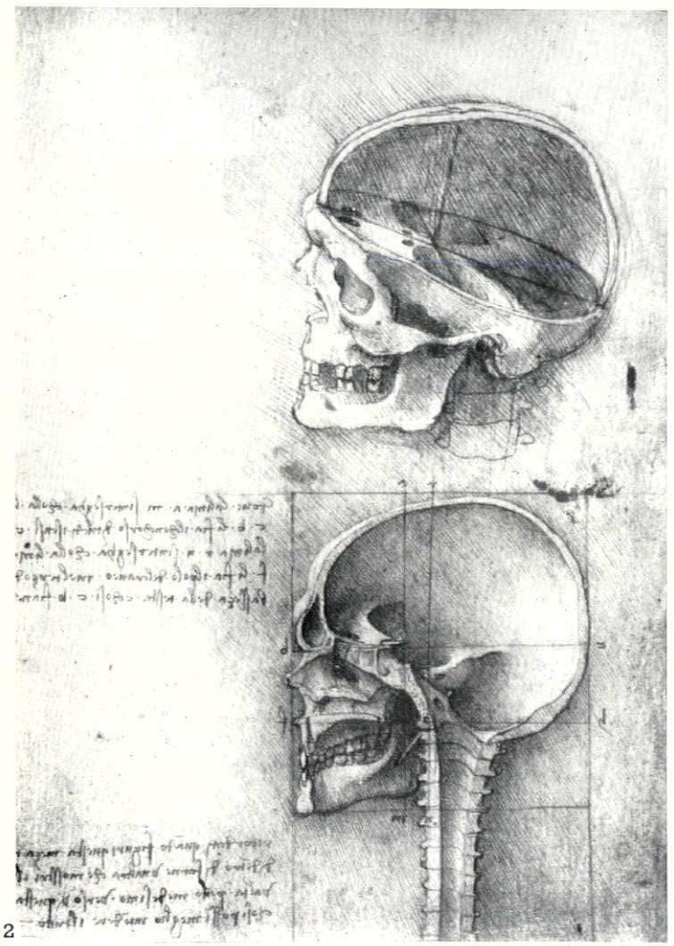
for criticism see page 367



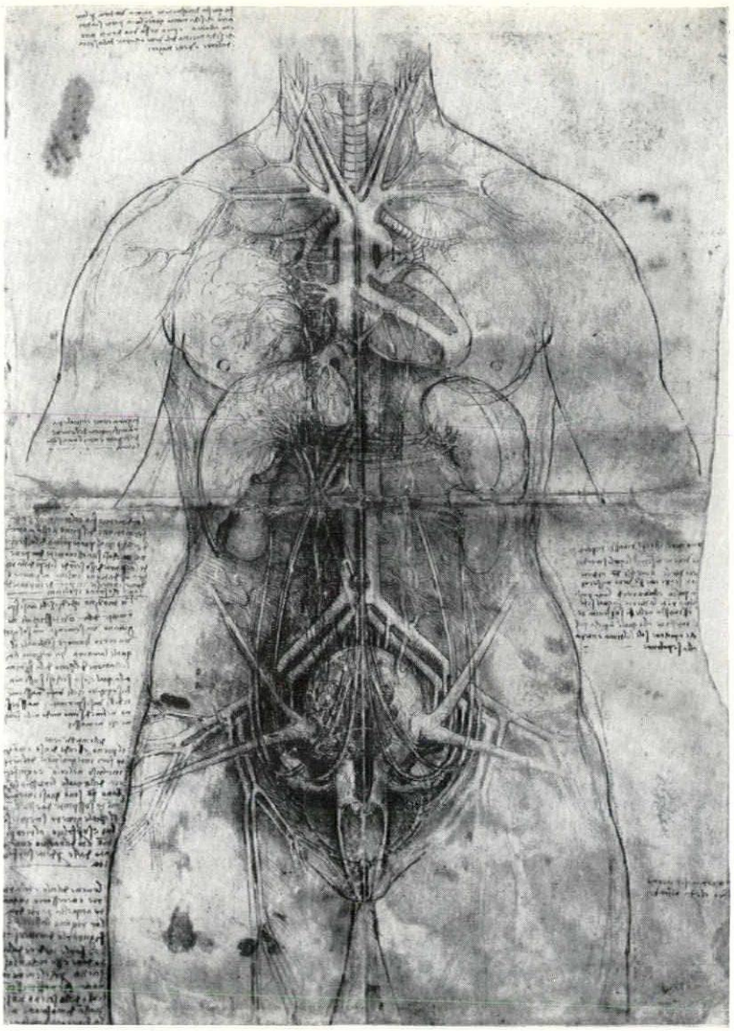
11



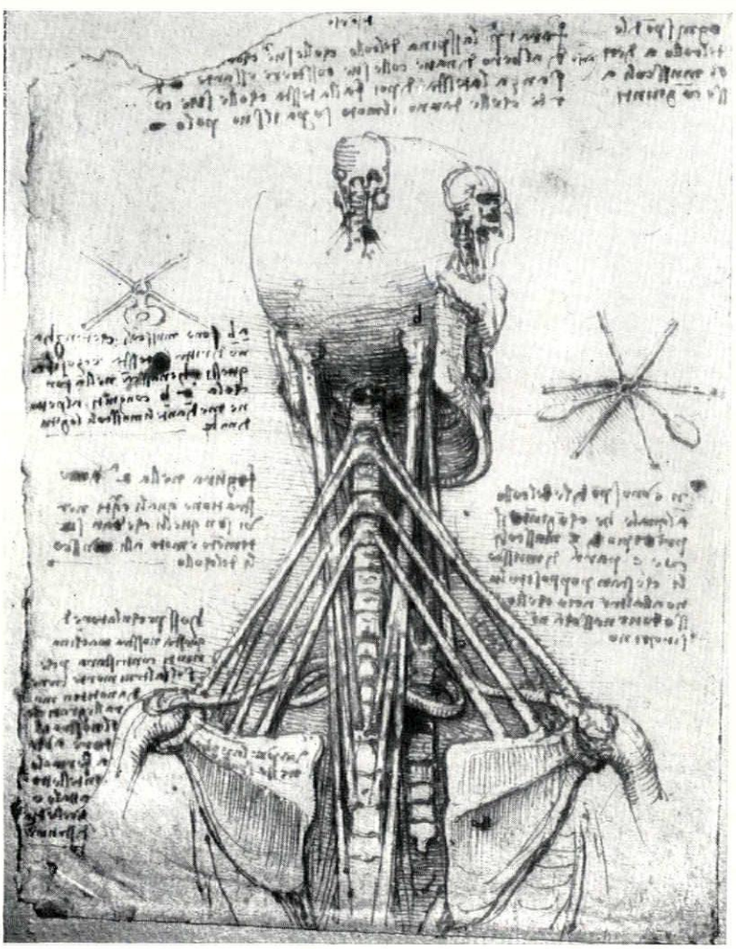
1



2



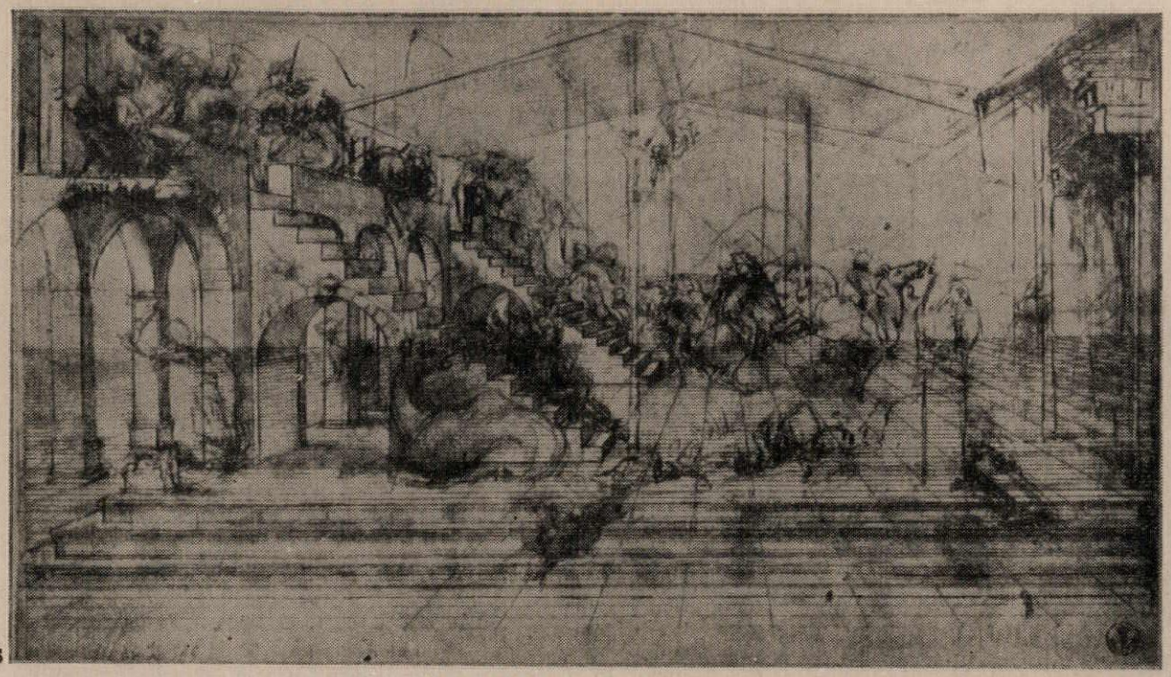
3



4

LEONARDO & BRAMANTE

PETER MURRAY



5

The coherence of Leonardo's investigations into architectural and human structure: opposite page 1, *study of the forces in a double dome;* 2, *the dome of the human skull in section;* 3, situs viscerum, *a functional description of the human body;* 4, *musculature and skeleton as a structural system;* 5 (*above*) *architectural drawing in the Florentine conventions, a study for the* Adoration of the Magi. *This paper on Leonardo's approach to anatomy and architecture, and its effect on Bramante, was first given by Dr. Murray as a public lecture at the Courtauld Institute, and will form part of a monograph on Bramante in the series* Studies in Architecture.

In September, 1481, Leonardo da Vinci was still in Florence, working on the *Adoration of the Magi* commissioned by the monks of San Donato a Scopeto, left unfinished when he went to Milan where he spent the next seventeen or more years. He may have written to Ludovico Sforza, Il Moro, since there is a draft letter setting out his qualifications for employment; in it he says that he can carry out various military operations, detailed at great length, and continues: 'In time of peace I believe I can give perfect satisfaction and to the equal of any other in architecture and the composition of buildings both public and private. . . .' It is not known whether this letter was ever sent, but Leonardo was certainly in Milan by 1483, for, on 25 April of that year, he contracted to paint the *Virgin of the Rocks*.

He had claimed to be skilled in architecture, but there is nothing to substantiate this in his Florentine works, except for one drawing, 5, of a flight of steps, which was merely a study for part of the background of the S. Donato *Adoration*. Such architectural draughtsmanship was not beyond the skill of any Florentine fifteenth-century artist; but by 1487 Leonardo must have had some practical experience of civil engineering (though not necessarily of architecture in our sense of the word) for he is recorded as working on a wooden model of the vaulted crossing, or *tiburio*, of Milan Cathedral. Payments were made between 30 July, 1487, and 11 January, 1488.[1] Bramante was also working on a model at this time, nothing of which survives either, but there are several drawings by Leonardo which must be connected with this project, and one (Codex Atlanticus 310a, 1) seems to be a fully worked-out diagram of the forces involved. It must be one of the first attempts to represent the nature of masonry thrusts, a subject later studied by Leonardo in great detail.

This cannot be much earlier than 1487, and may well be later (1487–90), but it is of crucial importance in the study of Leonardo's architectural ideas. It is one of the very small group of Leonardo's drawings that can be connected with an actual building, and it is practically the only one which is a fully worked-out solution to an existing problem.[2]

By far the greater number of Leonardo's architectural drawings are theoretical solutions to problems which nobody else was then formulating in the same way: indeed, it is possible that Leonardo's asking of these questions impelled Bramante towards those forms which became the architectural norm for the sixteenth century. The great importance of Leonardo in the history of architecture lies, not in the answers he produced, but in the mere stating of questions at length and in detail.

The curious fact is that a great many drawings by Leonardo exist, more or less architectural in content, most of them in two collections,[3] and probably nearly all destined as material for a treatise. Those which had a practical application are invariably to be ranked as engineering rather than architectural in content, and in the case of the numerous drawings for fortifications it is very difficult to say whether they were ever executed and whether they were not part of Leonardo's military interests rather than architectural. They are excluded from consideration here, because all of them are based on the premise that the shape of the building is conditioned by two things—the provision of a completely unobstructed field of fire for the defenders, and the maximum strength against attackers. Nevertheless, the concept of 'functionalism'—that the form is dictated primarily by the purpose of the building—is basic to Leonardo's architectural thought and may be traced in other fields of study cultivated by him, apart from military architecture: 'Structure and function were for him correlated phenomena, the study of one necessarily involving that of the other. . . . In Leonardo's time a cleavage between anatomy and physiology, between the study of structure and function did not exist. As an artist he was interested in form and as a student of mechanics he was interested in function, but the two could not be separated; there was no question as to whether form determined function or function determined form . . . for Leonardo the teleological view of Nature was the only one available. . . . '[4] This judgment refers specifically to Leonardo's great achievements as an anatomist, but it is the purpose of this article to show that, for Leonardo, architecture was merely another means of discovery about the world—it was Bramante who exploited his discoveries to the full because of the conditions in which the two men found themselves.

Leonardo's anatomical studies provide the key to many of his activities and, in particular, I believe they are the clue to his architectural drawings. This is partly because we are able to date the anatomical drawings with a high degree of accuracy, and we know that they represent a great proportion of his activity from the 1480's up to at least 1515; that is, almost to the time of his death. Leonardo was not perhaps the greatest artist of his age, but he was certainly the greatest anatomist: only Marcantonio della Torre of Pavia (1481–1511) could compete with him, and the difference in age makes it likely that Leonardo was the pioneer. In any case, della Torre's best work was not done until the end of his short life and he probably met Leonardo about 1510–11. William Hunter himself said unhesitatingly that Leonardo had not only been the greatest anatomist of his age, but was long in advance of his time and an anatomist of the first rank—'certainly the first man we know of, who introduced the practice of making anatomical drawings'.[5] It is precisely because Leonardo was so expert that we are able to trace the stages of his anatomical discoveries, and thus to date the drawings and notes. We have the date 2 April, 1489, inscribed on one of the Windsor sheets (19057 *recto*, 2), and another Windsor

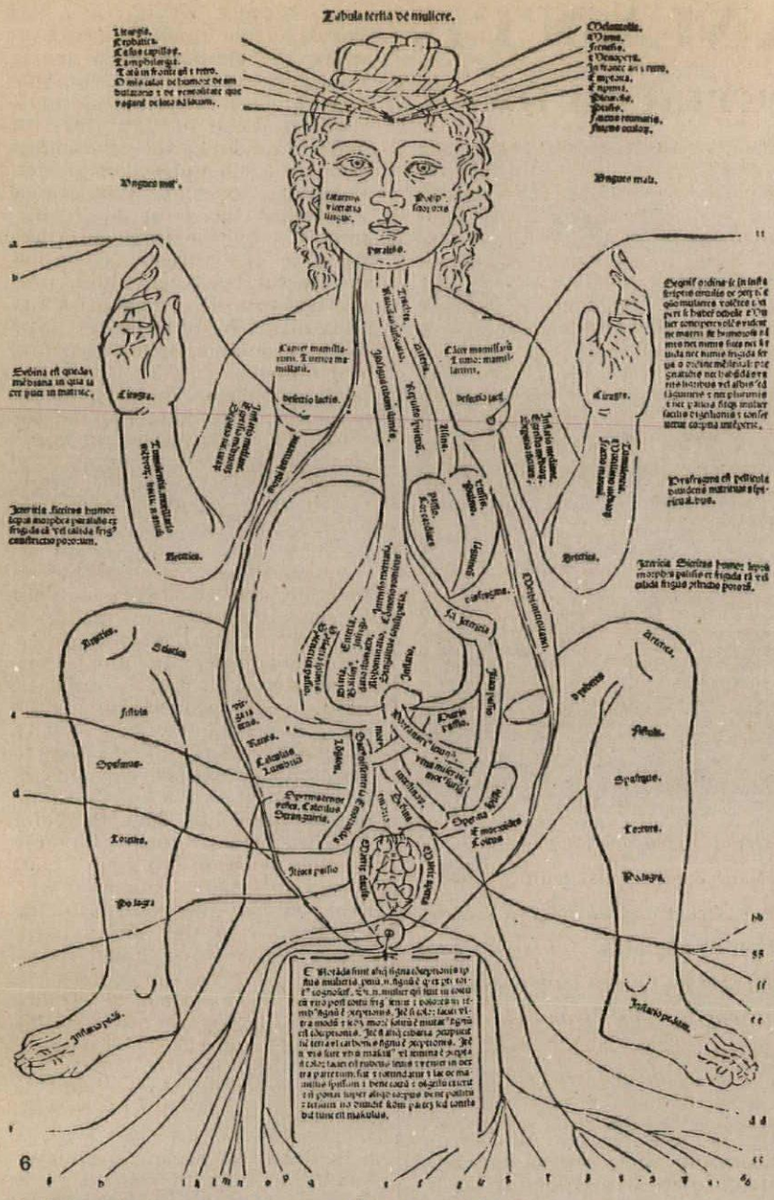
[1] Cathedral Archives. Quoted from J. P. Richter, *Literary Works of Leonardo da Vinci*, 2nd ed., II, 1939, 45–6.

[2] There are, for example, about twenty drawings for double-shell domes, but it is doubtful how many of them were made with an immediate practical purpose.

[3] By far the largest number of architectural drawings are contained in the Codex Atlanticus, Milan, and Ms B of the Institut de France, Paris (together with Ms 2037, which is part of Ms B).

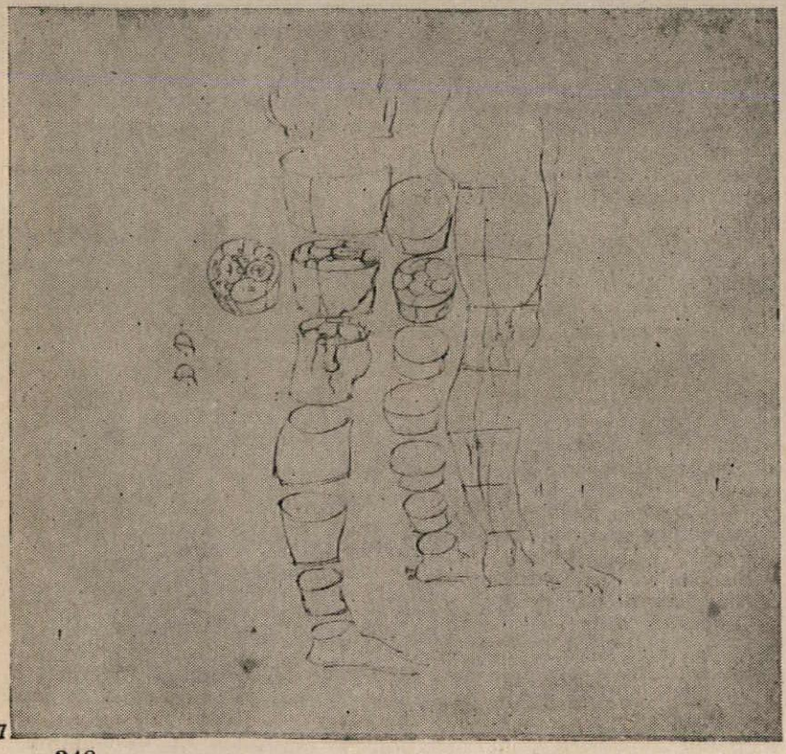
[4] J. McMurrich, *Leonardo da Vinci the Anatomist*, Baltimore 1930, 89, 93.

[5] Quoted in Richter, *Literary Works*, II, 84.



6

6, *Ketham's* situs viscerum—*pre-Vincian anatomy.*
7, *Leonardo's use of cross-sections to demonstrate musculature.*



7

drawing (19075 *verso*, 4) comes from a Notebook bearing the date 1513;[6] we thus have an internal, relative, chronology based on the advances of Leonardo's factual knowledge and another, external, chronology based on the two more or less fortuitous dates 1489 and 1513. Further, the drawing of a skull in partial section in 2, datable 1489, is clearly not the work of a beginner in anatomical illustration, so that his earliest studies must date well back into the eighties, and were perhaps begun at the famous hospital in Milan soon after his arrival.[7] One of his most celebrated and beautiful anatomical drawings—the female *situs viscerum* (Windsor 12281 *recto*, of *c.* 1510, 3)—shows, in the most striking way, both the enormous superiority of Leonardo as an anatomist over all his contemporaries and, at the same time, the gaps in his own knowledge.

Comparison with the *situs viscerum* from the most famous textbook of the period, Johannes Ketham's *Fasciculus Medicinae*, 6, printed in Venice in 1491, shows the vast gap between the primitive diagram of the principal organs made by Ketham's illustrator and Leonardo's searching analysis of a highly complicated structure. It is obvious that Ketham's illustrator was not trying to represent the actual shapes or dispositions of the internal organs found in any particular dissection, or even in a typical female *situs viscerum*; he was merely making a general statement about the number and approximate shape of these organs in accordance with traditional medical lore and not based on actual observation.[8] Leonardo was the first man to try to make an exact description and not a diagram, but even he fell into error on account of insufficient knowledge and preconceived ideas—in this drawing (3) some of the organs are not fully understood.[9] Leonardo had allowed himself to accept the theory, current in the fifteenth century and later, that many human organs were repeated exactly or approximately in the animals and could therefore be studied easily in dissected animals, human subjects being difficult to obtain (although Leonardo claimed at the end of his life to have dissected more than thirty corpses).

It is because, single-handed, Leonardo advanced the study of anatomy that we are able to date his drawings according to the accuracy of their representation; yet there is one important exception to this rule—the deliberate use of stylization. In the drawing of the skull of 1513, 4, it would seem at first sight that Leonardo's knowledge of the structure of the spine and shoulder-girdle was very limited, since the neck is enormously elongated, with too many vertebrae interposed between the base of the skull and the level of the shoulder-blades (which, in any case, are very small and narrow): by comparison, the early drawing, 2, seems to show greater knowledge. This is not altogether true, because the section of the spinal column in this early drawing shows some curious forward projections in the vertebrae which have no real existence, although the rest of the drawing is a meticulous rendering of an actual skull. The intention of the later drawing is quite different. It does not represent a particular dissection but a diagram of the mechanical forces which govern the movement of the head, as may be seen from the cord-like representation of the muscles; thus, the exact accuracy of a descriptive anatomical drawing has been sacrificed in favour of a diagram explaining a physiological mechanism—in Leonardo's own words 'You will never get anything but confusion in demonstrating the muscles and their positions, origin, and termination, unless you first make a demonstration of these muscles after the manner of linen threads. . . .'[10] It was at this period that Leonardo investigated the action of the heart and the movement of the blood, in what Heydenreich has aptly called 'speculative physiology.'[11]

Leonardo's anatomical drawings thus fall into two classes; descriptive and naturalistic, and analytical and stylized, these latter sometimes verging on the diagrammatic although they are diagrammatic in quite a different sense from such contemporary works as the Ketham *situs* figure. Once again, his own words record his intentions very clearly: 'This plan of mine of the human body (i.e. his projected Treatise) will be unfolded to you just as though you had the natural man before you. The reason is that if you wish to know thoroughly the parts of a man after he has been dissected you must either turn him or your eye so that you are examining from different aspects, from below, from above and from the sides, turning him over and studying the origin of each limb. . . . Therefore by my plan you will become acquainted with every part and every whole by means of a demonstration of each part from three different aspects; for when you have seen any member from the front with the nerves, tendons and veins which have their origin on the opposite side, you will be shown the same member either from a side view or from behind,

[6] Windsor 19059 *recto* actually bears the date 1489 but 19057 (here reproduced) is part of the same notebook and may be part of the same sheet of paper. The date January 9, 1513 (? 1514 N.S.) occurs on Windsor 19077 *verso*: the drawing reproduced here is 19075 *verso*).

[7] McMurrich, 54. Leonardo began to plan his Treatise on April 2, 1489, so it is a fair inference that his studies were begun long before.

[8] McMurrich 36ff., quoting Sudhoff, shows that this conventional representation can be traced back for about a century.

[9] McMurrich 38.

[10] Richter, *Literary Works*, II, 90.

[11] L. H. Heydenreich, *Leonardo da Vinci*, London 1954, 130. Cf. also K. D. Keele, *Leonardo da Vinci on Movement of the Heart and Blood*, London 1952.

just as though you had the very member in your hand and went on turning it from side to side until you had a full understanding of all that you desire to know.

'And so in like manner there will be placed before you three or four demonstrations of each member under different aspects. . . . And you who say that it is better to look at an anatomical demonstration than to see these drawings, you would be right, if it were possible to observe all the details shown in these drawings in a single figure, in which, with all your ability, you will not see nor acquire a knowledge of more than some few veins. . . .'[12]

Leonardo anticipated modern anatomists in yet another way, by 'the use of transverse sections for the study of the gross anatomy of the limbs.'[13] This is the point at which anatomy and architecture meet, for the drawing shown in 7 is no more than a plan at varying levels, or, rather, a kind of isometric projection. All the techniques Leonardo invented to serve his anatomical purposes—transverse and vertical sections, minutely descriptive drawings of individual forms set against a dark background to differentiate them from other members, and stylized representations of functions rather than forms—can be found in his architectural drawings, and most clearly in the draft Treatise on Architecture which he must have planned a little later than the anatomical treatise.[14]

Part of this Treatise survives as Ms B of the Institut de France, with an extra portion contained in Ms 2037, formerly in the Bibliothèque Nationale.[15]. Incomplete as it is, the Treatise shows clearly the general trend of Leonardo's architectural thought, with its marked bias towards mechanics, geometry, and structural problems rather than towards the aesthetics of architecture or the study of classical antiquity. In marked contrast to Alberti, Filarete, or Francesco di Giorgio, Leonardo makes no reference to antiquity as an exemplar,[16] and only a very few general statements on architecture as an art; in fact, all his statements of this kind may be quoted here—'A building should always be detached on all sides so that its form may be seen.' 'Here there cannot and ought not to be any campanile; on the contrary it must stand apart like that of the Cathedral and of San Giovanni at Florence, and of the Cathedral at Pisa, where the campanile is quite detached. Thus each can display its own perfection. If, however, you wish to join it to the church, make the lantern serve for the campanile, as in the church at Chiaravalle.' 'It never looks well to see the roofs of a church; they should rather be flat and the water should run off by channels to gutters made in the frieze.'[17]

The reference to the form of the building is relevant in connection with the Treatise, since it consists of a large number of drawings and a few scattered notes (and must, therefore, stand at the head of those architectural treatises conceived as a series of illustrations with captions), which is precisely what Leonardo had intended his anatomical demonstrations to be. The first architectural treatise of this kind actually to be published was Serlio's (1537 onwards), but it may not be coincidence that Serlio was Peruzzi's pupil and used his drawings; and Peruzzi was the pupil of Bramante, who is supposed, according to sixteenth century sources, to have written a treatise himself.

Leonardo's Treatise was intended to show the form of buildings 'detached on all sides,' and this he achieved by inventing a combination of naturalistic and diagrammatic draughtsmanship. Plans and elevations had, of course, been known for a very long time, but it is not likely that any architect before Leonardo had made use of the type of rendered drawings which purport to show a building as it will appear when actually erected. Most probably the almost universal use of three-dimensional models had made the use of such illusionistic drawings unnecessary; but as Leonardo was not intending to build actual structures, but only to make apparent the forms potentially contained in a series of mathematically produced plans, he obviously needed a new technique. His demonstrations, therefore, consist of pairs of drawings, 10, 11, 16, one, the plan, a diagram based on a geometrical figure, and the other a fully illusionist rendering of the building seen in bird's-eye perspective. This made use of Leonardo's own perspective researches and also had the advantage of displaying the complete form of the building to the spectator's imagination. No one could have seen the buildings, under normal conditions, in this bird's-eye perspective and this fact alone may prove that Leonardo's drawings were intended for a treatise and not as representations of possible buildings.[18] The idea of such 'unnatural' views came, I suggest, mainly from Leonardo's anatomical studies—'you will be shown the same member either from a side view or from behind, just as though you had the very member in your hand and went on turning it from side to side until you had a full understanding'—and perhaps also from early maps and views, 8, and Leonardo's own interest in cartography, 9, coupled with the fact that the normal usage[19] among architects was to submit a wooden model to the building committee and to expound it in their presence, which would naturally be done from a position above it, giving the equivalent of a bird's-eye view.

This method of exposition,[20] like that of an anatomical demonstration, makes much use of analysis of function, and the plan is the essential part of the whole. The difference was that, in the fifteenth century at least, an anatomical dissection was undertaken to discover and elucidate the hidden teleological rules which corresponded to the harmonious ordering of the Universe, while an architectural demonstration started from the statement of the rule, 10, in terms of a series of interlocked regular figures. The problems of architecture, for Leonardo, were thus twofold: either to develop a functional statement of a given, harmonious, plan, 10, 11, 16, or to construct a piece of pure engineering—a three-dimensional parallelogram of forces, 1. In neither case was he concerned with aesthetics in the sense of style, or with the revival or imitation of antique prototypes. This can be seen in 11 and 10 (Ms B 22 *recto*, 25 *verso*), where there are five plans, four of which are developed from a basic octagon. The two simplest (10: 25 *verso*, top and bottom) are octagons with identical openings on



3

8, *view of Rome (from the* Supplementum Chronicarum *of* 1490) *and* 9, *Leonardo's map of central Italy; both using high viewpoints like those in Leonardo's architectural perspectives.*



9

[12] Heydenreich, *Leonardo*, 123 ff. He dates this plan for the Treatise *c* 1507.

[13] McMurrich, 88.

[14] L. H. Heydenreich, *Die Sakralbaustudien Leonardo da Vincis*, Leipzig 1929, dates Ms B in the 80's, and perhaps mostly in the first half of the decade, but the chronological hypotheses in this book seem to me to be open to question. (Calvi in his fundamental *Manoscritti di Leonardo da Vinci* (Bologna 1925) dates Ms B in the late 80's). The yet later dating proposed here is, of course, conditional upon the assumption that the types of anatomical drawing were invented from necessity and were then extended to architecture, and not the other way about.

[15] A complete facsimile of Ms B was published by the Reale Commissione Vinciana as their 5th volume, Rome 1941. Ms 2037 has now been transferred to the Institut. Formerly known also as Ashburnham 2037 it was published by Ravaisson-Mollien, Paris 1891.

[16] Vitruvius's name occurs only once in the Leonardo Mss—'Cerca di Vetruvio fra cartolaj' (Richter, *Lit. Works*, II, 369)—and this seems to be a note to inquire for a copy at the bookseller's. This must refer to the *editio princeps* (Rome 1486?) or the reprints of 1495 and 1496, all of which were in Latin, which Leonardo could probably then only read with difficulty. The first Italian translation appeared in 1521, after Leonardo's death.

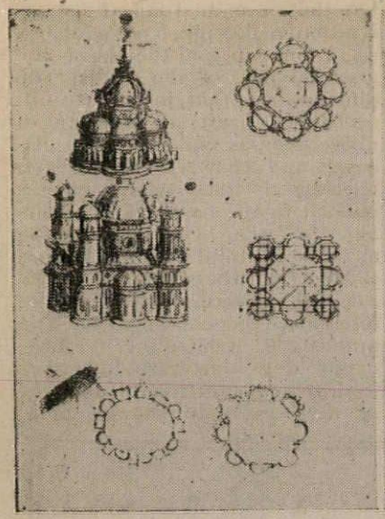
[17] Richter, *Literary Works*, II, 27.

[18] W. Lotz, 'Das Raumbild in der italienischen Architekturzeichnung der Renaissance' in *Mitteilungen des Kunsthistorischen Institutes in Florenz*, VII, 1956, 193ff, contains a very full treatment of the development of architectural draughtsmanship in the later fifteenth century: he also stresses the importance of perspective in this development and in the work of Bramante.

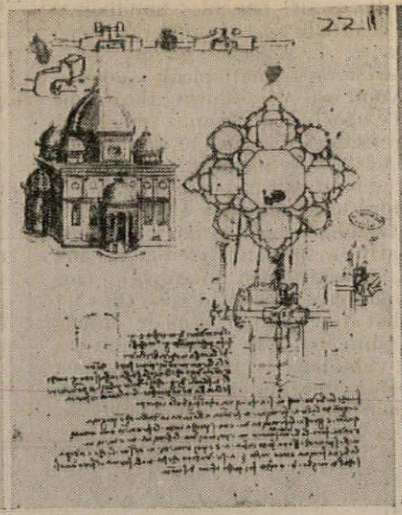
[19] J. S. Ackerman in *Journal of the Society of Architectural Historians*, XIII, 1954, 3ff.

[20] Such an exposition seems to have been practised, at Milan and Pavia Cathedrals, by both Leonardo and Bramante.

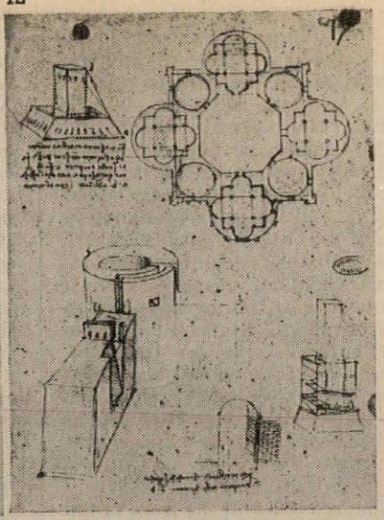
10



11

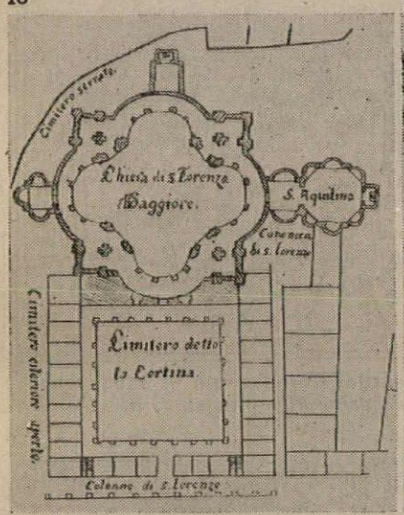


12

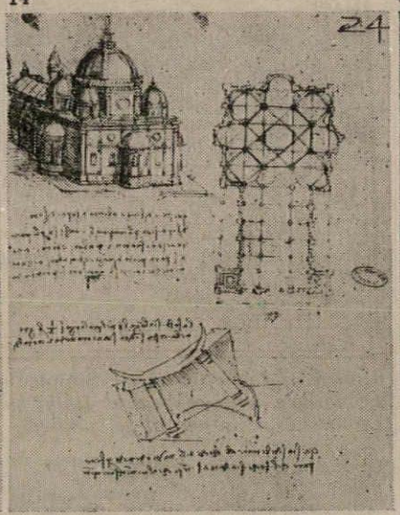


10, 11, 12, *ideal church plans by Leonardo da Vinci, developed from interlocking geometrical figures, and presented as functionally-plausible buildings in the characteristic bird's-eye perspectives used in the celebrated Manuscript B of the Institut de France.*

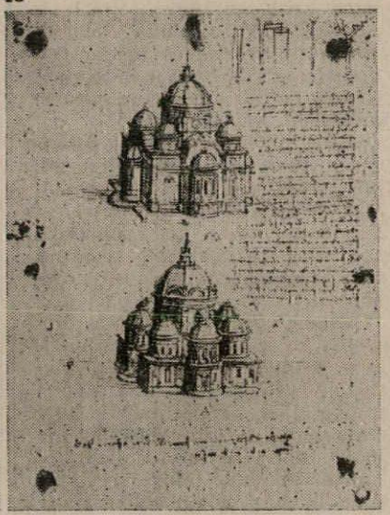
13



14

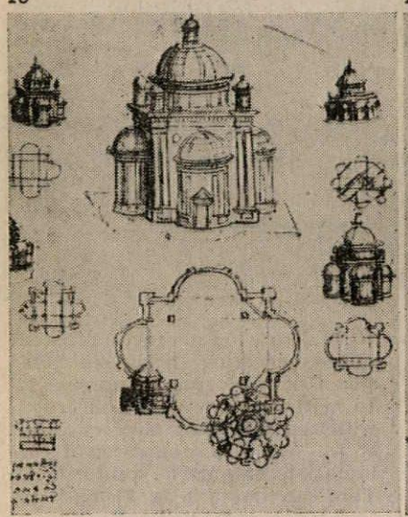


15

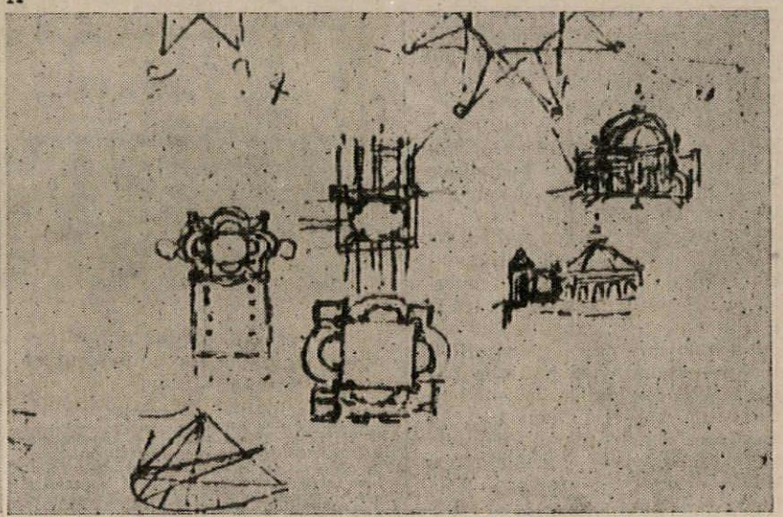


13, *unlike his contemporaries, Leonardo showed little interest in the revival of the antique, and the only local prototype for these centralized plans was San Lorenzo Maggiore,* 14, *one of Leonardo's ideal plans adapted to a long-nave church,* 15, *another centralized plan, and another step towards Bramante's St. Peter's.*

16



17



16, *one of the most famous ideal projects, often linked with Santa Maria della Consolazione at Todi though here connected with St. Peter's.* 17, *further and closer anticipations by Leonardo of the Bramante plan for St. Peter's, and even of the long-nave variants, committed to paper well before Bramante left Milan.*

all eight sides, first as semicircles and then (top) as the same form completed to a full circle. This is then worked out as an external elevation (top left), consisting of increasing half-cylinders, each abutting against a larger one until a central core is reached. This is crowned with a ribbed dome, partly Lombard and partly reminiscent of Florence Cathedral.[21] The forms of this structure show no awareness of any architecture later than Brunelleschi. At the same time the interior of the building is equally curious in its exclusive concern with plan. There is no specific entrance, but once inside the building one would find oneself in a single, cylindrical, chapel space, with small niches all round the walls, one of which presumably led to the main, central, domed, octagon: the transition from one spatial effect to the next being abrupt and effected by a narrow (and therefore low ?) door-niche. Further, the plan shows an outside line made up of half-cylinders separated by masonry angles corresponding to the angles of the octagon; from this one might conclude that the half-cylinders were covered by half-domes abutted against the very thick octagon core. From inside the chapels presumably gave the effect of having a complete hemisphere as a dome, but lit from one side only. The bird's-eye view is not clear on this point, and it seems possible that it was intended to show complete domes —i.e. hemispheres—over each chapel, in spite of the pepper-pot appearance this would give, far closer to such Byzantine prototypes as S. Mark's, Venice, than to anything then current in Italy outside Filarete's treatise. Yet it would not have been unsympathetic to Lombard taste.

The other two plans abandon this problem and start a fresh train of thought. Here (10: centre of 25 *verso*), the octagon has every second side pierced by a large arch which leads into the half-circular chapel form used in the previous designs, so that a Greek cross with rounded ends is superimposed on the central plan octagon. The remaining four sides develop the fully-circular chapel shape, transforming it into a minor octagon, so that any true elevation presents the same sequence of half-cylinders, now arranged in a straight line. This elevation shows a clear distinction in the dome forms, since the half-chapels have half-domes and the minor octagons (perhaps intended as Baptistries and Sacristies) have towers like those used by Michelozzo at Sant' Eustorgio. The main dome, with its *oculi*, is even more reminiscent of Florence Cathedral. Once again, the appearance of the whole is in accordance with conservative

[21] C. Baroni, 'Elementi stilistici fiorentini negli studi vinciani di architetture a cupola' in *Atti del 1° Congresso nazionale di Storia dell' Architettura* (1936), Florence 1938, 57ff. This very important article lays considerable stress on the role played by the Cathedral and Baptistry of Florence in Leonardo's architectural evolution, but it does not lay equal stress on the very un-Florentine character of Leonardo's projects.

Lombard taste and is very much behind the times, except in so far as these designs derive partly from S. Lorenzo Maggiore in Milan—i.e. from an antique prototype.[22] Yet it is evident that this approach to antiquity has almost nothing in common with that of Alberti or Giuliano da Sangallo—or Bramante.

The plan, 12, in Ms B 19 *recto* may similarly derive ultimately from the ninth-century San Satiro, rebuilt by Bramante while Leonardo was living in Milan. This rounded Greek-cross-in-square plan, modified in Ms B 25 *verso* (centre), recurs in the elaborate drawing on f. 22 *recto*, 11, which combines elements from 10 and 12 in such a way that a simpler outside line is obtained at the same time as a fantastically complex series of internal shapes.[23] This plan begins simply enough, like the bottom one on f. 25 *verso*, 10, with an octagon having equal openings on each side. Here four openings are half-circles and four are rectangular (combining 25 *verso* bottom and centre)—but the four half-circles open into full circles (25 *verso*, top), and the four rectangles develop into independent central plans like f. 19 *recto*, 12. Again, an octagon developed on one side into a S. Satiro-type Greek cross plan has a precedent in the S. Lorenzo complex (Chapel of Sant' Aquilino and the Cappella dell' Addolorata: 13.) The main dome is still that of Florence Cathedral, but a simple outline has been obtained by enclosing all but the circular chapels in a square, almost cubic shape; the circular chapels are expressed externally as half-cylinders (cf. 10) and the complex Greek cross chapels show, externally, only the small drum and dome which affords their light. This is much more satisfactory than either of the earlier[24] forms on f. 25 *verso*.

But Leonardo did not stop there. He was also interested in the problem of combining a centrally planned East end with a long-nave church, and the drawing, 14, on f. 24 *recto* shows him doing this with the plan just analysed, but necessarily simplifying it internally. Another drawing, 15 (f. 17 *verso*), shows similar churches, and the lower one ('A') has a note to the effect that the whole lower part could be dispensed with.[25] If we imagine this lower part as a separate building and we put it next to the long-nave churches on f. 24 *recto* and Cod. Atl. 271 *verso* (14 and 17) we have two of the major problems connected with S. Peter's;[26] if to these we add a drawing from Ms 2037, 16, which has always been connected with Sta Maria della Consolazione at Todi (and therefore forms a chain Leonardo-Bramante-? Peruzzi-Cola da Caprarola), then we have clear evidence that most of the formal problems of S. Peter's were stated, though not solved, before Bramante left Milan and long before Julius II was even elected Pope.

Yet Bramante's vision of the New S. Peter's had more to it than these quasi-geometrical formal problems. He was concerned to build something that could replace the Constantinian Basilica in every way, something that would carry the same meaning and be in as pure a Latin—in other words, the desire for an antique form was as strong in him as the desire for a geometrical form, and his painter's training, so different from Leonardo's approach to painting, was also classical and in the best sense decorative. If one compares a drawing, 18, by Leonardo (Codex Atlanticus) with the same motive as executed by Bramante at Sant' Ambrogio in the 1490's, 19, it is clear that the amplitude of the Sant' Ambrogio cloister is due to calculated proportions, simplicity of form, and horizontal emphasis. These lessons could, in the late fifteenth century, be most easily learned from the study of antiquity coupled with that search for Vitruvian and mathematical proportion which interested Leonardo as much as anyone else: yet the pupil of Piero della Francesca and Mantegna was equipped as no Florentine of his generation could have been. The great Roman heritage of Milan seems to have made very little impression on Leonardo.[27]

In Bramante's development, and therefore in the history of modern architecture, it was of fundamental importance. Before Bramante could design S. Peter's anew, even before he could conceive the Parchment Plan for it, it was necessary that he should experience the classic art of Mantegna, Piero, and Laurana; the romantic antiquity of Lombard fifteenth-century art expressed in his own engraving of *Ruins and Figures* of 1481; the mechanical and theoretical architecture of Leonardo, and also the Roman buildings (now nearly all destroyed) which had come down to him from the Age of Ambrose and Augustine. Even this had still to be consummated by intense study, both structural and aesthetic, of the grander Roman ruins before he could dream of 'putting the dome of the Pantheon on the vaults of the Temple of Peace' to create the greatest Roman building of them all.

For Bramante, Leonardo was an essential factor in his education. For Leonardo, architecture itself was but one aspect of his self-instruction.

[22] The importance of these tower/half-cylinder/dome theoretical drawings in connection with the earliest designs for S. Peter's would be difficult to exaggerate.

[23] At the risk of seeming fanciful I should like to suggest the likeness between this complexity of plan and the section of one of the more complicated bone structures with its nerve canals and muscular attachments: cf. the diagram of vertebrae, which Leonardo was the first to understand in all their complexity (Windsor 19007). Figure 2 shows similar, but rather simpler, features in the skull.

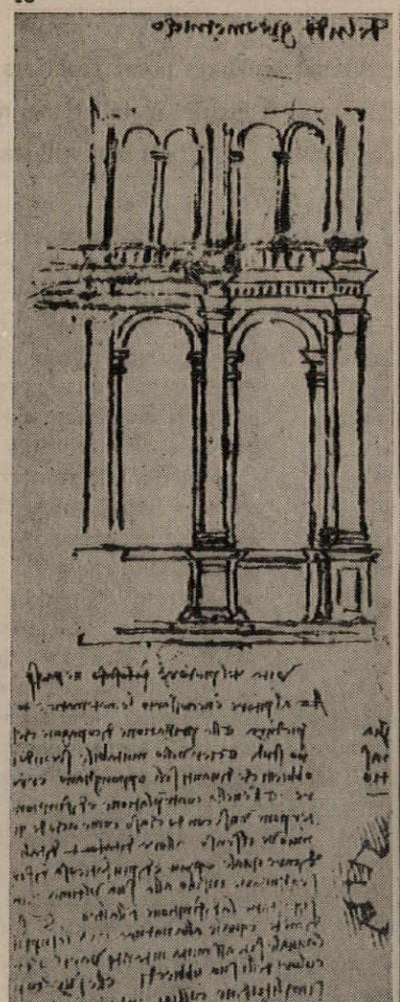
[24] i.e. less complex. I hope the analysis will have shown the chronological interrelationship as inevitable.

[25] The text reads: 'Questo edifizio ancora starebbe bene a ffarlo dalla linia a b c d in su.'

[26] In particular, compare the drawings in the Uffizi, A27, A2 and A20.

[27] At least two exceptions come to mind: the importance of San Lorenzo has already been noted, and he also drew a few—very few—actual buildings (e.g. Sta Maria in Pertica, Pavia, of the seventh century: Ms B f. 55 *recto*). The second exception may be the note (Richter, *Literary Works*, II, 360) reminding himself to buy a book on Milanese churches—'Libro che tratta di Milano e sua chiese, che a l' ultimo cartolaio fuerso il Corduso.' I should very much like to know what this book was.

18



19



18, *Leonardo's drawing of a two-storey arcade.* 19, *the same motif as built by Bramante at Sant'Ambrogio, Milan.*

Facing page 1 (top), the concrete entrance canopy to the steelworks offices. 2 (bottom) close-up showing the textures of the concrete shuttering used on both of the buildings illustrated here.

OFFICE BUILDINGS AT CORBY

ARCHITECTS: J. DOUGLASS MATHEWS & PARTNERS

The office block that is part of a complex of industrial buildings poses problems of its own, especially problems of relationship with the vigorous scale and character of industrial installations, and very often, as in the case of these two blocks at Corby new town, problems of handling materials that will stand up to industrial atmospheres.

These are two separate office blocks for Stewarts and Lloyds, one to house the administrative departments of the steelworks and the other to do the same for the tubeworks. The client required large open office spaces with areas on each floor suitable for subdivision into small offices. In the case of the tubeworks offices only, a canteen and medical centre were also required.

The steelworks offices run north and south, the orientation being influenced by the need to plan for possible future expansion. This necessitated protection from the sun, which is provided by projecting floor slabs shading the windows when the sun is high. The vertical circulation, lavatories, etc., have been placed on the western side to shield the offices from the evening sun, and here the projecting slab has been turned up to act as a screen wall to the lavatory windows.

The tubeworks offices adjoin a railway line and the site necessitated orientating them east and west, parallel with the railway, from which however they are removed as far as possible, using the canteen and kitchens as a barrier against noise. The canteen is on the ground floor, along with the medical centre. The latter is for dealing with minor accidents, etc., and contains doctors' consulting and examination rooms, physiotherapy room, X-ray room, a small laboratory, a shock room and rooms for the medical staff. Above the canteen kitchens is a separate block of senior staff dining rooms reached by a bridge from the first-floor offices.

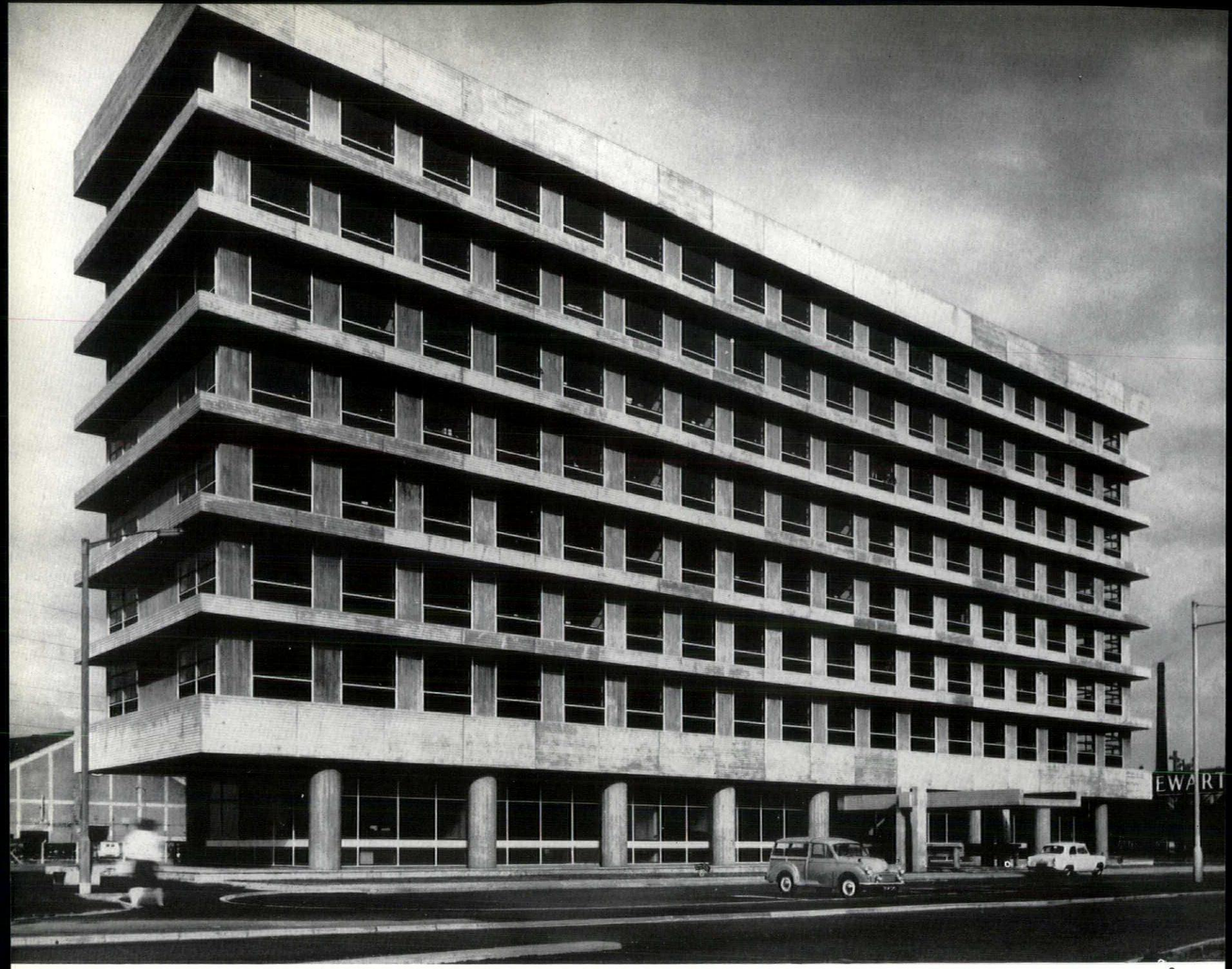
Both buildings are of textured concrete, boldly detailed to stand up against the scale and rugged skyline of a modern steelworks and designed to withstand the corrosive dusts in the atmosphere and give low maintenance costs. Windows are painted steel, since aluminium does not stand up to these corrosive dusts associated with a steelworks. Easy maintenance is provided by the projecting floor-slabs. The floors, spanning the whole 40 ft. width of the building, consist in the case of each block of composite slabs made up of 9 in. by 4 in. precast pretensioned concrete planks, with *in situ* ribs and topping giving an overall depth of 18 in. spaced at 20 in. centres. These ribs have permanent expanded-metal shuttering, forming voids in which services can be run within the slab depth. 3 ft. 3 in. by 9 in. reinforced concrete columns are at 10 ft. intervals on each long elevation, and the load from the floors is transmitted to them by an *in situ* beam in the depth of the slab. The slab is cantilevered 3 ft. beyond the columns at a reduced depth. Ground floor columns are at 20 ft. intervals. The structure is stiffened by reinforced concrete cross-walls, lift and staircase wells and main service ducts.

The main roofs of the two buildings are of similar composite construction. External concrete is textured by the use of 4 in. rough sawn hemlock boards as shuttering, jointed to give a raised V-shaped projection. In the tubeworks office building external walls on the ground floor are of blue engineering brick to mark the different use. Doors and joinery are hardwood throughout. In the entrance hall of the steelworks office building a decorative wall-panel has been formed out of a Roman mosaic, dated AD 350, which was found nearby during quarrying operations.

Partner in charge, E. D. Jefferiss Mathews. Associate partner, Michael Simpson. Assistants, Daniel Schen, David Hoskins, Charles Swallow, David Potts. Structural engineers, Cyril Blumfield and Partners. Quantity surveyors, Gardiner and Theobald.

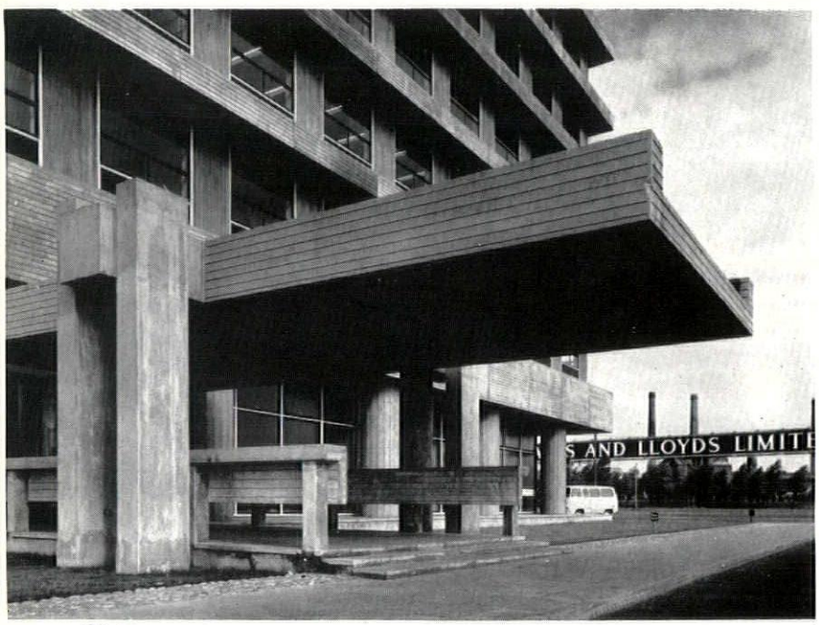


OFFICES FOR INDUSTRY



3

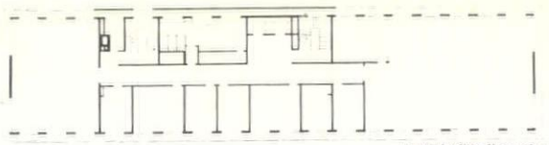
3, the steelworks offices from the east. 4, another view of the entrance canopy. 5, the entrance hall.



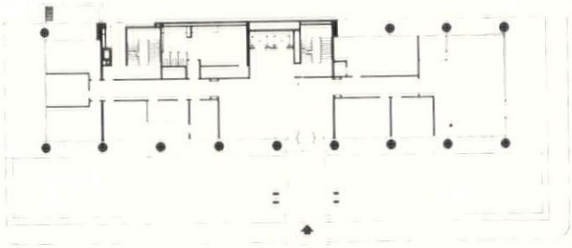
4



5



typical office floor plan

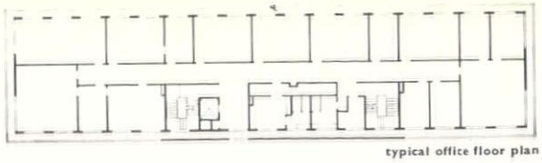


40 20 0 10

ground floor plan

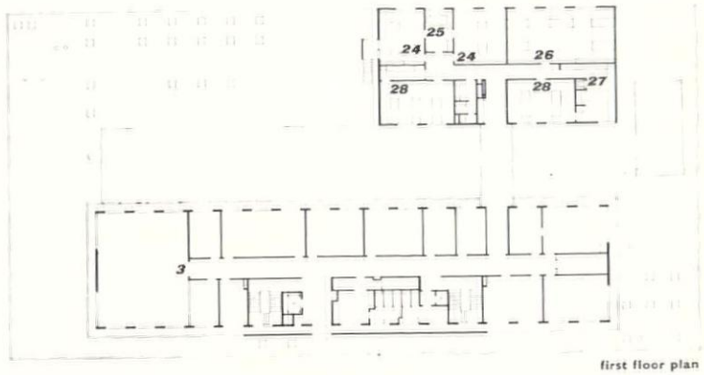
steelworks offices

tubeworks offices

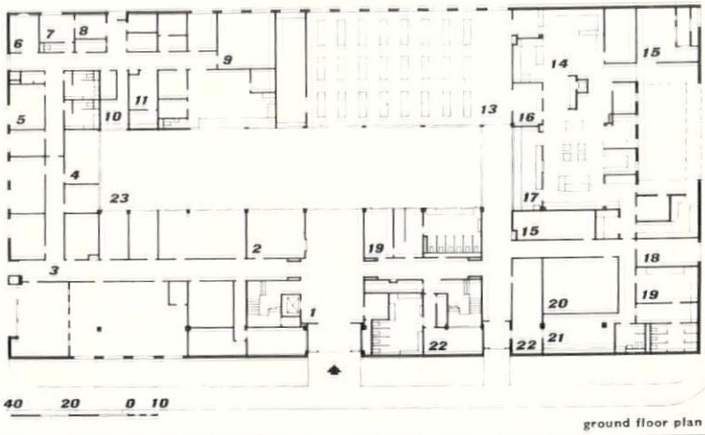


typical office floor plan

1. main entrance and waiting area
2. postal and reception
3. office wings
4. conference room
5. staff room
6. shock room
7. doctor
8. minor operations
9. physiotherapy
10. laboratory unit
11. x-ray
12. general surgery
13. canteen
14. kitchen
15. kitchen plant
16. beverage kiosk
17. servery
18. kitchen staff
19. women's rest room
20. calorifiers
21. electric intake
22. coat hanging rooms
23. courtyard
24. private dining room
25. servery
26. senior staff dining room
27. servery hoist
28. visitors' dining room



first floor plan



40 20 0 10

ground floor plan

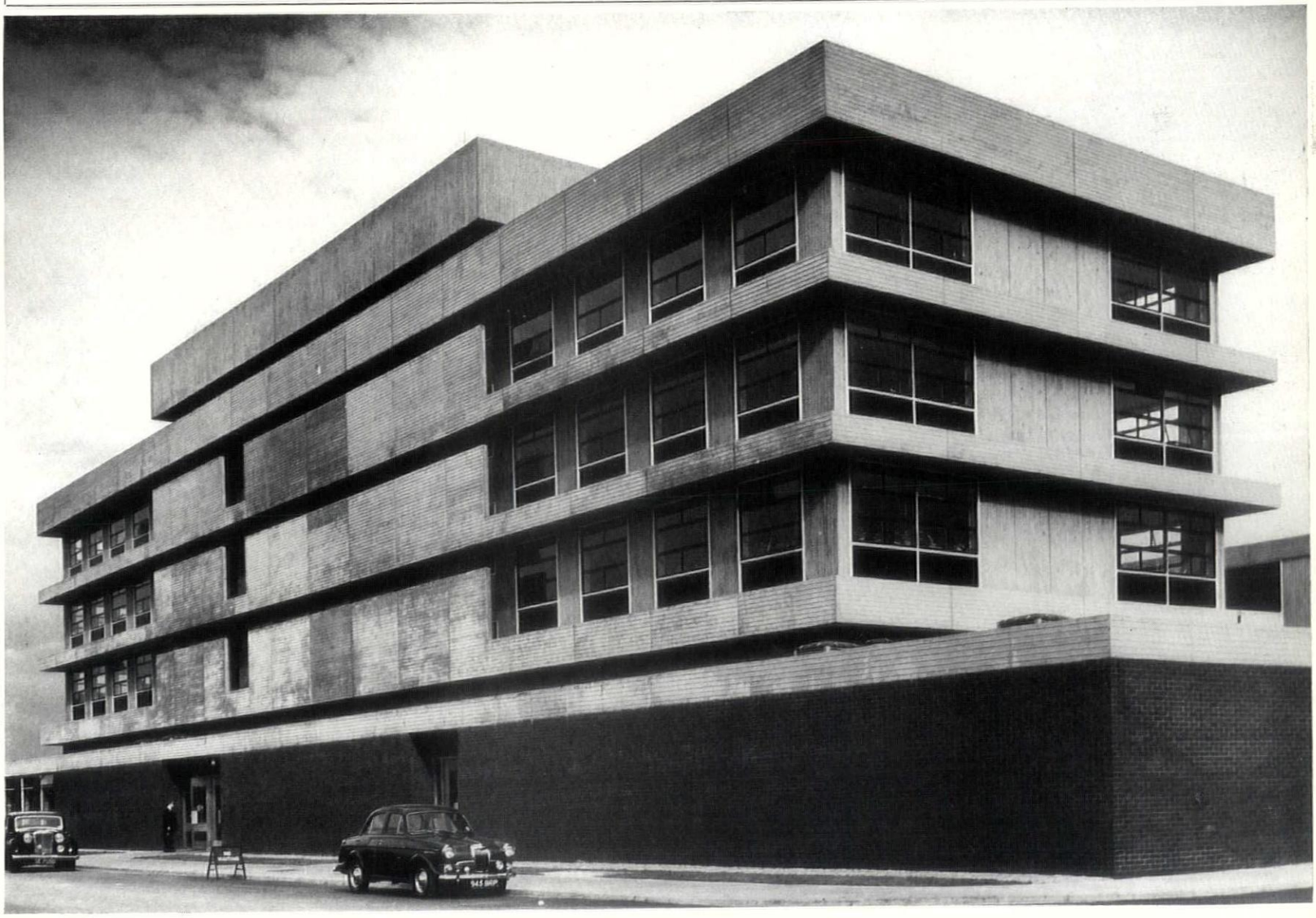
OFFICE BUILDINGS AT CORBY

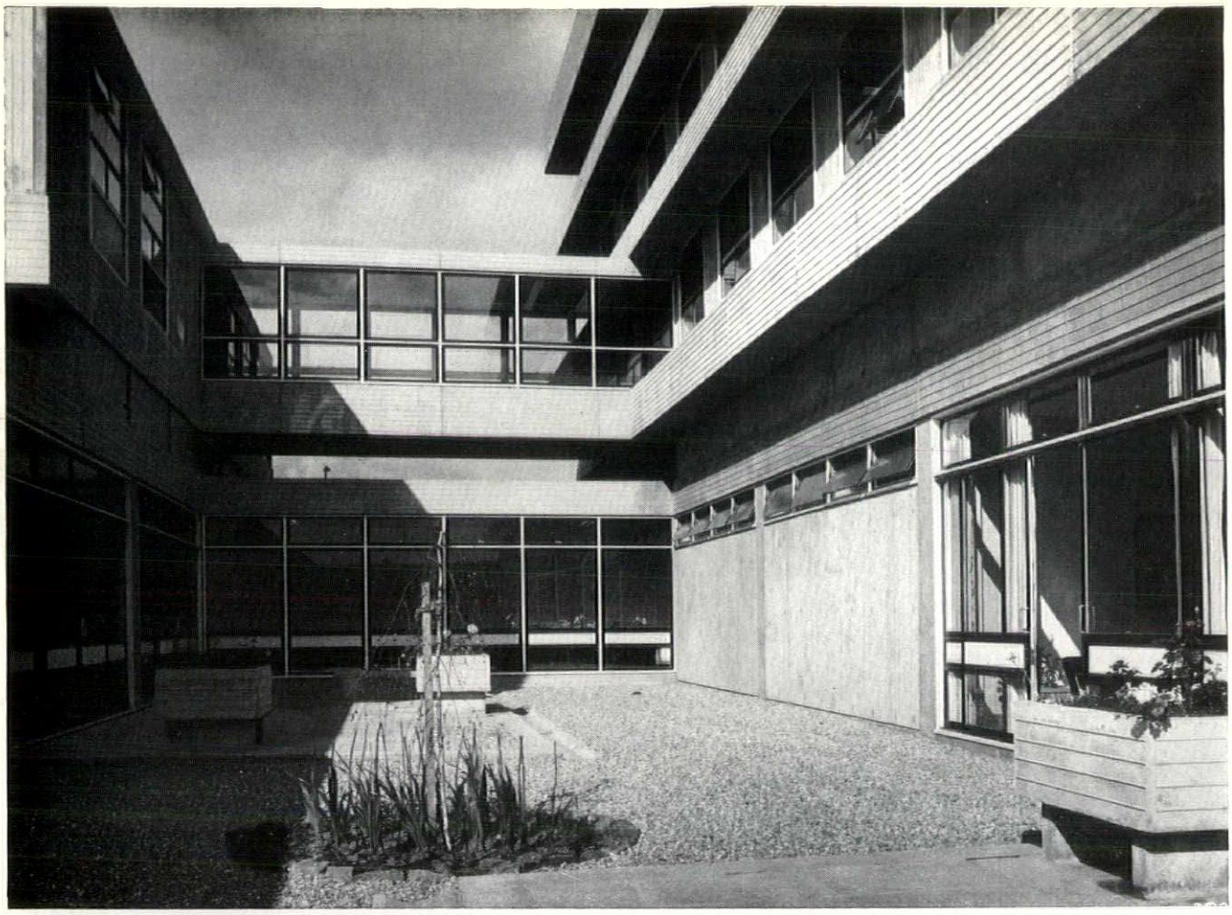
photographs by H. de Burgh Galwey

for criticism see page 368

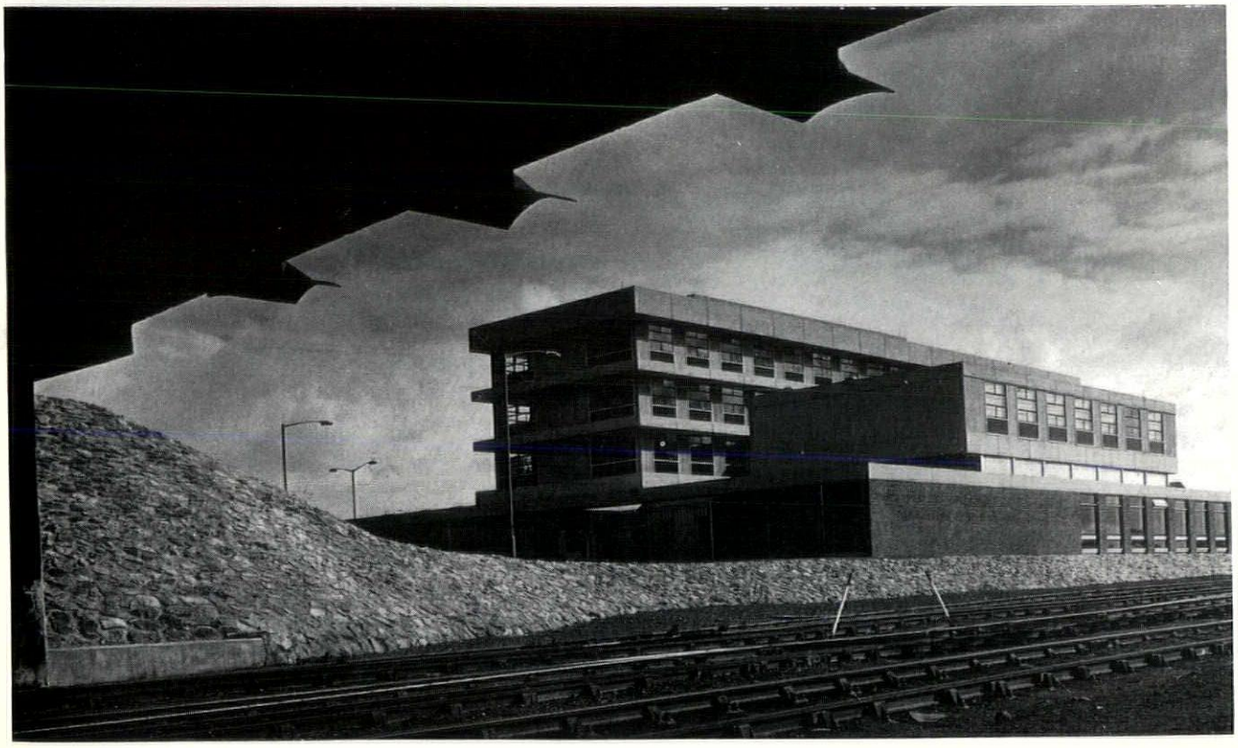
6 (below), the tubeworks offices from the west.

6



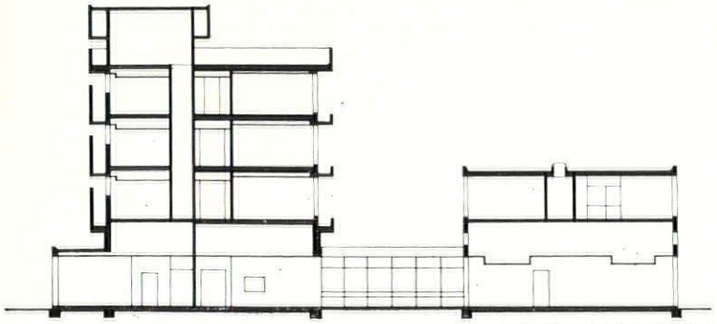


7

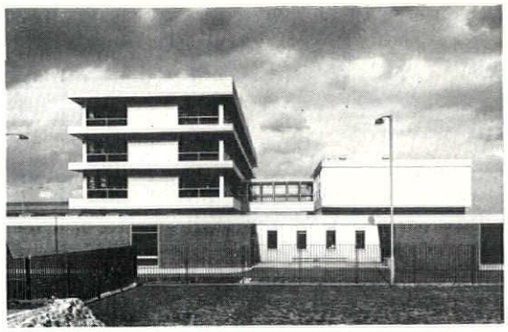


8

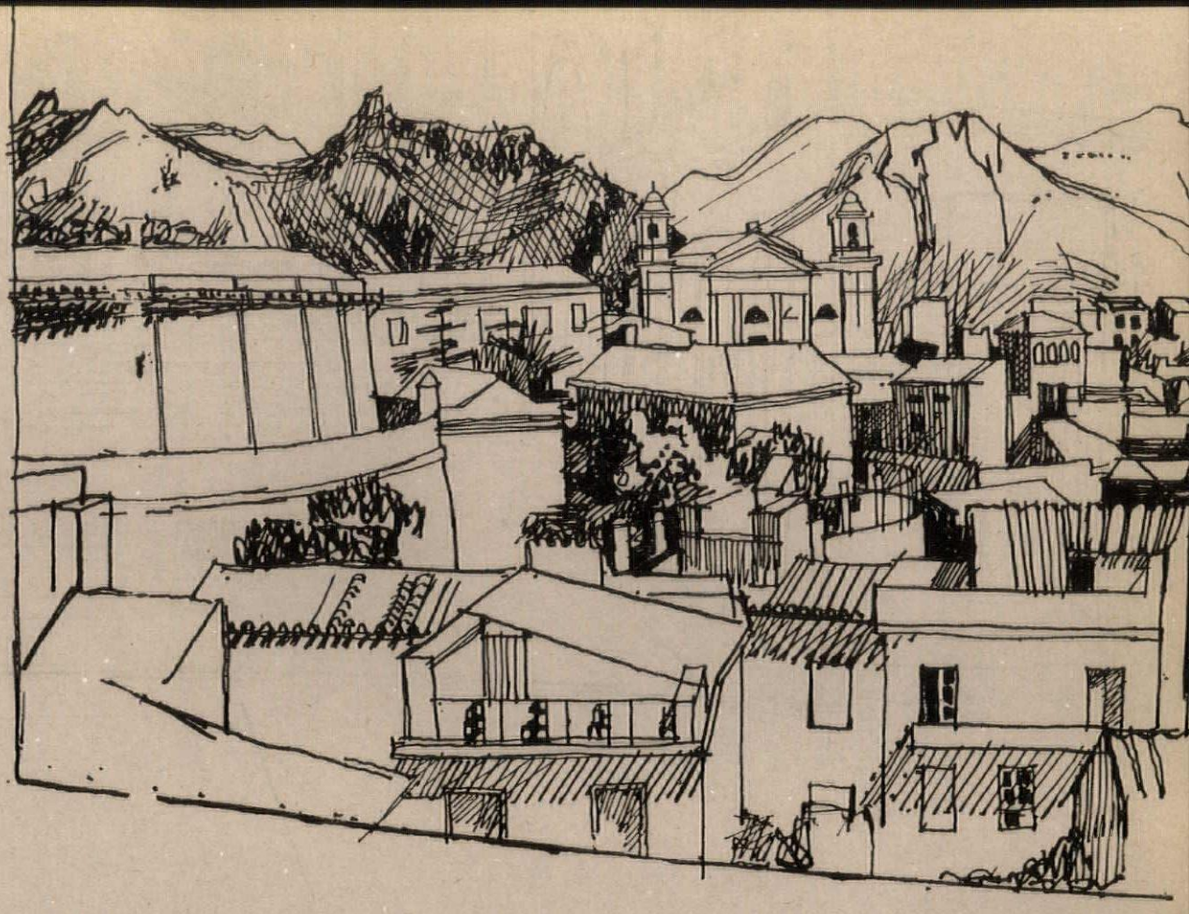
7, the internal courtyard of the tubeworks offices. 8, from the south. 9, the south-west elevation.

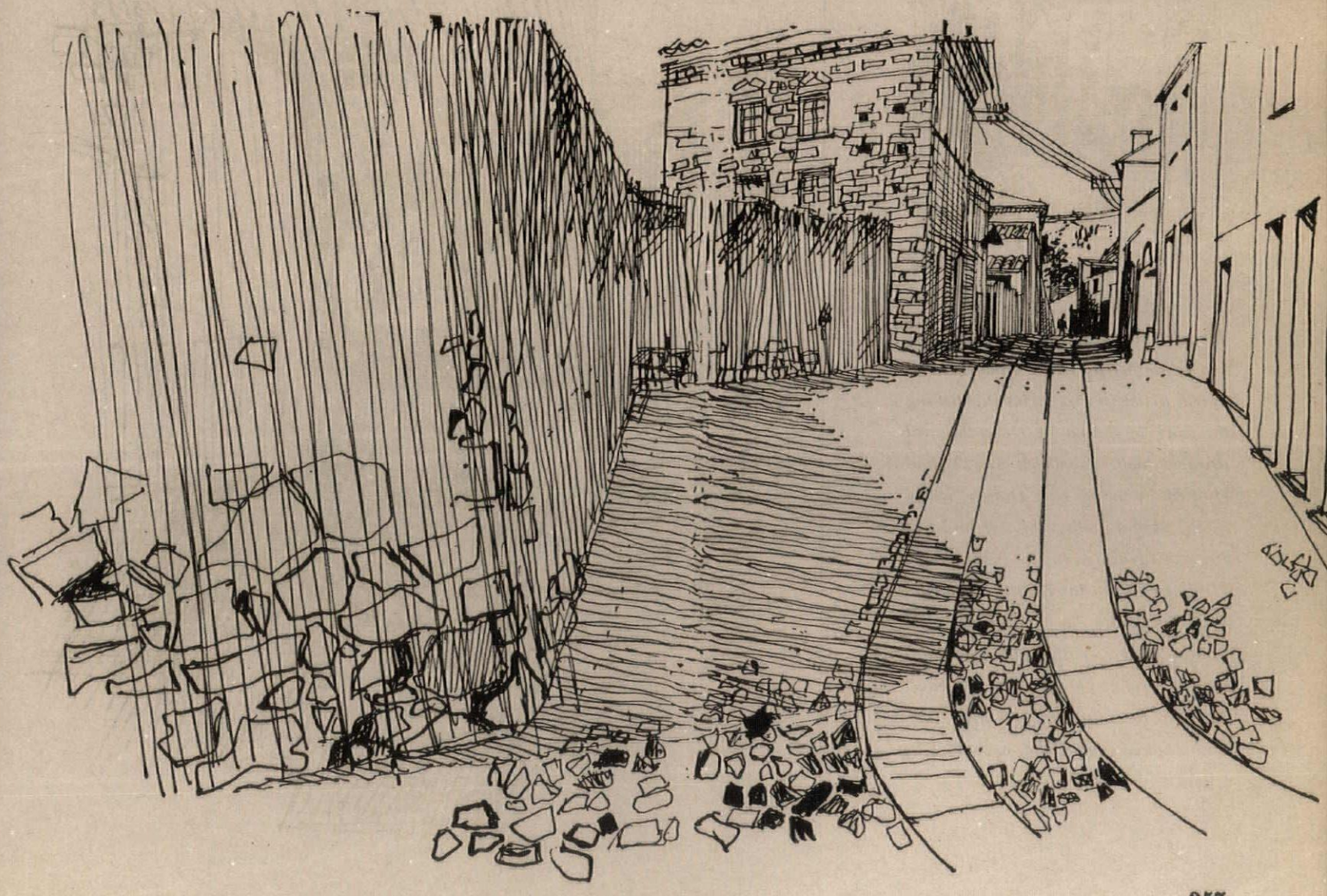


section through tubeworks offices



9

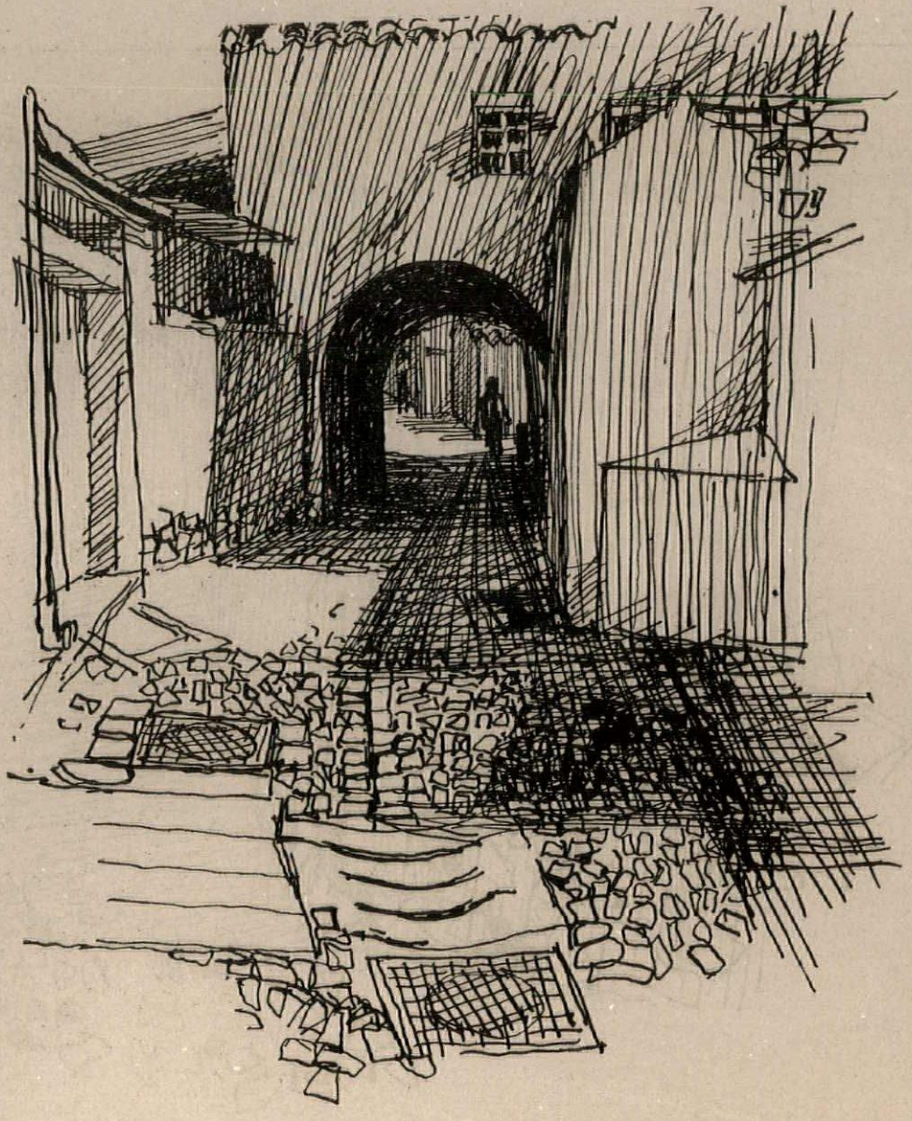








The drawings of Sardinia on these two pages are by Roger Limbrick, the fourth artist in this series illustrating the work of the younger architectural draughtsmen. Limbrick is 29 and studied in the Textile Design School of the Royal College of Art and has furnishing designs on the market now. He is currently interested in drawing subways and the London Underground and recently held an exhibition of serigraph prints of subways. He also recently won first prize in a doll's house competition organized by a toy manufacturing firm.



EXHIBITIONS

PAINTING AND SCULPTURE

The National Gallery has recently acquired a 'Cupid complaining to Venus', 1, by the sixteenth-century master Lucas Cranach, which is a very notable addition to its German collection. Cupid, love-child of the tall, slim fraulein who to my Northern eye is one of the most seductive Venuses ever imagined by a poet or painter, has stolen a honeycomb from a hive in the bole of a tree on the edge of one of those dark forests where children fall into the hands of witches, and he is complaining to his mother because the angry bees are stinging him.

The emblematists of the period took great pleasure in meting out poetic justice to the little god who spent most of his time piercing humanity with his arrows, and although stinging by bees was probably the most popular of the torments they devised for him he was sometimes crucified and frequently burnt at the stake, with a woman stirring the fire. The writer of the interesting hand-out about the picture remarks that the partly damaged Latin inscription in the top right-hand corner includes the moral that we, like Cupid, get stung in our pursuit of pleasure.

The hand-out also makes the following general comment on Cranach's handling of the subject: '. . . the subject is hardly more than a pretext to show an elegant nude Venus—wearing only a fashionable feathered hat and some necklaces—standing beguilingly under an apple tree. She hardly pays attention to Cupid holding up the honeycomb which started the trouble.' This seems to me to be unfair to Cranach, and I feel that if the writer had taken the emblematical nature of the picture a little more seriously he would have seen that the painter was thoroughly engaged by the subject and treated it with immense ingenuity.

If Venus hardly pays attention to Cupid, that is because it's not part of her emblematical function to soothe him, and if, for that matter, she has escaped the attention of the angry bees it's because she is only symbolically on the scene of Cupid's escapade. Since she is the goddess of sexual love, the object of Cupid's cupidity is one of her attributes, and since she dominates the picture the Latin tag doesn't have to specify the kind of pleasure we get stung in pursuit of.

The hand which she seems inattentively to extend to Cupid, acknowledges his presence but not his plight: but the raised hand is only subsidiarily an acknowledgment of Cupid; it's primarily a gesture towards her attribute; poised directly above the honeycomb it circumspectly confers divine favour. One bee clings to the honeycomb to emblemize the pain in the sweet pleasures Venus personifies.

Again, it would be very odd if Cranach had placed his figures under a tree laden with scarlet apples simply for the decorative effect. If Cupid were not present, the feminine figure could be Eve awaiting the approach of the Serpent, and we are meant to take notice of this reference to Eve because it establishes the symbolical nature of the tree. But Venus is a goddess, and she takes over the tree of knowledge as an attribute because it reinforces and enriches the meaning of the honeycomb. Post-Reformation relaxation gave Cranach the opportunity, in late middle-age, to paint the nude according to his heart's desire, but Venus in the Christian world is always Aphrodite Pandemos, the goddess of sensual lust, and eroticism still has the taste of forbidden fruit.



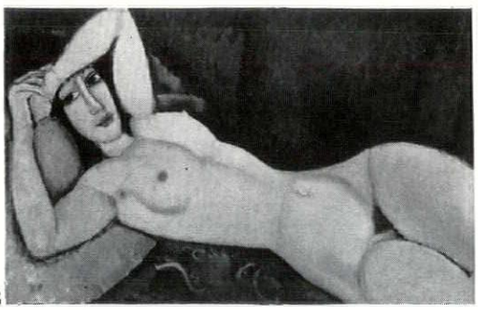
1

Cranach leaves us in no doubt that he intends the tree as an attribute of the goddess. We have already seen that the position of her right hand serves a dual purpose and the same can be said of the entire pose; the left arm raised to touch a high branch and her left foot raised to touch a low one effectively aid the display of her charms and at the same time give her possession of the tree.

I'm less than halfway through the catalogue of the symbolic meanings attributable to the objects and their situation in the composition, but don't propose to follow them any further partly out of fear that readers will think I'm making it up and partly because I hope I've said enough to indicate that if, as the Gallery hand-out maintains, the picture is little more than a pretext to show an elegant nude, Cranach has paid remarkable attention to the pretext. There's no doubt at all that his interest in depicting the female nude was his chief reason for painting the picture, but the seriousness with which he approached his 'pretext' has a bearing on his approach to the nude. It's an openly erotic approach, but I would suggest that his eroticism is inextricably involved in a sense of the mystery of the human situation, and that his nude is closer to our own sense of a sacred image than any image in purely Humanist painting.

Like the paintings of the School of Fontainebleau, dedicated to the same cult of Venus, it was painted for a sophisticated Court and influenced by Italian Mannerism. But Cranach only used the elongations of Mannerism to impart beauty and dignity to a Northern tradition of the figure, which had been conceived to signify the shamefulness of human nakedness. If there is a fundamental difference between nudity and nakedness, Cranach has somehow bridged the gap. His Venus is as beautiful and unashamed in her nakedness as the classical Venus in her nudity. She belongs to a purely imaginary golden age in European history when women had small breasts which never sagged and soft ovoid stomachs which only very slightly protruded; a time outside time when nordic women walked the earth clad only in hats and necklaces and yet miraculously retained the pallor of a rarely exposed skin. In this connection, the state in which the National Gallery has exposed her to the public gaze presents a good case for the cleaned picture. Her flesh must have been golden before the old varnish was removed, and the cleaning of the picture must have taken on something of the solemnity of a ritual undraping. The pallor of her skin carries a deliberate reminder of the secrecy of the bedroom, but it also implies that she comes from a secret world of inordinate dreams which involve the image of woman but which no woman can ever satisfy.

The only other painter who has achieved an equally magical synthesis of the nude and the naked is Modigliani. I think I've said this before, but as the Modigliani exhibition at the Tate Gallery includes some of his finest paintings of the undraped female figure it seems an appropriate moment to say it again. John Russell, who selected the paintings for the Arts Council, traces the development of this aspect of Modigliani's art from the *pathétisme* of the early 'Le Nu Douloureux' to the 'majestic fullness' of the last phase—which includes the superb 'Reclining Nude' from



2

the Zeisler collection, 2—where 'to be naked is no longer a condition of anguish,' and these words could apply to Cranach's transformation of the Gothic.

The subtle and sumptuous revaluation of female anatomy in the nude of the Zeisler picture gives precise form to woman's ineffable promise. It's an image created out of man's despairing eroticism; the dominating presence of a being forever absent. I can think of no other great work of art in which actuality and dream have come closer together.

Another recent acquisition by the National Gallery is less satisfactory than the Cranach. It's one of the series of Monet's larger-than-life paintings of sections of his lily pool at Giverny, which have been rediscovered and enthusiastically reassessed during the last ten years or so. The present huge canvas, 3, is an attempt to come to terms with a section of the pool in which only a thin scatter of water-lilies float above reflections of sky and willow trees, and the picture has a kind of golden vacancy. The lilies near the top left of the painting create the impression that they float on a different level of water from those in the foreground, but this might not have been disturbing if the layers of brush marks which form the paint surface had been more visible and more vigorous. It seems to be one of the transition works in the series: it so to speak acknowledges the impossibility of capturing a multiplicity of minute colour changes whilst being without benefit of the consolation he found in raining a fantastically rich complex of brush strokes on to the canvas without much regard for the model. It's in a kind of no-man's-land between the impressionism of the earlier works and the proto-expressionism of the last ones.

There's no reason to suppose that Soutine was in any way influenced by or even saw Monet's very late Nympheas, but his Céret landscapes took painting a step further towards abstract expressionism. The Céret landscapes are extremely well represented in David Sylvester's selection for the Arts Council's Soutine retrospective at the Tate, and the catalogue note on 'Landscape at Céret,' 4,



4

suggests that the only crucial difference between this painting and abstract expressionism is in the 'spatial self-containment of the image'—'forms extend to the canvas edge but turn back and re-enter the field.' Although this doesn't seem to be altogether true of the right-hand side of the canvas, the difference is undoubtedly important. Soutine here turns, in what



3

would seem to be a state of extreme agitation, upon a scene containing a hill, trees and a house, and transforms it into a dense, darkly glowing, tightly clenched oblong of turbulent paint very different from the boundlessness of the image in typical abstract expressionist works. It's like the difference between a threatening fist and an expansive gesture of welcome.

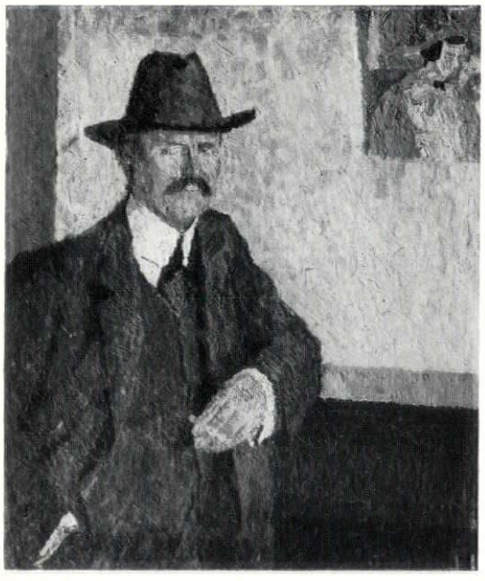
The Arts Council recently put on three small memorial shows at its St. James's Square Gallery. The sculptor Karel Vogel, who died in 1961, is better known than the others, and his small, grave, representational bronzes of the human figure are



5

very attractive, 5. They are all quite unmistakably studies from an art school model posed for student exercises—'Seated Figure with left leg resting on right knee,' 'Stooping Figure touching ankle,' 'Figure resting on elbow, holding foot' and so on—but a reverence for the classical makes its presence felt in all these sober attempts to be faithful to nature and they achieve a touching serenity.

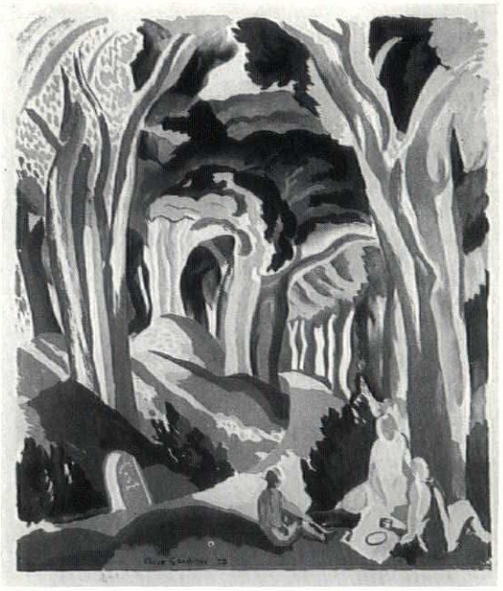
Malcolm Drummond, who died in 1945, studied under Sickert and exhibited in all three Camden Town Group exhibitions.



6

His best work seems to have been done in the three years from 1910 to 1912, when he was very thoroughly under the influence of Gilman and Spencer Gore. His portrait of Charles Ginner, 6, belongs to this period. It has the bright crisp colour which distinguishes his early group of works from the rest, and still looks delightfully fresh. Some paintings done in 1920 of Hammersmith Palais de Danse, with spotlights playing on the dancing couples, would have been quite sprightly if he had retained the high-keyed colour of the early works, but although everything he did after 1912 was conscientious enough there was no 'lift' to it. It's as though he went on producing pictures purely from force of habit.

Clive Gardiner, who died in 1960, had much influence as a teacher at Goldsmiths' College School of Art, and Graham Sutherland, who was one of his students, contributed a fascinating tribute to him in the catalogue. Gardiner was one of our best poster artists between the wars, and under the stimulus of McKnight Kauffer produced some notable work for the LPTB, including the charming 'Epping Forest,' 7, designed in 1928. The greater part of his exhibition was devoted to his paintings, but they are lacking in personality and



7

quite the best work on view was a glowing little painting, 5 in. by 4½ in., of a village, done in 1955 and lent by Lady Epstein.

Robert Melville

ARCHITECTURE

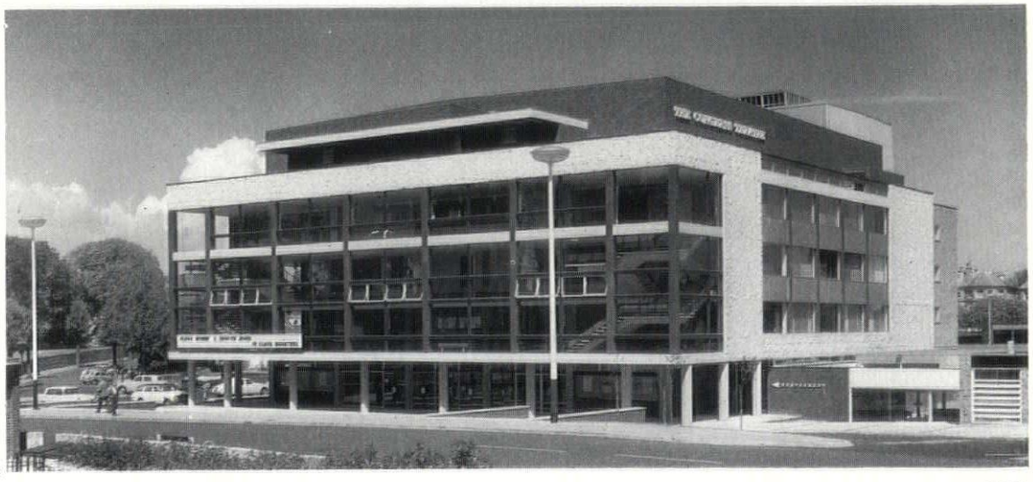
ADAPTABLE THEATRE

The recently completed Congress Theatre at Eastbourne, 1 (*architects, Bryan and Norman Westwood*) aptly illustrates some of the points made—both with regard to function and to finance—by Peter Jay in the AR article* in which he discussed the architectural implications of various types of theatre stage and of the play-production theories of which they are the expression.

The theatre in the round—the most extreme form of departure from the conventional proscenium, or 'picture-frame,' stage—recent pundits have seen as the panacea to end all ills behind the footlights, but that was before there were any modern examples. Once performers and producers gained experience of this kind of theatre its problems of voice projection, lighting, control, scenery and orchestral accommodation made them more appreciative of the benefits of a proscenium arch. The demand then became for adaptability: a single theatre capable of being converted into an auditorium of any type to suit the production in hand. But experience in Germany, where this principle has been pursued to fairly expensive lengths, showed that producers' use of such availability tended to be half-hearted.

As usual in the building industry, the problem can be resolved into a simple exercise of cost. As Peter Jay showed, theatres in the round are the cheapest, whilst those elaborately adaptable are the most expensive. The British being by tradition good at compromise, the Congress Theatre at Eastbourne comes as hardly a surprise. Externally as a piece of architecture it is confused, as if two architects of differing aesthetic convictions were

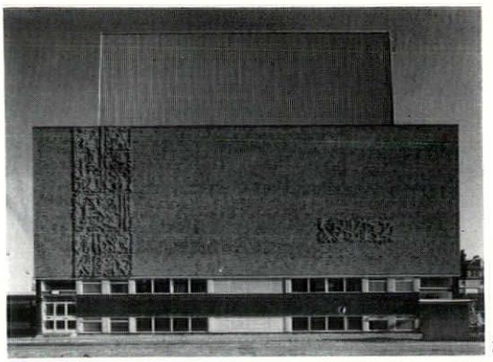
* March, 1963: 'Theatres: Stage and Auditorium' by Peter Jay.



1

equally responsible. It seems impossible that a mind working in terms of a black concrete frame, direct glazed and white precast cladding, would also be fussing with pale brickwork, bas-relief panels and standard metal windows, 2. The result is an immediate impact of promise that fades into irritatingly busy details of textures and shapes. But inside, the standard of design is more consistent and much is achieved in adaptability by comparatively cheap and simple means.

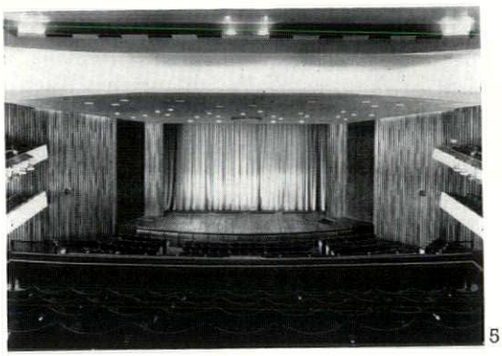
These are the provision of a variable width proscenium opening by sliding screens and a variable height orchestra pit. The last can be at stage level to form an apron in conjunction with a removable rostrum; at floor level to increase auditorium seating or at pit level to accommodate an orchestra. The auditorium, 3, 4, 5, which seats a maximum of 1,678 people (with a possible 2,000 for conferences, if the stage is used as seating space) provides excellent sight lines and is restrained in design in basic colours of white, natural wood and warm red fabric. The most impressive and unexpected feature is natural light flooding through large windows at either side of the



2

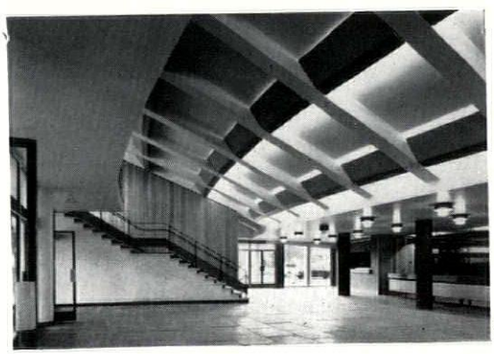
hall. These were provided with the seaside town convention trade money-spinner in mind, to ease 'conference fatigue.' There is little doubt that this objective will be achieved and the relief of looking away from delegates and speakers to the distant green Sussex downs will be considerable. Apart from conference use this arrangement has its possibilities during theatrical productions. Double glazing and black-out blinds are easy to make foolproof, and the excitement of entering an auditorium lit largely by the fading light of a setting sun would be considerable. The other side of the coin has its appeal, too, and glimpses of a brilliantly lit stage from darkened streets might well boost box office receipts.

Back-stage accommodation is generous, with a ramped approach to the scenery



5

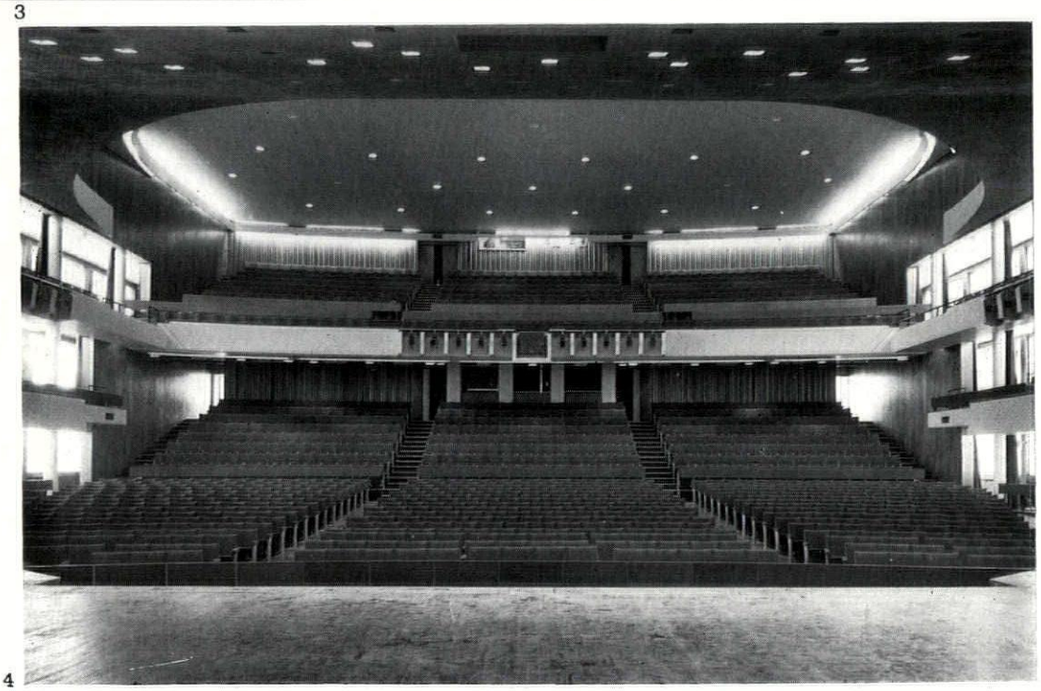
dock which is always desirable if the space is available. The foyers, 6, 7, wrap around the rear of the auditorium and are fully glazed with interesting three-dimensional effects obtained by stairs and galleries and even a sea view—just. The refreshment bars are realistically long, but the overall impression of this part of the building is that a little more space would have been useful had money been available. Despite certain aesthetic limitations and an



6



3



4



7

obviously limited budget the Congress Theatre is a considerable achievement for a smallish provincial town. It will be even more interesting and useful to hear the theatrical profession's assessment of its adaptable theatre.

Michael Manser

SHRUBS

DECIDUOUS HEDGES

*The rules which govern the choice of plants for deciduous hedges are very similar to those influencing evergreen**. The most suitable plants are those easily trained and clipped, hardy and with a solid twig structure to filter and baffle the winter winds, giving in summer a matt green effect to provide a background without distracting influence. Within these limits there are many possible variations.

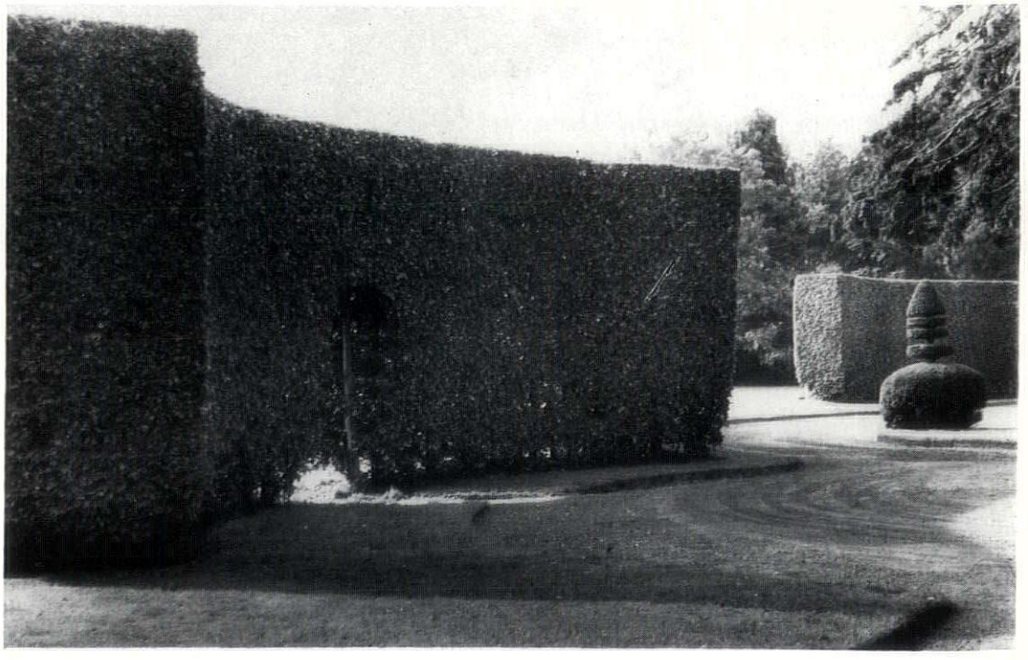
* AR, February, 1963.

First, perhaps, the two faithful standbys, beech and hornbeam which, although deciduous, have the attractive habit of holding their dead leaves as a russet cover until spring. Whether the habit is quite so attractive when you are faced with a massive fall of withered leaves just when the garden is all fresh and tidy for the new season, you alone can decide. Of the two, beech, *Fagus sylvatica*, is the more difficult to establish, needing to be planted small and flourishing in a soil with better drainage. The leaves are of a very pale silver green when young and have a slightly glossy surface which is pleasant without being distracting. Though by no means suitable for every position, the purple-leafed beech can make hedges whose sombre intensity gives added value to bright flower colour in front of them. The colour also has far more affinity than any other deciduous hedge with the darkness of yew, so that purple beech can well be used to extend existing designs in yew where it is not desired to repeat the evergreen.

Hornbeam, *Carpinus betulus*, has many of the advantages of beech while being more easily transplanted and able to withstand the wetter and stickier soils. In all other respects it is very similar, except that the leaves, of a deeper green, have a matt, heavily wrinkled surface which is not so attractive. In suitable positions both beech and hornbeam can be trained up into those incredibly tall narrow hedges which appear to have been such a feature of early eighteenth-century gardens.

Thorn, *Crataegus monogyna*, is the great standby of the country gardener. Quick growing when once established, able to live in most soils, it forms a solid barrier

1, hedge of *Fagus sylvatica cuprea*



1

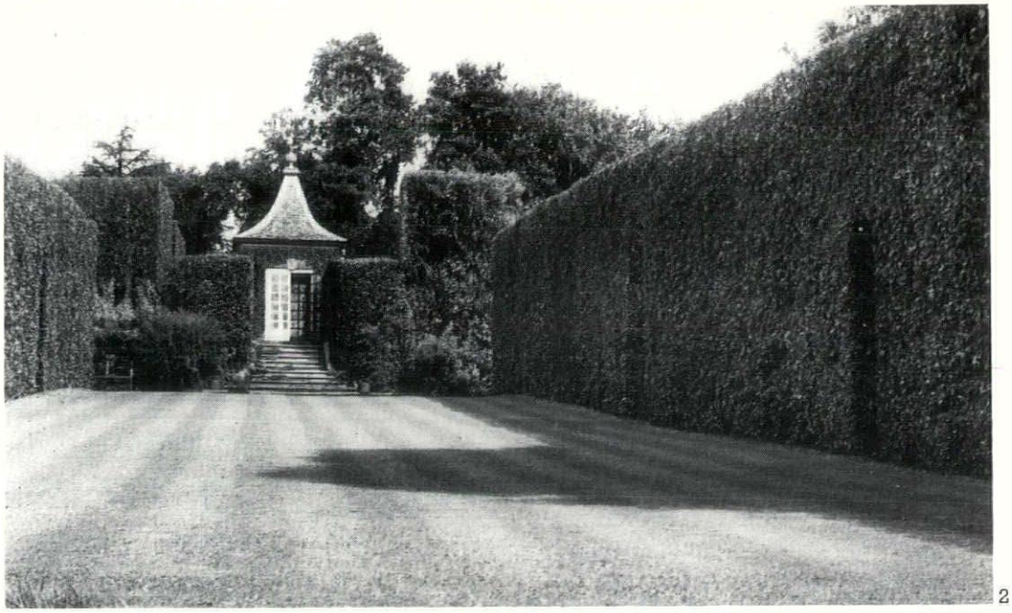
of interlacing twig and barb which will keep out the most venturesome cow. When planting as a bulwark against stock it is as well to remember that both cows and horses have amazingly elastic necks, and that young hedge plants need to be set at least a yard behind the protective fencing or they will be eaten to the ground before they have had a chance to grow. Similar in use and effect is the blackthorn, *Prunus spinoza*, whose early white flowers on black twigs have an added charm.

At one time I would have omitted privet, *Ligustrum ovalifolium*, from any discussion of hedges either deciduous or evergreen, regarding it as a cross between a nightmare with its endless need for clipping and greedily spreading roots, and a suburban joke. However, experience has brought me to respect this humble and much despised plant. Evergreen except in the very worst winters, it will grow in the most dreary and unpromising situations, under trees in poor ground and draughty positions with very little encouragement, quickly producing a solid screen of considerable height.

An unusual variation to the normal hedge, seldom seen but very effective in suitable positions, is the tapestry hedge made of several different shrubs in an apparently artless mixture, all clipped into one trim wall. This is not as simple as it looks, since the balance of different foliage, the proportion of evergreen to deciduous, the variations of texture between smooth and rough foliage, have all to be considered. The contrasts need to be subtle rather than striking, the results not too patchy nor yet too calculated, but if well done it can add great richness to the garden scene. In the famous grounds of Hidcote, in Gloucestershire, borders of flowers in different shades of red are backed by hedges into which are woven purple beech, yew and holly, the slight variation of tone and texture making a perfect setting for the jewel-like brilliance of the flowers.

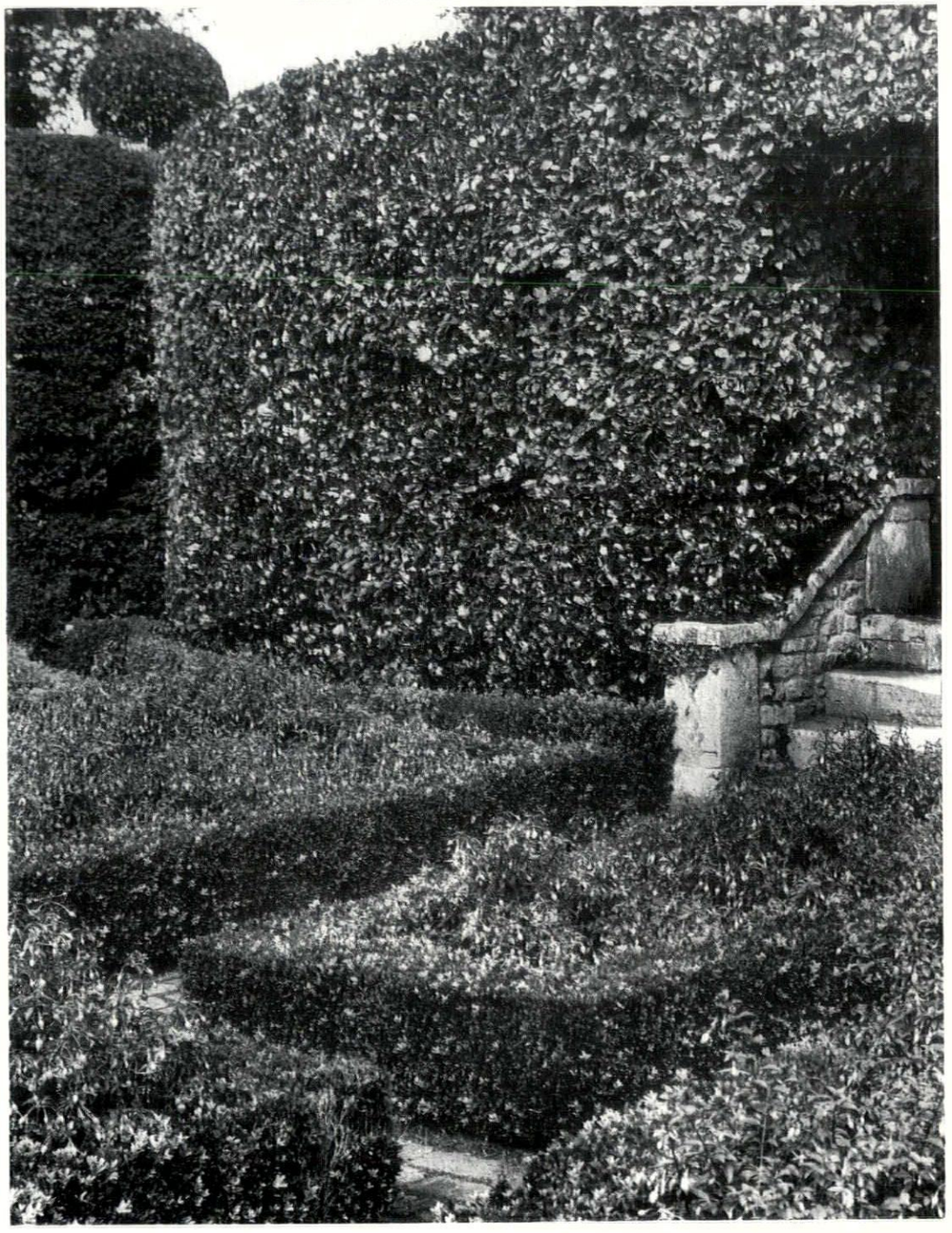
All these are structural and background hedges and, like the evergreens, they must be planted in well prepared ground and fed regularly to achieve the best results. Unlike the evergreens, however, they should be cut to half their height the first season after planting, in order to achieve a thick, well furnished base, and should be kept trimmed lightly as they grow up in order to maintain the shape. Neglect of this simple precaution is the cause of the many hedges one sees about with thin, straggly bases and tufts of growth on top. In such cases the old plants should be cut to within a foot or two of the ground and allowed to grow up again, the subsequent hedge being kept cut in a wedge shape, narrower at the top than the bottom, in order to maintain its stability.

A. du Gard Pasley



2

2, hedge of hornbeam (*Carpinus betulus*). 3, hedge of holly and copper beech at Hidcote



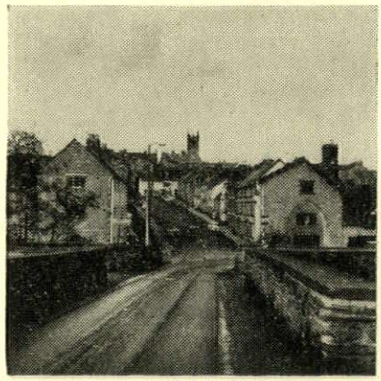
3

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

LOOK OUT

OUTRAGE

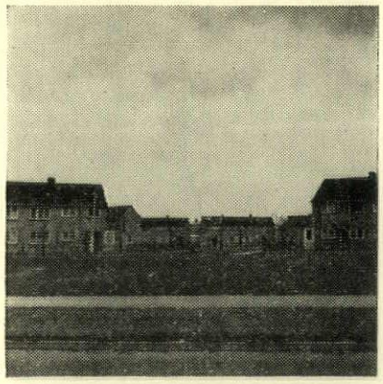
LUDLOW
The splendid approach to Ludlow from the south, 1, has terrible visual let down immediately next to the building on the right, 2;



1

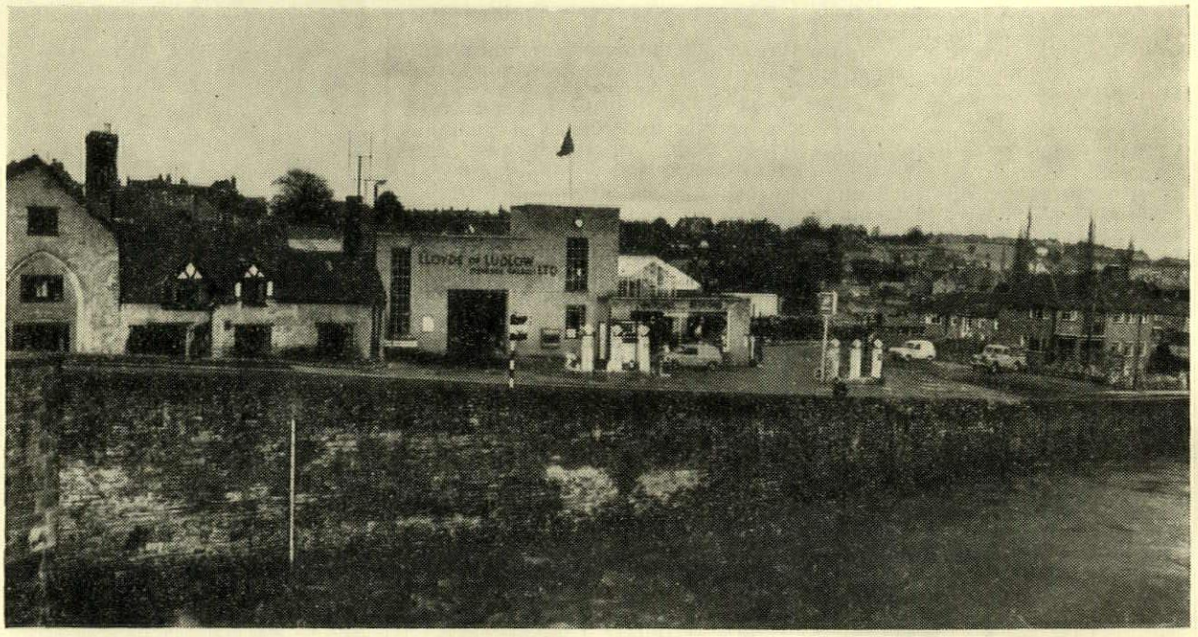
not too late to plant a line of riverside trees in the French way and restore some of the unity. This is one of the best town entries in the county and deserves very special treatment instead of being made to look like something on the Gloucester By-pass.

SWINDON
Some overspill towns are getting decent and sensitive architecture, by the LCC; Thetford, Haverhill and Edenbridge are all being augmented in this way. But when the LCC is not at work then the results can be pretty deadly. The photographs 3 and 4 show Walcot,



3

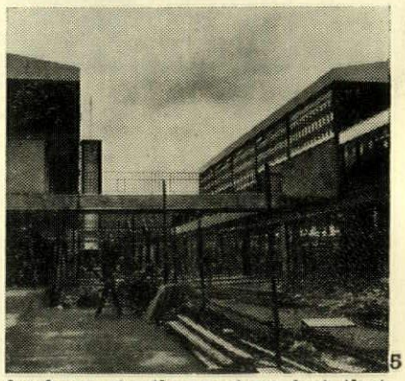
a newly built estate on the east side of Swindon built for London overspill, on a site which has in fact blocked the way from the old hilltop town to the country. The same wide streets, monotonous layouts, rigid zoning: all the faults of the first new towns repeated. A shopping centre by Frederick Gibberd is nearly complete, 5, and will add vitality and



2



4



5

freshness to the centre: but that helps only a little when the rest of the place is a howling desert.

TREE-LOPPING
The old bad ways still going on in Trinity Square, Southwark, 6, 7; and, by contrast, the rare



6

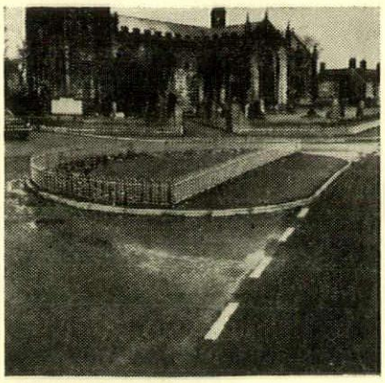


7



8

9



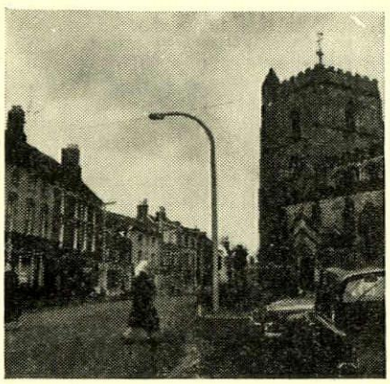
10



example in Britain of trees lopped to a purpose, at Longtown, Cumberland, 8. Here, even in winter, the trees have a pattern of their own which relates to the cottages around and which is quite different from the senseless mutilation of S.E.1.

TIDESWELL, DERBYSHIRE
A good rough Peak village with a splendid church. So why insult it with the trappings of 'municipal rustic,' 9, 10? This is a straight forward, honest place, not a venue for euphemistic double-entendres in the landscape. Lay off, for heaven's sake, you would-be improvers, and let the place be itself.

NEWPORT, SALOP
One more lampstandard in the wrong place, 11. Inconceivable if sentient human beings were con-



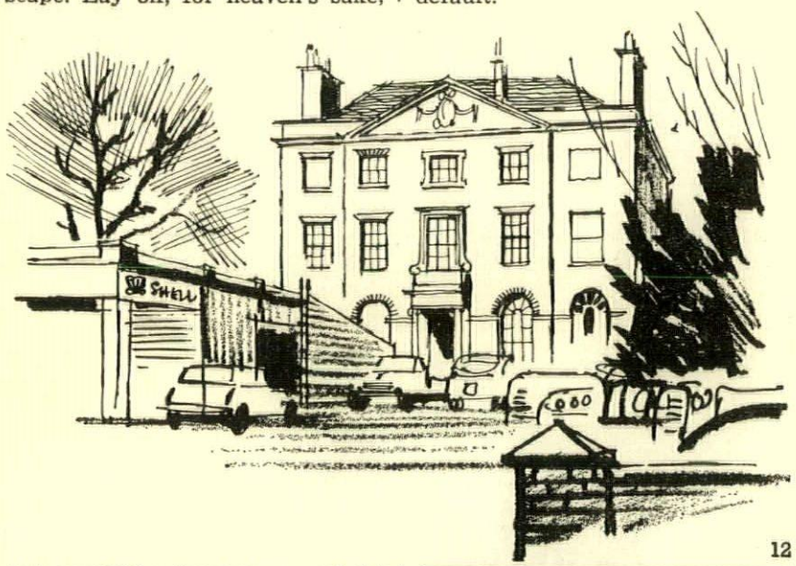
11

trolling the landscape instead of ciphers. So let us spell it out: Here is a Church. Here is a Main Street. The relationship between them means something. Don't kick it in the stomach. But who cares? —the official has a secure job anyway, whether he hates the town or loves it.

SOS

BRUTON, SOMERSET
An eighteenth century building in the centre of the town which has been in a bad way for years, 13. Yet it should be rescued, even now, for its townscape value at the main crossroads, an eye-catcher up and down the street.

WEM, SHROPSHIRE
The town's finest house, 12. Not in immediate danger, but obviously needs watching by the local societies. It is too good to go by default.



12

CAUTION

MONMOUTH
The Beaufort Arms is a splendid building, 14, and like all Trust Houses it is splendidly kept up. But it is painted light and dark green, a sophisticated, over-cosy effect which does not sit well in a straightforward county town. The subtle depression of the view by these softer shades is realized in the photograph by comparison with the splendid bit of black and white paint on the left hand side. Such a grand design does not need any affectations.

CREDIT

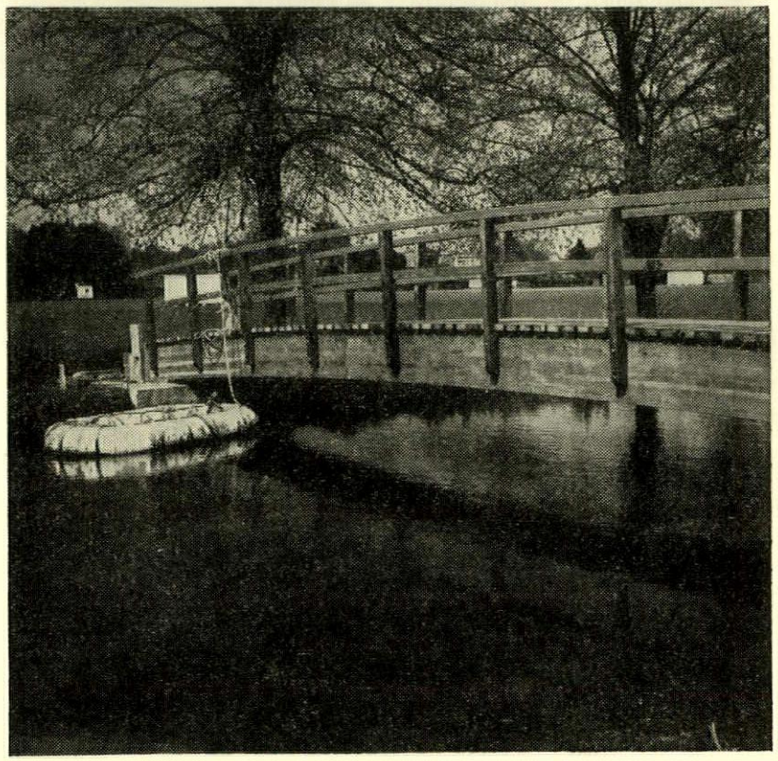
WINCHESTER
An admirable, unpretentious timber bridge, 15, in the grounds of Winchester College, built by Laminated Woods Ltd., of Bideford. It sets a pattern of honesty which could be followed by many larger engineering structures and municipal improvements of either the old (utilitarian) or new (expressionist) schools.



13



14



15

HOUSING, CAMBERWELL, LONDON
(pages 317-323)

The coming dissolution of London County Council will mean a great deal more responsibility placed on the Metropolitan boroughs, including responsibility for maintaining the high architectural quality for which the LCC has been outstanding among local authorities. In the past, with hardly an exception, the work of the Metropolitan boroughs has been poor in comparison. It is therefore very encouraging to find one borough, Camberwell, producing work as authoritative, sensitive and mature as this housing scheme.

Camberwell have done good quality work before, but this is their first scheme to compare in scale and comprehensiveness with some of the big housing schemes designed by the LCC. It presented the borough architect and his staff with problems of a kind of which the LCC, but few others, have had continuous experience, and here Camberwell have dealt with them most successfully—in some respects more successfully than in many LCC projects.

One of the problems—common to all schemes of this size—was to provide a good variety of accommodation and yet maintain a degree of architectural unity. The tower blocks standing among terraces of houses or four-storey maisonettes, employed by the LCC in their East End and many of their other sites, do not achieve this very successfully and the admirable unity of effect at Roehampton is largely achieved by the skilful use made of an undulating landscape with fine trees. At Camberwell there was a flat site with no trees or any other features; the coherence is architectural. Thirteen and a half acres have been covered (at a density of 136 to the acre) by continuous ranges of building, enclosing a series of courtyards differing in size according to the scale of the buildings surrounding them. There are no spaces between buildings leaking out at the corners and dominated, as the spaces between housing blocks often are, by unrelated elements forming part of the more distant townscape. The scale is consistently that created by the buildings and their grouping. Even the largest of the internal spaces—that between the higher and the lower blocks, in which the boiler-house is placed—though the least satisfactory with its somewhat indeterminate backyard character, is just sufficiently closed in by a block of houses and a screen wall.

The groups of houses occupying the northern half of the site, are provided, moreover, with their own gardens, something that generally results, in the case of new housing, in untidiness and suburban disorganization of the plan. These Camberwell gardens are totally enclosed by the groups of houses, giving the whole layout a compactness that is not only admirable and economical in itself but in keeping with the urban tradition of East and South London.

In the high, seven-storey, section the courtyards between the blocks gain enormously from the pedestrian circulation being planned as a series of covered walkways beneath them. The blocks have, that is to say, been left open at ground level, except in some cases where the ground floor is occupied by laundries and garages, and even here there is space between the roofs of these structures and the soffits of the superstructures. The resulting views through from one courtyard to another, and the glimpses into planted courtyards from the perimeter of the scheme, lighten the whole effect and give it an agreeable air of continuity and complexity.

One particular aspect of the scheme which is an improvement on much LCC work is the treatment of the skyline. This is ingeniously broken by planning the upper storeys in re-entrant pavilions, set back beyond the normal face of the buildings—a happy contrast to the usual bald-topped slabs dominated by water-tanks. The colour is also well handled at Camberwell, especially in the high blocks. It comes chiefly from the natural colours of the materials—exposed concrete, purple-blue brick, robustly detailed timber handrails with black painted supports. In the lower blocks the predominant colour is the orange-red of tile-hung walls—a questionable choice of materials, not only because the introduction here of so strong a colour emphasizes the difference between one part of the scheme and the other when what was needed was to emphasise the consistency of treatment in spite of the disparity of scale, but also because tile-hanging in itself—essentially a rustic material—is hardly in keeping with this urban architecture.

It is true that there has grown up a fashion for tile-hanging in modern building: Eric Lyons has used it in a number of his housing projects and so have the designers of some of the CLASP schools—notably, to the surprise of the Italians, the Notts school that won top prize at the 1960 Triennale—but it has never proved itself really suitable for sophisticated urban use. No doubt it has logic and convenience as a way of facing a non-structural, lightly framed wall, but its limitations even from this point of view (particularly where it has to turn corners) are exposed in the crude detailing of the projecting porches and other parts of the Camberwell house-fronts.

ART GALLERY IN LONDON; PLASTIC SHOWROOM, SOUTH LONDON
(pages 341-345)

It has become a common observation that certain kinds of shops tend to behave more like art-galleries, and standard jokes about milliners displaying a single hat on a slim stand in the window draw attention to an art-dealer's approach to the merchandise that may be justified by the hat's status as a unique work of creative imagination. It is less easy to formulate the justifications when the merchandise, though elegant, even exquisite, is mass produced, and this month's pair of interiors afford a striking comparison between a very pure statement of the basic art-gallery norm and a showroom that handles merchandise varying between award-winning plastic ware that visually demands gallery treatment, and sophisticated trivia that demand a different approach.

The Kasmin Gallery is one of a number of recent galleries which have tried to present a sort of basic gallery image—a pure space, strong enough visually to command architectural respect, yet capable of accepting art-works of pronounced character, without diminishing them or being diminished itself. In other words, the proposition is that in hanging each successive exhibition, the gallery director should be able to make one of those integrations of art and architecture about which so much was said and written in the middle 'fifties.

It is worth noting that the Kasmin's successful exploitation in this manner does not rely (dare not, in view of the varying styles of modern art) on any direct aesthetic congruence of styles. It depends far more on the character of the gallery as a *place*, one might almost say as a monument. The interior volume which one sees is divorced from all comprehensible exterior reality: it is reached through a dog-legged corridor that isolates it from Bond Street, it has no external structure that is ever seen, the lighting from the ridge of the vault affords no usable clues to its immediate surroundings. It is a place apart, with the air of a cavern or subterranean chamber—a critic like Vincent Scully might be tempted to assert that it is 'essentially' a Mycenean treasure house—though its top-lit form derives, in structural fact, from an older art-gallery on the same site.

At all events, its psychological impact is that of a place where one expects to find treasures or exotic artefacts, and the pictures take their place there less by stylistic suitability than by what might

be compared to the archaeological aptness of flints and antler picks in ancient British chalk-workings. Nevertheless, there is an important visual component in this psychological effect—the objects on display need to be simple and discrete in bulk form, and not too numerous. A large collection of very disparate exhibits, especially if their display required special equipment such as brackets and cases, would assume visual and psychological dominance.

But in the *Xlon* showroom, the problem is precisely one of a large collection of disparate objects requiring special display methods. Once again, the space occupied is a space apart, and one of very direct and powerful character, being an old air-raid shelter below ground, with the original plank-patterns of its poured concrete construction still visible on the walls—*beton brut* before the fashion set in. Fortunately—for the final visual result—two original piers stand on the centre-line and naturally divide the space in two. Not only is this a functional convenience, giving a natural subdivision into office and display sides, but it also means that the total volume can never be apprehended in a single glance, thanks to the partition between the piers, nor is there ever room to stand back and see the exhibits in a single long view.

Photographs can be deceptive on this point, but in real life the visitor does not consciously see more than one wall at a time, while the screen of plastic off-cuts hanging by the entrance means that attention, on entering, falls not on the complex wall of mass-produced *bibelots* at the end, but on the long side wall which displays moderately ornate objects under conditions of moderate complexity and establishes a kind of middle situation, a mean between the two extreme types of objects shown. At one end of the scale are the award-winning grey plastic serving dishes, etc., displayed on the counter cantilevered out from the two piers, lit from below and seen under almost art-gallery conditions; the mean or average is supplied by the objects on the long wall in which a more conventional domestic aesthetic prevails, in spite of the technical or optical brilliance of some pieces, displayed on transparent shelving and drenched in light; and the other extreme is outright trinketry, of the sort that now fills smart *boutiques* of voguish *cadeaux*, justifiably shown here under conditions of cornucopial congestion in a setting of spotlit gold and red.

Display cases in the Xlon *showroom.*



Apart from the failure of some of the drawers to close evenly (a technical fault that is visually distressing in this theatrical lighting) this plethora of mock gold, mock ivory, wax fruit and artificial jewel-stones is seen to remarkably good effect—in spite of the fact that it runs counter to current dogma that the setting for an object on display should act 'as a foil' or set it off, and should, in any case, be less complex and visually demanding than the object displayed. It should be remembered, however, that these objects are the furnishing equivalent of 'junk jewellery' and the same visual rules probably apply—profusion, over-scale dimensions and being worn on elaborately patterned or textured backgrounds, in direct contrast to the rules of taste for real jewellery.

OFFICE BUILDINGS AT CORBY
(pages 352-356)

Concrete can be handled in various ways, it goes without saying. There has been a fashion lately for trying to bring out the grace and elegance of which highly refined concrete structures are capable; playing down, that is to say, the difference between steel and reinforced concrete; going for minimal dimension, polished surfaces and sharp arrises. But there is also a way of using concrete that brings out its other characteristics: those of compressive strength and ruggedness. These two buildings at Corby are an interesting attempt to do this.

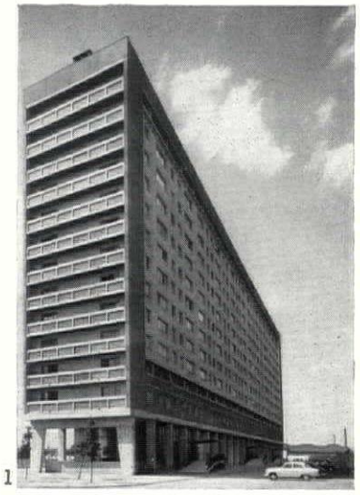
The classical example of the rugged handling of concrete is, one supposes, Le Corbusier's *unite d'habitation* at Marseilles, which was built in 1950-52 at a time when it was becoming urgently necessary to find a way of treating concrete as a respectable material with qualities of its own, no longer needing to be covered up, just as the more recent interest in its spareness and elegance have coincided with higher standards of concrete craftsmanship.

Le Corbusier's treatment of exposed concrete as a kind of rock, and his use of the rough graining of shuttering boards to create texture, though they may not have been the first were the most highly publicized, and they have had an enormous influence. He exploited the idea with his usual flair and vigour. Others since have not always done it so successfully; they have used grained shuttering too tastefully to produce simply a nice surface pattern, or they have used it unsuitably, insufficiently related to the structural lines of the building that give it its significance.

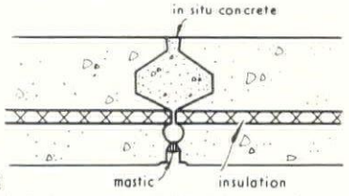
At Corby concrete is sensibly used—in a rectiliniar rather than in the plastic, sculptural style that has been chiefly admired in the past, but with plenty of vigour and in a situation where some degree of crudity in the building's geometrical framework was probably needed to stand up against the giant sheds, chimneys and blast furnaces that make up the dynamic skyline of a steelworks. The buildings are powerful in scale, though composed of simple enough elements, the only place where the scale has got a bit out of control being the porches and pergolas attached to the steelworks office block which needed a Japanese feeling for simply articulated geometrical elements.

Dirt is another significant factor. Texturing concrete by the use of rough-surfaced shuttering was first valued because of the unpleasant surface of smooth concrete, particularly after subjection to a dirty atmosphere. That was before exposed aggregates and other methods of controlling concrete surfaces had been so well developed. Such surfaces — especially those with a deeply etched grain—are often designed to hold the dirt in the atmosphere and exploit the changes of colour it produces by bringing them under control. It may well be that the more subtle surfaces given by rough-boarded shuttering will do this successfully too, but the atmosphere of a steelworks town will put them to a severe test.

SKILL



1

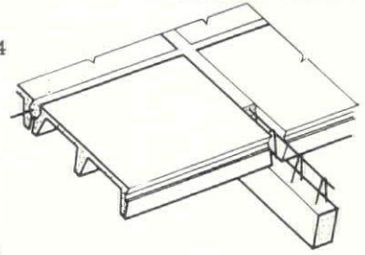


2

1, *Balency system used for a housing scheme at Nanterre (designed by Zehrfuss and Sebag).* 2, *horizontal section through external wall.*



3



4

3, *Barets system used for a residential tower block near Rouen (architects, Leroy, Vincent and Lenard).* 4, *detail of floor slab.*

INDUSTRIALIZED BUILDING

3, Comparison of Continental Systems

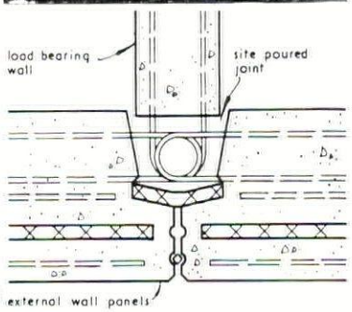
The second article in this series (AR, September) tabulated information on the various British systems of industrialized building. We conclude by publishing a list of Continental concrete systems which are available in this country.

B2 Concrete systems imported by industry from the Continent

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
BALENCY Bernard Sunley & Sons Ltd., 25 Berkeley Square, London, W.1 (*France*)	Ideal guaranteed programme—2,000 units per year within 45 miles radius of factory.	Multi-storey flats.		Large steam cured concrete panels; precast walls supporting *in situ* floor using special shuttering to form box frame. Complex moulded units incorporating services possible—although thin, their shell shape provides sufficient strength to support floor—kitchen, bathroom, shafts, etc. Facade and party wall panels are sandwich with insulating core, and incorporate facing materials, windows, etc. Loadbearing partitions of solid or lightweight concrete. Metal door frames cast in. Stairs prefabricated. Foundations conventional.	*Interbuild, System Building*, 1963. *The Builder*, 26.4.63.
BARETS Record Building Units Ltd., 74 Gloucester Place, London, W.1 (*France*)	Record Building Units Ltd. grant licences to approved contractors for a small royalty based on the surface area of the building. Design service offered at professional charges and arrangements can be made to supply moulds if required.	Multi-storey flats, hospitals, etc.	*Plan:* as required. *Storey heights:* as required.	Site cast loadbearing precast concrete façade panels in conjunction with precast frames, 6 in. thick by 10 ft. span up to a maximum of four spans (40 ft.), located each side of central corridor. Floor slabs span between façade panels and frame. Cross walls, 4 in. thick, non-loadbearing. External walls: exposed aggregate, etc., hollow clay or concrete panel, breeze block core, 1 in. expanded polystyrene, plasterboard—8 in. to 9 in. total width. Various other finishes. Maximum weight of concrete panels 2½ ton. Floor precast and ribbed. Stairs, chimneys, etc. *In situ* jointing between precast units.	*Interbuild, System Building*, 1963. *Architect and Building News*, 8.5.63.

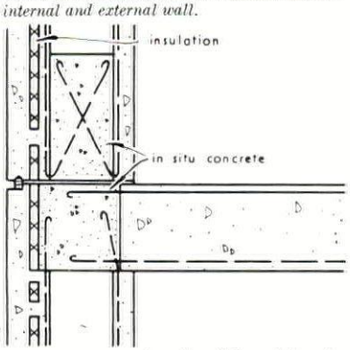


5



6

5, *Camus system—perspective of 22-storey blocks for Liverpool (architect, Dr. Ronald Bradbury, City Architect).* 6, *junction between internal and external wall.*



7

7, *Cauvet system—junction of floor slab and external wall.*

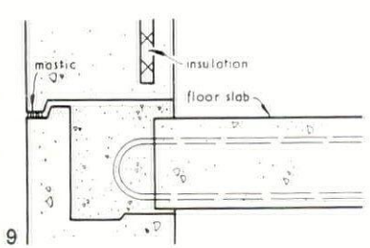


8

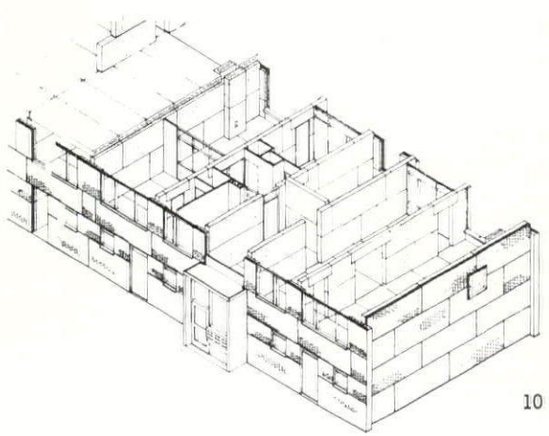
B2 Concrete systems imported by industry from the Continent (continued)

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
CAMUS Unit Construction Co. Ltd., Unit House, Central Way, Feltham, Middx. (*France*)	New moulds practicable for project as small as 200 units. Mobile crane required. Large contract in Liverpool—2,486 flats, 1,266 garages, etc.—value £9,611,961.	Multi-storey flats, schools, etc.	*Plan:* as required. *Storey heights:* as required.	Factory precast floor and storey height concrete panels. Box frame construction. Façade panels—concrete/polystyrene/concrete. Internal walls and floors: solid—approximately 6 in. thick. Partitions: concrete 3 in. thick. Maximum size of panels: 23 ft. 4 in. by storey height by 7–7½ ton. Floor units: room size up to maximum of 270 sq. ft. Doors, windows, pipes, conduit and tile finishes incorporated with casting. Joints grouted on site. Stairs prefabricated. No plastering necessary.	*Interbuild, System Building,* 1963. *The Builder,* 31.5.63. *Architect and Building News,* 6.12.61, 22.5.63.
CAUVET Building & Construction Co. Ltd., 68 Park Place, Cardiff, Glamorgan (*France*)	Can be built entirely by system contractor, or structure only. Alternatively moulds, detail drawings and technical service available at fixed charge. Not economic below 5 storeys unless in mixed development of 300–400 units. Economic number of panel units is 100. Tower crane; no scaffolding. No skilled trades required.	4–16 storey flats, offices, flatted factories, hospitals.	*Plan:* as required. *Storey heights:* as required.	Precast concrete cavity units, factory or site, floor to floor height, with self finish outer layer 2¾ in. thick, 1½ in. insulation compressed to ¾ in., intermediate concrete wall 1 in. thick, sealed cavity and inner concrete wall 1½ in. minimum thickness (total minimum 10 in.). External joints hot caulked with bitumen finished with mortar. All joints site grouted. Traditional foundations. Finishes as required.	*Interbuild, System Building,* 1963. *The Builder,* 8.3.63. *Architect and Building News,* 6.2.63.
COIGNET Fram-Coignet (Great Britain) Ltd., 171 Victoria Street, London, S.W.1 (*France*)	Most highly mechanized and complex process in France. Emphasis on quality and precision. Involves heavy investment in production equipment—precise enough to be self-positioning horizontally and vertically—only plumbing required. Tower crane required.	Up to 16 storey flats.		Precast large panels in box frame construction incorporating windows, doors, heating, conduits, facing materials and insulation. Largest panels 26 ft. by 8 ft. 4 in. by 10 ton. External walls of loadbearing sandwich: 7 in. concrete, ¾ in. expanded polystyrene, 1½ in. concrete (10 in. overall). Intermediate wall: 5 in. thick. Partition 2½ in. thick. Floors: 6 in. thick. Site grouting of joints. Concrete of ceramic tile exterior finish. Foundations conventional.	*Interbuild, System Building,* 1963. *The Builder,* 19.4.62. *Architect and Building News,* 4.4.62.
HSSB High Speed Building Ltd., Francis House, Francis Street, London, S.W.1 (*Netherlands*)	Known also as BMB System (Baksteen Montage Bouw). Originated in England in 1933. Developed from 1947 by Dutch—one of four surviving out of 120 systems. Investment of £10,000 of plant will produce one dwelling per day. Principle that 50 per cent of finishing can be economically carried out in factory. Estimated saving in man hours of 25 per cent. Tower crane required.	Multi-storey flats, schools, offices, industrial buildings.	*Storey height:* 9 ft.	Reinforced precast brick panels, maximum size 12 ft. by 4 ft. 6 in., made up as cavity wall: brick, 2 in. cavity, 4 in.–8 in. no-fines concrete. Inner skins and cross walls loadbearing. Maximum weight of panels 2½ ton. Interior surfaces plastered. Conduits, etc., cast into slab. Stairs prefabricated. Foundations semi-prefabricated—concrete panels along perimeter.	*Interbuild, System Building,* 1963. *The Builder,* 5.4.63. *Architect and Building News,* 2.1.63.

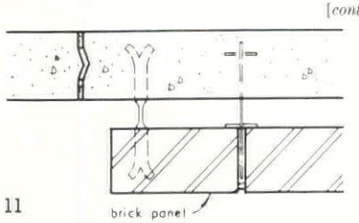
[*continued on page* 372



9



10



11

8, *Coignet system used for a block of flats in Rotterdam.* 9, *junction of floor slab and external wall.*

10, *isometric sketch showing arrangement of panels in HSSB system.* 11, *horizontal section through external wall.*

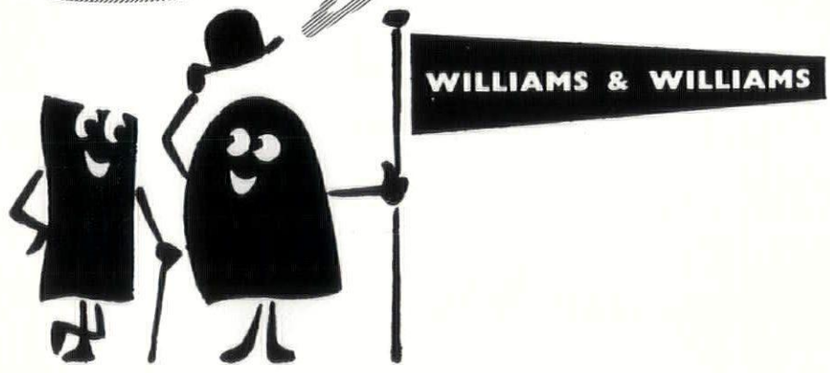
So grow your own overcoat

well... there's this new range of Aluminex roof and sidewall glazing, you put up a few thousand feet of it and the clever beast grows its own oxide overcoat – which protects it for ever after. Small wonder it's got a bulbous head. All six different sized bars in the range have bulbous heads, which gives them greater torsional stability and we wish we could say the same for some people.

Throwing phrenology to one side for the nonce (and it's a brave man who does) Aluminex is ideal for acres of roof glazing, can be used for as low a pitch as 8°/15°; or sidewall glazing ad infinitum. 250,000 square feet of Aluminex was used on Hinkley Point Nuclear Power Station.

Architects! Why not burn the word Aluminex on your mind in letters of fire, it's more spectacular than sewing samplers.

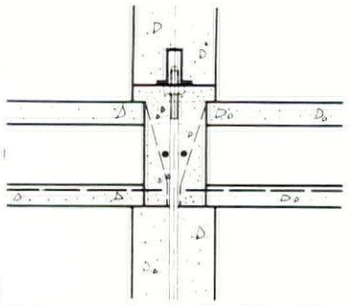
Williams and Williams



Sewing samplers or otherwise, Architects come up against many varied problems; we're only too pleased to help, it's a little thing for which we're noted.

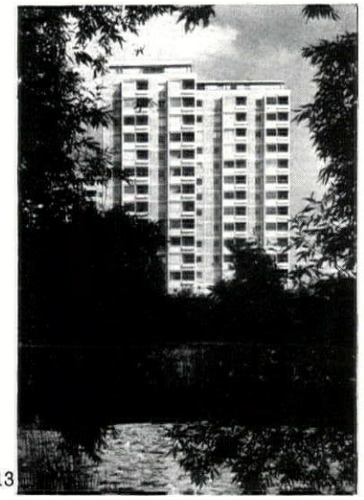
FORWARD LOOKING BUILDING PRODUCTS BY WILLIAMS & WILLIAMS · RELIANCE steel windows, ALOMEGA, GAIETY and other aluminium windows, ROFTEN cubicles and shelving, ALUMINEX patent glazing, WALLSPAN curtain walling, KEYSLOT angle and many other products.

DEPT ARA · RELIANCE WORKS · CHESTER (TELEPHONE CHESTER 24624) · AND AT WILLIAMS HOUSE · 37-39 HIGH HOLBORN · LONDON WC1 (TELEPHONE HOLBORN 9861)

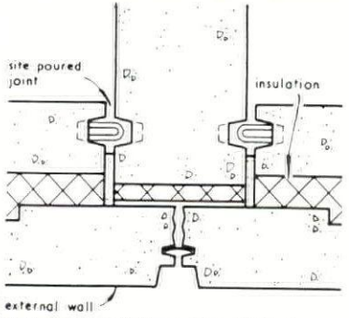


12

12, *Jesperson system—junction of floor slab and internal wall.*



13



14

13, *Larsen and Nielsen system—block of flats in Denmark.* 14, *junction between internal and external wall.*

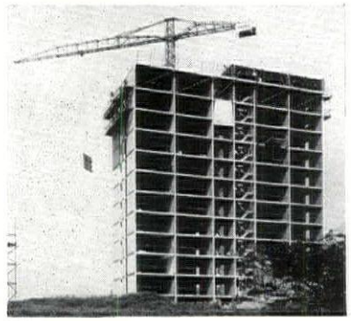
B2 Concrete systems imported by industry from the Continent (continued)

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
JESPERSON John Laing & Sons Ltd., 4 Regent Street, London, S.W.1 (*Denmark*)	A 4 in./10 cm. modular system constructed in collaboration with Local Authority, or as a complete all-in service.	Up to 16 storey flats.	*Plan:* 4 ft. x 1 ft. for overall size of building. 4 in. internally *Storey height:* 8 ft. 8 in.	Large concrete panels. Wall panels: 8 ft. 8 in. high by 4 ft., 6 ft., 8 ft. wide by 6 in.–7 in. thick. Floor panels: 4 ft. wide by 8 ft.–18 ft. long in 1 ft. intervals by 7 in. thick. Panels 2½ ton, maximum weight. Wall panels include doors, etc. Not a complete building system, but small standard units combine in various ways to give alternative plan layouts, as recommended in the Parker Morris Report.	*Interbuild, System Building,* 1963. *Official Architecture and Planning,* March, 1963.
LARSEN AND NIELSEN Taylor Woodrow-Anglian Ltd., Western House, Western Avenue, London, W.5 (*Denmark*)	Large panels prevent great variety in plan layout. Façade design can have maximum variety. 2–3 flats per day using mobile crane.	4–8 storey flats, bungalows, factories, etc.	*Storey height:* 9 ft. 4 in.	Factory made room size concrete wall and floor units (up to 5 ton). External walls: 2 in. concrete, 4 in. lightweight aggregate concrete, 1½ in. concrete, maximum size 9 ft. 4 in. by 16 ft. Internal walls: 8 ft. 8 in. by 16 ft. by 6 in.–7 in. Floor units, with cylindrical holes: 8 ft. by 18 ft. by 7 in. thick. Box frame construction. Partition: 2½ in. thick. Complete bathroom units up to 8 ton. Façades non-structural. Staircases precast. Finishes, doors, windows, conduits, etc., can be incorporated.	*Interbuild, System Building,* 1963. *The Builder,* 14.11.62. *Architect and Building News,* 14.11.62.
OHLSSON AND SKARNE Crudens Ltd., Musselburgh, Midlothian (*Sweden*)	Little flexibility in planning. Based upon concreter-prometo method of concrete casting developed in 1940 by Swedish engineers for tall structures including silos, tanks, dams, etc.	Multi-storey flats.		Two alternative methods. 'Light'—up to 17 storeys. *In situ* concrete core for lift/stairs using slip-form rising 10 in. per hour. Crane erected at top. Standard ply forms placed by crane for floor slabs. 3 ft. 4 in. wide by storey height panels fit into slots in floor. Construction rises floor by floor. Various external walls as required. 'Heavy'—slab blocks 4 storey height. Precast concrete box frames with non-loadbearing façade. Room size units up to 8 tons. Site factory. Stairs precast.	*Interbuild, System Building,* 1963. *Architect and Building News,* 27.9.61, 4.10.61, 6.12.61, 16.5.62.
SECTRA John Laing Construction Ltd., 4 Regent Street, London, S.W.1 (*France*)	Use of tower cranes. Claimed that structure of 15 storey block can be erected in 30 days. All-in service available.	Up to 25 storey flats.		Precision made steel moulds for on site casting. Moulds of room widths, tunnel form. Integral heating in formwork accelerates hardening and reduces time for re-use of formwork to 13 hours. Preformed reinforcement used. Partitions, stairs, plumbing, etc., prefabricated. Services incorporated with reinforcement assembly if necessary. Infill external wall panels as required.	*Interbuild, System Building,* 1963. *The Builder,* 22.3.63, 22.8.62. *Architect and Building News,* 22.8.62, 10.4.63.

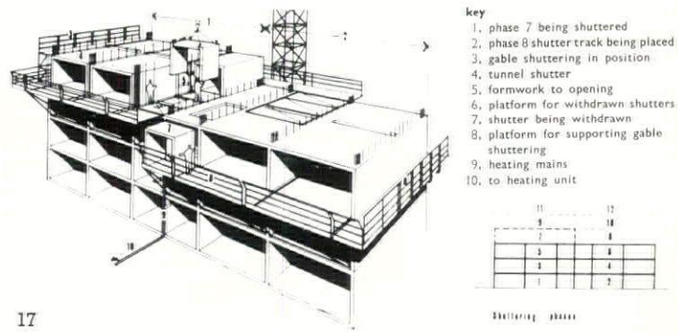
[*continued on page* 374



15



16



17

15, *Ohlsson and Skarne system—housing at Bollmora, Sweden.*
16, *Sectra system—multi-storey flats in Heywood, Lancs. Diagram showing sequence of operations.*

Ibstock FACING BRICKS

have long been the natural choice for licensed premises



"THE MAN ON THE MOON"

Reepham Road, NORWICH

is another example of the fine appearance given to the "Locals" everywhere when faced with Ibstock Bricks.

Architect in charge: H. Tuck (West Area Surveyor), Surveyor's Department, Bullard & Sons Ltd., Anchor Brewery, Norwich.

Merchants: Builders' Direct Supply Co. Ltd.

Builders: Bush Builders (Norwich) Ltd.

Bricks: 2⅝" Red Sandfaced Wirecuts and Best Hand-made Multi Golden Brown Sandstocks.

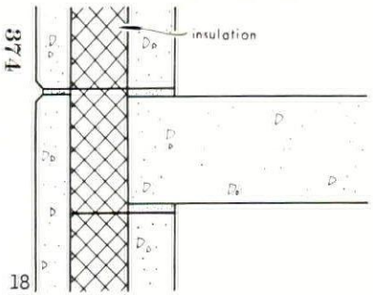
● Most machine-made bricks are readily available—but hand-made bricks are in short supply and all orders should be placed as far ahead as possible. We are, of course, anxious to receive enquiries for future deliveries and shall be happy to make reservations against architects' specifications.

Send for full details and sample

Ibstock **FACING BRICKS**

THE IBSTOCK BRICK & TILE COMPANY LIMITED, Ibstock, near Leicester Telephone: Ibstock 531

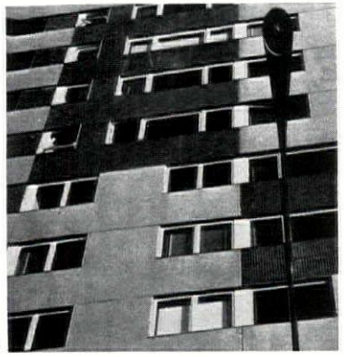
London: B.R. Goods Depot, Wright's Lane, Kensington, W.8 Telephone: Western 1281



18

18, *Sundh system—junction of floor slab and external wall.*

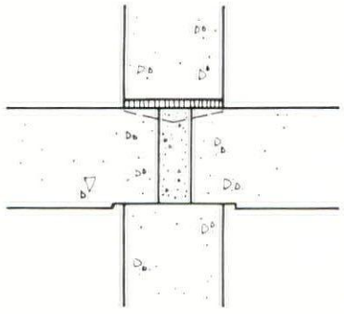
19, *Tracoba system—part of the Meaux programme in France (architects, Ginsberg and Tournier).* 20, 21, *junction of floor slab and internal wall.*



19

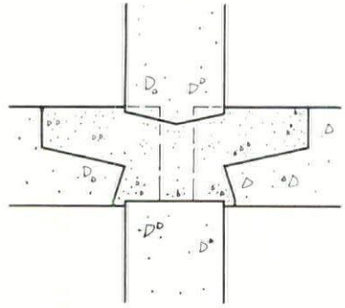
B2 Concrete systems imported by industry from the Continent (continued)

Name of system	*General comments*	*Uses*	*Planning considerations*	*Principles of construction*	*Bibliography*
SUNDH Sundh (Great Britain) Ltd., 5–9 Wigmore Street, London, W.1 (*Sweden*)	Economic contract is 250–300 units.	Small houses, two storey housing, multi-storey flats.		On site prefabrication of concrete panels up to 10 tons, maximum size 23 ft. 4 in. by storey height. Box frame, with loadbearing cross walls and non-loadbearing façades. Room size floor slabs 5 in.–6 in. thick. Sandwich walls either concrete with internal insulation or brick/insulation/concrete, or concrete with wallboard applied on to studding. Windows, doors, etc. cast in. Partitions 3 in. thick. Stairs precast. Joints site grouted.	*Interbuild*, *System Building*, 1963. *Architect and Building News*, 8.11.61, 6.12.61.
TRACOBA Gilbert-Ash Ltd., 45 Notting Hill Gate, London, W.11 (*France*)	Minimum economic size of contract is 200–300 units.	Two storey housing, multi-storey flats.		On site precast concrete panels, up to 22 ft. long by storey height. Site factory designed to suit specific requirements. Essentially a system of jointing only. External walls generally non-loadbearing: 3 in. concrete, 1¾ in. polystyrene or 4½ in. light concrete, 2 in. concrete. Partitions as required. Heating, insulation, window, exterior finishes, door frames, conduits, etc., can all be incorporated.	*The Builder*, 29.3.63. *Interbuild*, *System Building*, 1963.



section showing floor slab seating

20



section between seatings

21

THE INDUSTRY

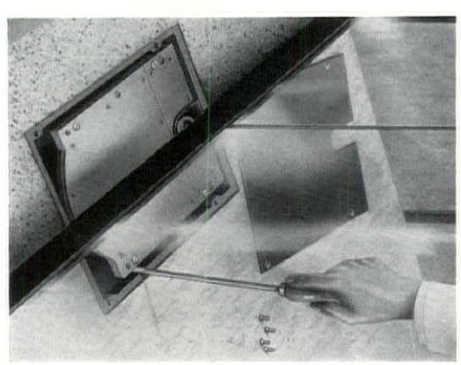
Floor spring adjustment

The fitting of floor springs in loose boxes in solid floors is, of course, standard practice but anyone who has watched a tradesman fitting a spring mechanism will be aware of the difficulty and fiddling adjustment he has to overcome with wedges and jacks and adjustable shoes or straps.

The new 'Adjustabox' by Newmans is designed to overcome these problems. It is designed to allow alignment simply in all horizontal directions.

When the spring has been mounted in its Adjustabox the four clamping bar screws are slackened. The spring can then be easily moved to and fro in the box. When alignment is satisfactory the four screws are tightened and the cover plate fitted.

The box is available for use with Newman's 400 and 444 Double Action Springs and the 900 Single Action and costs between £10 10s. and £16 including spring, shoes, etc.



1

The illustration, 1, shows a door being aligned simply by positioning the floor spring with a screw driver. *William Newman and Sons Ltd., Hospital Street, Birmingham* 19.

Fire alarms

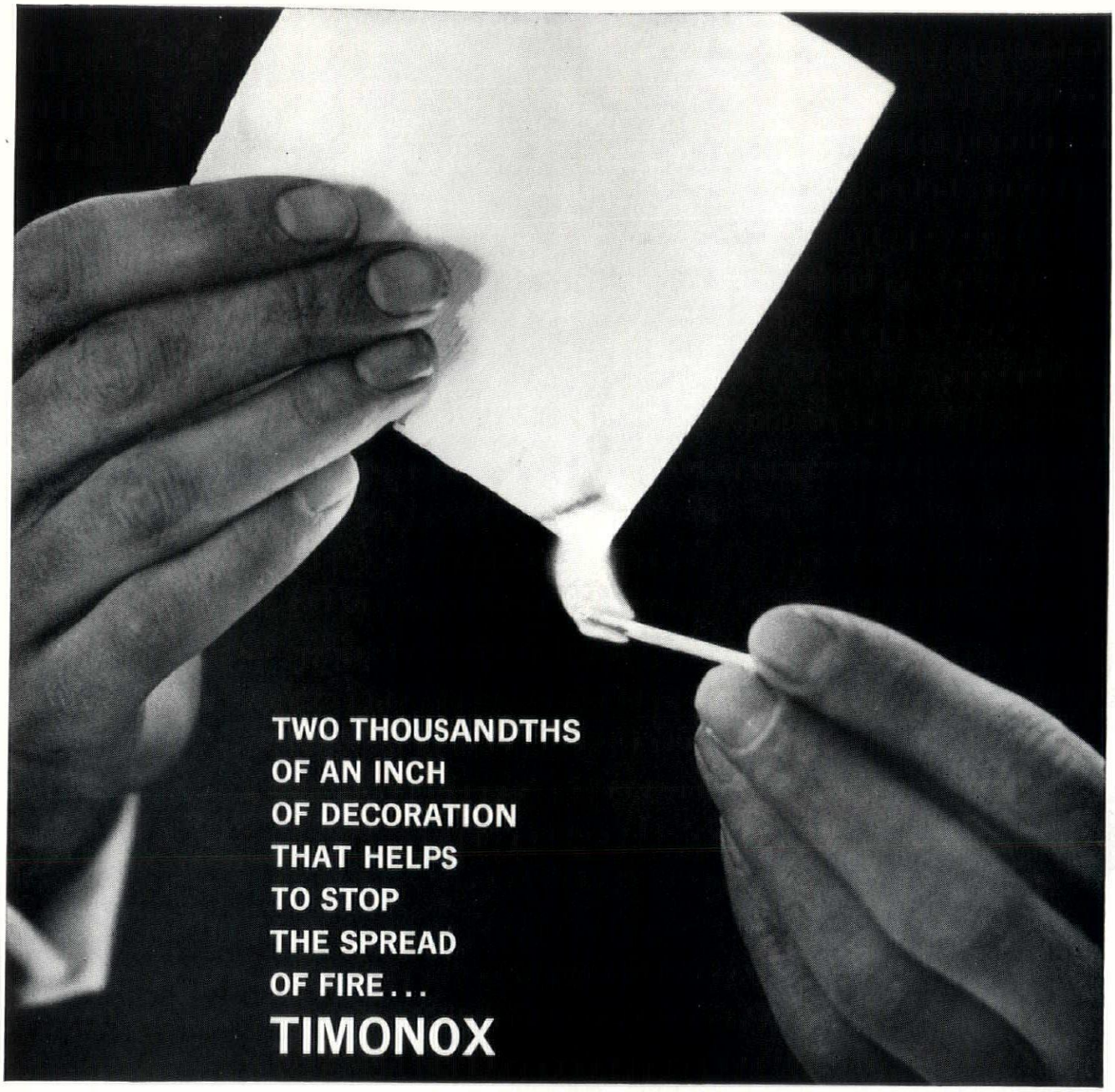
Readers will remember the articles by Clement Shepherd in the November and December, 1962, issues on fire alarms and protecting devices. Now comes information from Merryweather on a new device which they are now marketing to help in the prevention of fire damage. This is their 'Meridian Automatic Signalling Unit', 2.

The basis of the equipment is a

[continued on page 376



2



TIMONOX is a flame-retardant paint that has been officially tested at the Fire Research Station and their findings are set out in a leaflet that is available on request. But it is also a paint that anyone with an eye for sheer decorative quality would choose on that account alone.

This combination of flame-retardant and decorative qualities represents a major advance in paint technology. Timonox is at present made in two forms. As an emulsion paint in a wide variety of colours and as a pure white alkyd-resin enamel. In both forms it has quite exceptional opacity so that a high spreading rate is combined with excellent covering power. In both the finish is impeccable. It is an easy paint to use, drying without brush marks.

ASSOCIATED LEAD MANUFACTURERS LIMITED

Clements House, 14 Gresham Street, London E.C.2.
Crescent House, Newcastle upon Tyne 1. Lead Works Lane, Chester.

BARBOUR INDEX FILE 170

continued from page 374]

fully transistorized dialling unit which can be arranged to signal any given message to a predetermined telephone number, normally the 999 emergency number. The device is automatically tripped by operation of the fire alarm system (either manual or automatic) or of the sprinkler installation in the protected premises and is arranged to pass the necessary information to the appropriate authority. The message which would be agreed with the authority concerned would indicate that it was a fire alarm and then probably give the address.

Connection is by normal GPO telephone lines. No private line is necessary as the system makes use of the standard GPO Emergency Service. An ex-directory line set aside for the purpose is normally provided and this avoids the heavy cost of private lines over long distances—a very real problem in the case of Fire Brigades using a Central Mobilization system.

*Merryweather and Sons Ltd., Greenwich High Road, London, S.E.*10.



3

Food waste disposer

The name of Econa in the plumbing field has over the years become well known. Now the company has developed a food waste disposer, 3, 4, to fit any metal sink unit with a 3½ in. waste outlet.

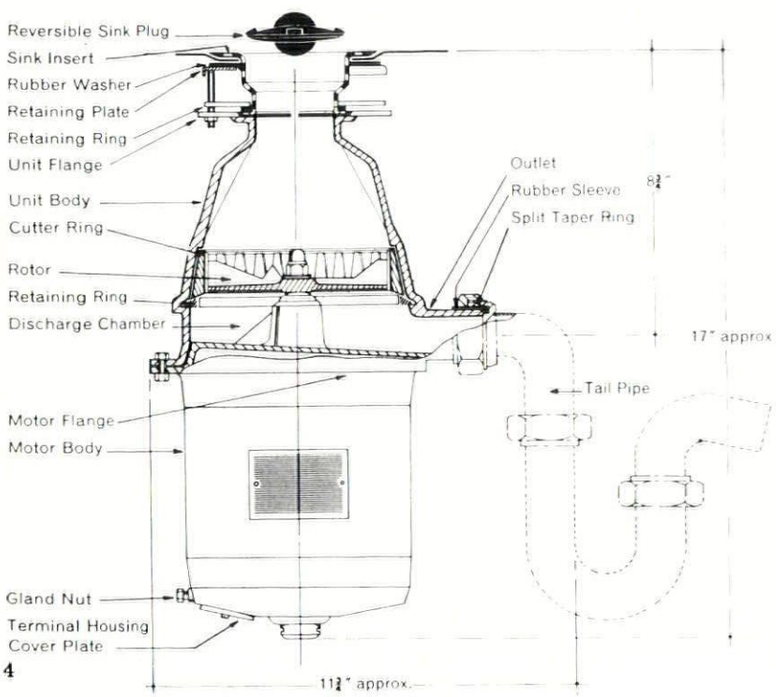
All materials used in the construction are corrosion resistant including the nuts, bolts and securing studs. The body unit itself is of aluminium and houses a semi-industrial motor which needs no lubrication. Normal domestic electrical circuit is employed using a 13 amp fuse and the unit can be either plugged into an ordinary socket or fed through a reversing switch. This enables the motor to reverse its rotation and assists the cutter by using both edges and so extending the life of the unit. The cutter and rotor assembly are made from a high carbon stainless alloy which is exceptionally hard and is designed with tapered channels to reduce clogging. The rotor has a deflection tooth on one of its vanes to prevent waste staying away from the cutter. It will grind into very fine particles all plate waste, fruit skins, bone, peel, etc., but not such items as metallic objects, rubber or string: which do not harm the unit as they will automatically cut the motor out and can be freed by using the de-jamming tool (in the case of a wall socket system) or by waiting a few seconds and turning the reversing switch. The assembly contains rubber at many points which reduces noise and vibration and the whole unit can easily be attached or detached with one hand from the sink insert by means of a special three stud safety arrangement.

The unit costs £32 10s. 6d. including p.t. but without the control unit. The whole thing is described in a well produced leaflet.

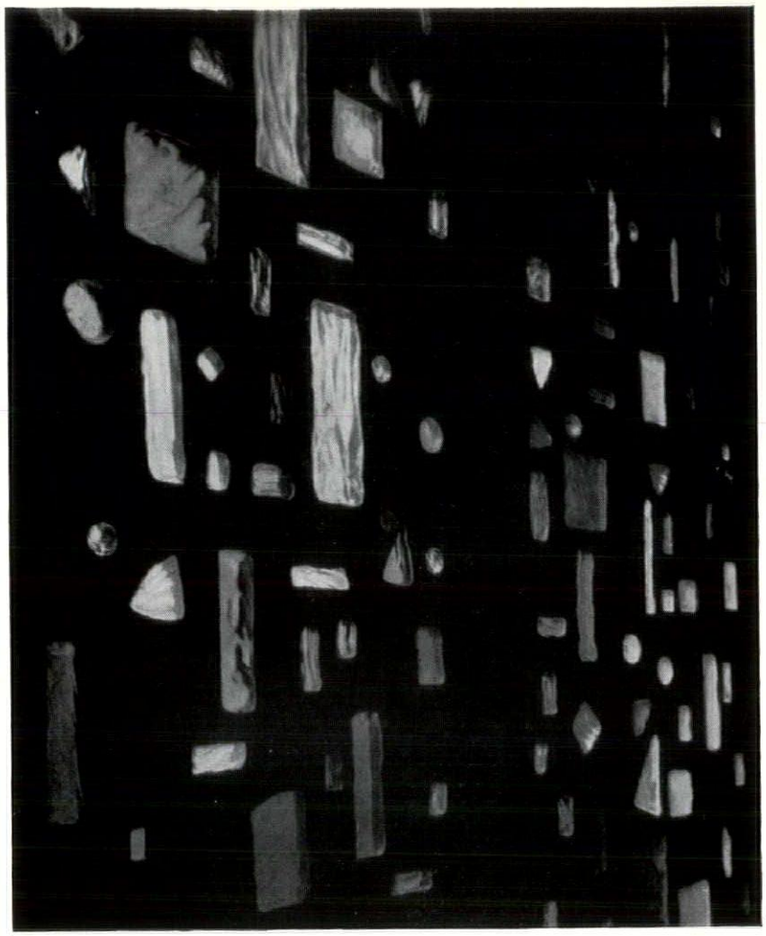
Econa Ltd., Highlands Road, Shirley, Solihull, Warwickshire.

Coloured glass-concrete

'Crystalcrete,' a new product marketed by James Clark and Eaton Ltd., is composed of precast concrete panels set with lumps of coloured glass, 5. The panels are 1⅛ in. thick and are reinforced with copper. Panels are purpose made to any design and within reason to any size.



4



5

Single panels are up to 10 ft. super, but panels can be fitted together to form larger designs. The price per square foot ranges from £2 19s. to £5 17s. 6d. for standard shapes and up to £9 15s. for special shapes and varies according to the colours (reds and yellows are the most expensive) and to the amount of glass.

*James Clark and Eaton Ltd., The Glass Centre, 96–152 Great Suffolk Street, London, S.E.*1.

Aluminium door handles

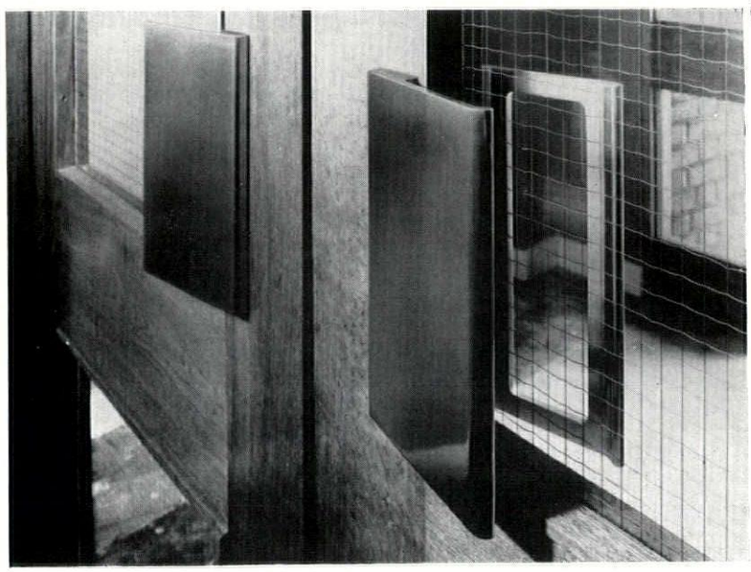
At this year's exhibition by the Guild of Architectural Ironmongers an award by British Aluminium for the best design in aluminium by a British manufacturer was won by the Standard Range and Foundry Co. for their A 6500/1 push/pull handle set, 6. This set also received the first award in its classification in the general exhibition.

The outlines of the two handles are identical but the effect of the solid plate on one side and cut out on the other is claimed to indicate immediately to the user which action is relevant. This theory is possibly open to some doubt. Experience tends to show that only the complete absence of any sort of handle will induce a large number of people to push rather than pull. Be that as it may, these handles are certainly neat and tidy in appearance.

The handles are fixed back to back with completely concealed through bolts adjustable for varying door thicknesses.

Dimensions are 9 in. by 5½ in.

[continued on page 378



6

There is an un-selfconscious air of quiet confidence about this handsome clock, one of seven Gent models chosen by the Council of Industrial Design for display in the Design Centre. It has that well-bred assurance that makes it at home in any surroundings. Materials, workmanship and performance to match.

AC mains or master clock operated models are available—ask for literature giving details of the complete range.

GENTS OF LEICESTER **Electric Clocks**



as selected for THE DESIGN CENTRE London

GENT & CO. LIMITED FARADAY WORKS LEICESTER

LONDON OFFICE AND SHOWROOM: 47 VICTORIA ST., S.W.1. also at BIRMINGHAM · BRISTOL · GLASGOW · NEWCASTLE · BELFAST

continued from page 376]

with a projection of 1⅛ in. and the finish is anodized either in silver or what is termed 'continental.'
Standard Range and Foundry Co. Ltd., Watford, Herts.

Sun control

Control of solar glare and heat gain is a problem which has grown with the ever greater areas of glass being used in modern building. This led at first to the development of the modern Venetian blind but it was then discovered that, although glare could be controlled, the heat gain problem tended if anything to become worse.

This, of course, after a little thought is readily understandable. Although surfaces within the room are protected from radiated heat, in fact the blades of the blind itself are subject to this heat. Naturally their temperature rises and the heat is then dissipated into the air of the room.

In fact for the most efficient insulation against solar heat gain an external blind is the best answer. With this in mind Hinchliffe have produced their new 'Bonaire' Sun-Blind, 7.

This is designed primarily for installation outside the window, as one of their range of aluminium building products. It consists of a blind box of anodised aluminium extrusion and a blind of rotproof pvc woven fabric. This slides up and down external guide channels, fitted to the side members of the window frames. Operation is by nylon cord from inside the room. When the cord is realeased from its cleat, a weight on the bottom edge of the blind pulls it down into position.

The fabric which has a 30 per cent open area will obviously permit 30 per cent penetration of light at right angles. This, of course, reduces as the angle of incidence of the sun to the blind increases.

Heat penetration is slightly more because of secondary radiation from the material but a reduction of 65 per cent minimum is claimed.

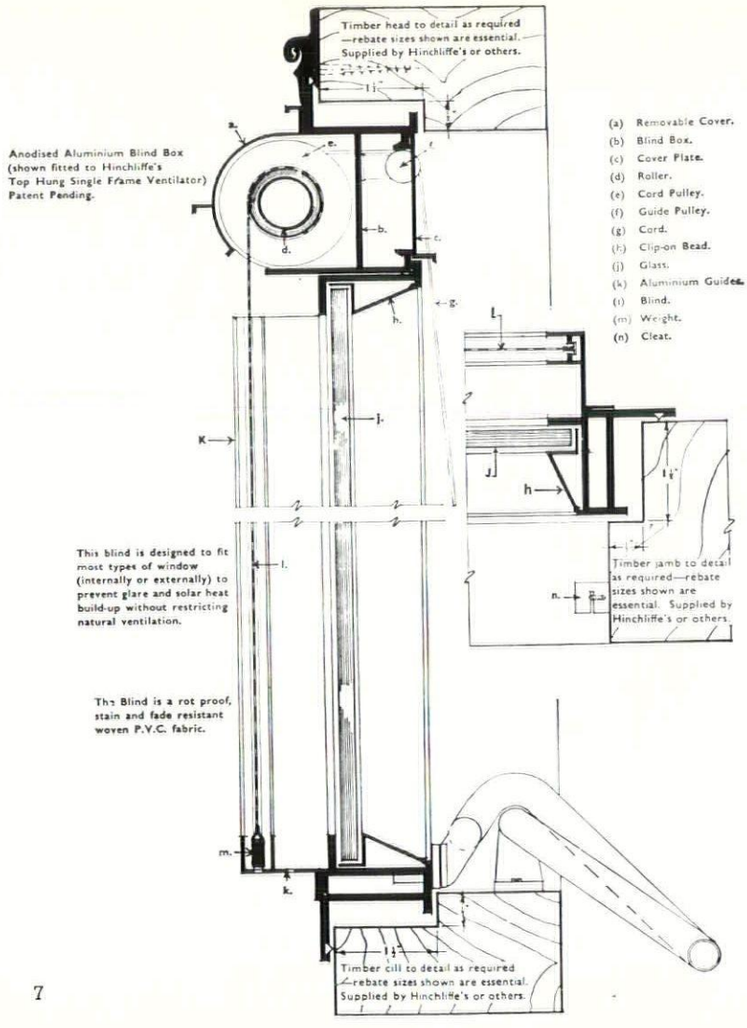
The illustration, 8, shows the blind fitted to a Hinchliffe single frame ventilator.
E. D. Hinchliffe and Sons Ltd., Hall Street South, West Bromwich, Staffs.

Automatic doors

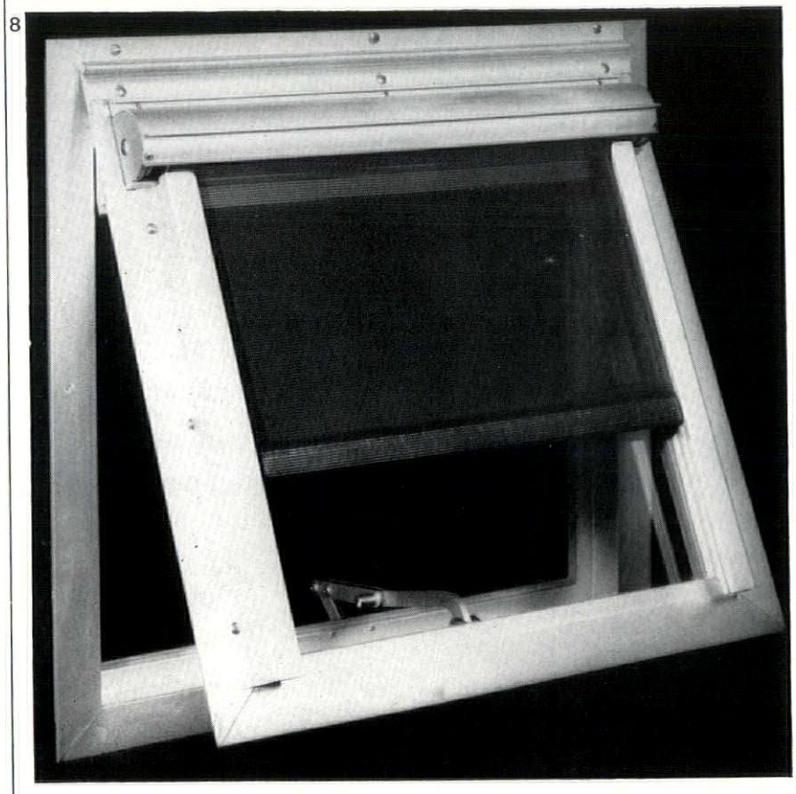
The use of automatic mechanisms for controlling routine operations such as opening and closing doors in a building has been spreading in recent years. It is probably fair to say that development of such mechanisms has been faster on the Continent than here, probably influenced by their emphasis on dividing the internal climate from the more rigorous external one. Our recent weather experiences, however, may persuade us that similar devices could usefully be employed here, winter and summer.

The use of opening devices on doors for normal foot traffic does tend to be rather gimmicky and confined to entrances where prestige probably plays an important part. Their use, however, on doors for wheeled traffic such as loading bays and goods reception docks does seem more practical.

Among the mechanisms available are some sliding folding doors of Swiss design, called 'Picbator'. The doors are fabricated from steel box section with sheet metal panels and glass sight panels available as required. The chain and sprocket mechanism combined with supporting roller carriages using ball races with nylon treads is claimed to provide a smooth gliding action with all leaves moving in unison and so avoiding jamming. Mounting can be on either face of the opening or on the soffit and all leaves and meeting rails are provided with rubber seals. Activating mechanisms can be of any of the usual types.
Plant Inspection and Control Ltd., Security Works, Pershore Road South, Kings Norton Factory Centre, Birmingham 30.



7


8

CONTRACTORS etc

Housing, Camberwell, London. *Architect:* F. O. Hayes (Camberwell Borough Architect). *General contractor:* Token Construction Co. *Subcontractors: Asbestos fibre spray:* Central Insulations Ltd. *Asphalt pavings and roofs:* The Rock Asphalte Co. *Concrete testing:* Constructional Services. *Electricity installation:* Holliday, Hall & Stinson Ltd. *Felt roofing:* Durastic Ltd. *Fencing:* Durafencing Ltd. *Floor tiling:* Marley Tile Co. *Glazing:* Faulkner, Greene & Co. *Heating installation:* Weatherfoil Heating Ltd. *Hot and cold water services:* Faithfull Bros. Ltd. *Joinery:* Rothervale Manufacturing Co. *Lifts:* Express Lift Co. *Lightning protection:* R. C. Cutting & Co. *Lightweight concrete:* Celcon Ltd. *Metal windows:* Crittall Manufacturing Co. *Painting:* G. & C. Whittle Ltd. *Piling:* Frankipile Ltd. *Plastering:* Pollock Bros. (London) Ltd. *R.c. chimneys:* Chimneys Ltd. *Roller shutters:* John Barker & Sons. *Sanitary plumbing and drains:* J. C. Toogood Ltd. *Shrub planting:* Gavin Jones Nurseries Ltd. *Soil investigations:* Ground Explorations Ltd. *Soiling and seeding:* Turfsoil Ltd. *Steel and ironwork:* Stanhope Engineering Co. *Steel reinforcement:* Engineering Design Services. *Tarmacadam roads:* Constable Hart & Co. *Vertical tiling:* Roberts Adlard & Co. *Wall and floor tiling:* Parkinsons (Wall Tiling) Ltd.

Art Gallery in London. *Architects:* Burton, Ahrend and Koralek. *General Contractor:* F. W. Clifford. *Sub-Contractors: Electrical installation:* Anthony Juer Lighting Ltd.

Office Buildings at Corby. *Architects:* J. Douglass Mathews & Partners. *General contractors:* John Laing Construction Ltd. *Sub-contractors* (STEELWORKS BUILDING): *Piled foundations:* Economic Foundations Ltd. *Lifts:* The Express Lift Co. *Heating, ventilating, plumbing and electrical work:* Matthew Hall & Co. *Fire-resisting doors:* Mather & Platt Ltd. *Suspended ceiling:* Campbell Denis Ltd. *Acoustic plaster:* Collins (Contractors) Ltd. *Scaffolding:* Scaffold (Great Britain) Ltd. *Metal windows:* The Crittall Manufacturing Co. *Glazing:* Faulkner, Greene & Co. *Asphalt roofing and tarmacadam:* The Limmer & Trinidad Lake Asphalt Co. *Lino flooring and skirting:* The National Flooring Co. *Marble floor tiling:* J. Whitehead & Sons Ltd. *Painting work:* F. Labbett & Sons Ltd. *Wall tiling:* Parkinson (Wall Tiling) Ltd. *Polishing work:* J. R. Beadon Ltd. *Staircase work:* W. H. Gaze & Sons Ltd. *Balustrading work:* Arc Welding Co. *Plastering:* J. R. Brookes (Plasterers) Ltd. *Partitioning:* Waddells (Stratford Steel Equipment) Ltd. *Sub-contractors* (TUBEWORKS BUILDING): *Piled foundations:* R. M. Douglas Ltd. *Lifts:* The Express Lift Co. *Electrical, heating, ventilating and mechanical services:* Matthew Hall & Co. *Suspended ceiling:* Campbell Denis Ltd. *Acoustic plaster:* Collins (Contractors) Ltd. *Glazing:* Faulkner, Greene & Co. *Asphalting:* The Limmer & Trinidad Lake Asphalt Co. *Lino Flooring and skirting:* The National Flooring Co. *Marble flooring:* W. B. Simpson & Sons. *Granolithic floor and plastering:* Pollock Brothers Ltd. *Painting:* F. Labbett & Sons Ltd. *Tiling:* Parkinsons Ltd. *Spiral staircase and balustrade:* Charles R. Price. *Entrance doors:* Adrian Stokes Ltd. *Windows:* The Crittall Manufacturing Co *Scaffolding:* Scaffold (Great Britain) Ltd. *Roller shutter doors:* The Bolton Gate Co. *Balustrading work:* Arc Welding Co. *Partitions:* Waddells (Stratford Steel Equipment) Ltd.

SfB Gk4

STRAMIT ROOFS in Schweppeshire?



STRAMIT in steel tees supported by concrete purlins at the Canterbury depot of Schweppes Ltd.

These new STORAGE BUILDINGS for SCHWEPPES

Thermal insulation can be a very important factor when designing buildings for storage purposes. By choosing STRAMIT Class I roof-decking for their storage accommodation at Canterbury, Staines and elsewhere, Schweppes have killed two birds with one stone. STRAMIT dual-purpose slabs provide both the roof-decking *and* the insulation in one easy operation and at no extra cost. Moreover, in the event of fire, it has been proved that STRAMIT resists penetration and spread of flame and so limits damage. Full technical data available on request. Ask for Technical Brochure STC 1004 (or see Barbour Index File No. 225 or Gorco Bureau Section 20/14).

Visit us at the BUILDING EXHIBITION Stand 298 Row K

have

STRAMIT
INSULATED
ROOF-DECKING

STOCK SIZES:

2 in. thick × 4 ft. wide × 6, 8, 9, 10 and 12 ft. long

Special sizes made to order

STANDARD 2" SLABS basic price, delivered — OBTAIN PRICE LIST, TODAY! **1/-** SQ FT

STRAMIT BOARDS LTD., COWLEY PEACHEY, UXBRIDGE, MIDDLESEX. Telephone: West Drayton (WE3) 3751 (10 lines)

One of the TOMO Group of Companies

Reinforced Concrete for flexibility in design



BRC

Specialists in Reinforced Concrete Design and Suppliers of Reinforcement

THE BRITISH REINFORCED CONCRETE ENGINEERING CO. LTD., STAFFORD

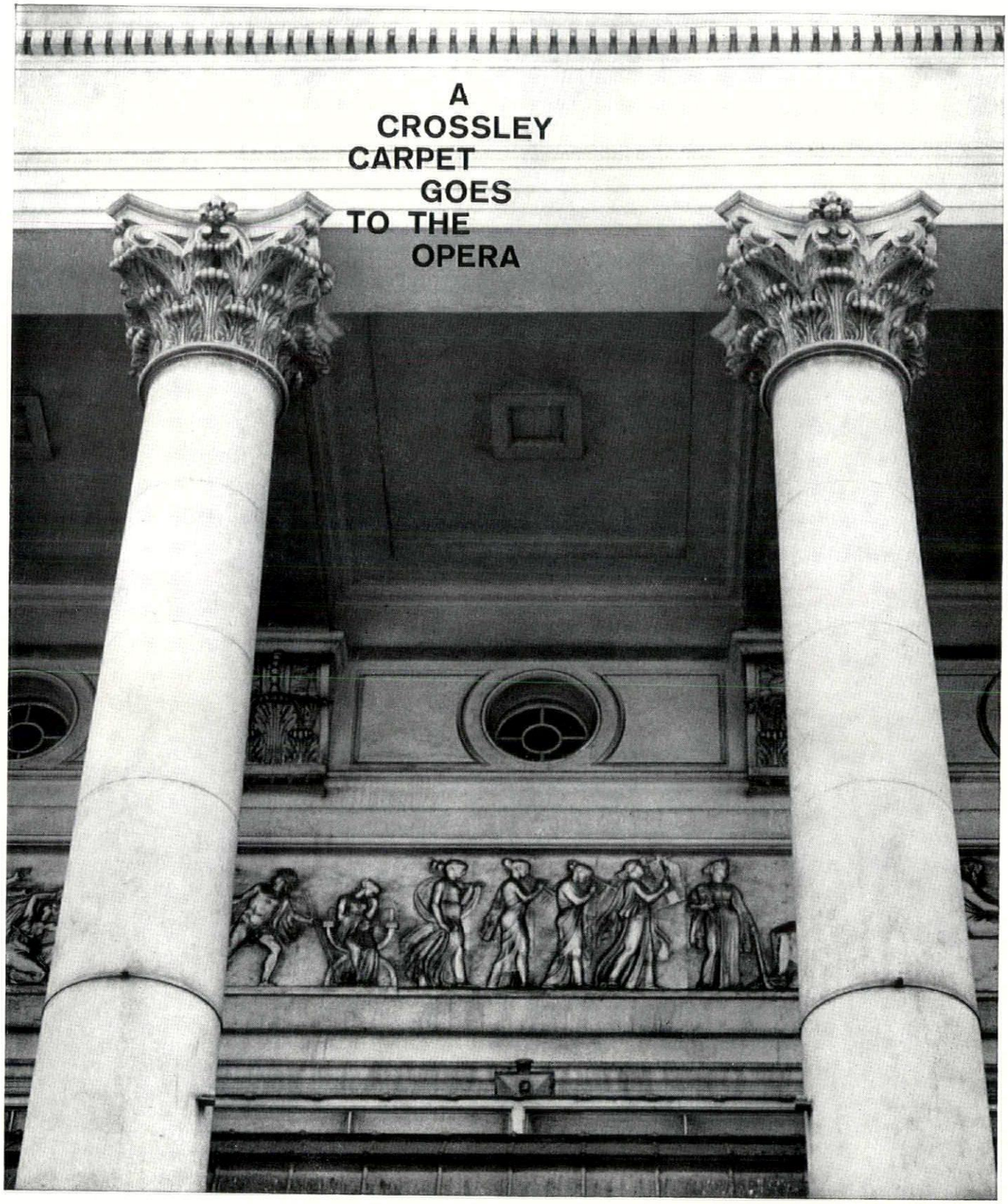
London, Birmingham, Bristol, Chelmsford, Leeds, Leicester, Liverpool, Manchester, Newcastle, Cardiff, Glasgow, Dublin, Belfast, Bulawayo, Calcutta, Johannesburg, Lagos, Singapore, Vancouver.

Export Sales: 54 Grosvenor Street, London, W.1

M·W.1077



THE ARCHITECTURAL REVIEW VOLUME CXXXIV NUMBER 802 DECEMBER 1963 FIVE SHILLINGS

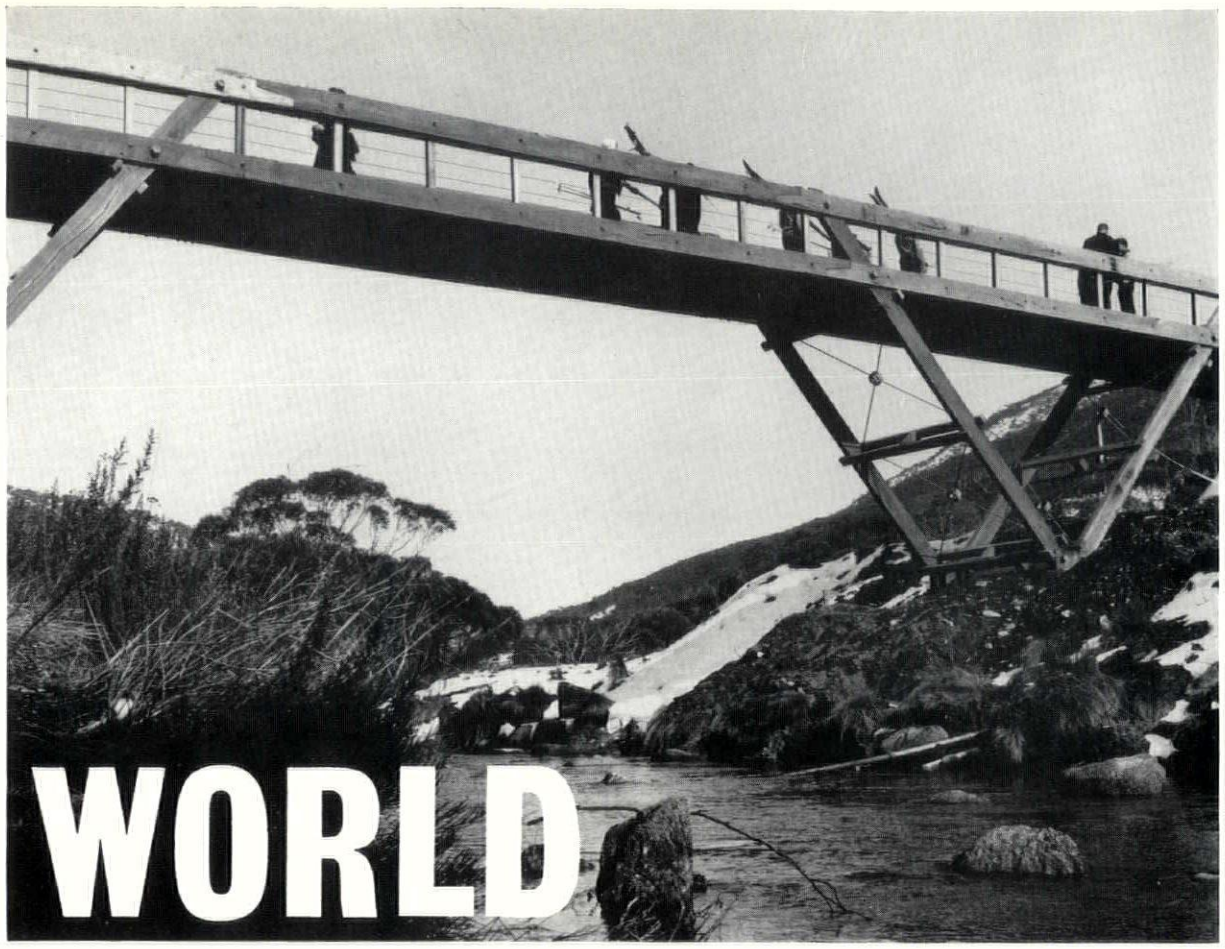


The Opera House, Covent Garden — carpeted throughout in a design specially created by the late B. C. Baltazanos and woven in Crown Saxony Wilton. Crossley Carpets are a frequent choice for theatres, hotels, restaurants and office buildings alike. For information about design, colour and quality, send for full details of the Crossley Contract Service*. Crossley Carpets are available through leading contract furnishers at home and overseas.

Showrooms in Halifax, London, Birmingham, Manchester, Liverpool, Leeds, Newcastle, Glasgow, Belfast & Bristol

CROSSLEY CARPETS

John Crossley & Sons Ltd., Dean Clough Mills, Halifax, Yorks.



1

SKIERS' BRIDGE

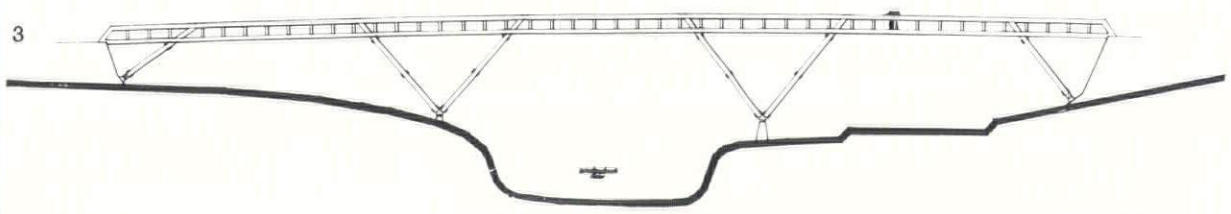


Cricket and surfing may still be the chief Australian sports, but it is fast becoming a great ski-ing country, and the characteristic buildings and installations of the sport are becoming an established part of the scenery of the Australian Alps. Since the area is still in process of being developed from scratch, however, it needs basic engineering structures as well as ski lodges and chalets, and notable among such structures is the new wooden bridge over the Crackenback river, 1, at Thredbo, connecting the site of a new hotel with the terminal of the ski-lift on the other side of the valley, 2. Designed by Clarke Gazzard and Yeomans (the planning consultants for Thredbo) and the engineers Miller, Milson and Ferris, the bridge consists essentially of eight continuous beams (top and bottom twinned rails of the balustrade on either side) carried on four raking supports, 3, which collect the loads from well-distributed points along the 180 ft. span, and deliver them to the limited footings available. The architects selected this particular structural form and material out of seven alternatives because (among other things) of 'the feeling that it was generally more sympathetic to the character of the area.' One takes it that 'character' here does not refer to the local architecture for, among the customarily featuristic bric-a-brac that flanks the Crackenback, only Harry Seidler's well-known ski-lodge, just visible at the right in 4, is of an idiom or quality of architecture that is comparable with the bridge.

4



3



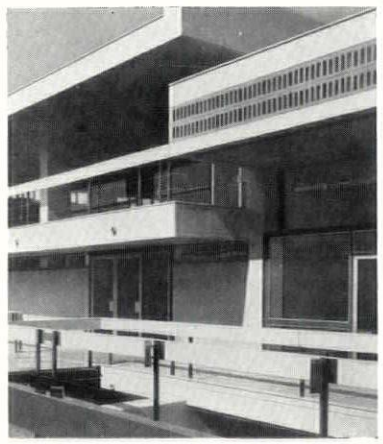
LEPETIT

Factory Social Block near Naples

It is interesting to compare the Gillette social block which appears elsewhere in this issue (pages 411–416) with the roughly similar installation which has been added recently by Indrizzi and Leoni to the Lepetit pharmaceutical plant at Torre Annunziata outside Naples, 5. Although the Lepetit scheme is in a free-standing block separated from the main plant by a road, the style of its overall conception is strikingly English (or at least North European) and its detailing even more so, 6. Most notably, the use of a free-flying elevated pedestrian walkway to connect the various parts of the social services block, 7 and 8, and link it with the rest of the plant chimes in



5



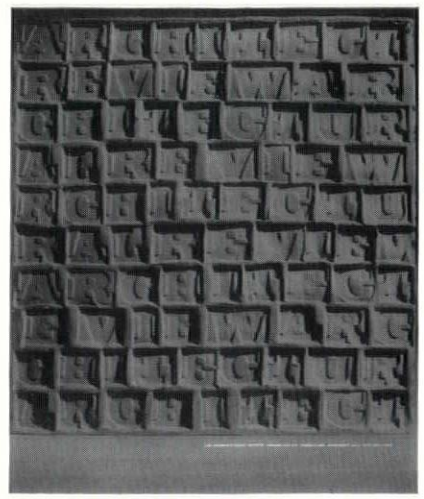
6



7

ACKNOWLEDGMENTS

COVER: Toomey Arphot. WORLD, pages 379–382: 1, 2, Geoffrey Lee; 4, Don Gazzard; 5–9, *L'architettura*; 10–14, *Progressive Architecture*; 15–19, *Architectural Forum*; 25–32, *Japan Architect*. VIEWS AND REVIEWS, pages 383–385: 1, Associated Press. FRONTISPIECE, page 386: Robert Freeman. TWO FINNISH CHURCHES, pages 394–399: 1, 5, Pietinen; 2, 3, 7, 10, 11, Richards Arphot; 4, Lucien Hervé; 6, 8, 9, Eva Ja Pertti Ingervo. CRITICISM, pages 400–407: 1, 2, 5–8, 10, Henry A. Wood; page 402, *Architectural Forum*; page 406, Walter R. Fleischer. INTERIOR DESIGN, pages 411–416: 2, 3, 5, 10, 11, John Maltby; 1, 4, 6–9, 12–14, Toomey Arphot. EXPLORING EYE, pages 417–419: H. W. Krabel. AUGUSTUS EGG, pages 420–422: 1, City of Manchester Art Galleries; 2, City Museum and Art Gallery, Birmingham; 3, Tate Gallery. CIVIC BUILDINGS, SCUNTHORPE, pages 423–426: Gerard Studios. LIBRARY, JESMOND, NEWCASTLE-UPON-TYNE, pages 427–428, Toomey Arphot. MISCELLANY, pages 431–438: Exhibitions (painting and sculpture), 4–6, Kim Lim; 7, 8, Tudor Photos; (New York World Fair) Robert Freeman. Shrubs, Donald F. Merrett. Architecture, Stewart Bale. Design, Galwey Arphot. LOOK OUT, pages 439–440: 3–6, 9, Nairn Arphot. CRITICISM, page 442: Toomey Arphot. SKILL, pages 443–446: 6, Gareth; 8, 9, D. C. Morris. THE INDUSTRY, pages 448–452: 4, Studio Edmark; 5, James Mortimer; 7, Gordon McLeish; 8–10, Publicity Designs (Clayton); 11, Apex Photos; 12, Robert Dawson.



This month's cover *shows a ceramic tile made by Tarquin Cole by pressing wood letters (such as those used in Victorian poster-printing) into the soft clay before firing.*

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER, SW1 WHITEHALL 0611 FIVE SHILLINGS

VOLUME 134 NUMBER 802
DECEMBER 1963

SUBSCRIPTION RATE:—*The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada $10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto, via V. di Modrone 18, Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of 27s. 6d. Postage 2s. 9d. extra on the completed volume.*

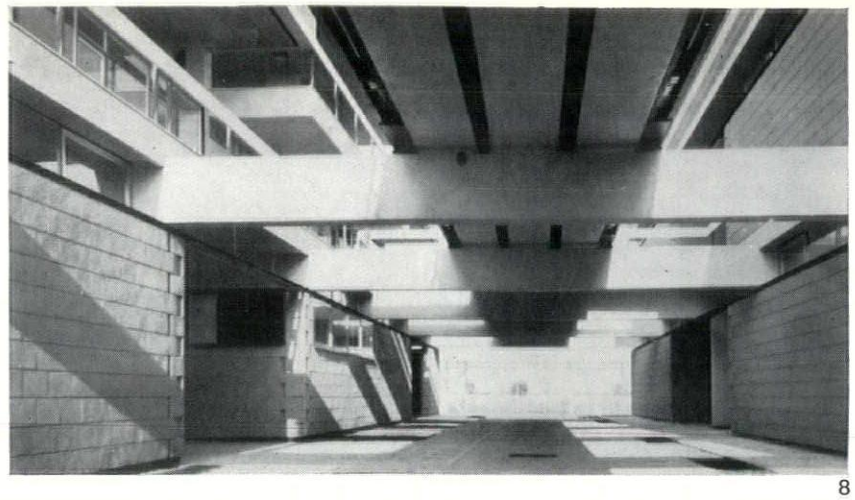
Directing Editors	*J. M. Richards, Nikolaus Pevsner, H. de C. Hastings, Hugh Casson*
Executive Editor	*J. M. Richards*
Assistant Executive Editor	*Reyner Banham*
Assistant Editor (Production)	*William Slack*
Features Editor	*Kenneth Browne*
Technical Editor	*Lance Wright*
Assistant Editor (Counter Attack)	*Ian Nairn*
Staff Photographers	*De Burgh Galwey, W. J. Toomey*
Advertisement Manager	*George Dunn*

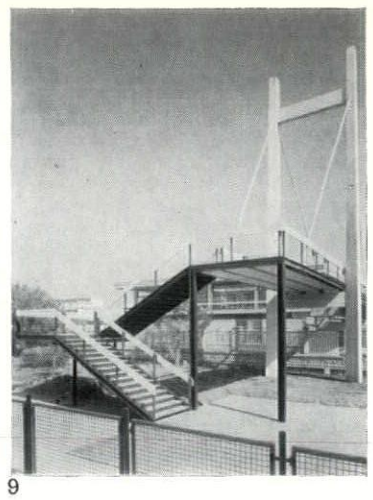
CONTENTS

379 World
383 Views and Reviews
386 Frontispiece
387 Green Ways: *Michael Dower*
394 Church at Hyvinkää: *Architect, Aarno Ruusuvuori*
Cemetery Chapel at Vatiala: *Architect, Viljo Rewell*
400 Criticism: Visual Arts Centre, Harvard University: *Peter Ambler*
408 Preview
A Satellite Town for Monaco: *Architect-planner, Manfredi G. Nicoletti*
411 Interior Design
Factory Social Block, Isleworth: *Designers, Conran Design Group*
417 Exploring Eye
Pottery in Cairo
420 Augustus Egg: *Peter Ferriday*
423 Civic Buildings, Scunthorpe: *Architects, Charles B. Pearson, Son & Partners*
427 Library, Jesmond: *Architects, Williamson, Faulkner Brown & Partners*
429 Townscape
Tricks of the Trade, 2:
Little Cloister, S.W.1: *Kenneth Browne and Ian Nairn*
Miscellany
431 Exhibitions
435 Shrubs
436 Architecture
437 Design
439 Look Out
441 Criticism: this month's buildings
443 Skill
Thermal Insulation in Building: *Iain Stewart*
448 The Industry
452 Contractors, etc.

LEPETIT

well with current English ideas about communication and circulation, even if the bridge which spans the road, 9, looks more Germanic. Whatever the origins of these usages, however, they are relatively unimportant alongside the status of the whole complex as a contribution to Italy's 'New South,' and to the direct social and industrial intervention that seems to have more to offer the South at the moment than politics can—except that, given the present status of British social architecture in the eyes of progressive and welfare-minded Italians, styling *all'Inglese* may be important as a means of communicating a serious purpose and disinterested intentions.

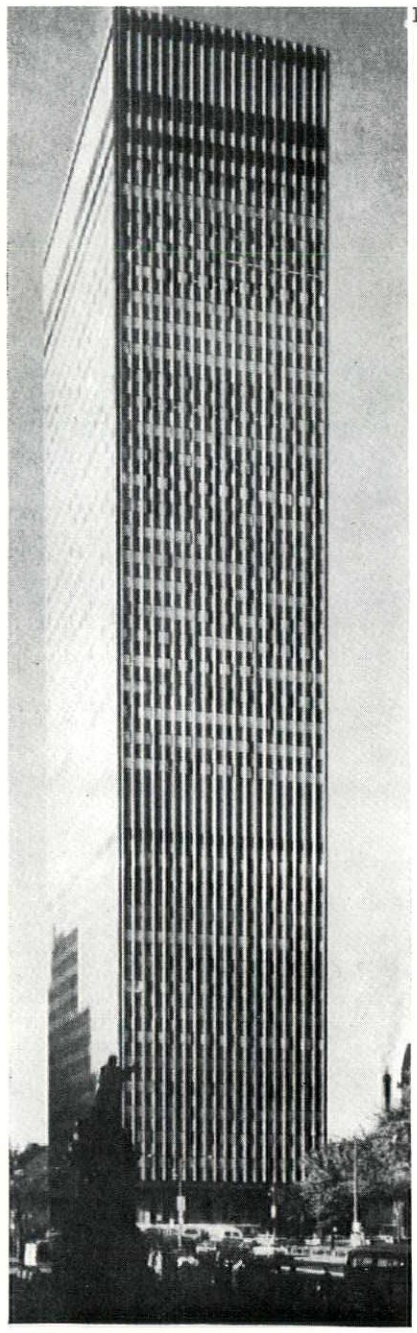




8 9

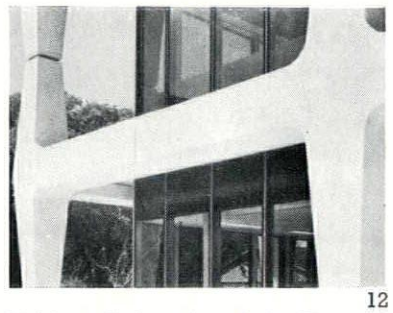
SOPHISTICATED TOWERS

The present state of the Skyscraper in its native land



13

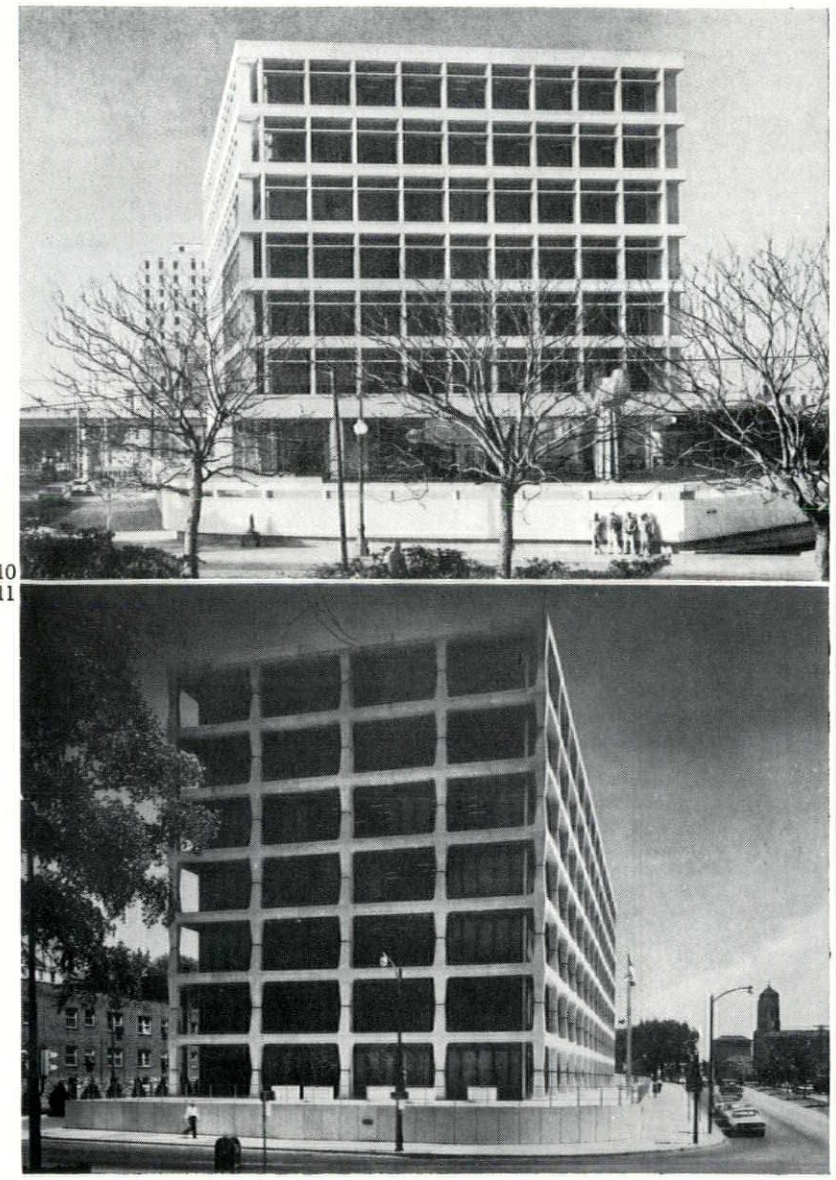
Inevitably, the focus of attention and discussion in US architecture has become skyscrapers once more; whatever diversions into university buildings or domesticity may occasionally draw attention away from skyscrapers, it must come back, for this building type above all others is America's own, as surely as jazz is, or comic strips. But since the last wave of hard talking and practical thinking, at the beginning of the nineteen-fifties, the language of architectural discourse has become more sophisticated, and so have the towers themselves. Characteristically, *Progressive Architecture* headed a recent feature (September 1963) *Peristylar Structures Pre-cast by SOM.*



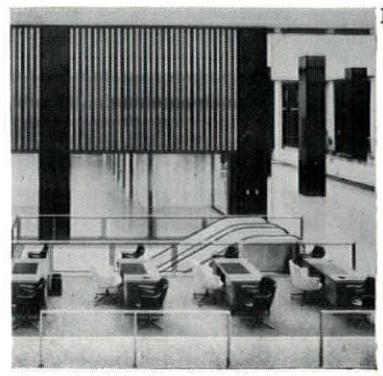
12

Neither of them (two John Hancock office blocks, one in New Orleans, 10, the other in Kansas City, 11) is strictly a skyscraper, but the Scullyish term *peristylar* could, with equal accuracy, be applied to a number of very tall structures on hand with SOM and other offices, some of which appear in a study of the evolution of the high-rise office building, by Robert P. Sitzenstock which appears later in the same issue. The sophistication of the two Hancock buildings is manifest, particularly the Kansas city exercise in the idiom, 12, of the Banque Lambert (which is reported to be nearing completion, see AR, October 1959).

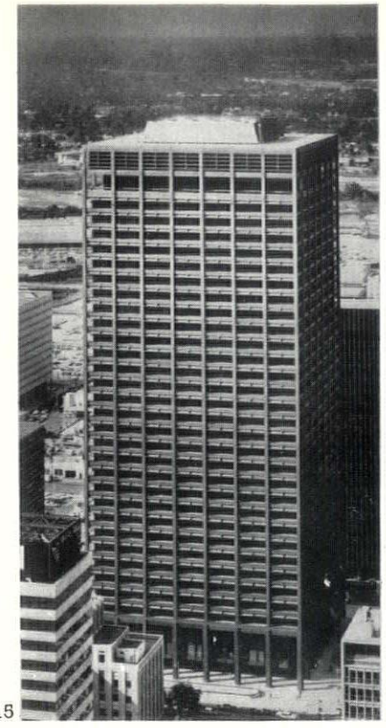
Although this same issue does illustrate and describe one tall building at some length, it is neither by SOM nor in the US, but Peter Dickinson's slim and sober shaft, 13, for the Canadian Imperial Bank in downtown Montreal. With its ample spaces, 14, and restrained slate facings, this, too, is a sophisticated skyscraper, but in employing a curtain wall it stands aside from the current SOM-inspired fashion for free-standing structural grids ('peristylar,' if *P/A* insists) with the glazing set back from them. For this, *in excelsis*, one must turn to another southern work by Skidmore's, the Tennessee Building in Houston,



10 11



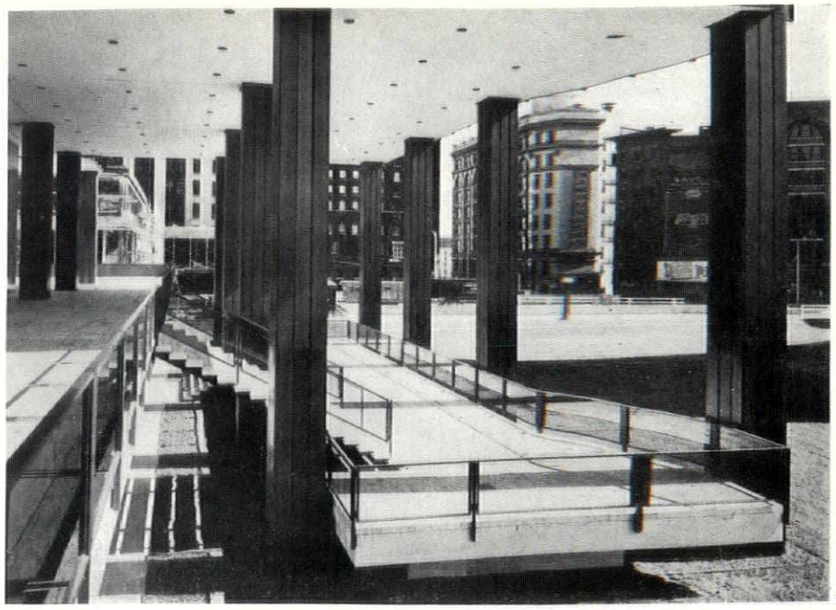
SKYSCRAPERS



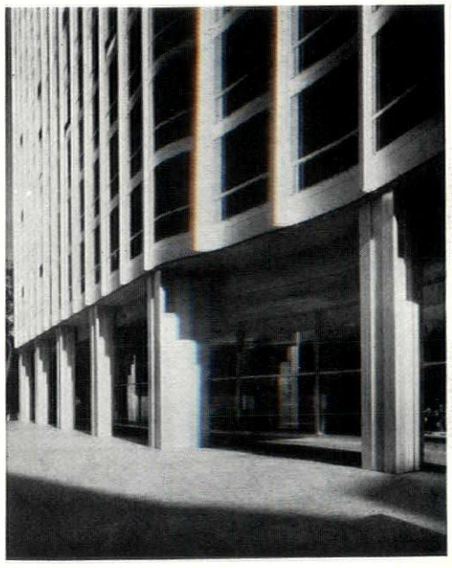
15

Texas, 15, in which the deep grid, 16, is used for sun-control, as well as for purely architectural reasons. However, this is a sophisticated tower for other reasons as well—most notably a further step toward the rationalization of the relationship of tower to public plaza. Instead of appearing as a clip-on accessory (Lever House) or an old-fashioned forecourt (Seagram) the plaza becomes, at the Tennessee, an undercroft to the tower itself, and is made to penetrate deeper under the block by the use of gigantic suspended mezzanine, 17, over an exiguous entrance hall.

A full description of this design will be found in *Architectural Forum*, also for September, together with a fully illustrated tribute to the father of skyscraper sophistication, Mies van der Rohe. Among all these three-dimensional structures he may look a bit of a square nowadays, but even a cursory examination of, say, the entrance arrangements, 18, of his Charles Centre building in Baltimore, shows that he has nothing to fear from the competition. The detailing seems to get more and more refined, yet more and more generous (another sample, 2400 Lakeview, Chicago, 19) as time goes on, and it looks as if we can still believe that, even at his present ripe age, the best is yet to be.

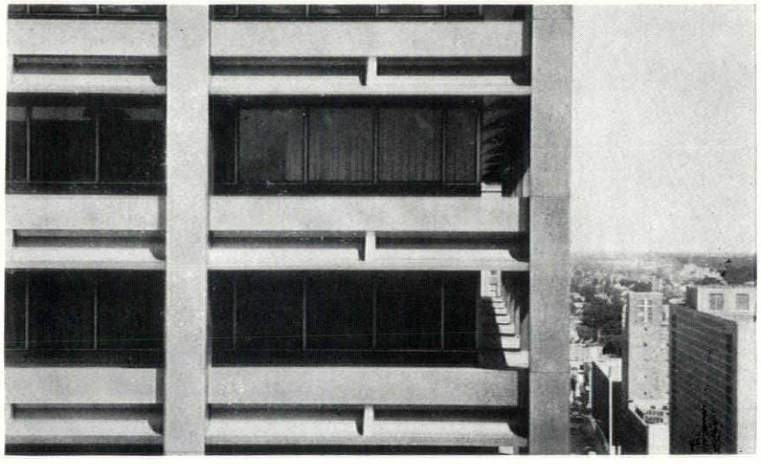


18



19

16



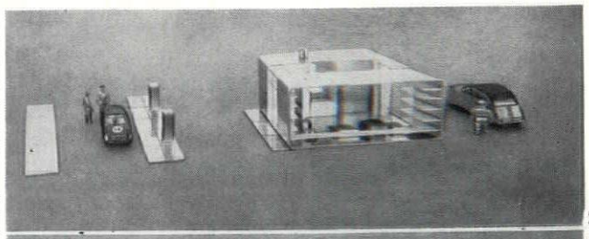
17



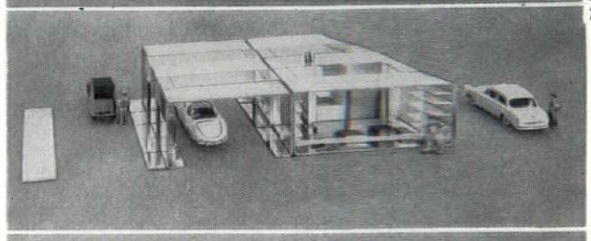
TANK-STELLEN-SYSTEM

An interesting contribution to European thinking on the ever-present problem of motorway architecture is provided by a model study undertaken by Herbert Ohl and Bernd Meurer of the Hochschule fur Gestaltung at Ulm. The exercise, described in the current issue (8/9) of the *Ulm Zeitschrift*, called for a simple system of structural units on a module that would be well adapted to a filling/service station arranged on a deep site behind a narrow frontage to the highway. The solution, 20, 21, 22, 23, provides for standard room units, each effectively a section of square tube 'on the scale of Man,' which are to come to the site fully equipped to serve whatever their designated function may be, and needing no site work beyond bedding in a prepared subsoil and making connection to mains services. These room-tube sections, though open ended, are without provision of windows, and daylighting (where a number of units are joined together) is to be given by interpolating room-tube sections which are fully glazed at sides and top, the alternations of solid and transparent giving the project an aspect so characteristic that any oil company that took it up could practically dispense with trademarks and logotypes.

Although the *Zeitschrift* does not make it clear whether any immediate commercial application of the scheme is envisaged, it is clear that the model shown here is so exactly in scale with the toy cars that adorn so many Ulm interiors in serried ranks that a smart toy manufacturer like Faller who took up this *Tankstellen-System* at its present size would appear to have a ready-made market.



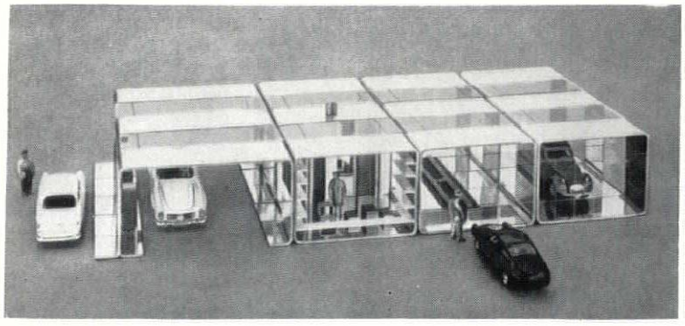
20



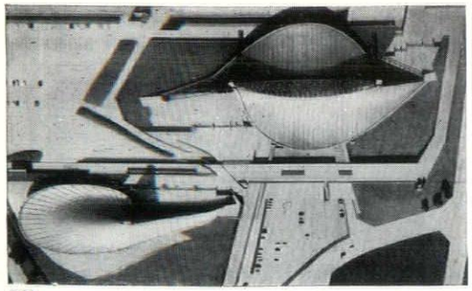
21



22



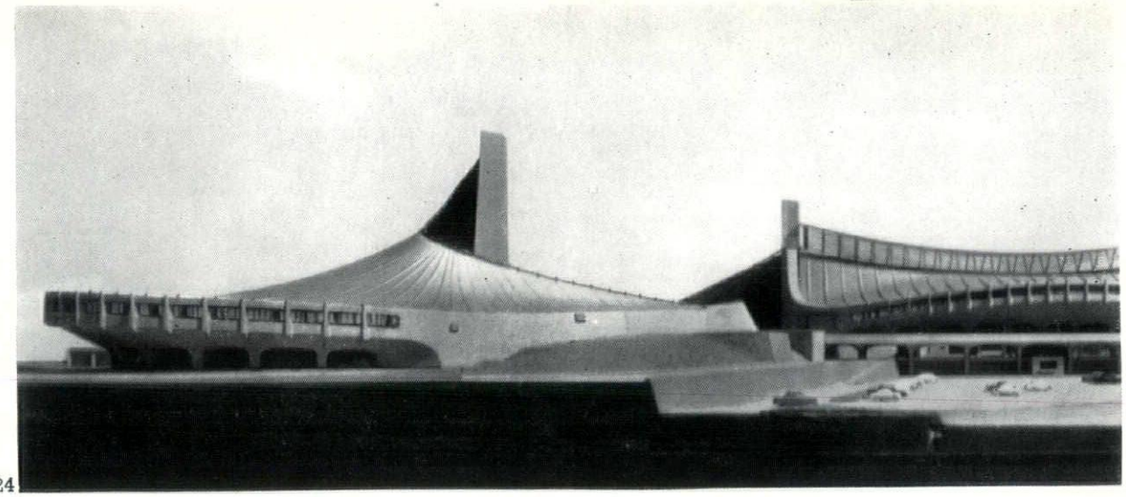
23



25

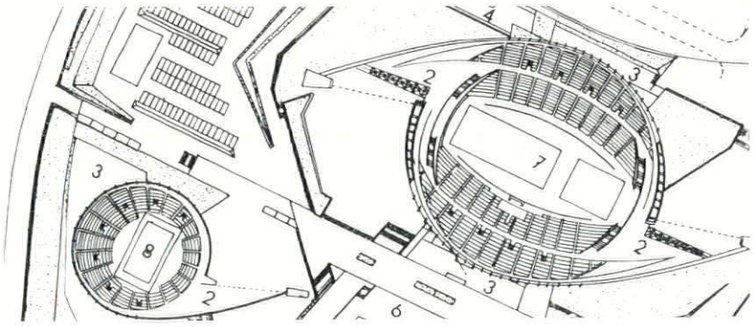
TOKYO OLYMPICS

A building by Kenzo Tange for the Tokyo Olympics is, presumably, as inevitable as a Nervi building for the Rome ones, but the form it has taken, 24, is a good deal less predictable than Nervi's. Reference back to Robin Boyd's article in last month's AR suggests that the nearest terms of comparison are Saarinen's hockey rink and Goff's Bavinger house, though other views of the two structures make this less sure, 25. Functionally both buildings are gymnasia, though a close view of the planning arrangements suggests that the functions are going to be pretty loose fits inside these handsome shells, 26.

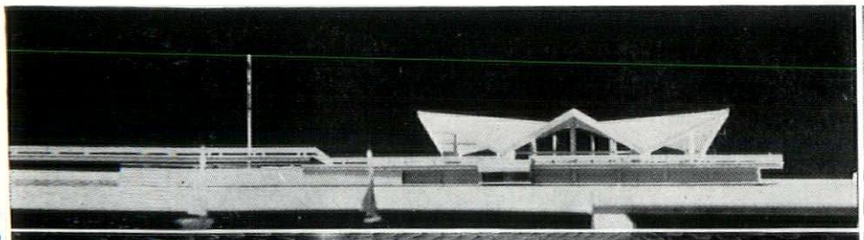


24

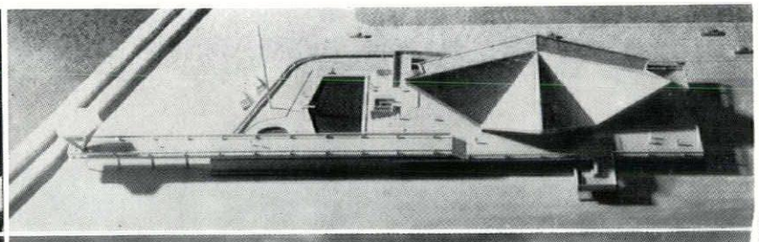
However, Tange is not to be the only starter in the architectural Olympics. Other contenders include Taniguchi, with a yachting centre, 27, 28; the national stadium, designed by the Ministry of Construction; Masachika Murata with a new municipal swimming pool, 29, and a track stadium in Komazawa Park, 30; Ashihara with another gymnasium, 31, also in the park, and Matsuda and Hisata with a neat riding school, 32. Other projects for the Olympics previewed in *Japan Architect* for June this year included, with equal inevitability, new motor roads and a monorail.



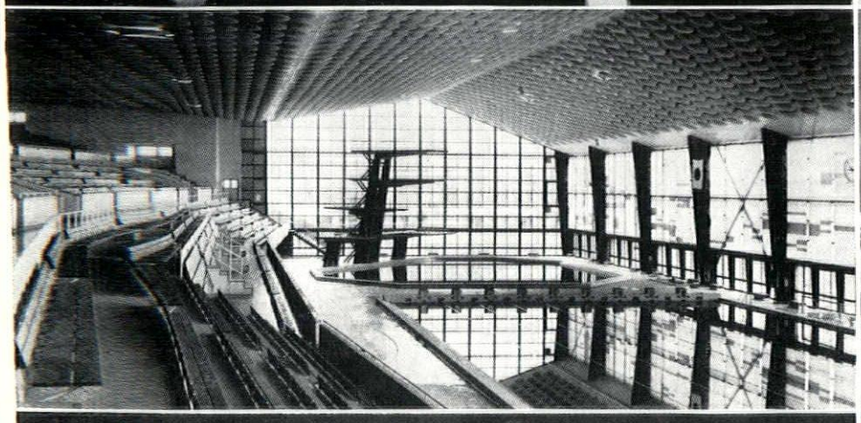
26



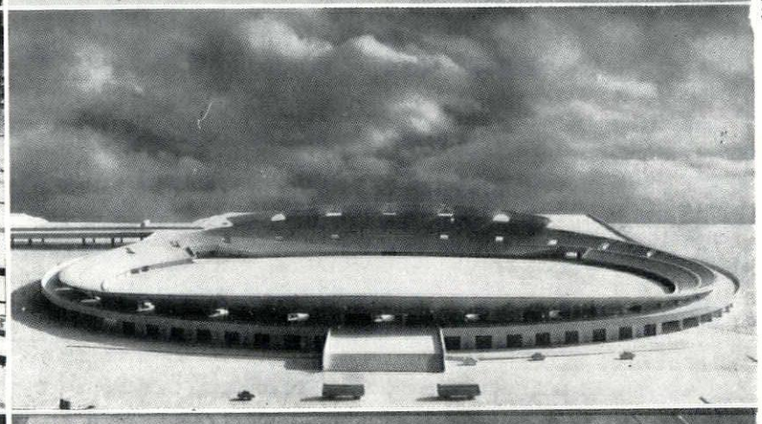
27



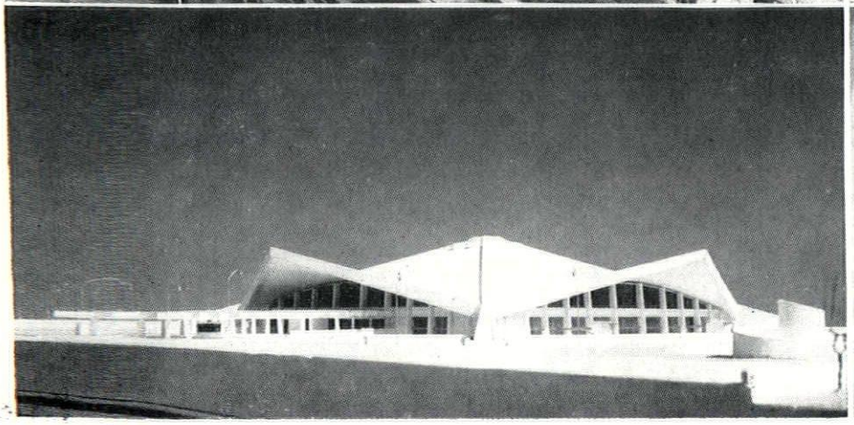
28



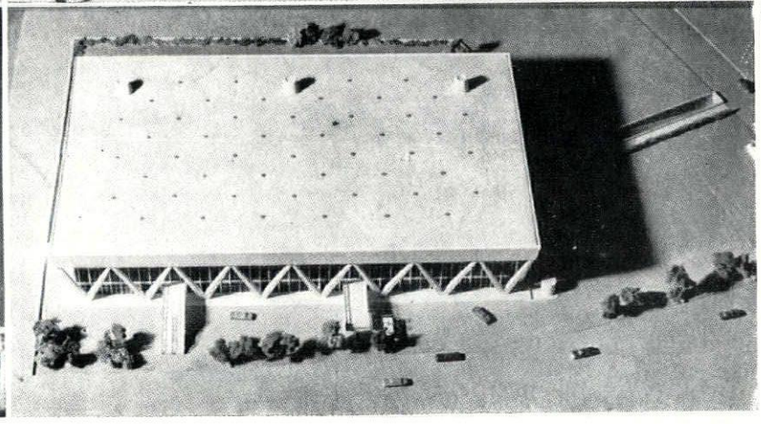
29



30



31



32

views and reviews

MARGINALIA

LEEDS REPORT II

In addition to the architects' interim report on the Leeds University development plan, mentioned in last month's Marginalia, another interesting document to emerge from the University's continuing expansion programme is the Report made to the House and Estates Committee after a delegation had visited fifteen Continental universities in seven countries studying student accommodation. It gives, for the first time since the present interest in student housing grew up, a comprehensive picture of the European student in his residential setting, notes the high proportion who still live in digs, but is primarily concerned with the provision, management and development of hostel blocks.

A significant proportion of these prove to be promoted and administered by student bodies themselves, not by the university authorities; are for mixed sexes and married students without segregation; group the occupants in units of between twelve and twenty to a floor or corridor with their own dining/kitchen accommodation as a social focus, and leave them to run their own lives to an extent that is practically unknown in Britain, but is workable where the student body is, on average, two or three years older than over here. Apart from these generalized findings, there are a number of detailed observations on topics as various as the operation of the Egmont Peters Kollegium at Copenhagen, which earns itself some £25,000 per annum by functioning as an hotel out of term-time, the installation of telephone call systems and the provision of miniature studies which could be rented by students whose lodgings were unsatisfactory. There are also some very tough strictures on the malfunctioning of the Brazilian hostel in the *Cité Universitaire* in Paris, but in spite of this the last word is left with Le Corbusier—two paragraphs quoted from the text that explains the attic-studio project in *Vers Une Architecture* (illustrated in Michael Brawne's article in AR, October, 1963). These two paragraphs, and the sketches that go with them, seem to have suddenly established themselves as the *beau idéal* of British student housing.

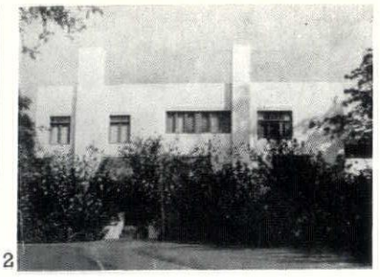
NEW OBJECTS IN THE LANDSCAPE

It is often surprising what the English landscape can absorb. When it was decided to site the Early Warning Rocket Defence Station at Fylingdales on the Yorkshire Moors, there were violent protests against its intrusion into an area of wild landscape, which was also part of a National Park. It is no doubt right that the National Parks should be regarded as sacrosanct, and from this point of view the protests were justified, but now the Station, shown in 1, has been completed, it can be seen that, from the landscape point of view, it has positive qualities and furnishes a quite exhilarating example of the additions science is making to our aesthetic experience.

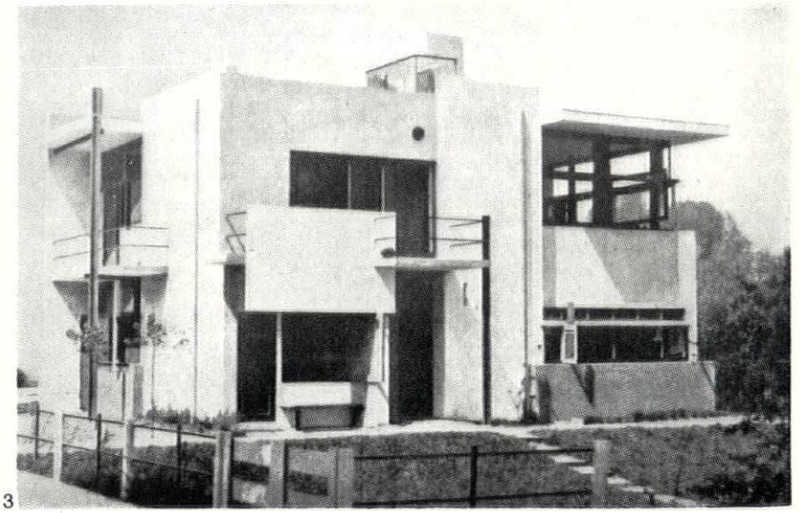
The clean-cut spheres, linked by a ribbon-like passageway, have something of the dream-like quality of Paul Nash's vision of objects in the landscape, and the surprise they give us may recall the fuss that was created over a century ago when the railways were first carried across the English countryside. They were regarded as intrusive monsters, but were assimilated over the years so that now their metalled ribbons and the lines of embankment and cutting are part of the traditional pastoral scene. A difference, perhaps, is that they brought little litter with them, whereas the disfiguring element in such modern installations as rocket stations and power stations is not so much the buildings themselves as the wirescape, roadways and fencing with which they tend to surround themselves. Their scale, too, is a problem. Railways and (if they are well engineered) motorways, can just be absorbed by the diminutive English landscape. Installations like the one illustrated, along with atomic power stations and the like, need wider horizons; and this again raises the problem that, although the contrast between these tame objects and their wild setting has its own aesthetic value, utter wildness is of more value still and some tracts of country must be allowed to remain where this can still be achieved.

MODERN MONUMENTS UNDER THREAT

Although the Robie House committee and the Chicago Heritage Committee have both been able to report solid (if painfully slow) progress over the last few months, the conservation picture in the US is still far from cheerful—at least as far as monuments of the modern movement are concerned. The latest major work to come under threat is Irving Gill's Dodge House in Los Angeles, 2, a work of 1914 and one of the outstanding examples of pioneering modernism on the West Coast. The threat comes in what is now almost a standardized form—the house is to pass out of public ownership because the local authority no longer needs it, and the site is being re-zoned so that redevelopment can take place—and, as usual, not a word of this became known to the public or the local conservation organizations until after the decisions had been taken. *Arts and Architecture* for October, 1963, has a justifiably bitter editorial on the subject.

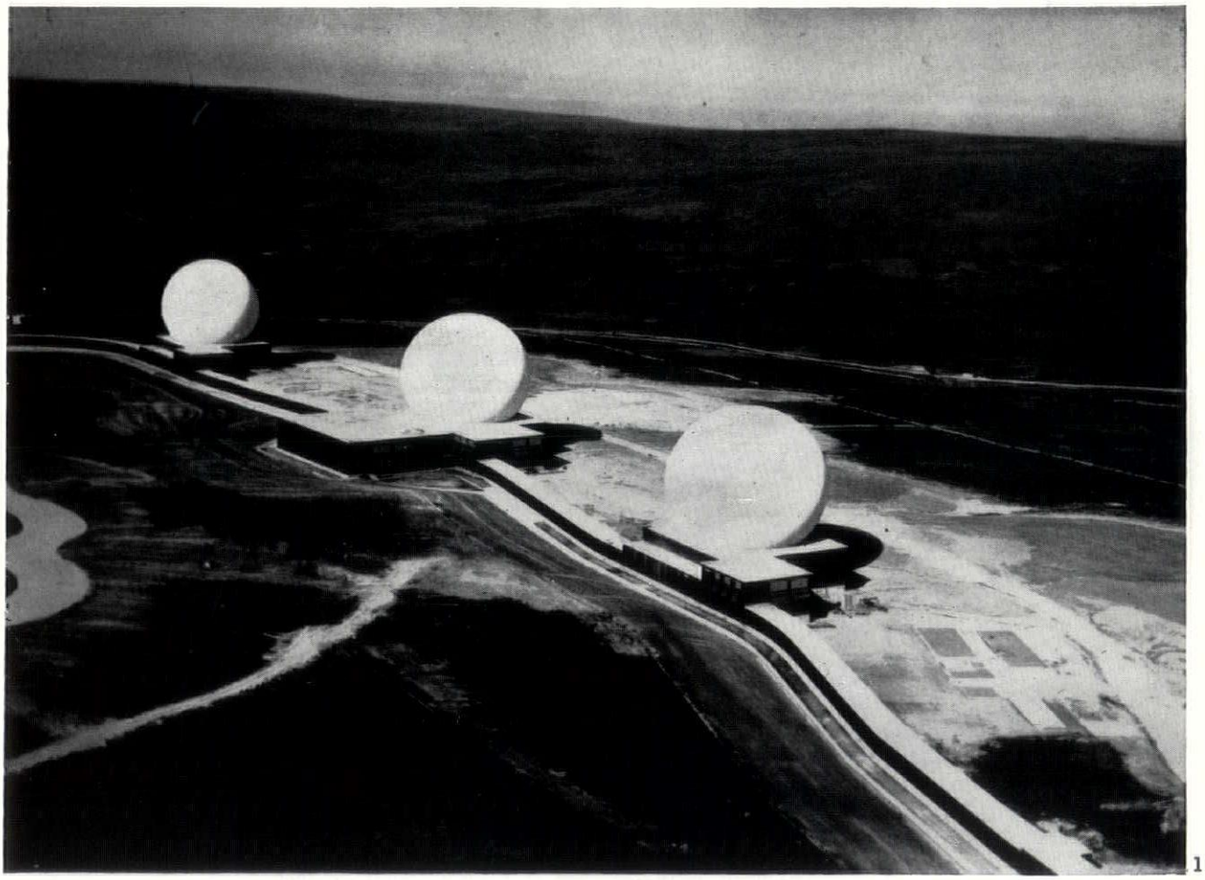


2



3

Europeans need not smugly assume that things are managed better over here, however. Once again, it seems, Rietveld's famous Schröder house at Utrecht, 3, is under threat, and from the same source as previous threats to the house and its environs—road widening. As all visitors to the house will know, a motor-road has already obliterated all but a fraction of the original garden in front of the house, and now fresh proposals for further



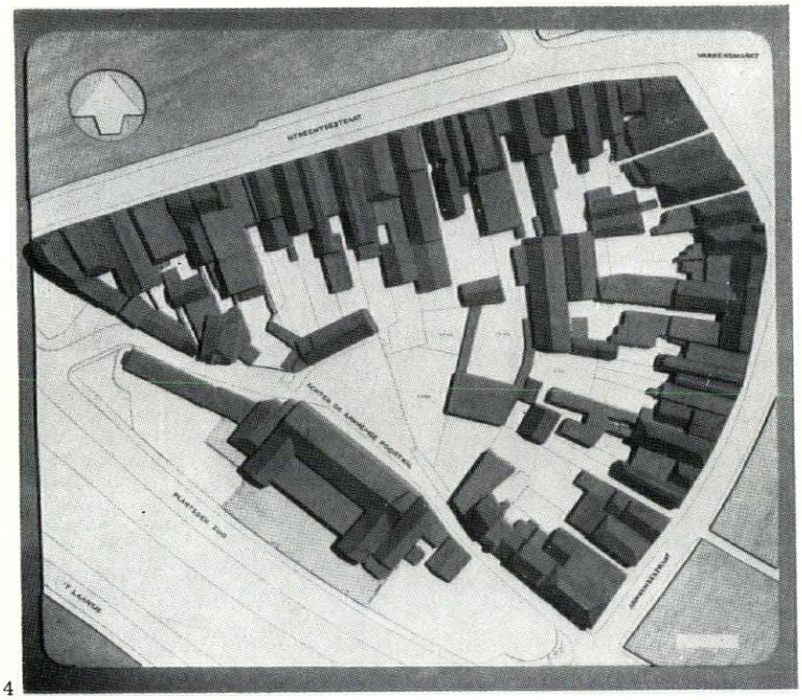
1

roadworks may involve the demolition of the house as well. Although the alarm has already been sounded in Holland, the fate of this key building in the history of Modern Architecture (it was built in 1924) does not concern the Dutch alone—like the Robie House, it is of world significance.

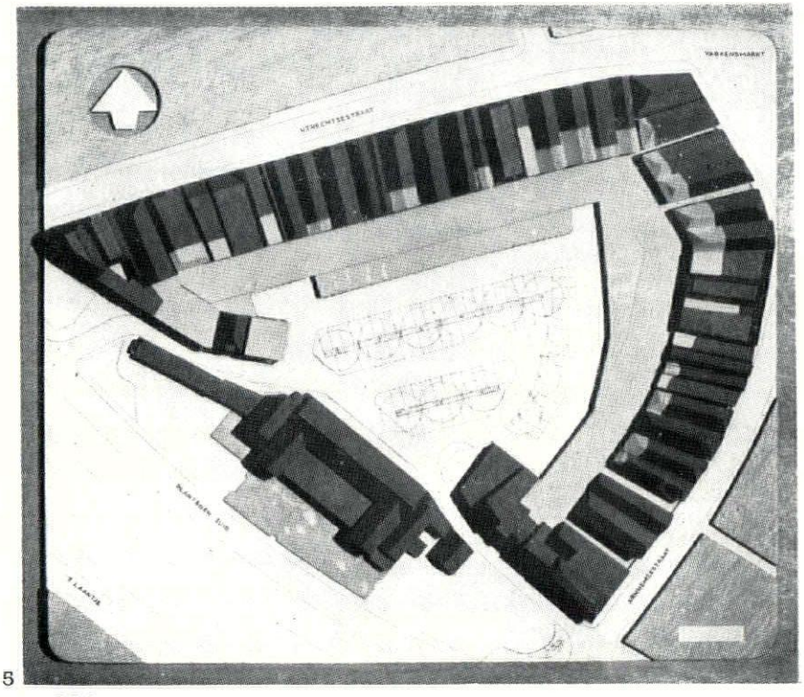
FULLER ON EDUCATION

Among the half-dozen or so books by Buckminster Fuller currently in process of publication or lately published (including the legendary *Nine Chains to the Moon*) is one which has the added interest of bearing directly on many of the topics touched upon in the Universities special issue of the REVIEW (October, 1963). Under the title of *Education Automation* (Southern Illinois University Press, $2) it displays its author skipping about—as usual—over half a dozen technologies, sciences and philosophies with a nonchalance unknown since the Encyclopaedists, but its hard core of argument is the possibility of applying radical mechanized teaching techniques at SIU's new Edwardsville campus (World, October, 1963).

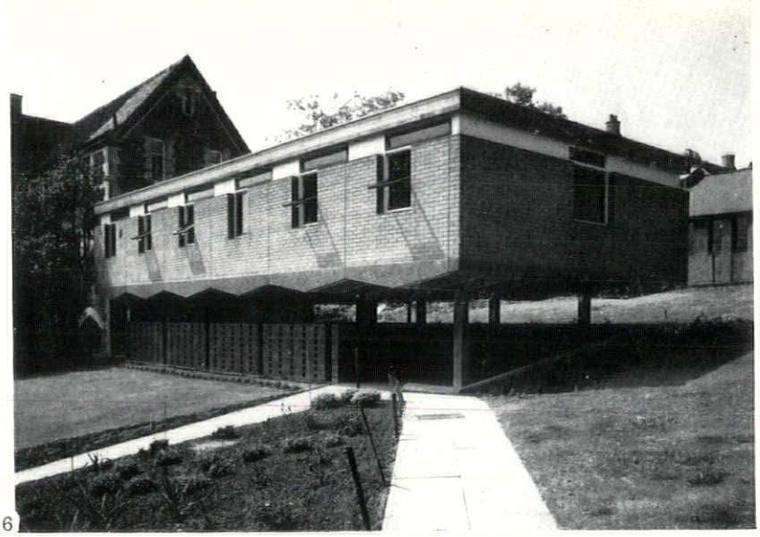
What Fuller has to say on this subject, and on the wider context in which machine teaching operates, is full of sharp and characteristic perceptions—he is justifiably cruel about the way so much modern school education has declined into a form of sophisticated baby-sitting, and on the impropriety of the schoolroom that results as a place for study. He cites startling instances from Dr. Omar Moore of the ability of pre-kindergarten infants to master machines as complicated as the typewriter, and from his own observation of the ability of children to concentrate on the patterns displayed on the TV screen. He foresees the disappearance of the simultaneous curriculum, where all the students in a particular class are taught the same material at the same time, and its replacement by machine memories that can teach the individual student what he needs when he needs it, and the rise of the properly prepared, rehearsed and edited taped lecture which will save teachers the drudgery of having to repeat substantially the same material not just year after year, but several times in the same year under present conditions of academic overloading. This last point leads him on to the main conclusion of his discourse: that the function of machine teaching is—in the words of his subtitle—'freeing the scholar to return to his studies.' It will be recalled that this was one of the objectives of mechanized teaching put forward in the October REVIEW.



4



5



6

The public schools have not the same reputation for architectural enlightenment as the local authority schools, but here is the first fruit of a forward-looking, long-term building programme by one of them, 6. Charterhouse is successively remodelling each of its eleven boarding houses, and hopes to complete the programme by 1972, the centenary of its move to Godalming. This is an extension to one of the houses, Girdlestoneites, containing ten study-bedrooms with bicycle-storage under: a precast concrete structure with brick walls and a timber roof. Work has begun on another house and a temporary house (composed of 82 single-storey prefabricated units) has been erected, into which the occupants of each house can move in turn during the remodelling process. Architect, James Dartford.

TWO DUTCH TOWNS

Krommenie, the well-known Dutch linoleum company, have recently devoted two issues of their periodical *Linoleumniews* (Nos. 17 and 21) to studies of two small towns of particular town-planning or townscape interest; the New Town of Emmen (No. 17) and Amersfoort (No. 21). Both have excellent English texts (by R. Blijstra) that afford model studies of the urban problems involved; Emmen's in growing from a large village to a small town that aims to keep something of its original village relationship to the surrounding countryside, Amersfoort's in growing over the centuries from a fortified mediaeval centre to a nineteenth-century railway junction and on into the traffic problems and congestion of the twentieth. The town has an ancient core of considerable interest, but with the usual problems of over-building, which it is proposed to alleviate by clearing out the centres of blocks of buildings to provide parking and service access, 4 and 5. An inner ring road has been created by filling in part of the defensive moat, but the road, as Blijstra points out, is too wide in places, but all in all the picture he presents of the planned development of Amersfoort is an encouraging one, and suggests that there may be lessons there to be studied by British towns of a similar history and present population.

STUDY-BEDROOM FURNITURE

The design of the furniture by Olivex Ltd. illustrated on pages 300 and 302 of the October AR should have been ascribed to Geoffrey D. Harcourt, not to Dennis Harcourt.

CORRESPONDENCE

DOBSON OF NEWCASTLE

To the Editors.

SIRS,—During research into material relating to John Dobson and Richard Grainger—the reputed designer and builder of central Newcastle between 1824–39—we have been impressed by the absence of any evidence that Dobson was connected with Grainger and Grainger's office architects in the designs of the buildings in Grainger Street or in Clayton Street—or, indeed, in any street excluding Eldon Square.

We believe that the bulk of Dobson's designs and Grainger's office plans have been destroyed. M. J. Dobson, in her *Memoir* of her father (1885) admits that he left 'no notes or memoranda that were available.' Further, there is a remarkable absence of references to Dobson in the contemporary press. For example, although he was supposedly architect of the New Markets (1835) he is only mentioned as being present at the dinner on October 24, 1835, to celebrate the opening of the Markets. Grainger received all the credit for the Markets in the speeches at the dinner and was guest of honour, replying to the Lord Mayor. None of the speeches mentions

Dobson and, although he is present, he remains silent.

In addition, there is an editorial in the *Newcastle Journal* of June 3, 1837 (Vol. VI, 266) to the effect that '. . . the buildings just adverted to will complete the west side of Grey Street, the entire three ranges of which as well as the western half of Market Street and Grainger Street, it is but justice to say have been entirely designed in Mr. Grainger's office by Mr. Wardle, under Mr. Grainger's immediate directions.' It also mentions that Wardle designed the south side of Shakespeare Street and the Greens the north side.

Just over three years after Dobson's death, there appeared in the *Newcastle Daily Journal* on March 21, 1868, a letter entitled 'Honour to whom Honour is due' and signed 'Veritas,' of which the following is an extract: 'The Butcher and Green Markets with the block of houses enclosing them were designed by the late Mr. John Dobson who also designed that portion of the East side of Grey Street which reaches from Shakespeare Street to Moseley Street.

'The late Messrs. John and Benjamin Green designed the Theatre and surrounding block.

'The present Mr. John Green designed the Salem Chapel and the houses in that block; all the rest of the new streets, including part of Grey Street, Grainger Street, Market Street, Clayton Street, etc., etc., were designed by the late Mr. John Wardle. The Central Exchange was not Mr. Dobson's design but Mr. Wardle's associated with Mr. George Walker.'

This kind of discovery has led us to doubt whether Dobson's influence in Grainger's schemes was as pervasive as tradition has had it. Add to this the paper in *Archaeologia Aeliamic* (Fourth Series XXIX, 1951) by Margaret Jones and Herbert Honeyman which suggests that Thomas Oliver was responsible for the designs of the Leagues Terrace and Crescent area and for Blackett Street, then one finds that Dobson's influence tends to be more confined to the periphery of the city and to individual buildings.

We should consequently be most grateful if any of your readers who have evidence tending to show that Grey Street, Grainger Street, Clayton Street (or, indeed, any other streets) were built according to designs by John Dobson, would send us information, which would be gratefully acknowledged.

Yours, etc.,
LYALL WILKS.
GORDON DODDS.
Newcastle upon Tyne.

HOUSING IN PHILADELPHIA

To the Editors.

SIRS,—While the criticism of Prof. James Marston Fitch of the work of architect I. M. Pei in your September issue was very interesting, it has one serious drawback. The whole discussion of Society Hill in Philadelphia, one of Pei's most significant efforts, is based on an uncompleted work. A major point of the town houses, which are discussed in detail, is to establish a link between the scale of the historic city and that of the three tall towers. Since the towers were not built at the time Prof. Fitch formed his opinion, this opinion is based on fragmentary evidence of the main purpose.

Another important shortcoming of the criticism was that the Philadelphia project is treated as an entity in itself. It is only a small fragment of a total plan for a much larger area and, in my opinion, a proper criticism of it must deal with it as part of a larger totality. Rarely has an architect tried so hard to make a link between the scale of the old and the new. This effort is worthy of continuing study, I think.

Yours, etc.,
EDMUND N. BACON
(Executive Director, City of Philadelphia Planning Commission).
Philadelphia.

BOOK REVIEWS

CALIFORNIAN CASE-STUDIES

MODERN CALIFORNIA HOUSES. *By Esther McCoy. Chapman and Hall for Reinhold Publishing Corporation.* £5.

Be not deceived by the title nor by a summary glance at the illustrations—this is not just a glamorous collection of homes beautiful. The sub-title *Case Study Houses 1945–1962* gives notice that this is, in fact, an important historical document (almost important enough to justify its grotesque price of nearly sixpence a page). The Case Study House programme, launched by John Entenza through the medium of his magazine *Arts and Architecture*, is one of America's most important contributions to post-war architecture, its influence on domestic design throughout the world has been far-reaching, it made the name of more than one architect, and it produced some uncommonly good houses.

Central to the whole achievement was the domestication of steel and glass, a world-wide phenomenon in which three or four case study houses were visibly more influential than either the Farnsworth house or Philip Johnson's suave box. One, but *only* one, of the crucial case-studies was, of course, the Eames house, probably the most fully industrialized small structure of its day, prefabs and Herts schools not excluded. The real process of domestication of industrial components, however, begins with the exactly contemporary house 13 designed by Eames and Saarinen for Entenza himself, and already far sweeter in style and less programmatic in intention. But it is with the early Craig Ellwood houses of the Fifties, and Pierre Koenig's masterly house 21 of 1958, that steel, glass and concrete become 'materials friendly to man.' The Koenig house in particular, using a repertoire of materials and surfaces hardly distinguishable from those used by the Smithson's at Hunstanton, creates interiors whose spacious and restrained luxury is still beyond the capacity of any European architect, though enough have tried. Cheap too—although most of these houses can never be priced properly because manufacturers were apt to 'help' with the materials for the sake of the publicity, they were not expensive, because of their simplicity of construction and the very long distance between one detail and the next given by the big bays (as much as twenty-two feet wide) of the structure.

Because all this was done by manipulating the ordinary processes of getting things built in a free-for-all capitalistic housing market, rather than by a consortium or development group operating under conditions partly shielded from the market-place, this kind of ingenious research is out of favour among Britain's ascendancy of social architects at present—as witness the contemptuous dismissal of Alan Temko's claims for the economy of American long-span construction at sundry recent symposia on industrialized building. Nevertheless, this is one of the ways in which research and development can be done, as the contents of the book amply prove, and although it would probably embarrass both parties beyond words, a fair case could be made out for seeing John Entenza as the American Stirrat Johnson-Marshall. For those who cannot (or will not) see that such a comparison is possible, *Modern California Houses* is recommended in much the same spirit as Peter Hammond once recommended MoE Pamphlet 33 (*The Story of Post-War School Building*) as 'an admirable Lent Book.'

P.R.B.

BOOKS RECEIVED

THE PLASTIC METHODS OF STRUCTURAL ANALYSIS (2nd ed.). *By B. G. Neal. Chapman & Hall.* 45s.

ARCHITECTURAL PHYSICS: LIGHTING. *By R. G. Hopkinson. Building Research Station.* 50s.

LE ORIGINI DELL'URBANISTICA MODERNA. *By L. Benevolo. Editori Laterza.* L.1800.

METHUEN HANDBOOK OF COLOUR. *By A. Kornerup and J. H. Wanscher. Methuen & Co.* 36s.

L'AREA DI SVILUPPO INDUSTRIALE DELLA PROVINCIA DI NAPOLI. *By L. Tocchetti, C. Beguinot and G. Mazzuolo. Camera de Commercio di Napoli.*

FORM SPACE AND VISION. *By Graham Collier. Prentice-Hall, Inc.*

LAW AND PRACTICE OF BUILDING CONTRACTS (2nd ed.). *By Donald Keating. Sweet & Maxwell.* £3 17s. 6d.

BUILDINGS FOR THE ELDERLY. *By N. Musson and H. Heusinkveld. Reinhold.*

ART IN LATIN AMERICAN ARCHITECTURE. *By P. F. Damaz. Reinhold.*

BUILDING CONSTRUCTION (Vol. 3). *By W. B. McKay. Longmans.*

THE CONSTRUCTION OF BUILDINGS (Vol. 3). *By R. Barry. Crosby Lockwood & Son.* 20s. (*spiral bound*) and 25s. (*cloth*).

DESIGN WITH CLIMATE. *By V. Olgyay. Princeton University Press.*

FAMOUS CITIES OF THE WORLD: PRAGUE. *Photography by E. Tylinek, introduction by F. Kozik. Spring Books.* 15s.

LA VALLE DEL SARNO. *By C. Beguinot. Fausto Fiorentino, Napoli.*

CEMENT INDUSTRY IN INDIA. *By V. Podder. Times of India.*

MODERN POWER STATION PRACTICE (Vol. 1). *CEGB.* £3.

MUSIC, ACOUSTICS & ARCHITECTURE. *By Leo L. Beranek. John Wiley & Sons, Inc.*

PROGRAMMAZIONE E SVILUPPO. *By C. Beguinot. Fausto Fiorentino, Napoli.*

SCANDINAVIA DOMESTIC DESIGN. *Ed. Erik Zahle. Methuen & Co.* £4 4s. 0d.

TECHNICAL DRAWING (Vol. 1). *By G. R. Barnfield and T. Male. English Universities Press.* 10s. 6d.

RUTLAND, A SHELL GUIDE. *By W. G. Hoskins. Faber.* 15s.

DECORATIVE ART IN MODERN INTERIORS: 1963-64. *Studio.* 50s.

CHILDREN IN HOSPITAL. *Nuffield Foundation. Oxford University Press.* 40s.

DESIGN OF THIN CONCRETE SHELLS (Vol. 1). *By A. M. Haas. John Wiley & Sons.*

L'EAU DANS LE JARDIN. *By Jacques Simon. La Maison Rustique.* 25 NF.

CENTO ANNI DI EDILIZIA, 1862-1962. *La Societa Generale Immobiliane di lavori di utilia pubblica ed agricola, Roma.*

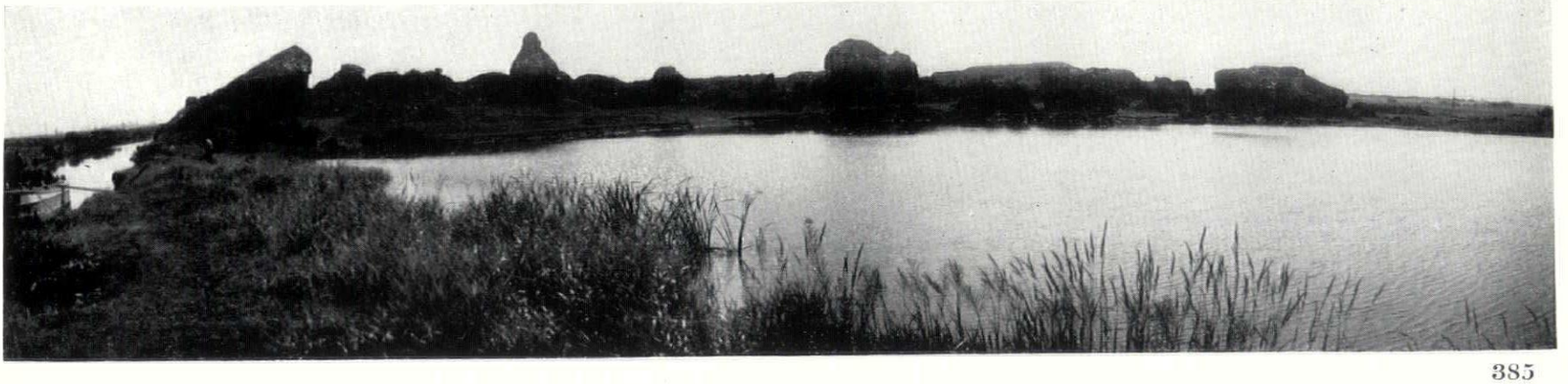
ARCHITECTURE. *By Frank Lloyd Wright. Macdonald.* 50s.

OSPECALI DE CLINICHE UNIVERSITARIE (Vol. 2). *By. C. Beguinot. Fausto Fiorentino Editore, Napoli.*

HANDBOOK OF STRUCTURAL DESIGN. *By I. E. Morris. Reinhold.*

CONFERENCE ON DESIGN METHODS (September 1962). *Eds. J. Christopher Jones and D. G. Thornley. Pergamon Press.* 50s.

Work has begun on Lancashire County Council's biggest land reclamation scheme. Below, 7, is the site—at Bryn Hall/Bamfurlong, near Wigan. Earth-moving machinery is levelling, grading and draining 180 acres of old colliery spoil-heaps to create new pasture-land with shelter-belts of trees. This is in addition to 200 acres of derelict land already reclaimed by the county for housing, industry, playing-fields and agriculture. Another three projects, involving altogether 600 acres, are planned. It is important in such work not to destroy the existing character. Levelling and draining are negative operation; a positive attitude to landscape design can retain and exploit the romantic character these old industrial sites invariably possess.



7



The bare frame of the IBM pavilion, opposite above, and the Unisphere (the World's Fair symbol) below, photographed by Robert Freeman in the early autumn, are both now reaching completion, as the controversial New York World's Fair enters the final phase of construction before its opening next April. Further progress photographs and a note on some abandoned projects for the Fair appear on pages 433–435.

Michael Dower

GREEN WAYS

A POSITIVE FUTURE FOR BRITAIN'S CAST-OFF RAILWAYS?

Withdrawn services, closures, cuts—the clamour rises, national and now local, against Dr. Beeching's villainous destruction. One is reminded of the cry for the blood of his predecessors when canals were being closed, or tacitly abandoned, after the war. With the canals, we have after 15 sore years reached the stage of positive schemes to exploit their potential for recreation—the National Trust have almost reclaimed the Stratford-on-Avon Canal, and two members of avowed amenity interest sit on the new British Waterways Board. Can we, for the railways, graduate more quickly from the despair of closures to the optimism of new use?*

The 'uneconomic' railways—linear, wide, almost level, running for many miles through country tame and wild—present a fascinating opportunity. Over 3,000 miles of railway were already without passenger services, some of them totally closed, before Dr. Beeching joined British Railways. He now proposes to withdraw passenger services from a further 5,000 miles, with the implication (though not the certainty) that much of this total will, in time, lose its goods traffic also and be closed. Add to these the towpaths of 1,800 miles of minor canals, and you have a formidable reserve of uncommitted linear routes to be exploited. (See map 1.)

During the last 12 years the Minister of Housing has approved over 1,100 miles of Long Distance Route proposed to him by the National Parks Commission. This total includes the two great inland footpaths of Pennine Way and Offa's Dyke, the coastal footpaths of Cornwall, Devon, Somerset, Dorset and Pembrokeshire, and the South Downs bridleway-cum-footpath. Apart from the continuity round the south-west peninsula, these paths are not linked to each other. Other proposals are in preparation, notably for Long Distance Routes along the Ridgeway from Lyme Bay to Cambridge, on the Pilgrims Way to Canterbury, and along the escarpment of the North York Moors. These routes will provide the backbone of a system of long-distance paths for the walker; but only the South Downs route can be used by riders, and none of the paths is officially open to cyclists. Could canal towpaths and the unwanted railways help to fill in the system and provide for these three needs?

Walkers want to get into the country quickly and to find good routes from one town or village, youth hostel or camping site to the next. They want to be off metalled roads and away from motor traffic, to see villages and other points of interest and to command good views of the countryside. They value a clear, dependable route. But what do they find? —a network of local footpaths, few of which can be seen on the ground and fewer still on the 1 in. map; which are often blocked by brambles or barbed wire; and which do not run in any consistent direction, so that the walker must puzzle his fifteen or twenty miles in a zigzag route with frequent stretches of road (see map 3, for an example).

These local paths, once much used between cottage, farm, church and pub, are now of dwindling value to the villager, and do not help the modern walker unless they can be linked to a network of 'trunk footpaths.' Long-distance routes approved by the Minister have made such 'trunk' links in some stretches of wild and beautiful country. But in areas less wild, more congested, more enclosed, the 'trunk' routes are even more necessary. Try walking straight out of Manchester, or traversing parts of London's Green Belt, except on a road.

* Several of the Beeching-condemned railways are valuable to walkers and cyclists as *railways*, to take them quickly from cities into fine countryside. The most notable example is the line from Manchester to Sheffield via Edale (heart of the Peak District and start of the Pennine Way), on which the Ramblers Association and others are fighting to preserve the passenger services. I support their view, and doubt the Beeching wisdom on some other lines, but I believe we must consider now the opportunity which substantial railway closures will provide.

Riders and pony-trekkers meet the same problem. They want dependable, continuous routes, away from metalled roads and traffic, giving them links to a variety of rides which are more or less circular, coming back to their starting-point (often a riding school) after 10, 20 or 30 miles. In areas of open country, such as the New Forest or Dartmoor, such routes can be found. But elsewhere, riders may be sorely restricted, with a limited number of drove roads and bridleways which they must constantly use, often having to return on their own tracks.

Touring cyclists are kin to walkers in their needs. The Cyclists Touring Club alone has 24,000 members. They want to get into the country quickly and to find routes away from heavy traffic but with ready access to places of interest. They welcome easy gradients and a good cycling surface, which need not be more than well-drained beaten earth. At present, for lack of cycle routes, they are forced to suffer main-road traffic in getting out of towns. Once in the countryside, they may dodge along local roads; but a good 'trunk' network of cycleways would give them the choice between this meandering and a more speedy passage, and might even be useful to the 'Rough Stuff Fellowship,' whose 2,000 or so members take cycles to the top of Helvellyn and other unlikely places and might be glad of direct routes from town to mountain foot.

So, the triple need—trunk cycleways, trunk footpaths, trunk bridleways. Could not railways and canal towpaths provide these admirably, the first by extinction, the second by survival?

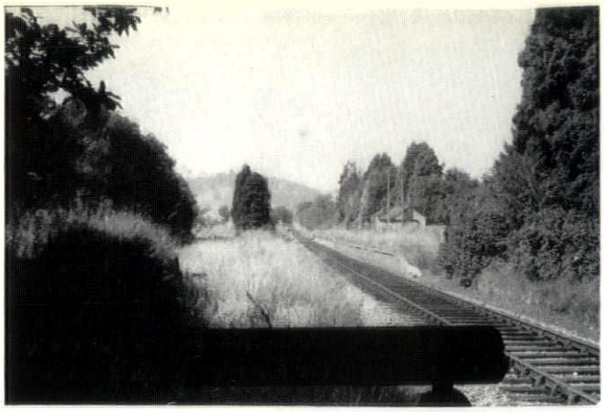
The permanent ways of both railways and canals are continuous, largely isolated from motor traffic, with gentle gradients and no abrupt changes of route. They run through towns, often to the very centre, and out again through the countryside for miles, in places passing through dramatic scenery. There is seldom a square 10 miles of country without either minor railway or minor canal running through it (as map 1 shows).

Railway and canal towpath differ in their width and versatility as long-distance routes. *Disused rail-*

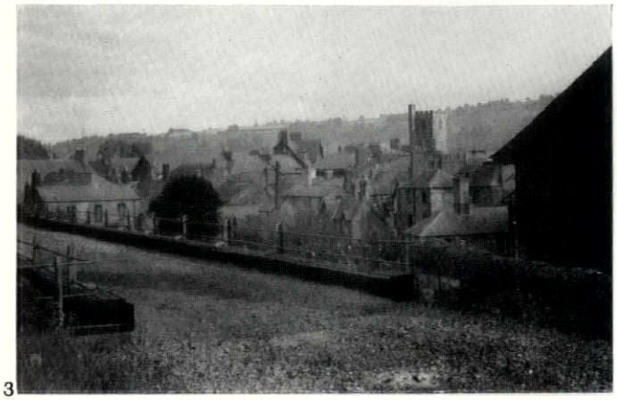
[*continued on page* 391

1, Britain's resources of disused (or doomed) transport lines that could become green ways



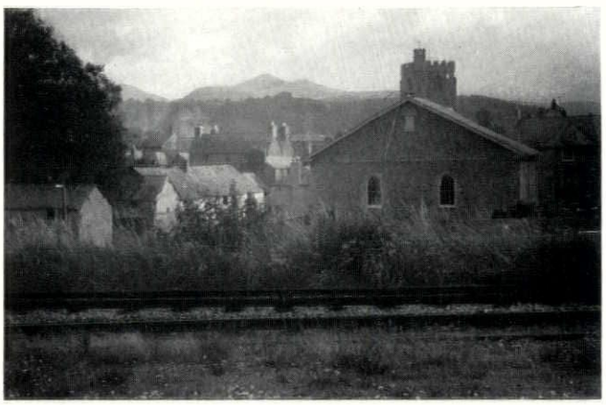


1

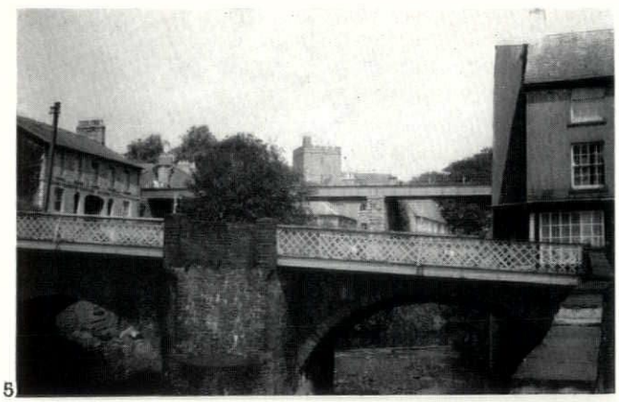


3

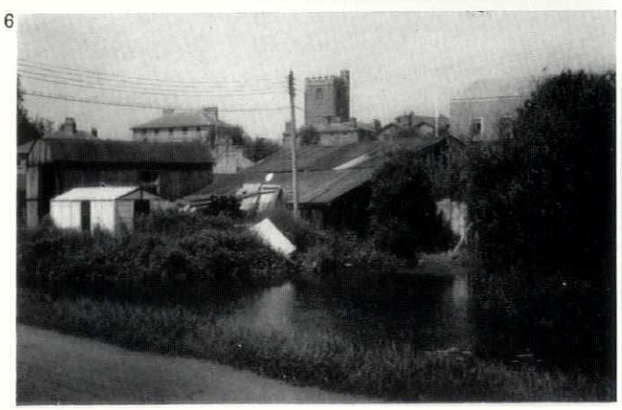
Facilities in the Brecon Beacons area (see map 4) capable of development into a large-scale pathway network: 1, *Abergavenny halt;* 2, *at the approach to Brecon:* 3, 4, *Brecon town:* 5, *the railway viaduct in the town;* 6, *the canal basin in Brecon;* 7, *the canal leading away from the town;* 8, *the canal aqueduct over the river Usk.* (*continued over page*)



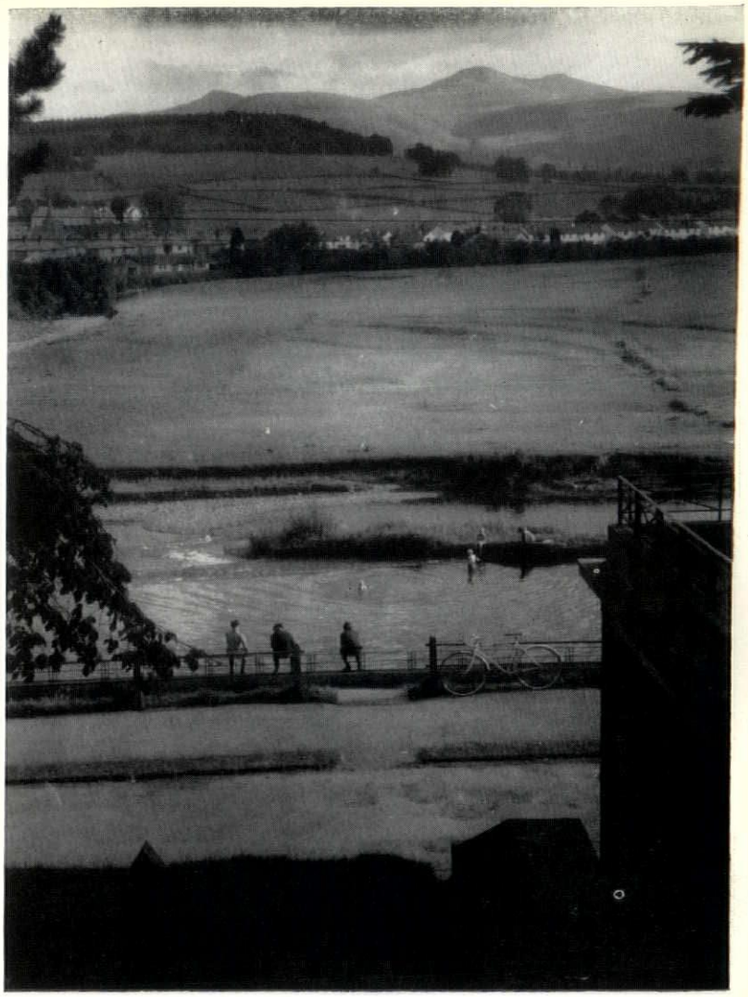
4



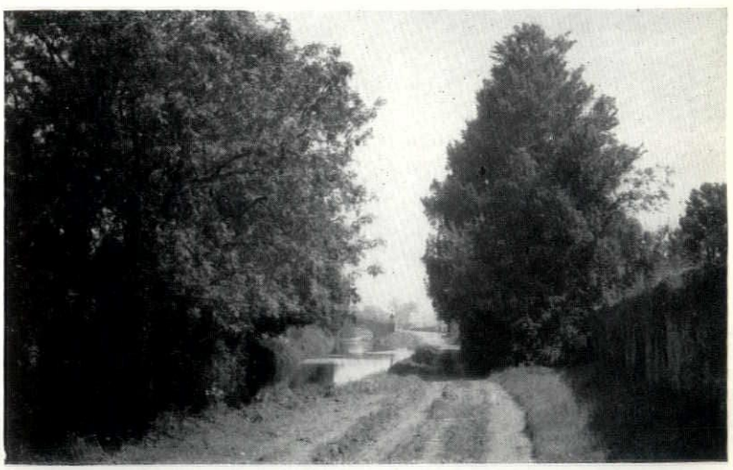
5



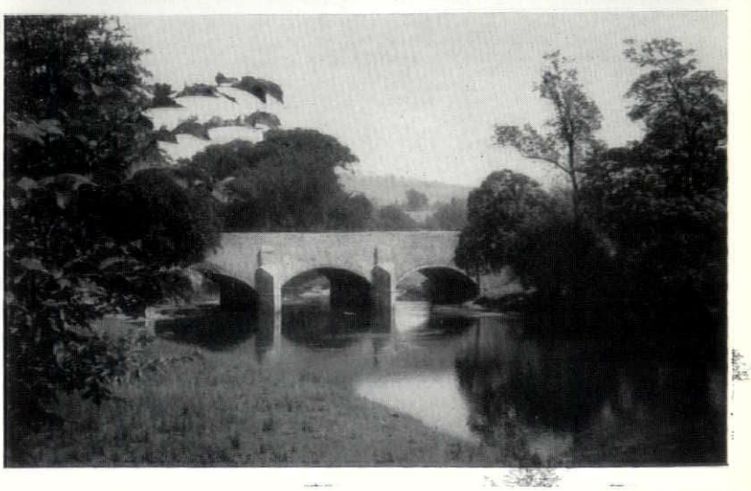
6



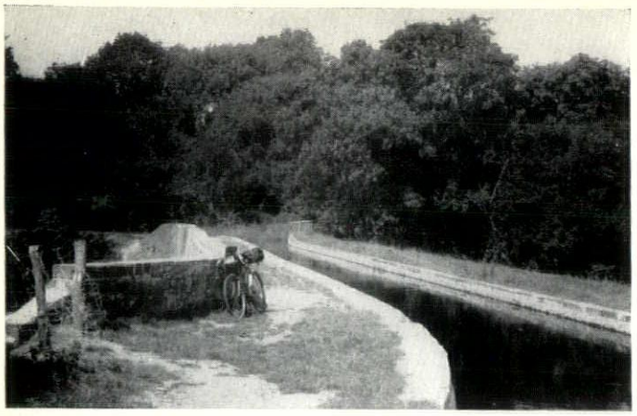
2

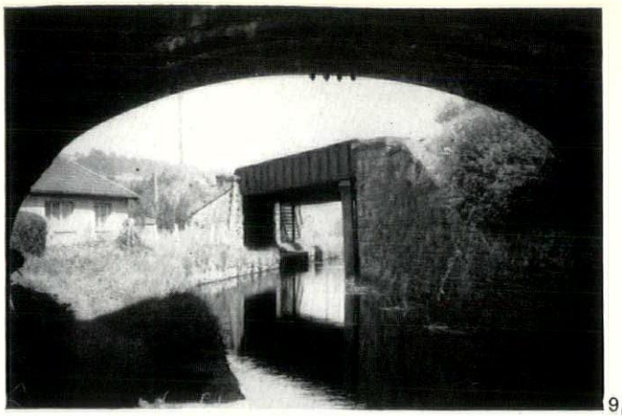


7

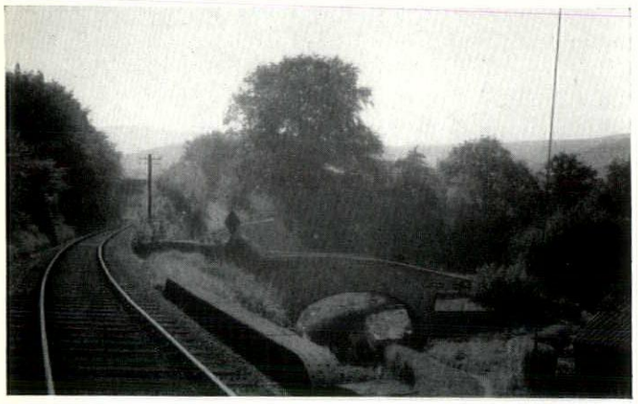


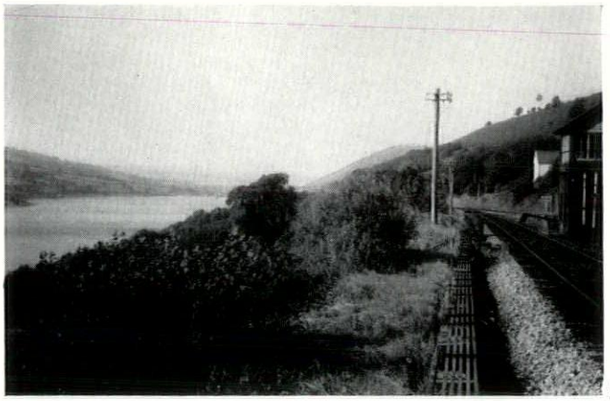
8





9,10

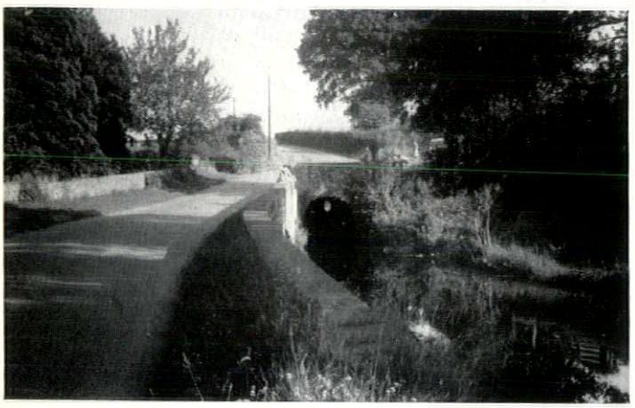


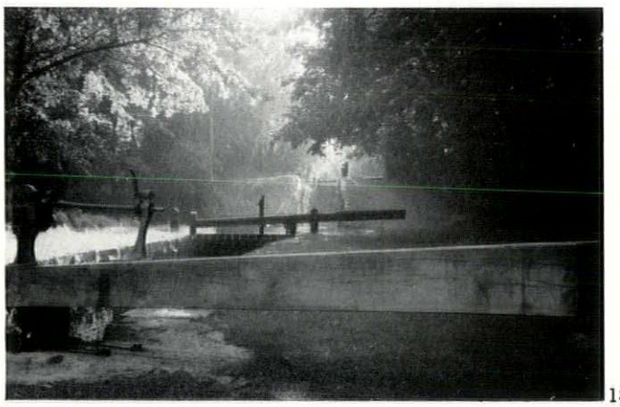


11,12

green ways

9, *the Monmouthshire and Brecon canal crossing the Usk, the towpath already usable as a walking/cycling track;* 10, *road, railway and canal meet at Talybont;* 11, *the railway leading to Talybont reservoir;* 12, *the line along the side of the reservoir;* 13, *the Talybont tunnel;* 14, 15, *the towpath route past the locks at Llangynidr;* 16, 17, 18, *walkers, pony-trekkers and cyclists already using facilities that could be fully developed for them in a proper post-Beeching plan.*





13,14

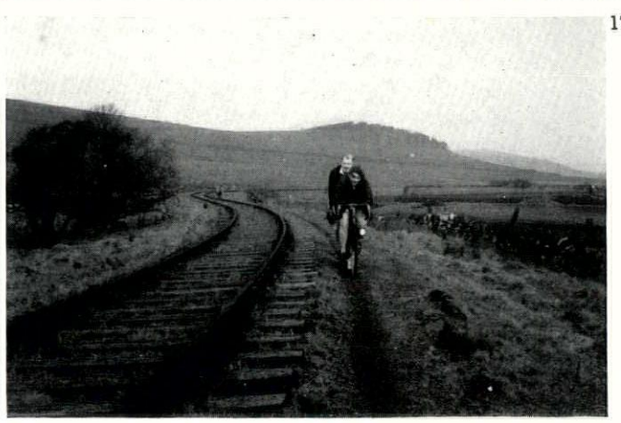




15,16

17,18





continued from page 388]

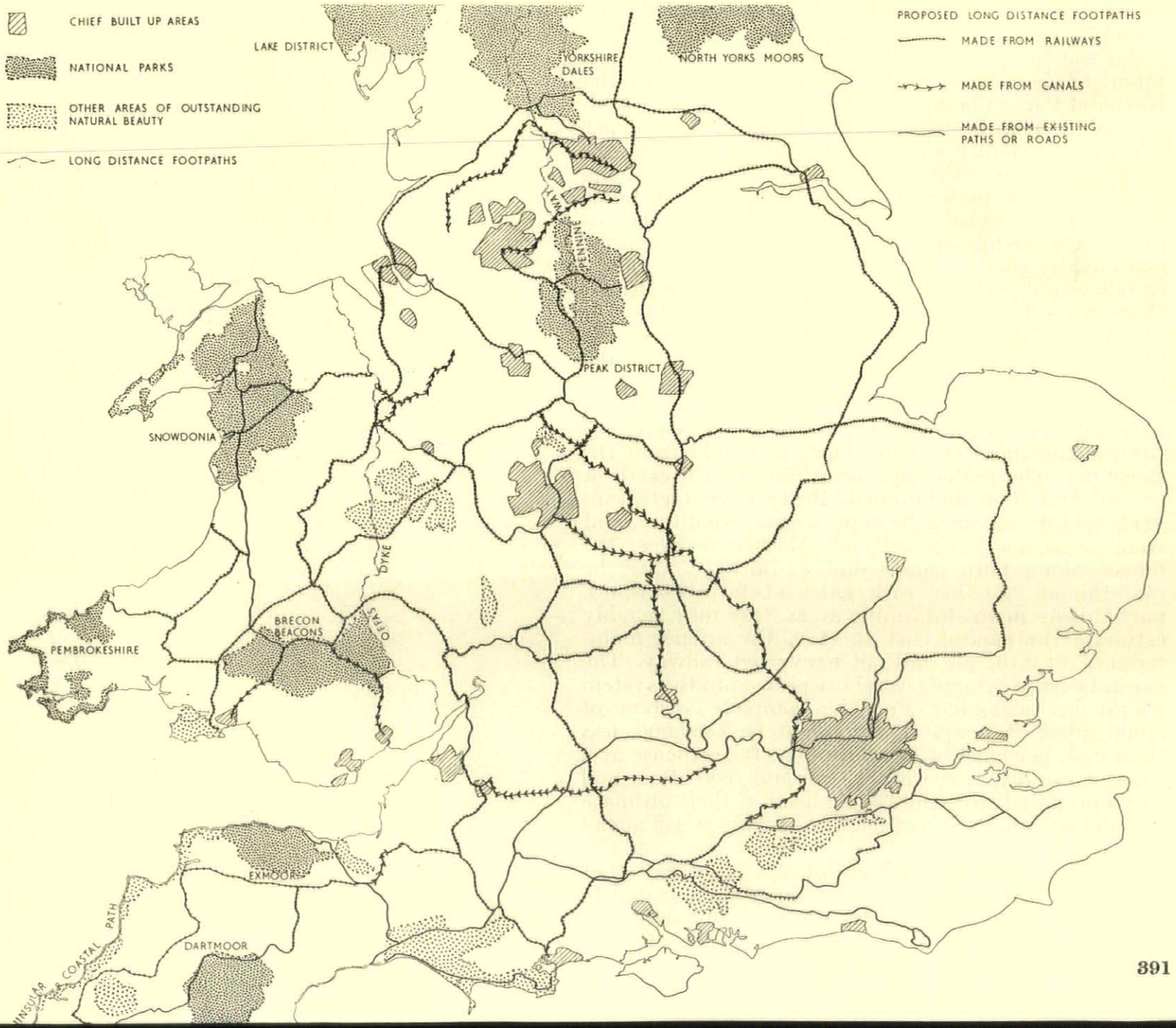
ways offer a firm bed from 7 to 14 feet across (single or double-track) with often a narrow path on each side, flanked by grass slopes, cuttings and embankments. The strip may be pinched in at bridges, viaducts, level crossings or tunnels, but is wide and firm enough to take surfaces suitable for walking, riding or cycling; double-track routes might have space for all three. Cycling may be the most eager candidate for railway tracks, because the view is often too restricted to attract walkers and dense horse-riding is confined to certain parts of the country.

On *canals* the water uses are normally dominant. Walking, riding and cycling on the towpath are welcome where they do not interfere with commercial traffic, boating, fishing and water supply. On most minor canals, where recreational uses are more important than commercial traffic, the towpath can be fully used for walking. The normal towpath, 4 to 6 feet wide, is too narrow for horses and bicycles: only where the towpath or canal reservation is wide, or adjoining land can be taken in, will riders and cyclists on any scale be able to use the canal routes. But as footpaths they can be superb—quiet, often very beautiful, with long level pounds of tranquil water punctuated by locks. Buildings seen from them are mainly the original Georgian structures—bridges, aqueducts, locks, wharves, cottages—or the functional factories and warehouses of later date.

Canals and disused railways are havens of wild life. The bank and hedges flourish, untouched by plough or weed-killer; and their wealth of flowers, animals and birds varies from mile to mile as the embankments cut across changing rocks and soil. Moreover, naturalists and bug-hunting children can see these things without crossing farms or vexing landowners.

A further attribute of railways and canals is that both have land and buildings which go with them—halts, stations and sidings on the railways, basins and warehouses on the canals—which can provide the basis for camping-sites or hostels for the walker, cyclist and pony-trekker. Except at major towns, the

2, a natural network of green ways connecting outstanding scenic areas



existing stations and warehouses are rarely big enough to form youth hostels themselves, but there is often ample space with good road access and water supply. The Youth Hostels Association are currently considering the possibility of a floating hostel at Lapworth Basin: Brecon County Council are looking at railway halts for possible caravan and camping sites.

In all, there is enormous potential in the Beeching-condemned routes and the canals. Map 2 shows a possible system of long-distance routes in England and Wales. It uses the primitive tracks—Ridgeway, Pilgrims Way, Sarn Helen and others—and the Long-Distance Routes approved by the Minister of Housing—and fills them out into a national network using railways on the Beeching list, railways already disused or closed, and the more attractive minor canals. The total length would be some 4,000 miles: Scotland, not shown on the map, might have a further 1,000 miles.

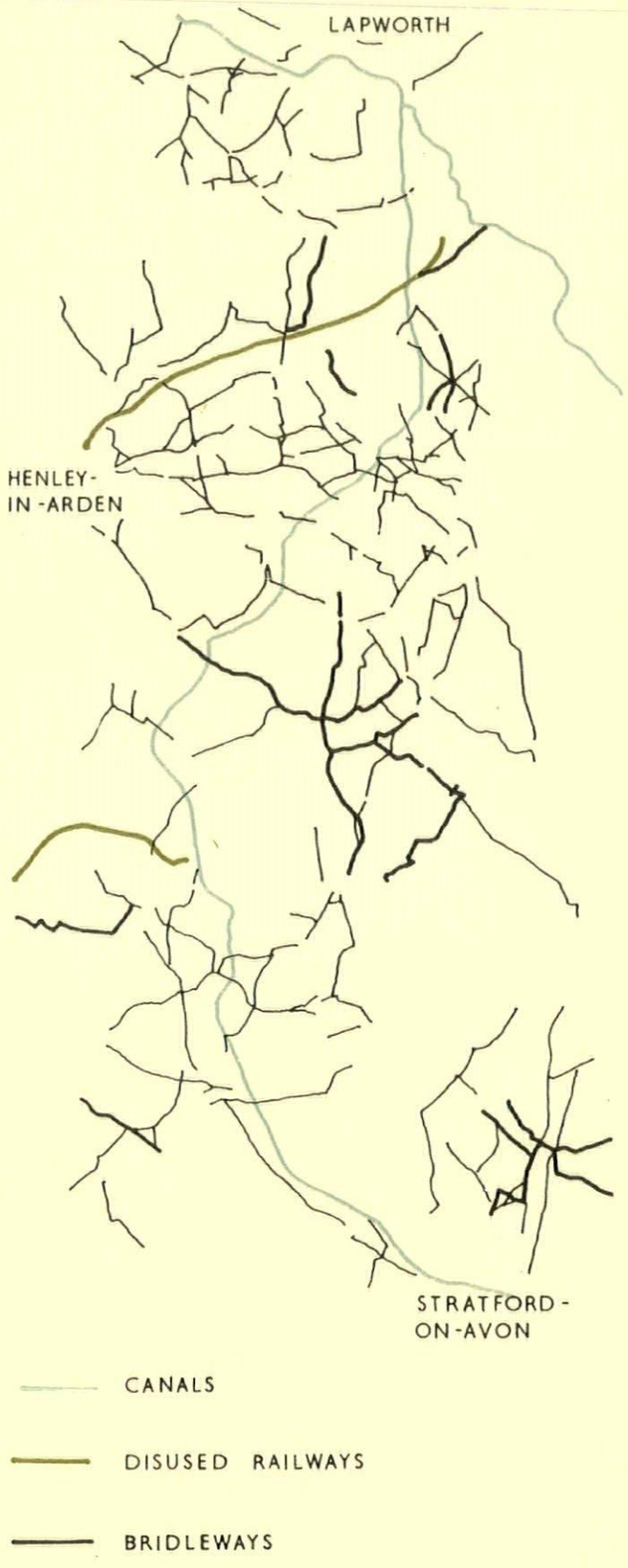
The whole network would be usable as footpaths; and walkers would have exclusive use of the major hill routes and many of the canal links. There would be bridlepaths on longer routes through the chief riding areas—the southern counties, Dartmoor, Exmoor and Wales. Cyclists would use the bulk of the network, though cycling and riding would not normally overlap.

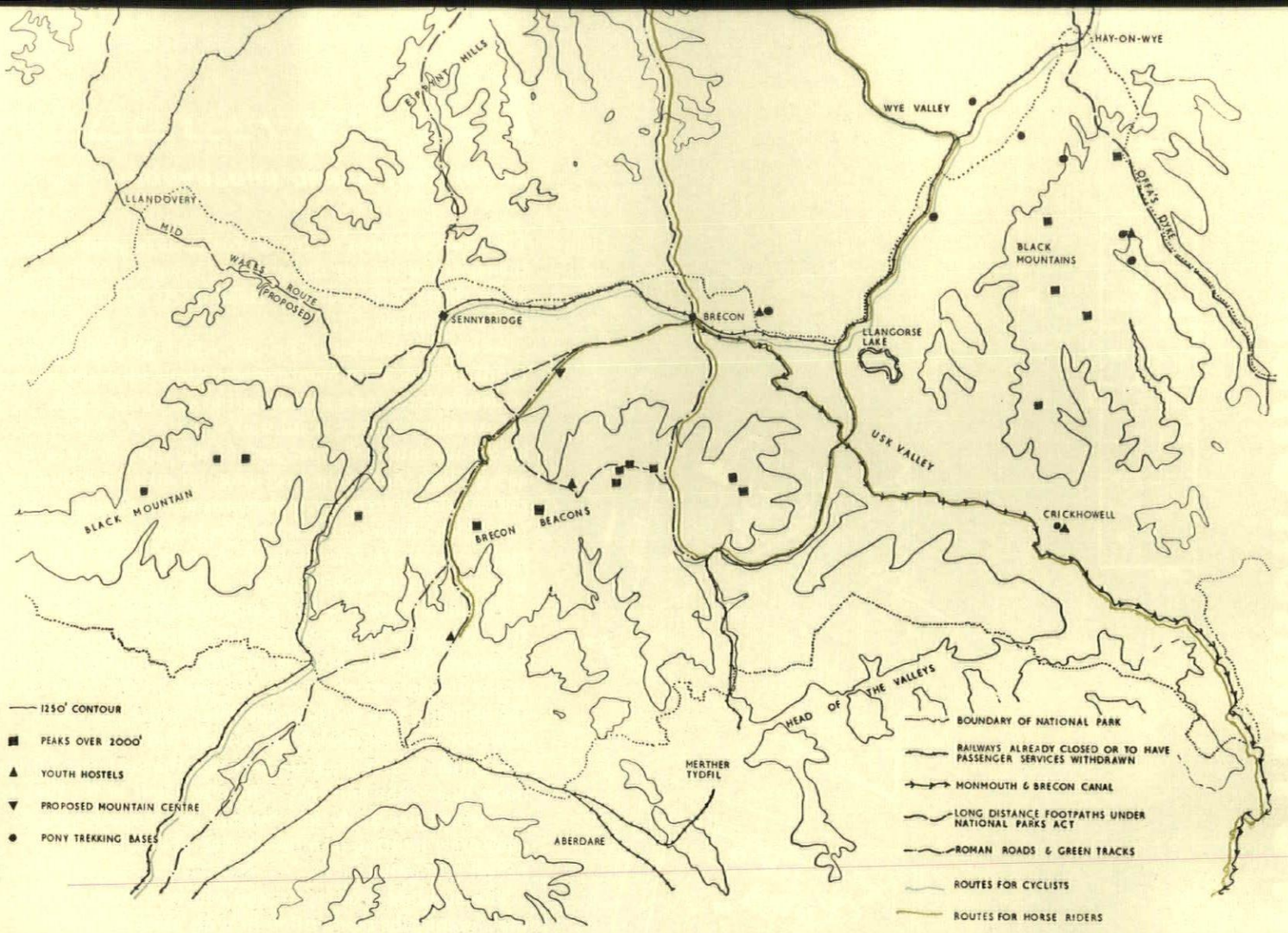
All the footpaths and bridlepaths on this network might be designated as Long-Distance Routes by the National Parks Commission and administered by each county or county borough authority, with 100 per cent Government grant under the National Parks Act for all costs in construction and maintenance. (The Act does not at present envisage use of Long-Distance Routes by bicycles, but could be amended accordingly.) Ownership of the railway stretches might be assumed by the local authorities at national cost. The canals would probably stay in the hands of the British Waterways Board; and it would seem reasonable that the Board should be able to obtain direct Government grant where improvement and maintenance of the canal and towpath for recreation was economic.

The cost of constructing and maintaining these national routes cannot be left to the slim resources of rural authorities. The land must be bought from Dr. Beeching. The paths must be surfaced with earth or hoggin and then maintained. Bridges, viaducts, culverts and drains must be kept in good condition, and tunnels normally blanked off. Most expensive, the fences along both canals and ex-railways must be maintained, together with gates at farm crossings, particularly in stock-farming areas. One may roughly estimate the capital cost at £150, the annual maintenance at £10, per mile of converted railway. The capital cost of bringing canal towpaths into the system would be negligible. For the complete system of 5,000 miles, the capital cost might be £500,000, less than 2½d. per head of population—a fair expense at a time of rapidly increasing leisure and recreation, and tiny compared with the £6 per head of their ultimate population which Stevenage have spent or will spend on cycleways alone.

Government and local authorities may say that they cannot wholly finance and maintain a complete network of specific routes for use by a minority; nor could one readily charge tolls for the use of long-distance routes. But the users might help to create and maintain them by voluntary effort. The most notable precedents are the great volunteer operation organized by the National Trust and the Inland Waterways Association to reclaim the Stratford-on-Avon Canal; and the Appalachian Trail in America, passing down the east coast mountains from Maine to Georgia

3, fragmented footpath pattern connected up by former railways and canals





4, a full network of green ways for mid-Wales, including abandoned railways, those to be closed under Beeching proposals, and the Monmouth canal

and maintained by Trail Associations in each city region which it traverses*. The National Trust is already seeking to adopt one or more of the most beautiful Beeching-condemned railways. There will be room for the harnessing of many energies.

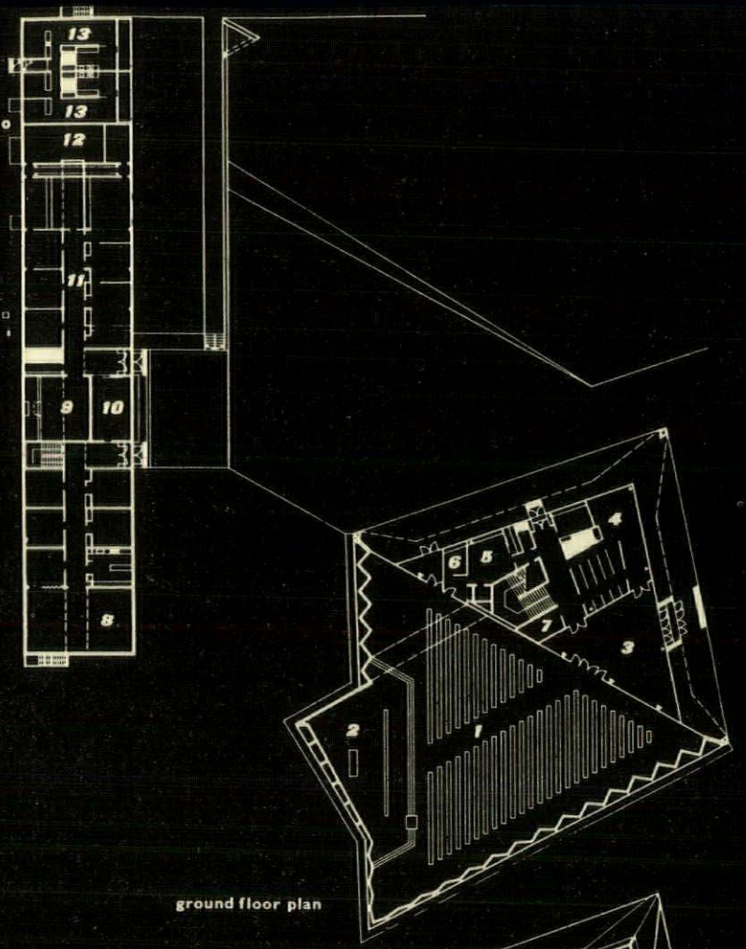
Map 4 shows one area in detail—the Brecon Beacons, a fair candidate for Britain's least known and least accessible National Park. The potential for access, however, is considerable—one Long-Distance Route already approved (Offa's Dyke) and another being studied (the Mid-Wales Route): the Monmouthshire and Brecon Canal (the only canal which actually runs into a National Park, this beautiful waterway has a level pound nearly 20 miles long and is increasingly used for walking and pleasure craft); several Roman roads and green ways; and a long stretch of Beeching-condemned railway. The resulting network, centred on Brecon itself, would provide a remarkable freedom of the Park for walkers and riders.

For example, a walker entering the Park from the west by the Mid-Wales Route may drop down into the Usk Valley at Sennybridge and there join the railway for the last seven miles into Brecon. This stretch is already closed and becoming overgrown and the stations and halts are little paradises of garden gone wild. Aber-bran Halt, 1 (page 389), would make a splendid caravan or camping site, with natural screening and yet fine views from it of the Beacons. The track runs eastward along the National Park boundary, with a constant variety of views southward over the Valley, until at the approach to Brecon it opens fully to the river, 2, and then to the town itself, 3 and 4, which the walker commands as from the rampart of ancient walls, his eye focusing on the tower of St. Mary's Church. Several paths take him down into the town, whence the railway is seen cutting in viaduct across the street-ends, 5.

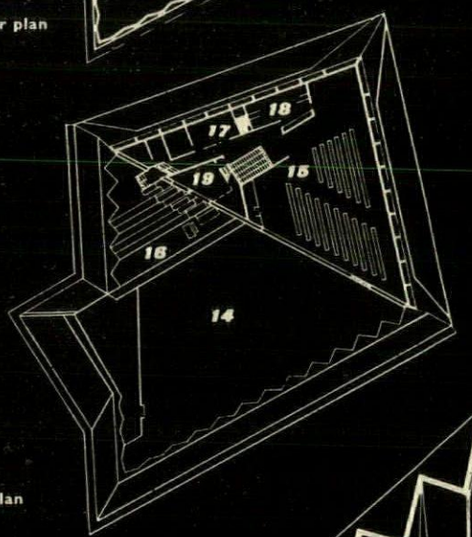
From Brecon, eastward, the walker may choose the railway again (not yet closed to goods traffic) or the canal, which springs off from a modest basin within view of the St. Mary's tower, 6, and immediately swings the eye on to rural views, 7, running quietly, tree-shaded, alongside the traffic-laden A40. After three miles the canal turns to cross the Usk on a sturdy aqueduct, 8 and 9, built by the canal engineer Thomas Dadford; and then runs on the southern side of the valley to Talybont, where canal, railway and road meet, 10, and give the walker a further choice—the railway route up to Talybont Reservoir, 11 and 12, and the Beacons circuit, or the continuing canal route down the handsome Usk Valley to Crickhowell and beyond, past the Talybont tunnel, 13, and the flight of locks at Llangynidr, 14 and 15.

* This great footpath was first proposed by Benton Mackaye in the *Journal of the American Institute of Architects* in October, 1921. Mackaye conceived it as the backbone of a whole system of wild reservations and parks; the British idea of long-distance routes, and the theme of this article, owe much to Mackaye's inspiration.

TWO FINNISH CHURCHES



ground floor plan



first floor plan

1 AT HYVINKÄÄ

ARCHITECT: AARNO RUUSUVUORI

The church is sited on rocky tree-planted ground near the centre of the rapidly growing town of Hyvinkää, about thirty miles north of Helsinki. It was the subject of a competition.

As well as the church proper, which has 630 seats (with another 60 in an organ and choir loft), the main structure contains a parish hall at an upper level (above the entrance vestibule) which seats 200 and can be opened into the upper part of the church to serve as a gallery. A detached rectangular structure contains parish offices, archives, clubrooms and a couple of flats for parish officers; also, in the basement, additional clubrooms and a Finnish bath. A screen-wall in front of it terminates in a bell-tower.

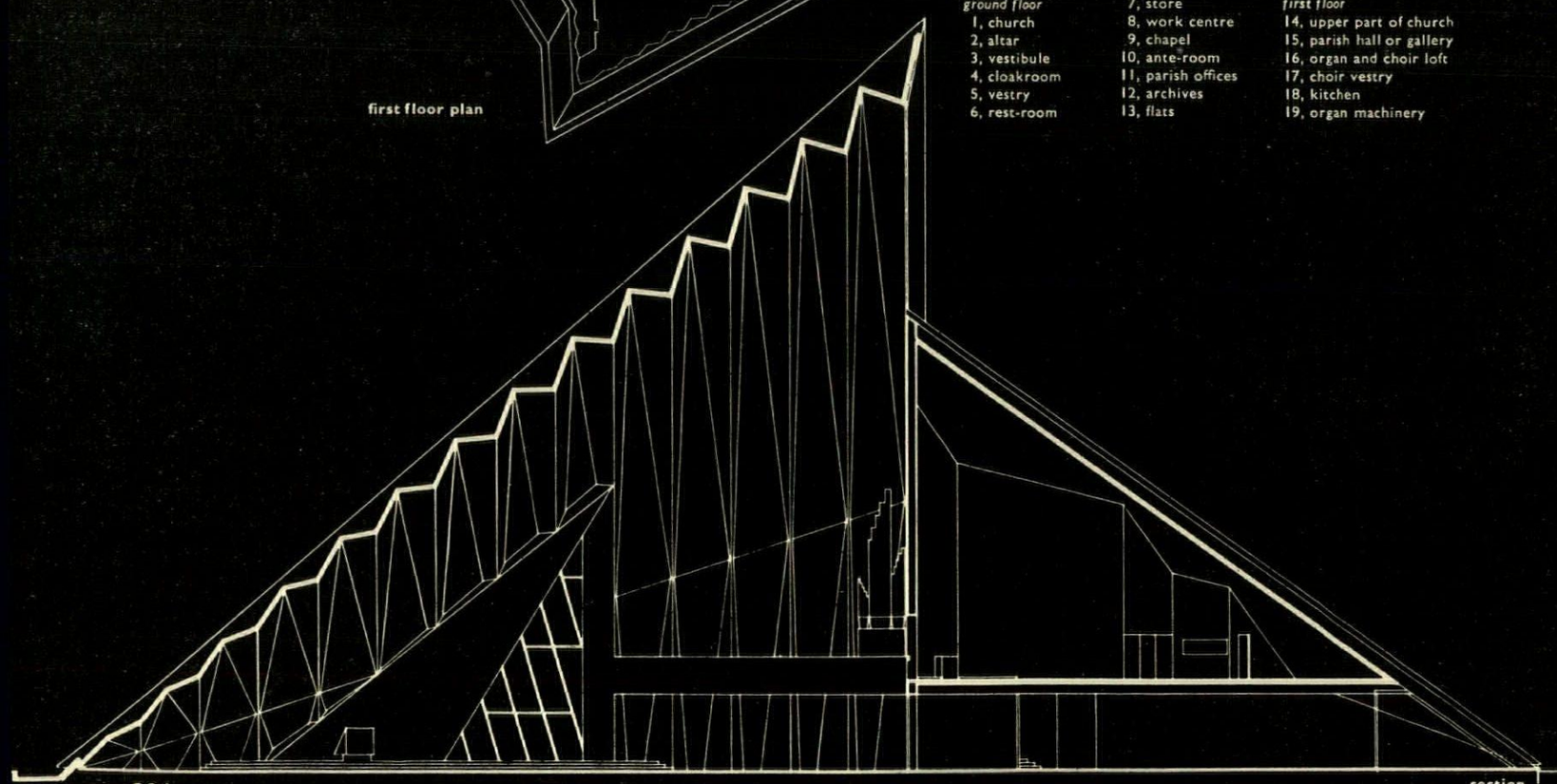
The main structure has a rhomboidal plan, divided from corner to corner so that the church itself, occupying half the area, is triangular in plan. It is also triangular in section, rising to a peak in the centre of the building (see section), the altar being placed, however, against one of the outside walls with the result that it and the aisle between the seats are off the main axis of the entrance. The other half of the plan is also triangular in section, but not so high, allowing clerestory lighting into the church above the parish hall-gallery.

The building is of reinforced concrete construction, the sloping ribs being filled in with glass or faced externally with precast concrete slabs.

1 (facing page), entrance front of the church at Hyvinkää.

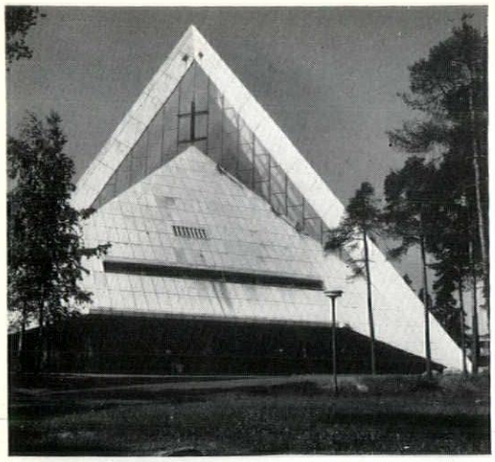
key

ground floor		*first floor*
1, church	7, store	14, upper part of church
2, altar	8, work centre	15, parish hall or gallery
3, vestibule	9, chapel	16, organ and choir loft
4, cloakroom	10, ante-room	17, choir vestry
5, vestry	11, parish offices	18, kitchen
6, rest-room	12, archives	19, organ machinery
	13, flats	

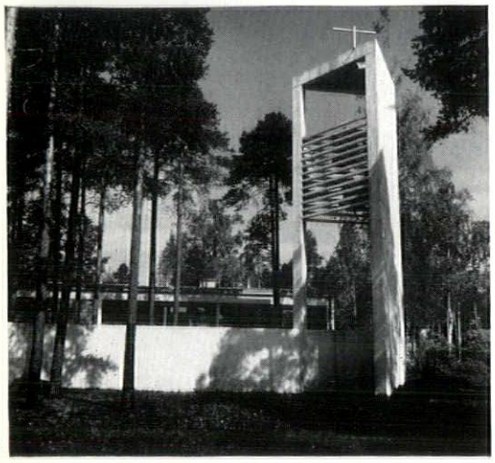


section





2



3

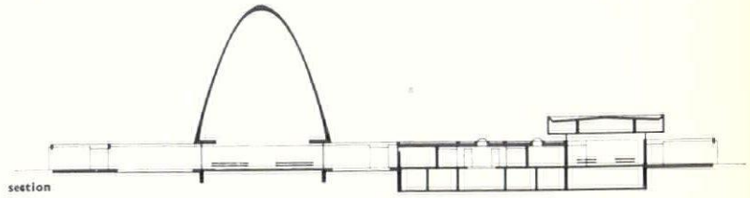


4

2, distant view of the entrance front. 3, the bell-tower in the separate rectangular block. 4, close-up of the entrance porch. 5, interior of the church looking towards the altar with the organ and choir loft on the right.



5



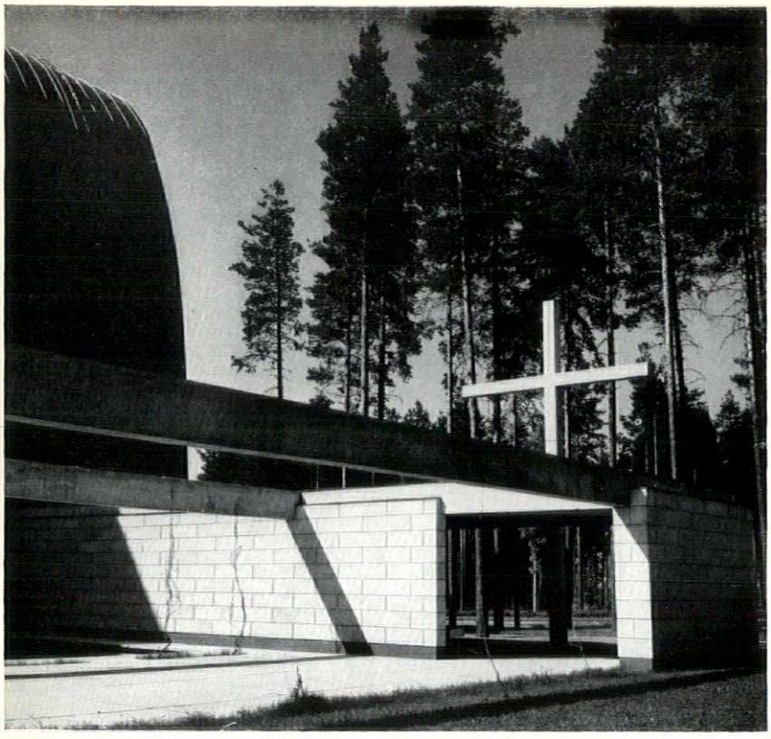
2 CEMETERY CHAPEL AT VATIALA

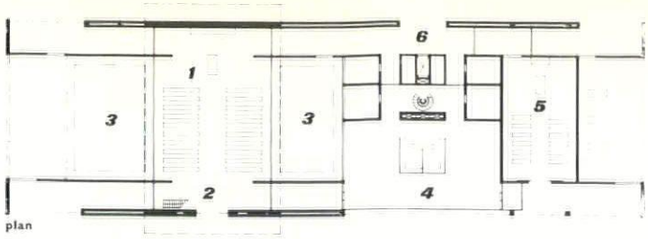
ARCHITECT | **VILJO REWELL**

6, the main front : large chapel on the left, small chapel on the right.

The chapel is in a new cemetery at Vatiala, laid out in rural surroundings to serve the city of Tampere which is about nine miles distant. The design, like that of most public buildings in Finland, was the outcome of a competition.

The grounds of the cemetery are fairly flat, with many tall pine-trees. The chapel building stands alongside the wide avenue by which the cemetery is entered. It contains a large and a small chapel and, because of the distance from the city, a large waiting





plan

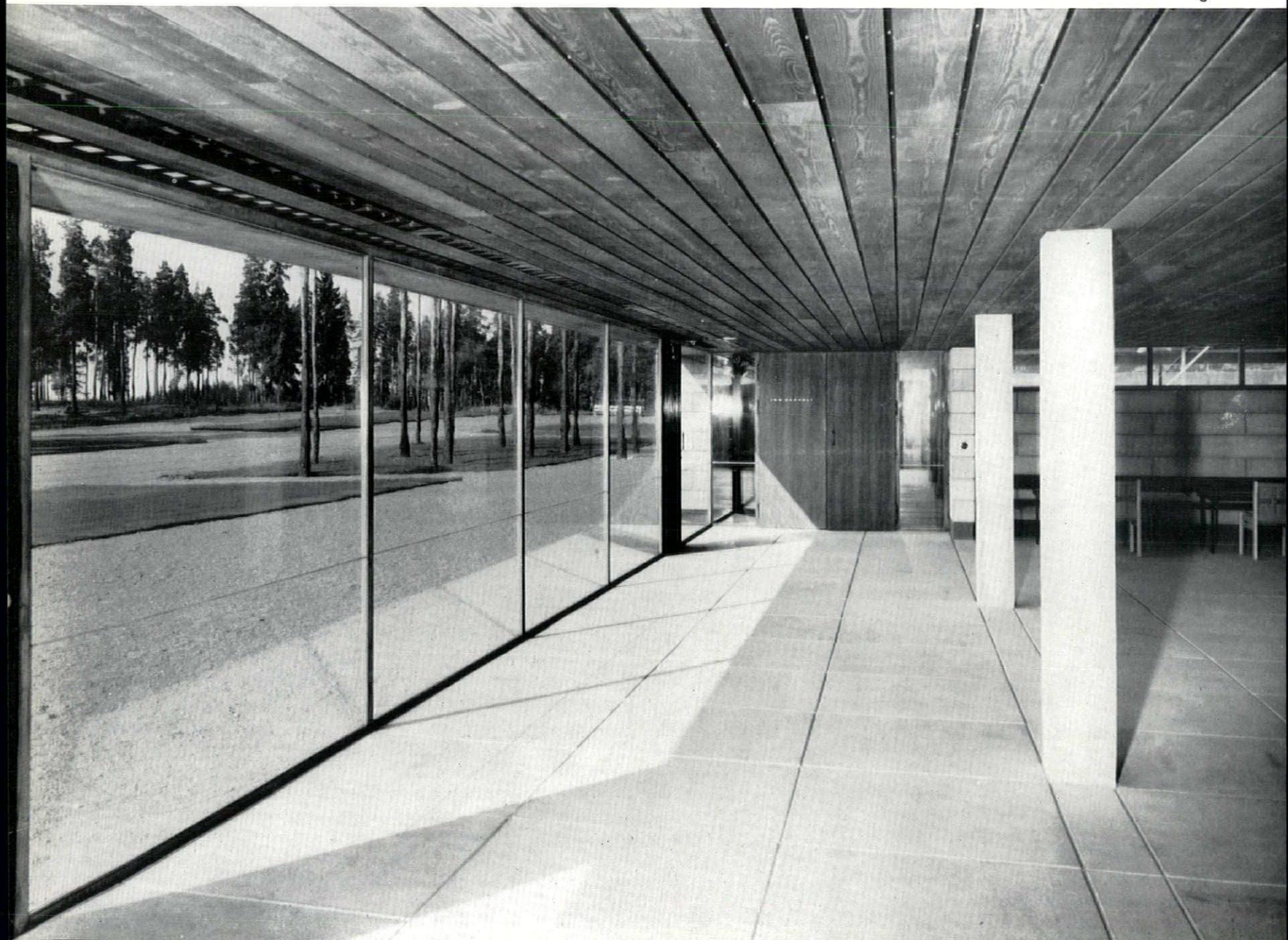
key 1, main chapel. 2, stairs to gallery. 3, garden court. 4, waiting and assembly hall. 5, small chapel. 6, service corridor.

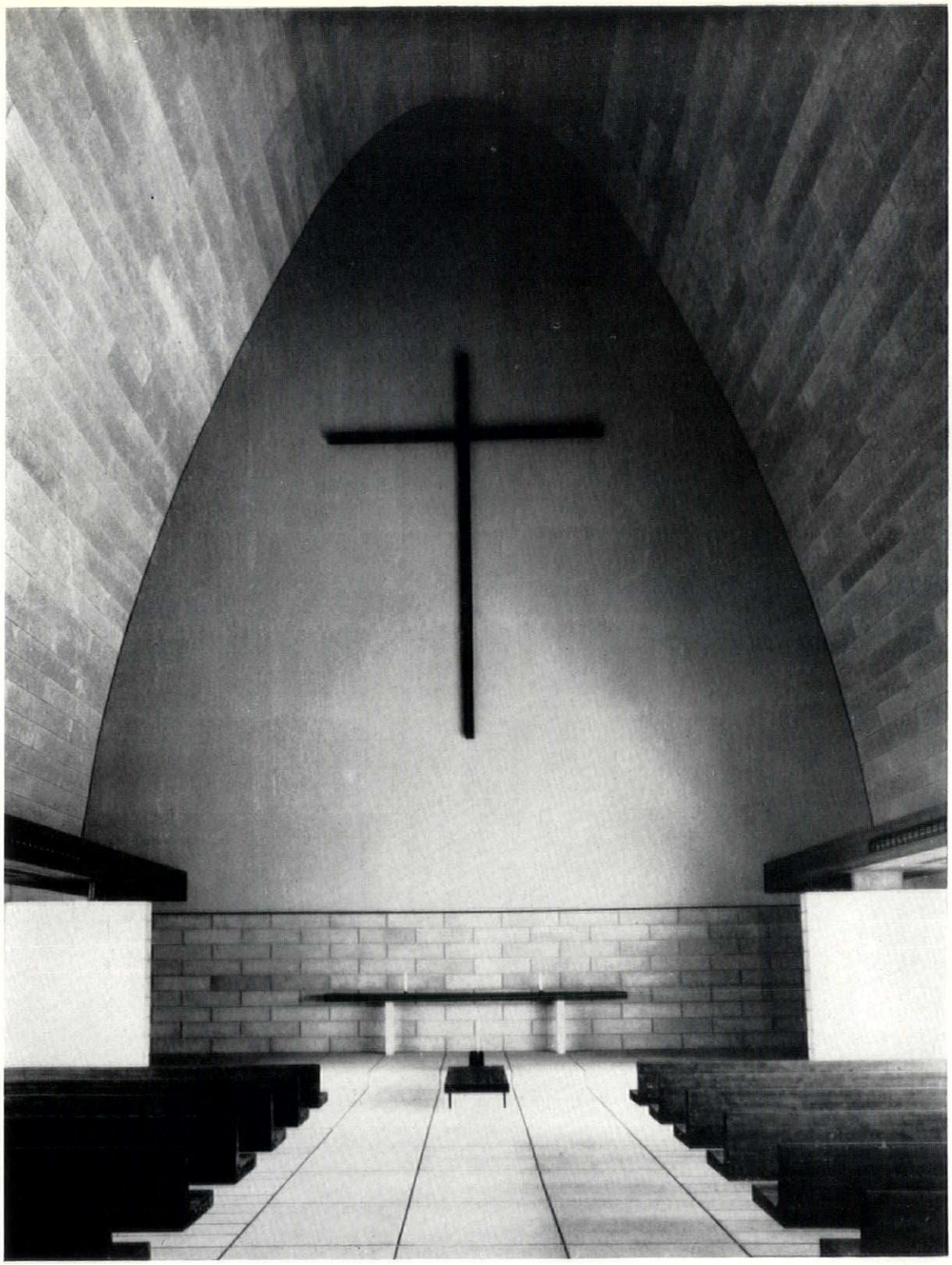
hall, common to both chapels, in which the public can gather before services. Each chapel is entered from this hall, but also has a doorway on its main axis, leading direct into the open air. These doorways are used at the end of the service, when mourners follow the coffin to the graveside. They frame sliding doors, mechanically operated. At either end of the building, beside each chapel, are open courts for use in the summer either as additional gathering places or for open-air services.

Materials are reinforced concrete and unpainted timber. The parabolic concrete roof of the larger chapel is covered in copper.

7, the garden court next to the large chapel. 8, the waiting and assembly hall between the two chapels.

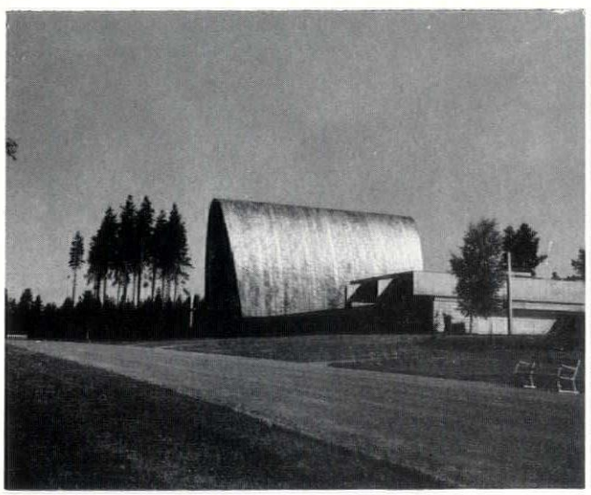
8



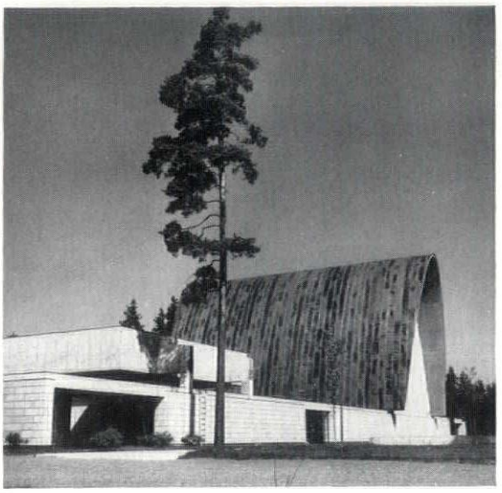


9

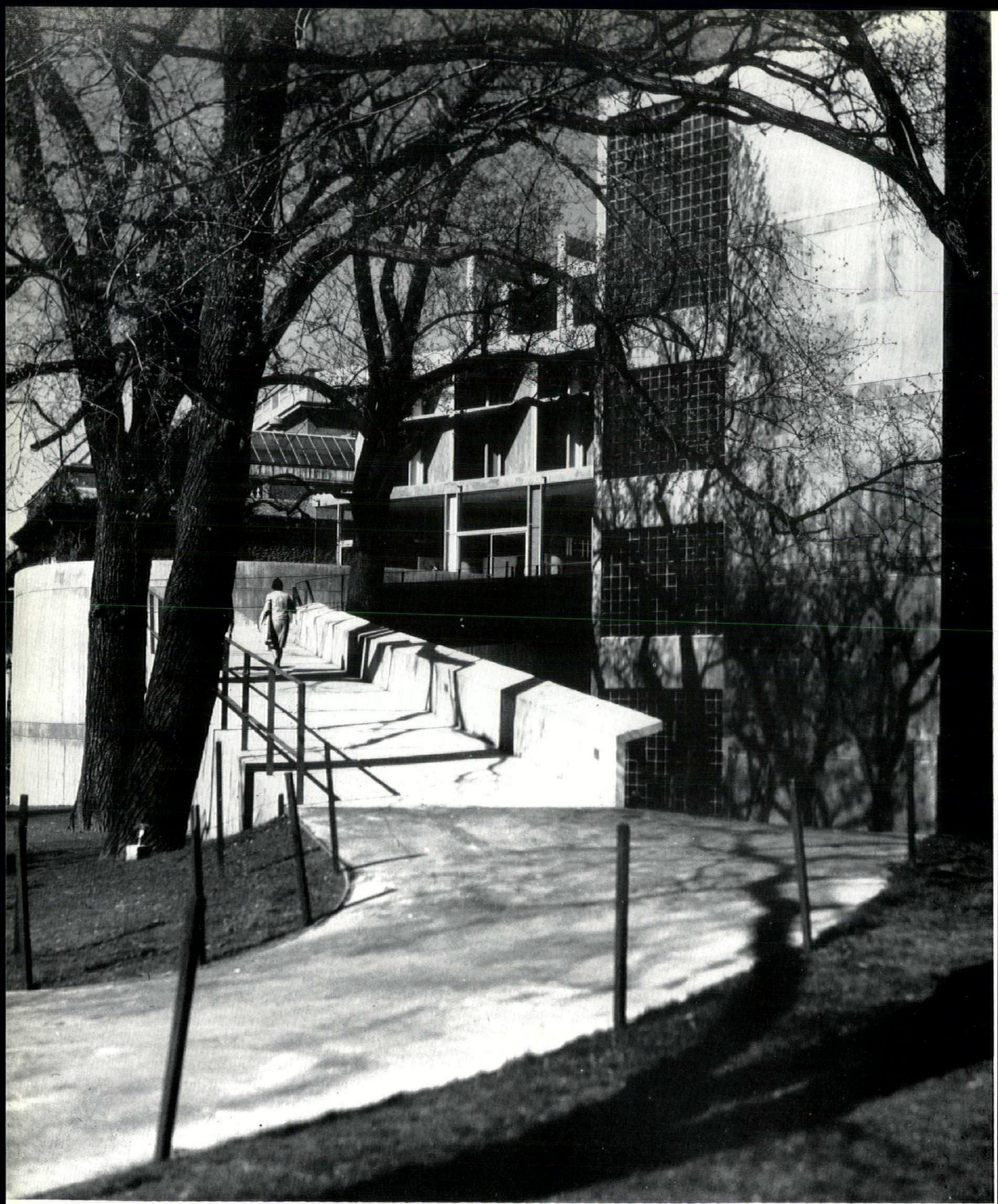
9, interior of the large chapel, looking towards the altar. 10, distant view from the approach avenue. 11, the back of the two chapels. *For criticism see page* 441.



10



11



Peter Ambler

Architect: Le Corbusier

Visual Arts Centre, Harvard University

The Visual Arts Centre is the high point of an architectural renaissance at Harvard. Like many of her sister Eastern universities, Harvard built heavily during the 1910's and 1920's. At MIT the governing style was a stripped neo-classicism, at Princeton and Yale 'Collegiate Gothic' modelled on English universities. Harvard's drew on the New England past for a synthetic 'Colonial' or 'Georgian' mode, although her new dormitory groups were enclosed quadrangles rather than free-standing blocks in the tradition of the Harvard Yard.

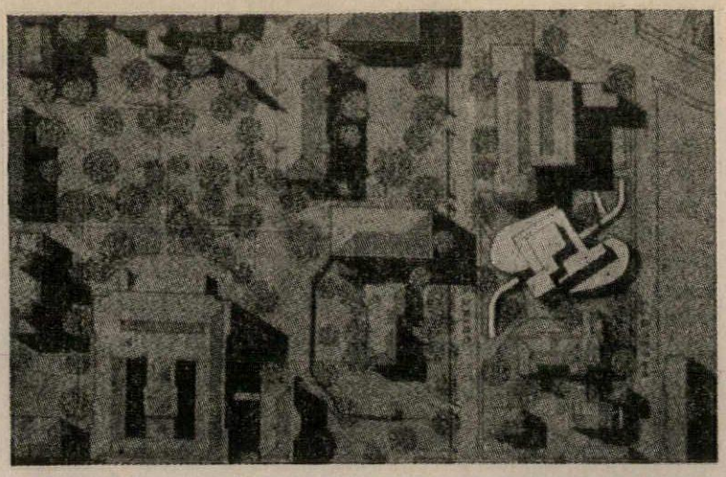
By the end of the war revivalism had finally collapsed, but the problem of getting modern architecture of high quality was not easily solved. One answer, to commission the European masters themselves, was rendered the more logical for Harvard by Gropius's presence at the School of Design, and his Graduate Centre set as high a standard as Mies's buildings at IIT or Aalto's dormitory at MIT. Such buildings, however, represented graftings on from foreign stock, and did not signal the maturity of the modern movement in America.

The upward progress of Harvard architecture is best reflected in the postwar work of Shepley, Bulfinch, Richardson & Abbott, which under various names had always had its fair share of Harvard commissions. The Lamont Library (1949) was good Harvard Colonial 'modernized' with squared-off cornice and window mouldings. The Allston Burr Lecture Hall (1952), a pleasant exercise in the International Style, was at least in a twentieth-century manner, and the Gordon McKay Laboratories (also 1952), an uncommunicative curtain wall structure, brought the firm abreast of current design. Distinction was achieved at the end of the 1950's in two dormitory blocks, Leverett Towers and Quincy House. Together with the Loeb Drama Centre (1960), a modest-appearing but technically advanced theatre designed by Hugh Stubbins, these buildings indicated that Harvard would insist upon, and could obtain, architecture of a high, if non-revolutionary, quality.

Although Harvard has continued to commission buildings in the new white-masonry-and-red-brick vernacular (the latest is by The Architects Collaborative) its declaration of independence was made with the Holyoke Centre project designed by Sert, Jackson and Gourley, the first half of which, containing administrative offices and health services, was completed in 1961. This was an elegantly detailed high-rise in the Corbusian tradition of *béton-brut* and bright colour. It resembled nothing around Harvard either in scale or materials. The second half of the project is under construction, and the Sert office has been given the commission for a large new complex of married student housing.

Besides the favourable architectural climate at Harvard, two other circumstances facilitated the commissioning and public acceptance of the Visual Arts Centre. One was the obvious correlation between an advanced architectural design and the building's purpose as a workshop for the visual arts. Consisting mainly of men distinguished in visual media, such as the sculptor Mirko Basaldella and the architect and historian Dr. Eduard Sekler, the 'client'—the executive committee of an interdepartmental Committee on the Practice of the Visual Arts—was particularly well-qualified to appreciate Le Corbusier's merits. Second, the lack of controversy is traceable in part to the winning of the recent City Hall competition by a highly original (though obviously Corbusier-influenced), most 'un-Bostonian' design, against which the traditionalists may have expended the last of their small reserves of energy. (See THE ARCHITECTURAL REVIEW, September, 1962.)

Facing page: 1, *the Carpenter Centre for the Visual Arts, at Harvard University, the subject of this month's critical analysis, beginning on the right. It is the first building by Le Corbusier in the United States. The photograph shows the Quincy Street side of the building, and is taken from the foot of the ramp that passes through it and leads down again into Prescott Street.*



The site of the Carpenter Centre for the Visual Arts, showing its placing at an angle among the more formally disposed buildings of Harvard University. Quincy Street is on its left and Prescott Street on its right.

round and through the building

A visit to the Visual Arts Centre perhaps begins in the Harvard Square area's narrow, twisting streets, jammed with cars and students, lined with men's clothiers, foreign delicatessens, camera shops, travel agencies, purveyors of Scandinavian furniture, and bookshops—foreign bookshops, paperback bookshops, textbook shops, out-of-print bookshops. Here, it seems, you can buy almost anything and meet almost anyone from almost anywhere. A bizarre combination of cosmopolitanism and urban strangle; but across Massachusetts Avenue, through a tunnel or brick portal, and we are in the eighteenth century.

The buildings in Harvard Yard adorn nobly scaled rectangular spaces. Only two monstrous contributions of the twentieth century, the Widener Library and the Memorial Church, dare to reverse the relationship, to subordinate the space to the architecture. One passes through Johnstone Gate and down a short, broad mall between two eighteenth-century brick structures. Directly opposite, seen in front elevation, is one of the Yard's two finest buildings, Bulfinch's delicate University Hall. The approach is axial but not monumental, for the great space's longer dimension is transverse to the line of sight. An even succession of rectangular blocks defines the space on four sides. We cross on one of the oblique paths and pass around University Hall into a smaller space, approximately square. On our right and left stand the two modern colossi; directly ahead of us is a masterpiece of the nineteenth century, H. H. Richardson's Sever Hall.

From the north-west corner of the Robinson-Sever-Emerson quadrangle is our first view of the Visual Arts Centre: a dominant vertical oblong block, its long side in shadow, a lower horizontal block on its flank, a curved glass element, lower yet, projecting from that to the street. This, it turns out, is the building's least inviting view. (One recalls the blank wall which greets the visitor to La Tourette.) As one approaches Quincy Street the play of forms begins. The curved block becomes foreground for the main building mass. The ramp comes into view, curving into the middle of the building from the right.

Upon reaching Quincy Street, one may, if one wishes, cross directly, pass under the projecting curved block, 2, and into the mysterious innards of the building. Instead, however, we turn right, moving up Quincy Street towards the base of the ramp. The building is canted at a 25 deg. angle to the street; to see the front elevation we must move well past the central axis of the site. The head-on view, however, is a poor one. The three-dimensionality is lost, and service tower, ramp, upper and lower studios appear as elements balanced freely about the small hole made by the ramp's penetration.

The true Quincy Street 'façade' is seen from directly across the street from the base of the ramp, 1 and 3. A strong vertical splits our vision, the corner of the concrete service tower, now seen at some three-fourths of head-on. About this central element is architecture in motion. At the right a deeply pierced block, twenty feet above the ground, curves easily out and around to Prescott Street behind. The ramp rises gently through the trees, obliquely up and away from us, and, turning suddenly, disappears behind the central block. Responding from behind the ramp the curve of the north studio moves back out to the street and around to the Fogg Museum side of the building. Even the static observer is astonished by this masterful symphony of movement.

We cross Quincy Street and not for the only time are challenged by a dilemma: the ramp angles up and to the left the path down and to the right. We take the ramp. Passing within touching distance of some trees, the ramp turns, the service block is close on our right, the *brise-soleils* of the second-floor studio hover low overhead, 4. Everything so far has conspired to make us *feel* this a smaller building than it is. But at the top of the ramp all changes. Without warning, the scale becomes monumental. The ramp descends slowly, ceremoniously, straight for one hundred and thirty feet through a gloomy two-storey space, its surprising axiality accented by a parallel row of attenuated columns, 5. We descend the ramp on to Prescott Street and turn back. Our impression of monumentality was not mistaken.

Approaching Prescott Street the initial impression is of a sheer wall of *brise-soleils* seen behind the embrasure-like openings of the library extension under the new Fogg garden. The penetration of the ramp here is neither concealed nor insignificant; on the contrary, it gouges out a great hole, 6. To our annoyance, we find no way directly up to the base of the ramp (some six feet above street level). We must continue to the end of the wall, turn right . . . and we understand the circuitous route. We see, in head-on elevation, the ramp ascending straight through the building, 7, a small patch of sky at the end. Once again the essential quality of the façade, here the ramp's penetration, is distilled at the moment of entry.

Descending again to Quincy Street, we take the path down and to the right from the base of the ramp. We butt right up against the corner of the vertical block, which rises sheer and smooth out of the pavement for five storeys: a rude way to treat a visitor! The path slopes down to the right, levels out and opens up into a small courtyard, punctuated by high columns supporting the second-floor studio, 8. On our left, tucked into a corner, is the entrance to the lobby.

interior spaces

The theme of 'discordant entry' sounds again. Upon entering the building, at our right elbow is a thick column, off our left hip is a concrete bench, 9, and directly ahead is an eight-foot-wide vertically pivoting door. Again the visitor is placed on his mettle: the architecture communicates no easy information. At last one gains one's bearings. At our right a stairway leads down to the auditorium, communications rooms and photographic dark rooms, receiving and storage areas. Large ducts painted green and black cross the ceilings of the corridors, but their roar does not penetrate the auditorium.

Returning upstairs to the lobby, one sees, through a glass wall, near the L-

[continued on page 405

Visual Arts Centre
Harvard University



2

2, from the Quincy Street side, looking at the projecting curved block with the beginning of the ramp on the right.

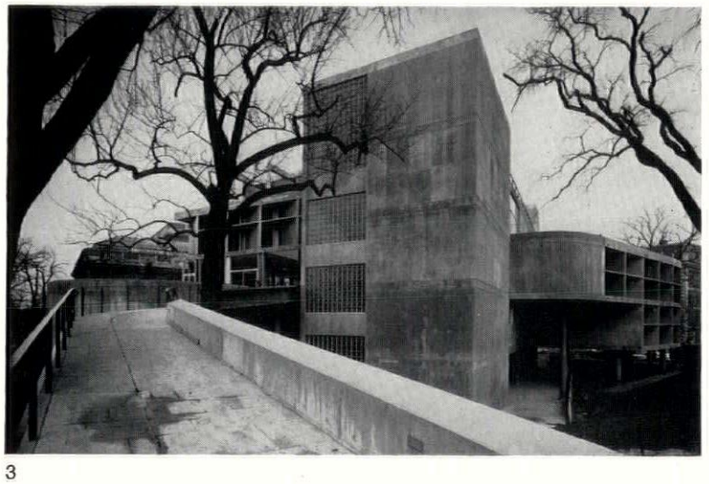
3, at the foot of the Quincy Street ramp, which curves round the corner of the square service tower.

4, the ramp enters the building; studios overhead.

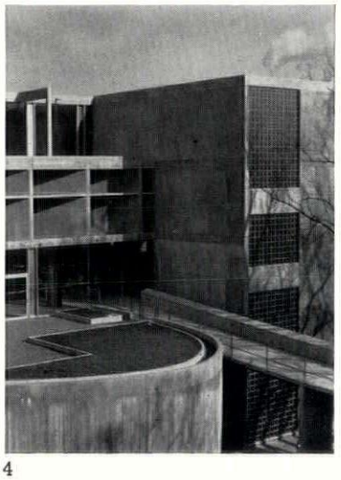
5, looking through the building and down the Prescott Street ramp.

6, the Prescott Street side, with the ramp emerging from the hole in the facade.

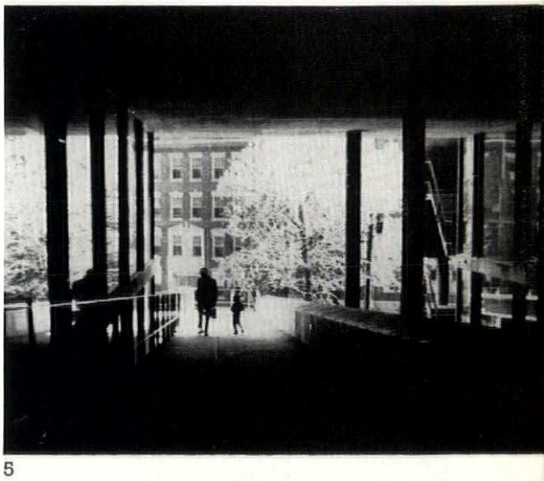
7, looking back up the ramp, with daylight showing on the far side of the building.



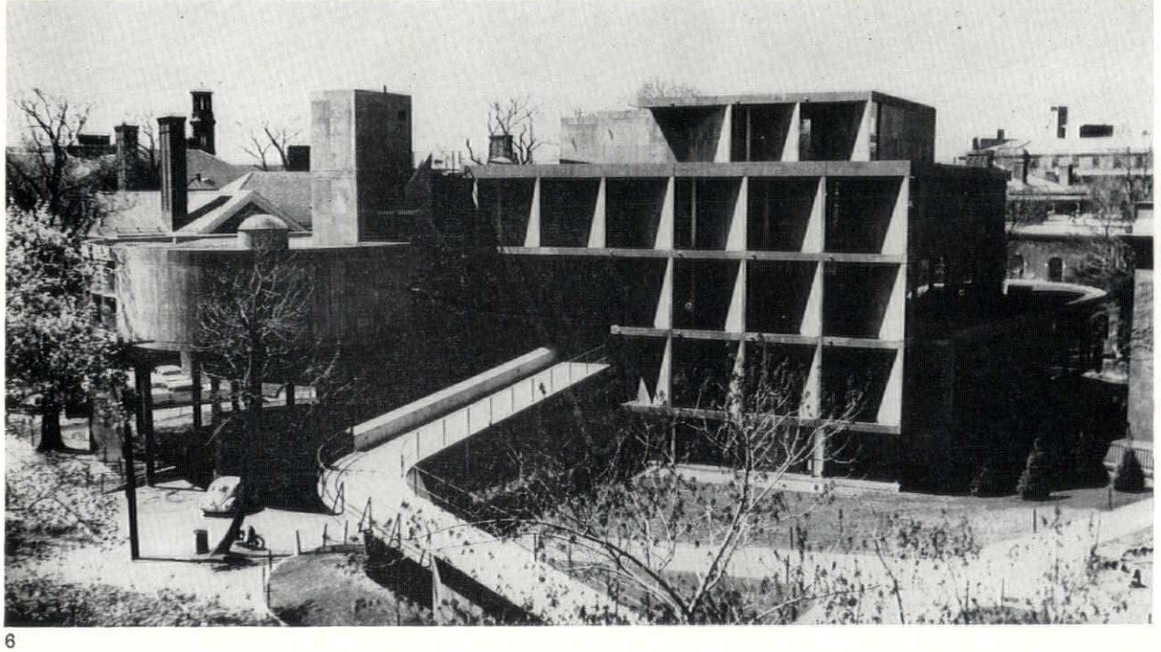
3



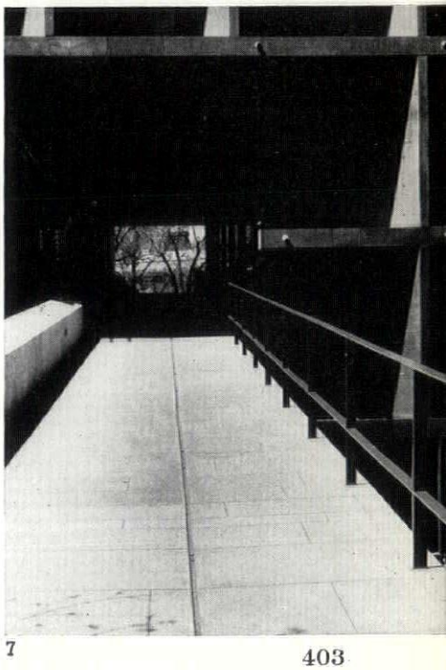
4



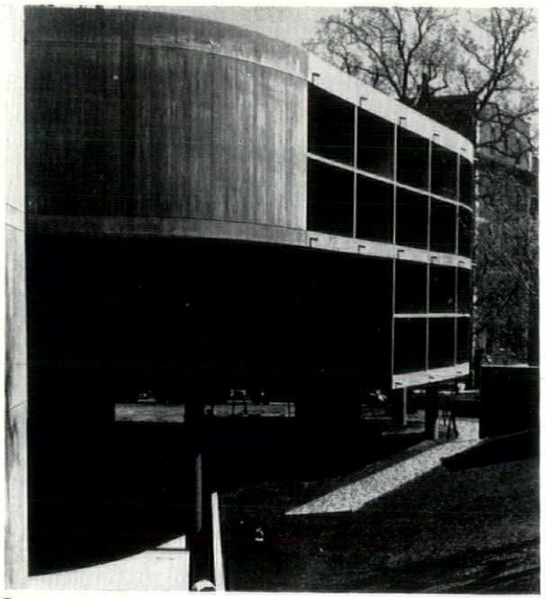
5



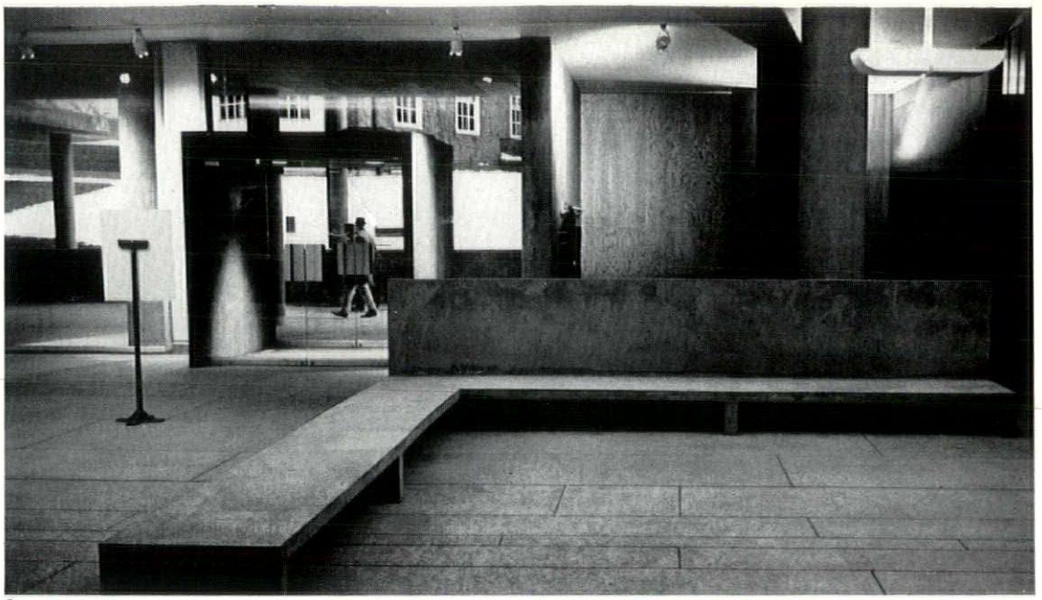
6



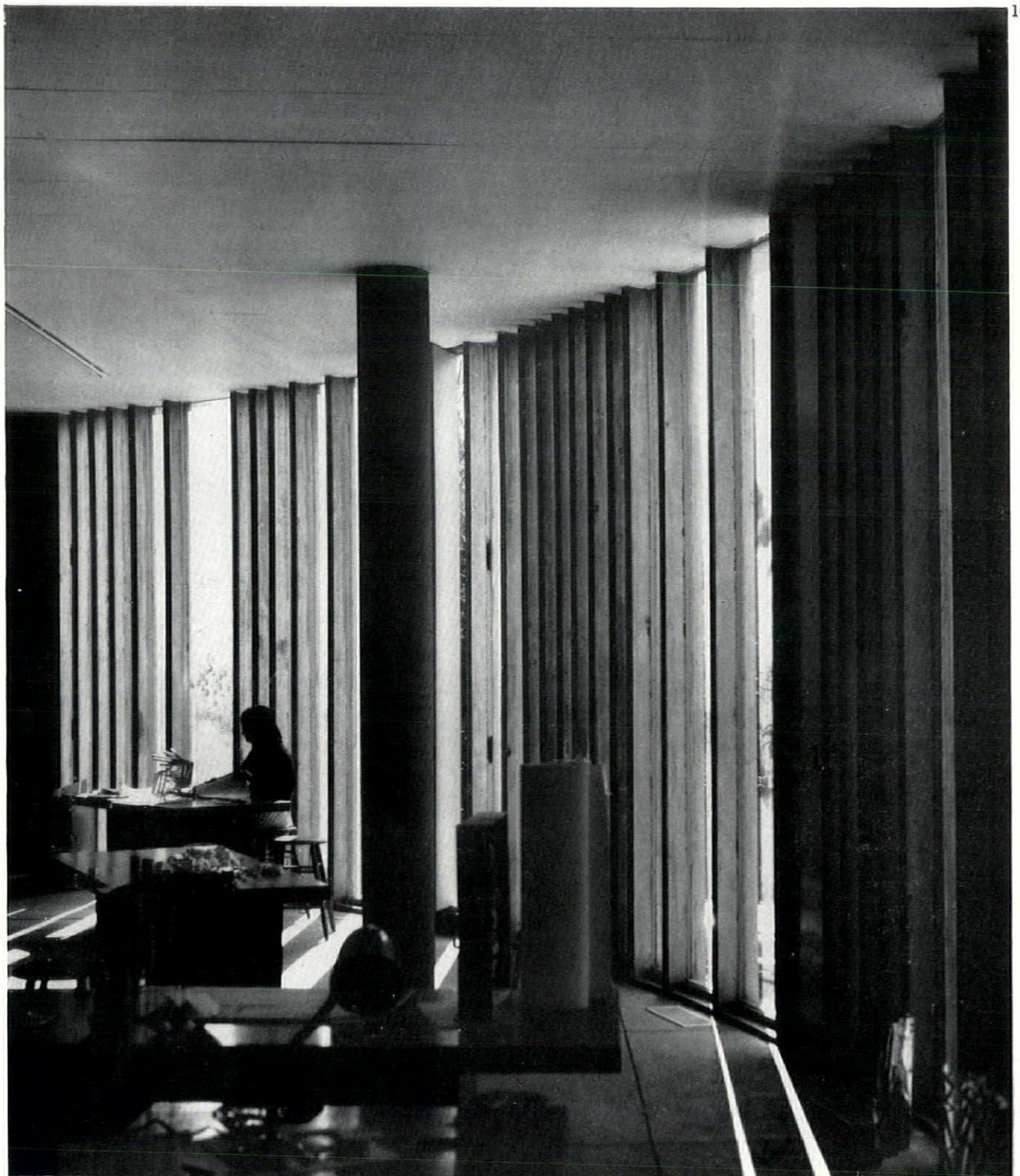
7



8



9



10

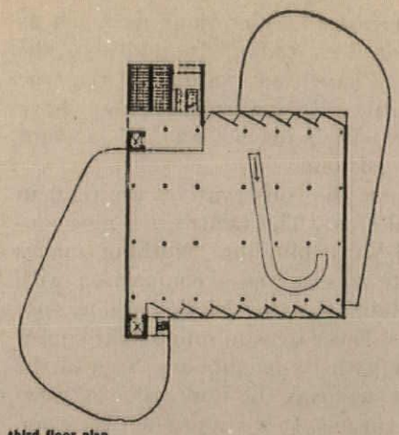
8, *the projecting studio wing on the Quincy Street side. At the bottom of the path, round the corner on the left, is the entrance to the building.*

9, *inside the entrance hall.*

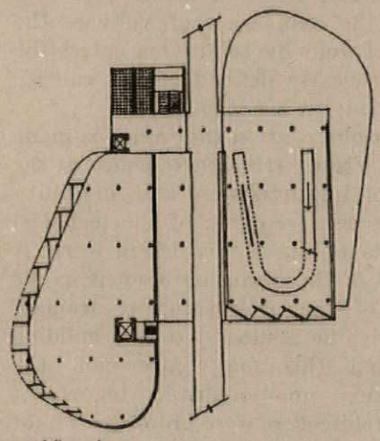
10, *one of the main studios: the 'three-dimensional workshop,' with curved wall composed of irregularly spaced vertical sunbreakers.*

Visual Arts Centre
Harvard University

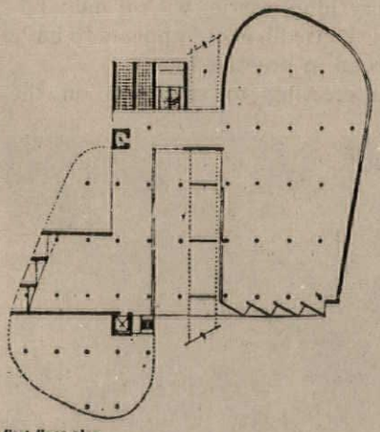
continued from page 402]



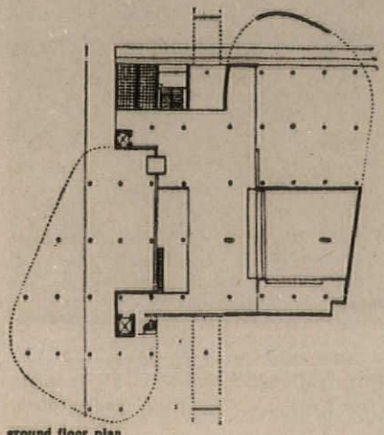
third floor plan



second floor plan



first floor plan



ground floor plan

shaped concrete bench, the ramp ascending overhead. The wide door opposite the entry opens on to an exhibition terrace underneath the curved first-floor studio, and to the right of the door is an all-glass wall, through which one can look down into the auditorium. At the far right-hand end of the lobby, behind a bright red wall, are the administrative offices.

From this entry we turn left to the stairwell. (An elevator was originally included but was eliminated for budgetary reasons. Provision has been made for its future installation.) The dappled light penetrating the glass blocks makes one feel under water. From the inside clear glass would have been more dramatic, but it might have ruined the solidity of this key element in the west façade.

At the first-floor landing one turns left, passes under the ramp, and enters the curved studio which projects out towards Quincy Street. This is the 'three-dimensional workshop' under the direction of Mr. Basaldella. Although they differ widely in plan, the spaces on the first, second and third floors are similar enough in general characteristics for us to analyse this case as typical.

The view of the whole space is blocked by the unfortunate placement of tall lockers on our right. Once past them we perceive a unique type of loft space, a free-form plan disciplined and scaled by the insistent rhythm of the circular columns, 10. All objects stand free; nothing is hidden or built-in: desks, storage equipment, sinks, even the air handling machine. The concrete of the ceiling is painted white, that of the floors remains natural grey. The walls are concrete (often painted brilliant red, yellow, green, or white), plywood, black chalkboard and glass.

At the far right, or eastern end of the room, are massive *brise-soleils* angled for protection against the eastern sun. Construction of these twelve-foot-high fins, only four inches thick, was one of the most difficult tasks faced by the contractor. They narrow at their outer ends to points a fraction of an inch wide, another difficult detail, and there is some question whether the outside points will be able to resist the rigorous New England climate.

The fenestration is standard 'Corbu'; narrow vertical panes of glass set directly into irregularly spaced concrete mullions. Occasionally interspersed are brightly painted, centre-pivoted wooden *aerateurs*, sixteen inches wide, designed to provide cross-ventilation in mild weather. (With the exception of the basement and lobby levels, the building is not air-conditioned.) The mullions have shown an unfortunate tendency to buckle, and in many cases steel pipes have had to be wedged between them. They have not been taking load from a deflecting slab; rather, the reinforcing bars placed in the mullion 'flanges' were too thick to contract with the concrete during the shrinking process, and so went into bending.

On the left: plans at the four main levels. The ground floor is largely open, except for a glazed entrance hall and a square conference room to the right of it. The first floor has studios on the left and, on the right, the large 'workshop for two-dimensional experiment.' On the second floor—which is the level through which the ramp passes—are the corresponding workshop for three-dimensional experiment and an exhibition hall. On the third floor is one square exhibition hall.

some technical complications

In respect to heating, each room is an individual unit, with its own free-standing unit ventilator. The alternative would have been one or more centralized heating units supplying all areas through a system of ducts. The system chosen has been defended on grounds of both economy and design. The extra square footage and cost of several small units over one large one is more than offset by avoiding a large vertical duct chase. Furthermore, it would have been difficult to span the open ramp gorge without exposing the ductwork, an unacceptable solution aesthetically. As it is, the units need to be fed only by hot water pipes, which fit within the 'air floor' under the screed of the floor above. Painted bright colours like the basement ducts, these pipes casually appear and disappear through walls, ceilings, and in one case, a blackboard.

Under the peculiar conditions imposed by the design, this is undoubtedly the logical solution. Visually, the exposure of the pipes and machines reinforces the 'workshop' aesthetic. The problem raised is acoustical, for a higher level of background noise is acceptable for assembling automobiles than for making works of art. It is a question of degree. From far enough away the machines' humming sounds restful, like a ship, and besides, a healthy dose of 'acoustic perfume' is needed in spaces faced with wood, concrete and glass, whose combined sound absorptivity is approximately zero. However, at close range the noise level becomes unacceptably high.*

Structurally, a conventional slab is supported at each column by a heavily reinforced upset shear head, a variant of the mushroom cap which projects above the structural slab. Around the upset panels is the 'air floor,' a system of domed metal pans 3½ in. high, covered with 2 in. of concrete. In a design like his, however, the structural system cannot avoid being somewhat haphazard and *ad hoc*. Some

* The planned enclosure of the machines within concrete block walls will reduce the noise at the source. The acoustical consultants, Bolt, Beranek and Newman, have devised an ingenious solution to the other problem. Heavy coloured curtains of varying lengths (all, however, remaining above head height) are to be hung from the ceiling lighting tracks in such a way as to absorb the necessary amount of sound.

loads are taken on hangers from the floor above. Such features as the curved edges of the floor slabs and the central location of the ramp created unusual structural situations.

One structural oddity is the proportioning of the column diameters solely according to the amount of weight supported, without consideration of the column's unbraced height. For example, the outer columns supporting the second-storey studio on Quincy Street, the outer columns supporting the third-storey studio on Prescott Street, and the first two columns in the ramp opening are all 16 inches in diameter. The first are only one storey high, but the latter two are two storeys, and presumably are prevented from buckling only by being crammed full of reinforcement.

the Le Corbusier language

The Modulor scale was used in dimensioning the building. For example, the *brise-soleils* are 12 ft. on centres, the floor-to-ceiling height is also 12 ft., columns are 25 ft. 5 in. on centres. It is claimed that the Modulor is used only where tolerances are not critical, and does not affect important structural and mechanical dimensions. For example, although the original design called for a structural slab 1 ft. 1 in. thick, a Modulor dimension, the total floor dimension became 1 ft. 2 in. when the air floor was added. Of course, this example of the Modulor's 'flexibility' in practice also serves to undermine the assertion that it doesn't interfere with the structural design, since the original Modulor structural slab is shown to have been about 60 per cent thicker than necessary. This kind of niggling, evident in all the working dimensions, over inches or fractions of inches, is in the most depressing contrast to the lofty purposes of the Modulor system. Also, the visual irrelevancy of *tracés régulateurs* in a design of this plastic character is too obvious to need explanation, and since a logical connection has yet to be established between a system of mathematical proportions and dimensions which 'accord with the human scale,' one is hard put to find any way in which this awkward system of dimensioning façades has improved this building.

The architect's defence against the charge that he has oversolved the sun control problem for sculptural reasons is weakened by the conspicuous omission of *brise-soleils* from the all-glass, west-facing walls of the second-floor exhibition area and the third-floor sculptor's studio. The obvious intent was to provide visual continuity with the roof terraces. However, one cannot be sure that the *aerateurs* and the sliding glass doors will remove all the heat, and the only defence against the murderous glare will be curtains, always a last resort. In general, however, Le Corbusier's personal set of *objets types* for sun control and ventilation can well be defended, at least in intention. The severity of even the winter sun in the United States in terms of heat and glare is too often underestimated. The danger is all the greater in this building because it lacks the customary crutch of air conditioning. Visits at all hours show that little direct sunlight penetrates, although there is no shortage of general reflected light. The efficacy of the *aerateurs* is still unproven, but at least an Unseen Hand in the basement will not be in full control.

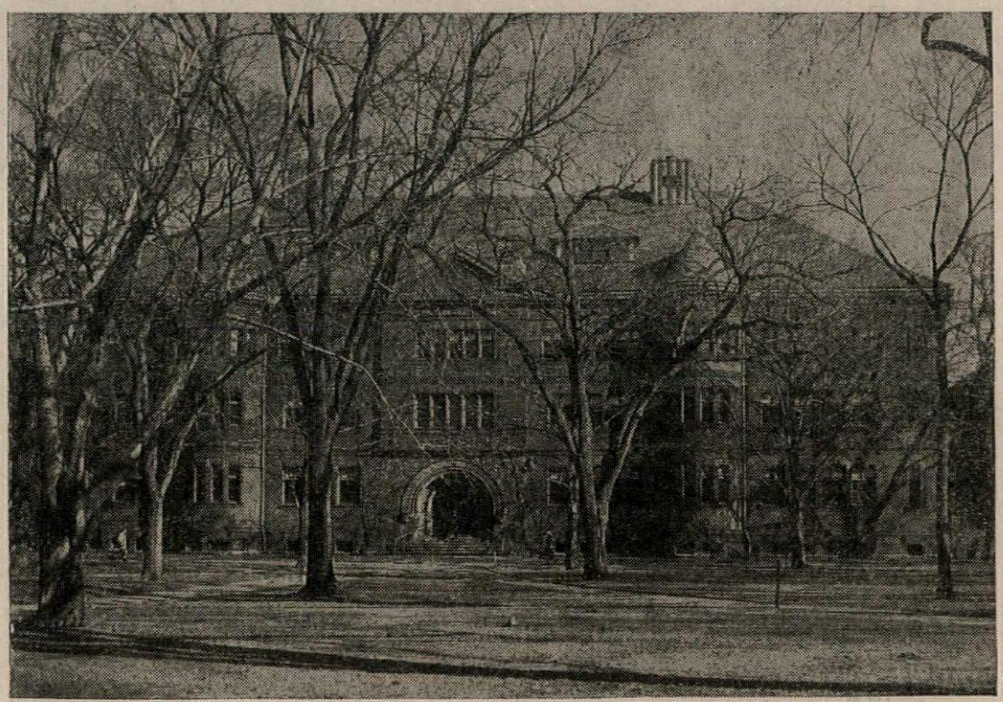
some final observations

The building contrasts markedly with the Yard architecture in two ways. It is primarily street-oriented, and is designed, unusually sensitively, with regard to what a sidewalk pedestrian sees. Also, it is the diametric opposite of a self-contained block with interior and exterior clearly distinguished, as in Sever. Its boundaries are profoundly ambiguous, and one cannot tell whether the building really begins at the base of the ramps, underneath the projecting studios, or within the glass. The much commented upon choice of material is not as radical a departure as one might think, however, since two of the Yard's finest buildings are not of brick. Bulfinch's University Hall is of a light grey Chelmsford granite, while the newly remodelled Boylston Hall of 1857 is faced with a rugged dark Rockport granite which must have shocked the Victorians as much as *béton brut* does today. In addition, the Appleton Chapel, an example of the true Romanesque Revival which may have impressed Richardson, was of a light Pictou sandstone.

Of course the conservatives are right in a general sense. The Centre is a most un-Harvard-Yard building. Nothing makes this quite so clear as a comparison with Sever Hall, 11, the Yard building *par excellence*. Sever lives in quiet right-angled harmony with its neighbours. Seen in the round, it confirms the impression of mass of its elevations. It is a supreme expression of static architecture. The effect is in the marvellous configuration of the structural material, the expression of volume, the mastery of void by solid. One enters the building at clearly defined points, and interior space is an afterthought.

Another observation that must be made about the Visual Arts Centre concerns the amount of improvization and ingenuity that have been required of the technical consultants to make this design work. A good deal of the confusion evident in the response of the architecturally trained, particularly the students, to the building stems from this fact. After all, the rationalistic, functionalistic tenets of modern architecture were promulgated not least articulately by Le Corbusier himself. His dictum, 'technical consideration comes before everything, carries with it unavoidable plastic consequences,' appears to have been reversed in practice here.

It is interesting to speculate on the



11, *Sever Hall, Harvard Yard, which the author of this article describes as the Yard building* par excellence, *and a supreme example of static architecture, contrasting this quality and its right-angled harmony with its neighbours with Le Corbusier's emphasis on movement in his Visual Arts Centre, his eccentric placing of the building to exploit its movement and the ambiguity of its boundaries.*

the effect the Visual Arts Centre will have on American architecture. Considering the strong foothold *le style Corbu* has already gained in the Boston area through the work and teaching of Dean Sert and the winning design in the City Hall competition, its greatest impact will probably be outside Boston through its generous coverage by the American architectural press. Hopefully it will serve as an antidote to the 'new formalism' of historicist forms, axial plans, symmetrical façades and machine-produced ornament described in THE ARCHITECTURAL REVIEW by Professor Jordy, and defended with unprecedented frankness by the new editor of *Progressive Architecture* (February, 1963).

In terms of both Le Corbusier's personal development and architectural design in general, the Visual Arts Centre is full of paradoxes. While it has obvious resemblances to the Indian buildings and to Ronchamp it goes back to the thirties for its thin cylindrical columns. The elements supported by these columns, however, are not taut-skinned cubic volumes but complex sculptural forms of varying heights; moreover, some elements rest directly on the ground, while others are supported by curved concrete planes. Then there is the deliberate blurring of the distinction between interior and exterior, and the dramatic projection of the building into surrounding nature, neither of which have been characteristics of Le Corbusier.

As usual he is one jump ahead of the critics, for just as Professor Vincent Scully put out the plausible hypothesis that he was the new disciple of sculptural humanism (in the empathetic sense of Geoffrey Scott's *The Architecture of Humanism*), Le Corbusier designed a building that was all sculpture and no humanism. One ought to grant some kind of award for prescience, however, to Sir John Summerson, who wrote in 1947, in his *Heavenly Mansions*, that the distinctive quality of a Le Corbusier building is:

'A ruthless dismemberment of the building programme and a reconstitution on a plane where the unexpected always, unfailingly happens. . . . His architecture is full of a glorious, exciting contrariness—a contrariness which is never affectation, because it invariably is a solution of a hard and fundamental problem of use.'

Nothing could better describe the ramp. A flamboyant sculptural gesture incidentally allows direct access to the exhibition area on the third storey.

Excepting the Millowners' building at Chandigarh, Le Corbusier's sectional pyrotechnics have always gone on within a strongly defined external form. With the exceptions of the Philips Pavilion and Ronchamp, the same may be said of his use of free curvilinear surfaces and volumes. The free-standing screen partitions of his houses, the curved blocks of the Moscow Centrosoysus and the Swiss Pavilion, the roofscapes of Marseilles and Chandigarh, the writhing light-scopes at La Tourette—always the free form has been a foil to the dominant rectangular mass or bay-pattern.

Here, it is possible to conceive of the building as a ramp with ancillary enclosed spaces—certainly this must be the lay public's image of it. Rectangular and curved volumes are freely disposed, in plan and in massing, about dominant central elements, the ramp and the service towers. Within the studios, curved walls now terminate and confine the rhythm of the columns, reversing the earlier relationship.

Finally, a word about a tricky subject, the Centre's symbolic aspect. It is hard to read any associative meaning into the building's form, as has been done in the case of Ronchamp. However, a building may communicate meaning in other ways than 'looking like something.' A good example is Lewis Mumford's campaign against the bureaucratic image conjured up in the UN and Unesco buildings by the secretariat's towering over the assembly spaces. If we are asked to identify what the Visual Arts Centre means or communicates in a non-representational way, we might well conclude something like 'irrationality.' This is exemplified by the lack of a coherent mechanical or structural system, the mysterious circulation pattern, the lack of correspondence between the principal façades, and the indefinable boundaries. It is interesting to contrast it in this respect with that monument of the 'first machine age,' Gropius's Bauhaus, which 'read' as a precise, functional machine product, although it, too, was a school in the visual arts and resembled a factory inside. We know how accurately Gropius's building expressed an important part of the artistic spirit of its day. It would be rash to press the point at this stage, but certainly one may speculate that some future historian would find much in common between the Visual Arts Centre and such vital contemporary movements as the theatre of the absurd, abstract expressionist painting, and some of the *avant-garde* film-making. Undoubtedly it will offend the architectural morality of some and set a bad example to others, but at least no one who has seen its marvellous transparency at night, experienced its grand succession of grand forms and spaces, and discovered fresh secrets with each visit, can deny that Le Corbusier has perfectly symbolized Harvard's purpose, to give the visual arts their rightful place in an over-verbalized, over-intellectualized civilization.

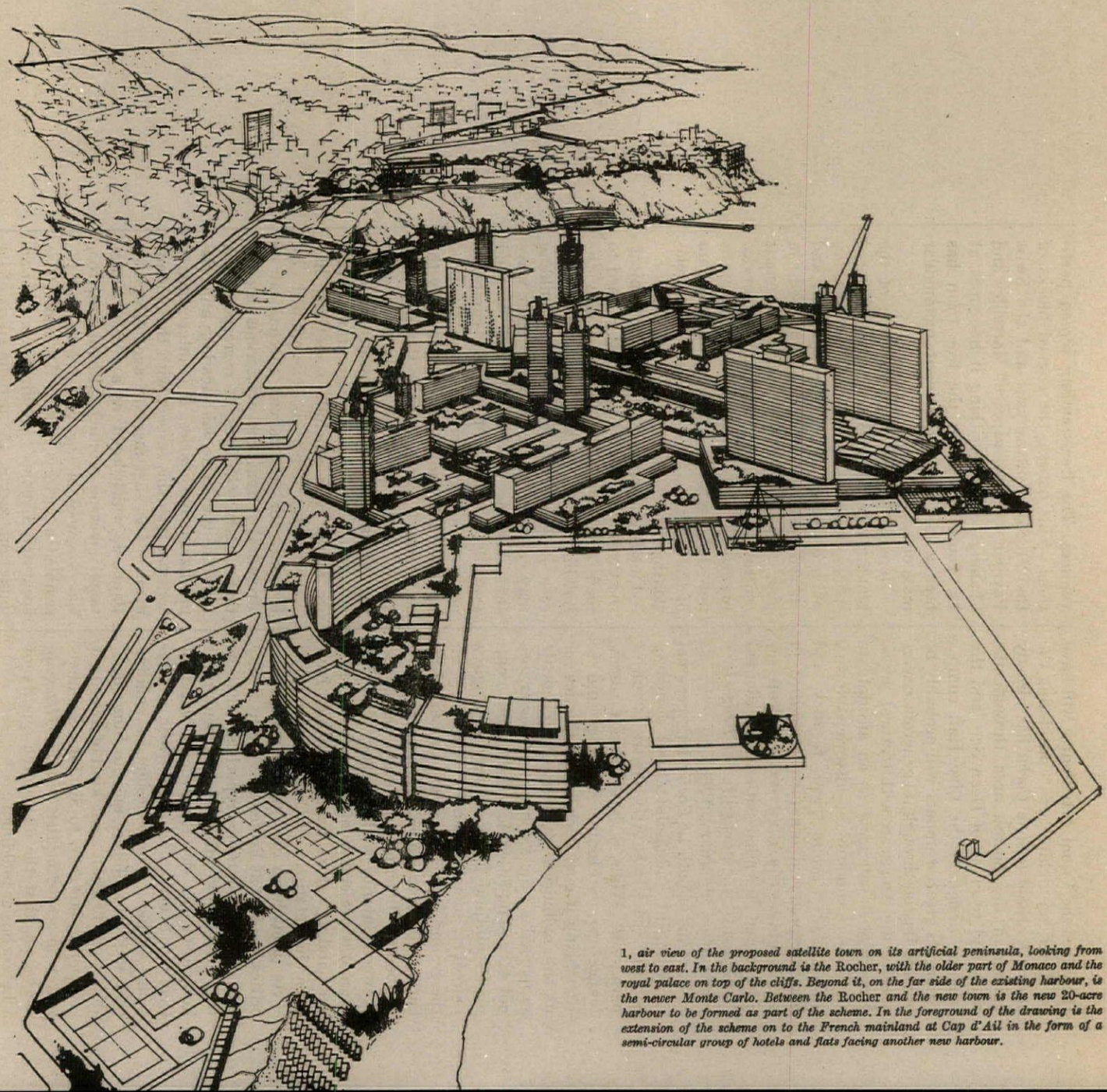
A SATELLITE TOWN FOR MONACO

ARCHITECT-PLANNER: MANFREDI G. NICOLETTI

Development in the Principality of Monaco has always been restricted by its limited ground area. Its 30,000 inhabitants occupy a total land surface of only 370 acres. This is a project for expanding the area by creating an artificial peninsula built out into the sea. It has received the preliminary approval of the authorities—Monégasque and French—and survey and engineering work has already begun. The project is being privately financed—in the first place by a number of Italian and French corporations; later, property developers will undertake construction of the buildings, conforming to the plan and the three-dimensional envelope laid down by the Italian architect Dr. Manfredi G. Nicoletti and illustrated here. The economic consultant is Prof. Gianfranco Gilardini.

The artificial peninsula, situated at Fontvielle, at the western edge of the Principality, will be 86 acres in extent and is expected to accommodate 18,000-20,000 people (including transient visitors). The total building volume is subdivided as follows: 50 per cent housing; 15 per cent hotels; 15 per cent restaurants, shops, theatres, etc.; 15 per cent offices; 5 per cent small-scale industry. There is also provision for a harbour of at least 20 acres area. The 86 acres of newly created ground will all be Monégasque territory and will thus increase the area of the Principality by about 23 per cent. In addition, the project takes in, as part of the same development, an area of 32 acres in the Cap d'Ail zone of the existing mainland, on which it locates a semi-circle of multi-use buildings, containing hotel accommodation, restaurants and flats, facing another new harbour.

The artificial peninsula is to be constructed by sinking prefabricated boxes of reinforced concrete into the sea to form a dam, which will then be filled with earth. The dam will rest on a truncated pyramidical base formed by binding together existing large rocks with mass concrete. The maximum height of the dam is 140 ft., of which 117 ft. is below normal water level, so that the level of the earth filling above the sea will be 23 ft.



1, air view of the proposed satellite town on its artificial peninsula, looking from west to east. In the background is the Rocher, *with the older part of Monaco and the royal palace on top of the cliffs. Beyond it, on the far side of the existing harbour, is the newer Monte Carlo. Between the* Rocher *and the new town is the new 20-acre harbour to be formed as part of the scheme. In the foreground of the drawing is the extension of the scheme on to the French mainland at Cap d'Ail in the form of a semi-circular group of hotels and flats facing another new harbour.*

The layout of roads, buildings and open spaces on the new peninsula has been determined by the following main considerations: a high density of vehicular traffic had to circulate internally without interfering with other uses of the land and had to link up with present mainland traffic arteries extending between Nice, Monte Carlo and San Remo; since the final realization of the project will depend on private investment and the simultaneous growth of each part cannot be expected, there had to be enough flexibility in the plan to allow it to be self-sufficient at all stages; since only 57 of the 86 acres of new ground being created is building land (21 acres being the area enclosed by breakwaters to form the new harbour, and the remaining 8 acres being taken up by the sea-walls), a very high urban density was required to fulfil the economic programme.

The need for compact planning and usable open spaces led to the adoption of a system of pedestrian and vehicular traffic segregation at different levels, with pedestrian precincts linked with open spaces formed on the roofs of lower buildings. The use of levels is as follows:

Level 3 ft. above normal sea-level: mechanical installations and permanent parking for residents.

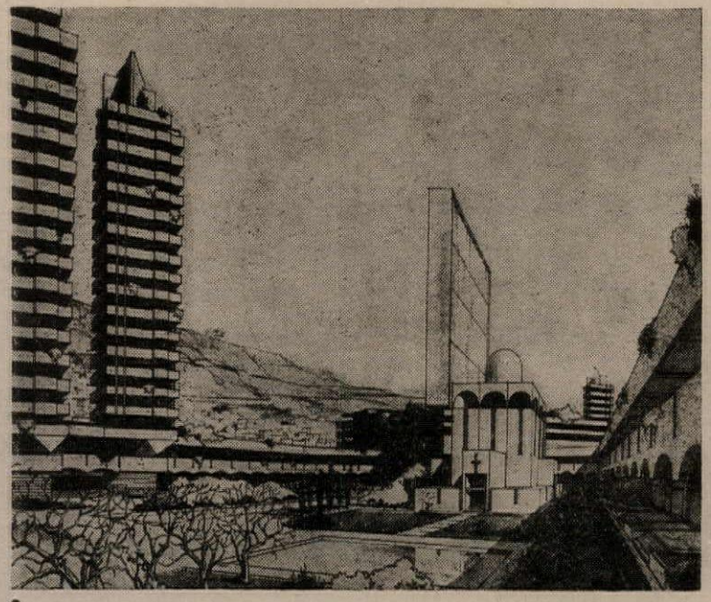
Level 10 ft. above sea-level: main vehicular traffic circulation and temporary parking for visitors.

Level 23 ft. above sea-level: main pedestrian circulation and public spaces and gardens.

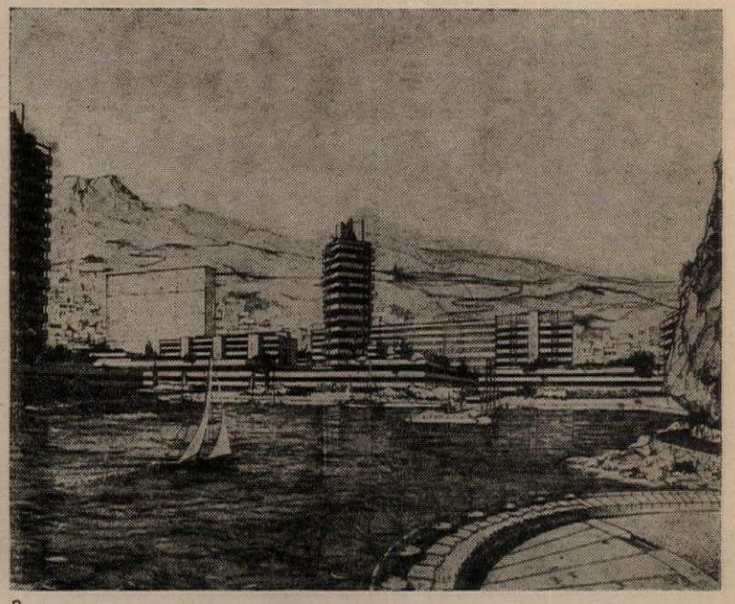
Level 23 ft. to 71 ft.: floor levels of lower buildings (shops, restaurants, theatres, etc.), forming a connective building network which will also incorporate pedestrian spaces at various levels. This is not being pre-planned, so that developers' needs can be met with the maximum flexibility; the layout of internal streets and spaces, and the subdivision generally, of this building stratum will thus emerge gradually, but under the architect-planner's control.

Levels 71 ft. to 348 ft.: high building blocks (flats, hotels and offices), which will also depend on developers for their detailed design, but will be subject to much more rigid control, their general grouping and outlines having been already laid down.

As a general principle, both in the lower and in the higher building strata, developers will be

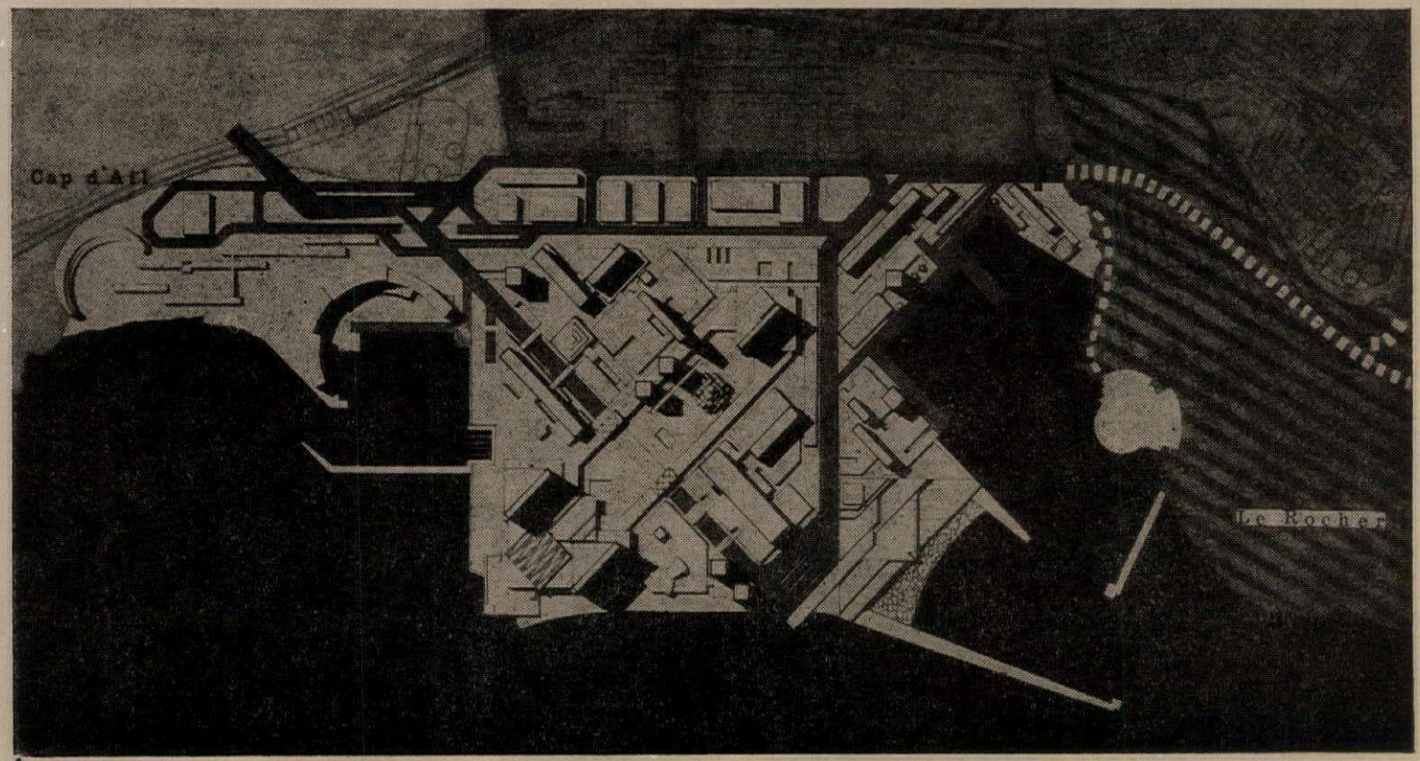


2



3

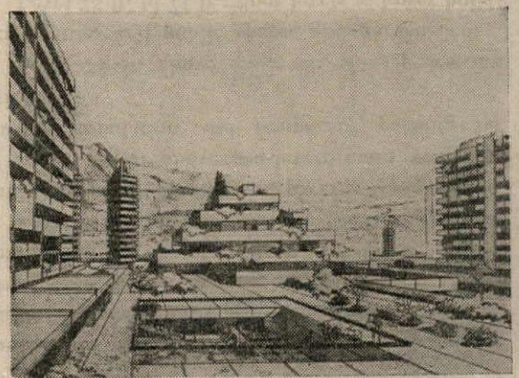
2, in the central piazza of the new town: flats and offices on the left; the inter-denominational church in the centre with, behind it, the cultural centre. The tall slab is the book-stack of the library. 3, looking towards the new town from the foot of the Rocher, *across the new harbour on hte Monégasque side. 4 (below), plan of the new town showing also the location of the peninsula between Cap d'Ail and the* Rocher *of Monaco. The dark lines show the main low-level traffic route, which passes beneath and between the building platforms. The central piazza (see above) extends diagonally across the peninsula, with a group of hotels at the seaward end and the civic buildings at the opposite end.*



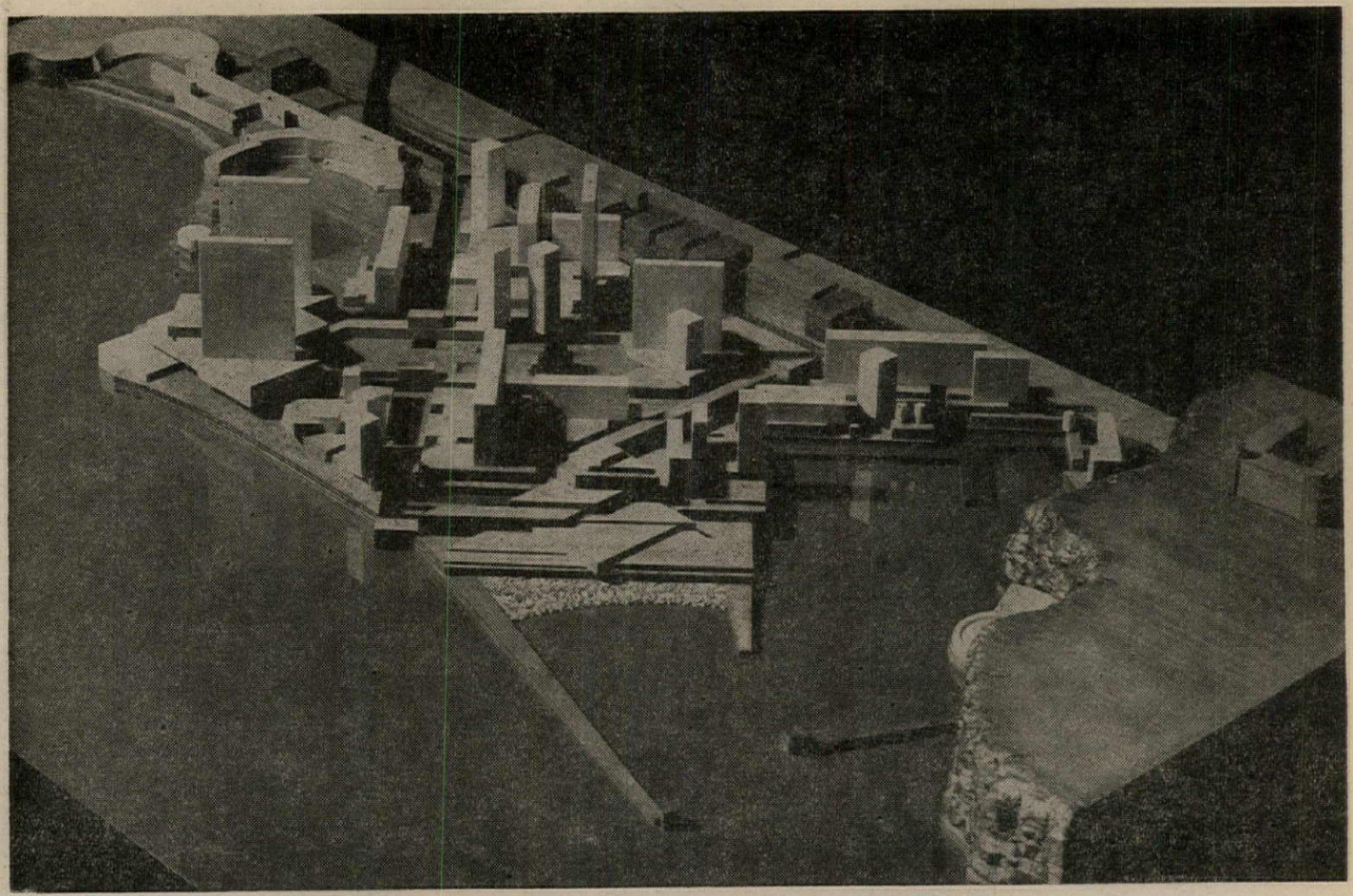
4

offered three-dimensional volumes rather than two-dimensional sites.

Traffic planning has been based on an estimate of 5,000 residents' cars and 5,000 visitors' cars. Parking places are planned alongside the vehicular circulation routes underneath the main building platform and are distributed on the principle that the maximum distance between parking and destination should be about 160 yards. Traffic circulation is on a one-way system. In addition to the small pedestrian open spaces distributed at various levels, the plan provides one formal open space in the shape of a long piazza sunk into the main building platform and extending diagonally across the centre of the peninsula. It will separate the hotel centre on the south from a group of civic buildings on the north.

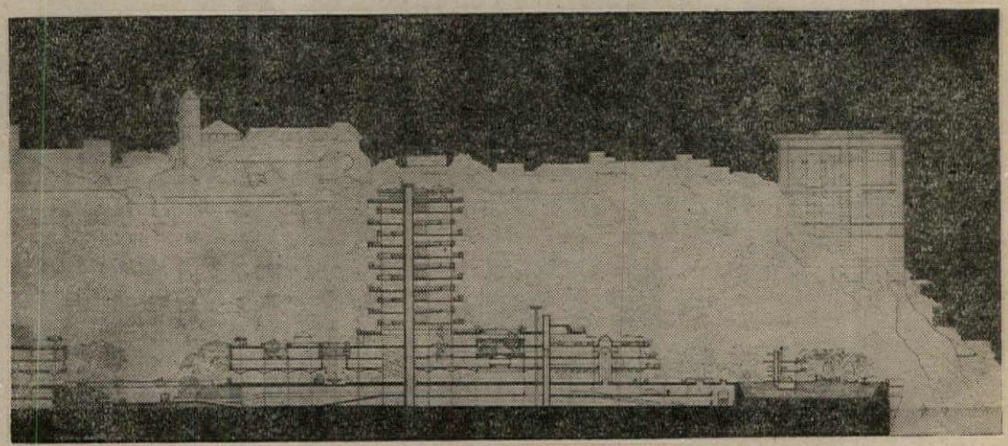


5



6

5, the upper levels of the main building platform, with tower blocks rising from it. 6, model of the whole project, looking down on the artificial peninsula from the south-east: the Rocher *of Monaco (with the royal palace) on the right; Cap d'Ail, with the mainland development associated with the project, at top left. 7, section through the peninsula, looking towards the* Rocher. *It is taken through one of the proposed high buildings and shows the low-level traffic route (left) with the two parking floors adjoining it, the main pedestrian platform above and the different levels of building rising from it.*



7

A SATELLITE TOWN FOR MONACO

Factory Social Block, Isleworth

designers (for the interior), Conran Design Group
architects for the building, Dodge & Reid

ID
a monthly review of interior design



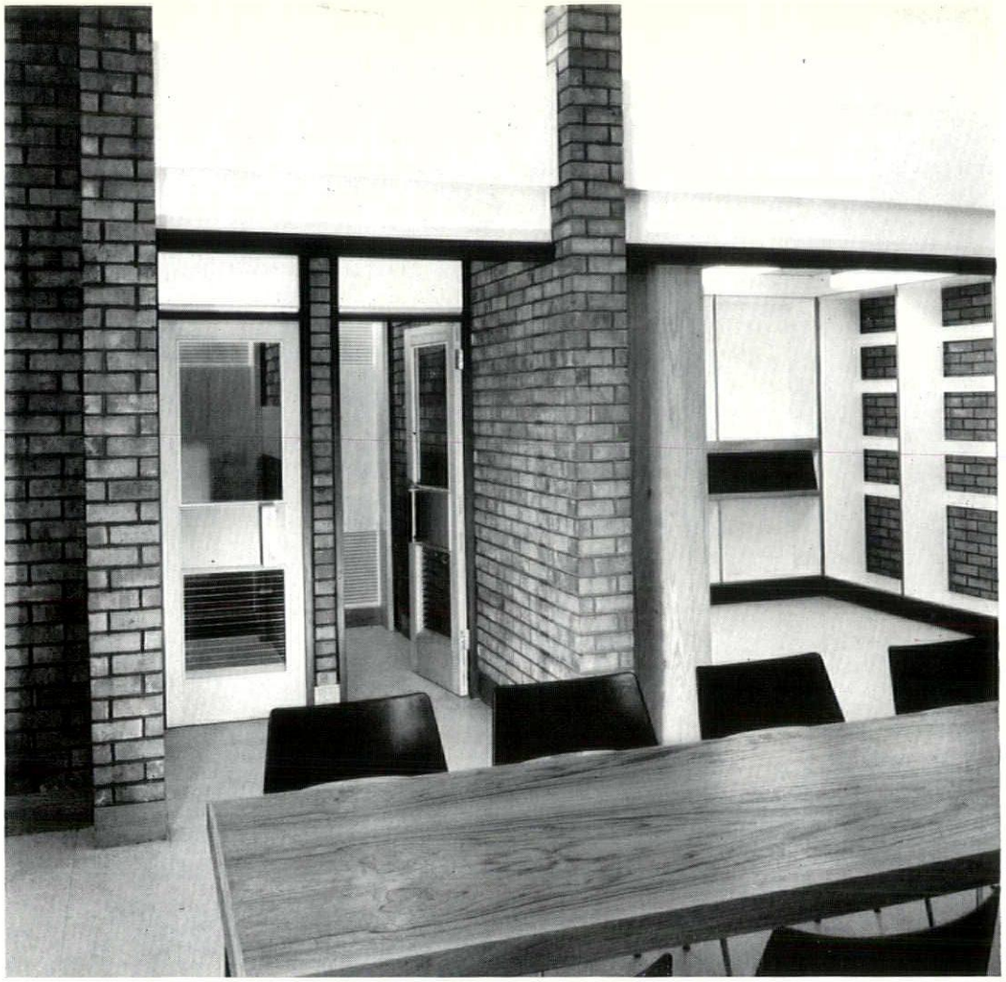
1, spectator seating in the billiard room.

ID

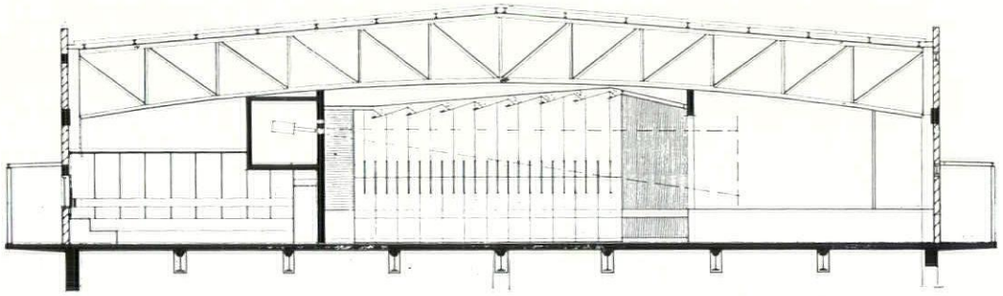
Factory Social Block

The construction of this large social facility for workers at Gillette Industries, Isleworth, is something of a portent. Firstly, its site, at the back of the Gillette Building, one of the rare works of Sir Banister Fletcher, is an earnest that the industrial palaces of the Great West Road are reaching the end of their useful life, and further drastic renovations are to be expected. Secondly, the scale of the facilities provided is remarkable—though neither the furnishings nor the equipment is unrealistically luxurious, the sheer square-footage of floor space is in itself a luxury that few similar installations can rival. As a result, there is ample room for specialized recreational facilities, instead of the common confusions of games-playing in the canteen, etc. Thirdly, a leading interiors design-office has been called in to prepare a proper scheme, in collaboration with the architects, and with a representative of the management, instead of leaving the whole thing to the dubious ministrations of the sort of contract furnishing organization that usually lands a job like this on the basis of the lowest tender. The result is an industrial interior of more than usual interest.

for criticism see page 441



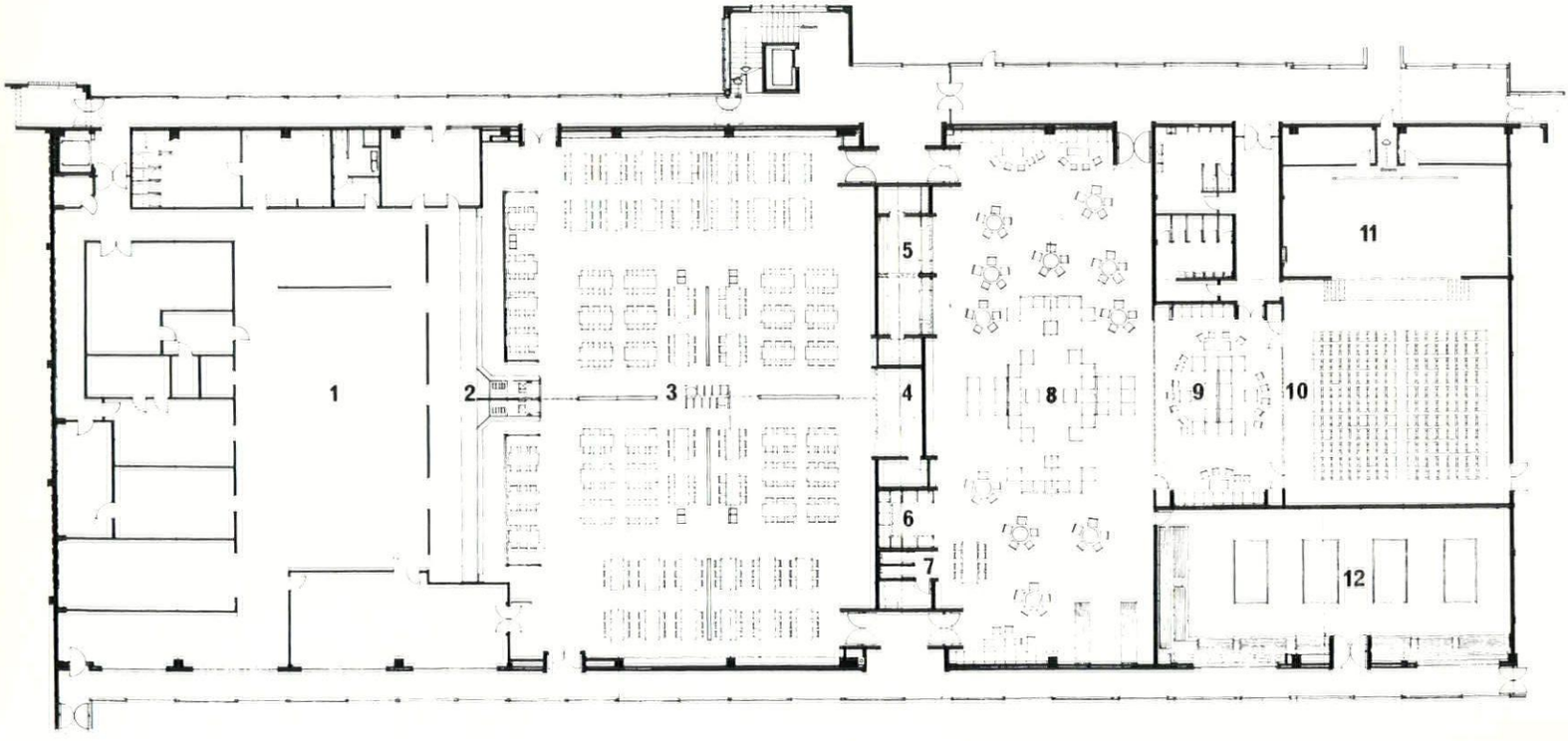
2



section through the billiard room, projection booth and theatre

key to plan

1. kitchen and storage
2. serving counters
3. canteen
4. canteen shop
5. bar and shop
6. library
7. telephones
8. main rest-room
9. smaller (ladies') rest-room
10. auditorium of theatre
11. extensible stage
12. billiard room





3

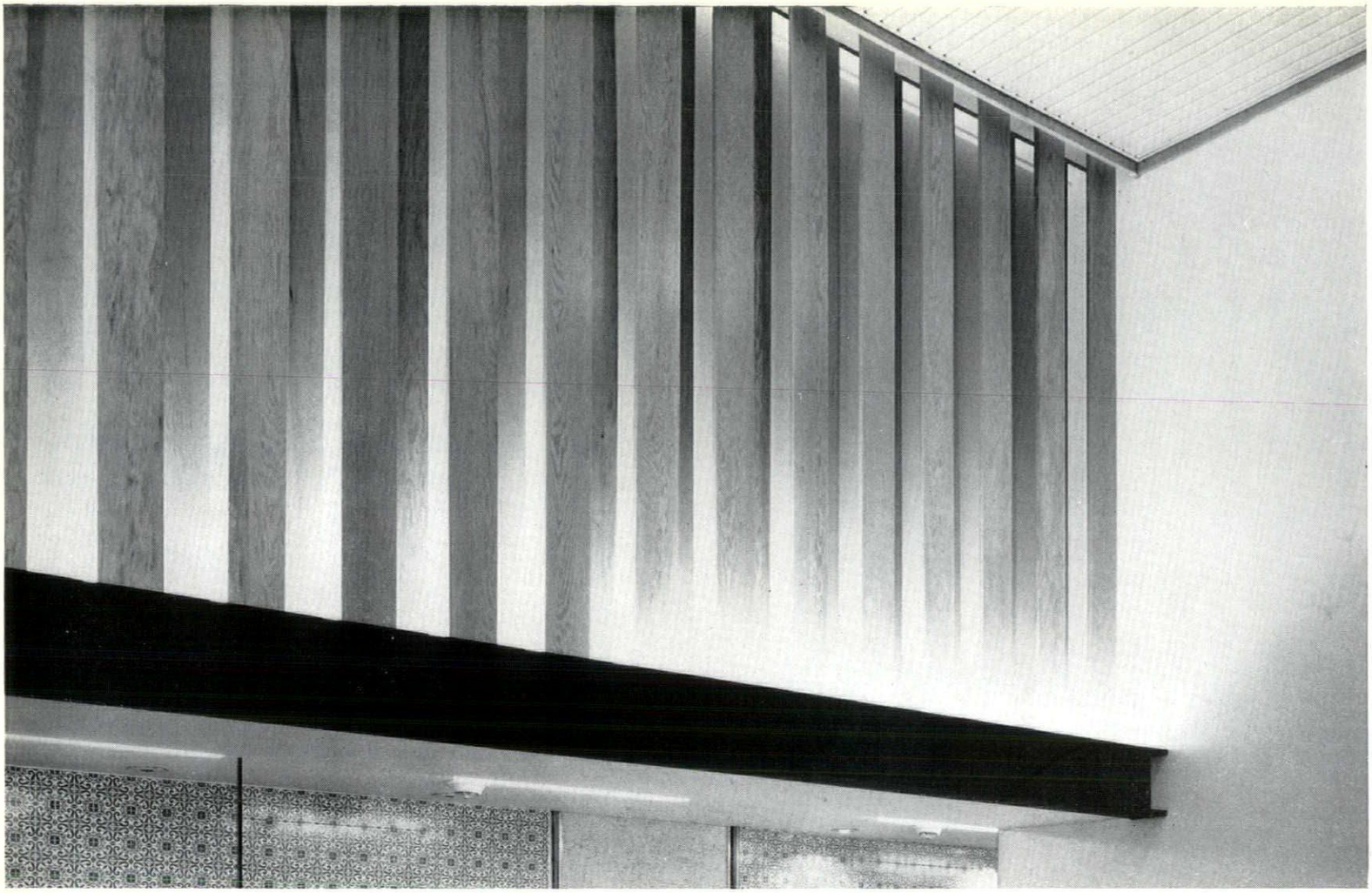
4



2, opposite, the library and telephone booths in the main rest-room.
3, general view of the main rest-room, with library at left, glazed display case for sporting trophies, shop and bar at the far end. The furniture generally is upholstered in blue and the thermo-plastic floor tiles are a light neutral tint.
4, the services wall of the main rest-room looking back toward the library. The projecting piers are blue engineering brick, the lighting beams above are clear-finished pine.
5, looking across the rest-room to the sliding-folding screens which separate it from the small rest-room and theatre beyond ; entrance to billiard room at right.

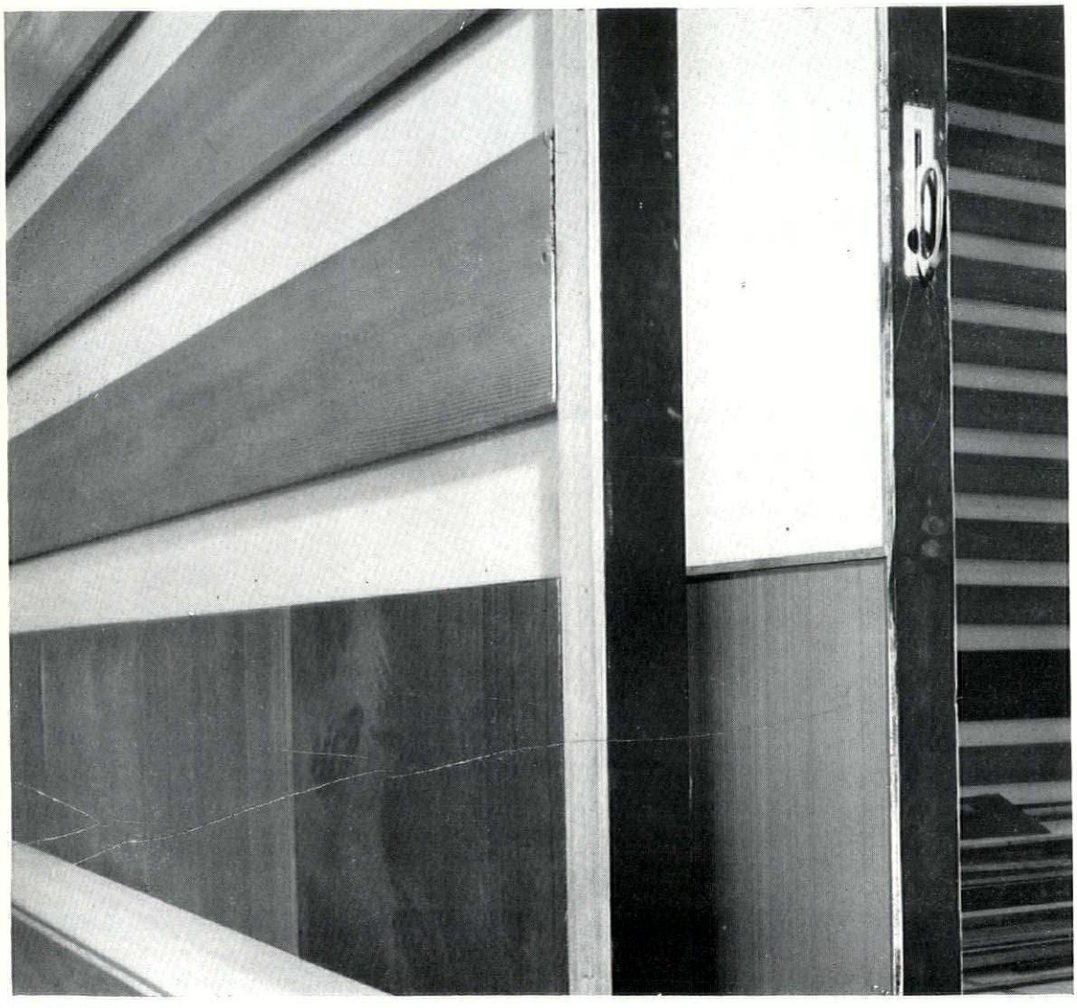
5





6

Factory Social Block, Isleworth



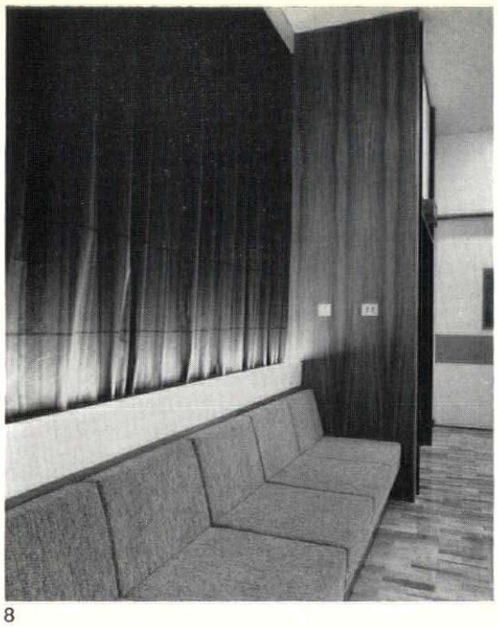
7

6, one end of the canopy over the serving counter, at the point where it butts against the central division above the pay-desks (see plan page 412). The vertical staggered pine slats can be illuminated from in front or behind (one front-lighting strip is switched on in this picture) in order to animate and vary a long and otherwise undifferentiated surface.

7, roll-out section of screen in the canteen, showing brass pull (which can be flipped back out of sight when not in use, leaving a flush surface). With the aid of these screens, the canteen may be converted from a large single volume to up to four smaller units.

8, opposite, seating in the smaller rest-room; the projecting elm panels beyond shield the door giving on to the separate entrance lobby to the theatre.

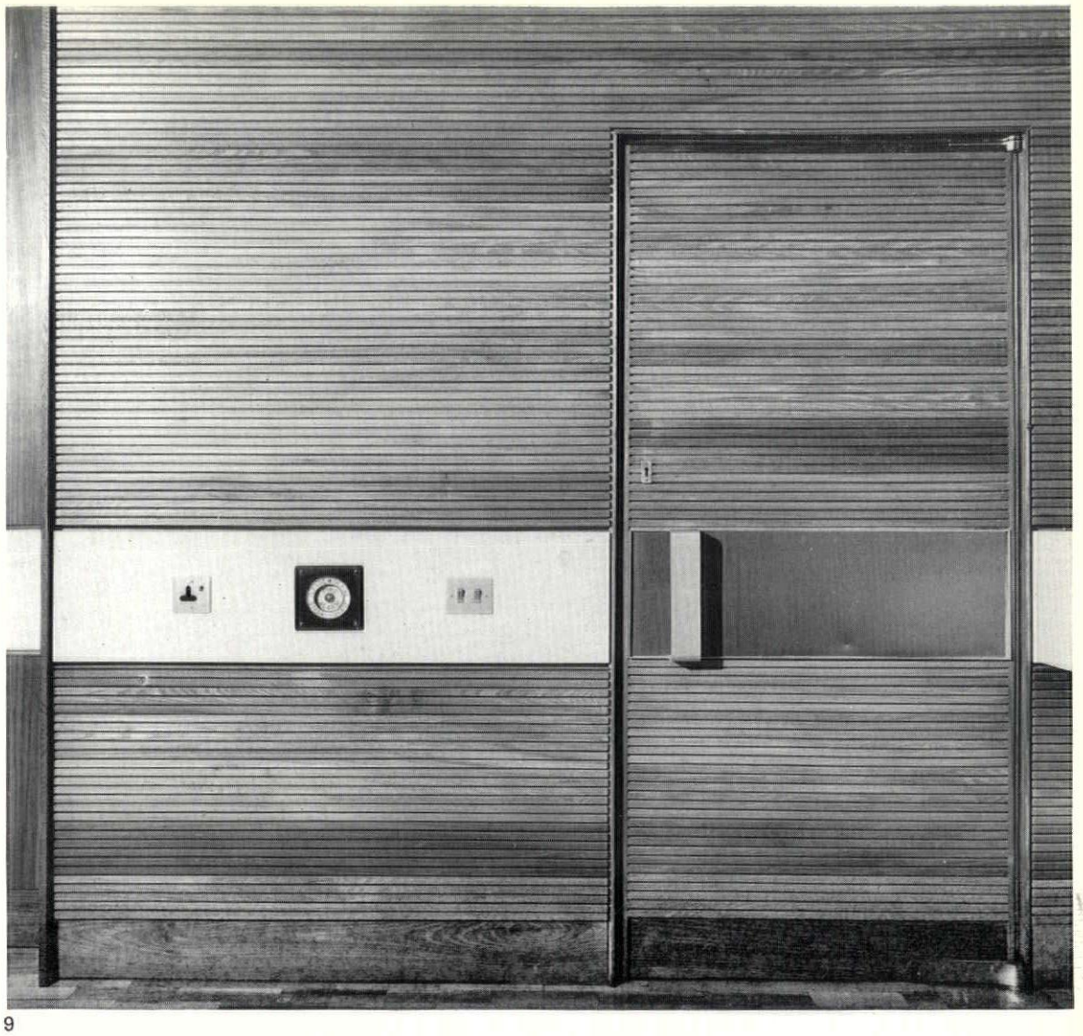
9, door from theatre into lobby with fire-alarm and electrics panel alongside in white



8

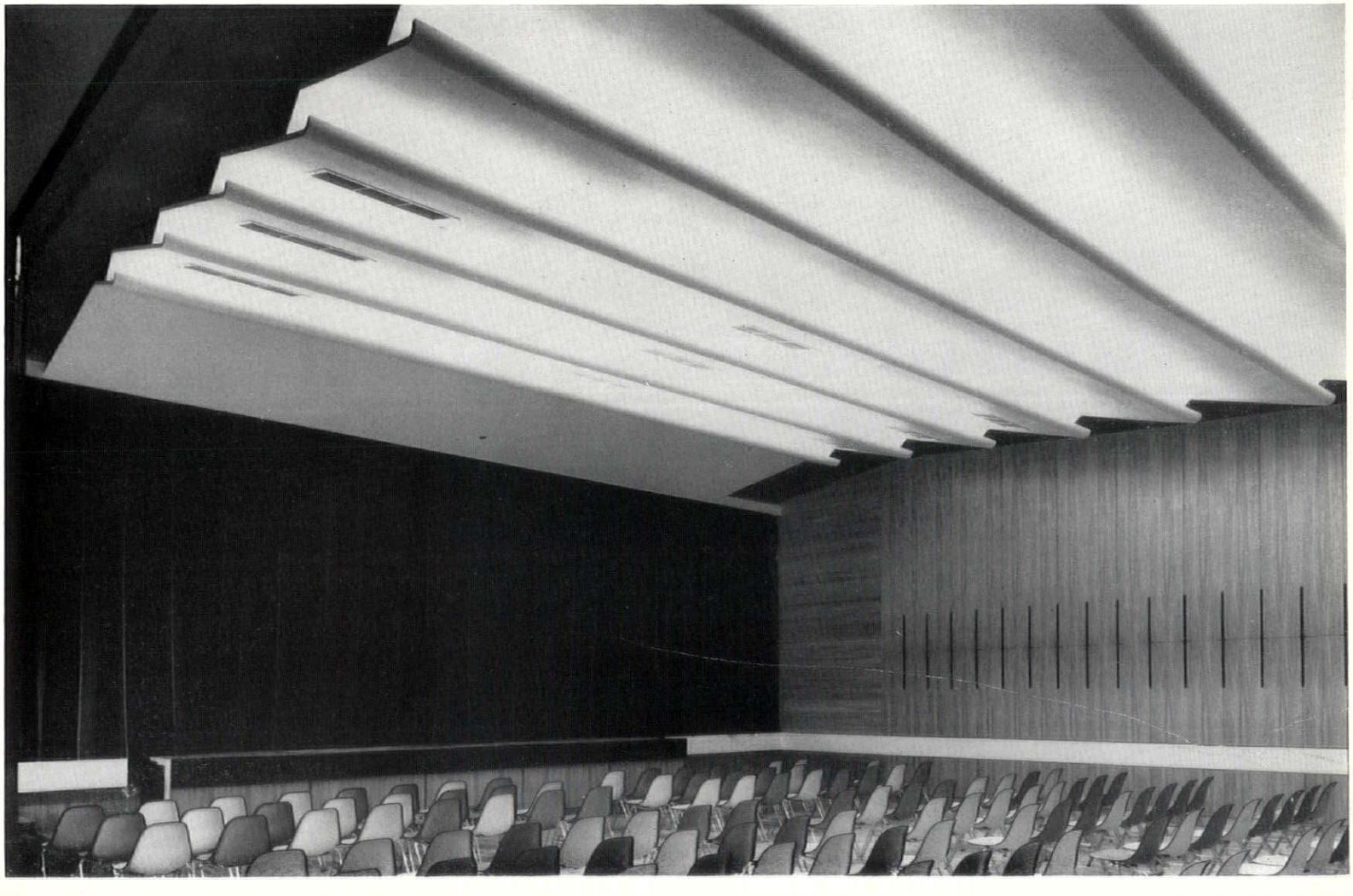
melamine. This melamine-veneered push-strip runs right round the theatre on all sliding-folding doors and other surfaces liable to wear, and is seen in 10, below, where it becomes a simple dado.

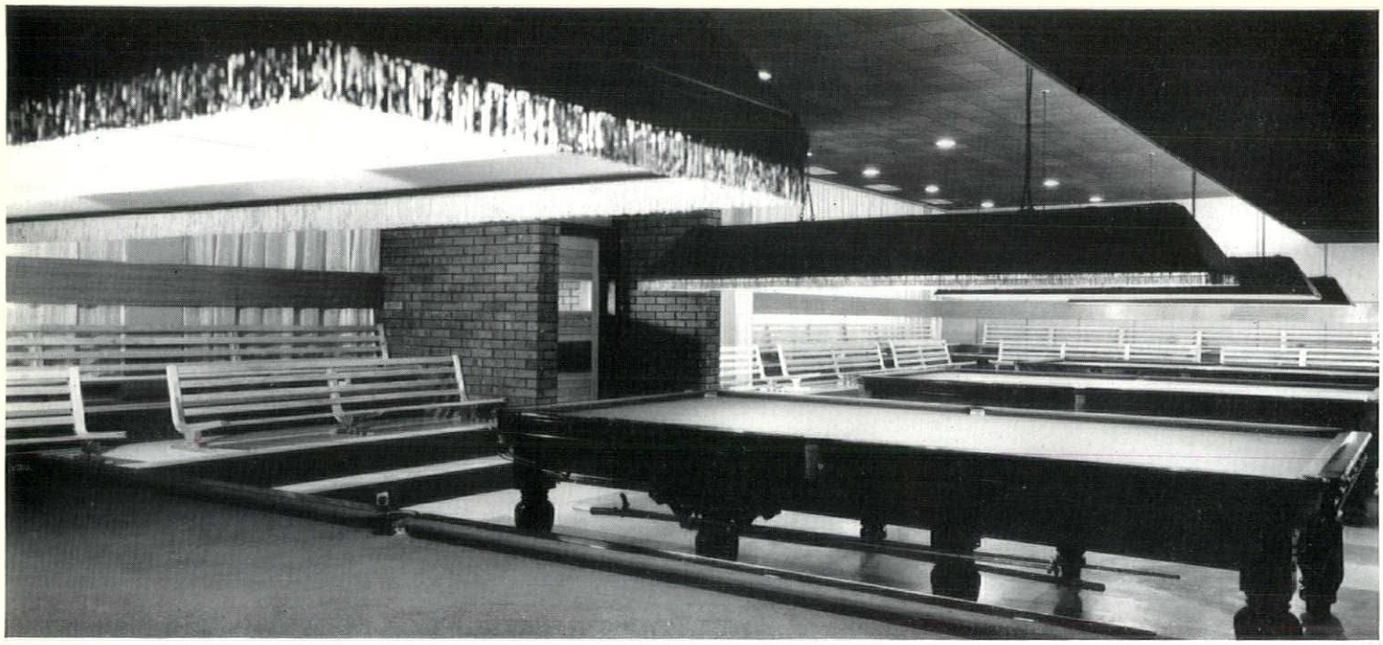
10, general view of the theatre with stage extension pulled forward. The acoustic ceiling is formed of shaped, overlapping fibrous-plaster leaves. The far wall is panelled in elm.



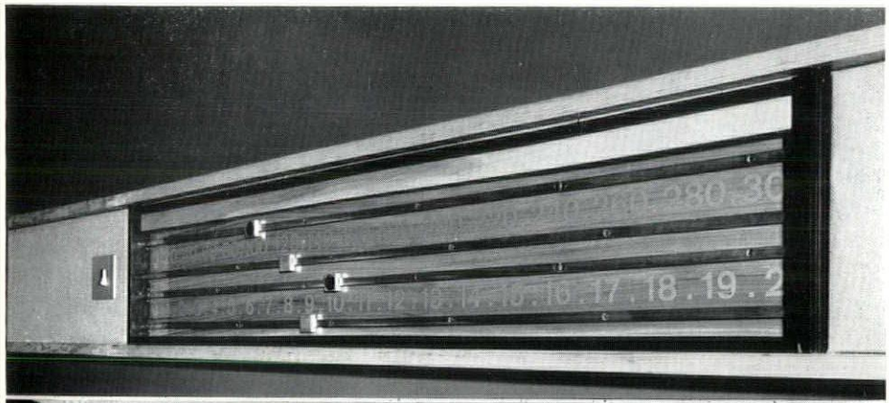
9

10





11



12

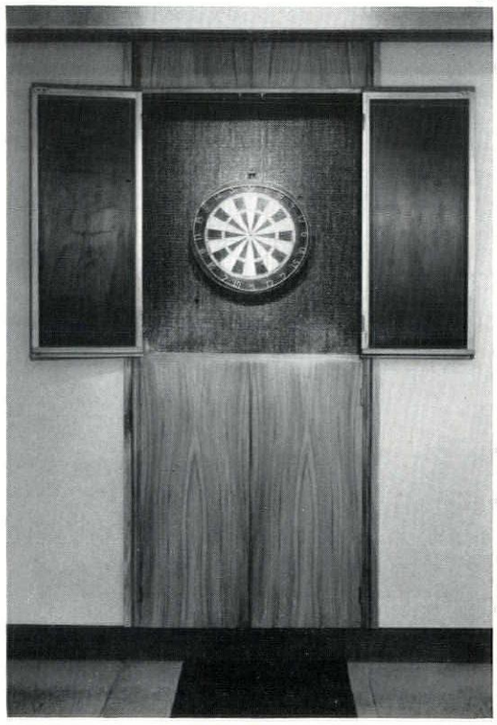
13

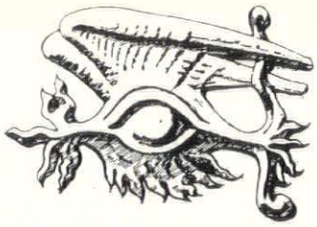


Factory Social Block

11, general view of the billiard room, with entrance from external corridor in centre background.
12, 13, traditional billiard room equipment brought into a non-traditional environment through the use of a continuous dado panel to carry cue-clips, scoreboards, etc.
14, cupboard for dart-board in the main rest-room. The backs of the doors are black-boards for chalking up scores, while the board itself is hung against a backing of coarse hair-cord carpet to absorb stray darts.

14

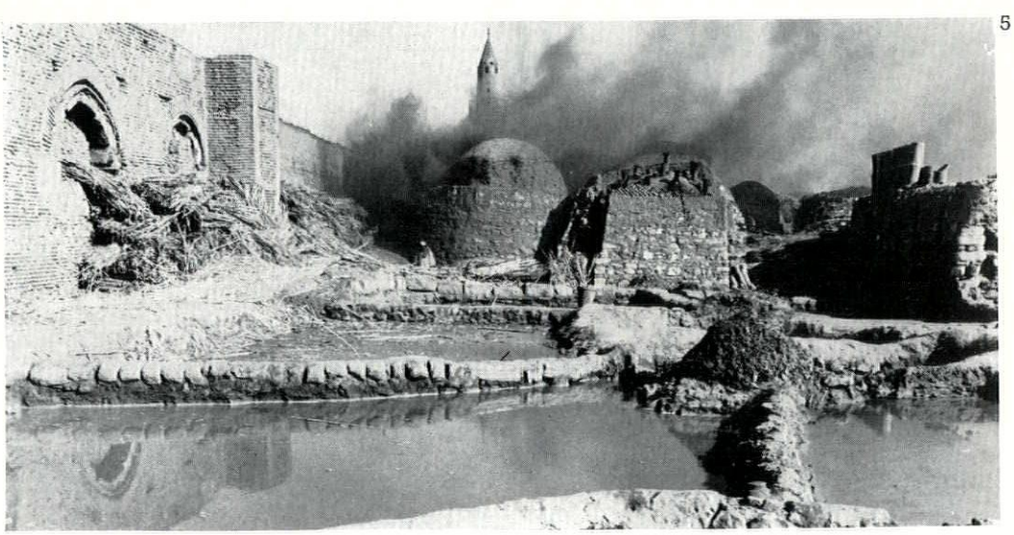




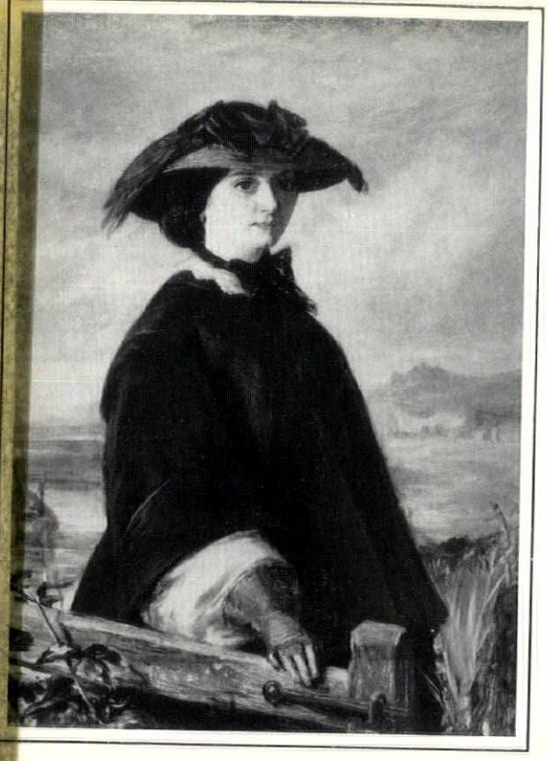
the exploring eye

Pottery, the dean of manufacturing industries, the nursery of painting and chemistry, is practised at every level of technology from the most sophisticated to the most primitive. Before the demands of clay and glaze, the civilized man and the savage are equals; there is hardly a culture that cannot produce a decent pot, and in many nations the manufacture of pottery exists simultaneously as a factory industry, and a workshop craft. These pictures were taken by the Swedish photographer H. W. Krabel only last year at a pottery just outside the walls of Cairo, by the mosque of Amr Ibn El Cas, but they show the craft being practised in a manner that appears not to have altered since the time of the Ptolemies, a living fossil from the prehistory of Western technology creating around itself an industrial landscape that recalls the fire-pits and satanic mills of the earliest images of industry to lodge in the Western mind.

1, *pots set out in the sun to dry, with kiln in background.*



5



1



2

AUGUSTUS EGG: 1, *A Walk on the Beach.* 2, *The Travelling Companions.* 3, *Past and Present; a good example of Egg's meticulously observed Victorian interiors*



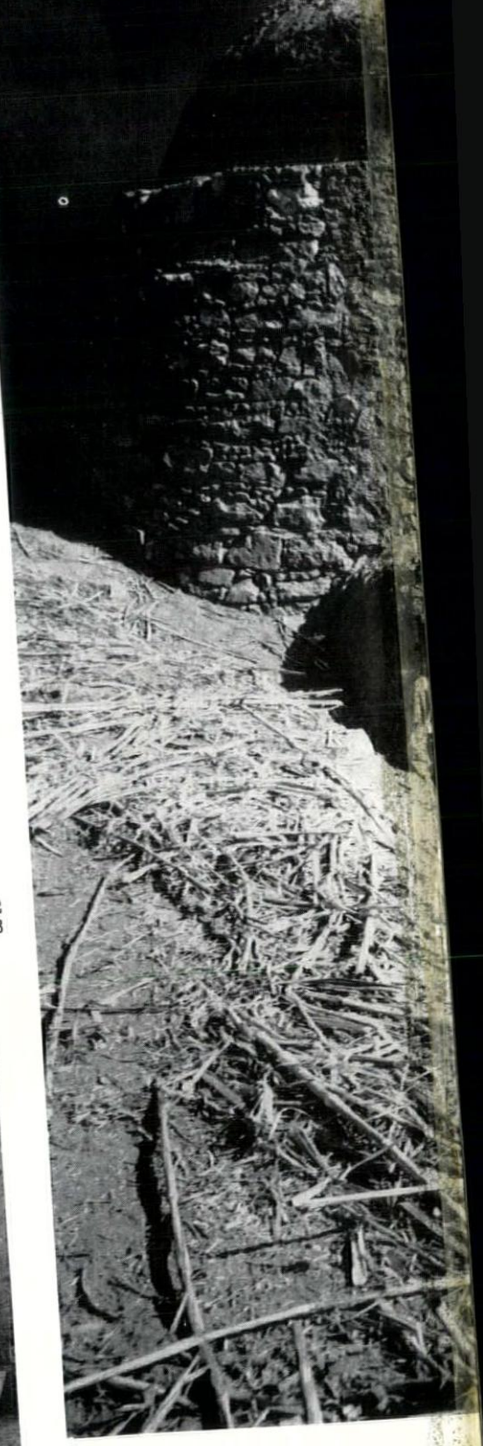
3

pottery in Cairo



2
3





4

2, *storage pits for raw clay, much of it kept in or under water.*
3, *pots set out in the sun to dry; in the background, kilns closed and in operation.*
4, *kilns after being opened. After closure the pottery is fired in the kilns for about four days, the capacity of a single kiln being up to 6,000 small pieces.*
5, *a general view of the pottery, with the city wall in the left background, wrapped in a pall of smoke from the burning kilns.*

PETER FERRIDAY

AUGUSTUS EGG

the centenary of whose death is being celebrated this year

The opening decade of Queen Victoria's reign was a promising one for young painters. Although two of the great men, Lawrence and Constable, were recently dead, there were men of great achievement still alive—Wilkie, Mulready, Etty and, above all, Turner. The great aristocratic patrons, a very overrated set, had almost disappeared, but the new middle-class buyers were coming along in profusion, and the trade in engravings was booming. Of the young men, Maclise was already established and being patronized by the Queen; Clarkson Stanfield and David Roberts were successful; Redgrave, Horsley, Goodall and Webster were not far behind. Yet for all the promising signs, talent and the wealth to encourage it, the deterioration was rapid.

For this there were numerous causes. The requirement for 'finish' had already ruined Mulready's delicate art and was to ruin that of many of his successors. The rising popularity of the Royal Academy summer exhibitions as a family entertainment was another restrictive influence; it was vital for the young artist to be well hung there and, because of the kind of social institution it had become, nothing outré or recondite was likely to be on the line. (For this reason the nude lost favour and Etty's timid successor, W. E. Frost, was attacked as indecent.) The subject picture was becoming increasingly popular in a very literary age. A fashion had been established, largely by C. R. Leslie and his compatriot Newton, for polite and amusing illustration of the popular classics—Molière, Pepys, Goldsmith, Sterne. And this, with the historical anecdote about Charles II or Peter the Great or Thomas More, provided the twin traditions of the new age.

These paintings could be defended in that they were 'improving,' in an age that set high value on improvement, as well as pretty. But, though it has been possible to produce fine painting within these limitations, the effect was the relegation of the painter to illustrator and the seeking after striking subjects at the expense of execution—surely no noted artist has painted as carelessly and badly as C. R. Leslie, or painted simply as hopelessly as Tom Faed.

The career of Augustus Egg illustrates the position of the young artist in the 'forties and 'fifties. The son of a prosperous Piccadilly gunmaker, he was born in 1816. His student companions were Richard Dadd, later of Broadmoor, O'Neil, Frith and John Phillip, and they used to assemble in Dadd's room in Great Queen Street to discuss their craft and prospects. None of them, Egg apart, had any money, and all were desperately anxious for Academy success. Frith intended to make his fortune from illustrations of everyday life, Dadd from works of imagination, Egg from illustrations of famous literary works, O'Neil from incidents appealing to the feelings, and Phillip from illustrations of incidents in the lives of famous people. The plans did not altogether work. Dadd, the most able of them, was quickly removed from the scene, Frith spent most of his time on costume pictures, Phillip began with sub-Wilkie scenes of the Scottish poor before being funded to go to Spain by the promoter of the Atlantic cable and then concentrated on garish Spanish scenes.*

Egg's career was modestly successful—successful enough for him to be featured in the *Art-Union Monthly Journal* in 1847. He was criticized there for producing copies of Leslie and Newton; 'The great drawback to Mr. Egg's productions consists in their want of originality—he is deficient in what may be termed the "creative of Art".' It was in 1847 that Egg made the acquaintance of Charles Dickens and joined his troupe of amateur actors. Dickens seemed to like the company of painters, for Frank Stone, Maclise and Clarkson Stanfield were already close friends. Over the following ten years Egg was in the Dickens set and often entertained them at his house, Ivy Cottage, in Black Lion Lane, later Queen's Road, Bayswater. In the company were John Leech, Mark Lemon, John Forster, O'Neil, Phillip, Mulready and Frank Stone. Frith recalled: 'Egg possessed an admirable cook, and his wines were perfect.' Egg seems not to have had any great acting ability but he regularly undertook small parts in these enormously successful charity plays. According to Frith 'Egg was a tolerably well-educated man, but, either from a defective ear or from Cockney surrounding (he was born in Coventry Street), he had some peculiarities in his pronunciation which were embarrassing and sometimes ludicrous.' At the beginning of one play the curtain rose on a poet in a garret: 'The first words were, "Years ago when patrons were—" something or other. Egg always began, "Here's a go! when patrons," etc.'

The career of Dickens makes an interesting comparison with those of his painter friends. In the first year of the amateur theatricals he was writing *Dombey and Son*, and over the following years wrote *David Copperfield*, *Hard Times*, *Little Dorrit* and *Great Expectations*. His was, like George Eliot's, a triumph of inclusiveness—of being able to go his way, his condemnatory way, and carry his public with him. He travelled under his own colours. But what was possible in literature (and to a remarkable degree in architecture) was all but impossible in painting—Millais's career is abundant evidence. In painting there seem to have been two possible courses, calculation (with the RA exhibition in mind) or failure. Dickens himself began as an admirer of the works of his friends, commissioning two small Friths and Maclise's charmless portrait of Georgina Hogarth footing it over a brook, amongst other things; but in 1855 he looked at the new pictures in Paris and wrote back to John Forster about 'the fearlessness of them; the bold drawing; the dashing conception; the passion and action in them.' By comparison he wrote of the English artists: 'It is no use disguising the fact that what we know is wanting in the men is wanting in their works. . . . There is a horrid respectability about most of them—a little finite, systematic routine in them, strangely expressive to me of the state of England herself.' Could any better description of Early Victorian Academy painting be written?

At the time that Dickens was seeing English painters for what they were, the revolution from inside was already well under way (Rossetti had described an Academy exhibition as 'a sea of slosh'), for the pre-Raphaelites were at work and Rossetti was over the next twenty years to undermine the Academy by making a fat living without ever having exhibited there. The legend so assiduously put out by Millais in his later years that the young painters were persecuted—art-critic hatchet-men running amok like Holman Hunt's Druids—has long since been exposed, and in fact it is clear that the PRB received much encouragement and help from their elders. Maclise, Mulready, Dyce (who forced Millais on to Ruskin), and Egg supported them. Only E. M. Ward seems actively to have campaigned

*His is perhaps the most inexplicable of Victorian reputations. His chef d'oeuvre *The Early Career of Murillo, 1634* was displayed in the Robinson collection in 1958 at the RA and a more brutally coarse painting could not be imagined; yet it twice fetched 3,990 gns. in Victorian sales.

against them—'What do you call that?' he said to Millais. 'Ophelia.' 'O failure, I call it!' Egg went out of his way to help the struggling Hunt. He persuaded one of his own patrons to buy the unsold *Rienzi* for a hundred guineas and commissioned him to paint a single figure for twenty-five guineas. Hunt instead painted *Claudio and Isabella*, finished in 1850, and Egg, seeing that his modest payment had secured an elaborate work, tried to persuade him to sell it for a higher price elsewhere—a gesture of kindness Hunt declined.

Egg did Hunt a further service in interesting Thomas Fairbairn in *The Awakening Conscience* and so securing for him his first rich patron. He advanced the fame of the Pre-Raphaelites by choosing their pictures for the great Manchester exhibition of 1857. He was the selector of the modern pictures, and although it was a 'representative' collection—twenty-three paintings by Landseer, fourteen by Etty, ten by Collins, nine by Callcott, Webster and Muller, etc.—the Pre-Raphaelites were there, but no Rossetti, in startling array. All the great early Millais were on show and all the Holman Hunt. It was the first time that the PRB had been given such a showing in the company of their contemporaries, though in the same year the Moxon Tennyson had proved beyond doubt their immense superiority even in an unfamiliar field—and, incidentally, had given a wide distribution of some Rossetti masterpieces.

The paintings for which Egg is remembered are not those which interested the rich Victorian patrons. Only a few of his small works are known and there may not have been many, but the two in the Harris Museum and Art Gallery at Preston, one at Manchester (*A Walk on the Beach*), and one privately owned and exhibited at Agnew's in 1961 are sufficient evidence of where his real talent was. They are all portraits of women and most charming and tactful—Frith's comparable works are all smartened up, rouged and sweetened. This group of pictures would in themselves hardly justify a commemorative note, though they might be used to show how coarse most of his contemporaries were, but *The Travelling Companions*, now at Birmingham, a much more elaborate, finely painted, witty and completely successful picture would be an inevitable choice in any exhibition of Victorian painting. It has only to be compared with Abraham Solomon's *First Class—The Meeting* and *Second Class—The Parting*, both works of horrible chromolithographic coarseness, for its distinction to be obvious and for the danger of classing pictures by subject-groups — as historians seem always to do in discussing Victorian art—to be clear. (A comparable Egg painting is in Mr. Evelyn Waugh's collection but this has not, so far as I know, been exhibited.)

The famous, because it is in the Tate, Egg is the triple *Past and Present* dated 1858. While the moralizing sequence in English painting goes back at least as far as Hogarth, the particular intensity and the method of conveying it by minuteness of detail must derive from Holman Hunt's *The Awakening Conscience*. Hunt's garish original seems to succeed almost by absence of art. It demands attention because its manic earnestness communicates through the insensate accumulation of detail, because it almost requires to be 'read'—here and there in its symbolism it *has* to be read—and because of the abnormality of its colour. *The Scapegoat*, painted hair by hair, would kill fifty Landseer animals if they were in the same room. Egg's scene of the adultress discovered succeeds, though not so violently, as the lady with the conscience. It is technically a much more competent painting than Hunt's; the despairing husband is a fine portrait, and how skilfully the carpet, table-cover, wallpaper and the errant wife, foreshortened and with hands clenched, are painted. The 'literary' adjuncts are neatly contrived—the subjects of the paintings on the walls, the children's falling card-house. This melodramatic scene, derived from Hunt and indirectly from Rossetti's taste for bad romantic literature—his own unfinished *Found* is an example—as well as from low drama, makes one wonder why the painters did not more often illustrate the novels of their own age. What scenes could have been culled from *Adam Bede* and *Middlemarch*, from *David Copperfield* and *Hard Times!*

The Awakening Conscience and *Past and Present* were not followed by many similarly elaborate domestic scenes, though Martineau's *Last Day in the Old House* is a famous later example. The tradition has never quite died out and an astonishing product of it, Charles Spencelayh's *Why War?* of 1938, is also in the Harris Art Gallery at Preston.

The closing years of Egg's life are of little interest. He made an 'unfortunate' marriage (Victorian cant for marrying a girl who dropped her aitches) and so lost contact with his famous friends. He went to Algiers and there died in 1863. He left £14,000 to the unfortunate relict. The collection of paintings, including *The Travelling Companions*, was sold at Christie's in the same year.

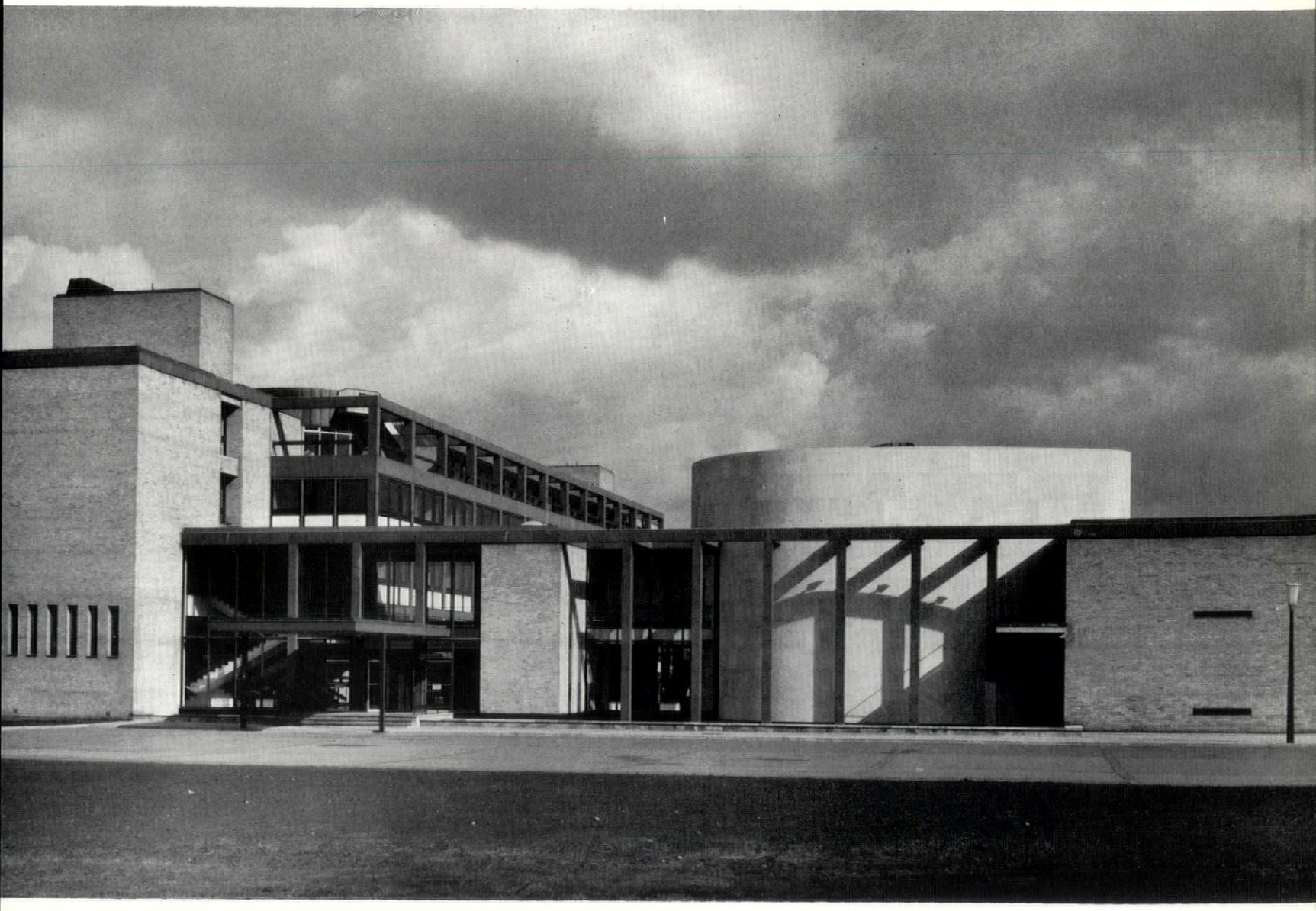
The career had been an interesting one of a curious range, and although the artistic achievement was minor there would still be three or four examples of his work in any comprehensive exhibition of Victorian painting. It is on this last point that his centenary provides an opportunity to suggest how limited our knowledge of Victorian painting is. The reviews of the Landseer exhibition at the Royal Academy in 1961 were an unfortunate opening to any reconsideration. The critics, from obvious motives of correcting earlier over-harshness, went out of their way to elevate Landseer into a painter of distinction—in face of the mediocrity and feebleness all around them. There was a Liverpool contemporary of Landseer's, William Huggins, a difficult man, who said he could paint animals much better than Landseer, and judging by paintings in the Walker he could. H. C. Marillier, who wrote the standard account of Rossetti and also managed the Morris firm, made high claims for other Liverpool painters, Bond, Davis and Tonge amongst them, but who has seen a collection of their works in the last fifty years? It is possible that some of the Victorian painters are so well represented publicly that nothing new could surprise, but even here, after a big Rossetti exhibition, one might hear a little less about Blake. But what happened to all the other Arthur Hughes? He could not suddenly have ceased to paint beautifully. Possibly *April Love* marked the height of his career, but the little-known *Bed-time* at Preston is a remarkable painting and there must be many, many more. And where are all the missing William Dyces? And where, outside Norwich, are the early Fred Sandys? And are there, unrecognized, any Bramwell Bronte portraits? At Port Sunlight there are two delightful landscapes by G. D. Leslie; where are there others? Where are Frank Holl's subject pictures other than the most impressive *Newgate* at Holloway College?

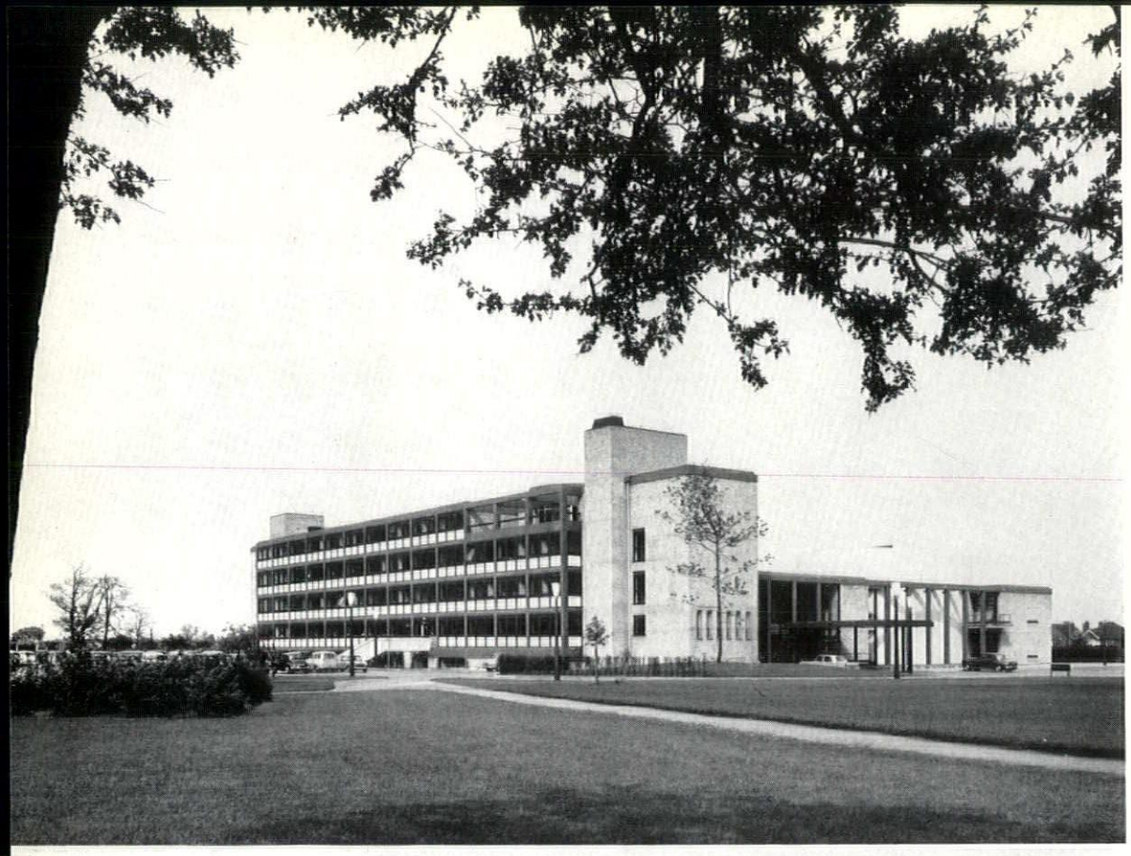
It is often overlooked how progressively more competent the Victorians became—how much more competent Lucas was in his battle pieces and Wyllie with his sea battles than their earlier equivalents. Possibly the work of Stanhope Forbes is impressive, but where can it be seen outside the Tate and in one provincial gallery? There are artists one does not want much to see more of—Frith, in spite of the prices he now fetches, Orchardson, Poynter, Phillip, Goodall, and many others. But there are, and perhaps more particularly with the later painters, many paintings one would like to see—and the suspicion remains that their discovery would give one a very different idea of Victorian painting as a whole than one's current impression.

CIVIC BUILDINGS, SCUNTHORPE

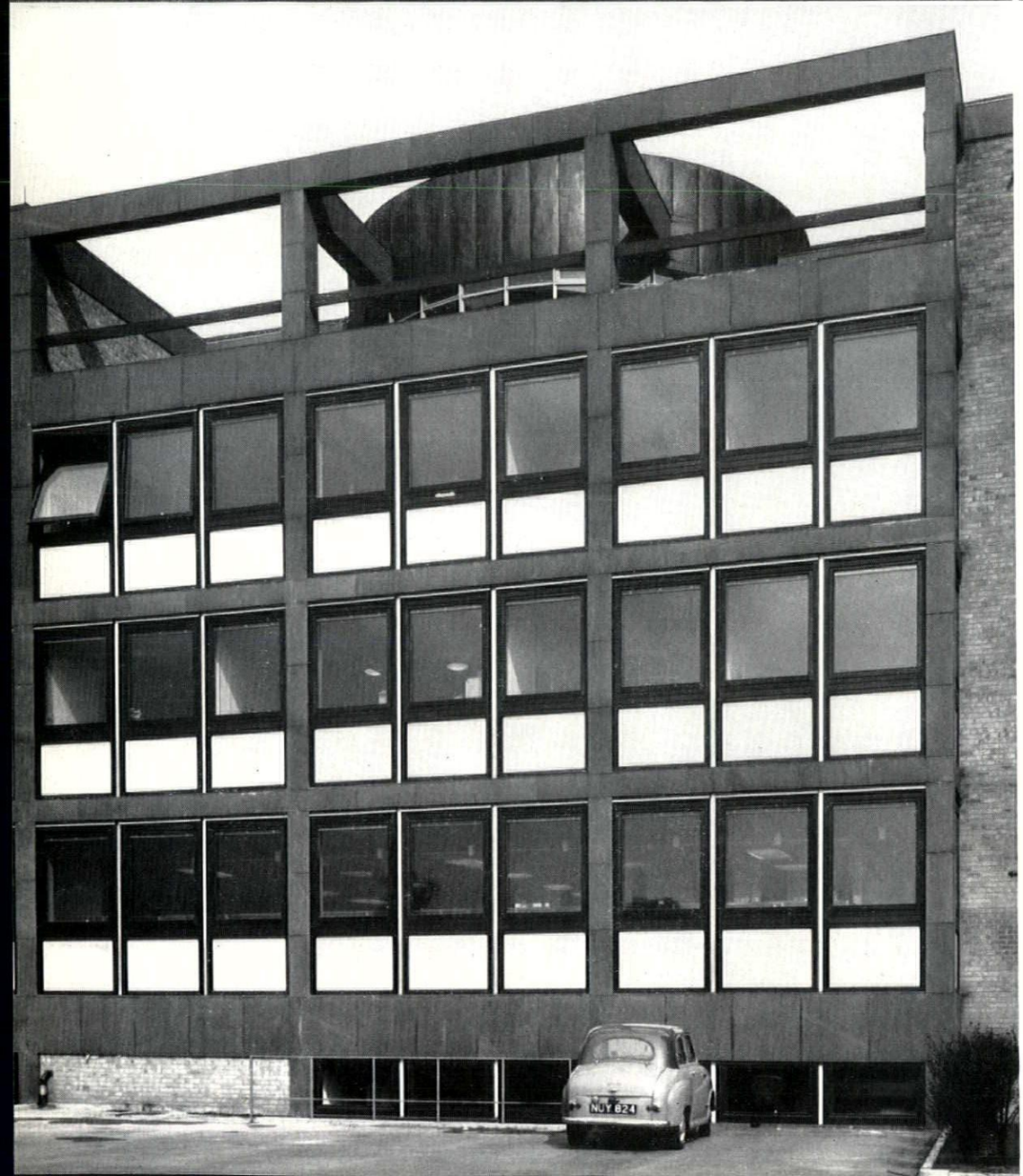
ARCHITECTS | **CHARLES B. PEARSON, SON AND PARTNERS**

1, from the south: office block on left, council suite on right.

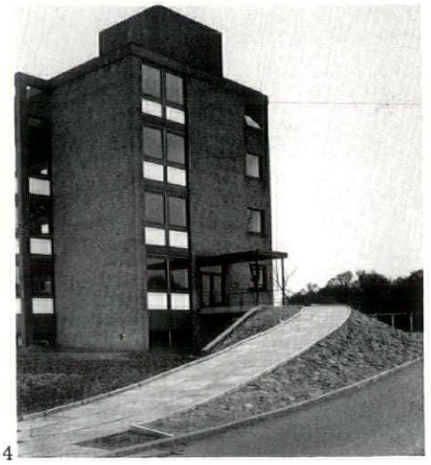




2

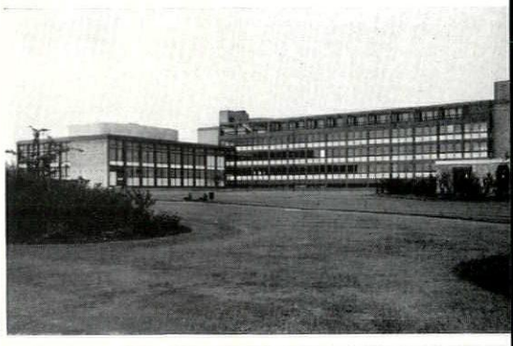


3



4

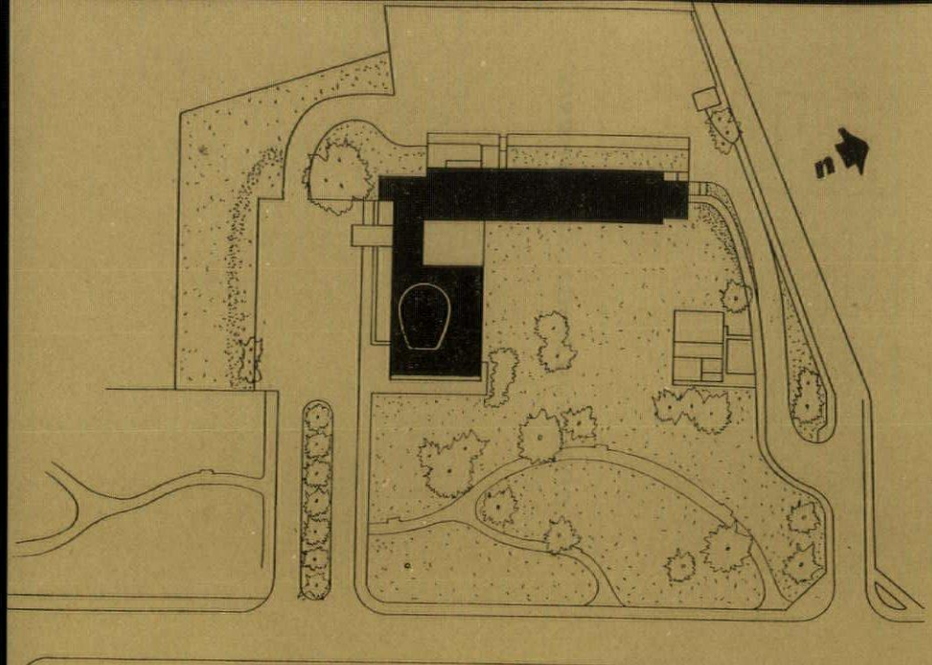
2, from the south-west. 3, close-up of west elevation ; the drum on the third floor is a waiting room and exhibition hall. 4, staff entrance at the north end of the office block. 5, from the east. 6, main entrance hall with the rates hall on the right.



5



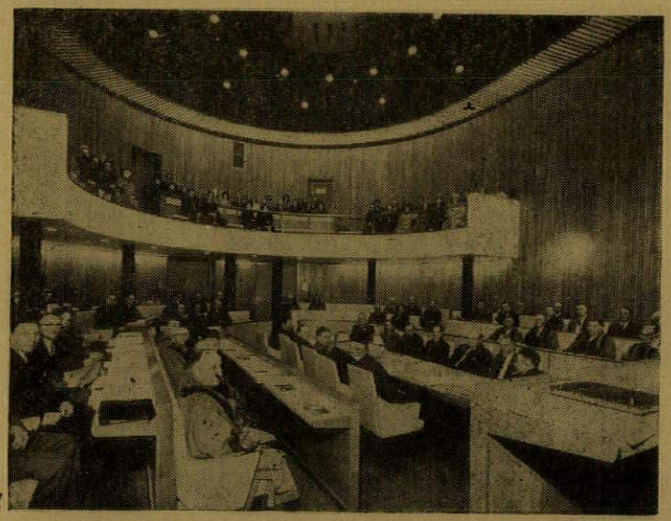
6



site plan

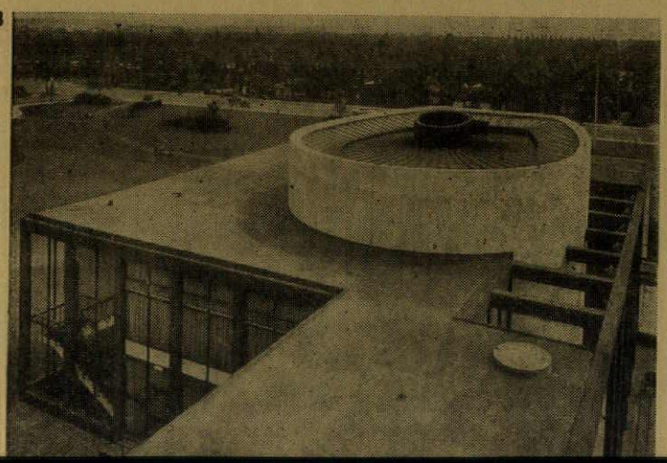
CIVIC BUILDINGS, SCUNTHORPE

photographs by Gerard / for criticism see page 442



7

7, the council chamber with the council in session. 8, roof of the council suite showing the oval roof of the council chamber.



8

The buildings were the subject of a competition held before the war. Construction after the war was delayed by national restrictions on capital expenditure and by a change of site, the original site near the shopping centre being found too small for a town that was by then growing unexpectedly fast. The new site is at Central Park, off Ashby Road. The first phase, illustrated here, consists of council suite and a four-storey office-block, planned at right-angles (see site plan). Future extensions will consist of a civic hall to the south of the council suite (on the other side of the public parking area) and a second office-block further west, which will be linked by a covered way to the first block.

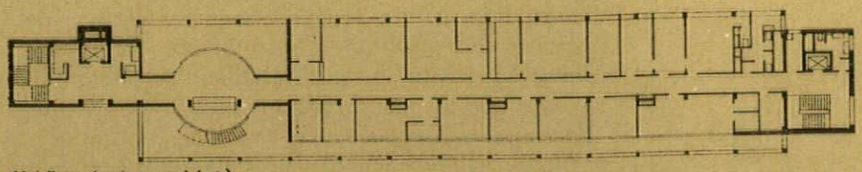
The office-block has its public entrance at the south end and its staff entrance in the west side, where the staff car-park is sited. Offices are planned either side of a central corridor, and have moveable partitions to allow maximum flexibility. On the ground floor is the treasurer's department, with the rates hall at the south end; on the first floor are the town clerk's and education departments; the second and third house social services and the surveyors, and also the architects and quantity surveyors with their drawing offices. At the south end of the third floor is a circular exhibition hall with access to outdoor terraces from which there are views over the town, the nearby steelworks and the Trent valley. In the basement are plant rooms, a staff canteen and a printing department.

The office block is steel-framed with concrete floors. Columns and beams are clad externally in slate. Infill walls are brick, and the drum of the viewing-platform at roof level is faced with copper. Windows, of steel set in mahogany frames, are double glazed and pivoted to allow easy cleaning. Oil-fired central heating feeds continuous cill-height convector heating-panels in the external walls. These conform to a modular service grid which allows all services to be taken off at any point.

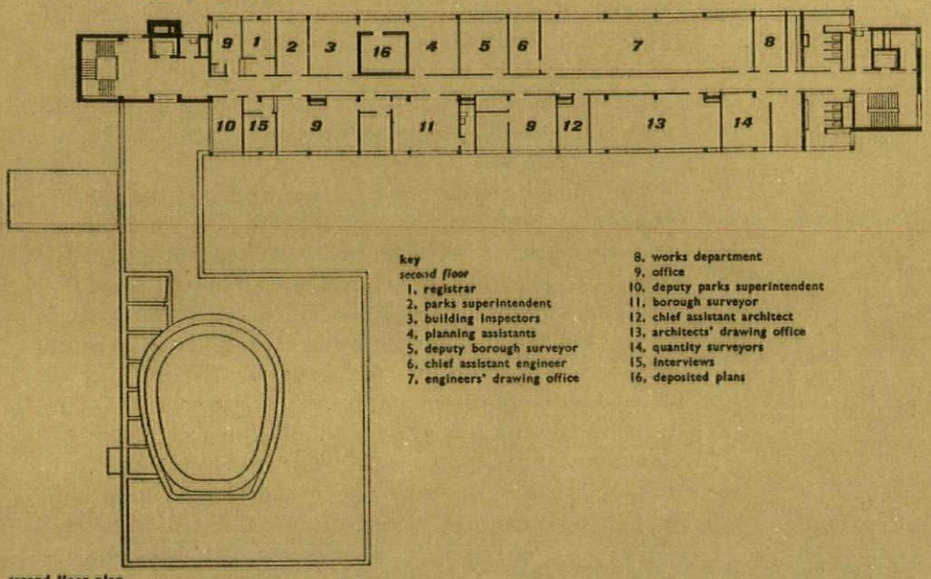
The council suite is entered from a two-storey glazed entrance-hall which it shares with the office-block and which forms the link between the two buildings. It is approached by a bridge over a pool and has a large canopy to allow car-access under cover. In the centre of the wall opposite the revolving doors is a section of Roman mosaic pavement, excavated at Winterton (north of Scunthorpe). From the hall a semi-circular staircase leads to the public gallery of the council chamber. A gallery at first floor level across the back of the hall allows aldermen, councillors and officials access from the council suite to the office-block. The council suite is a two-storey block with the oval council-chamber rising through the roof. The chamber is enclosed on the north and east sides by mayor's parlours and their kitchen on the ground floor and members' and committee rooms on the first floor.

The chamber has load-bearing walls faced with Portland stone. Its roof is supported on steel trusses arranged in bicycle-wheel fashion, the 'hub' being a flat steel sheet shaped into a cylindrical drum to form a lighting and ventilation shaft. The entrance hall has a light brown marble floor, columns faced with polished slate and copper-coloured suspended ceiling. The chamber is panelled in red beech. Seating is in the same wood, upholstered in natural hide. The formal entrance doors are faced with blue leather. The committee rooms have internal stone facing with end walls lined in hardwood. Council chamber and entrance halls have floor and ceiling heating.

Architect in charge, Dennis Burnside. Partner in charge, Charles E. Pearson.

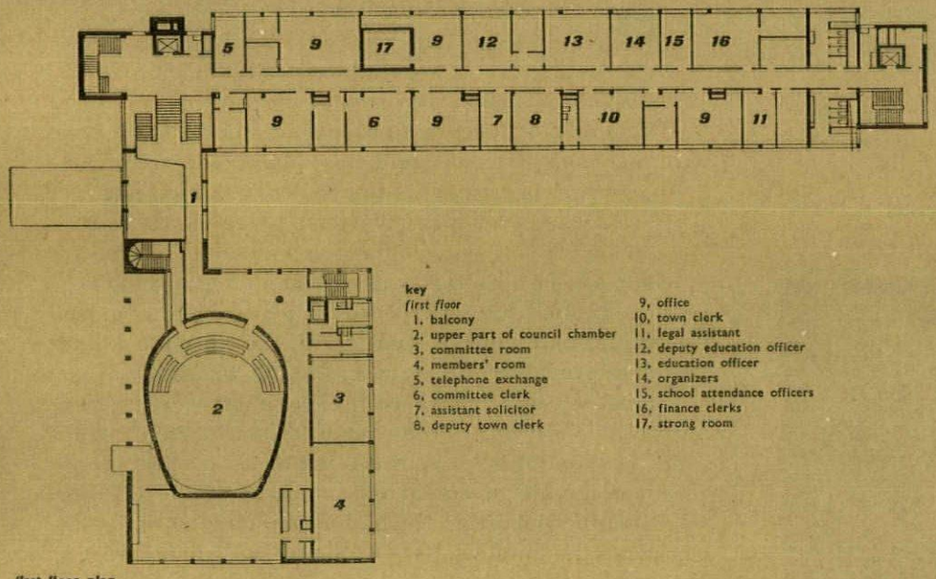


third floor plan (surveyors' dept.)



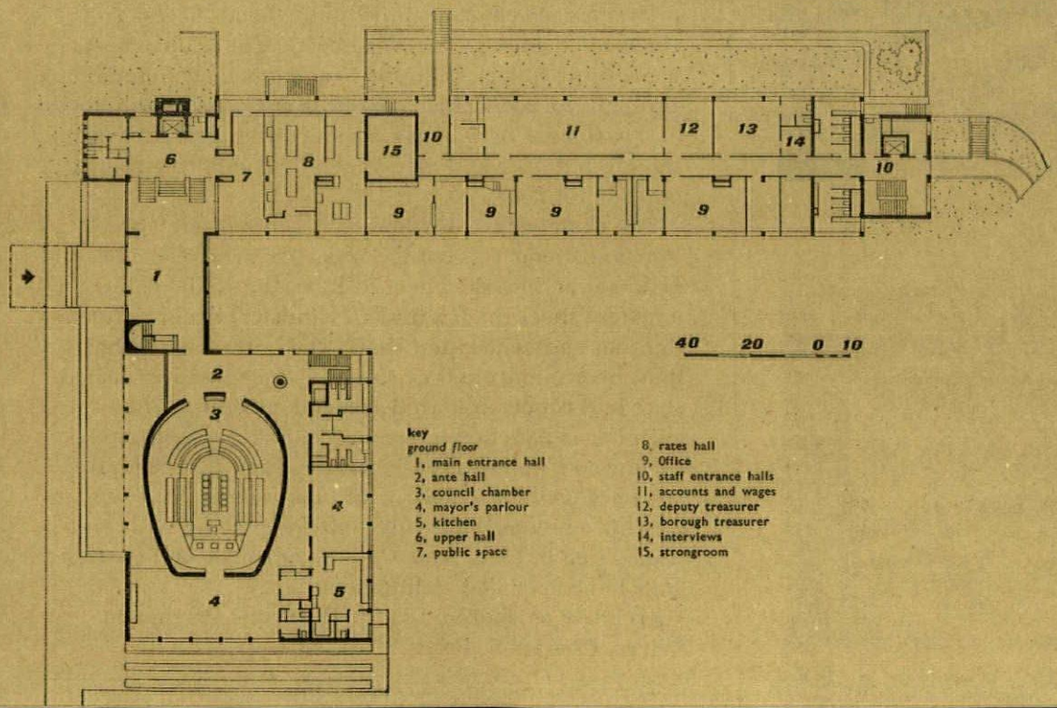
key
second floor
1. registrar
2. parks superintendent
3. building inspectors
4. planning assistants
5. deputy borough surveyor
6. chief assistant engineer
7. engineers' drawing office
8. works department
9. office
10. deputy parks superintendent
11. borough surveyor
12. chief assistant architect
13. architects' drawing office
14. quantity surveyors
15. interviews
16. deposited plans

second floor plan

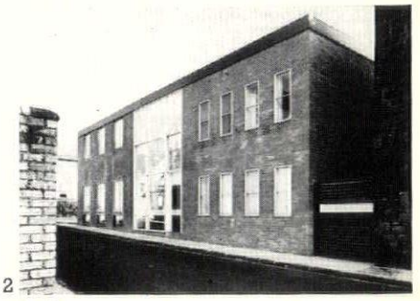


key
first floor
1. balcony
2. upper part of council chamber
3. committee room
4. members' room
5. telephone exchange
6. committee clerk
7. assistant solicitor
8. deputy town clerk
9. office
10. town clerk
11. legal assistant
12. deputy education officer
13. education officer
14. organizers
15. school attendance officers
16. finance clerks
17. strong room

first floor plan



key
ground floor
1. main entrance hall
2. ante hall
3. council chamber
4. mayor's parlour
5. kitchen
6. upper hall
7. public space
8. rates hall
9. Office
10. staff entrance halls
11. accounts and wages
12. deputy treasurer
13. borough treasurer
14. interviews
15. strongroom



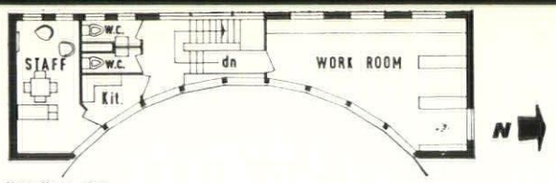
2, the two-storey wing at the rear.

LIBRARY, JESMOND, NEWCASTLE-UPON-TYNE

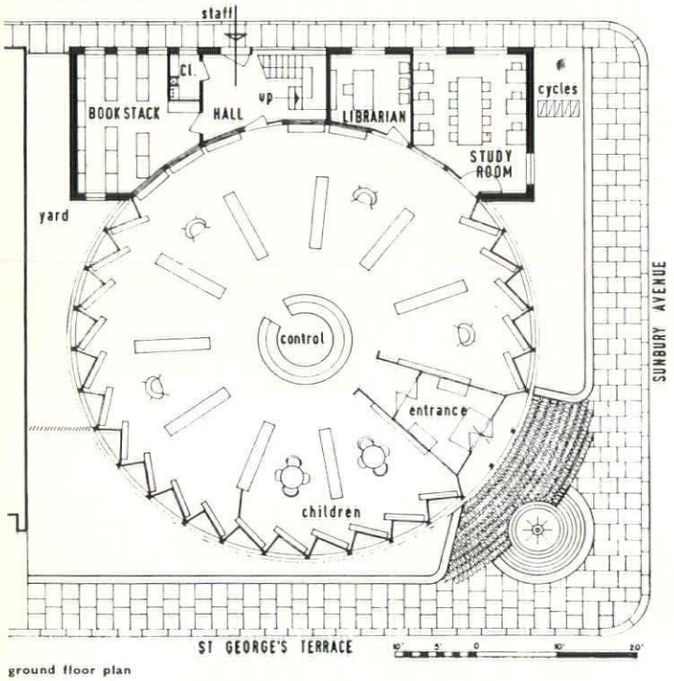
ARCHITECTS | **WILLIAMSON, FAULKNER BROWN AND PARTNERS**



1, the main block from the north-east, with the entrance in the centre.



first floor plan



ground floor plan

This is a branch library, adjoining the main shopping-centre of Jesmond, but serving a larger district, being designed also to relieve the strain on Newcastle central library. It was required to accommodate 18,000 books, to provide, in addition, staff-rooms, a study-room and a workroom, and to have maximum natural lighting and easy supervision from the control desk.

The site was small, surrounded on one side by a high stone church and on the other by red brick terrace houses. The library consists of a circular main block with a two-storey wing adjoining it. The saw-tooth arrangement of the perimeter of the circle allows direct daylight to fall on the book faces. The building is a fully glazed drum, with columns and fascia faced with steel and painted a matt dark grey. The external panels backing on to the perimeter shelves have exposed Balmoral red granite chips. The two-storey block is faced with light grey concrete bricks.

The main library has a clear span of 58ft. The roof is of tubular steel lattice girders supported on 2⅛in. by 2⅛in. hollow steel columns arranged at 5ft. intervals round the perimeter. The columns are faced internally with white plastic on blockboard. The ceiling, 12ft. high, is of suspended mineral-fibre acoustic tiles. Inset in it are a large circular light-fitting over the central control-desk, and smaller fittings with perspex covers in a circle round it. The floor in the entrance hall is of green Westmorland slate, and in the library of rubber. The free-standing bookcases have tubular steel frames supporting shelf units which are cantilevered out on either side from a 1in. central blockboard spine. The units are faced in afrormosia veneer with white laminated plastic ends. The library is heated by electric cables in the floor-screed and ventilated through glass louvres in alternate perimeter bays.

Partner-in-charge, Henry Faulkner Brown. Structural consultant, D. W. Cooper. Heating and electrical consultants, R. W. Gregory and Partners. Quantity surveyors, J. W. Summers and Partners.

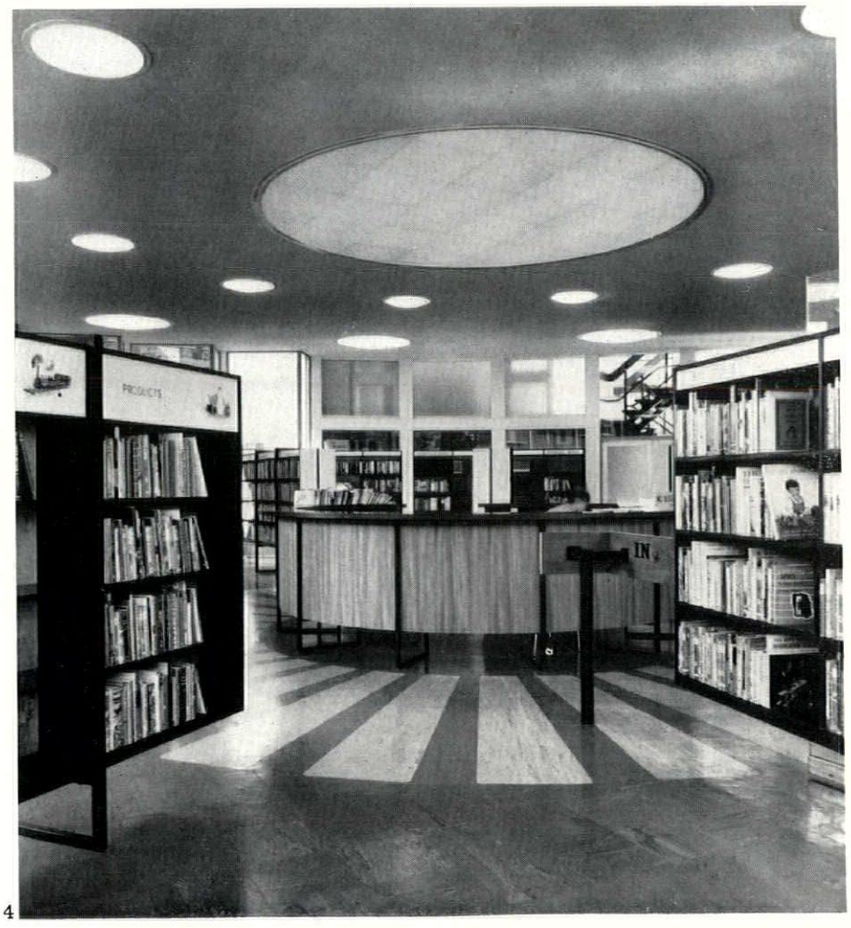


3

3, bookcases fixed to the inside of the windows round the perimeter. 4, looking towards the central control-desk, with free-standing bookcases on either side.

photographs by W. T. Toomey / *for criticism see page* 442

LIBRARY, JESMOND, NEWCASTLE-UPON-TYNE



4

TOWNSCAPE

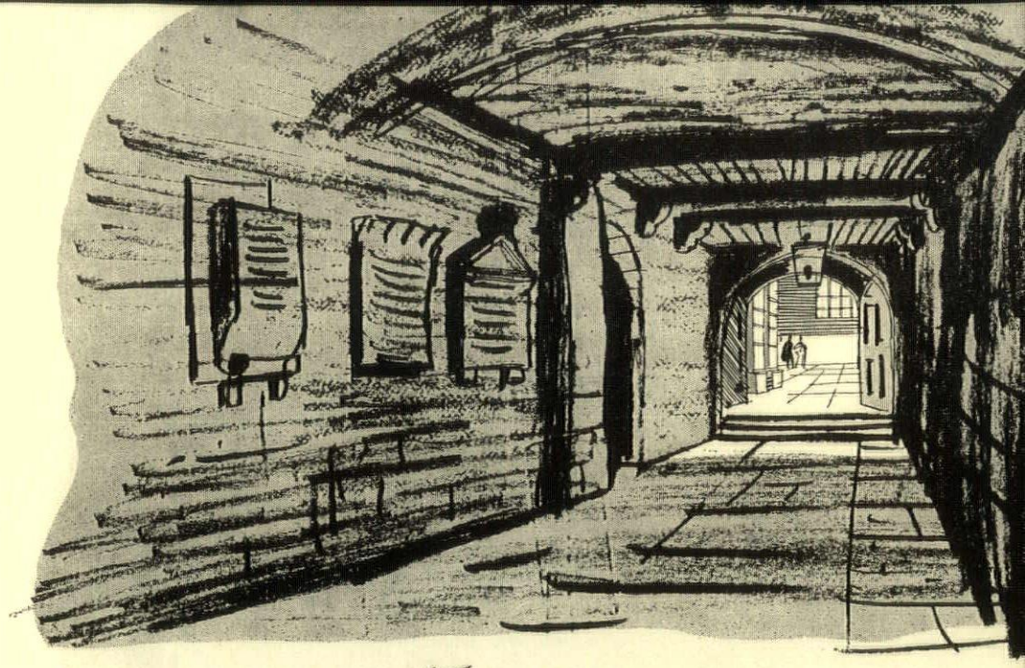
Kenneth Browne & Ian Nairn

TRICKS OF THE TRADE

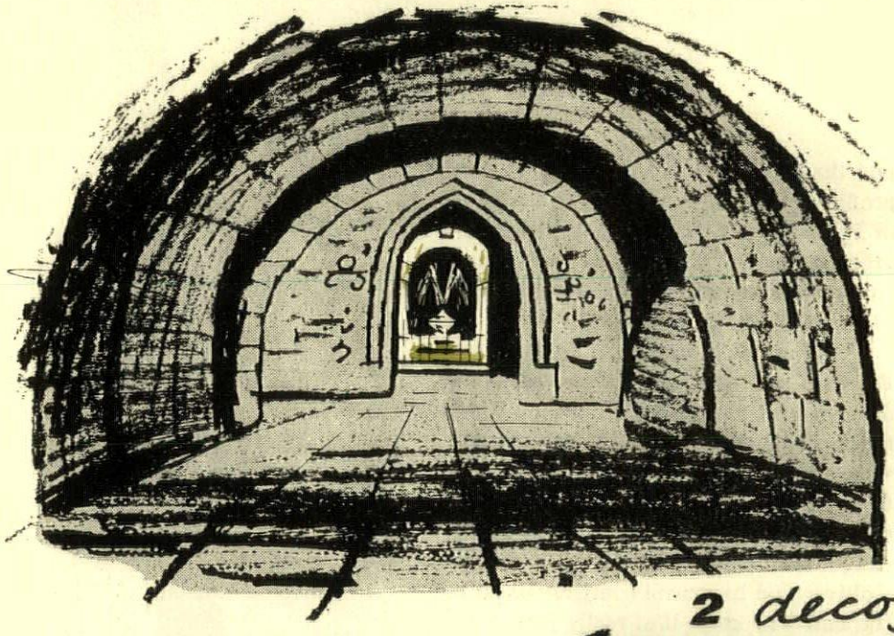
2. Little Cloister S.W.1 or The Decoy Duck.

This is a kind of moral tale, and it takes place appropriately enough in the cloisters of Westminster Abbey. Leading from the main cloister is a long, gloomy passage, *1*, which is well named the Dark Cloister. At the end is the forecourt of Westminster School; healthy Georgian buildings, healthy children, the healthy open air.

When you are almost there, already enjoying the wholesomeness, another passage opens up on the left-hand side, *2*. Healthy impulses are out of mind in a second; for sheer shameless seductiveness this alley would be hard to beat. Arches of different shapes and shades lead to a green garden and the irresistible shimmer of water from a fountain, *3*. The Alhambra in S.W.1, instant Orient.



1 escape route

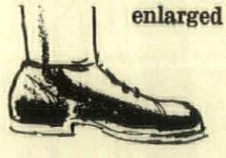


2 decoy



3

Step closer to the enchanted courtyard—the Little Cloister—reach out to grasp it, and retribution comes thundering up beyond, *4*. The scale is not so much enlarged as made hallucinatory; the unreality of Alice in Wonderland, a mouse looking at a giant's foot. Another step,





the secret garden . . . but take two steps forward *4* *and . . .*



and the giant is revealed, *5;* the superb profile of the Victoria Tower of the Houses of Parliament, rearing up from the tiny arcaded courtyard, quivering with righteous indignation right up to the slap of the lanyard on the flagpole.

This is much more than a pretty fairy-tale. For once you are in the courtyard, the difference in scale is so huge—and has in a sense been exorcized by the force with which you experience it on the way in—that the enclosure is reinforced rather than diminished. Court and tower do not cancel each other out, they co-exist, like Gulliver and his travel companions. It is the half-way stage that really jars. For Victoria Tower read a point block of flats; for the Little Cloister read a close-built honeycomb of squares, houses and small shops crowding right up to it on the sunny side. The small buildings will not be overawed because they have their own tight spatial defences. The big building will become welded into the townscape instead of standing around as a mournful exercise in geometry.

And remember—beyond every enchanted garden there is someone waiting to bash you on the napper.

5 behold the giant

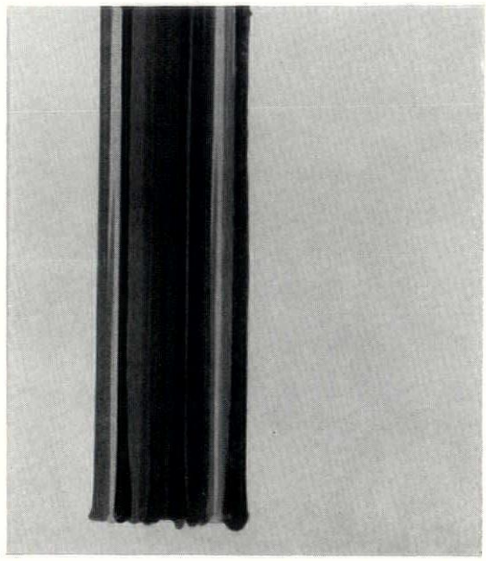
EXHIBITIONS

PAINTING AND SCULPTURE

Harold Cohen's statement in the catalogue of his recent exhibition at the Robert Fraser Gallery was an attempt to persuade the spectator that his paintings are as difficult to understand as his own ideas about them, but I found them as irresistibly comprehensible as Anthony Caro's best constructions at Whitechapel Art Gallery, and although I would not wish to deny the possibility that Cohen's paintings and Caro's constructions have opened up 'new areas of awareness'—as a critic remarked of Caro's things—I was conscious only of the fact that they were very charmingly and decoratively occupying familiar territory.

Cohen's statement includes a sneer at his own kind of painting from which the paintings themselves deserve to be defended. 'The middle-aged idea of "relationships",' he says, 'is a very dull idea,' but although his paintings are almost too obviously, and certainly too exclusively, a matter of colour and shape relationships they show that an able 35-year-old professional can still wring a quiver of life from an idea that has all too frequently yielded very dull results. He is not, of course, intentionally dismissing his own work and it's not clear who is being attacked, unless it's everyone who started painting before he did. He evidently feels that his own work springs from a disruptive force—and until it occurred to me that he must be taking his measure from the paintings of two post-abstract-expressionist American artists I thought it was a rather puzzling case of self-deception. If one narrows one's sights and focuses one's attention exclusively on the paintings of Noland and Louis, one can actually detect with the naked eye signs of fracture and upheaval in Cohen's work.

Noland and Louis produce highly effective optical vibrations by putting one carefully chosen colour against—or rather, *beside*—another. The word 'against' is far too harsh a way of referring to colour combinations which are never anything but meltingly tasteful. They have both relied on an extremely simple design formula for the presentation of their colour schemes: Noland uses target-like, concentric bands (AR July, 1963), and Louis—who died last year at the age of fifty—used vertical strips hung from the top of the canvas like a vapour-thin curtain, 1. It's claimed for them in New York that their work represents a major breakthrough and achieves



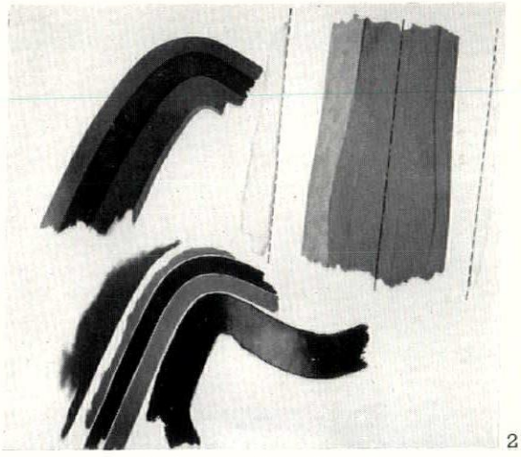
1

the final 'integrity of colour' which Cézanne, Vuillard and Matisse, to mention only three, would have recognized as the victorious outcome of their struggles.

The exhibition of some of Morris Louis's last paintings at the Kasmin Gallery was the last word in repetitive seductiveness without any of the impact that's engendered by an obsessive vision. The paint is used like a dye; it's worked into the canvas and doesn't lie on top of it, and although there are always large areas of bare canvas on either side of the colour section, the dyeing process produces a homogenized effect which in its turn rivals the effect of a sumptuous and very expensive reproduction. Louis's paintings are probably the most beautiful, and if I may use a fearsome but not inappropriate Americanism, most personalized colour charts in the world. They make an intriguing footnote to Rothko's vision of sublimity for they manage to suggest an agreeable and petite void.

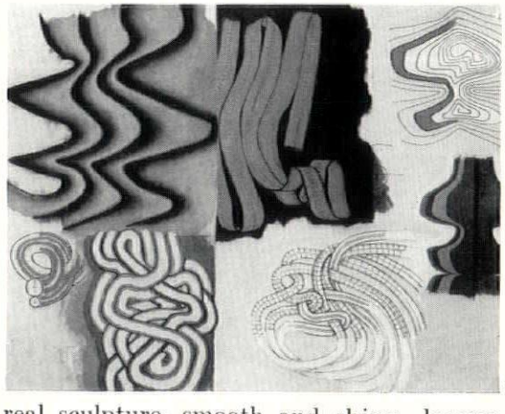
Harold Cohen is one of a small number of youngish English painters who dream of making a great English contribution to American painting, but they are rather more ambitious than the Bloomsbury painters who earlier in the century tried to be Frenchmen. If, for instance, Cohen believes that the paintings of Noland and Louis are the latest significant contributions to world art, as I feel sure he does, it becomes clear that he's making a bid to go into the lead. One can almost hear him paraphrasing Cézanne's famous remark about Monet. 'Noland and Louis are only interested in colour, but what colour!' Within these special terms of reference he sees it as his task to restore shape values to the art of painting, and this, we must all agree, is a very ethical and art-enhancing thing to want to do. And he has not failed. He begins by fragmenting their colour charts, as in 'First Choice,' 1962, 2, and then puts a wriggle into the separated colour strands and, as if he were illustrating a manual on curvilinear devices, sets them on various serpentine courses. 'Conclave,' 1963, 3, is a full-blown example of his highly personalized colour and shape charts. It's rather coarse compared with a Louis, and far less seductive, but this is no doubt sternly intentional. Nevertheless, like all the paintings in his show, it is very charming and decorative.

It seems as if it were only yesterday that thick, groovy substance was providing the only dependable sign of intense artistic endeavour. It was what we critics called 'giving the creative process a high degree of visibility.' But to-day there's something quaint and laughable about the stuff that



2

comes out of the studios of painters and sculptors who haven't realized that the 'tracks in the mud' episode is over. To-day, real painting only shows its colour, and



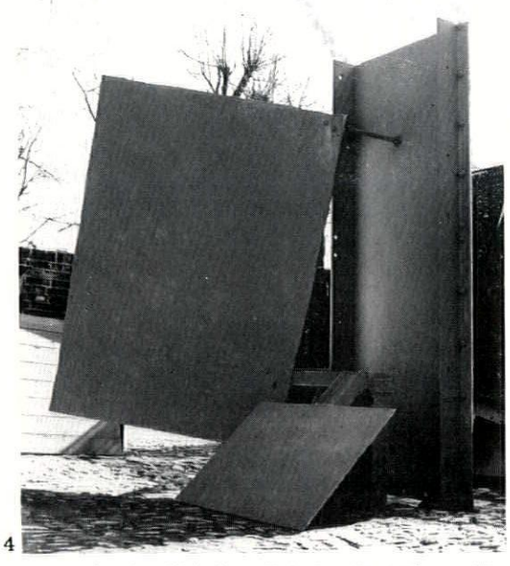
3

real sculpture, smooth and shiny, leaves no trace of human hand.

Some of the constructions of Anthony Caro, recently shown at Whitechapel Art Gallery, are excellent English examples of

the kind of sculpture that currently provides the only dependable signs of intense artistic endeavour.

They are assemblages of metal plates, rods, channels and girders, but although the materials may have been purchased at scrap yards they in no sense resemble the engineering discard and broken machinery usually associated with assemblage. They would still be suitable for the kind of constructional work for which they were intended. Caro doesn't cut or shape the plates, channels and girders, and as Michael Fried enthusiastically remarks in the catalogue: 'In Caro's sculptures, unlike Rodin's, the spectator is not made to feel that the artist has been closely or passionately involved with his materials.' Very occasionally he puts a bend in one of the rods, but otherwise his creative activity is expended entirely upon the order in which they are to be bolted or welded together. Gone are the days when sculptors used blow torches like paint brushes to obtain interesting burn-marks from metal surfaces. To remove any accidental textures that the metal may have acquired in the manufacturing process or whilst lying in the metal vendor's yard, Caro gives the entire construction an even coat of paint, with either a flat or a gloss finish. But the paint is not applied only to eradicate textures, and I gather from Michael Fried's Introduction that he considers the painting of the constructions to be at least as important as the arrangement of the parts. He discovers the influence of Noland and Louis in Caro's use of paint, and although at first sight Caro's hard, rebarbative skins of industrial paint seem to have little in common with the subtle stains of the Americans, he obviously shares their distaste for proclaiming their ability as

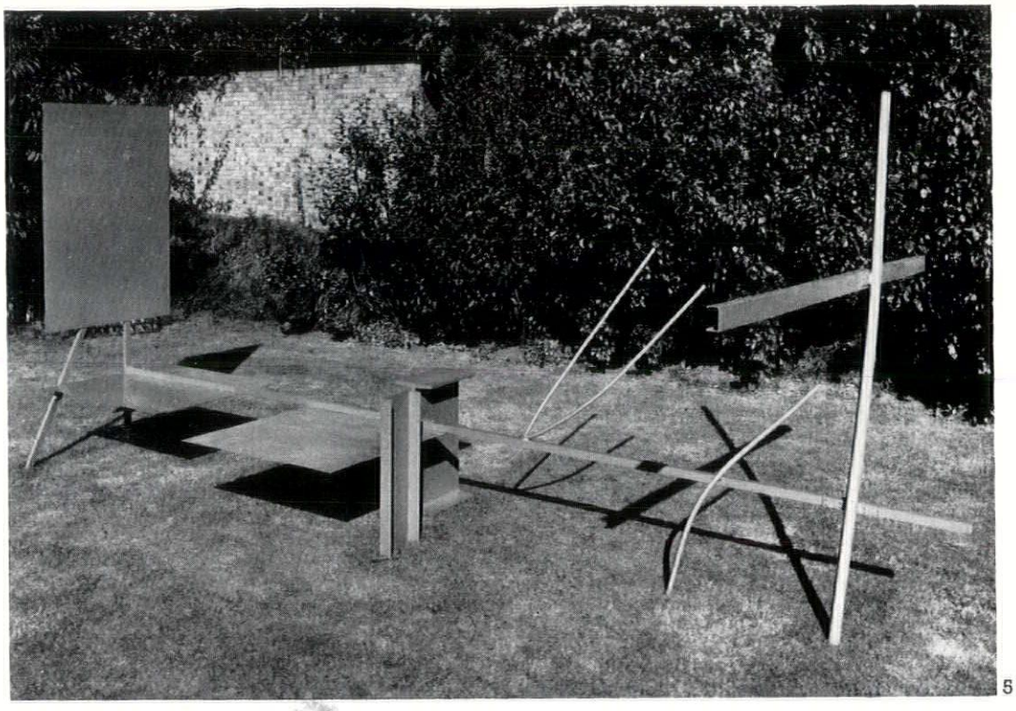


4

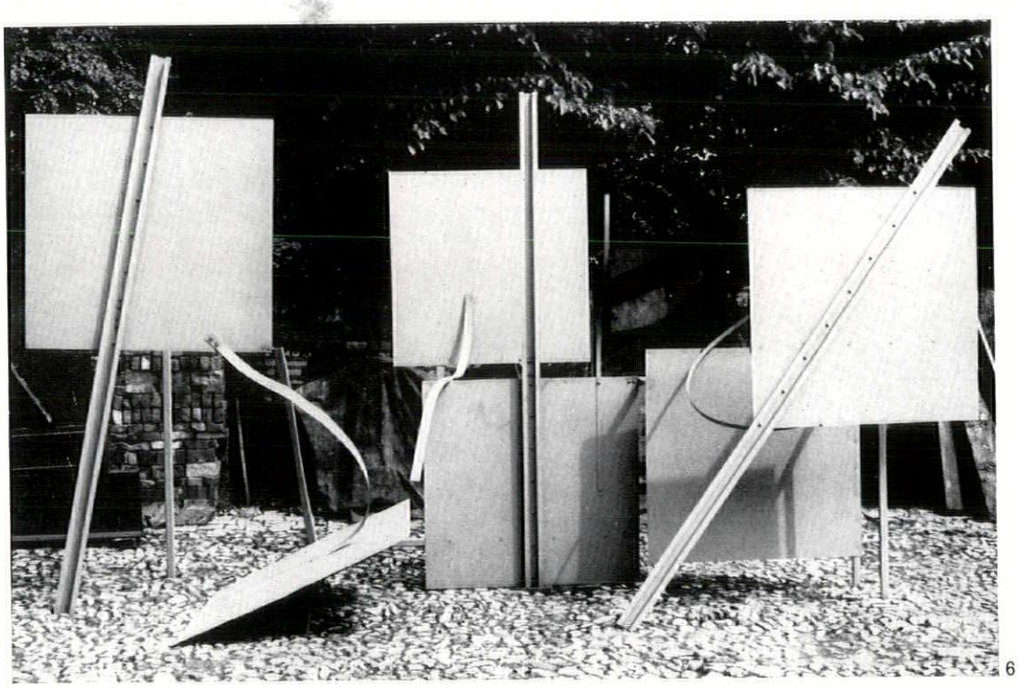
executants. Fried maintains that Caro, like Noland and Louis, has 'sheerly optical images' in mind, and that his all-over colour gives his heavy materials the illusion of weightlessness, rendering substance itself 'mostly optical.' To point up the miracle, he adds: 'And what could be more substantial than his massive girders?' But in fact the constructions which are mainly composed of girders continue to look extremely ponderous, and leave one with the unsatisfactory impression that he found them too heavy to move around much. Even a thing like 'Sculpture Four,' 4, midway between the heavy and light constructions, has a distinctly glum look, as if the attempt to make something of it had to be abandoned. All the same, it would make a rather splendid anti-monument outside the head offices of a wealthy jerry builder.

The constructions in which plates, rods and narrow channelling predominate certainly do achieve a sense of weightlessness —not, I suspect, on account of their colour, but because some of the larger elements have been lifted clear of the ground and suspended on thin verticals. In this respect, 'Early one Morning,' 5, and 'Pompadour,' 6, are particularly effective, and their colour—one is painted red, the other pink—is not only charming, but gives enhanced visibility to the hyphenating elements—both constructions go on for several yards—and helps to bestow upon quite arbitrary arrangements a delightful air of decorative unity.

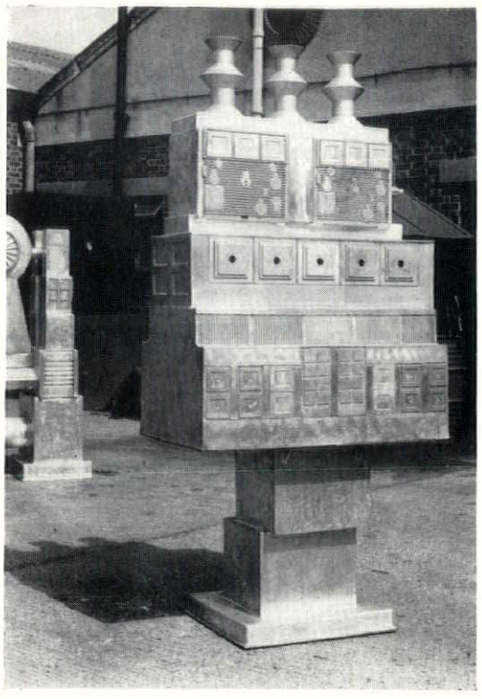
Eduardo Paolozzi has also been paying his respects to the aesthetic of the anonymous surface, in his impeccably smooth



5



6

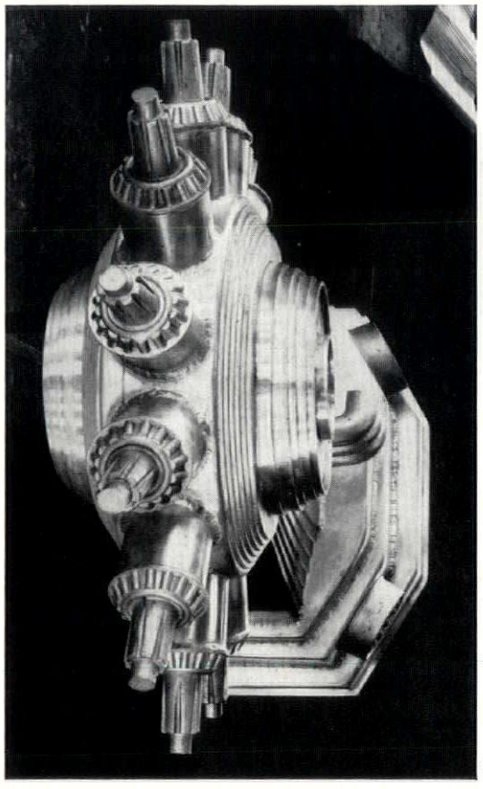


7

and symmetrical aluminium sculptures at the Waddington Galleries. He has built up an engaging group of machine personages from standard units, and it is fascinating to see an artist who has produced marvellous images in the past by relying on spontaneous decisions in the process of making now placing as much faith in preconception as in the act of making. It may well have a far-reaching influence on the future of painting and sculpture, but the first harvest of images seems to revert, very charmingly, to our old friend the robot.

They convey a sense of lightness and hollowness, almost as if they could be worn, and some of them look as if they might be new streamlined 'costumes' for the Managers in *Parade*, 7. I would like to see them stamping across a stage to an electronic version of Satie's music. The piece called 'Diana as an Engine,' 8, has only been photographed from above, perhaps in order to retard one's sense of her implacable symmetry, but her polished aluminium surfaces certainly lend themselves to the idea of a moon goddess. Diana was always a friendly goddess and it was a happy thought on Paolozzi's part to put her at the head of his mechanized family. He has probably remembered that she was worshipped at the crossways and may have invoked her presence to ask her which direction he should take. It could be the $64,000 question even for a goddess.

Robert Melville

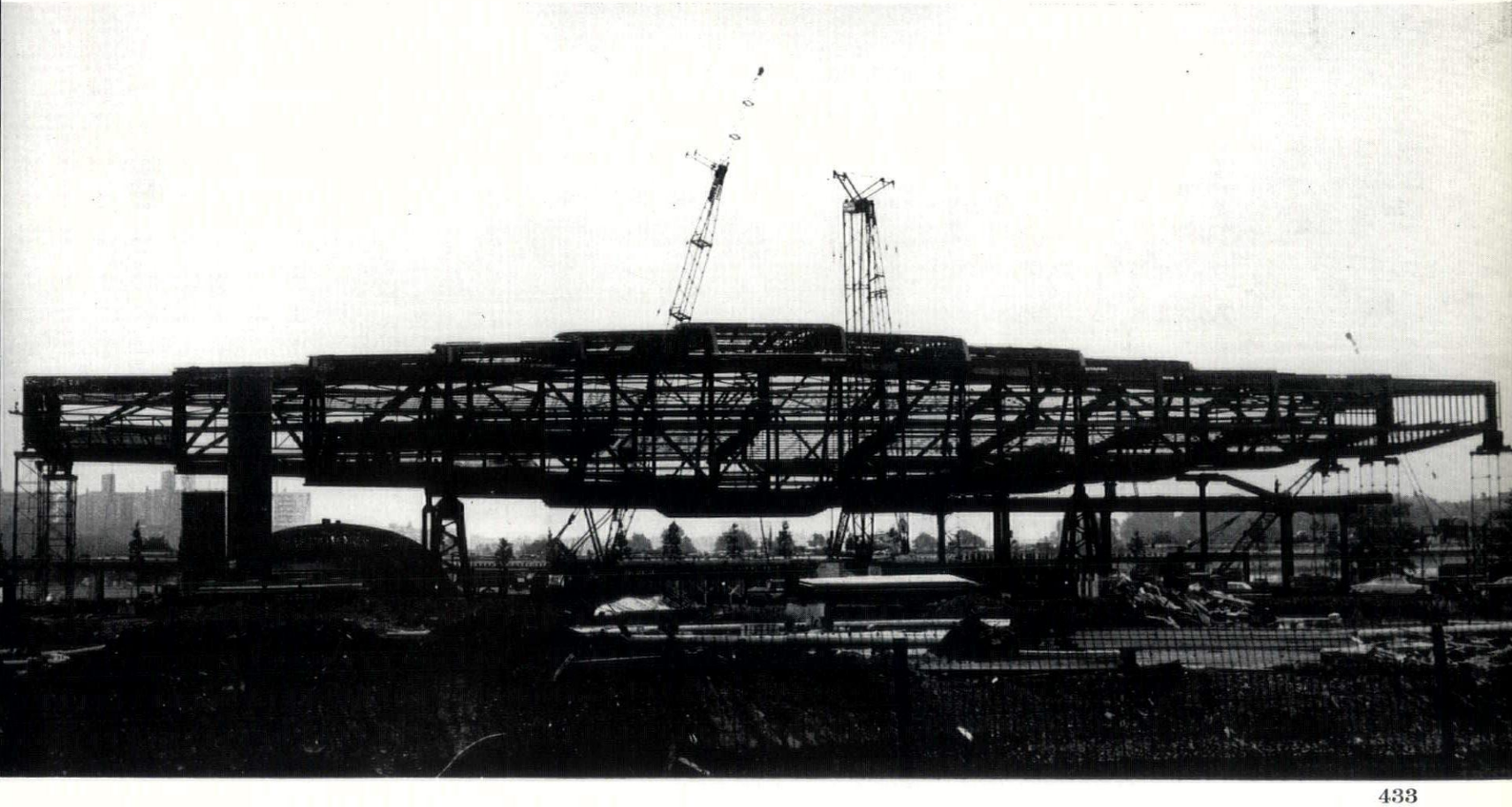


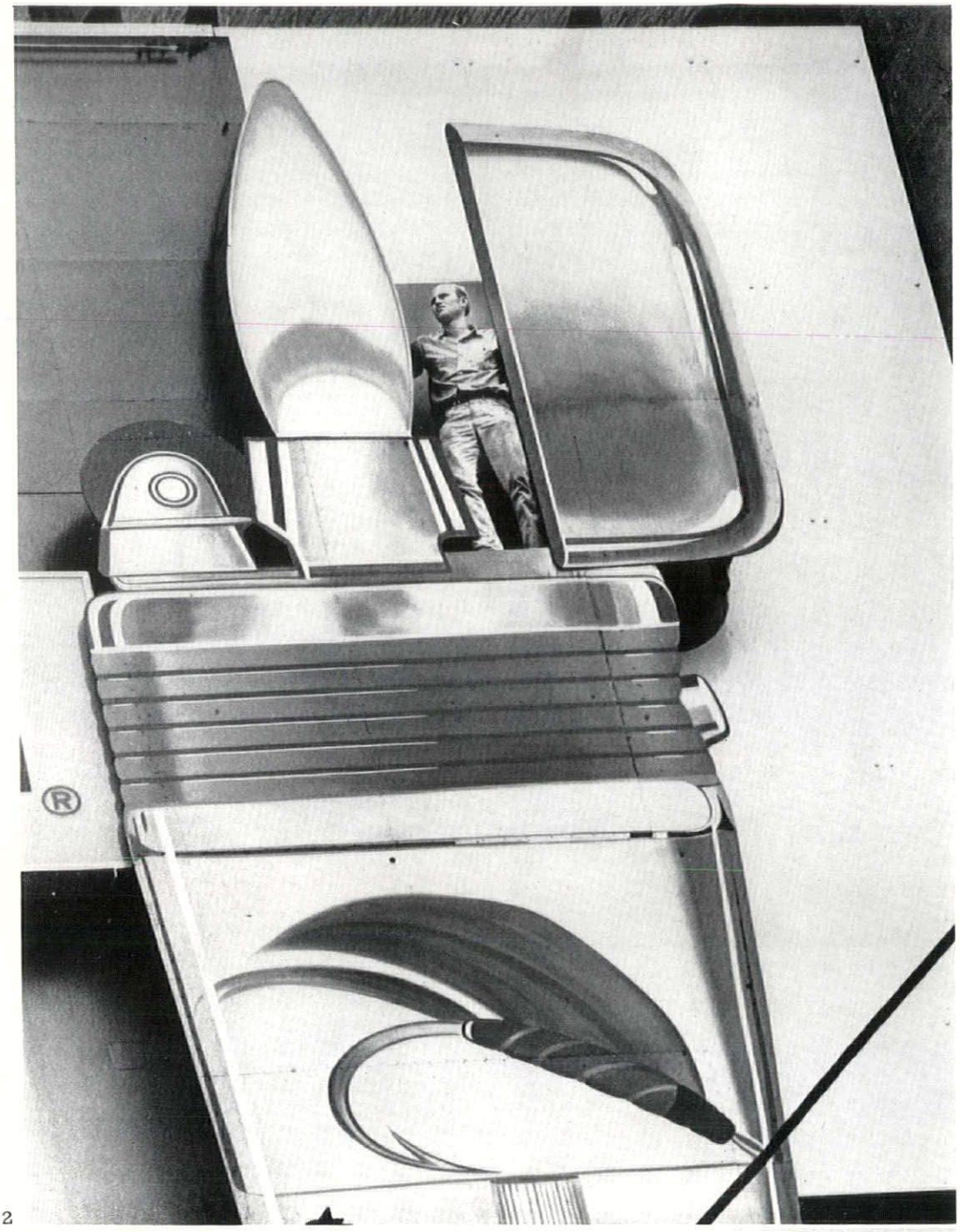
8

NEW YORK WORLD'S FAIR

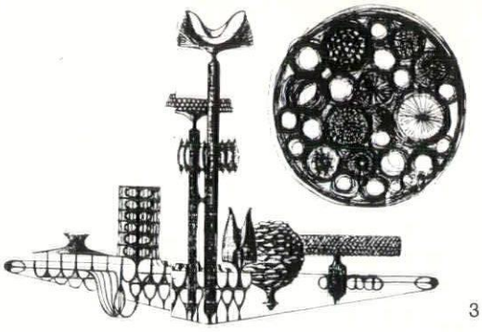
For months, cynical New Yorkers have been saying that their world's fair, due to open next year on the 1939 *site at Flushing Meadows, will never look as good completed as it does now.* Certainly, the great uncompleted hulks and unclad frames, 1, with their air of a twenty-first century spaceshipyard present a spectacle of engineering ingenuity that will be lost when everything is boxed in, and paying visitors are unlikely to be vouchsafed such spectacles of contrasting scale as 2—the painter James Rosenquist caught by Robert Freeman's

1

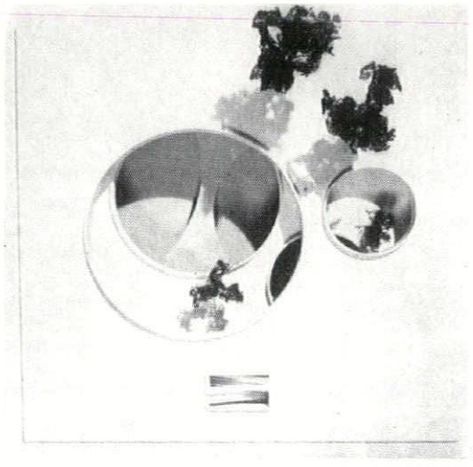




2



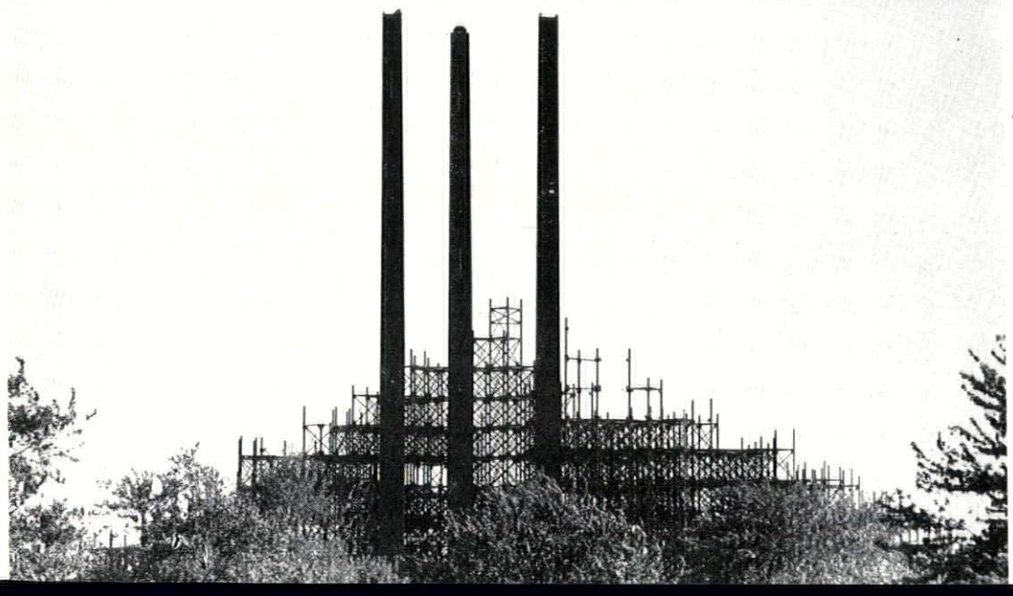
3



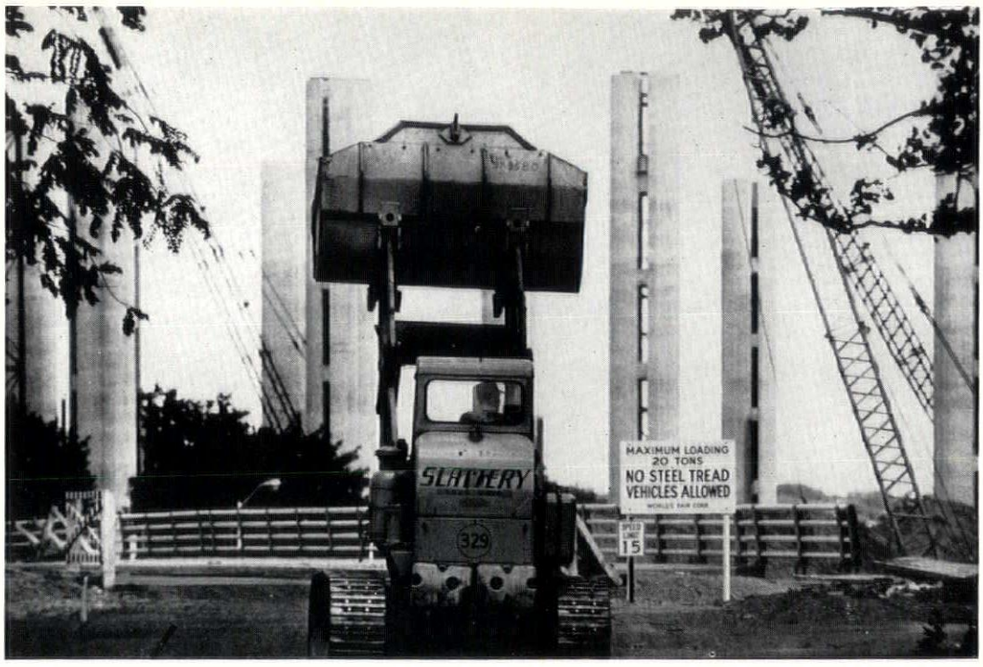
4

camera on part of his giant bill-board mural for the New York State pavilion. But even so, the opprobrium that has been heaped upon the whole Fair project, and Robert Moses, its chief, seems premature—so many of the pavilions will contain elaborately mechanized and mobile displays, or will even transport visitors through the exhibit on travolators, trolleys or what have you, that the Fair seems certain to be a popular success that those who are busy writing its obituaries already may be made to look rather foolish.

Nevertheless, there is one kind of obituary that may properly be written, that of the brainwaves and advanced designs that never actually reached the site. The New York magazine *Industrial Design* gave decent burial to a number of these in its issue of last September; among them, William Katavalos' *Education City*, 3, which seems to be a relation of Paolo Soleri's Mesa City projects; a subterranean water garden by no less a person that Arthur Drexler, 4, for no less an organization than the Chase Manhattan Bank, and several proposals for the Federal Pavilion, which will, in actual fact, be a classicizing sub-Miesian glass box by Charles Luckman and Associates, with its internal entertainments designed by the Cinerama Corporation, and the moving grand-stand system which will take visitors for a fifteen-minute ride through it, by Jeremy H. Lepard. It all sounds admirable, but there still seems an obstinate current of opinion that there would be more entertainment and instruction to be



5



6

gained from a ride through the present jungle of scaffolding, 5, in a front-loader, 6, with or without steel treads. More progress photographs are on the frontispiece to this issue, page 386.

Michel Santiago

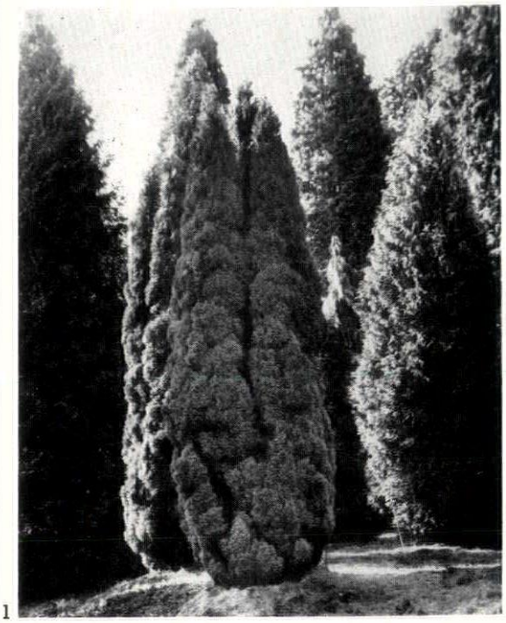
SHRUBS

CONIFERS

Although certain types of Pine are native to these islands, and are accepted as part of the natural scenery, most of the so-called ornamental conifers have been out of favour for many years, owing to the over-enthusiasm of the late Victorians who have left behind them a legacy of gloomy, dripping drives, and landscapes thickly spattered with sharp exclamation marks in unlikely and mostly unrelated shades of blue, green and gold. Such mistakes give an immediate insight into the uses and limitations of these generally striking and dramatic trees.

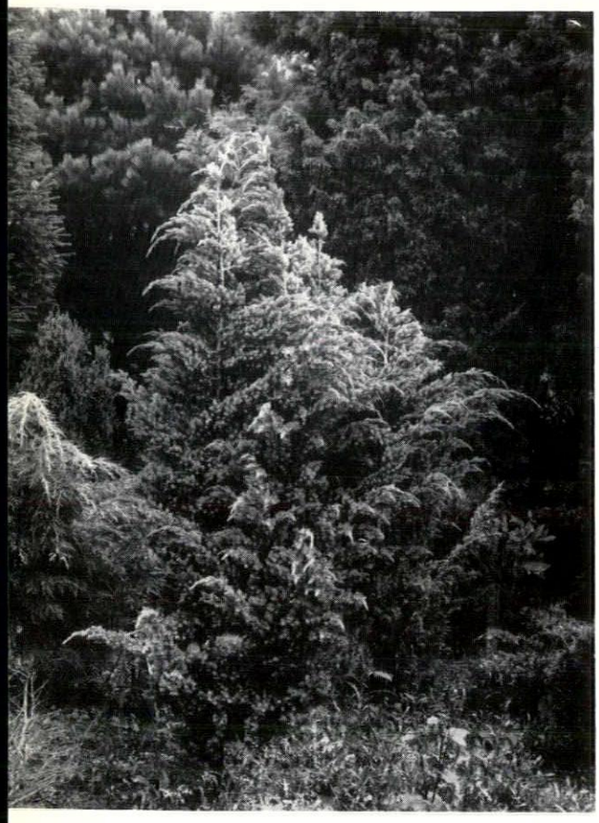
The climate of this country tends to be grey and damp, the quality of the light soft and misty, gaining its best effects from the subtle variations of sunlight and cloud shadow against a blue distance. Into such scenes, dependent on vagueness and illusion, the solid darkness of many conifers and the hard black shadow which they all throw, must be introduced sparingly and with care. Wrong placing or too great massing can produce only discord and gloom. The familiar shapes of our landscape, also, are softly rounded or smoothly flowing, so that the sharp staccato symbol of most of the trees, like the equally emphatic and much abused Lombardy poplar, needs careful placing to appear as the climax of any particular scene rather than an irritating interruption in it.

Except in garden contexts, where the surrounding colouring is specially adapted, the blue and gold conifers are as out of place in the landscape as those liverish, red leafed trees one sees sometimes growing unrelated amidst the surrounding green. In their proper place they can be exceedingly effective, carrying on the colouring of some particular group through the winter months and making an excellent background to suitable flowers and foliage. Of the blue trees, *Cedrus atlantica glauca*, 1, the blue Atlantic cedar, is one of the best known. Growing fairly rapidly, it makes a fine specimen on a lawn or where its wide branches have room to spread. In more restricted spaces and for vertical accents, the blue varieties of *Chamaecyparis* (more often, but incorrectly, known as 'cypress') such as *lawsoniana allumii*, *fletcheri*, 2, and *Triomphe de Boskoop*, repeat the colour, while lower still, and rather spreading, *Juniperus squamata meyeri*, 3, will give a short fountain of glaucus blue. In spite of the immediate charm of their frosted silver, the blue varieties of *Abies* and *Picea*, the silver firs and spruces, are better avoided, as in middle age their foliage tends to die off along the branches, leaving only a row of tips on the outer edge. This tiresome habit gives them a bedraggled appearance just when they are coming into their


1

1, *cedrus atlantica glauca*. 2, *chamaecyparis fletcheri*.


2



3. *juniperus squamata meyeri.*

prime, so that one can only rely on them as small shrubs for short-term effects.

To introduce a gleam of artificial sunshine, or to form part of a gold and yellow garden scheme, there are several conifers whose rather greenish gold is particularly attractive. For some reason they tend to grow more slowly and remain smaller than their blue and green relations, which can be an advantage in a confined space. From amongst the many varieties of *Chamaecyparis* I would choose *lawsoniana erecta aurea*, *lawsoniana lutea* and *stewartii*, *obtusa cripsii* and *pisifera aurea*. As a spreading ground cover, the feathery layers of *Juniperus pfitzeriana aurea* are particularly attractive.

The infinite variety of different shades and types of green provides a constant source of wonder to anyone who stops to consider the matter, and amongst conifers the range is deepened and intensified amazingly. Although the general idea of 'conifer colour' would probably be the black green of pines or of the common *Chamaecyparis lawsoniana*, it ranges from the very pale silvery green of *Ch. lawsoniana pottenii*, a feathery, upright column of modest size, through the blue green layers of the spreading *Juniperus pfitzeriana* and *tamariscifolia*, both of which form admirable ground cover and look well spraying out beside steps, or associated with stonework and water, to the intense plush green of *Libocedrus decurrens*, a dramatic vertical feature growing fifty feet high or more in reasonably sheltered surroundings.

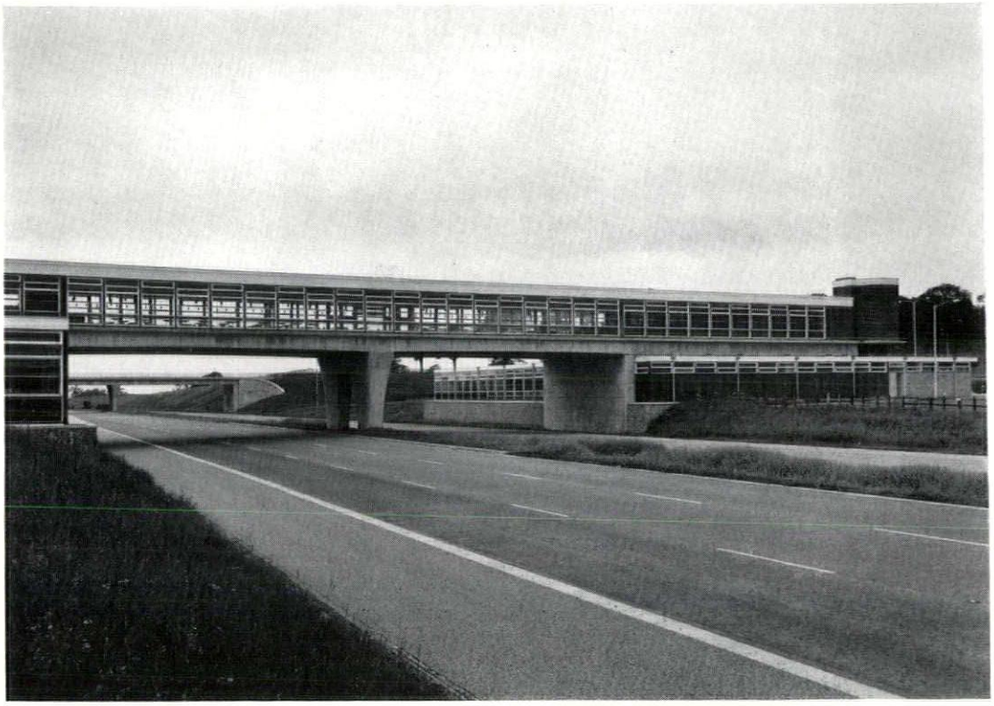
All these trees grow best in a soil which is neutral or slightly acid and does not dry out too quickly. Shallow, chalky soils are to be avoided as very few conifers will flourish under such conditions. When planting, it should be remembered that an investment is being made for the future, and particular care should be taken with ground preparation and spacing, since mistakes may only appear after a number of years, when it is too late to rectify them.

A. du Gard Pasley

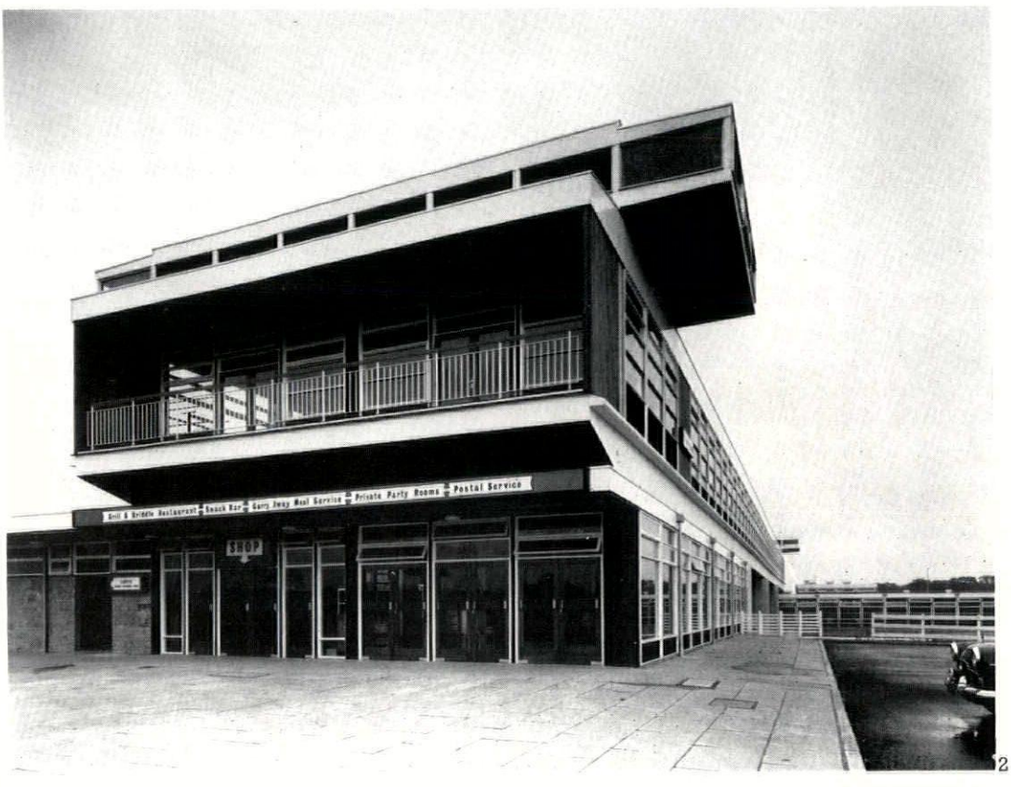
ARCHITECTURE

M6 SERVICE AREAS

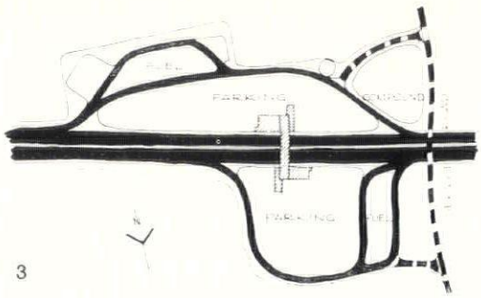
The new overbridge restaurants at Keele, 1, *and Charnock Richard*, 2, *on the M6 Birmingham-Preston motorway are such an improvement on any similar installations elsewhere in Britain* that it is clear that new Ministry of Transport revised directives, and the Ministry's closer collabora-



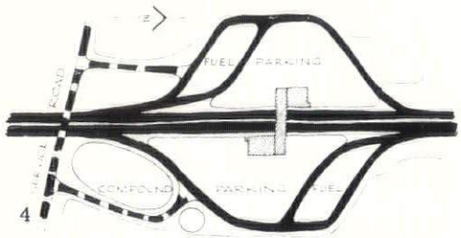
1



2



3

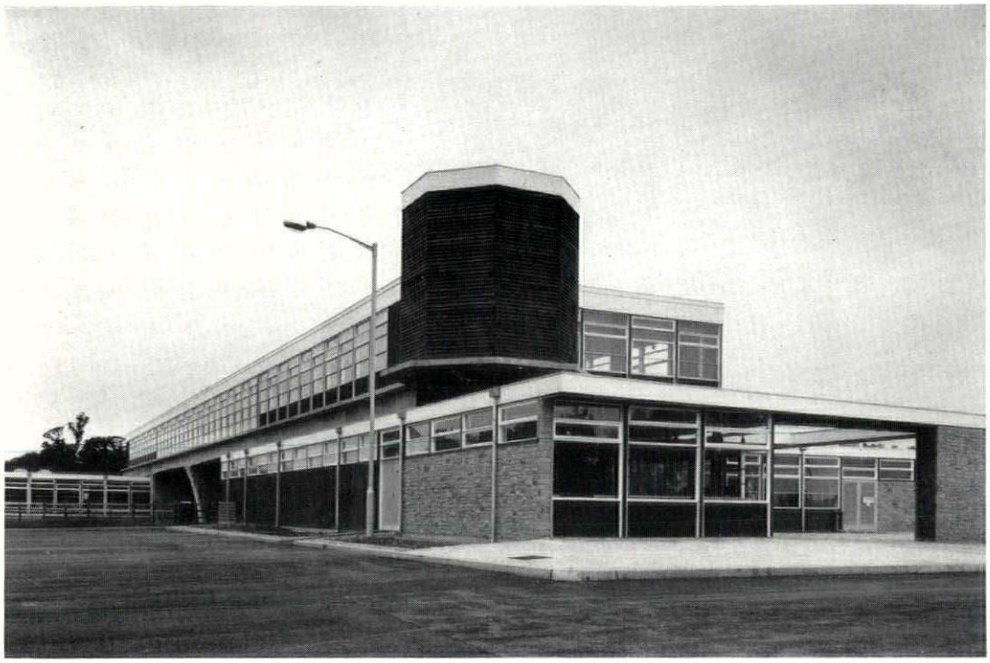


4

tion with the better architects that the new directives require, will produce results. The architects in both these cases were Terence Verity Associates, acting in conjunction with the local authorities and the Ministry, and enjoying far more responsibility for the total design of the entire service area, in which the restaurants are located, than has been the case before. The circulation arrangements at both sites, 3 and 4, were worked out between the Ministry and the architects, as was the landscaping; the bridge structures were designed by the local authorities' engineers, which guarantees their consonance with neighbouring bridges (visible in 1), while even those buildings on the site that were not to the architects' design were painted, wherever possible, to the architects' specification.

The result is not only vastly better architecture, 5 (Keele), but also a vastly more coherent total design, as can be seen at Charnock Richard, 6, that comes a long way to meet the demands for an appropriate road-style for the motorway that were voiced in the AR by Raymond Spurrier as long ago as December, 1961. Taken together with the news that the Ministry has recently rejected a number of service area proposals on account of their poor architectural quality, in spite of the fact that they were supported by attractive financial propositions from substantial caterers, these M6 service areas are an earnest of an improvement in design that, one hopes, will be maintained.

C. Forehoe


5


6

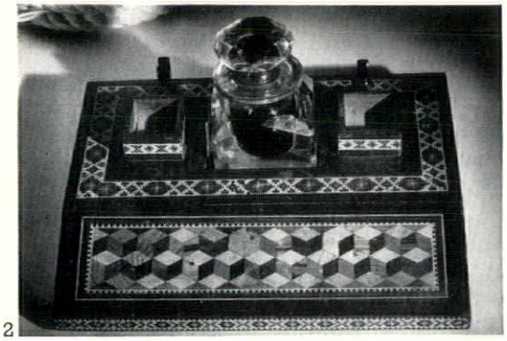
ART IN USE

INNOCENT DECEPTIONS

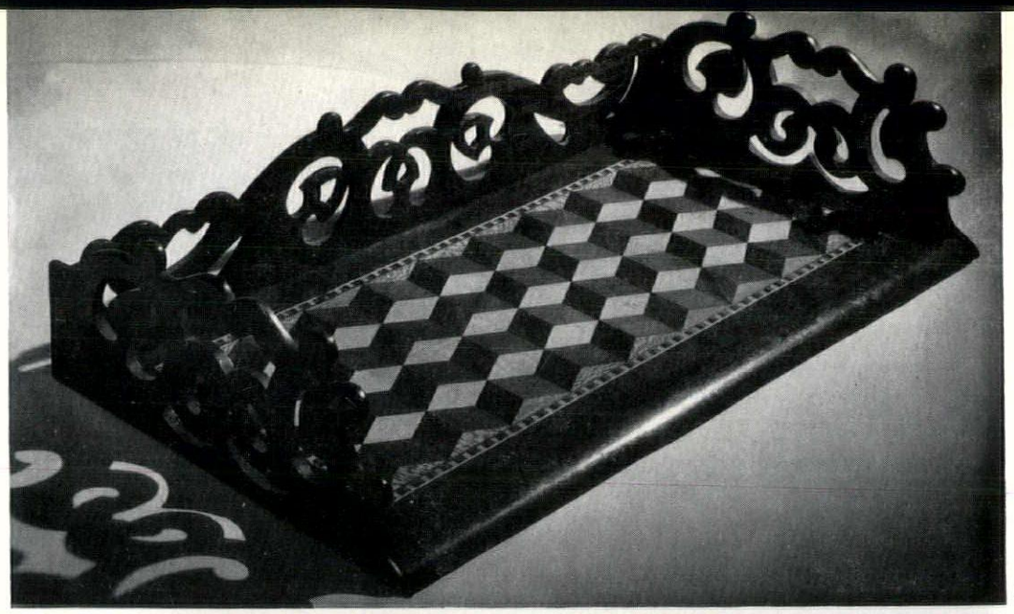
The lamp of truth is one which modern design does well, in general, to keep trimmed. Nevertheless, now that the necessarily puritanical pioneering days of the modern movement are passed, there are occasions on which a little innocent deception may be quite in place.

The accompanying photographs show examples of a device prettily calculated to produce such innocent deception—the fictitious cube. It is *innocent* deception, note, because only the eye, and not the mind, is deceived: no one really supposes for longer than the period of the first glance that the top of the table in 1 is anything but flat. Yet even when the mind has told the eye that it has been made a fool of, it persists in its error in the eye's view; the glass ball continues to


1

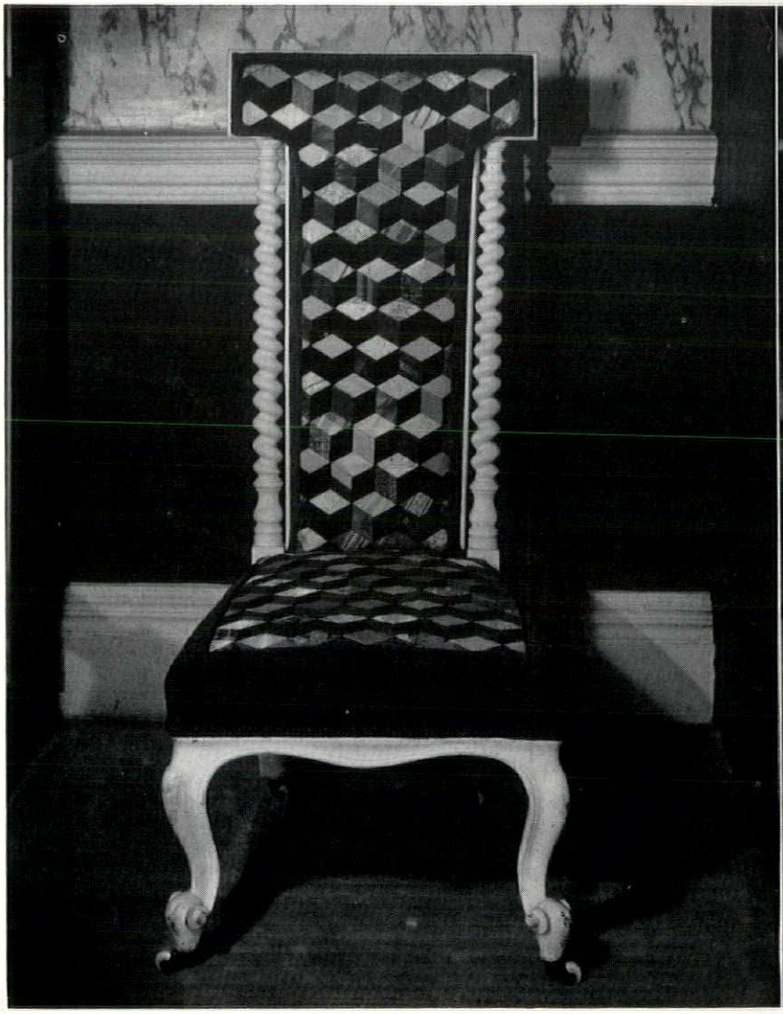


2

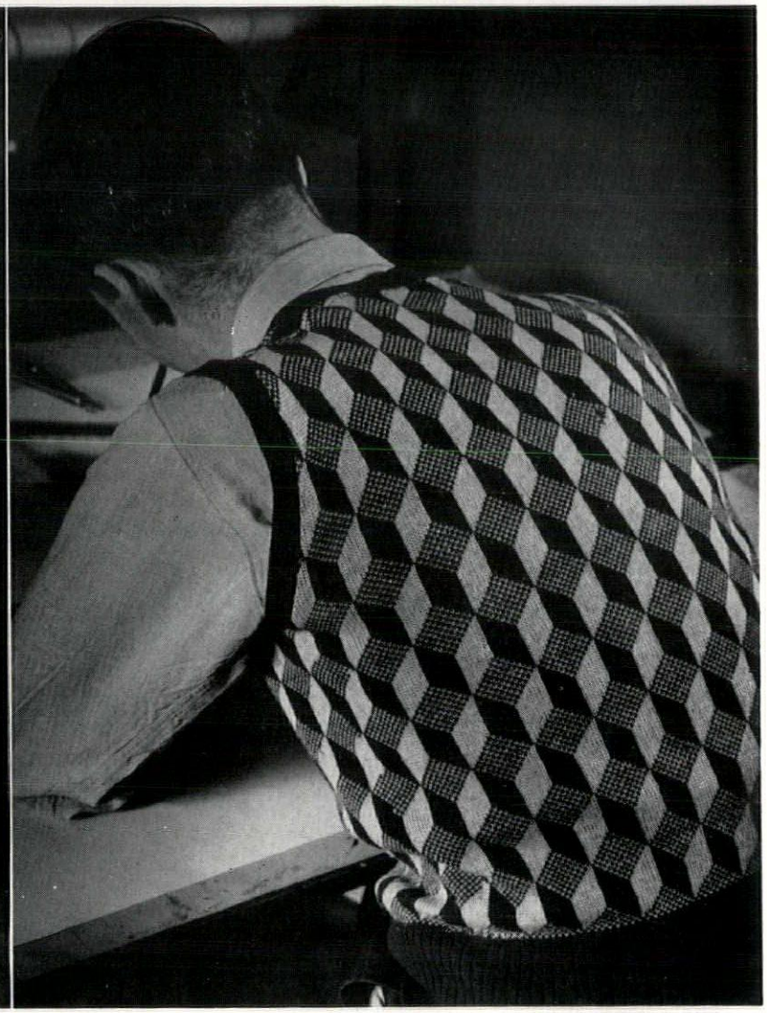


3

defy all the laws of gravity. This table is of early Victorian date, as are also the other pieces of furniture here shown in which inlaid woods are employed to produce the same effect—the writing stand in



4



5

6

2 and the letter rack in 3. 4, on the other hand, shows trompe-l'oeil cubism (as it might be called) in another medium—patchwork. And in 5 and 6 we have two contemporary examples, one in wool and the other in rubber floor covering; both were photographed in the AR offices in Queen Anne's Gate.

It is a simple device, but one which rarely fails to please. We are notoriously short of motifs for surface decoration; hence designers' expeditions into crystallography. Here is one ready to hand which might well be more widely used.

M.W.



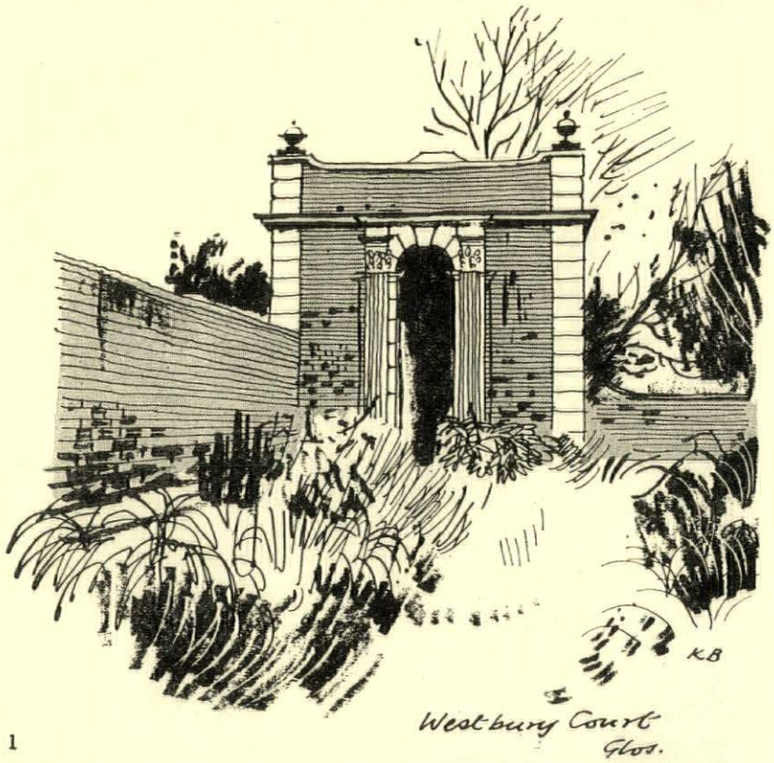
A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn and illustrated by Kenneth Browne

LOOK OUT

SOS

WESTBURY COURT, GLOUCESTER
Famous seventeenth - century water gardens, 1, now bought for a housing estate. This is not a story of builders' vandalism, for the developer is quite prepared to retain the lakes and pavilions in the new layout if only this can be properly endowed. But the Gloucestershire County Council simply will not help, and organizations like the National Trust cannot take on the job unaided. This is crazy, for Westbury is one of the very few old formal gardens in the country.

HONITON, DEVO
St. Margaret s Almshouses, 2, a delightful group of two sets of cottages and a small chapel. Not in immediate danger ; in fact the Trustees, led by the Rector of Honiton, want to keep the buildings. But the annual endowment is only £110. Although there is still time, the buildings need help if they are not to decay slowly and slide down to the final ignominy of a closing order.



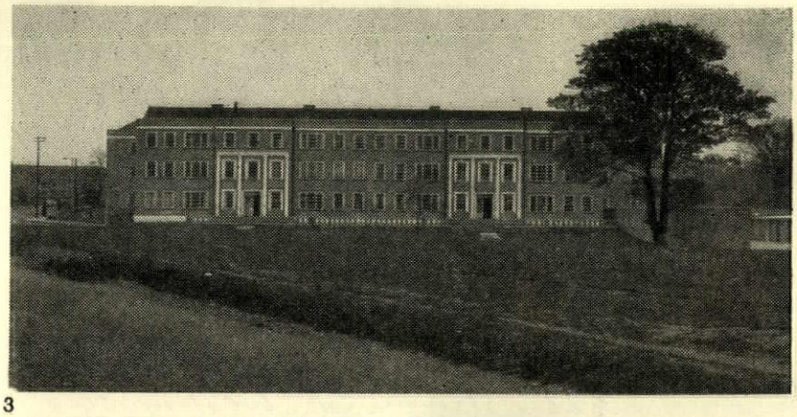
1


2

OUTRAGE

ARCHITECTURE AS SHE IS SPOKE
New flats on the northern side Blackheath, 3 and 4. The building being demolished for these frumps is incredibly enough a Vanbrugh villa—very modest and very battered but still recognizable—part of the early suburb that he built behind his house in Maze Hill. Progress ?

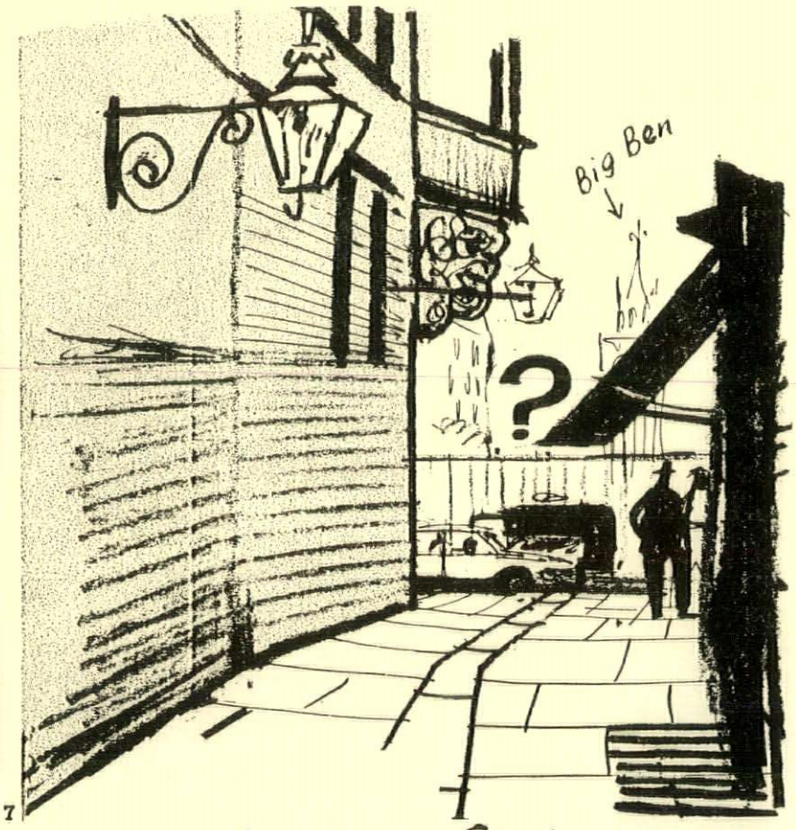
WELL HALL, ELTHAM
If any housing estate should be treated daintily it is this one, a piece of fairyland from the First World War, using all the townscape tricks which have had to be relearnt painfully. When the time came for the borough (Woolwich) to replace the lighting, did it take special care ? An ungainly angular standard saws it way up and down the roads, 5, and footpaths, 6. How sad, when there are now plenty of modern lamp


3

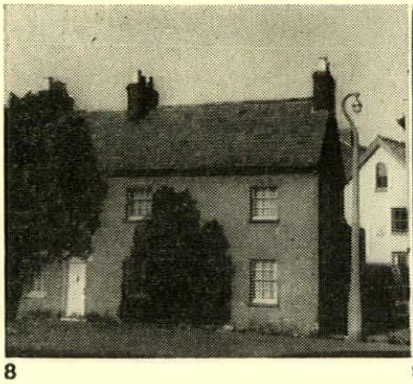

4


6

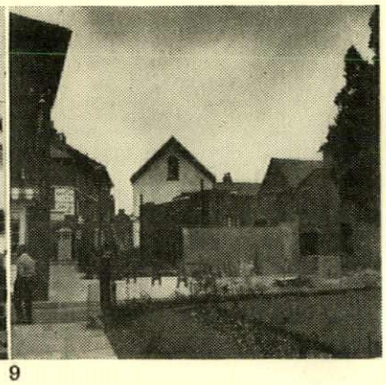

5



7 Lewisham St. Westminster



8



9



10 Wimborne – site for a tiny urban square

standards which would not have impaired the fragile charm of the estate.

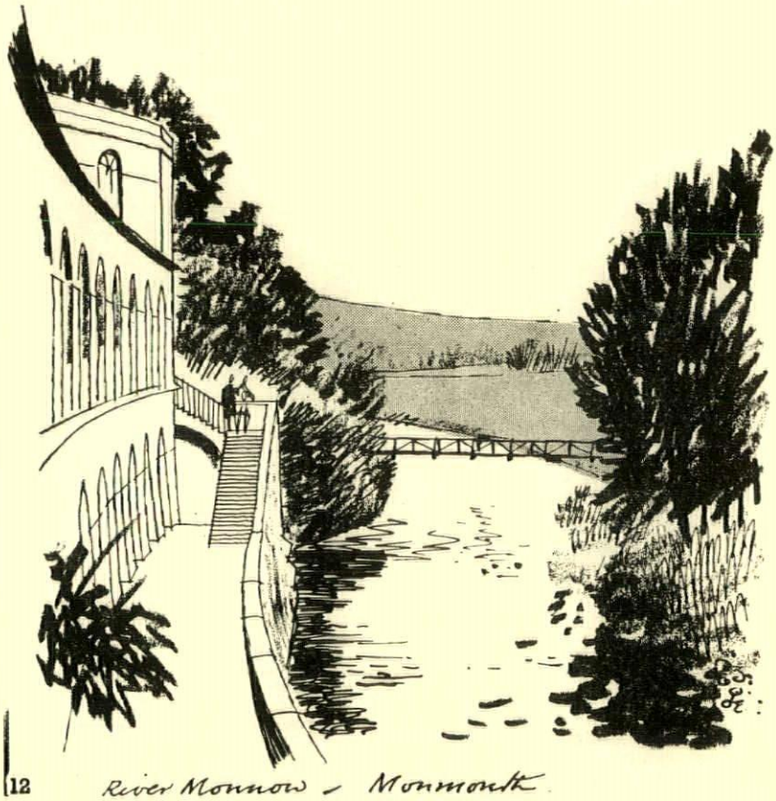
OPPORTUNITY

WESTMINSTER
The alley way, 7, described in last month's townscape article (pages 338-340) ends at present in a car park. This is the old Colonial Office site, now to be developed as government offices and conference rooms. The design was won in competition by William Whitfield, and it will, inevitably, block the near view of Big Ben. But this could be turned into a townscape gain if the alley could be continued under a first-floor link and down one side of the new building, to come out with a bang in the middle of Parliament Square, between the Middlesex Guildhall and the Institute of Chartered Surveyors, itself to be rebuilt by Denys Lasdun.

WIMBORNE
This is the sequel to a letter in the February issue showing cottages due for demolition, 8. This has now been done, with the inevitable consequence — an unlovely public lavatory stares straight at the Minster, 9. But good could yet come out of bad if the lavatory were demolished also and the space made into a tiny urban square, 10, which is the pattern of the rest of Wimborne anyway. Selective demolition *can* be a good thing.



11



12 River Monnow – Monmouth

CAUTION

MONMOUTH
The Grecian Market at Monmouth, 11, burnt out after a fire and happily to be restored. But in the interests of getting back to the original design, the bay in the foreground, which is slightly later, will be removed even though it is undamaged. This is a pity, for it announces the town beautifully and deflects the view both left towards the market place and right, 12, on to a much more unexpected view—open fields and the river Monnow. It would be a pity to lose this for the sake of academic accuracy.

TWO FINNISH CHURCHES

(pages 394-399)

The basic architectural fact about a church is that it is a one-storey building, a fact easily lost sight of when its height is the noticeable thing about it, which it often is. A church has none of the horizontal stratification that determines the outward as well as the inward form of most types of building, its upper volumes and its rooflines being thereby set free, and determined either by the means chosen to cover the interior spaces, or by the architect's fancy, or by both. Too often it is the architect's fancy that sets the pace, and this and the absence of any accepted architectonic form not associated with the historic styles, have resulted in the tendency to jazz-modern that cheapens much church-building today.

Of these two churches, which are among quite a large number built in Finland in the last few years—almost all, it is interesting to note, following architectural competitions—one (Vatiala) wholly avoids this particular defect and the other very largely. They do so by relying on a clear geometrical idea for roofing in the large uninterrupted space that a church requires; in the one case (Vatiala) a simple and easily digestible idea, the parabolic concrete shell; in the other (Hyvinkää) an idea of some ingenuity, productive of considerable drama, but at the same time appearing a little forced, which gives it that partial affinity with the jazz-modern just referred to. The double triangular structure, forming a rhomboid in plan, with one of the two triangles—the one enclosing the church itself—rising to a higher peak than the other, constitutes a perfectly logical geometrical means of enclosing the required spaces, and yet the external effect, with its emphasis on angularity and the difficulty of comprehending it from a single viewpoint, gives an uncomfortable feeling of arbitrarily manipulated planes and apertures.

Surprisingly, however, the church interior is not so restless as its eccentric shape and the vigorous pattern of the exposed concrete ribs might lead one to expect. It has real dignity, enhanced by discreet colouring: white and grey and the muted brown of natural woods. The airy upper spaces absorb the asymmetrical openings of gallery and organ loft without difficulty. Nor is the existence of three separate axes as disturbing as, on looking at the plan, one might expect. One enters through the screen that forms one side of the triangular vestibule, on an axis quite unrelated to anything inside the church, one then turns a little to the right, to face down the axis created by the centre aisle and one has to turn again to the right to achieve the main axis of altar and sanctuary. The only seating on this axis, oddly enough, is that in the gallery. But it all somehow, in spite of these and the other complications, holds together.

Vatiala, on the other hand, is utterly simple: the whole building kept as flat and low as possible, echoing the flatness of the green lawns on which it stands, with the vigorous upward-soaring curve of the main chapel roof telling all the more strongly in contrast. The building is grey exposed concrete, with the shiny copper of the main roof again creating a strong contrast. While new this is perhaps too bright—seeming to bring the surface too far forward towards the eye—but it will improve with time. A more positive point of criticism is the way the concrete base wall which forms the perimeter of the whole building has been incised to give the effect of bonded stonework—an unwanted embellishment as well as being out of character. The interior spaces at Vatiala are well considered, airy and dignified. The colouring again is mostly grey and white and somewhat cold, even the natural wood furnishings being more grey than brown.

Both buildings gain a lot from their sympathetic but unforced relationship to their surroundings: Vatiala from its contrasts of vertical and horizontal being echoed in the straight-stemmed pine-trees rising from level lawns; Hyvinkää from the pine and birch trees and rounded rocks that crowd informally round the angles of its uncompromisingly formal plan, and from the changing shadows cast by the trees on its sloping concrete surfaces.

FACTORY SOCIAL BLOCK, ISLEWORTH, MIDDLESEX

(pages 411-416)

The gift of bulk space, roofed but uncluttered by vertical structure, has been the dream of many architects ever since Mies van der Rohe articulated it in his famous project for an auditorium in a giant aircraft hangar. In many ways, therefore, Conran Design Group are to be envied this chance to spread themselves over one whole clear-span floor of a sizable industrial structure. In other ways, however, the unlimited flexibility of plan may have been an embarrassment, and the rigid slicing of the space into three main areas would be forgivable merely as an attempt to impose some sort of humanly-comprehensible order on a volume whose scale was almost unreadable because of its size.

Nevertheless, functional requirements, as well, clearly indicate some such *parti*. The containment within the canteen of sounds and smells that may be welcome in an eating-place but not elsewhere, predicated one solid wall, at least, while the need to exclude unwanted sound from the theatre predicates at least one other wall that can, when necessary, be made solid and continuous. Thus, these two walls—one fixed and largely in fair-face exposed brickwork, the other largely of sliding and folding panels—are the effective generators of the whole design. For a start, the fact that they cannot (for functional reasons) be alike visually, means that the effective axis of the space between them (the main rest room) must run across the space from wall to wall, not lengthwise. By an extension that may be more apparent and logical on paper than in built fact, this axis is formally resumed in the planning of the canteen, and is marked by two of the free-standing screens and the binary division of the serving counters.

Even after these walls have been inserted and this axial *parti* imposed, the spaces remaining are still huge—even the theatre is a good size and only the billiard room comes down to what is normally regarded as 'human scale.' However, the fairly dense occupation of the canteen by chairs and tables, and the four standing screens, prevents any feeling of being lost, while the disposition of the furniture in the main rest room achieves a similar effect, though by different means—though fairly thinly dispersed, it can be read on the clear floor as a kind of map of archipelagos of seating on an ocean of vinyl floor-tiles. Even so, in this vast space, the functional subdivisions and changes of surface of the two long walls still have a vital role to play in giving the occupants some sort of fix or sense of location. What is remarkable is that in spite of their length and organization in successive bays, neither wall reads as a 'street facade' and pulls the room out visually at right angles to its implied axis—quite a balancing feat this.

On such a scale, detailing as normally understood can hardly register, and the broad treatment of the wall-surfaces, the large-scale modelling of inserted built-up structures such as bars and shops, are all fully justified by their visual performance. Nevertheless, there are any number of well-turned functional details, such as the hair cord backing to the dartboards, and the cupboards in which they are enclosed, the roll-out apron to the stage in the theatre, and throughout the billard room, where both the physical ceiling height and the psychological scale are sharply reduced, and detailing in the normal sense begins to read visually. It must be a

very long time indeed since any front-rank designer in Britain was called upon to design a billiard room as such, and an effectively masculine interior has been created here without nostalgic reference to earlier styles—except where their functional relevance is beyond doubt, as in the racks and clips for the cues, and the fringed edges for the lampshades over the tables. These last are not Victoriana, they perform an important function in preventing hard edges of illumination just above eye-level, which could be both distracting and optically distressing to the players.

CIVIC BUILDINGS, SCUNTHORPE
(pages 423-426)

The civic centre at Scunthorpe is an uncommonly tough-looking building to have been produced by recent municipal patronage in Britain, which all too often has preferred to commission a basically 'sweet' design—as in the new civic buildings for Hampstead—or, having accepted a basically tough-minded proposition—such as the recently-completed central library in Norwich—is prepared to see its impact blunted by irresolute and sentimental detailing. But Scunthorpe strikes the eye of the beholder with an impact that suggests that its architects still believe that the ultimate authority in modern architecture comes from the world of technology—indeed, its south elevation strongly suggests, if not actual industrial plant, then at least one of those industrially-styled theatre projects produced towards the end of the twenties under Russian Constructivist influence.

Both in external form and internal organization, it stands some way off from present classicist and formalizing tendencies as exemplified in, say, the winning design for the Boston (Mass.) city hall, and adheres instead to mainstream modern movement usages, such as the external differentiation of different functions, and contrasts of form—as in the way the long office-wing is set against the council chamber, the one rectangular and grid-like in its fenestration, the other a closed curved form without visible openings. Though this is less clearly seen in views from the north-west, in which the lower part of the council chamber is hidden by the rectangular and fully-glazed ancillaries block, this view does reveal a similar type of formal/functional contrast just above the junction of the two blocks, where the circular exhibition hall and the curved staircase up to the viewing platform are seen through the exposed upper part of the structural grid.

Where the building differs sharply from what would once have been considered mainstream usages is in its use of dark or textured exterior materials—exposed brickwork, dark slate facings to the structure, copper, matt black paint on most of the external steel and ironwork, mahogany joinery to the windows setting off the lighter-toned spandrel panels. In a manner that is highly characteristic of many recent exercises in mainstream modern, what is inside the voids of the structure is apt to appear visually lighter than the surrounding solids of the frame, in contradistinction to the optical effects prevailing in the white architecture of previous decades.

However, these relationships of materials do point up the one area where the design seems open to criticism—the handling of the join between the two wings. On the north side there are some striking non-alignments of levels, but these are less disturbing than the management of the exposed outer side of the corner, by means of an almost blind, brick-walled tower-unit in an idiom that faintly recalls Dudok and looks as if it may have survived from an earlier, perhaps pre-war, version of the design. Even though the logic of the design clearly calls for some sort of solid-looking vertical feature at this point, what has actually been built does not seem visually apposite to its important place in the design.

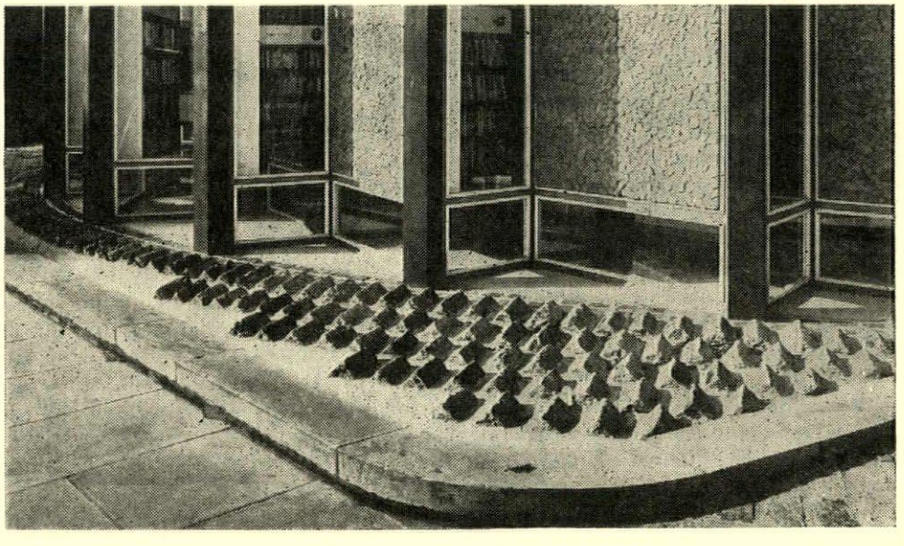
LIBRARY, JESMOND,
(pages 427-428)

Although no similar criticism could be brought against the Jesmond branch library, it does tackle a major architectural problem that is also part of the Scunthorpe design—the mating up of a large curved volume to a block of rectangular ancillaries (and here, again, any adverse criticism must be set against the fact that this, too, is a work of unusually high quality for a British municipality). Whereas at Scunthorpe the curved volume of the council chamber is accommodated within a rectangular structural grid which, whether enclosed or open, remains the architectural dominant, at Jesmond it is the circular library hall which is the dominant and the ancillary block which takes a subsidiary role, and is only allowed to register visually on the elevation toward Sunbury Avenue (from the lane at the back it is not seen in connection with the main, glazed drum, since it hides it completely).

The junction between the two forms is handled in a straightforward and understated manner—the serrated glazing simply meets the brick wall without so much as a negative detail, but with the implication that the circular library simply buries itself in the ancillary block (which it does not, there is a substantial curved re-entrant in the upper part of the block to accommodate it). It cannot be argued that this is an unclear solution to this confrontation, since the basic proposition is none too clear either, even from inside the library where one sees, beyond a glass screen, a staircase ascending into spaces whose exact nature and relation to the library itself is not self-explanatory.

Against this, one may properly make the point that, for most visitors, the subsidiary block is completely invisible, or of no great visual account. Certainly, it is the library with its pleated glass wall that seizes the eye at first sight and holds the attention for some time thereafter. Frankly, the design can well afford to stand or fall by this clearly modelled and confidently detailed form, which is also one of the most succinct demonstrations of the independence of structure and skin to be seen in recent architecture, the nature of the columns as supports for the perimeter of the roof structure being perfectly clear, and the zig-zag wall below looking almost like a system of exhibition screens independently inserted under it. The combination of this wall-form (not unlike a northlight roof stood on its side) with a circular plan to give both 'panopticon' supervision from a central desk and natural lighting to almost all the bookshelves, is not merely an ingenuity; it makes the nature and functioning of the building perfectly clear in a manner that is rare in library-building. The detailing throughout has come in for much well-merited praise, though one wonders whether such ferocious and ankle-twisting paving was really needed to prevent children leaning cycles on the windows.

Paving around the base of the library at Jesmond.



SKILL

THERMAL INSULATION IN BUILDING

A fairly basic knowledge of thermal insulation can generally now be considered as part of the architect's overall background information, although this is still based on very simple theoretical concepts with little refinement. In the field of practical work, however, he is faced with a bewildering variety of alternatives and the choice of the best form for insulation, considering practicability, efficiency and costs both of installation and maintenance, is becoming increasingly difficult. This article by Iain Stewart sets out to review this ever widening field and provide what is hoped will be a concise guide to materials and methods.

Real interest in the thermal insulation of buildings can properly be said to have grown up in the immediate post-war years. Fuel shortages culminating in the memorable Fuel Crisis Winter of 1947 focused attention on the whole question of the efficient use of inadequate fuel supplies. The steady rise in costs of heating produced a need for some quantitative assessment of heat losses from buildings and a method of calculation based on the simplest ideas of heat flow through materials was adopted.

National concern was evidenced by the Thermal Insulation (Industrial Buildings) Act of 1957 sponsored in Parliament by Mr. Gerald Nabarro. A second measure introduced by him endeavouring to extend the legal requirements of thermal insulation to domestic buildings was, however, not adopted. It was felt by the Government of the day that this measure could more easily be covered by a strengthening of local byelaws and a recommendation to this effect was contained in the Model Byelaws issued by MOHLG in 1959. The effectiveness of such a measure is, of course, open to some question, but then the whole idea of control by a multitude of local authorities each with its own idiosyncrasies and individual interpretations is one with which the majority of architects have been unhappy for some time.

Apart from legal requirements, however, architects have realized that it was in the client's interest to provide well insulated buildings. Such buildings would give the client undoubted economic advantages in terms of lower heating costs, but would also provide a more readily controlled thermal environment for the occupants.

Materials and methods

Following the impetus of the 1957 Act, a great deal of development has taken place in the production of insulating materials and the result is an almost bewildering array of proprietary products designed for use in specific situations. There are in effect two means available to resist the passage of heat. One is by trapping air in small confined spaces and the other by providing a reflecting layer or membrane.

U value

The most familiar term used in discussing thermal insulation is the U value. This is defined as the thermal conductance of a structure, or, in other words, a measure of the heat flow through an assembly and is usually measured in Btu (British thermal units) per square foot, per hour, per degree Fahrenheit difference in temperature between the two faces. Often in trade information this value is confused with the k value or thermal conductivity. This, too, is quoted in Btu, but in this case it is a measure per square foot, per hour, per degree Fahrenheit difference with the addition of another factor, per inch thickness.

This k value is used to calculate the U value but it should be noted that they are by no means the same thing.

From the k value (conductivity) is first obtained the resistivity, r, which is the reciprocal of k:

$$r = \frac{1}{k}.$$

This is multiplied by the thickness in inches to give the resistance:

$$R = t \times r.$$

Resistances are calculated for all materials used in the structure or assembly under consideration and these are added together. The surfaces both internal and external also provide a resistance to the passage of heat and so these too are added. If the assembly contains a reflective layer, a further additional surface resistance will be added.

The result then is the total resistance of the assembly to the passage of heat.

The U value or thermal transmittance is then calculated as the reciprocal of the total resistance:

$$U = \frac{1}{R}.$$

Heat loss factors

This then is the simple calculation by which heat losses and their control can be evaluated. The process, however, does suffer from one or two faults. Current research seems to suggest that the arithmetic has been over-simplified. As a rough and ready method, it provides quick practical answers but the true picture tends to be rather more complex. For example, the k values quoted and the U values calculated are for a 1 deg. Fahrenheit difference in temperature. These are probably accurate enough when multiplied by, say, a 10 deg. difference but, as the differential increases, the rate of heat flow also increases. This results in much higher heat losses than anticipated in colder weather.

Another factor which influences heat loss through insulating materials is moisture content. Although no figures are available, it is generally accepted that moist materials form less of a barrier to the passage of heat than dry. This fact has been well known to refrigerating engineers who take extensive precautions to prevent condensation forming within the insulating layers of their installations and reducing the efficiency.

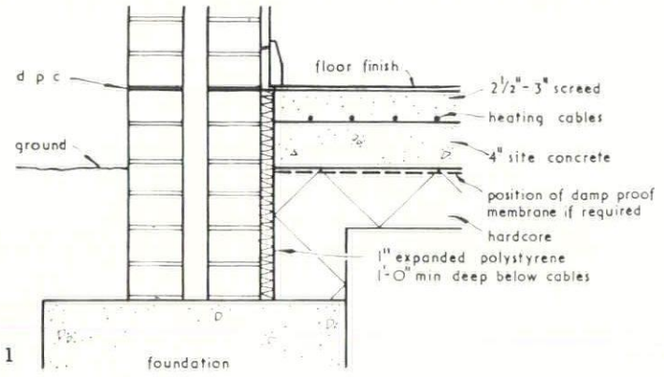
Naturally in cold room installations this problem is much magnified but there can be no doubt that it exists even in normal building insulation. This is particularly true of roof insulation where the only vapour barrier is likely to be impervious roof covering. This has the effect of confining condensation to the interior of the assembly with resulting considerable losses in insulating efficiency.

Structural insulation

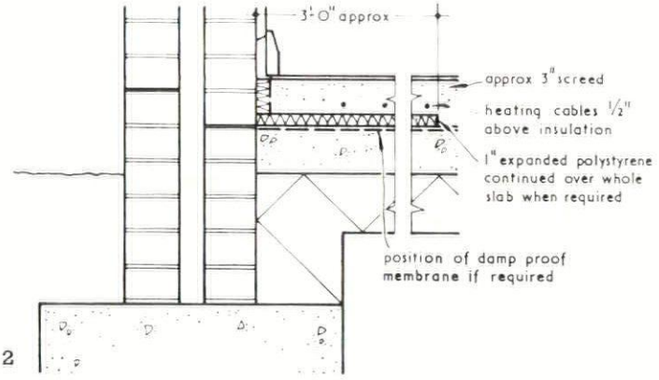
The method and material to be adopted in any building structure will obviously depend on the basic construction adopted but it is usual to consider the major elements when designing for thermal insulation.

Floors

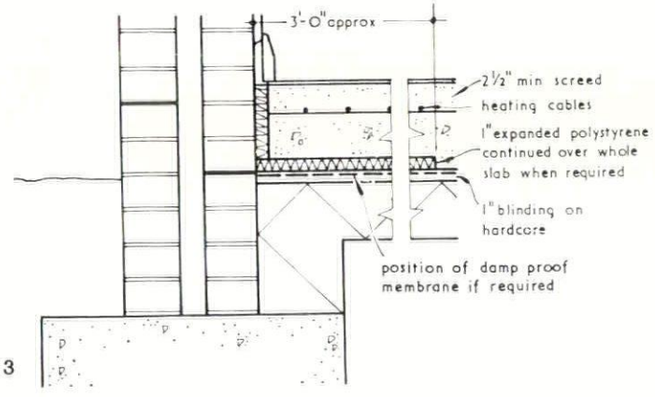
Concrete floors are generally sufficiently resistant to the passage of heat to require no further treatment.



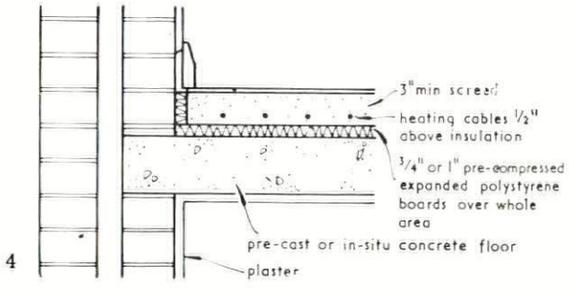
1



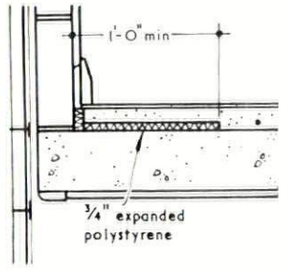
2



3



4



5

1, vertical perimeter insulation to external walls at ground level.
2, horizontal perimeter insulation over ground floor slab.
3, horizontal perimeter insulation under ground floor slab.
4, method of providing thermal and sound insulation to an intermediate concrete floor.
5, method of providing thermal edge insulation on intermediate concrete floors, with curtain wall external walls.

This, of course, is not the case when underfloor heating is provided. On the ground level in such a case, however, only the edges of the slab constitute a real heat leak and in this instance insulation is generally provided to isolate the slab from the external structure as shown in 1-5. In the case of upper floors, in order to contain the heat and prevent its leakage downwards, insulation may be placed under the screed containing the heating elements or, alternatively and generally more satisfactorily, on the soffit. If it is placed under the screed, it must be of a kind which will not compress under load.

Wooden floors seldom need extensive precautions particularly in intermediate locations, but a ground floor suspended wooden floor may warrant additional protection. In such conditions the normal method would be to place the insulating layer on the joists before fixing the boarding. This has the added value in the case of boarded floors that it stops draughts. These can be a more significant source of heat loss than the passage of heat through structure.

Walls

Insulation in walls can be considered in two categories. First, load-bearing walls and, secondly, panel walls for cladding.

In the first case the problem is relatively straightforward. A normal 9 in. brick wall will have a U value of something like 0.47. This is the theoretical figure based upon standard calculations. There can be no doubt, however, that condensation and moisture penetration considerably increase this figure.

The first answer to this problem is the cavity wall. By introducing an air space the insulation value is immediately raised and the U value will fall to 0.30. But to obtain full advantage the cavity must not be ventilated. Further transmittance may be reduced by the use of a lightweight plaster or, for really low transmittance, by the fixing of insulating plasterboard on battens.

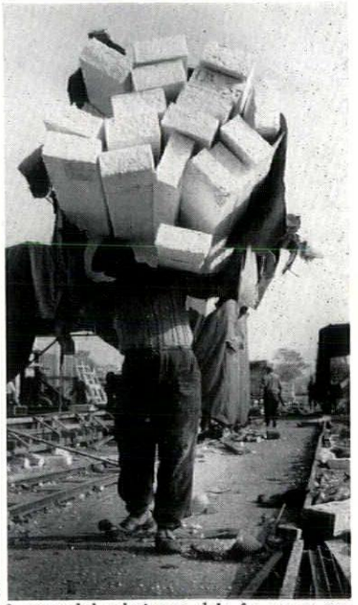
In recent months a new product has appeared on the market in the form of very thin sheets of foamed plastic which are fixed to the inner face of the wall prior to decoration. This development makes maximum use of the high k value associated with this material, but is said to lead to difficulties on redecoration.

The cavity wall has, of course, the other advantage of preserving the inner skin relatively dry and hence obtaining maximum insulating power from the material. It is becoming increasingly common to form the inner leaf from insulating blocks.

There have been experiments in filling the cavity with various insulating materials, but there is at present no obvious advantage to be obtained. True, the insulation value of the wall may be increased, but the accompanying danger of bridging the space enabling moisture to cross from the outer to inner leaves, does much to discount the gain. Impervious materials such as foamed plastic would, at first sight, seem a possible answer, but if slabs of foamed polystyrene are used the bridge formed at the junction of slabs cannot be avoided easily. An alternative of pumping polyurethane foam in would seem to solve this problem, but again a snag is encountered. The normal cavity is a very confined space in which to place the material and it is rather difficult to avoid the formation of air pockets which again provide an ideal bridge for moisture.

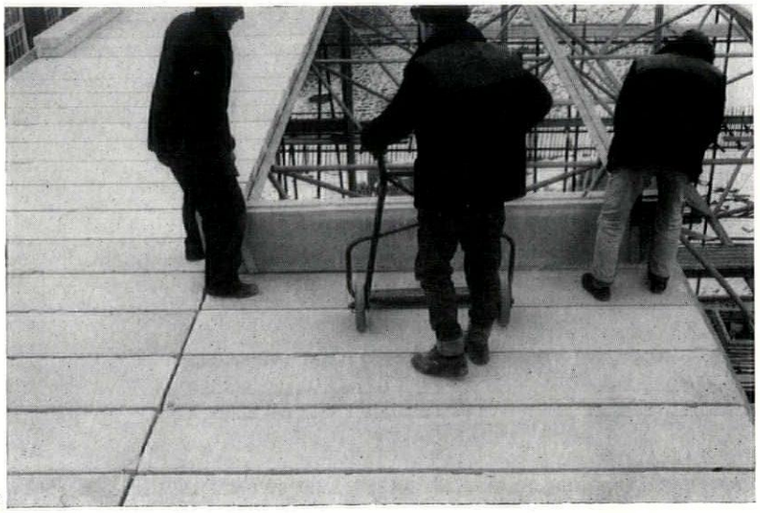
When consideration is given to light cladding in walls thermal insulation becomes an extremely important factor. The thin impervious materials used as a weathering face require considerable backing as alone they tend to offer virtually no barrier to the passage of heat. They also tend to give rise to severe condensation problems and so strict precautions are necessary to guard

[continued on page 446

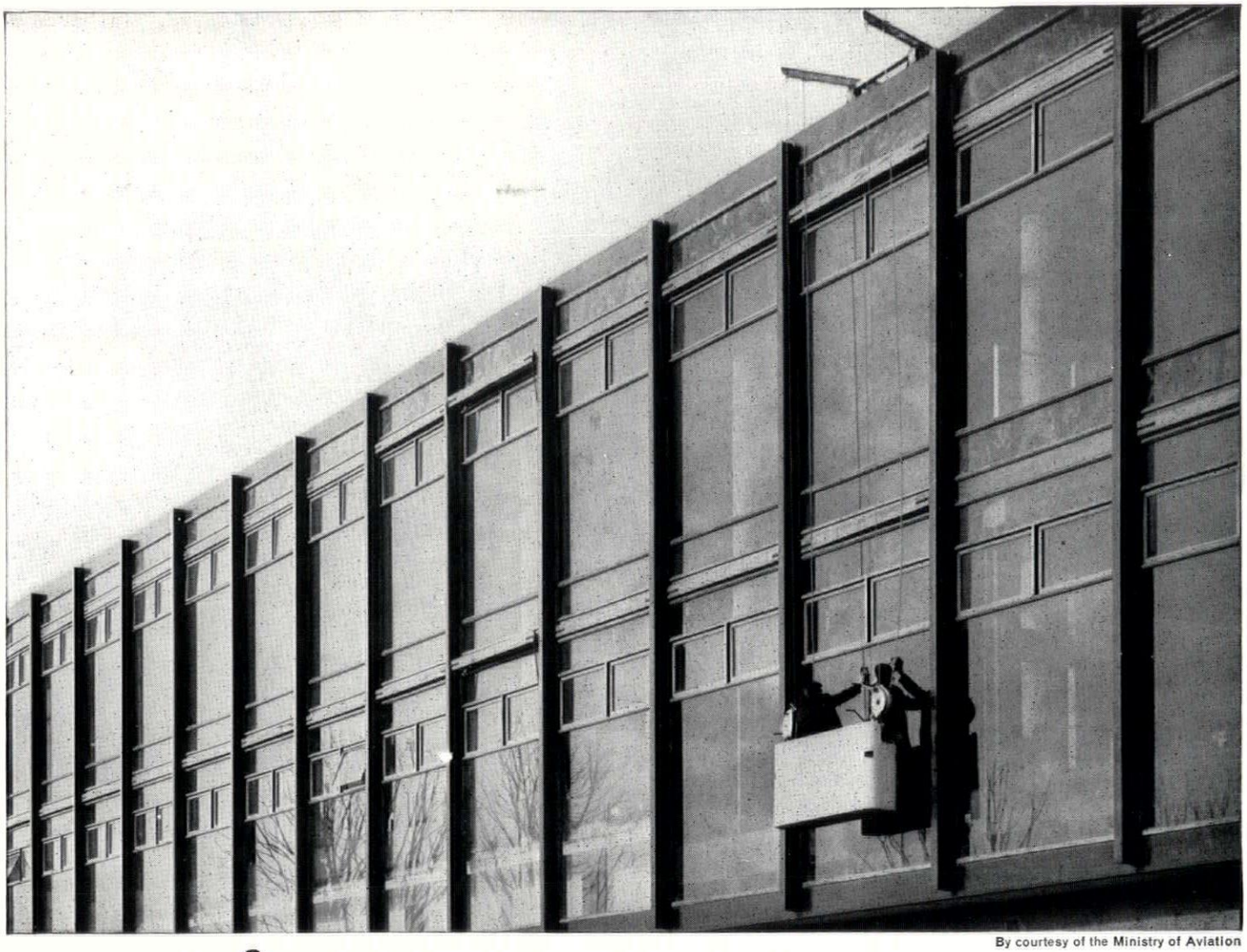


6

6, expanded polystyrene slabs for use as permanent centering for precast hollow floor units. 7, aerated lightweight concrete roof units by Durox Building Units being placed on the roof of a secondary school extension at Rayleigh, Essex. (Architects, Gerald Shenstone and Partners. Consulting engineer, Stephen Revesz).



7



By courtesy of the Ministry of Aviation

a bright future for modern buildings

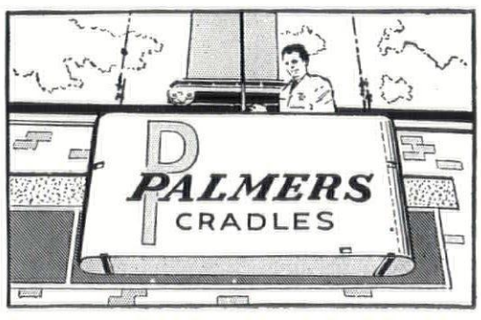
If fine modern buildings are to be kept in their original condition it is important that the problem of cleaning and maintenance should be considered in the early stages of design. Palmer's are specialists in modern maintenance systems for buildings. Some examples of their equipment are described below.

Permanent Runways
are incorporated into the structure of the building. From them, travelling cradles can be suspended to give easy access to any part of the elevation.

Portable Runways
are available in units which can be coupled together to cover the whole elevation. They can be attached to flat roofs, flat roofs with parapet and to balconies and offsets.

The Manual Trolley
has been designed for modern buildings of moderate height and length, where the emphasis is on curtain walling and new materials.

The Palmatic
is an electrically operated travelling cradle which can be moved horizontally, vertically or diagonally either from the cradle or from the roof. It is the first of its kind in the country.



PALMER'S TRAVELLING CRADLE & SCAFFOLD CO. LTD.

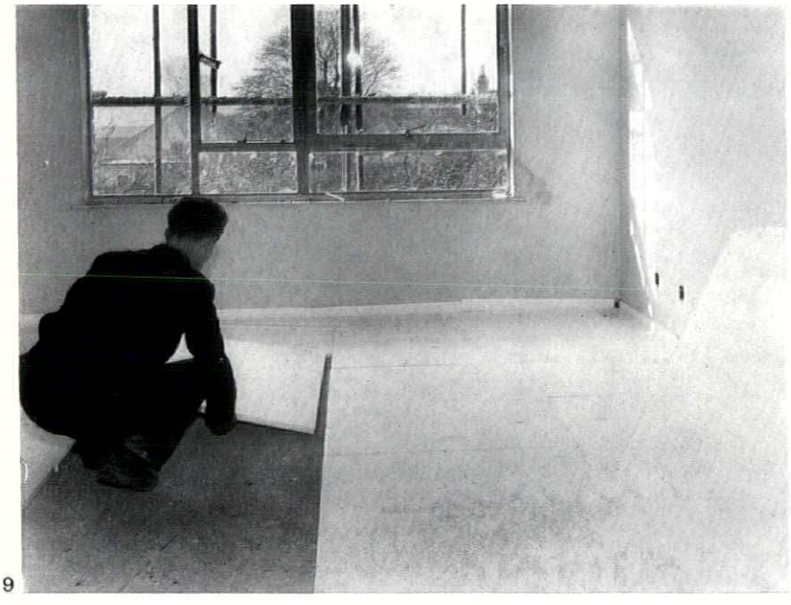
3 WOODSIDE GREEN, LONDON, S.E.25 TEL: ADDiscombe 7721

BRANCHES: Bristol, Tel: 292133, Leeds, Tel: 21394 Middlesbrough, Tel: 3051
Newcastle, Tel: Washington 2084/5
Manchester Subsidiary, Stones Scaffolding Ltd., Tel: Urmston 6151

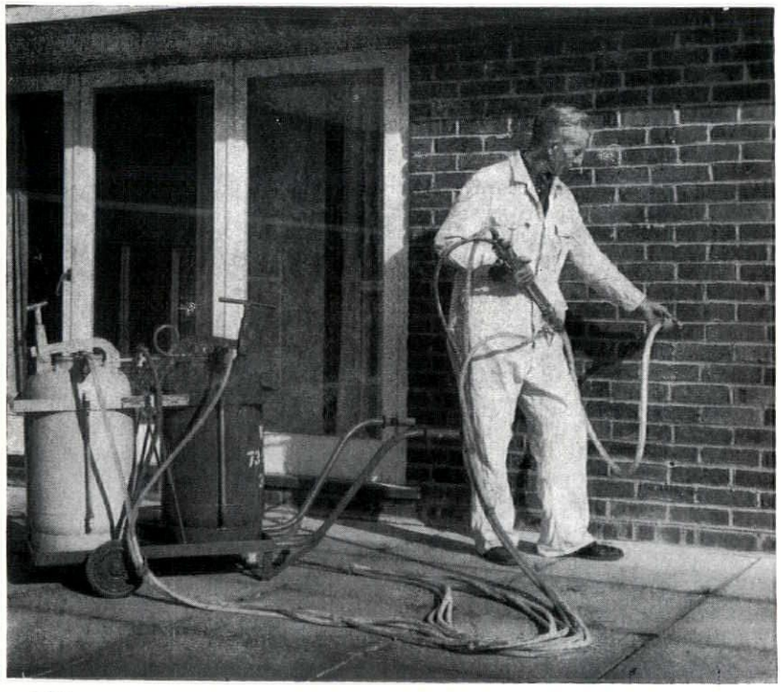


8

8, *plastic foam being installed in the space of a cavity wall.* 9, *expanded plastic boards laid prior to cable laying for an underfloor heating installation.* 10, *'Thermalon' foam being pumped into a cavity wall under pressure.*



9



10

continued from page 444]

against this. Usually a ventilated cavity with provision for any water to escape will be possible. Alternatively a vapour barrier may be introduced into the assembly. If this is done, however, care should be taken to insulate this from cold outer temperatures otherwise condensation will be formed then on the inner face of the barrier.

Another factor which must be guarded against is the danger of forming cold bridges. Such a bridge is formed by a structural member penetrating the assembly between outer and inner faces. This is particularly true of steel framed structures.

Roofs

Much of what has been said about light cladding walls can also be applied to roofs. Theoretically it can be said that the ideal location for insulation of a roof structure is on the outside. Since most materials suitable are not likely to take kindly to weather exposure, however, some compromise must be effected. The great danger particularly in industrial buildings is that of condensation. Vapour barriers are essential with adequate precautions to keep them from forming a cold surface.

Materials

Materials used in thermal insulation fall generally into three categories:

1. Natural organic
2. Natural mineral
3. Synthetic

Natural organic materials

These are probably the older materials used in thermal insulation work although a few have been adapted to more readily used forms and as such are still widely used. Their main disadvantage is their liability to attack by rot and by vermin.

Cork, not generally used in structural insulation probably because of cost, is still widely used in specialist constructions such as cold rooms. Natural grasses and fibres quilted in building or kraft paper were at one time popular but their equal popularity with unwanted lodgers has caused a certain amount of reserve among potential users. Straw, the farmer's insulating material has been developed in a compressed form and is often used, but care must be exercised in keeping it dry and free from fungal rots. Fibre and wood waste insulating boards are still popular, however, as a cheap insulation form and have been widely used in conjunction with numerous patented fixing systems in industrial applications.

A serious problem, to be considered in choosing an insulating material particularly where it is to form the internal face, is that of fire risk. Most organic materials are not to be recommended without reservations in this respect. However, woodwool with a cement binding in the form of slabs is now a popular and efficient form of insulation which provides a non-combustible roof.

Natural mineral materials

Woodwool slabs may be considered the bridge material between these two categories being partly of both camps. Mineral materials tend to be either of the loose fill type or to be formed with cement into rather heavier or bulkier units. Light weight aggregates embodying entrapped air are one of the forms widely used. In this category would come first of all coke breeze. Other aggregates have been developed such as foamed slag or expanded clay. In the loose fill types probably the best known are vermiculite and mineral wool.

The use of lightweight concrete blocks as the inner leaf of cavity construction has been widely adopted for some time and up to comparatively recent times these were usually of the lightweight aggregate type. However, manufacture is now proceeding with aerated concrete blocks usually based on Scandinavian patents. This material is also widely used for precast roofing units. Certain screeds are also available for roof work which are laid with an air entrapping agent to provide an insulating layer. These must be used with great care, however. Their porous nature makes them difficult to dry out and this porosity also makes them vulnerable to the absorption of moisture. When they are then covered by an impervious layer serious failures can occur when solar heat on the roof surface causes vaporization of this trapped moisture. To avoid this elaborate precautions in the form of ventilation of the screed must be adopted.

One of the most nearly ideal methods of roof insulation to be found is by the use of asbestos tiles. This tends to be expensive, however, and is usually confined to flat roofs where appearance and/or traffic requirements are governing factors. The tiles of asbestos with a cementitious binder are reasonably good insulators as well as providing a sound weatherproof finish and so conform to the near ideal condition of having the insulating layer on the outer surface.

Apart from the heavier cement based insulating forms in this category, there is a range of products of the lighter board forms usually based on asbestos or lightweight plaster. These are usually used in ways similar to those employed for the organic insulating boards. Their advantage, of course, is their inert and inorganic nature.

Aluminium foil can also be placed in the mineral category. This is available by itself or combined with paper or boards to provide some degree of reinforcement and mechanical strength.

Synthetic materials

It is probably in this range that most development has taken place recently. The first in the field was probably glass fibre. This was used first in quilted applications combining all the advantages of natural materials with none of the disadvantages. Impregnation with bitumen followed and then the material was pressed into boarded forms.

Plastics then entered the field with foamed polystyrene and polyurethane. These have been used extensively in board forms, particularly in the fabrication of panel infillings in lightweight construction. The polyurethane plastics have also been used for cavity filling in walls as discussed earlier.

It is possible that more development will take place in this plastics field in the future, but at the moment this is hard to predict as it depends to a large extent on the chemical research of the big producers.

An attempt has been made here to describe the wide range of materials available in the thermal insulating field. Because of the enormous number of products involved it is impossible to list these in the space available, but readers are referred to the tables in Specification in which a fairly comprehensive coverage will be found. Any omissions can be attributed either to newness or to lack of information at the time of going to press.

The British Aluminium Company Ltd.

SfB Dd4
UDC

'Aluminium for Architects' The following new data sheets are now available

ACCESSORIES
Henderson Safety Tank Co. Ltd.

CURTAIN WALLING
Fredk. Braby & Co. Ltd.
(Victoria Suite curtain walling)
Fredk. Braby & Co. Ltd. (Wallstruct)
E. D. Hinchliffe & Sons Ltd. (Revised)
John Thompson Beacon Windows Ltd.

DOORS
Culford Art Metal Co.

DYED & ANODISED MURALS
Aluminium Printers Ltd.

GARAGE DOORS
General Mechanics Ltd.

INFILL PANELS
Carter Panels Ltd.

PATENT GLAZING
British Challenge Glazing Co.
British Patent Glazing Co.

VENTILATORS
RCM (Air Distribution) Ltd.
Sturtevant Engineering Co. Ltd.

WINDOWS
Ellbee Window Co.
W. G. Kaleyards Ltd.
John Thompson Beacon Windows Ltd.
(Horizontal sliding window)
John Thompson Beacon Windows Ltd.
(Vertical sliding window)
John Williams of Cardiff Ltd.

OTHER PRODUCTS
Duraflex Housecrafts Ltd.
Maintenance (Edinburgh) Ltd.
Ramsay & Sons (Forfar) Ltd.
Martin Thomas Ltd.
Ward & Co. (Letters) Ltd.

Compiled by THE BRITISH ALUMINIUM BUILDING SERVICE

The British Aluminium Company Ltd Norfolk House St. James's Square London SW1 Tel: Trafalgar 8888

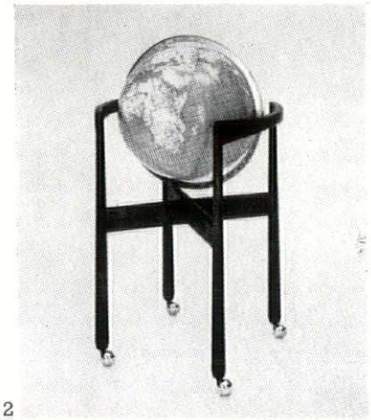
B.106

THE INDUSTRY

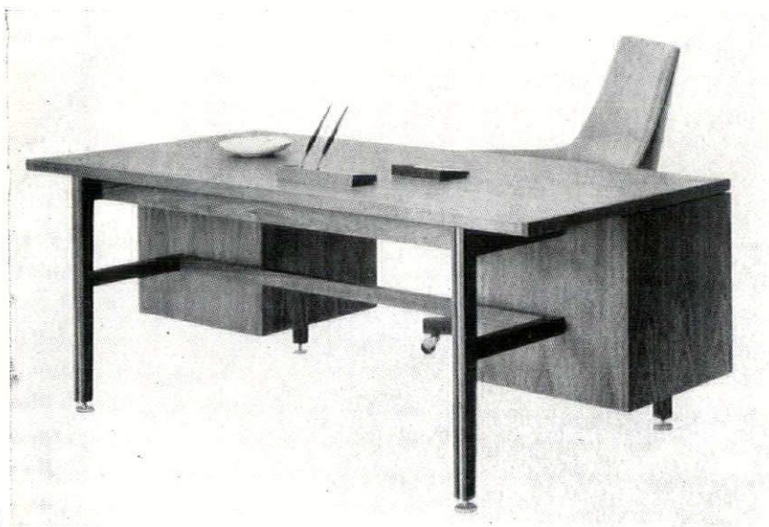
Risom range

America's celebrated and status-enhancing Jens Risom furniture was introduced to the British market earlier this year by Younger's of Bow. One says 'America's' in spite of Risom's office address in Copenhagen, because all the ranges covered by Younger's catalogue were originally 'designed and manufactured in the US' as transatlantic Risom advertising always insists. Particularly at the executive end of these ranges (which are extremely broad in their coverage of front-office and boardroom furniture) the style, quality and materials all have a strong US flavour, 1, and include one or two items that would not normally be thought necessary by most English companies, 2. At the less showy and more directly functional end of the range, however, in pieces like those comprised in the *Group Seven* set, 3, a note of Scandinavian simplicity emerges that will probably appeal to British interior designers. *Group Seven* does not yet appear in the Younger catalogue (though it is to be hoped that it will not be too long before it does), but most of the *Group Nine* and other executive pieces are already included, and provide a welcome addition to the well-designed prestige office furniture available in England.

A. Younger Ltd., Monier Road, Bow, London, E.3.



2



1



3

Indoor and outdoor seats

The enterprising LM furniture company have recently introduced two new chairs: one is a neat stacker, 4, in afrormosia with a plywood seat (model 1810) designed by Ronald Carter, retailing at £6 15s. 0d. with plain veneered seat or somewhat more with the upholstery shown here; the other is an outdoor seat, 5, designed by John Morton. The construction of heavy mild-steel square section tubes and oiled afrormosia slats is claimed to be 'as hooligan proof as seems humanly possible,' while the bolts are countersunk and the nuts riveted during assembly to discourage amateur dismantlers. Identified as the 1010 range, these seats are available in lengths from 8 ft. down to 2 ft. at prices around £13 for a six-footer.

LM Furniture Ltd., Wallingford, Berks.



4



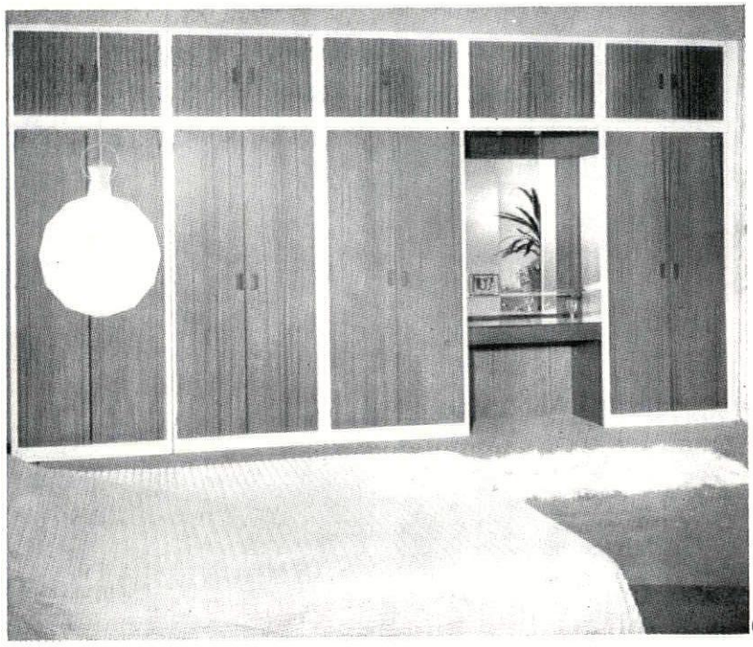
5

System furniture

Two further recruits to the growing field of system furniture are the *Consort* range and Hille's second storage wall system. Consort, manufactured by ASH Woodcraft Ltd., of Walsall, is primarily a bedroom system, its main elements being a series of wardrobe units, 6, 78 in. high (95 in. with top cupboards as shown here) and in various widths in six-inch modular increments from 30 in. to 48 in. However, the range also includes dressing units with mirrors, fire-surrounds with bookshelves and flanking cupboards, and bedheads with shelves or drawers. Standard finish is sapele, except for the fire surrounds which are in afrormosia.

Hille's second entry, the storage-wall, designed by Alan Turvill and

[continued on page 450



6

DESIGN IN COLOUR

BUILD WITH KALCOLOR*

THE CORROSION-RESISTANT,
COLOUR-FAST ALUMINIUM FROM **ACORN**

KALCOLOR — Kaiser Aluminium's new process for colouring architectural aluminium components—is now being carried out under licence by Acorn Anodising Co. Ltd.

Unlike normal anodising, KALCOLOR uses no colouring agents, the shades being created through conversion of the aluminium alloying elements.

Already well tried and proven in the U.S.A., KALCOLOR has exceptionally high resistance to corrosion and abrasion. The colours have good uniformity and do not fade. Prior to the introduction of KALCOLOR, no other architectural anodic finish provided this combination of properties.

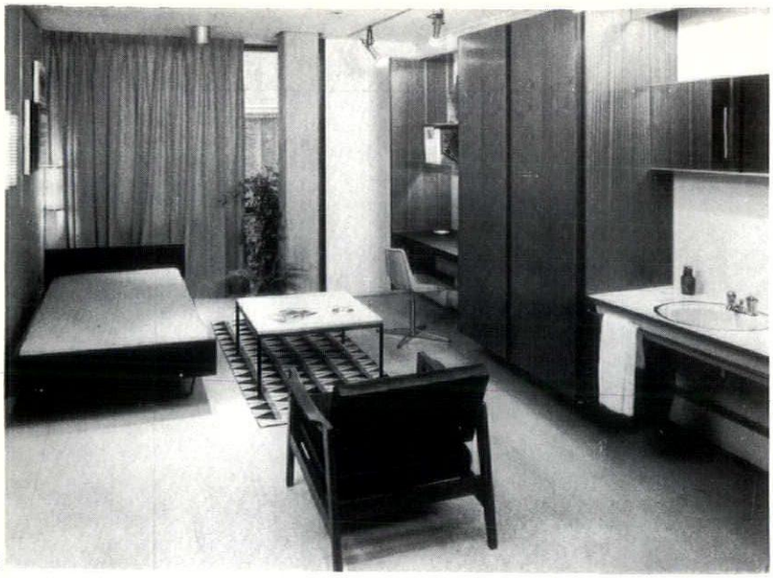
KALCOLOR is available in a broad range of colours, including gold, amber and black.

Direct enquiries to:

ACORN
ANODISING CO. LTD.
Cambric'ge Yard, London W7
Tel: EALing 7744

KAISER ALUMINIUM
KAISER ALUMINIUM INTERNATIONAL
1 Knightsbridge Green,
London SW1
Tel: KNIghtsbridge 6661

* *Trade mark of Kaiser Aluminium & Chemical Corporation.*



7

continued from page 448]

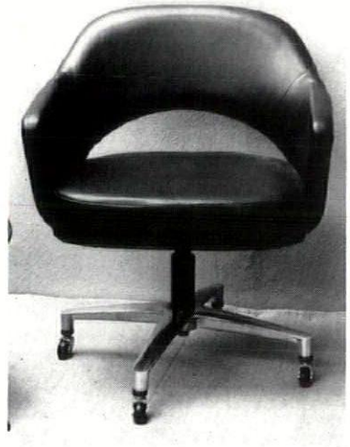
John Lewak, is a comprehensive system including wash-basins, 7, and therefore up to university study-bedroom standards. Based on a four-inch module, the structure consists of panels hung at right angles to the wall surface from horizontal metal channel sections on the wall itself. Standard finishes include Melamine or veneers of mahogany, elm or rosewood.

ASH Woodcraft Ltd., Vicarage Place, Walsall, Staffs.

Hille of London Ltd., 35 Albemarle Street, London, W.1.

Office furniture

Sankey Sheldon products in steel have tended to be too over-styled in the past to have much appeal to architects and interior designers, but desks from the new *BM* series show a welcome return to straightforward and rational rectangular lines, 8. The attention given to simplifying and tidying up both the drawer-fronts, and the way they fit together visually, completely hiding the structure behind, is particularly noteworthy in furniture of this class. Announced at the same time, and more or less complementary to the *BM* series, are the Sankey-Royal *1300* range of chairs, 9, 10, also with square tube frames and to BS anthropometric dimensions. Another range of chairs and desks that should be noted are the Omal Continental,



11

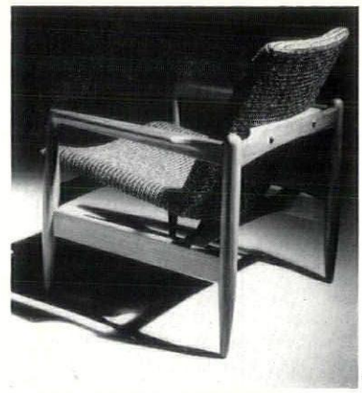
from Office Machinery Ltd.—11 is their Executive chair in black 'Cirrus' synthetic hide.

Sankey Sheldon Ltd., GKN House, 22 Kingsway, London, W.C.2.

Office Machinery Ltd., 169 Tottenham Court Road, London, W.1.

Irish design

Although the new regime at John Hogg and Company of Navan, was set up almost three years ago (with Arthur Edwards as design consultant) the first fruits of this collaboration are only just beginning to receive the public notice they deserve—the model C armchair from their *Crannac* range, 12, has been honoured with a Switzer Award for Good Design (the first Irish product to receive this Irish award). Framed in afrormosia



12

and upholstered either in moth-proofed Irish tweed or 'Cirrus' synthetic hide, the Model C, like the rest of the Crannac range, can be seen in England at the Denzil Hindley showroom in Poland Street, London, W.1.

John Hogg & Co. Ltd., Navan, Co. Meath.

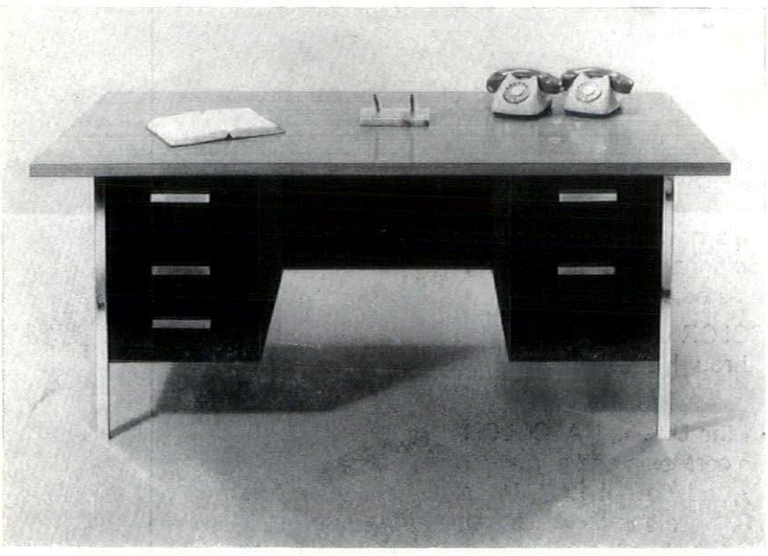
Partitions

A new partitioning, 13, has been introduced which, it is claimed, has a sound reduction rating of 40 dB and a fully erected weight of only 6 lb./sq. ft. The makers claim also that the total erected cost works out at less than 10s. per sq. ft.

The partition comprises two 1 in. thick 'skins' spaced 2 in. apart to give an overall partition thickness or 4 in. A 1 in. thick glass fibre matt of curtain is freely suspended in the cavity.

The skins, known as *Vencoustic* sound insulation panelling, are a composite of expanded polystyrene faced both sides with $\frac{1}{4}$ in. thick dense hardboard, manufactured by a special patent method. The panels are supplied in sizes of 8 ft. by 4 ft., 9 ft. by 4 ft., and 10 ft. by 4 ft., with a tongued timber insert along one

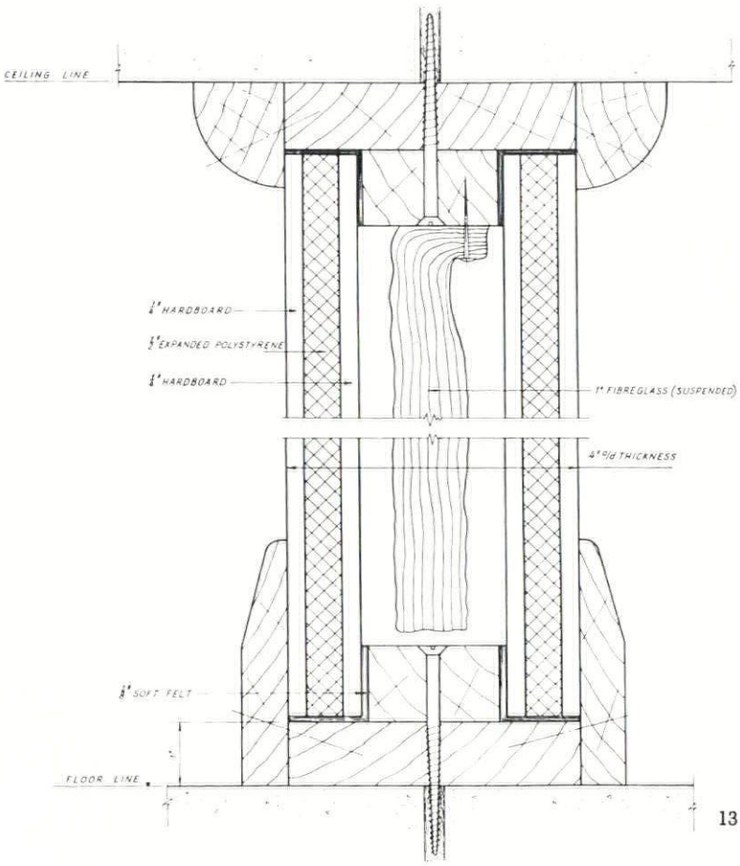
[continued on page 452



8

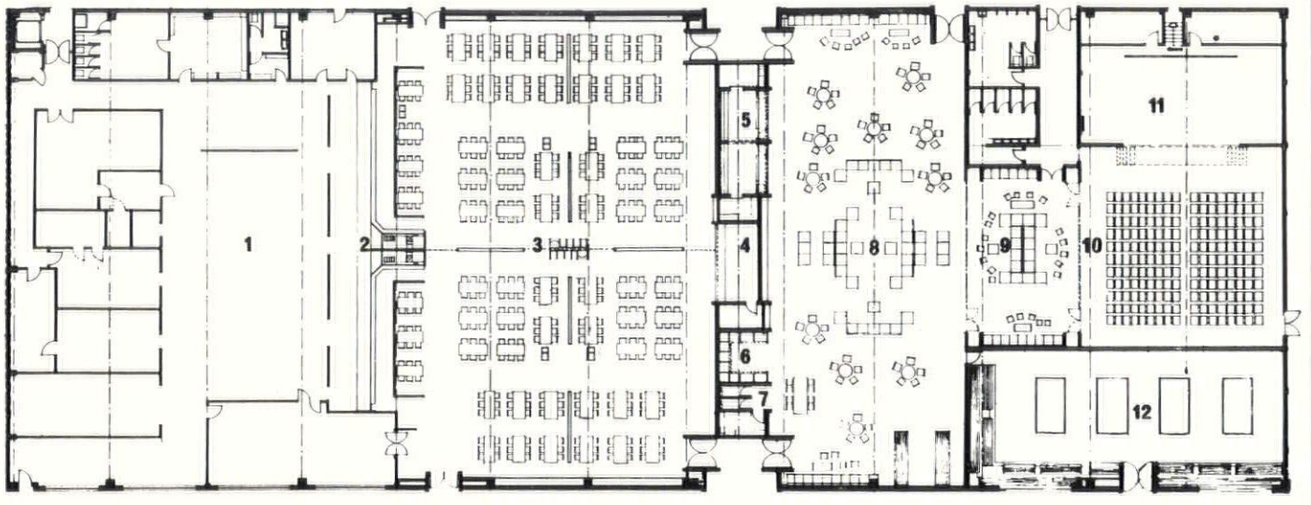


9, 10



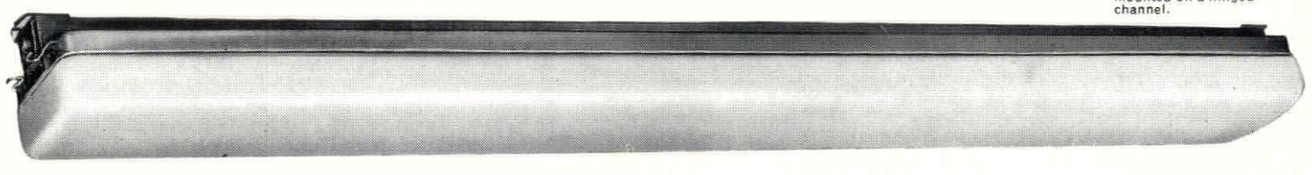
13

GILLETTE SOCIAL CENTRE



interior joinery by **WILLINGS**
Willing & Company Contracts Limited
2 Hertford Road London N1
Telephone CLIssold 9881 8lines

5540 RANGE
Totally enclosed weather and corrosion-proof unit. Spine is a single piece casting, with control gear mounted on a hinged channel.



VAPOUR-PROOF MODEL

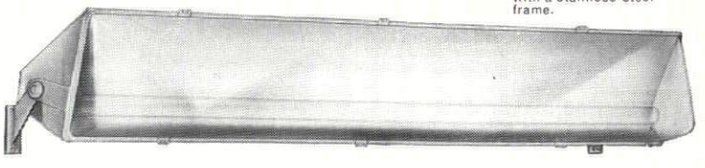


5650 RANGE
Completely sealed against inflammable gases. Entirely new construction with twin glass cylinders and non-corrosive cast junctions. Simple to service.

5350 RANGE
Water and weather-proof unit fitted with neoprene sealing glands throughout. Also available with zinc-plated sheet steel reflector.

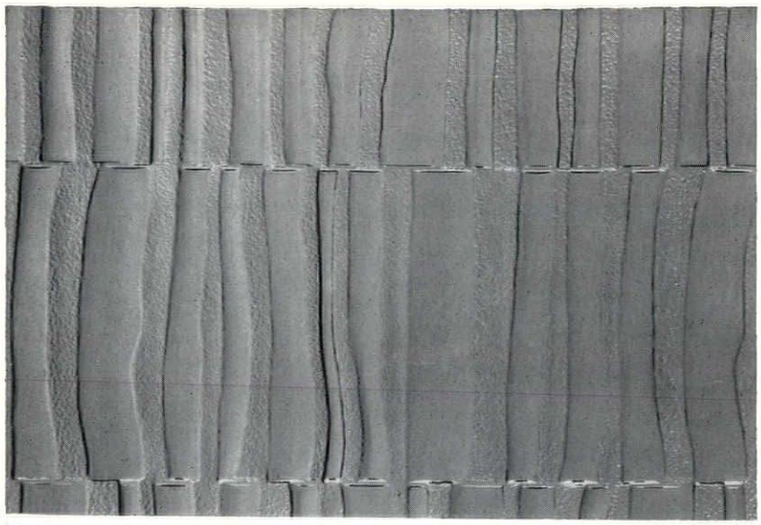


5600 RANGE
A remarkably robust and efficient wall-mounted fitting for directional flood lighting. Single-piece casting with polished aluminium reflector. Sealed with a stainless-steel frame.

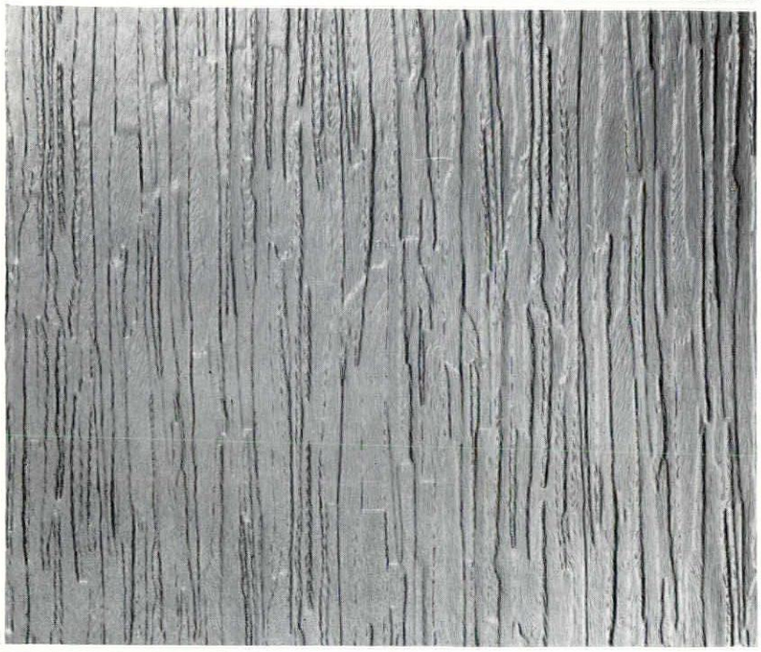


Introducing the new EXAKTOR range . . .
Sound practical construction; clean skilful design. Expertly engineered fittings for every requirement. The EXAKTOR range offers purpose-built fittings at mass production prices; with a standard of construction to meet the most rigorous specifications. Fittings are also available with the new 'double-spot' high lumen output control gear. A fully illustrated catalogue displaying the complete EXAKTOR range is available on request.

RADA
LIGHTING
148-150 Curtain Road, London E.C.2. SHO 8275 (4 lines)



14



15



16

continued from page 450]

edge and the expanded polystyrene routed out along the other. On erection no intermediate framing is necessary.

The construction of a partition is simple. A 4 in. wide batten with a 2 in. wide spacer is fixed at both floor and ceiling line. The glass fibre curtain is pinned to the top spacer and allowed to hang freely. The panels are then offered up with strips of ⅛ in. soft felt along the edges to isolate the areas of contact. The skirting board and a wood fillet at ceiling line hold the panels in place. The partitioning can be easily erected by builders, contractors and maintenance staff. Undamaged by any permanent fixings, the panels can be used again should the partition be dismantled.

Tests carried out in the AIRO Laboratories in accordance with British Standard 2750: 1956 show that, over the full frequency test range of 100 c/s to 3,200 c/s, the arithmetic average of the sound reduction index figures is 40 dB. At frequencies over 500 c/s the sound reduction index is in excess of 40 dB, rising to 51.5 dB at 1,600 c/s, and to 57 dB at 3,200 c/s. It is claimed that the coincidence effect—where the wavelength of sound in air coincides with the wavelength of bending waves in the partition—is non-existent over the range of frequencies tested.

This new soundproof partitioning has been designed by Venesta Manufacturing Ltd. who supply the *Vencoustic* panels at 2s. 11d. per sq. ft. *Venesta Manufacturing Ltd., West Street, Erith, Kent.*

Patterned Glass

The use of glass internally for effect in a decorative scheme is not new and has been used by many designers, sometimes effectively and, one must admit, sometimes disastrously. However, for the sensitive designer Pilkingtons have increased his repertoire in this field by introducing three new patterns.

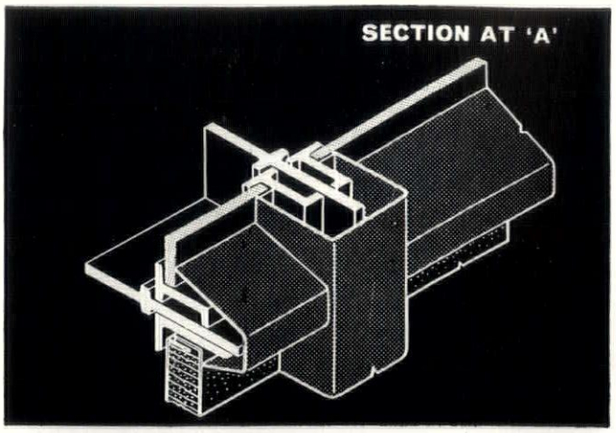
Rattan, 14, has a bold and perhaps rather brash effect. *Cotswold*, 15, on the other hand, is possibly more subtle combining the effect of old fashioned tight patterning with a modern random feeling. The third, *Siesta*, 16, tends almost to an engraved effect and will probably require to be in fairly large panes in order to be properly appreciated. Prices are 2s. 1½d. per sq. ft. for ⅛ in. thickness and 3s. 6d. per sq. ft. for $\frac{3}{16}$ in. *Pilkington Brothers Ltd., St. Helens, Lancs.*

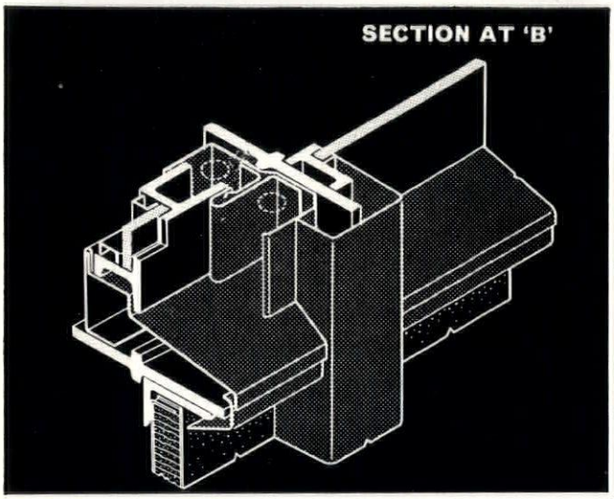
CONTRACTORS, etc

Factory Social Block, Isleworth. *Interior designers:* Conran Design Group. *Sub-contractors: Semflex floor tiling, mastic asphalt underlay, maple block flooring, linoleum:* Acme Flooring Ltd. *Terrazzo floors, wall linings, toilet partitions:* Arcanum Terrazzo & Stone Co. *Fibrous plaster ceilings to ladies' rest room, theatre and foyer:* Clarke & Fenn Ltd. *Dampa strip acoustic ceilings to main rest room and main dining rooms, cork ceiling to billiard room:* Compactom Ltd. *Floor tiling to canteen entrance:* Great Metropolitan Flooring Co. *Lifts:* Maryatt & Scott Ltd. *Electrical fittings for theatre:* The Strand Electric & Engineering Co. *All interior decoration works, end panelling and joinery:* Willing & Co. (Contracts) Ltd. *Door furniture and ironmongery:* Yannedis & Co. *Catering advisory services:* J. Lyons & Co. *Sound amplification:* Tannoy Products Ltd. *Wall and floor-ing tiles to walkways:* Krommenie Flooring UK Ltd. *Furniture to main dining room, main rest room, ladies' rest room:* Conran Furniture Ltd. *Theatre furniture:* Hille of London Ltd. *Aluminium and bench seating to billiard room, special aluminium sections:* Non-Corrosive Metal Co. *Curtaining, fabrics:* Conran Fabrics Ltd. *Sliding door gear, moving screens to main dining area:* E. Hill Aldam & Co. *Laminated lighting beams:* Beves & Co. (Structures) Ltd. *Decorative floor and wall tiling:* Carter & Co. (London) Ltd. *Light fittings, main dining room:* Allom Heffer & Co. *Lighting to servery, theatre and centre shop block:* Rotaflex (GB) Ltd. *Veneers:* F. R. Shadbolt & Sons. *Kitchen equipment:* Eclipse Copper Co. of York Ltd.

Civic Buildings, Scunthorpe. *Architects:* Chas. B. Pearson, Son & Partners. *General contractor:* A. J. Wait & Co. *Sub-contractors: Piling:* Frankipile Ltd. *Structural steelwork:* United Steel Structural Co. *Facing bricks (internal and external):* Proctor & Lavender Ltd. *Portland stone (pre-cast):* Girling's Ferro-Concrete Co. *Mechanical engineering services (heating and ventilation):* Z. D. Berry & Sons Ltd. *Lifts:* Keighley Lifts Ltd. *Reinforced concrete and Hy-rib suspended ceilings:* Truscon Ltd. *Sliding door gear:* E. Hill Aldam & Co. *Council chamber doors:* John Turner & Smith Ltd. *Mats:* Cimex Ltd. *Acoustic wall panelling (council chamber):* John Higgin (Furniture) Ltd. *Brass balustrading (council chamber):* J. R. Pearson (Birmingham) Ltd. *Internal partitioning (main office block):* Compactum Ltd. *Roof lights:* Cordar Ltd. *Floor tiles:* Semtex Ltd. *Windows, including venetian blinds:* J. Gerrard & Sons Ltd. *Copper roofing:* F. Braby & Co. *Slate cladding:* Burlington Slate Quarries Ltd. *Aluminium and steel windows:* Henry Hope & Sons Ltd. *Circular aluminium glazing panels:* Williams & Williams Ltd. *Aluminium revolving and main entrance doors:* T. B. Colman & Sons Ltd. *Suspended ceilings (main office block corridors):* Dawber Townsley & Co. *Marble wall cladding, floor slabs internal and external:* Pattesons (Manchester) Ltd. *Fixed seating (council chamber) including circular seat to ante hall:* Waring & Gillow (Contracts) Ltd. *General joinery:* W. J. Simms, Sons & Cooke Ltd. *Lightweight concrete roofs and floors (main office block):* Celcon Ltd. *(council chamber);* The Butterley Co. *Loose furniture:* Hille of London (Midlands) Ltd. *Rates counter, desk unit:* J. H. Todd & Sons Ltd. *Steel filing cabinets and shelving:* Roneo Ltd. *Kitchen equipment:* GEC Domestic Equipment Ltd. *Heated ceilings:* Stramax Ceiling Ltd. *Ventilation grilles:* RCM (Air Distribution) Ltd. *Thermal insulation:* The Darlington Insulation Co. *Curved steel panel radiators:* Powell Duffryn Heating Ltd.

Library, Jesmond, Newcastle-upon-Tyne. *Architects:* Williamson, Faulkner Brown & Partners. *General contractor:* R. C. Williamson (Durham) Ltd. *Sub-contractors: Structural steelwork:* Northern Tubular Buildings. *Aggregate panels and slate floors:* C. S. Ormerod Ltd. *Synthanite screeds and floor tiles:* Semtex Ltd. *Tiled ceilings:* The Darlington Insulation Co. *Special steelwork (perimeter window frames, column casings, curved fascia, staircase, screen wall):* M. Aynsley & Sons Ltd. *Timber bookshelves and display cases:* Mann Egerton & Co. *Control desk:* R. W. Bramley Ltd. *Windows:* Alumin Building Products; J. Gerrard & Sons Ltd.; N. V. Appleton (UK) Ltd. *Mats:* Cimex Ltd. *Ceiling tiles:* Celotex Ltd. *Heating cable:* Pyrotenax Ltd. *Standard shelving:* Luxfer Ltd.





STAINLESS STEEL IN ARCHITECTURAL DESIGN

OFFICES FOR PFIZER LTD · SANDWICH · KENT

F. A. Reed and Partners: Chartered Surveyors
Stainless steel clad Holoform window walling
by The Morris Singer Company Limited

The double-hung sashes made from M.S. universal casement sections, are set within a frame constructed from pressed, polished stainless steel sections. The stainless steel used for this framework is Silver Fox 316, a molybdenum bearing quality which resists surface deterioration in marine atmospheres and is expected to give an impression of high quality and finish throughout the entire life of the building.

Write today for the 40-page brochure "Stainless Steel in Architectural Design" ref. no. SF 469.

'SILVER FOX' STAINLESS STEEL

samuel fox & company limited

STOCKSBRIDGE WORKS · SHEFFIELD

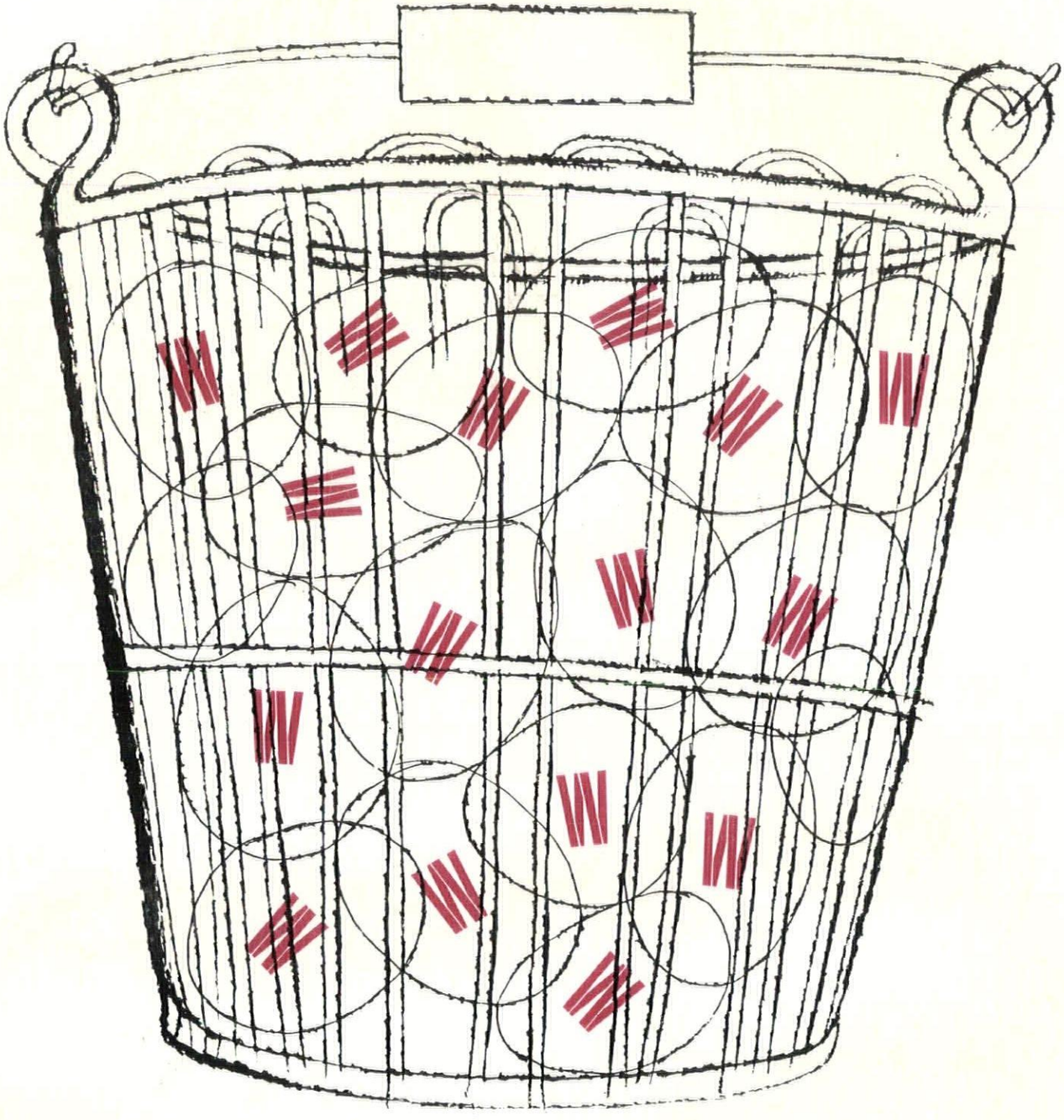
A subsidiary of The United Steel Companies Ltd.



F 501a

Printed in Great Britain for the Proprietors of "The Architects' Journal," of "The Architectural Review," and of "Specification" (The Architectural Press, Ltd.) 9-13, Queen Anne's Gate, Westminster, S.W.1, by Knapp, Drewett & Sons Ltd., by appointment to Her Majesty the Queen, Printers, Kingston-on-Thames.
Editorial illustrations engraved by The Engravers Guild Ltd., Windsor House, 23/26, Cursitor Street, London, E.C.4.
Entered in the New York Post Office as Second Class Matter

ALL THE EGGS ARE FOUND IN OUR BASKET



THE WINCILATE GROUP SERVICE—Finest slate quarried and selected. Architects' requirements discussed and drawing prepared. Wincilate slate cills, surrounds, copings, cladding and flooring precision finished, delivered, and fixed. For further details and information sheets, contact the Wincilate Group*, The Town Hall, Bow Rd, London E3

To get the best service in slate specify WINCILATE by name

ADV 2203

* The Wincilate Group: The Bow Slate and Enamel Company Limited, Aberllefeni Slate Quarries Limited, The Slate Fixing Company, Lloyd Quarries Limited, Goddard and Son, Manorian Limited

index

VOLUME ONE HUNDRED AND THIRTY-FOUR JULY-DECEMBER 1963

PAGE

ARTICLES AND ILLUSTRATIONS

Aberdeen University, Animal House. *Architects:* George, Trew, Dunn. External views and plans 250–251
Aberdeen University, Department of Natural Philosophy. *Architects:* J. Douglass Mathews and Partners. External views and plans 250–251
Agde, France, War relics on the Languedoc Coast: Concrete in Decay (The Exploring Eye). *Illustrated note by* Eric de Maré 335–337
Aluminium door handles (The Industry). Illustrated note 376
Aluminium finishes (The Industry). Note 72
Anatomy and Architecture (Leonardo and Bramante). *Illustrated article by* Peter Murray 346–351
Andros, Greece Hotel. *Architect:* Aris Konstantinidis. Exterior, interior views and plans 160–164
Art Gallery, London, Bond Street, The Kasmin. *Architects:* Ahrends, Burton and Koralek. Interior views 341–343
Art in Use: Innocent Deceptions (Designs for Surface decoration). Illustrated note 437–438
Arts Centre, Harvard University, USA. *Architect:* Le Corbusier. *Illustrated article by* Peter Ambler (Criticism) 400–407

Bauhaus '23–'24. *Article by* W. F. Necker 157–159
Belfast, Queen's University Students' Centre. *Architect:* Robert McKinstry. Exterior, interior views and plan 256
Bellicose Prophecies (Fortifications of the Channel Islands). *Illustrated note* by Michel Santiago 59–61
Birmingham University, Department of Education, Institute of Education. *Architects:* Sir Hugh Casson, Neville Conder and Partners. Drawing and model 278

Book Reviews:

Baird, Joseph Armstrong and Hugo Rudinger. The Churches of Mexico. *Reviewed by* Irene Nicholson 6
Birch and Macmillan. The Sydney Scene 1788–1960. *Reviewed by* Jim Tanner 288
Boyd, Robin. Kenzo Tange. *Reviewed by* Fello Atkinson 81
Clifton-Taylor, Alec. The Pattern of English Building. *Reviewed by* Maurice Barley 7
Conrads, Ulrich and Hans G. Sperlich. Fantastic Architecture. *Reviewed by* Robin Boyd 155
Denby, Elaine. Interior Design 311
Hall, Peter. London 2000. *Reviewed by* E. J. Carter 310
Jacobus, Jr., John M. Philip Johnson. *Reviewed by* Fello Atkinson 81
Jones, Cranston. Marcel Breuer 1921–1961. *Reviewed by* Fello Atkinson 155
Kulterman, Udo. New Architecture in Africa 311
McCoy, Esther. Modern California Houses 385
McHale, John. Richard Buckminster Fuller 80

PAGE

Rey, José Lopez. Velasquez: A Catalogue Raisonné. *Reviewed by* Bryan Guinness 228
Rosner, R. Neue Staedte in England. *Reviewed by* Gerhard Rosenberg 81
Saarinen, Aline B. (Editor). Eero Saarinen on his Work. *Reviewed by* Fello Atkinson 80
Schmutzler, Robert. Jugendstil. *Reviewed by* Nikolaus Pevsner 154–155
Scully, Vincent. Louis Kahn. *Reviewed by* Fello Atkinson 81
Temko, Allan. Eero Saarinen. *Reviewed by* Fello Atkinson 81
Warner, Jr., Sam B. Street Car Suburbs. *Reviewed by* Reyner Banham 7
Wegerif, A. H. Bouwmeesters der Middeleeuwen en hun Werken IV. England, 1066–1550 81
Yarwood, Doreen. The Architecture of England from Prehistoric Times to the Present Day 311

Books Reviewed:

Architecture of England from Prehistoric Times to the Present Day. *By* Doreen Yarwood 311
Bouwmeesters der Middeleeuwen en hun Werken, IV. England, 1066–1550. *By* A. H. Wegerif 81
Breuer, Marcel. 1921–1961. *By* Cranston Jones 155
Churches of Mexico, The. *By* Joseph Armstrong Baird and Hugo Rudinger 6
Design of Forms in Government Departments, The 311
Fantastic Architecture. *By* Ulrich Conrads and Hans G. Sperlich 155
Fuller, Richard Buckminster. *By* John McHale 80
Johnson, Philip. *By* John M. Jacobus, Jr. 81
Jugendstil. *By* Robert Schmutzler 154
Kahn, Louis I. *By* Vincent Scully 81
Landscaping for Flats. Ministry of Housing and Local Government Design Bulletin no. 5 228
London 2000. *By* Peter Hall 310
Modern California Houses. *By* Esther McCoy 385
Neue Staedte in England. *By* R. Rosner 81
New Architecture in Africa. *By* Udo Kulterman 311
Pattern of English Building, The. *By* Alec Clifton-Taylor 7
Saarinen, Eero. *By* Allan Temko 81
Saarinen on His Work, Eero. *Edited by* Aline B. Saarinen 80
Skidmore, Owings and Merrill, The Architecture of 155
Street Car Suburbs. *By* Sam B. Warner, Jr. 7
Sydney Scene, The: 1788–1960. *By* Birch and Macmillan 228
Tange, Kenzo. *By* Robin Boyd 81
Velasquez: A Catalogue Raisonné. *By* José Lopez Rey 228
Bramante and Leonardo. *Illustrated article by* Peter Murray 146–353
Brazil, Theatres in: Teatro Amazonas and Teatro José de Alencar. *Illustrated article by* Leopold Arnaud 20–27
Brickwork, Calculated (The Industry). Note 304

PAGE

Brighton, Sussex University, Falmer House and Physics Building. *Architect:* Sir Basil Spence. Exterior, interior views, model and plans 258, 265–274
Brussels, House at Uccle (History). *Illustrated note by* Betty Bradford 133–135

Cairo, Pottery in (The Exploring Eye). Illustrated note 417–418
Cambridge University:
Jesus College Residential Extension. *Architect:* David Roberts. Model 282
Fitzwilliam House. *Architects:* Denys Lasdun and Partners. Drawing and plans 281
St. John's College Halls of Residence. *Architects:* Powell and Moya. Model, drawing and plan 276–277
Carpets, Small pattern (Design Review). Illustrated note 120
Cathedral Cities. *Illustrated article by* Ian Nairn and Kenneth Browne 165–179
Ceiling diffusers (The Industry). Illustrated note 304
Cemetery Chapel, Vatiala, Finland. *Architect:* Viljo Rewell. Exterior, interior views and plans 397–399
Central heating (The Industry). Illustrated note 146
Channel Islands, Fortifications of the. *Illustrated note by* Michel Santiago 59–61
Chicago, USA, Housing at Hyde Park. *Architect:* I. M. Pei. *Illustrated article by* James Marston Fitch (Criticism) 197
Chicago, USA, The Midway Gardens of Frank Lloyd Wright. *Illustrated article by* Alan M. Fern 113–116
Chichester (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 174–175
Church, Hyvinkää, Finland. *Architect:* Aarno Ruusuruori. Exterior, interior views and plans 394–396
Church, Vatiala, Finland (Cemetery Chapel). *Architect:* Viljo Rewell. Exterior, interior views and plans 397–399
Civic Buildings, Scunthorpe. *Architects:* Charles B. Pearson, Son and Partners. Exterior, interior views and plans 420–422
Colleges:
Cambridge, Extension to Halls of Residence at Jesus. *Architect:* David Roberts. Model 282
Cambridge, Halls of Residence at St. John's. *Architects:* Powell and Moya. Model, drawing and plan 276–277
London, Halls of Residence, Royal Holloway. *Architects:* Sir Leslie Martin and C. A. St. J. Wilson. Model 279
Oxford, St. Antony's. *Architects:* Howell, Killick, Partridge and Amis. Model and plans 275–276, 295
Oxford, St. Catherine's. *Architect:* Arne Jacobsen. Drawings 279–280
Concrete in Decay: War Relics at Agde on the Languedoc Coast, France (The Exploring Eye). *Illustrated note by* Eric de Maré 335–337
Contemporary Draughtsmen: 4. Roger Limbrick 357–358
Corby, Offices for Stewarts and Lloyds. *Architects:* J. Douglass Mathews and Partners. Exterior, interior views and plans 352–356
Correspondence:
A.D.C. (St. Andrew's Halls, Glasgow) 80

PAGE

Bacon, Edmund N. (Housing in Philadelphia) 385
Davis, Ian R. (Wires Underground) 6
Dodds, Gordon, and Lyall Wilks (Dobson of Newcastle) 384
Gibbons, James, Ltd. (The Hardware Bazaar) 80
Gomme, A. H. (Townscape in Bicester) 310
Gropius, Walter (Gropius and van de Velde) 6
Hill, David T. (What New Town?) 154
Newman, William, and Son Ltd. (The Hardware Bazaar) 79
Scott, S. T. (Lloyd's Register) 80
Yulle, W. L. (Flats at Sydney) 227

Cost Control: Financial Policy and Architectural Quality. *Illustrated article by* David Parkes and Stirrat Johnson-Marshall 287–288

Covers:
July: New Zealand House, London
August: Photogram *by* Ken Garland
September: Fourteenth-century carving of Hittite infantrymen on one of the galleries of Yazili Kaya in Asia Minor—*photographed by* Ara Güler
October: Model and plan of the new University of East Anglia
November: Ruins of World War II fortifications in the South of France—*photographed by* Eric de Maré
December: Ceramic tile made by Tarquin Cole by pressing wood letters into soft clay before firing

Criticism:
Housing in New York, Washington, Chicago and Philadelphia. *Architect:* I. M. Pei. *Illustrated article by* James Marston Fitch 192-200
New Zealand House, London. *Architects:* Robert Matthew, Johnson-Marshall and Partners. *Illustrated article by* J. M. Richards 34–42
Visual Arts Centre, Harvard University. *Architect:* Le Corbusier. *Illustrated article by* Peter Ambler 400–407

Cromford Canal Pumping Station, Derbyshire. *Measured drawings by* John Mosse, Peter Mosse and Michael Ball 201–202

Decking catalogues, New (The Industry). Illustrated note 222

Design Review:
Seating, New. Illustrated note 47–48
Small-pattern carpets. Illustrated note 120

Doing Without Utopia. *Article by* Lionel Brett 9–11

Door handles, Aluminium (The Industry). Illustrated note 376

Doors, Automatic (The Industry). Note 378

Double glazed units (The Industry). Note 304

Draughtsmen, Contemporary: 4, Roger Limbrick 357–358

Durham University, Dunelm House. *Architects:* Architects. Co-Partnership. Models 282

Eastbourne, Congress Theatre. *Architects:* Bryan and Norman Westwood. *Illustrated note by* Michael Manser 361–363

Edinburgh University, Veterinary Field Station. *Architects:* Alan Reiach and Partners. Exterior, interior views and plans 254–255

Educational and Social Objectives: The Thinking Behind Britain's New Universities. *Article by* Asa Briggs 233–235

Egg, Augustus. *Illustrated article by* Peter Ferriday 420–422

Exhibitions. *Illustrated notes by* Robert Melville 57, 131, 203, 359, 431

PAGE

Exploring Eye, The:
Concrete in Decay (War relics at Agde on the Languedoc coast, France). *Illustrated note by* Eric de Maré 335–337
Hittite Sculpture. Illustrated note 185–187
Pottery in Cairo. Illustrated note 417–418
Valley of Nepal. *Illustrated note by* Ewan Macleod 91–93

Factory-built Kitchens (The Industry). Illustrated note 222

Factory Social Block, Isleworth. *Architects:* Conran Design Group (interior), Dodge and Reid (exterior). Interior views 411–416

Factory, Newport, Mon. Steelworks. *Architects:* Sir Percy Thomas and Son with Gollins, Melvin, Ward and Partners. Exterior views and plans 123–128

Farm, Fulmer, Bucks. *Architects:* David Dry, K. Halasz and Associates. Exterior views and plans 51–54

Flats:
London, Camberwell. *Architect:* F. O. Hayes (Borough Architect). Exterior views and plans 317–323
Melbourne, Australia. *Architects:* Grounds, Romberg and Boyd. Exterior views 18–19
Sydney, Australia, Blues Point. *Architect:* Harry Seidler. Exterior, interior views and plans 12–15

Floorscape: Put out more Patterns. *Illustrated note by* Michel Santiago 136–137

Fortaleza, Brazil, Teatro José de Alencar. *Illustrated article by* Leopold Arnaud 20–27

Fortifications of the Channel Islands. *Illustrated note by* Michel Santiago 59–61

Fulmer, Bucks, Farm. *Architects:* David Dry, K. Halasz and Associates. Exterior views and plans 51–54

Furniture:
Indoor and Outdoor Seats (The Industry). Illustrated note 448
Irish Design (The Industry). Illustrated note 450
Office (The Industry). Illustrated note 450
Risom Range (The Industry). Illustrated note 448
System (The Industry). Illustrated note 448

Glasgow University, New Library and Art Gallery. *Architect:* William Whitfield. Model 277

Glass-concrete, Coloured (The Industry). Illustrated note 376

Glass, Patterned (The Industry). Illustrated note 452

Gloucester (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 170–171

Gosport, Stokes Bay Marina. *Architects:* Raglan Squire and Partners. Drawing 105

Greek Mills in Shetland (History). *Illustrated note by* Elisabeth Beazley 62–64

Green Ways: A Positive Future for Britain's Cast-off Railways? *Illustrated article by* Michael Dower 387–393

Halls of Residence:
Cambridge, Fitzwilliam House. *Architect:* Denys Lasdun and Partners. Drawing and plans 281
Cambridge, Extension to Jesus College. *Architect:* David Roberts. Model 282
Cambridge, St. John's College. *Architects:* Powell and Moya. Model, drawing and plan 276–277
London, Imperial College. *Architects:* Richard Sheppard, Robson and Partners. Exterior, interior views and plans 244–249, 294
London, Royal Holloway College. *Architects:* Sir Leslie Martin and C. A. St. J. Wilson. Model 279

PAGE

Philadelphia, University of Pennsylvania. *Architects:* Eero Saarinen and Associates. Interior view and plan 290

Harvard University, USA, Visual Art Centre. *Architect:* Le Corbusier. *Illustrated article by* Peter Ambler (Criticism) 400–407

Hereford (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 178–179

Hindley, near Wigan, House. *Architect:* Anthony J. Grimshaw. Exterior views and plans 190–191

History:
Greek Mills in Shetland. *Illustrated note by* Elisabeth Beazley 62–64
Unwin Centenary. *Illustrated note by* Nikolaus Pevsner 207–208
Van de Velde's Own House. *Illustrated note by* Betty Bradford 133–135

Hittite Sculpture (The Exploring Eye). Illustrated note 185–187

Horticultural Hand (Lettering). Illustrated note 208

Hotels:
Andros, Greece. *Architect:* Aris Konstantinidis. Exterior, interior views and plans 160–164
London Hilton, Roof Restaurant. *Architects:* Sir Hugh Casson, Neville Conder and Partners. Interior views and plan 117–119
Nafplion, Greece. *Architect:* Yani Triandafilidis. Exterior, interior views and plans 160–164

Houses:
Hindley, near Wigan. *Architect:* Anthony J. Grimshaw. Exterior views and plans 190–191
Melbourne, Australia. *Architects:* Grounds, Romberg and Boyd. Exterior views 18–19
Parbold, near Wigan. *Architect:* Anthony J. Grimshaw. Exterior views and plans 188–189
Sydney, Australia, Hunter's Hill. *Architects:* Clarke, Gazzard and Yeomans. Exterior, interior views and plans 16–18
Uccle, Brussels, Van de Velde's own House (History). *Illustrated note by* Betty Bradford 133–135

Housing, London, Camberwell. *Architect:* F. O. Hayes (Borough Architect). Exterior views and plans 317–323

Housing, USA, New York, Washington, Chicago and Philadelphia. *Architect:* I. M. Pei. *Illustrated article by* James Marston Fitch (Criticism) 192–200

Humanism, The New English: Prefabrication in its Social Context. *Article by* Guy Oddie 180–182

Hyvinkää, Finland, Church. *Architect:* Aarno Ruusuruori. Exterior, interior views and plans 394–396

Imperial College, London, Halls of Residence. *Architects:* Richard Sheppard, Robson and Partners. Exterior, interior views and plans 244–249,294

Industrialized Building:
1. System Building—Open or Closed. Illustrated article 138–146
2. Comparison of Systems. Illustrated article 2c3–220
3. Comparison of Continental Systems. Illustrated article 369–374

Industrialized Building: The New English Humanism: Prefabrication in its Social Context. *Article by* Guy Oddie 180–182

Industry, The:
Aluminium Door Handles. Illustrated note 376
Aluminium Finishes. Note 72
Automatic Doors. Note 378
Calculated Brickwork. Note 304
Ceiling Diffusers. Illustrated note 304

index

PAGE

Central Heating. Illustrated note 146
Decking Catalogues, New. Illustrated note 222
Double Glazed Units. Note 304
Factory-Built Kitchens. Illustrated note 222
Fire Alarms. Illustrated note 374
Floor Spring Adjustment. Illustrated note 374
Food Waste Disposer. Illustrated note 374
Furniture: Indoor and Outdoor Seats. Illustrated note 448
Furniture: Irish Design. Illustrated note 450
Furniture: Risom Range. Illustrated note 448
Furniture, System. Illustrated note 448
Glass-concrete, Coloured. Illustrated note 376
Lighting Fittings. Illustrated note 74
Office Furniture. Illustrated note 450
Partitions. Illustrated note 450
Patterned Glass. Illustrated note 452
Sanderson's New Sample Book. Note 148
Sliding Door Gear. Illustrated note 72
Sun Control. Illustrated note 378
Tiles in Bristol University. Illustrated note 304
Wall Mounted Convector Radiators. Illustrated note 222
Wood Veneers in Melamine. Illustrated note 148

Inner Circle (Centenary of London's First Underground Railway). *Article by* Edward Hollamby 313–316
Innocent Deceptions: Design for Surface Decoration (Art in Use). Illustrated note 437–438
Interior Design:
Isleworth, Social Block for Gillette Industries. *Architects:* Conran Design Group (Interior), Dodge and Reid (Exterior). Interior views 411–416
London, Bond Street, Art Gallery. *Architects:* Ahrends, Burton and Koralek. Interior views 341–343
London, Earl's Court, The Wayang Restaurant. *Architect:* Lucas Mellinger. Interior views 46
London, Kennington Road, Plastics Showroom. *Designer:* Noel Lefebvre. Interior views 343–345
London, Maida Vale, The Rice Bowl Restaurant. *Architect:* Lucal Mellinger. Interior views and plans 46
London, New Bond Street, The Sands Restaurant. *Architect:* Lucas Mellinger. Interior views and plans 43–45
London, Park Lane, Roof Restaurant, London Hilton Hotel. *Architects:* Sir Hugh Casson, Neville Conder and Partners. Interior views and plan 117–119
London, Piccadilly, French Tourist Office. *Architects:* Ernö Goldfinger and Charlotte Perriand. Interior and exterior views 183–184
Isle of Wight, King's Quay Marina. *Architects:* Derek Lovejoy and Associates with Basil Phelps. Model and drawing 107
Isleworth, Factory Social Block for Gillette Industries. *Architects:* Conran Design Group (Interior), Dodge and Reid (Exterior). Interior views 411–416

Jaffa, The Old Town of: A Study in Urban Renwal. *Illustrated article by* J. Jahr and Saadja Mandl 28–33
Jesmond, Newcastle upon Tyne, Library. *Architects:* Williamson, Faulkner Brown and Partners. Exterior, interior views and plans 420–422

PAGE

Kitchens, Factory-built (The Industry). Illustrated note 222

Lamp-posts: Competition for Manufacturers. Illustrated note 205–207
Leeds University. *Architects:* Chamberlin, Powell and Bon. Model 236
Leicester Market: A Townscape Notebook *by* Kenneth Browne. *Architect:* Konrad Smigielski 109–112
Leonardo and Bramante. *Illustrated article by* Peter Murray 346–351
Lettering: Horticultural Hand. Illustrated note 208
Libraries:
Glasgow University. *Architect:* William Whitfield. Model 277
Jesmond, Newcastle upon Tyne. *Architects:* Williamson, Faulkner Brown and Partners. Exterior, interior views and plans 420–422
Liverpool University, Faculty of Arts. *Architects:* Bryan and Norman Westwood and Partners. Exterior, interior views and plans 252–253
Oxford University. *Architects:* Sir Leslie Martin and C. A. St. John Wilson. Models 280
Lighting Fittings (The Industry). Illustrated note 74
Liverpool University, Faculty of Arts Library. *Architects:* Bryan and Norman Westwood and Partners. Exterior, interior views and plans 252–253
London:
Bond Street, The Kasmin Art Gallery. *Architects:* Ahrends, Burton and Koralek. Interior views 341–343
Camberwell, Housing. *Architect:* F. O. Hayes (Borough Architect). Exterior views and plans 317–323
Earl's Court, The Wayang Restaurant. *Architect:* Lucas Mellinger. Interior views 46
Haymarket, New Zealand House. *Architects:* Robert Matthew, Johnson-Marshall and Partners. Exterior, interior views and plans. *Illustrated article by* J. M. Richards (Criticism) 34–42
Kennington Road, Xlon Plastics Showroom. *Designer:* Noel Lefebvre. Interior views 343–345
Imperial College Halls of Residence. *Architects:* Richard Sheppard, Robson and Partners. Exterior, interior views and plans 244–249, 294
Maida Vale, The Rice Bowl Restaurant. *Architect:* Lucas Mellinger. Interior view 47
New Bond Street, The Sands Restaurant. *Architect:* Lucas Mellinger. Interior views and plans 43–45
Park Lane, Roof Restaurant, London Hilton Hotel. *Architects:* Sir Hugh Casson, Neville Conder and Partners. Interior views and plan 117–119
Piccadilly, French Tourist Office. *Architects:* Ernö Goldfinger and Charlotte Perriand. Interior and exterior views 183–184
Royal Holloway College, Halls of Residence. *Architects:* Sir Leslie Martin and C. A. St. John Wilson. Model 279
Look Out: An Anthology of Townscape Problems. *Illustrated articles by* Ian Nairn and Kenneth Browne 49–50, 129–130, 209–210, 365–366

Manaus, Brazil, Teatro Amazonas. *Illustrated article by* Leopold Arnaud 20–27

PAGE

Marinas. *Illustrated article by* Elisabeth Beazley 94–108
Market, Leicester: A Townscape Notebook *by* Kenneth Browne. *Architect:* Konrad Smigielski 109–112
Melbourne, House and Flat. *Architects:* Grounds, Romberg and Boyd. Exterior views 18–19
Midway Gardens of Frank Lloyd Wright, The. *Illustrated article by* Alan M. Fern 113–116
Monaco, A Satellite Town for. *Architect:* Manfredi G. Nicoletti. Model, drawings and plan 408–409

Nafplion, Greece, Hotel. *Architect:* Yani Triandafilidis. Exterior, interior views and plans 160–164
Nepal, Valley of (The Exploring Eye). *Illustrated note by* Ewan Macleod 91–93
Newcastle upon Tyne, Library at Jesmond. *Architects:* Williamson, Faulkner Brown and Partners. Exterior, interior views and plans 420–422
Newhaven, Cresta Marina. *Architects:* Bond and Will. Drawings, plan 104
Newport, Mon., Steelworks. *Architects:* Sir Percy Thomas and Son with Gollins, Melvin, Ward and Partners. Exterior views and plans 123–128
New York, Housing at Kips Bay Plaza. *Architect:* I. M. Pei. Exterior views and plan 154, 194–195
New York World's Fair. *Illustrated note by* Michel Santiago 386, 433–435
New Zealand House, London, Haymarket. *Architects:* Robert Matthew, Johnson-Marshall and Partners. *Illustrated article by* J. M. Richards (Criticism) 34–42
Nottingham University. *Architect:* G. A. Jellicoe. Model 236

Office Furniture (The Industry). Illustrated note 450
Offices:
Corby, Industrial, for Stewarts and Lloyds. *Architects:* J. Douglass Mathews and Partners. Exterior, interior views and plans 352–356
London, Haymarket, New Zeland House. *Architects:* Robert Matthew, Johnson-Marshall and Partners. *Illustrated article by* J. M. Richards (Criticism) 34–42
London, Piccadilly, French Tourist. *Architects:* Ernö Goldfinger and Charlotte Perriand. Exterior and interior views 183–184
Oxford University:
Library Group. *Architects:* Sir Leslie Martin and C. A. St. John Wilson. Models 280
St. Antony's College. *Architects:* Howell, Killick, Partridge and Amis. Model and plans 275–276, 295
St. Catherine's College. *Architect:* Arne Jacobsen. Drawings 279–280

Parbold, near Wigan, House. *Architect:* Anthony J. Grimshaw. Exterior views and plans 188–189
Partitions (The Industry). Illustrated note 450
Patterns, Put Out More (Floorscape). *Illustrated note by* Michel Santiago 136–137
Philadelphia, Housing at Society Hill. *Architect:* I. M. Pei. Exterior views and model 192, 198
Plymouth, Fort Picklecumbe Marina. *Architect:* John Evans. Model, drawings and plan 106
Poole, Dorset, Marina. *Architects:* Fuller, Hall and Foulsham. Model 107

PAGE

Portraits:
Griswold, A. Whitney 149
Hollein, Hans 2
Pichler, Walter 2
Portsmouth, Eastney Marina. *Architects:* Denis Clarke Hall and Partners. Model 108
Pottery in Cairo (The Exploring Eye). Illustrated note 417–418
Prefabrication in its Social Context: The New English Humanism. *Article by* Guy Oddie 180–182
Pumping Station, Cromford Canal, Derbyshire. *Measured drawings by* John Mosse, Peter Mosse and Michael Ball 201–202

Queens University, Belfast, Students' Centre. *Architect:* Robert McKinstry. Exterior, interior views and plan 256

Radiators, Wall Mounted Convector (The Industry). Illustrated note 222
Railways? A Positive Future for Britain's Cast-off (Green Ways). *Illustrated article by* Michael Dower 387–393
Reading University. *Architects:* Architects' Group of the University Grants Committee. Interior views, drawing and plans 288, 291
Restaurants:
London, Earl's Court, The Wayang. *Architect:* Lucas Mellinger. Interior views 46
London, Maida Vale, The Rice Bowl. *Architect:* Lucas Mellinger. Interior view 47
London, New Bond Street, The Sands. *Architect:* Lucas Mellinger. Interior views and plans 43–45
London, Park Lane, London Hilton Hotel Roof. *Architects:* Sir Hugh Casson, Neville Conder and Partners. Interior views and plan 117–119
Roof Construction, Tensile (Under Tension). *Illustrated article by* Robin Boyd 324–334

Salisbury (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 172–173
Sanderson's New Sample Book of Wall Coverings (The Industry). Note 148
Satellite Town for Monaco. *Architect:* Manfredi G. Nicoletti. Model, drawings and plans 408–409
Scunthorpe, Civic Buildings. *Architects:* Charles B. Pearson, Son and Partners. Exterior, interior views and plans 420–422
Service Areas, M6. *Illustrated note by* C. Forehoe 436–437
Sheffield, University House. *Architects:* Gollins, Melvin, Ward and Partners. Exterior, interior views and plans 239–243
Sheppey Marina. *Architects:* Julian Keable and Partners. Drawing and plan 106
Shetland, Greek Mills in (History). *Illustrated note by* Elisabeth Beazley 62–64
Showroom, London, Kennington Road, for Xlon Plastics. *Designer:* Noel Lefebvre. Interior views 343–345
Shrubs. *Illustrated notes by* A. du Gard Pasley 61–62, 135–136, 363–364, 435–436
Shuttering: 2, Formwork in Practice. *Illustrated article by* Graham Lewis 65–72
Signs, Traffic. Illustrated article 83–85
Site, Growth and Plan: Problems of Planning the New Universities. *Illustrated article by* Lionel Brett 257–264
Skill:
Shuttering: 2, Formwork in Practice. *Illustrated article by* Graham Lewis 65–72
Industrialized Building: 1, System Building—Open or Closed. Illustrated article 138–146
Industrialized Building: 2, Comparison of Systems. Illustrated article 213–220
Industrialized Building: 3, Comparison of Continental Systems. Illustrated article 369–374
Thermal Insulation in Building. *Illustrated article by* Ian Stewart 443–446
Sliding Door Gear (The Industry). Illustrated note 72
Social Block, Isleworth, for Gillette Industries Factory. *Architects:* Conran Design Group (Interior), Dodge and Reid (Exterior). Interior views 411–416
Southend-on-Sea, Keddies Department Store. *Architects:* Yorke, Rosenberg and Mardall. Exterior, interior views and plans 86–90
Steelworks, Newport, Mon. *Architects:* Sir Percy Thomas and Son with Gollins, Melvin, Ward and Partners. Exterior views and plans 123–128
Store, Southend-on-Sea, Keddies Department. *Architects:* Yorke, Rosenberg and Mardall. Exterior, interior views and plans 86–90
Street Furniture: Lamp-posts Competition for Manufacturers. Illustrated note 205–207
Student Living: Approaches to Residential Planning. *Illustrated article by* Michael Brawne 289–302
Sun Control (The Industry) Illustrated note 378
Surface Decoration, Designs for (Art in Use). Illustrated note 437–438
Sussex University, Brighton, Falmer House and Physics Building. *Architect:* Sir Basil Spence. Exterior, interior views, model and plans 258, 265–274
Sydney, Australia, Flats at Blues Point. *Architect:* Harry Seidler. Exterior, interior views and plans 12–15
Sydney, Australia, House at Hunter's Hill. *Architects:* Clarke, Gazzard and Yeomans. Exterior, interior views and plans 16–18
System Building:
1. Open or Closed. Illustrated article 138–146
2. Comparison of Systems. Illustrated article 213–220
3. Comparison of Continental Systems. Illustrated article 369–374

Theatre, Adaptable (Congress Theatre, Eastbourne). *Illustrated note by* Michael Manser 361–363
Theatres in Brazil: Teatro Amazonas and Teatro José de Alencar. *Illustrated article by* Leopold Arnaud 20–27
Thermal Insulation in Building. *Illustrated article by* Ian Stewart 443–446
Tiles in Bristol University (The Industry). Illustrated note 304
Town Planning: Doing Without Utopia. *Article by* Lionel Brett 9–11
Townscape:
Cathedral Cities. *Illustrated article by* Ian Nairn and Kenneth Browne 165–179
Leicester Market — A Townscape Notebook. *Illustrated article by* Kenneth Browne 109–112
Tricks of the Trade. *Illustrated notes by* Ian Nairn and Kenneth Browne 338–340, 429–430
Townscape Problems, Anthology of (Look Out). *Illustrated articles by* Ian Nairn and Kenneth Browne 49–50, 129–130, 209–210, 365–366
Traffic Signs. Illustrated article 83–85
Tricks of the Trade (Townscape). *Illustrated notes by* Ian Nairn and Kenneth Browne 338–340, 429–430

Underground Railway, London's First (Centenary of the Inner Circle). *Article by* Edward Hollamby 313–316
Under Tension. *Illustrated article by* Robin Boyd 324–334

PAGE

Universal University, The: A Leap into the Future. Illustrated article 283–286
Universities. Special Issue 223–304
University, Harvard, USA. Visual Arts Centre. *Architect:* Le Corbusier. *Illustrated article by* Peter Ambler (Criticism) 400–407
University House, Sheffield. *Architects:* Gollins, Melvin, Ward and Partners. Exterior and interior views 238–243
Unwin Centenary (History). *Illustrated note by* Nikolaus Pevsner 207–208
Utopia, Doing Without. *Article by* Lionel Brett 9–11

Valley of Nepal (The Exploring Eye). *Illustrated note by* Ewan Macleod 91–93
Van de Velde's Own House (History). *Illustrated note by* Betty Bradford 133–135
Vatiala, Finland, Cemetery Chapel. *Architect:* Viljo Rewell. Exterior, interior views and plans 397–399

Wall Mounted Convector Radiators (The Industry). Illustrated note 222
Waste Disposer, Food (The Industry). Illustrated note 376
Washington, USA, Housing at Town Centre Plaza. *Architect:* I. M. Pei. Exterior views 192, 196
Wigan, Two Houses near. *Architect:* Anthony J. Grimshaw. Exterior views and plans 188–191
Winchester (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 176–177
Wood Veneers in Melamine (The Industry). Illustrated note 148
Worcester (Townscape). *Illustrated article by* Ian Nairn and Kenneth Browne 168–169
World's Fair, New York. *Illustrated note by* Michel Santiago 386, 433–435
Wright, Frank Lloyd: The Midway Gardens. *Illustrated article by* Alan M. Fern 113–116

ARCHITECTS AND ARTISTS

Aalto, Alvar 1–2, 149
Ahrends, Burton, and Koralek 341–343
Aizenberg, Leonardo, and José Rey Pastor 2
Apple, Billie 57
Architects' Co-Partnership 282, 309, 312
Architects' Group of the University Grants Committee 288, 291
Arnfred, Tygge, and Viggo Moller-Jensen 224
Arup, Ove and Partners 293
Ashinara, Yoshinobu 382
Ball, Michael, and John and Peter Mosse 201–202
Barnes, John, Richard Stevens and Peter Rodd 205
Bayer, Herbert 151–152
Behnisch, Gunter, Bruno Lambart and Winfried Büxel 76
Bellmer, Hans 204
Bond and Will 104–105
Borland, Kevin 328
Borland, McIntyre, Murphy and Murphy 329
Bovet, Berthelot and Cuzol 308
Boyd, Robin 329
Bradbury, Ronald (Liverpool City Architect) 370
Bramante, Donato 346–351
Browne, Kenneth 109–112, 338–340, 429–430
Building Design Partnership 146, 294
Burkhard, Ralph 330
Büxel, Winfried, Bruno Lambart and Gunter Behnisch 76
Caldwell, Alfred 330
Caro, Anthony 432
Carter, R. David 207
Casson, Sir Hugh, Neville Conder and Partners 117–119, 278
Caudil, Rowlett and Scott 226
Chamberlin, Powell and Bon 236, 309
Clarke, Gazzard and Yeomans 16–17, 379
Cohen, Harold 431
Conran Design Group 411–416
Cranach, Lucas 359

index

PAGE

Dahlstrand, Olof 4
Dartford, James 384
Davie, Alan 132
Day, Robin 48–49
Dickinson, Peter 380
Dodge and Reid 411–416
Dowson, Philip 329
Drexler, Arthur 444
Drummond, Malcolm 361
Dry, David, K. Halasz and Associates 51–54
Eames, Charles 47
Egg, Augustus 420–422
Eggers and Higgins with Walter Dorwin Teague 331
Ehrecke, Peter 298
Elsom, C. H. 153
Ervi, Aarne 2
Evans, John 7–8
Farleigh, John 120
Ford, O'Neill and Associates 331
Freiburg im Bresgau Stadtbauamt 224
Fuller, Hall and Foulsham 108–112
Gardiner, Clive 361
Gehron and Seltzer 330
George, Trew and Dunn 250–251
Gibberd, Roland 300
Gill, Irving 383
Gillespie, Kidd and Coia 292, 295
Ginsberg and Tournier 374
Goff, Bruce 329
Goldfinger, Ernö, and Charlotte Perriand 183–184
Gollins, Melvin, Ward and Partners 230, 239–243, 294
Gollins, Melvin, Ward and Partners with Sir Percy Thomas and Son 123–128
Gomis and Raymond 308
Graaf, Heinz 307
Grimshaw, Anthony J. 188–191
Grosz, George 203
Grounds, Romberg and Boyd 18–19
Güler, Ara 185–187
Hall, Denis Clarke and Partners 108
Harcourt, Geoffrey D. 300, 301
Hare, Richard, and Robert Potter 311
Hayes, F. O. (Camberwell Borough Architect) 316–323
Hentrich and Petschnigg 305
Hermkes and Becker 151
Hockney, Charles 132
Hollein, Hans, and Walter Pichler 2
Howe, Jack 206
Howell, Killick, Partridge and Amis 275–276, 295
Hummel, Roger 226
Indrizzi and Leoni 379–380
Ivessich, Giorgio Host 306
Jacobsen, Arne 279–280
Jahr, J., and Saadja Mandl 28–33
Jellicoe, G. A. 236
Johnson, Philip 149
Jouk, A. V. 1
Kahn, Louis 296
Katavalos, William 444
Keable, Julian, and Partners 106
Koch, Carl, and Margaret Ross 331
Konstantinidis, Aris 160–164
Krabel, H. W. 417–418
Kramer, Ferdinand 224
Kump, Ernest J. 225
Lafaille, Bernard 326
Lambart, Bruno, Gunter Behnisch and Winfried Büxel 76
Lange, Albrecht, and Hans Mitzloff 76
Lasdun, Denys 261–263, 281
Le Corbusier 298, 400–407
Lefebvre, Noel 341–345
Leonardo da Vinci 346–351
Leroy, Vincent and Lenard 369
Lewis, H. J. Whitfield 144
Liebhart and Watson 77
Limbrick, Roger 357–358
Louis, Morris 431

PAGE

Lovejoy, Derek, and Associates 108
Lucicchenti, Ugo 4
Lundy, Victor 330
McKinstry, Robert 256
Maillard, Ducamp, Thomas and Sylvano 308
Mandl, Saadja, and J. Jahr 28–33
Martin, Sir Leslie, and C. A. St. J. Wilson 279, 280
Mathews, J. Douglass, and Partners 250–251, 352–356
Matsuda and Hisata 382
Matthew, Robert, and Johnson-Marshall and Partners 34–42, 259–261
Mellinger, Lucas 43–48
Meurer, Bernd, and Herbert Ohl 381
Mies van der Rohe, Ludwig 381
Mills, Sherwood and Smith 225
Mitzloff, Hans, and Albrecht Lange 76
Modigliani, Amedeo 360
Moller-Jensen, Viggo, and Tygge Arnfred 224–225
Monet, Claude 360
Mosse, John and Peter, and Michael Ball 201–202
Murata, Masachika 382
Murphy, C. F., and Associates 150
Nicoletti, Manfredi G. 408–410
Noland, Kenneth 58
Nowicki and Severud 326
Ohl, Herbert, and Bernd Meurer 381
Otto, Frei 326–327
Oud, J. J. P. 310
Paolozzi, Eduardo 433
Parkin, John B., and Associates 152
Pasmore, Victor 132
Pastor, José Rey, and Leonardo Aizenberg 2–3
Paxton, Sir Joseph 5
Pearson, Charles B., Son and Partners 423–426
Pei, I. M. 3, 156, 192–200
Perriand, Charlotte, and Ernö Goldfinger 183–184
Phelps, Basil 107
Pichler, Walter, and Hans Hollein 2
Poliakoff, Serge 59
Potter, Robert, and Richard Hare 311
Powell and Moya 276–277, 326
Quarmby, Arthur, and students at Bradford Regional College of Art 322
Reiach, Alan, and Partners 254–255
Rewell, Viljo 397–399
Ricks, John 206
Rietveld, G. T. 383
Roberts, David 382
Rodd, Peter, Richard Stevens and John Barnes 205
Rosenquist, James 444
Ross, Margaret, and Carl Koch 331
Rudolph, Paul 149
Rudolph and Twitchell 326
Russell, R. D. 300
Ruusuvuori, Aarno 394–396
Saarinen, Eero 151, 324, 332
Saarinen, Eero, and Associates 290
Schoning, Gunter, and Christian Turcke 150
Seidler, Harry 12–15, 75–76, 227
Senn, Otto and Walter 306
Sharp, Paul 5
Sheppard, Richard, Robson and Partners 244–249, 294
Short, Willis 77
Skidmore, Owings and Merrill 380
Soutine, Chaim 360
Spence, Sir Basil 8, 227, 265–274
Squire, Raglan, and Partners 105–106
Stevens, Richard, Peter Rodd and John Barnes 205
Stone, Edward D. 331
Stubbins, Hugh, and Associates 331
Studio di Architetti e Ingegneri (Rome) 307
Sullivan, Olive 120
Sutherland, Graham 131
Tange, Kenzo 382

PAGE

Taniguchi, Yoshiro 382
Tengbom, Anders 296
Thomas, Sir Percy, and Son with Gollins, Melvin, Ward and Partners 123–128
Tilson, Joe 133
Triandafilidis, Yani 160–164
Turcke, Christian, and Gunter Schoning 150
Turnbull, William 133
Unwin, Sir Raymond 207–208
Van de Velde, Henry 133–134
Verity, Terence, Associates 436–437
Viligiardi, Carlo 4
Vogel, Karel 361
Wernecke, John Carl 4
Westwood, Bryan and Norman, and Partners 252–253, 361–363
Whitfield, William 277
Williamson, Faulkner Brown and Partners 427–428
Wilson, C. A. St. John, and Sir Leslie Martin 279
Wimberley and Cooke 3
Wright, Frank Lloyd 113–116
Yorke, Rosenberg and Mardall 86–90
Yoshimura, Junzo, and Associates 79
Young, Richardson and Carleton 225
Yuncken and Freeman 329
Zehrfuss and Sebag 369

AUTHORS AND CONTRIBUTORS

Ambler, Peter 400–407
Arnaud, Leopold 20–27
Atkinson, Fello 80, 155
Banham, Reyner 7
Barley, Maurice 7
Beazley, Elisabeth 62–64, 94–108
Boyd, Robin 154, 324–334
Bradbery, Ian 311
Bradford, Betty 133–135
Brawne, Michael 289–298
Brett, Lionel 9–11, 257–264
Briggs, Asa 233–235
Browne, Kenneth 109–112, 228
Browne, Kenneth, and Ian Nairn 49–50, 129–130, 165–179, 209–210, 338–340, 429–430
Carter, E. J. 311
Casson, Sir Hugh 200
de Maré, Eric 335–337
Dower, Michael 387–393
Editors, The 283–286
Fern, Alan M. 113–116
Ferriday, Peter 420–422
Fitch, James Marston 192–200
Forehoe, C. 436–437
Guinness, Bryan 228
Hollamby, Edward 313–316
Johnson-Marshall, Stirrat, and David Parkes 287–288
Lewis, Graham 65–72
McCallum, Ian 154
Macleod, Ewan 91–93
Manser, Michael 361–363
Melville, Robert 57, 131, 203, 359, 431
Murray, Peter 346–351
Nairn, Ian, and Kenneth Browne 49–50, 129–130, 165–179, 209–210, 338–340, 429–430
Necker, W. F. 157–159
Nicholson, Irene 6–7
Oddie, Guy 180–182
Parkes, David, and Stirrat Johnson-Marshall 287–288
Pasley, A. du Gard 61–62, 135–136, 363–364, 435–436
Pevsner, Nikolaus 154–155, 207–208
Richards, J. M. 34–42
Rosenberg, Gerhard 81
Santiago, Michel 59–61, 136–137, 433–435
Stewart, Iain 443–446
Tanner, Jim 228

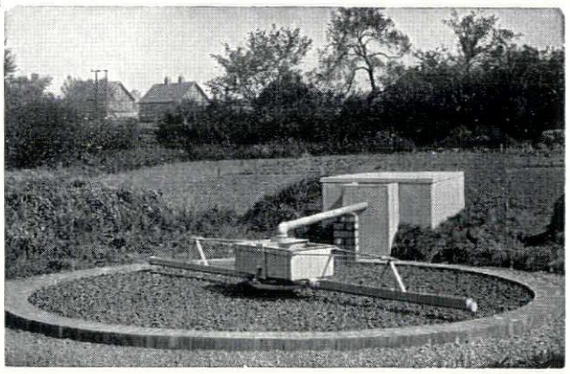
ALPHABETICAL LIST OF ADVERTISERS

	PAGE
Abix (Metal Industries) Ltd.	115
Adshead Ratcliffe Co. Ltd.	37
Airscrew-Weyroc Ltd. (V.S. Board)	89
Alcan (U.K.) Ltd.	60, 61
Alcan Industries Ltd.	3
Alcan Industries Ltd. (Alcanodox)	103
Appleton, N.V., Pty. Ltd.	31
Armitage Ware Ltd.	100
Armstrong Cork Co. Ltd.	77
Architectural Press Ltd.	109, 114, 118, 120, 122
Ashwell & Nesbit Ltd.	112
Atlas Lighting Co. Ltd.	94, 95
Bastian & Allen Ltd.	22
Benjamin Electric Ltd.	62
B.I.P. Reinforced Products Ltd.	80
Black Sheathing Felt	14
Bolding, John, & Sons Ltd.	121
Bolton Gate Co. Ltd.	17, 93
Brady, G., & Co. Ltd.	34
Bridge of Weir Leather Co. Ltd.	120
Briggs, William, & Sons Ltd.	40
British Electrical Conduit Manufacturers	2
British Reinforced Concrete Engineering Co. Ltd.	126
Brockhouse Steel Structures Ltd.	7
Brooke Marine Ltd.	11
Burgess Products Co. Ltd.	28
Butterley Co. Ltd., The	125
Colt Ventilation Ltd.	68
Concept Interiors Ltd.	119
Cox, Williaam J., (Sales) Ltd.	104
Crittall Manufacturing Co. Ltd.	20
Cullum, Horace W., & Co. Ltd.	4
Curran, Edward, Engineering Ltd.	78
Davis, H. & C., Co. Ltd.	102
Denny, Mott & Dickson Ltd.	15
Draftsele Ltd.	71
Dunlop Semtex Ltd. (Synthanite)	59
Eclipse Copper Co. of York Ltd.	118
Edinburgh Weavers	73
Ellard Sliding Door Gears Ltd.	116
Ercol Furniture Ltd.	70
Evomastics Ltd.	50
Falks Ltd.	24
Fox, Samuel, & Co. Ltd.	83
French, Thomas, & Sons Ltd.	122
Gent & Co. Ltd.	85
Gliksten, J., & Sons Ltd.	27
Goodlass Wall & Co. Ltd.	108
Gothic Engineering Co. Ltd.	124
Hands, W., & Sons Ltd.	8
Harrods Ltd.	67
Henderson, P. C., & Co. Ltd.	84
Hermeseal Acoustics Ltd.	19
Hille of London Ltd.	52, 53
Hollowseal Glass Co. Ltd.	96
Hope, Henry, & Sons Ltd.	44
Ibstock Brick & Tile Co. Ltd.	87
I.C.I. (Hyde) Ltd.	26
Ideal Standard Ltd. (Sanitaryware)	79
James, W., & Co. Ltd.	122
Johnson Control Systems Ltd.	2
Kaiser Aluminium Co. Ltd.	63
Kasparians (U.K.) Ltd.	101
Kelscreen Co. Ltd.	66
Kenrick, Archibald, & Sons Ltd.	114
Kenyon, William, & Sons (Thermal Insulations) Ltd.	25
Leigh, W. & J., Ltd.	97
Line, John, & Sons Ltd.	42
London Seventy Ltd.	111
Lucas of London Ltd.	43
Ludwell, A., & Co. Ltd.	112
Luxfer Ltd.	36
Lyons Catering Advisory Service	122
Mannheim, L., Ltd.	109
Merchant Adventurers Ltd.	69
Metal Sections Ltd.	41
Milium Insulated Lining	113
Monsanto Chemicals Ltd.	74
Morris Singer Co. Ltd.	38
National Coal Board Brickworks	39
Newman, William, & Sons Ltd. (General)	23
Nicholls & Clarke Ltd.	110
North Western Lead Co. Ltd.	116
Olsson, Martin, (Fibreboards) Ltd. (Ankarboard)	13
Peel, H., Ltd.	120
Pel Ltd.	35
Pilkington Bros. Ltd. (Mirrors)	75, 76
Quicktho Engineering Ltd.	81
Ramsay & Sons (Forfar) Ltd.	111
Ranalah Gates Ltd.	113
Rank Audio Visual Ltd.	51
Rawlplug Co. Ltd., The	118
Remploy Ltd.	49
Reyrolle, A., & Co. Ltd.	29
Riley (I.C.) Products Ltd. (Oil Firing)	46
Rotaflex (G.B.) Ltd.	32, 33, 98, 99
Ruberoid Co. Ltd., The	91
Sankey, J. H., & Son Ltd.	48
Sebel, D., & Co. Ltd.	47
Shanks & Co. Ltd.	9
Shires & Co. (London) Ltd.	6
S.L.R. Electric Ltd.	117
Smith & Walton Ltd.	54
Smith & Wellstood Ltd.	102
Standard Telephones & Cables Ltd.	106
Steel Radiators Ltd.	45
Steventon, John, & Sons Ltd.	12
Stewarts & Lloyds Ltd.	105
Still, W. M., & Sons Ltd.	93
Stoddard, A. F., & Co. Ltd.	18
Stone Firms Ltd., The	55–58
Stramit Boards Ltd. (Partitions)	16
Stramit Boards Ltd. (Grooved Panels)	64, 65
Sussex & Dorking Brick Co. Ltd.	82
Thermal Radiators Ltd.	119
Trianco Ltd.	115
Tuke & Bell Ltd.	124
Valbania Ltd.	21
Walker, Crosweller & Co. Ltd.	107
Wall Paper Manufacturers Ltd.	72
Wardle, Bernard, (Everflex) Ltd.	5
Westland Engineers Ltd. (Unique Balance)	110
Westland Engineers Ltd. (Doors)	121
Williams, John, of Cardiff Ltd.	10
Wilton Royal Carpet Factory Ltd.	117
Wright, John, & Sons (Veneers) Ltd.	30

TB LTD

SEWAGE PURIFICATION

for Country Houses



Installation for a Housing Scheme

TUKE & BELL LTD

1, Lincoln's Inn Fields
London, W.C.2

Works: Lichfield, Staffs

Barbour Index File No. 35

PURIPHER

OIL BURNERS

THE RANGE FOR

EVERY INDUSTRIAL NEED

Gas oil burners — Outputs of 95,000 to 2,050,000 BTU
200 second oil burners — Outputs of 500,000 to 2,500,000 BTU
Heavy oil burners — Outputs of 1,900,000 to 15,880,000 BTU

INSTALL "PURIPHER" FOR SAFETY AND MAXIMUM EFFICIENCY

Full details from

GOTHIC ENGINEERING CO. LTD.

Registered Users of the Trade Mark "Puripher"

London Office: 146 Grosvenor Rd · London SW1 · Tate Gallery 0078
Head Office: Union Street · West Bromwich · West Bromwich 1391