ar

the functional tradition



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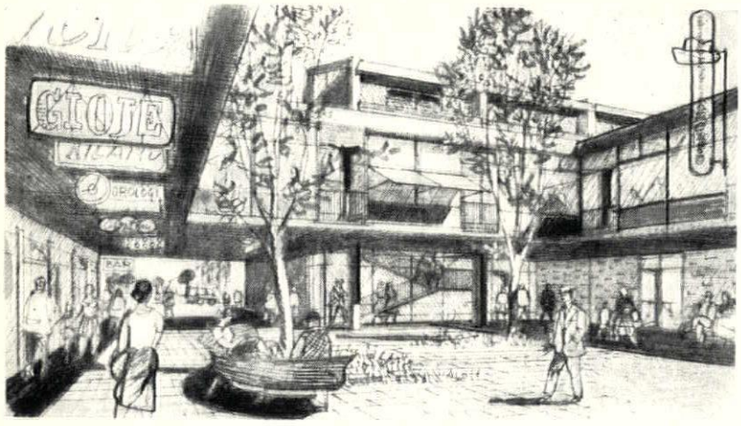
MARGINALIA

Italy and Townscape

The post-war years have seen a rather pathetic procession of Italian town-planners and architects coming to Britain, bedazzled by our town-planning laws, and leaving again a few months later, baffled and bewildered by the discrepancy between legislation and fact. In the process, however, the live aspects of English town-planning thought have been noticed, in some cases understood, and have begun to filter back to Italy. There is something unmistakably English, for instance, about the winning design, 1, for a new covered market in Pescara, by Aymonino, Belardelli and Malatesta, exhibiting many of those townscape qualities that, ironically enough, have had to be illustrated in the REVIEW by examples from Italy's own past, but which no Italian publication has noticed until recently.

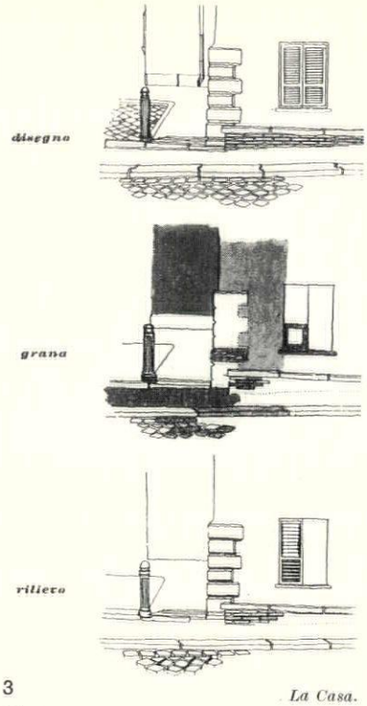
An example of the degree to which these are now being noticed is afforded by the most recent (No. 3) of the *Quaderni* '*La Casa*' devoted to neighbourhood planning and its problems, edited by Ludovico Quaroni, who is internationally famous for his work at La Martella, (to be treated in the August issue). The book comprises an omnium-gatherum of essays on many aspects of neighbourhoods, historical, sociological, political and—how rare among recent literature—visual. In this last aspect it draws heavily on English examples and ideas. The reader finds himself confronted with the inevitable view of Finchingfield, the equally inevitable bibliographical references to Gibberd, Colvin, to the MARS group plan for London and to Harlow New Town. But much less inevitably he also finds examples of the Functional Tradition and Gordon Cullen drawings, and also Italy's own version of the townscape eye at work—still operating on a curiously split level, alternating between an abstract approach, which seems more concerned with qualities than things, or a humanity and feeling for character that could only have come from the country of *Ladri di Biciclette*. 3 is an example of the excessively abstract approach, analysing the scene as if it had no subject matter, no space, were simply a picture and nothing more; 2 is the kind of character study that every townscaper needs to be able to make, even if he lacks productive material like Trastevere to work upon.



1 *L'Architettura.*



2 *La Casa.*



3 *La Casa.*

Italy and Counter-Attack

The responses of leading Italian architectural magazines to the REVIEW'S *Counter-Attack* programme have been revealing, as well as gratifyingly laudatory. *L'Architettura* (1957, No. 17) described the *Counter-Attack* issue as splendid, underlined the point about the need to differentiate between country and town, and underlined it again by reprinting the two sequences of sketches with which *Counter-Attack* demonstrated the rehabilitation of the urban and the rural scene. In its next issue, a correspondent signing himself L.B., and taking as his text the potted version of *Counter-Attack* that had appeared in *L'Espresso* (Rome) in February, turned it to polemical account as a stick to beat the *Razionalisti*, by drawing attention to a well-known plan for a new neighbourhood near Rotterdam, by Bakema, van den Broek and Tijen, and asking if this, 4, were not *Subtopia Razionalistica*—which, in view of the diagrammatic and space-wasting way in which each sub-neighbourhood is made indistinguishable from the next, is a very fair question.

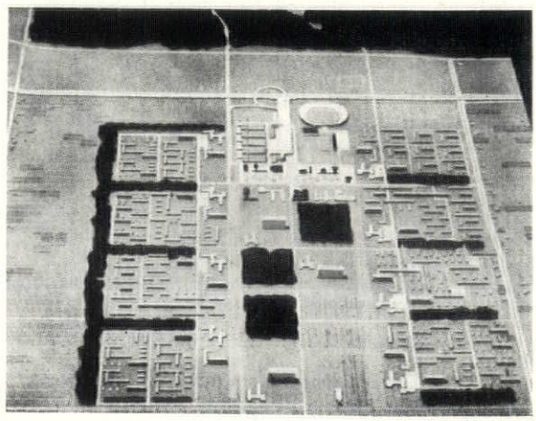
By contrast, A. T. Anselmi, in his bi-monthly review of periodicals in *Casabella* (No. 214) more or less accused the REVIEW itself of being too diagrammatic—'Singular is the contrast between a certain abstractness into which the general premises fall (particularly on account of excessive scrupulosity in classification by categories) and the effective concreteness of the detailed proposals.' But this seems to miss the point at issue. Town and country are not god-given categories, but man-made ones, and they are only meaningful as long as they are actively defined and socially operative and since they have been socially inoperative for so long in so many branches of human activity, it has become time to redefine them, and in a manner which recognizes that there are different characters of towns and of countrysides. The mere yes/no definition into Town and Country is already far more abstract than a finer distinction that recognizes such other categories as Metropolis, Arcadia and Wild as well.

Lodestone Protest

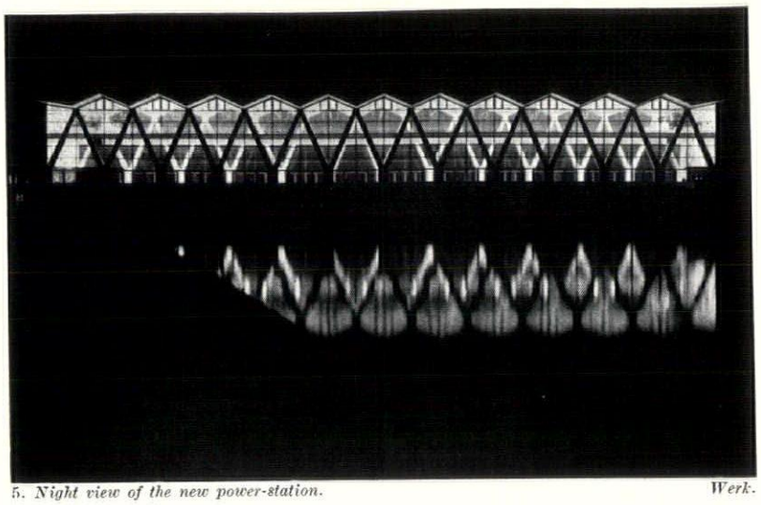
The spring, 1957, issue of the Birkbeck College magazine *Lodestone*, contains one of the first detailed protests to come from inside London University about the desecration being wrought by the University in Bloomsbury. Under the title of *The Illiterate Eye*, the anonymous author of this broadside makes the following points: that University building in Bloomsbury has been misguided as far back as the design of the Senate House; that what is most conspicuously misguided about this building programme is the demolition of Bloomsbury's unique townscape pattern of streets and squares, houses and trees; that irrespective of the effect of the scale of these new buildings on the townscape, they are second-rate, and too insignificantly genteel to attract even adverse comment; that in its architectural policy London University lags behind not only the more progressive universities abroad, but also most of the provincial universities at home. One can only hope that this last jab at London's parochial pride may combine with Sir Leslie Martin's recent appointment as planning consultant to the University to trigger a genuine change of eye.

Swiss Structure

An example of a convincing use of a somewhat assertive structural form in a location of acknowledged scenic interest is provided by the new power-station on the Rhine at Birsfelden near Basle. The four turbo-generators are housed in a glazed envelope with a ripple-pitched roof, supported on Y-legs that register with considerable visual emphasis, particularly at night, 5, (over-page), when reflections in the tailrace duplicate the effect. The successful integration of this dominant note into the revised riparian landscape is largely due to the unusual order of events in the programming of the overall design. The designer in charge, Dr. Hans Hofmann, had been working on the landscape aspects of the project since as early as 1942, and the decision to entrust the buildings to him as well was not taken until a decade later. Thus the design was considered in its wider aspects first, and the buildings were entrusted to



4 *L'Architettura.*



5. *Night view of the new power-station.* *Werk.*

an architect who had a ten-year acquaintance with the site and of its possibilities. It is to be hoped that this example will not be wasted on the projectors of atomic and other power-stations in our own landscape.

CORRESPONDENCE

Commonwealth Opportunity

To the Editors,

SIRS,—We admire and applaud your concentrated efforts to rescue the 'Old Country' from its subtopian development and wish you well in your mission.

Your fight no doubt will be long and bloody and a few sincere crusaders will find their energies and faith waning in the face of such odds. Therefore it is prudent to suggest that these saddened souls may wish to avail themselves of the opportunity to create their own 'Utopia' out here in this fair land of Australia. In the Commonwealth countries an architect can create his own environment, his sensitivity and aesthetic can formulate the pattern for a new life divorced from the mistakes of yesterday. What a golden opportunity exists for the idealist (and for those whose favourite role is forever 'the voice crying in the wilderness').

Let us shift our gaze to the potential of the Commonwealth countries, mobilize our energies towards the development of tomorrow, and a new beginning.

Attacks on subtopia may bear some importance but the Commonweath challenge is vital.

Yours, etc.,
JOHN DALTON.

Indooroopilly, Brisbane

Europe Rebuilt

To the Editors,

SIRS,—The article headed 'Europe Rebuilt' could have made a valuable departure from normal architectural journalism. The weakness is its failure to relate its topic to life. The buildings discussed are one reflection of chaos in the present world. The unsolved problems they represent are humanity's problems; here is a subject that reaches beyond technical and aesthetic discussion. In any case the situation is worse than the article admits; many people will agree that the examples cited are wholly bad, while overlooking the more widespread evil of a widespread lack of architectural vitality in buildings that are usually described as good.

History teaches us that the representative architecture of an era derives its characteristics from qualities of life and people. In a world of moral, political and social confusion it is surprising to hear an architectural critic explain the lack of unity in architectural expression as a failure to apply design principles; if only it were as simple as that.

The first requirement of architectural criticism is quasi-philosophical: to interpret the more general aspects of life that influence our art; leaving the particulars to be expressed in the work of those it helps to enlighten. The need expressed by post-war building is not for a book of rules about design, but for an increased awareness of our present human condition. In an era such as ours, of scientific complexity and spiritual desolation, people don't like seeing the world as it is. The normal reaction is to live as comfortably as possible with a limited but convenient philosophy that serves to mask the difficult questions. Thus, many architects are glad to accept without analysis or understanding a few efficient-sounding principles, and then consider that they are 'doing their bit' by helping to create a better environment. The results of evading the painful search for true values are available for all who wish to see; look through some recent magazines and see how few designs prove to be more than meagre architectural conceptions made interesting by the facility with which they adapt the current fashion; look at a typical student's final testimony and discover the deadly monotony of the 'Mies Technique' as used by designers lacking his insight and sensitivity; look at the fungus growth of overdone 'contemporary' interiors; diagnose the apparent need for over-dramatized 'isms'.

While this 'easy-way-out' game goes on, scientific development accelerates, and the task of adapting the bewildering possibilities becomes increasingly difficult. To face up to the world as it is, is to realise the need for means to cope with an unprecedented speed, scale and scope of change. Without the creative mind that can move abreast of science and speedily distil, in a climate of collective awareness and spiritual cohesion, the proper means of application and expression of a new technique, the battle for modern architecture will never be fought, let alone won.

The task is immense, and one looks in vain towards our architectural schools for some indication of a constructive approach to the real challenges of our time. Only the worst blind thinking could imagine that a system producing a large number of complete individuals, all qualified at the same low level, will meet the requirements. The successful practice of architecture now and in the future can only result from a close-knit design team; the carefully selected and organized group that can relate a real creative ability to the necessary breadth of scientific knowledge and a dedicated concern for human affairs.

It is interesting to note how problems as vital as life and death can quickly revolutionize the outlook of a profession as tradition-bound as soldiering; in war there is no option but to face up to realities. One might say it is unfortunate that well-designed buildings are not a prerequisite for human survival, but who knows, perhaps ultimately they are.

Yours, etc.,
REGINALD TREE.

Brighton.

Archer Abroad

To the Editors.

SIRS,—It is suspected but not proved, I believe, that Thomas Archer, groom-porter to Queen Anne and architect, may have visited Austria. All that is known is that he spent the years 1689–93 abroad.

By common consent, his tower at Birmingham (1709–15) stands apart from other such work in England; but I have long thought that it resembles work in Austria.

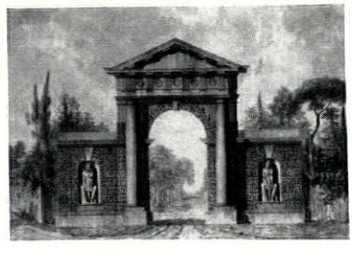
Unfortunately, the dates do not fit. The most similar Austrian tower, that of Dürnstein on the Danube, belongs to 1721–5; others of the same type are at Pausa (1714) and Zwettl (1723). The architects of Dürnstein are not known for certain. Munggenast was the builder; the designs are attributed to Prandtauer or Steindl. Prandtauer was born in 1660. Steindl was born as early as c. 1644. So towers of this type may well have been designed in or *en route* for Austria before Archer's visit, and, if so, can we adumbrate a link between Austria and Birmingham?

Yours, etc.,
EDMUND ESDAILE.

The Egyptian Revival

To the Editors,

SIRS,—Some of the readers of Dr. Pevsner and Dr. Lang's article on the Egyptian Revival may be interested in a hitherto unpublished watercolour in the collection of the Royal Institute of British Architects, (below). On the verso is inscribed 'Lord Digby's Park Gate W C.' The style of the drawing and the initials corroborate that this is from the hand of Sir William Chambers. It is the only example I can find of this architect using an Egyptian motif in such a context and on such a scale. The site of the gate must be Sherborne Castle, Dorset, and probably its Town entrance. It is not known whether the design was executed. A similar gate for the Duke of Richmond at Goodwood was engraved in 1759 for Chambers's Treatise on Civil Architecture. But in this instance the niches and Egyptian motif are missing. At about the same time Chambers was designing the eclectic buildings at Kew, and near to Sherborne he was building Duntish Court. It appears therefore that the design can be placed about the end of the 1750s, and neither later, when other architects were employed on the house and park, nor earlier, that is in 1756, when Capability Brown (whom Chambers disliked) was landscaping the grounds.



Yours, etc.,
JOHN HARRIS.

Intelligence

The South Park Street Cemetery Restoration Fund Committee, whose work in repairing the monuments in the Great Cemetery, Calcutta, is illustrated and described on pages 79–80, are still in need of another £1,000 in order to complete their work on this rare relic of Britain-in-Asia. For information about their appeal, and concerning their work, readers should write to the Secretary of the Committee, Wellesley House, 7 Wellesley Place, Calcutta I.

The Spanish firm of Cesar Ortiz-Echague, Manuel Barbero and Rafael de la Joya has won the first R. S. Reynolds Award, a $25,000 annual international prize given for the most significant contribution to the use of aluminium in architecture. The prizewinning building was a canteen at the S.E.A.T. car factory in Barcelona using aluminium as the main structural and roofing material.

Two international competitions are announced by the IUA: the first is for the development of the centre of Berlin, open to all architects living or born in Europe. The competition is anonymous and in one stage. The closing date is 30th November, 1957, and the first premium will be 30,000 DM; information obtainable from Senator für Bau und Wohnungswesen, Württembergischestrasse 6, Berlin-Wilmersdorf. The second is for a Solar House to be built in Arizona to encourage public interest in the use of solar energy. First premium 2,500 dollars; information from James M. Hunter, AIA, 1126 Spruce Street, Boulder, Colorado, U.S.A.

A year's interregnum in the direction of the school of Architecture and Design at Yale University has been ended by the appointment of Professor Gibson A. Danes, as the new Dean of the School, in succession to Professor Boyd Smith, and of Paul Rudolph as chairman of the Department of Architecture, thus permitting the acting Chairman, Professor Pfisterer to return to his work as Professor of architectural engineering.

ACKNOWLEDGMENTS

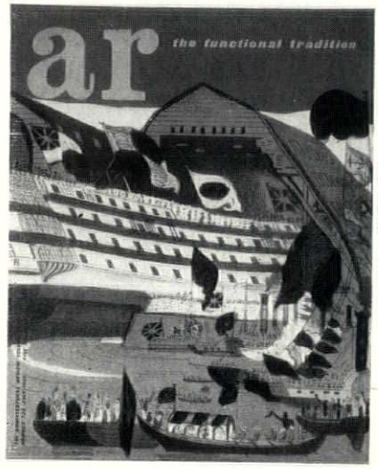
Except for those acknowledged below, all photographs in this issue were taken by Eric de Maré.

THE FUNCTIONAL TRADITION, pages 5–73: 8, 9, 17, 27, 116, 123, 166, 191–193, J. M. Richards, Arphot; 15, 18, 90, 94, 118, 119, John Piper; 19, 106, Marcus Whiffen; 22, McCallum, Arphot; 32, 37, 50, 52, Galwey, Arphot; 33, Dell & Wainwright; 36, 51, 53, 54, Herbert Felton; 103, M. H. Currer-Briggs; 183, Nairn, Arphot. MISCELLANY, pages 74–80: Functional Tradition, Past and Present: 1, NBR; 3, John Piper; 5, Galwey; 9, CEA. Exhibitions: 1, the Solomon R. Guggenheim Museum; 5, Marc Vaux; 6, the National Museum, Warsaw. Counter Attack: Bottisham, Andor Gomme; remainder, Nairn, Arphot. A Calcutta Cemetery: Bernard Matthews.

THE FUNCTIONAL TRADITION

AS SHOWN IN EARLY INDUSTRIAL BUILDINGS

edited by J. M. Richards *photographed by Eric de Maré*



This Month's Cover symbolizes the close connection between the nautical tradition of the shipwright and the functional tradition in architecture to which this issue is devoted. It is taken from part of an engraving in a Deptford scrapbook now in the British Museum, and shows the launching of H.M.S. Trafalgar in June, 1841, from a covered slip similar to those still surviving in the Royal Naval Dockyards at Chatham and Devonport (see pages 26, 30 and 33), now used as boat stores. The architectural arrangement of gun-ports along the side of the wooden ship is echoed in the windows set in the roof of the great wooden structure, itself framed in timber in shipwright's style.

1 **Marginalia**

2 **Correspondence**

4 **Frontispiece**

5 **The Functional Tradition** The word Functional is more closely associated with modern architecture than any other, and indicates the philosophical basis on which the movement rests. But in the heat of battle it has acquired the status of a revolutionary slogan, and the long tradition from which it derives has tended to be forgotten. Yet the functional tradition is as old as the styles, its history is threaded through theirs and the monuments of its development afford a view of the range and subtlety of aesthetic effects that can be produced by an architecture dominated by functional considerations. This special issue of THE ARCHITECTURAL REVIEW concentrates on one episode in that development, the last years of the eighteenth and first half of the nineteenth centuries, when the industrial revolution adorned many parts of Britain with bold, anonymously designed factories, warehouses, mills and the like. Although other types of buildings such as grain-mills and oast-houses are also discussed, the contributions of rural craftsmanship are not included, since they mostly fall outside the field of pioneer industrialization. Nevertheless, many traditions of anonymous functional design contributed to this remarkable phase of English architecture, and it is not for the pioneering of new materials alone that it commands our attention today. In new materials or old, with or without the influence of the architecture of the styles, it was a vernacular firmly grounded in the progressive spirit of the times, and it can provide valuable lessons for the architects of today, who stand in need of a similar vernacular, a means of answering the demands of functional discipline flexibly and unself-consciously.

8 **Warehouses** With their powerful rectangular outlines, gable ends, serried windows and usually massive construction, warehouses have already attracted attention as exemplars of the functional tradition, but the importance of their trim, paintwork and detailing deserves wider recognition.

18 **Docks** The forthright structural qualities of their concomitant sea-walls, gates and lighthouses are reflected in the more strictly architectural aspects of docks, the ranks of warehouses, the ancillary buildings, the thief-proof perimeter walls.

26 **Naval Dockyards** Built to house functions such as fitting-out and repairing of ships of the line, naval dockyards include types of buildings not found in commercial docks, and their official background gives them occasionally a more consciously architectural quality, though the underlying strength of their design still lies in the traditions of shipwrights and engineers.

34 **Textile Factories** Most early factory buildings were textile mills of one sort or another, and they were the buildings in which much of the pioneer-work in metal structure was done—though the ironwork was mostly internal and the exteriors in massive stone or brick retained a Georgian quality late into the nineteenth century.

48 **Water Mills** The classic industrial buildings of the rural landscape, watermills belong to a tradition of great antiquity, though most of the examples dealt with here are contemporaries of the early industrial buildings. Their common use of timber framing and cladding, however, sets them apart from textile mills in appearance.

58 **Windmills** A novelty in the twelfth century in England, the windmill achieved a style that was both elegant and robust by the time of its greatest utilization, when an estimated ten thousand were at work. Superseded at the peak of its development, the surviving examples show it at its most aesthetically satisfying.

62 **Breweries, Maltings and Oast-houses** One of the first activities to be organized on a factory basis, brewing and its tributary industries have contributed highly characteristic buildings to both the urban and rural scene. The processes involved are often complicated, must be organized in their proper sequence, and often require to be housed in structures of specific shape; breweries are thus frequently the most complex as well as the most satisfactory buildings in the functional tradition to be seen in small country towns.

Miscellany

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THE ARCHITECTURAL REVIEW

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FIVE SHILLINGS



The theme of this issue is the functional tradition as shown in early industrial buildings, and the theme of the article opposite is that functionalism is not a creed peculiar to our time but the dominating ingredient of a deeply rooted tradition to which the anonymous architecture of every age bears witness. The qualities founded on functionalism come out as strongly in the buildings depicted on the following pages as they do in our own, and how much the two have in common is shown by the photograph above, 1: *part of the red brick and stone façade of Stanley Mill at Stonehouse, in the Stroud Valley, a woollen mill built in* 1813. *From the handling of forms and materials in buildings like this the modern architect has much to learn.*

THE FUNCTIONAL TRADITION

'Functional' is the word that has always been more closely associated with modern architecture than any other, both in the explanations of its apologists and in the popular mind; and rightly so, because even though its meaning has been continually distorted and misunderstood, it remains the basis on which the architectural philosophy of our time is founded. But because of all this misunderstanding, and the heat of the struggle to establish its supremacy over the literary and antiquarian philosophy of the nineteenth century, functionalism has acquired the reputation of being a revolutionary creed, peculiar to our day. The main purpose of this issue is to show how mistaken this is. The functional element has always been present in architecture, not only in the obvious sense that buildings have always had a function to fulfil, but in the sense in which we use the word now—of their aesthetic character being derived directly from the way in which the challenge of function is met.

There exists, in fact, a tradition of functionalism (hence the title of this issue), running parallel with the evolution of successive styles and weaving its way, as it were, in and out of them. Sometimes it is dominant and sometimes recessive, and to bring into focus another earlier episode in our architectural history when the functional values that we look up to now were dominant, as the following pages are designed to do, may serve to put our own age into its proper perspective (and thus to allay the feeling that there is anything alarming or subversive in our preoccupation with functionalism) and at the same time, perhaps, furnish some useful lessons about the range and subtlety of the aesthetic effects of which an architecture dominated by functionalism is capable.

The episode in history chosen for this purpose is that which produced the great numbers of largely anonymous mills, warehouses and factories that rose up so boldly—and, as it must have seemed at the time, brutally—in the last years of the eighteenth century and the first half of the nineteenth, the years when England was being transformed by the

industrial revolution of which they were of course the product. But they were not confined to the regions now given over to industry. They stand along the canals and railways, inhabit remote valleys whose water-power brought them temporarily within the grasp of industrial improvement, rise squarely above the water's edge in docks and harbours from one end of the country to the other.

They have remarkable architectural qualities: sometimes a breath-taking scale and power, sometimes a gentler assurance in the handling of materials and the treatment of the various architectural elements like stairways and window openings, which should gain for them, frankly utilitarian though they are, far more admiration than they have previously been accorded. Indeed to many Eric de Maré's photographs will be a revelation, and we may wonder why so little attention has hitherto been paid to the buildings they depict.

The explanation, one must suppose, lies partly in the automatic operation of the cycle of taste—we are only now becoming capable of looking dispassionately at the nineteenth century—and partly in the very process, already referred to, by which the functional element in architecture becomes dominant for a time and then for a time relapses into the background. For we respond most readily to buildings possessing the qualities our own aspire to; and we are now ready, as we were not a generation ago, to admire the functional tradition whenever we find evidence of it in the architecture of the past.

Appreciation in our day of the anonymous mills and warehouses of the industrial revolution thus logically follows our discovery a few years ago of the beauties of the engineering structures that not only accompanied that revolution but gave it its impetus. Those who led the fight in the nineteen-thirties to free architecture from the straight-jacket in which the academies had confined it for a hundred years, concerned as they were with gaining freedom to make the most of all the newly discovered techniques and materials, drew much encouragement from the pioneer efforts of the engineers and praised their works accordingly: the bridges and aqueducts, the train-sheds and harbour-works of men like Telford, Stephenson and the two Brunels—which so inspiringly exploited the discoveries of science at the same time as the architects were turning their backs on science and increasingly concerning themselves with the niceties of scholarship and fluctuating stylistic fashions.

A few years ago, that is to say, we were interested in the technical initiative shown in the engineering products of the industrial revolution; now the time is ripe for us to move on to learn what we can from the industrial architecture, which, as distinct from the engineering, was not for the most part preoccupied with experimenting with the new materials. Textile mills at Shrewsbury and Derby did pioneer the iron frame, and other mills and warehouses used iron in different and sometimes unprecedented ways; but most of these early industrial buildings were of solid, orthodox brick, stone or timber construction. Their lesson for us is their subtle and infinitely varied use of an unselfconscious idiom derived from meeting the challenge of the building's function fairly and squarely.

The vigorous and forthright qualities shared by all the artifacts of the industrial revolution—engineering structures and industrial buildings alike—is not surprising when we consider that they express the enterprising spirit that was stirring so deeply in their time. Periods of war and civil strife leave to posterity their castles. Periods dominated by the power of religion leave their abbeys and cathedrals. And periods when a nation's energies are concentrated on commerce and industry leave factories, warehouses, docks

and suchlike buildings which, if they have had as much creative energy focused on them as English buildings of this kind had in the years following the industrial revolution, possess something of the same vigour and conviction as the castles and cathedrals.

That is the simple origin of the remarkable quality of the buildings to which this issue is devoted, but they draw added strength from belonging to the functional tradition. Indeed some of them belong more strictly to the deeply rooted aspect of that tradition than to the new contribution that was made to it during the industrial revolution. For example the brick and timber water-mills, seen at their best in East Anglia and the Home Counties, to which one section of this issue is devoted. Although these mostly date from the time of the industrial revolution, they reach further back into a rural tradition of building which, like the nautical tradition, has answered practical needs with an instinctive rightness and economy for as long as building has existed.

Many other traditions, of course, merge with the functional, so that the buildings illustrated here are the end product of a long anonymous process to which the builder in search of an economical structure and the manufacturer in search of convenient accommodation together contributed, but into which also entered the years of experience of generations of millwrights and other craftsmen, the tradition of those who furnished the countryside over centuries with its plain rectilinear barns and farm buildings, and the newer traditions of the simple, functionally designed stables and other appendages that often provide a foil to the more sophisticated architecture of country houses. These builders carried with them into the nineteenth century some of the Georgian instinct for proportion and rhythm, and sometimes the habit, learnt from the Georgian architects, of ornamenting a doorway or a stairturret with reminiscences of classical detail.

The functional tradition, as we trace it through the centuries, can be discerned in all sorts of objects besides the strictly architectural, like railings and fences, as the REVIEW has already pointed out. The REVIEW has already paid some attention, too, to design on the canals and railways, on whose development the industrial revolution was founded. In the buildings shown here it comes out in its most powerful architectural form. The best of them, newly revealed to us just as the beauties of Gothic were newly revealed to the eighteenth-century antiquarians, add another chapter to the volume of fine buildings that the architecturally minded visitor comes to England to admire : her cathedrals, her castles (which represent another episode when functionalism was dominant), her market towns, her country houses, her urban squares and terraces—and now her mills and docks and warehouses.

But to the modern architect they have a significance that goes deeper even than this. He has reached a crucial point in the development of his art, which has been utterly changed by new technical resources, new planning responsibilities and new aesthetic ideals. Its impetus, that is to say, has been a revolutionary one, but no art can remain for ever in a state of revolution. Innovation gives it its vitality and its capacity to develop, but after the revolution comes consolidation, depending on the creation of a vernacular language in which the ideas of the innovators gradually become merged.

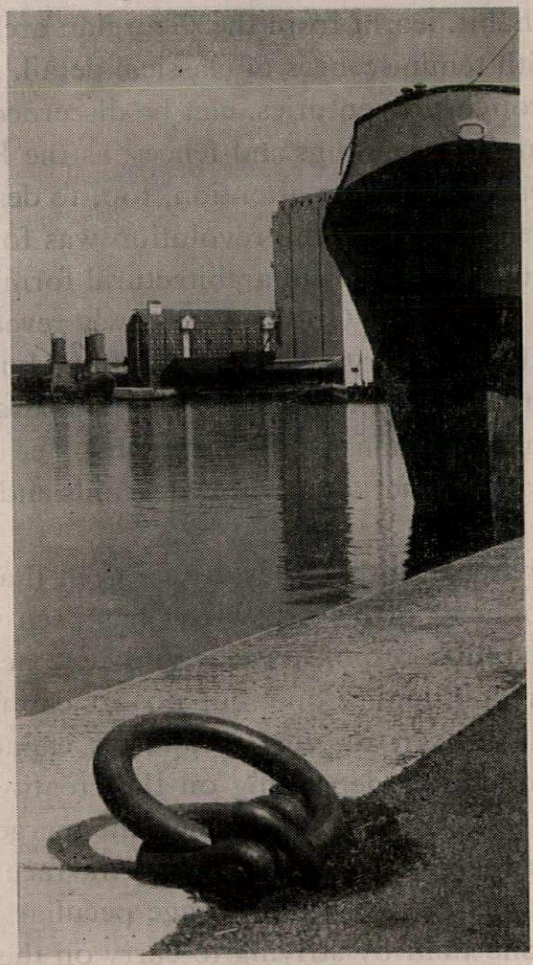
Architecture's special need now is to perfect such a vernacular, even in the face of the difficulty that it means achieving the unselfconscious virtues in an age peculiar for its self-consciousness. How can this better be done than by striving to carry on the functional tradition which inspired the anonymous vernacular of these early industrial buildings? In them we see a preoccupation with functionalism similar to our own, with the disciplines functionalism imposes transformed into a flexible architectural language.

WAREHOUSES

The function of a warehouse needs no description. It is a building for storing goods, most often goods in transit, since the warehouses of the early nineteenth century, chiefly represented here, were built in the greatest number along the waterways (as they were later along the railways) on which the expanding commerce of those days was founded. They are essentially utility buildings, in which expenditure is concentrated on such necessities as strength, wide uninterrupted floorspaces (hence the great advance made when iron roof-trusses were introduced), easy handling of goods and the protection of the fabric of the building against the rough treatment that dealing with heavy goods often involves (hence the hard materials used for plinths and door-jambs and the granite bollards leaning against corners).

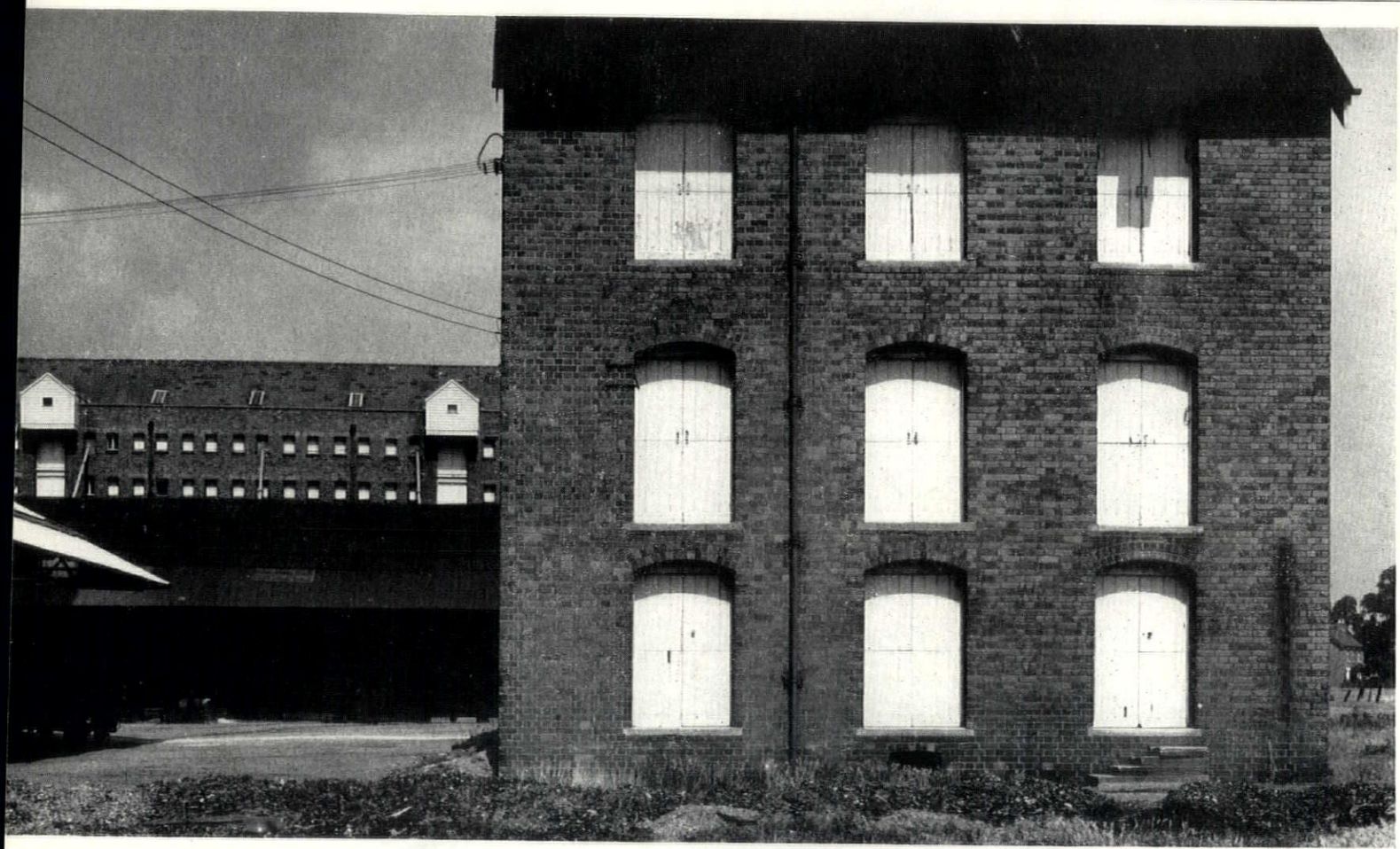
The great warehouses that form an integral part of the London, Liverpool and other docks are represented separately in the next section. This section illustrates, for the most part, isolated warehouse buildings, some serving the smaller shipping basins, river quays and canal-side wharves; others (like the tall bonded warehouses in the City of London) serving a big commercial centre's entrepot trade, while others served some country-town activity such as flour-milling.*

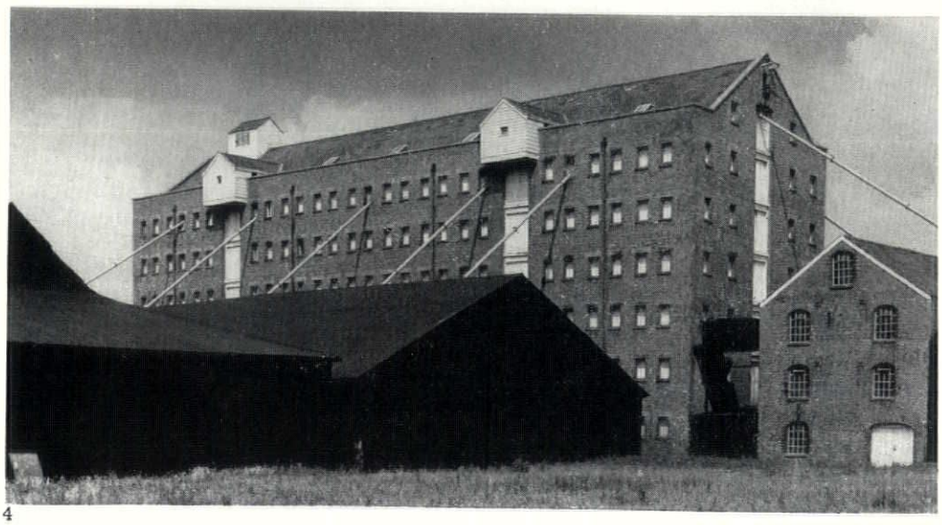
But whether they are an actual product of the industrial revolution like the former, or link up like the latter with earlier handicraft traditions, they share the same architectural characteristics: powerful rectangular outlines; gable ends often supporting cranes and hoists; tiers of superimposed doors for loading and unloading; rows of squarish windows, deep-set and usually with segmented arched heads. Materials are local stone and brick, used functionally and traditionally. Few warehouses—perhaps because of the risk of fire—are built wholly of wood, but tone and colour contrasts between the walls and the painted woodwork of heavily battened doors contribute much of their robust but lively quality; so do areas of whitewash and bold painted lettering. Iron when used for construction is not seen, but it appears in the form of windows and window-bars and the very characteristic heavily moulded tie-irons.



2, the warehouse in its setting: Sharpness, Glos., where the ship-canal terminates (see facing page) and where the functional tradition is illustrated by nineteenth and twentieth century warehouses standing side by side.

* Those at Wisbech, a particularly fine range, have already been illustrated in the REVIEW, in December, 1939.



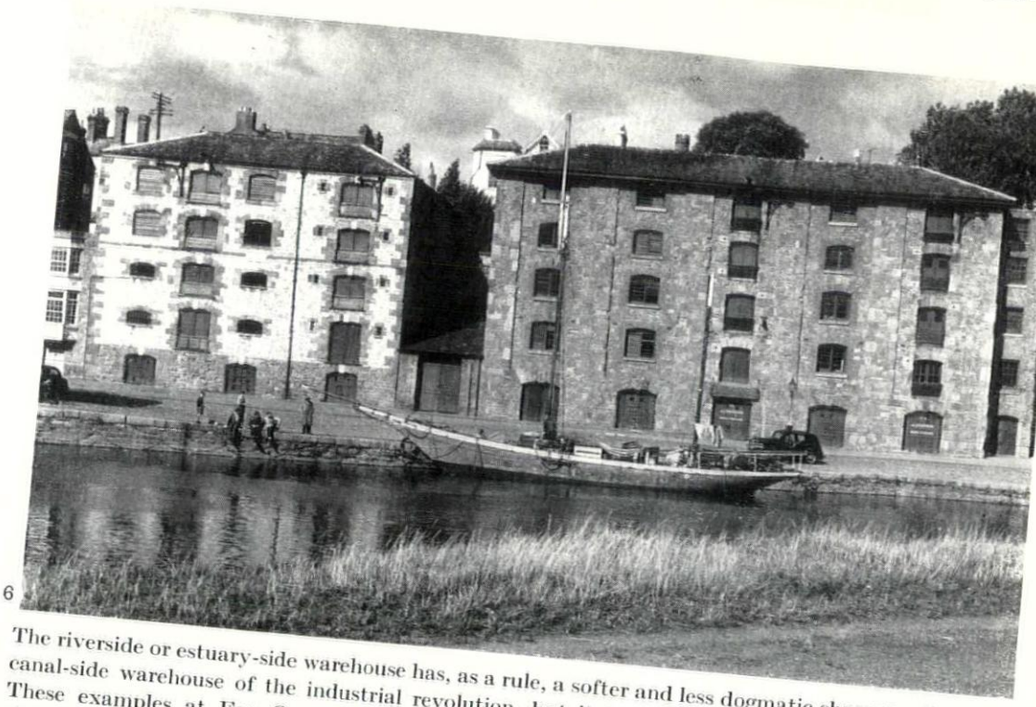


4

In these towering red brick warehouses at Sharpness, the characteristic rhythm of windows interrupted by tiers of loading-doors is emphasized by the light contrasting paintwork of the wooden shutters that fill each window aperture. Sharpness is at one end of the Gloucester and Sharpness ship canal, linking the Bristol Channel to the Severn (see page 23 for photographs of the docks at Gloucester, at the other end). The canal is 16 miles long. Telford was its engineer. It was opened in 1827 and Sharpness was enlarged in 1874 when it became a miniature 'company town' with its own housing. These buildings therefore date from the 1870s.

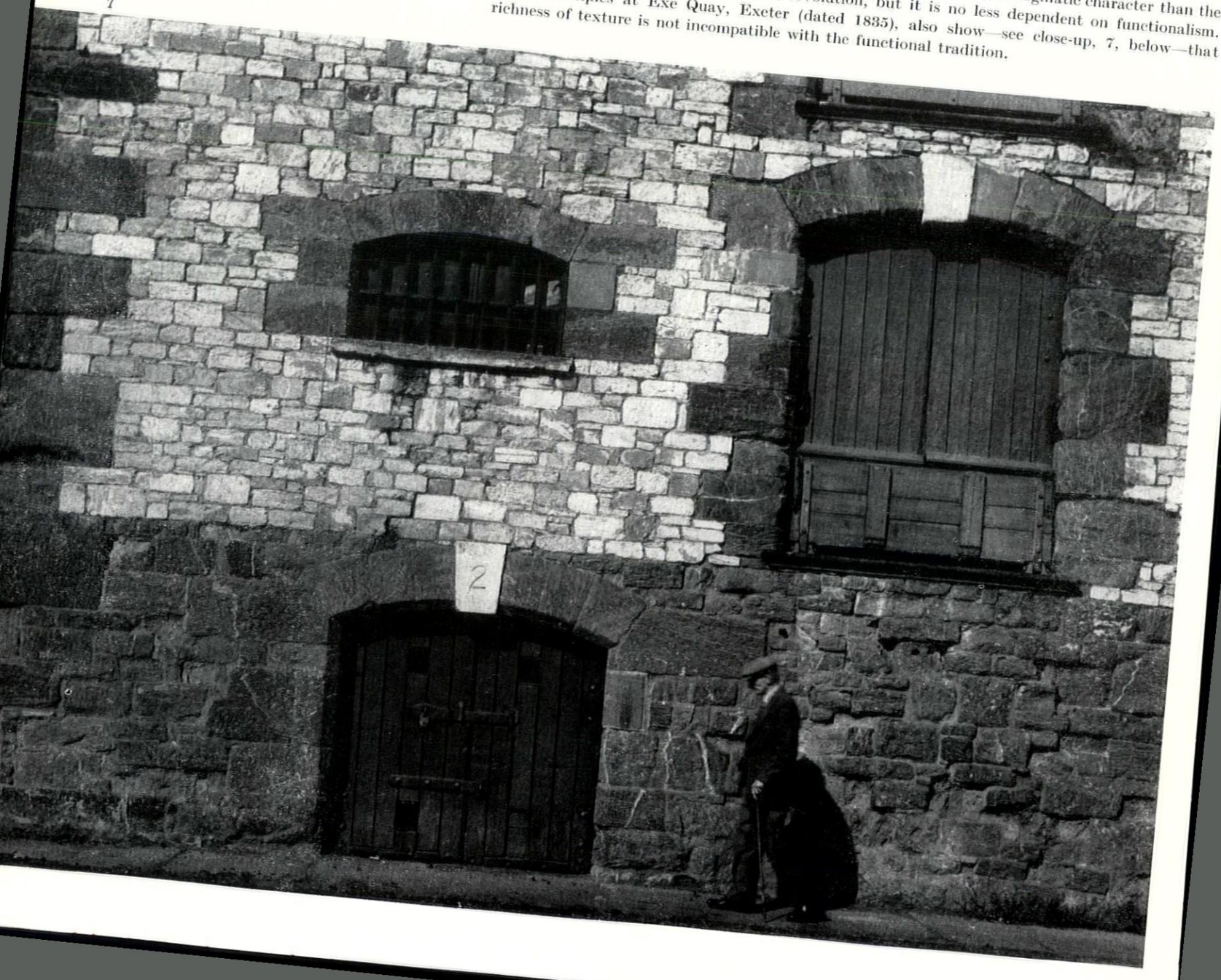


5 A type of nineteenth century warehouse frequently met along the canals of the industrial areas has an archway through the centre which serves as a loading-dock. 5, now derelict, is at Macclesfield.



6 The riverside or estuary-side warehouse has, as a rule, a softer and less dogmatic character than the canal-side warehouse of the industrial revolution, but it is no less dependent on functionalism. These examples at Exe Quay, Exeter (dated 1835), also show—see close-up, 7, below—that richness of texture is not incompatible with the functional tradition.

7



WAREHOUSES

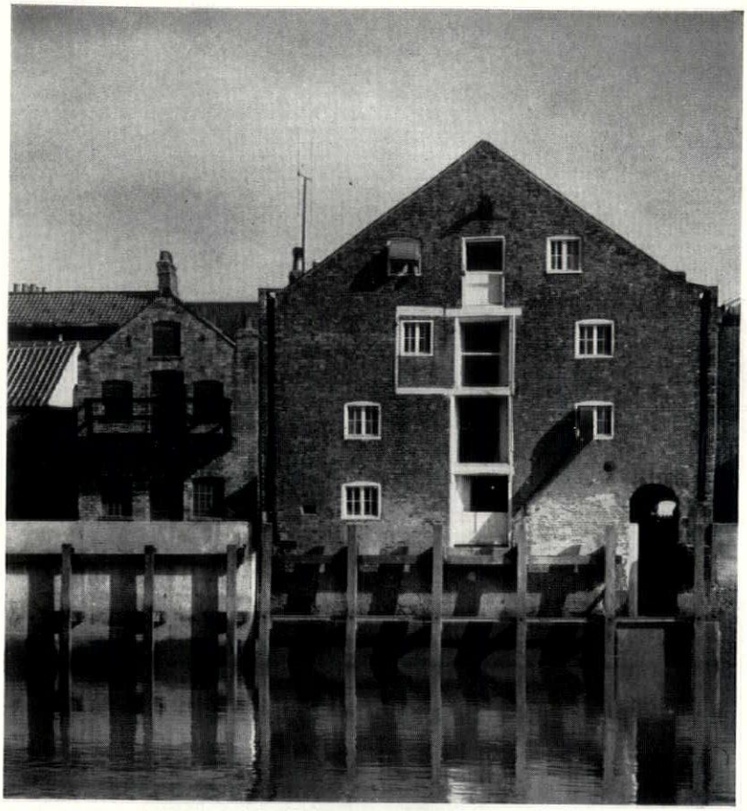


8



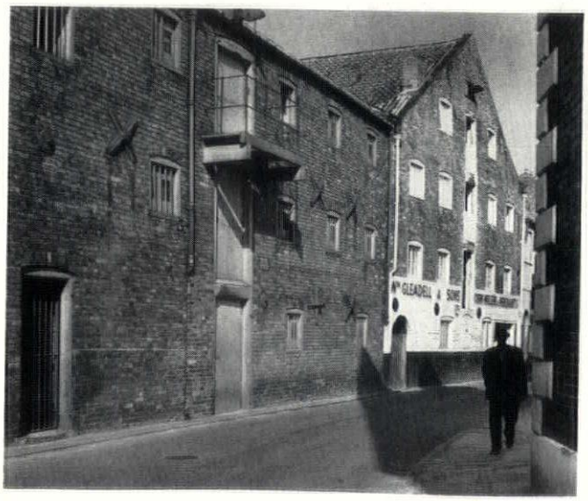
9

Another group of riverside warehouses, on the Witham at Boston, which was a thriving port until the river became too silted up for large vessels in the eighteenth century. 8, the river side; 9, the landward side showing the white paint and bold lettering which often enliven these flat brick frontages.



11

10, 11 and 12, warehouses at Gainsborough, Lincs, backing on to the River Trent, typical of the gabled brick grain warehouses of East Anglia. Again sparkle is given to them by contrasting white paintwork.



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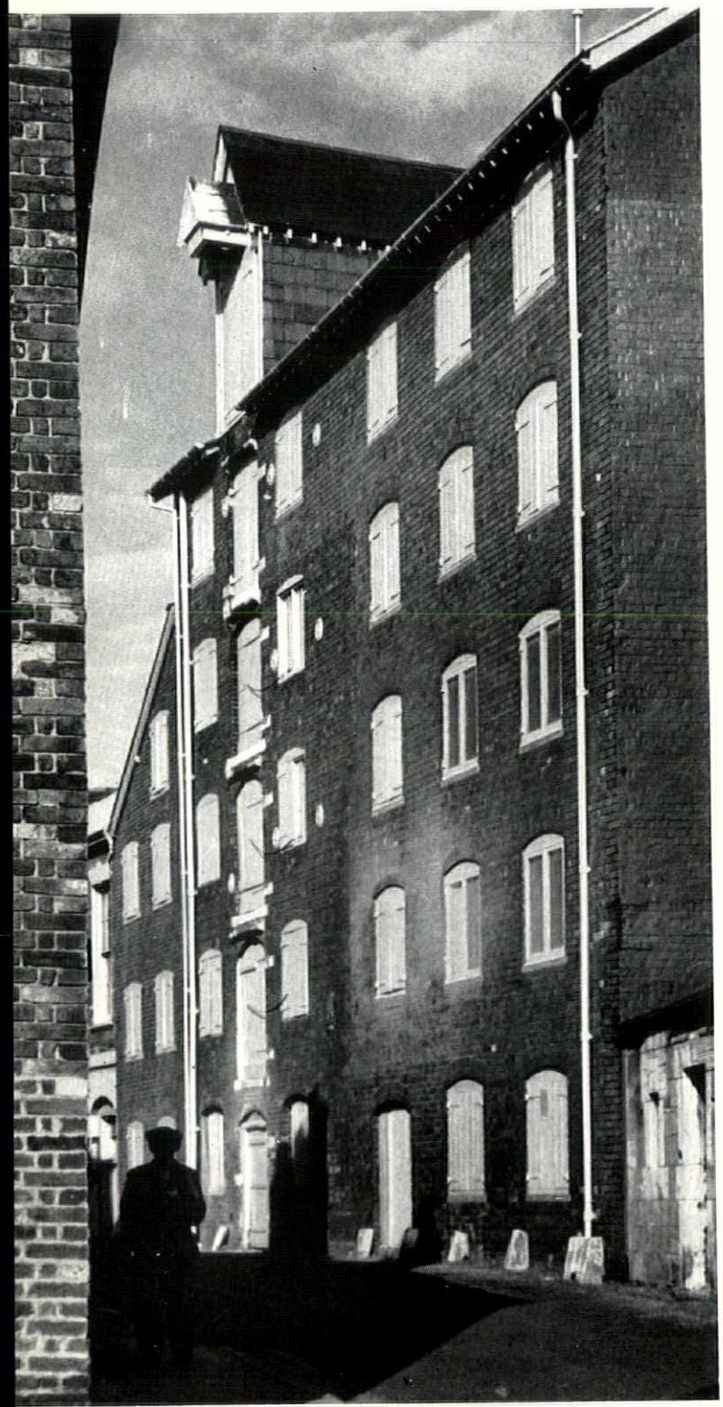
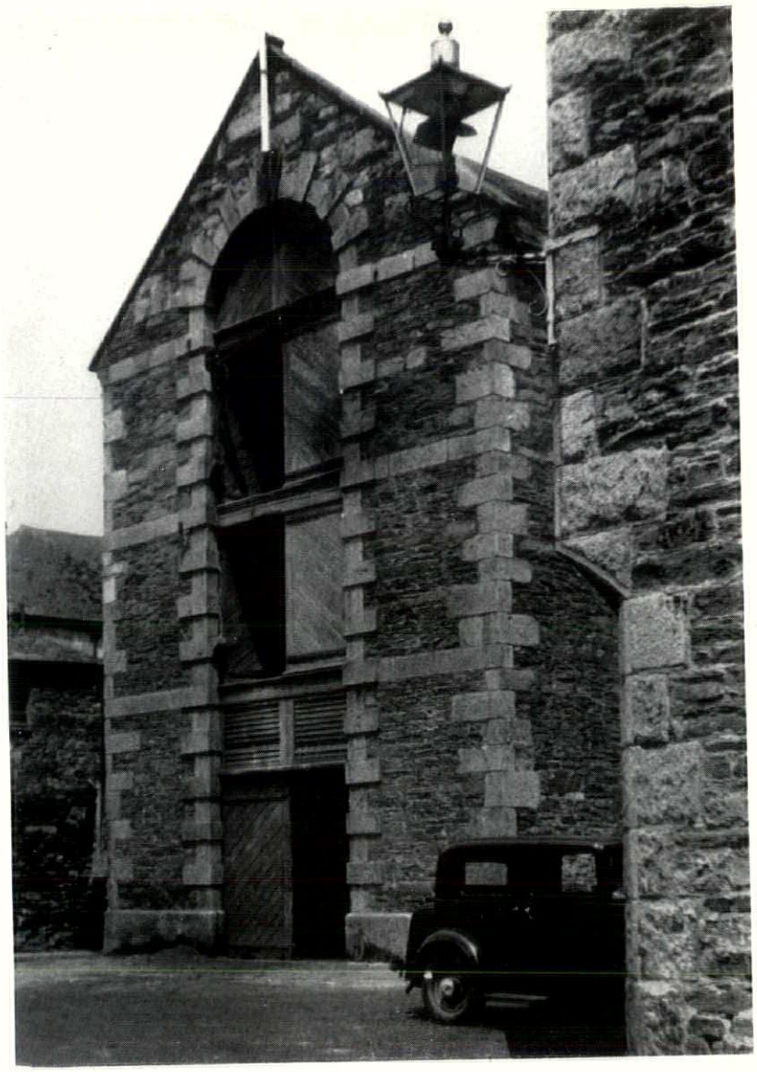
12

15, a stone built example on the quay at Looe, Cornwall; small, but monumental in scale, using a mixture of smooth grey stone and brownish rubble.

WAREHOUSES



13 Red brick warehouse on the old quay at Poole harbour, Dorset, belonging to Oakley Bros., corn, cake, seed and fertilizer merchants. The paintwork is the traditional light buff, and the wall surface, as often happens, floured over with white. The detail alongside, 14, shows the sturdy proportions of the doorway and the subtleties of texture produced by the wearing of the brick and timber surfaces.



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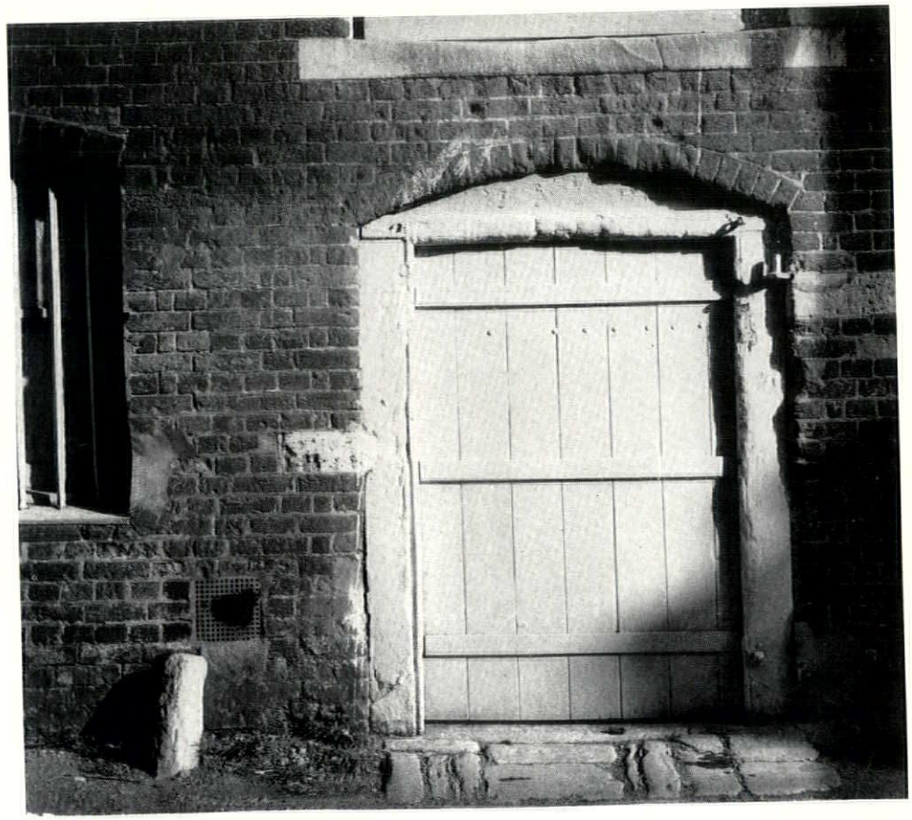

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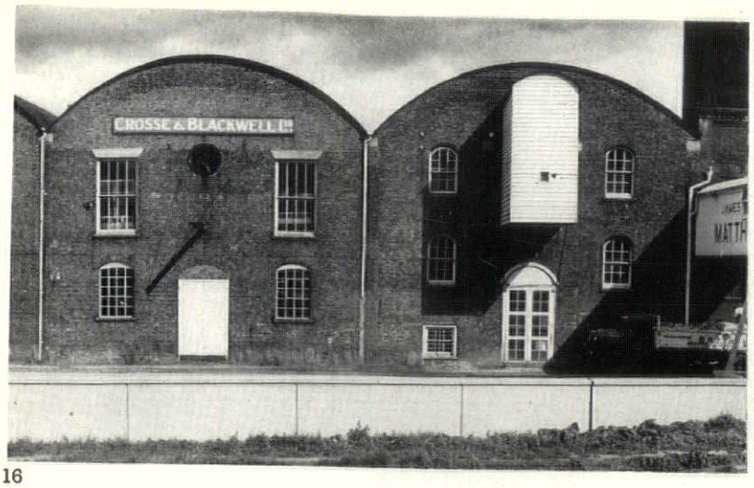

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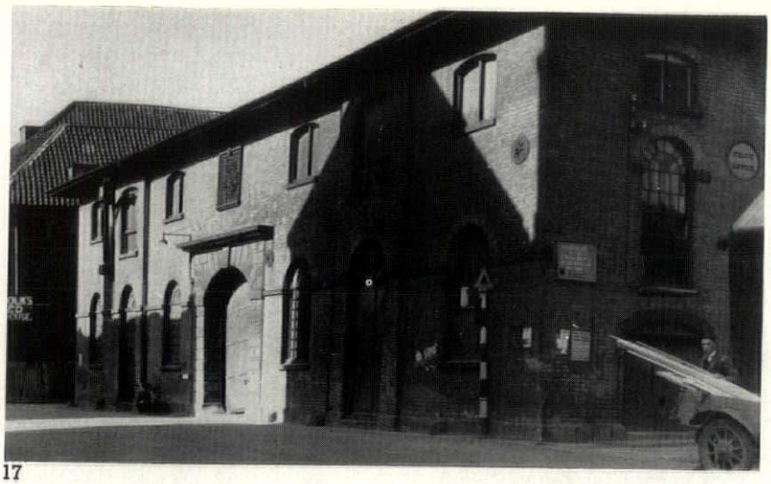


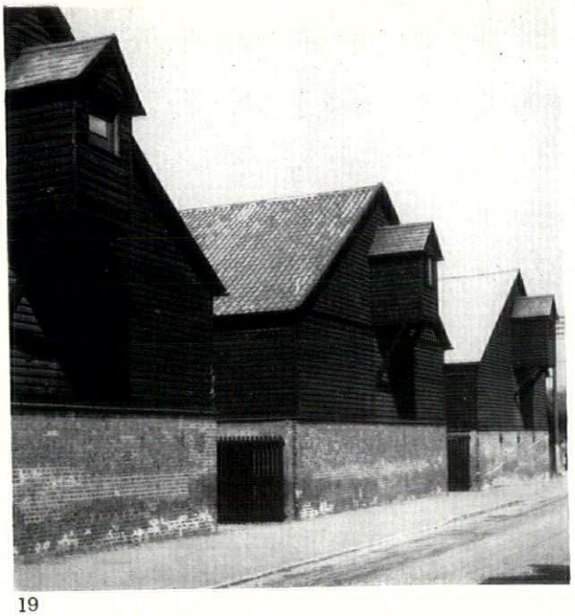
17

Variety in character and outline: 16, at Hythe Quay, Colchester—note the differently shaped doors and windows which do not affect the strong rhythm of the sequence of arched roofs; 17, at Boston, where the strong horizontal eaves-line, the round arched windows and the enriched central doorway give the building a formality appropriate to its use as a customs warehouse.



18, a vigorous example of unusual personality, also at Boston (on the opposite side of the river from the group of warehouses shown in 8 and 9; the top of Boston Stump can be seen on the left). The wide-eaved, low-pitched roof, the plaster wall surface, quoins and round-arched basement windows, all give the building a surprisingly foreign air. It is a prominent and distinguished feature of the town as one enters it from the west, but its elegance has been spoilt since this picture was taken by advertisements plastered over it.

18



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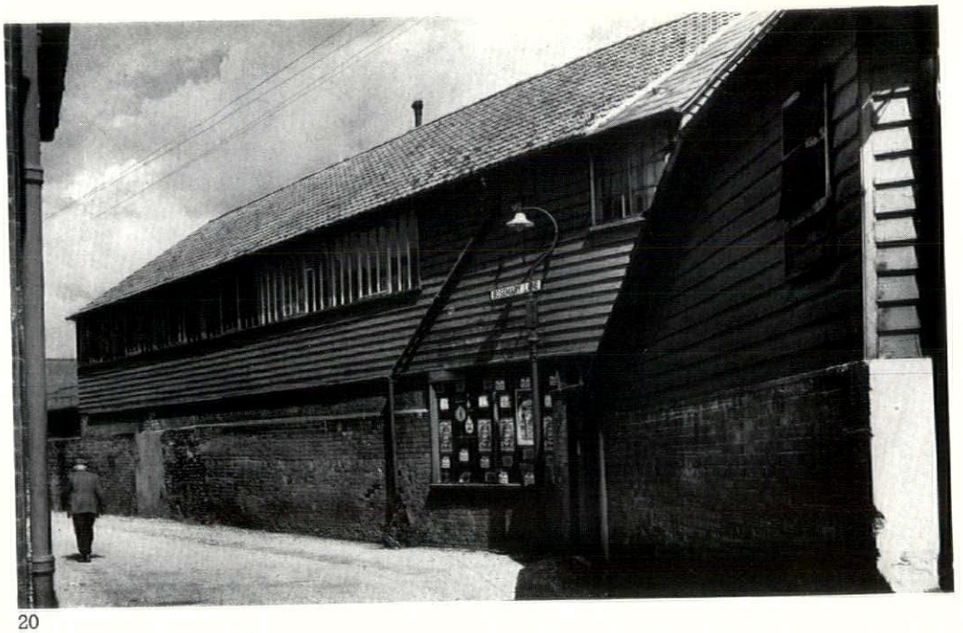

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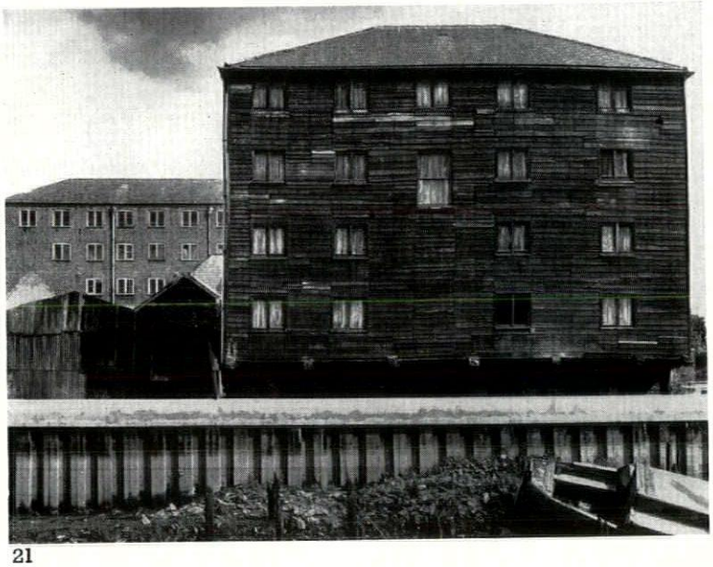

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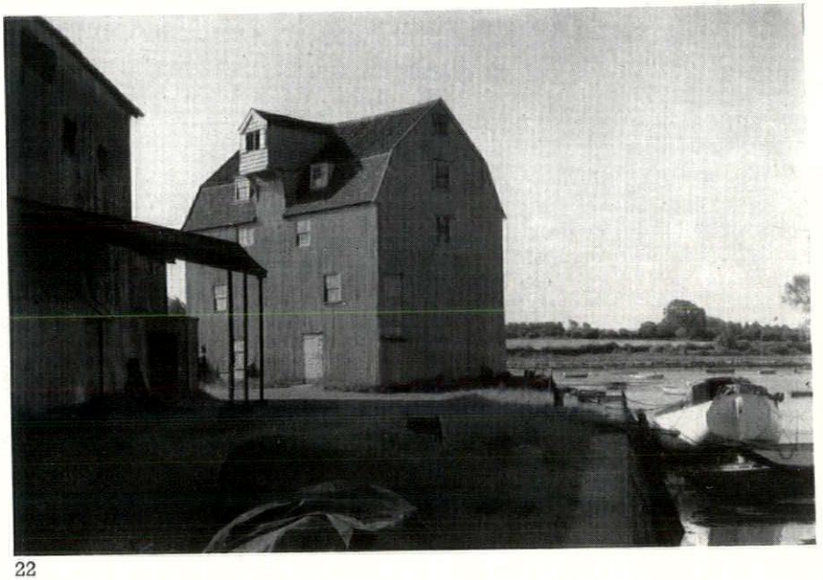
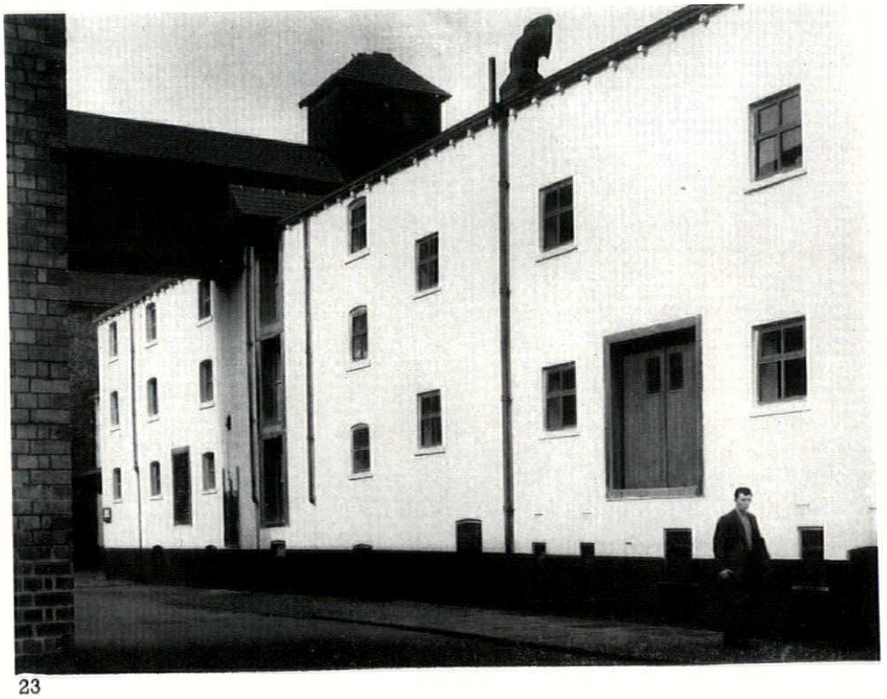


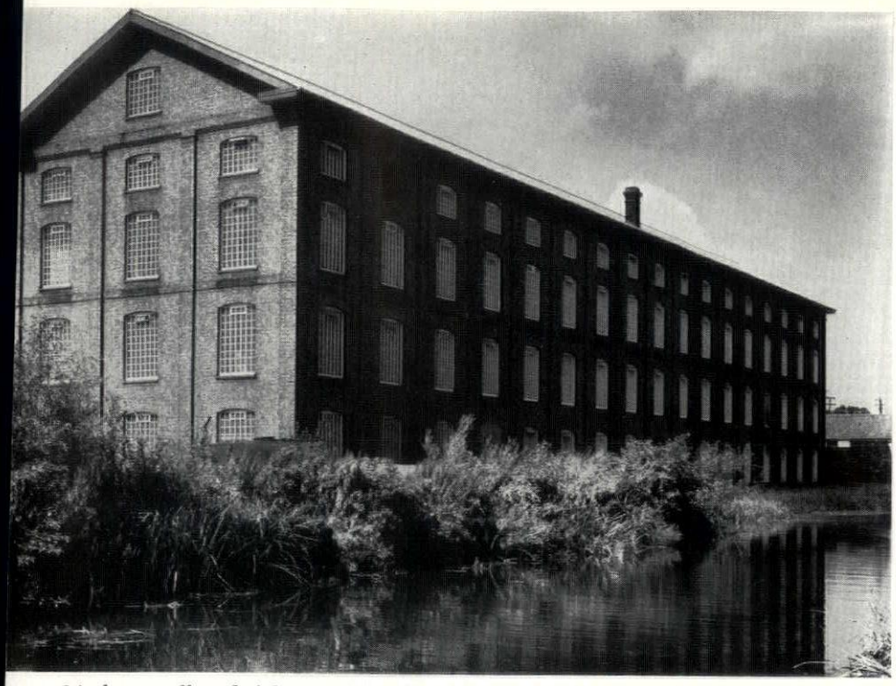
22

Timber boarding, tarred or painted over a brick base, is much used, especially in the Home Counties and East Anglia, for the smaller kind of shed or warehouse: 19 and 20, at Ware, Herts., and Halstead, Essex. The latter, now used as a carpenter's workshop, has the long window, subdivided vertically, often found in timber-framed buildings of this kind. Warehouses on an industrial scale are rarely of timber because of the risk of fire, but 21 is an example from Boston. 22 is a reminder of the charming qualities of that much maligned material corrugated iron. It sheathes this warehouse on the waterside at Woodbridge, Suffolk, which may once have been a boarded water-mill.



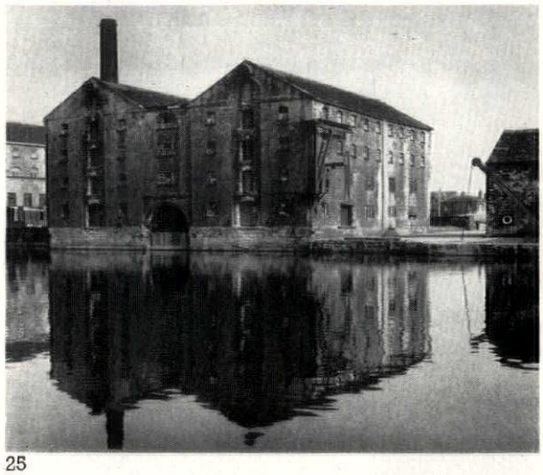
23

23, a warehouse - façade in white plaster at Wakefield, Yorks., beside the river, to which the small windows, variously shaped and oddly spaced, give unusual character and scale.



24, long yellow brick warehouse at Heybridge, Essex, built in 1863 by E. H. Bentall, MP, owner of the local ironworks. Inside it has cast-iron columns supporting timber beams.

25, canal-side warehouse at Wakefield, Yorks, with the traditional arched opening forming a covered loading dock (now partly blocked). 26, a detail showing one of the boldly modelled heavy iron tie-irons typical of these industrial warehouses.



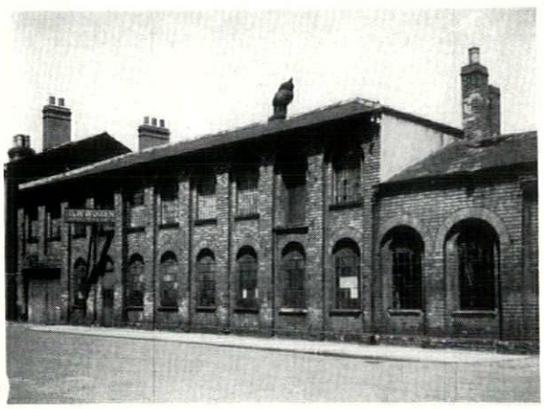
25



26

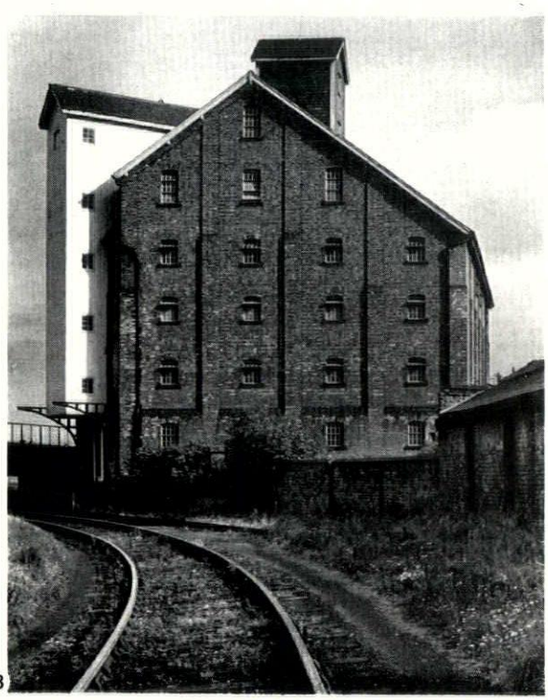
WAREHOUSES

The grimmer and more industrial warehouse, of which 27, at Lowestoft, shows the type at its simplest, is naturally best seen in the industrial north and is largely a Victorian product, belonging



27

as it does to the railway age, in the same way that the earlier warehouse belongs to the age of canal and river transport. 28, grain warehouse (Yeomans, Cherry and Curtis) at Burton-on-Trent; 29, the Victoria railway warehouses at Preston Docks; 30, at the junction of the Ashton and Rochdale canals, Manchester (just before the railway age—it was built in 1836 and has a double version of the arched loading dock); 31, bonded railway warehouse at Burton-on-Trent.



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30



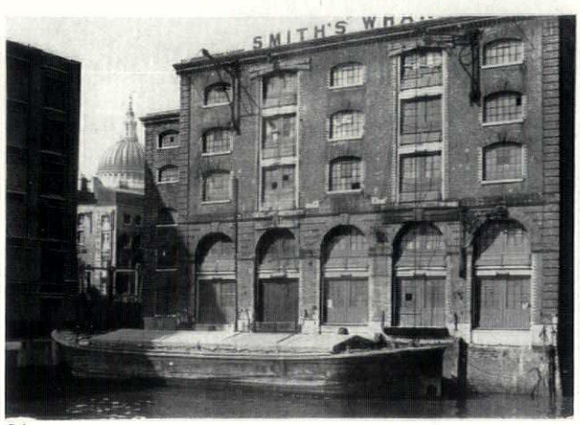
31



32



33



34

London has its own warehouse tradition. 32, a typical street-scene in a warehouse quarter: Cooper's Row, off Trinity Square in the northern part of the City. A 32 ft. high section of the old city wall (lower part Roman, upper part medieval) is incorporated in the wall of one of these warehouses. 33, a prewar photograph of the great warehouse (Chaplin's) that used to dominate the western side of Tower Hill, alongside All Hallows Church. It was destroyed by bombing and has been replaced by a shockingly genteel paved garden. 34, a Victorian example of the London riverside warehouse, at Queenhithe Dock, just above London Bridge, where since Roman times there has been an indentation in the river bank. In medieval times it rivalled Billingsgate (a similar indentation) in importance.

DOCKS



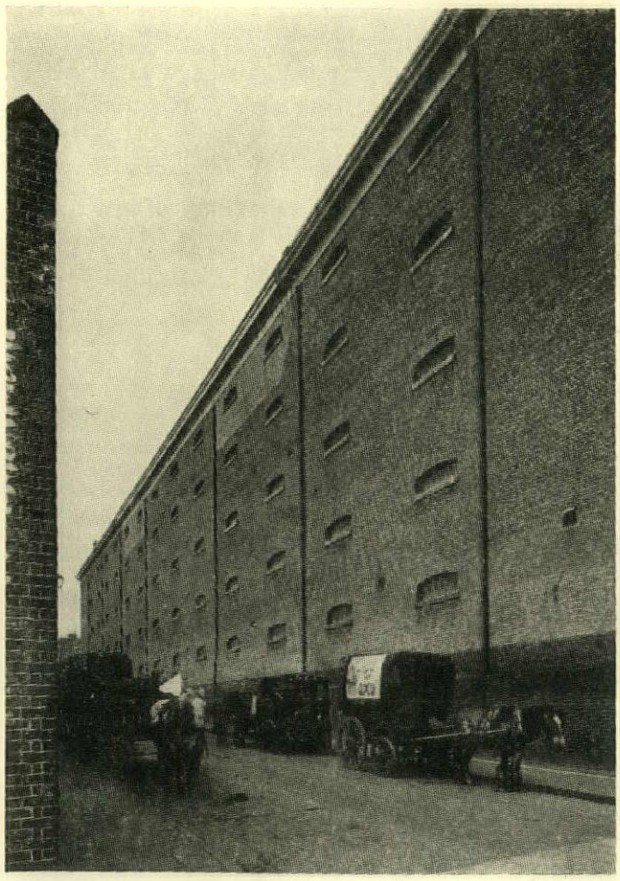
35

One of the finest surviving specimens of the early nineteenth-century enclosed dock, surrounded by warehouses: Albert Dock, Liverpool, finished in 1845. The buildings are red brick, standing on Doric columns of cast iron—see also page 21.

It is the more strictly architectural aspect of docks that is represented here—the ranges of tall warehouses that stand around the wharves and basins—though these reflect the powerful, forthright character of the surrounding engineering structures—the sea-walls and gates and piers and lighthouses that hark back to an older nautical tradition.

The dock warehouses illustrated are from Liverpool (which possesses the finest surviving range of nineteenth-century docks), London (where, as in many other places, the original dock buildings have been extensively altered and were severely damaged during the war, though splendid monumental groups and fragments of groups remain) and, representing the estuary port as distinct from the seaport, Gloucester, the terminal point of the Gloucester and Sharpness ship canal.

36, London Docks: a typical view along the high walls that line the narrow streets leading to the dock gates.



The building (all by private enterprise) of new enclosed wet docks like those at London and Liverpool (also at Bristol, Glasgow, Hull and other ports) with their attendant warehouses, was one of the major contributions made by the great engineers of the early nineteenth century, including such pioneers as Telford and Rennie, to the development of the industrial revolution. The main purpose of the enclosed docks was, of course, to enable ships to lie alongside unaffected by the rise and fall of the tide (the water inside being retained by heavy hinged iron and timber gates), but they were also enclosed on the land-ward side to stop looting and pilfering. This had become a serious problem by the end of the eighteenth century—in 1797 *the year's losses by looting at the port of London alone were estimated at half a million pounds. The traditional system of lighterage had also encouraged this and even the formation, in* 1798, *of the Thames police force did little to stop it.*

The West India merchants were the first to take drastic action, and in 1802 *built the West India Docks on the Isle of Dogs and surrounded them with an impregnable wall, with guardhouses at intervals for the use of troops. This was the first of the series of towering perimeter walls that give the docks area of London their air of mystery and their fortress-like character. The West India Docks were the work of Ralph Walker and John Rennie, and consisted of two parallel sections, for import and export, separated by an avenue of great brick*

*warehouses. John Summerson describes them as 'designed and constructed with taste and precision, and serving their purpose today as naturally as they did when the biggest ships in the dock were 750-tons indiamen.' He goes on to say: 'The extraordinary engineering grace of the scheme as a whole has, of course, been diminished by alterations, and one has to refer to Daniell's dramatic pictures and the steel-engraved plans of the period to appreciate the clean lines of the approach as it was first cut in the sodden earth of the Isle of Dogs, finished with masonry and cast-iron work of superlative quality.'**

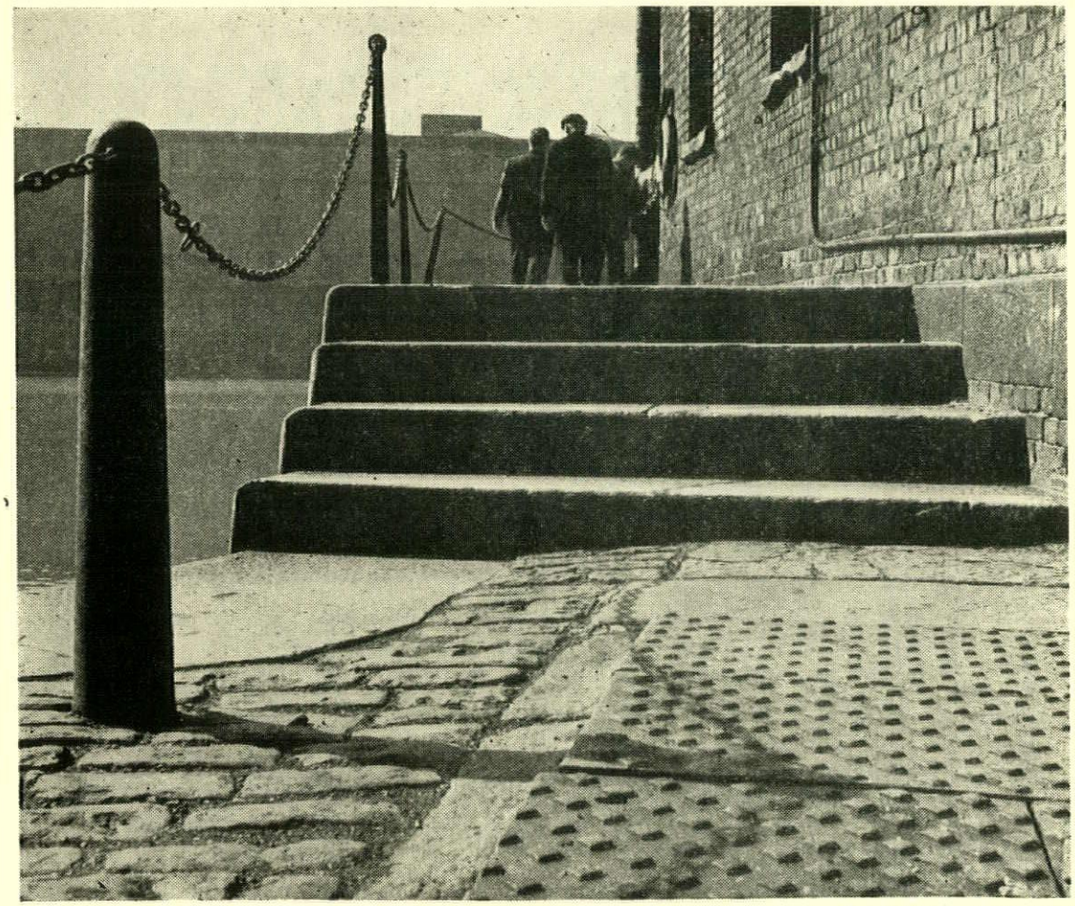


37, the office entrance at West India Dock, typical of the formal classical frontispieces which the engineers of the early nineteenth century (in this case John Rennie) provided as a foil to the great ranges of warehouses in which they were set.

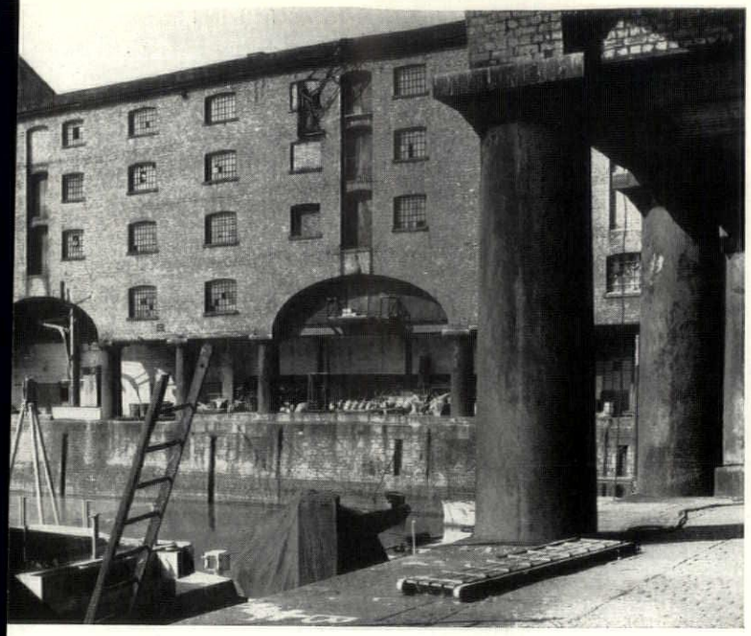
The beauties he discerns in the West India Docks are present in greater or less degree in the others that were built soon afterwards up and down the Thames: the London Docks at Wapping (also begun in 1802), *the Surrey Docks on the other side of the river (begun in* 1804) *and the East India Dock at Blackwall, (begun in* 1805) *where Rennie introduced cast-iron for the roofs. Twenty years later St. Katharine's Dock was added further up-river, alongside the Tower. Built by Telford and finished in* 1828, *its layout has suffered the least change though many of its buildings were damaged, and some destroyed, by bombing in* 1941. *It is the one most fully illustrated here, along with the Albert Dock at Liverpool, which was finished as late as* 1845.

Both have brick superstructures (the Albert Dock red and St. Katharine's yellow London stocks) standing on sturdy Greek doric columns of granite and cast-iron. At St. Katharine's, where the office had a Greek façade in stucco, designed by Philip Hardwick, now destroyed, the walls of the great warehouses are lightened by arched recesses in which the windows are set, adding rhythm and grace to the strength and dignity common to all these early dock buildings.

* *Georgian London*, 1945.



38, a study in materials, functionally used, at Albert Dock, Liverpool: granite setts, iron bollards, stone steps and steel covering plates. Each creates its characteristic texture, which is intensified by the effects of wear.





40

Albert Dock, Liverpool (see also page 18), where ranges of five-storey warehouses enclose the dock basin, was built in 1845 by Jesse Hartley, Liverpool dock surveyor from 1824–1860. They are of red brick with a ground-floor colonnade. The cast-iron columns are unevenly spaced, the wider spaces being bridged by a great elliptical arch. 41, below, is a close-up of one of the doorways in the south façade and illustrates, like the picture opposite, the simple robust detailing, based on the natural qualities of materials, that give these dock buildings their strength of character: in this case rounded granite buttresses to protect the door jambs, square stone loading step and iron grilles.



41

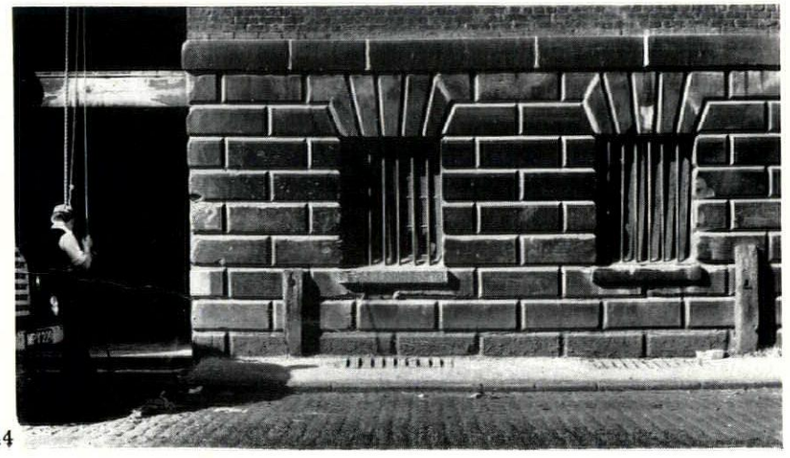


42

DOCKS



43



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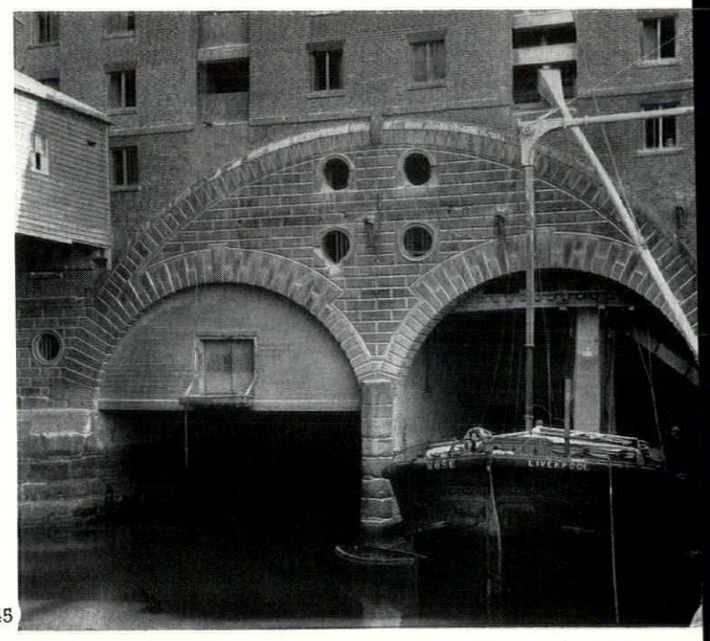
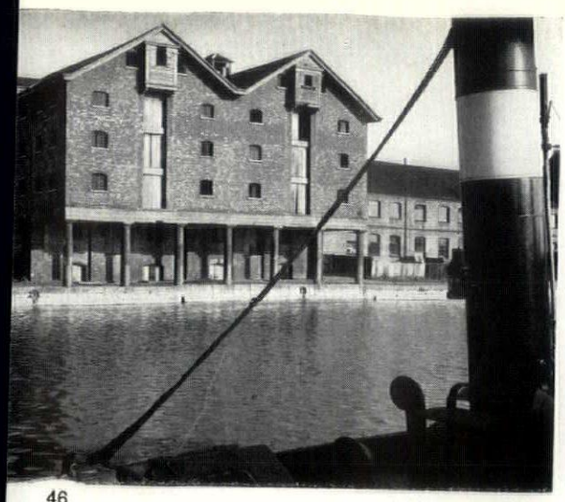


45

This tall pedimented grain warehouse at Liverpool docks is called Duke's warehouse, having been built in 1811 by the Duke of Bridgewater, to serve as a general terminal warehouse, after the construction of the Bridgewater Canal. 42 and 43, the landward side with its pattern of heavy moulded tie-irons. The rusticated base, 44, is given unusual liveliness by the fact that flour or meal, falling across it during many years, has whitened the upper surfaces of the recessed joints. 45 shows the water side of the same building, with its strange double arch within an arch. One loading-dock is seen in use (a chute leads down from the warehouse above); the other has had a mezzanine floor inserted in it.



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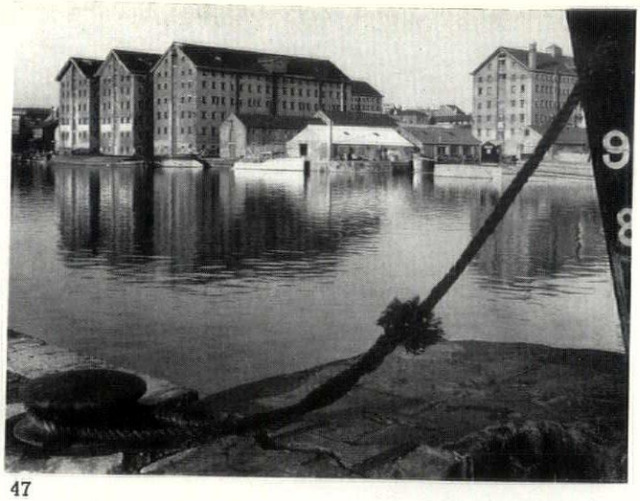

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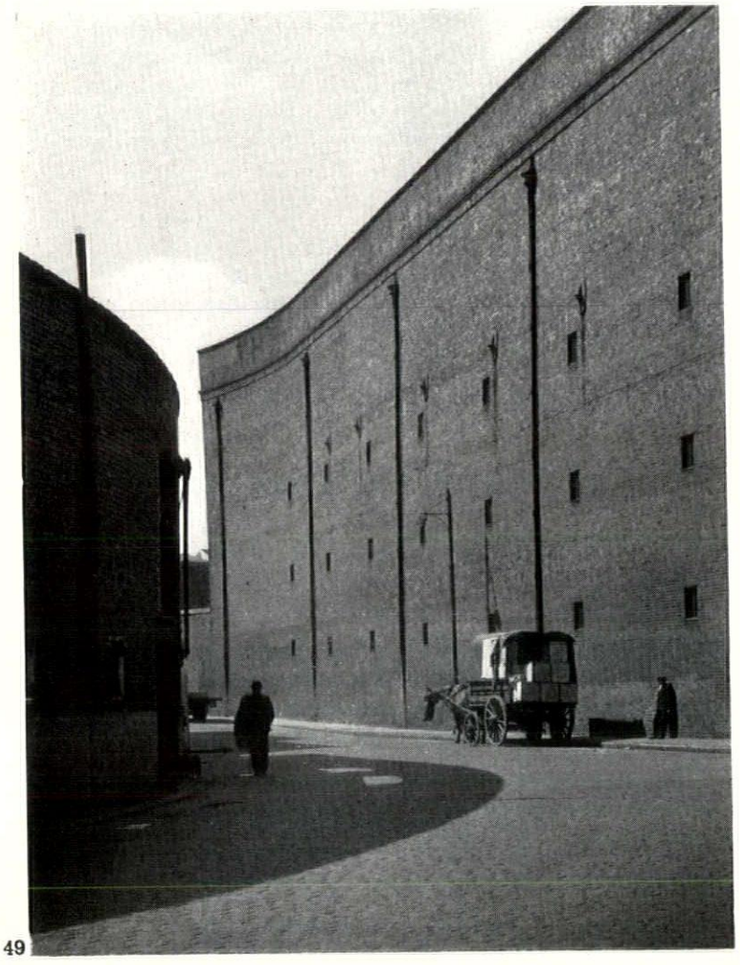
46, the Pillar Warehouse, Gloucester, built about 1849, with cast iron columns. 47 and 48, warehouses grouped round Gloucester docks, the terminus of the Gloucester and Sharpness ship canal. The buildings presumably date from the 1870s, as they closely resemble those at Sharpness (see page 9), the most obvious difference being that at Sharpness a lively pattern is created by the light-coloured shutters in the windows, whereas here the windows are dark but their painted lintols create a similar pattern.

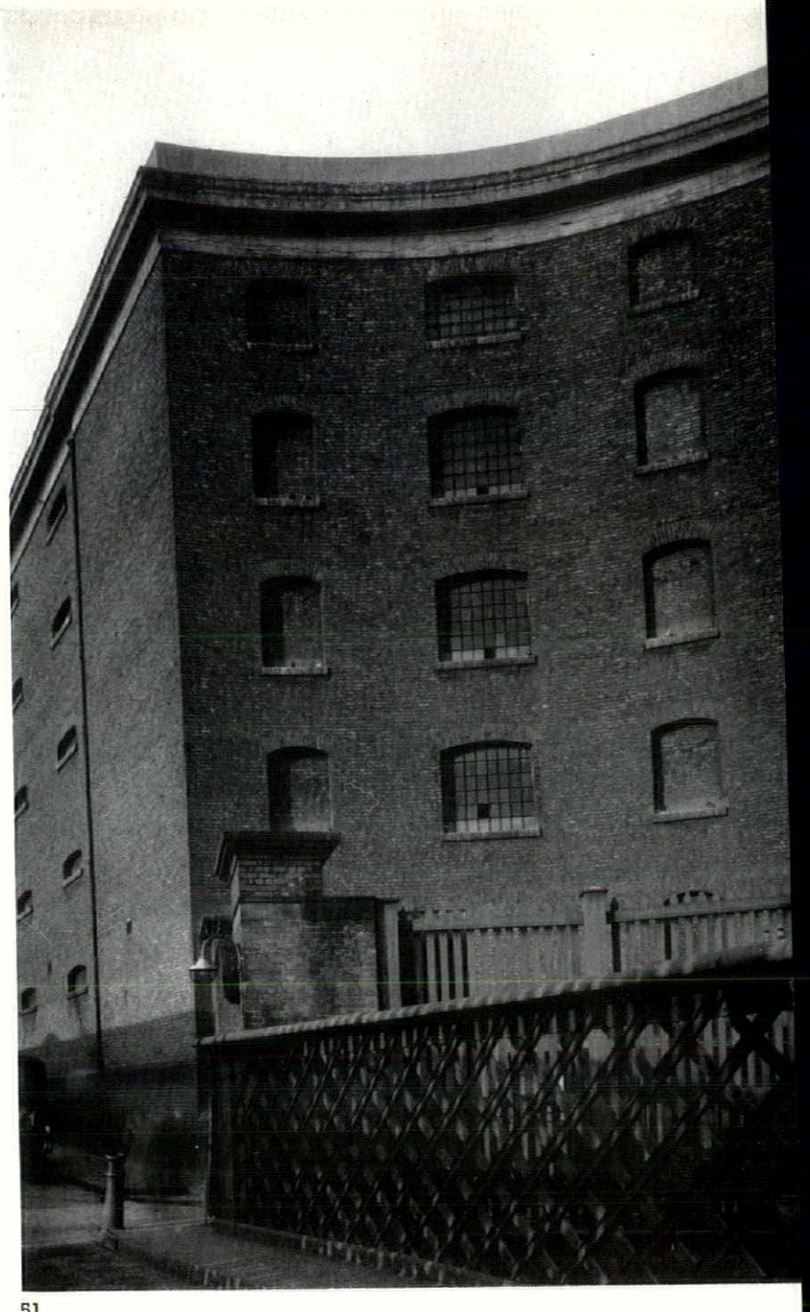


48



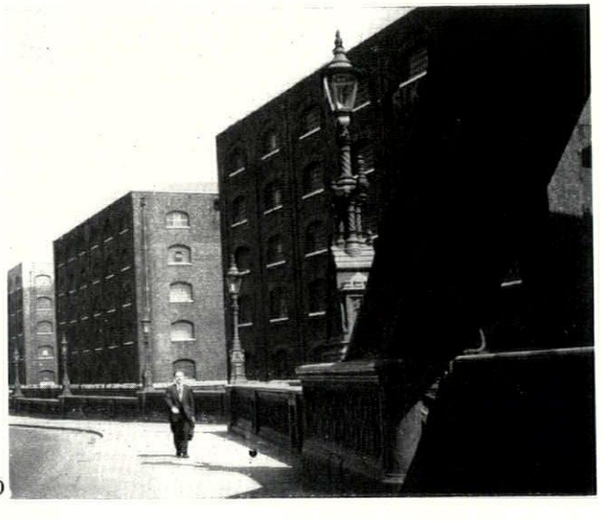
49

High brick walls between which the narrow paved roads wind their way are all the public sees of the older Thames-side docks and their surrounding warehouses. 49, London Dock at Wapping, begun in 1802.



51

Below and right, St. Katharine's Dock, built by Telford just downstream from the Tower and completed in 1828. 50, the row of square brick warehouses forming the west side of the dock, seen from the approach to Tower Bridge. 51, a corner of one of the warehouses from a lane to the north. 52, warehouse close-up showing the elegant arched window recesses.



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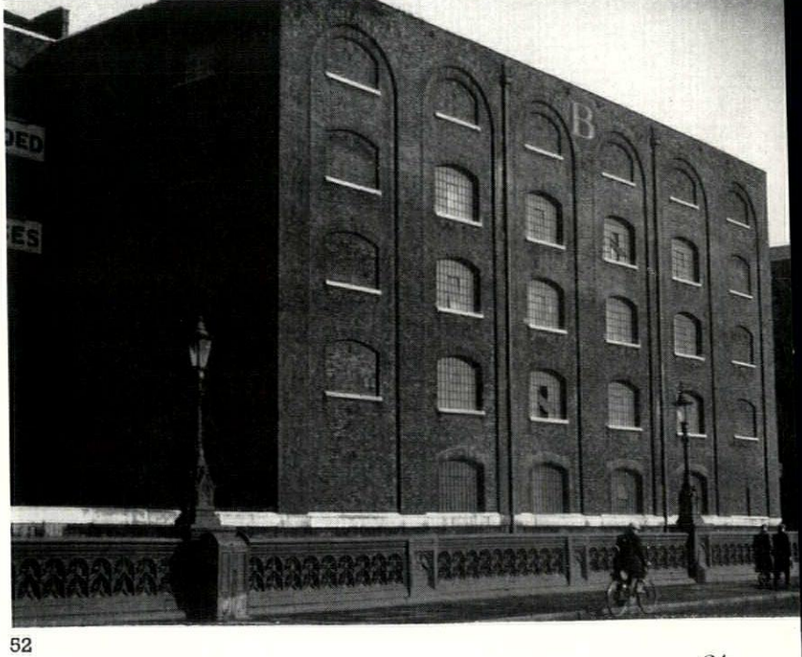
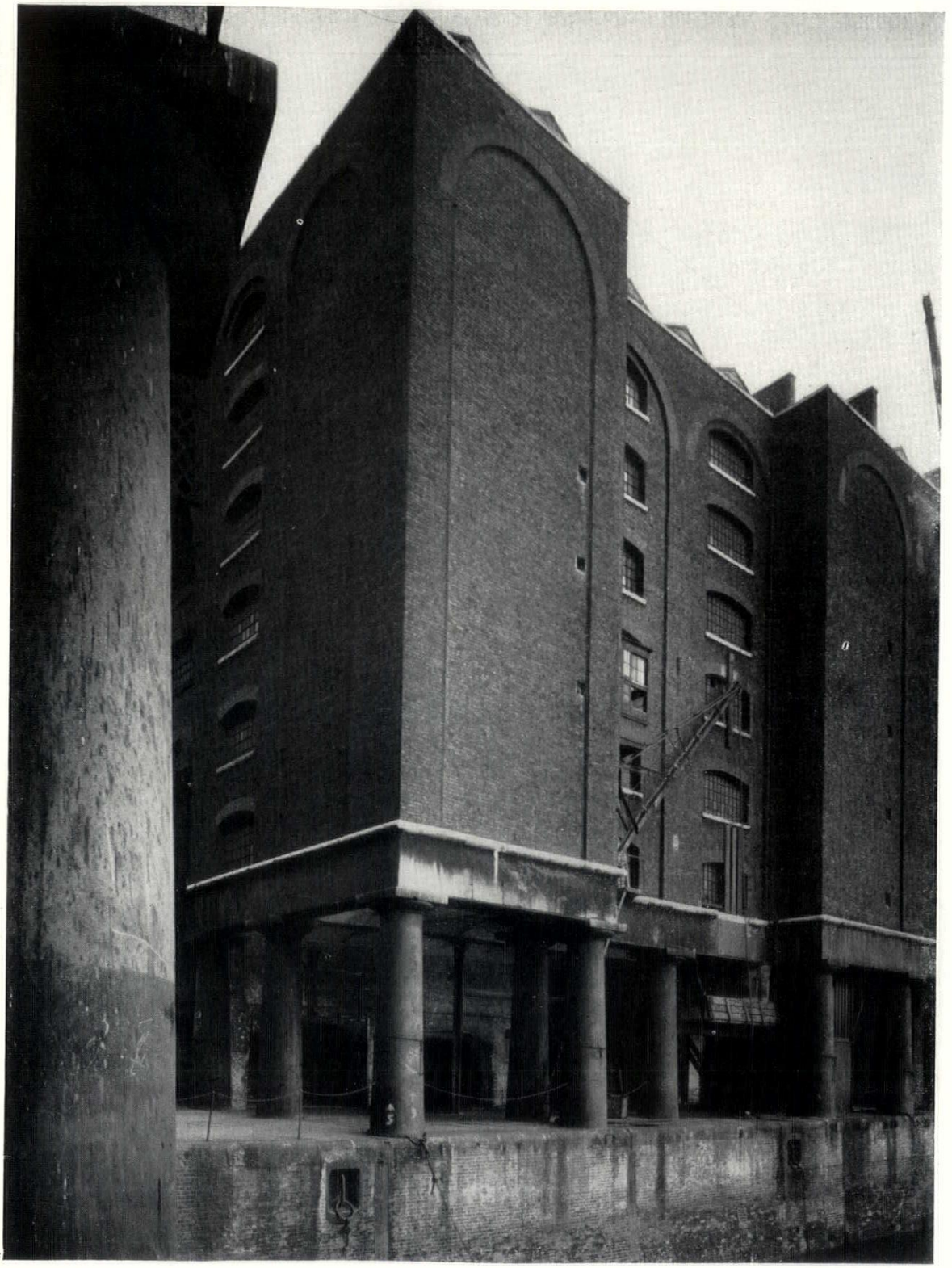


52



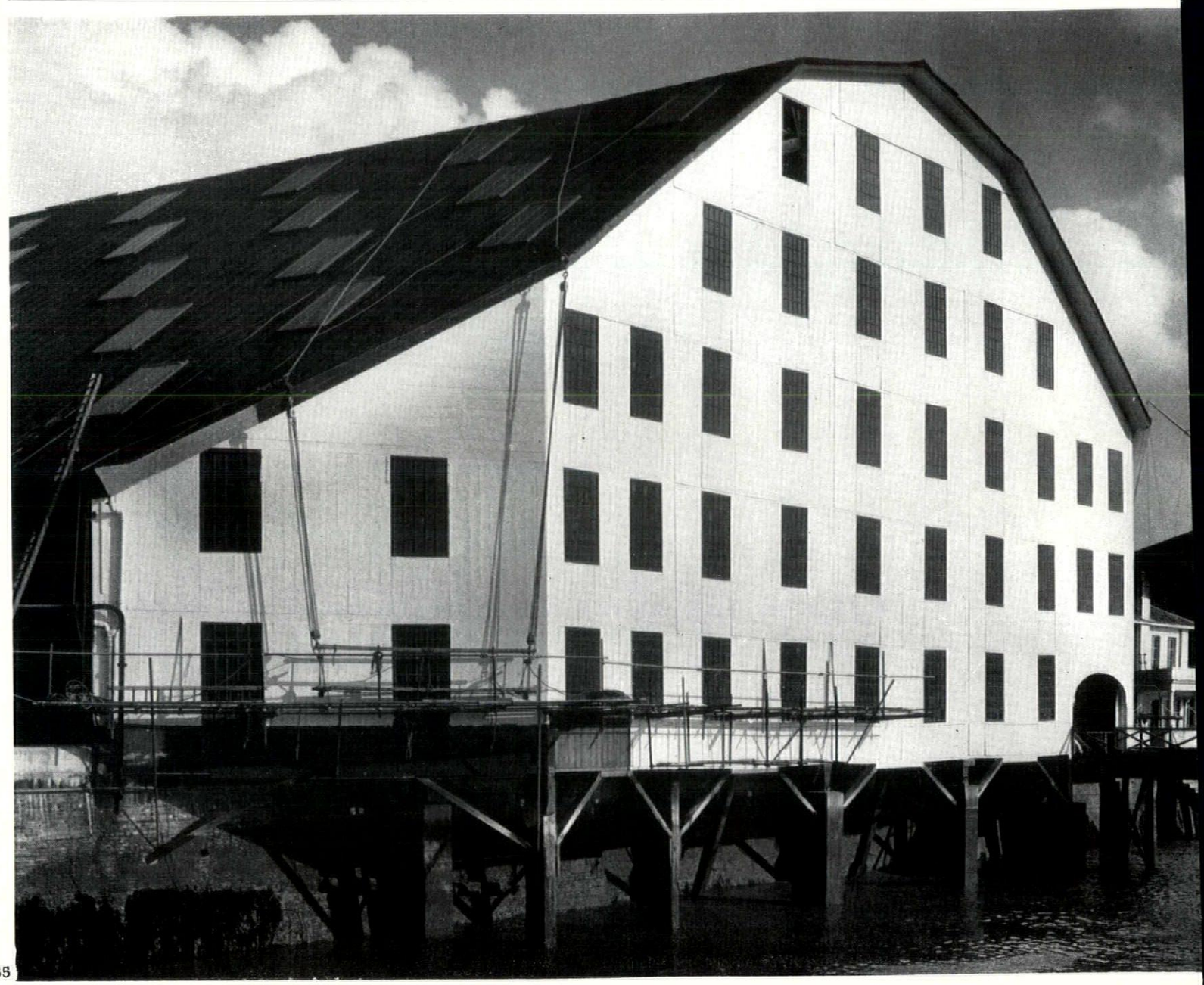
Inside St. Katharine's Dock. On this side the warehouses have a ground-floor colonnade with cast iron columns of the Greek doric order. The blank end walls to alternate bays of certain blocks, 54, give an impressive effect of scale.

53



54

NAVAL DOCKYARDS



55

No. 53 boat store, at Chatham Naval Dockyard, a vast timber-framed building (see interior view on page 30) and a splendid example of shipwrights' work. It was built in 1813, and it is likely that this end of the building, which faces the Medway, was originally open and that it was used for building and repairing men-of-war; in fact as a roofed-in dock—see the engraving on the cover of a similar building in use at Woolwich in 1841.

The complex of buildings known as a naval dockyard contains many facilities besides docks (wet and dry), though these were the basis of most dockyards' original creation. A dockyard (the term is now used only for naval, as distinct from mercantile, establishments) is succinctly defined in The Encyclopaedia Britannica *as 'an establishment which builds and equips warships, and has complete facilities for docking and repairing them. It supplies and perhaps manufactures armaments and ammunition, provides general and victualling stores and fuel and also contains training, medical and other establishments for the service of the personnel. It is, however, only a few of the large home dockyards in each country which are so completely equipped, and even in these only a small proportion of warships are now actually built. Government dockyards are now mainly used for fitting out and commissioning new ships and for the upkeep of the fleets.'*

The older British naval dockyards contain a medley of buildings of all periods from the seventeenth century onwards, serving (now or originally) such various purposes as stores, docks, workshops, offices, dwellings (including admirals' houses), barracks, foundries and ropewalks. They contain probably the most concentrated collection of buildings, representing at its best that functional tradition to which this issue is devoted, that exists anywhere. Nevertheless, their beauties are little known, since they are enclosed by high walls and not accessible to the public. The finest of them have been photographed for this issue (in many cases for the first time) by kind permission of the Admiralty.*

The four dockyards represented here are, in order of seniority, Portsmouth, Chatham, Sheerness and Plymouth (Devonport). The Royal Dockyard at Portsmouth was

56, two well established naval traditions: the functional and the baroque. Beside No. 1 boat slip at Devonport naval dockyard (with its original timber roof of 1772) stands the painted figurehead of King William IV, 1833.

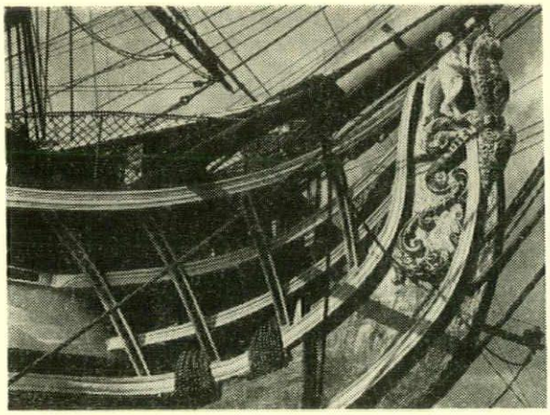


* Long low buildings in which strands of yarn were twisted (or 'laid') into ropes by men walking backwards with the strands round their waist, the other end being attached to a hook, and twisted them as they went. Rope-walks are still used, but the process has been mechanized.

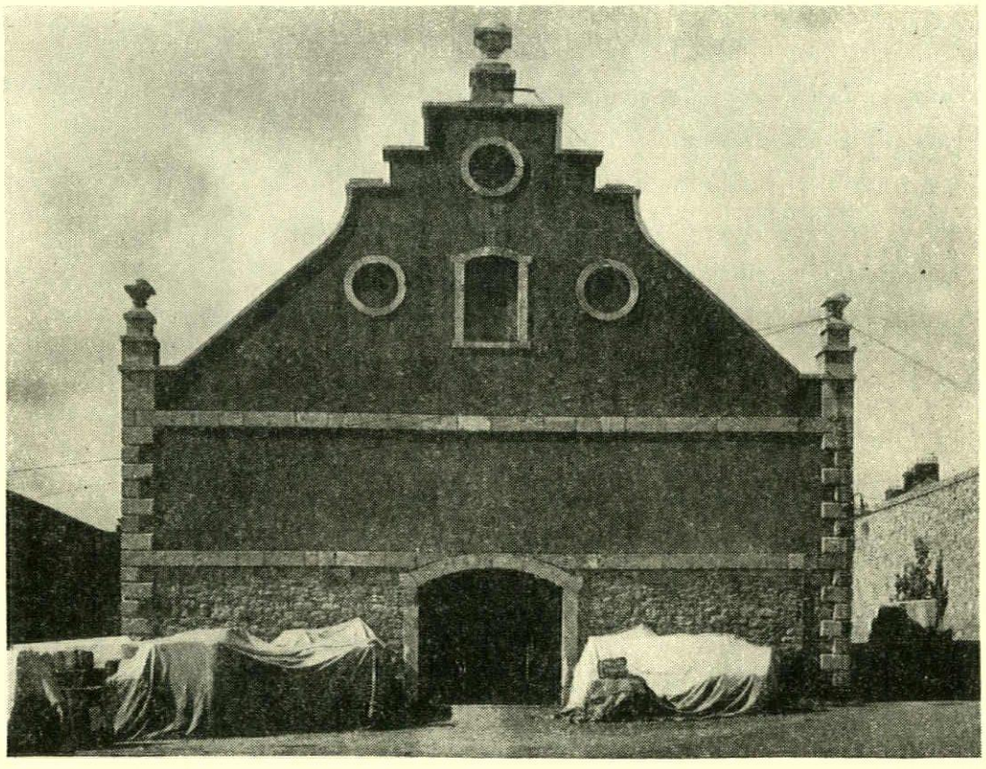
NAVAL DOCKYARDS

founded in 1540 *on a site where the first permanent dry dock in England had been built by Henry VII in* 1496— *it had primitive gates, staunched with clay, but was big enough to take the largest warship of that day, the 'Sovereign.' The dockyards at Chatham and Sheerness were begun by Queen Elizabeth I and greatly enlarged by Charles II. Although Plymouth had long been an important naval base, it did not become a royal dockyard until* 1689.

Besides their strict adherence to the functional tradition, the notable thing about these buildings is the equal virtuosity with which all the materials used are handled: brick, stone and timber as well as iron, which is employed precociously but unselfconsciously. It is natural, owing to the official nature of some of the buildings, that they should have been adorned in Georgian style with moulded gables, quoins, doorways and even somewhat formally laid out (for example, the Quadrangle building at Sheerness, with its square clock-tower, dominating a range of fine brick buildings planned by Rennie), but underlying this obedience to the sophisticated idiom of the time (and in many buildings achieving a satisfying architectural effect without any reference to it at all) is the older anonymous idiom of the shipwright and the marine engineer, who have introduced into this architecture that combination of toughness, neatness and economy of conception encountered in everything connected with the sea.



57, the carved stem of the Victory, berthed at Portsmouth, illustrates the craft of the shipwright—functional first and decorative where called for—whose qualities are echoed in the navy's shore establishments.



58, the decorative formality which adds a naive charm to the functional simplicity of some naval dockyard buildings: the south end of No. 27 stores, Devonport Naval Dockyard, built in 1769.



59 In Portsmouth Naval Dockyard. The figurehead of HMS Benbow (1813) stands in front of No. 5 Boathouse, a typical example of a shipwright's timber structure—timeless in style, though in fact built in 1882.

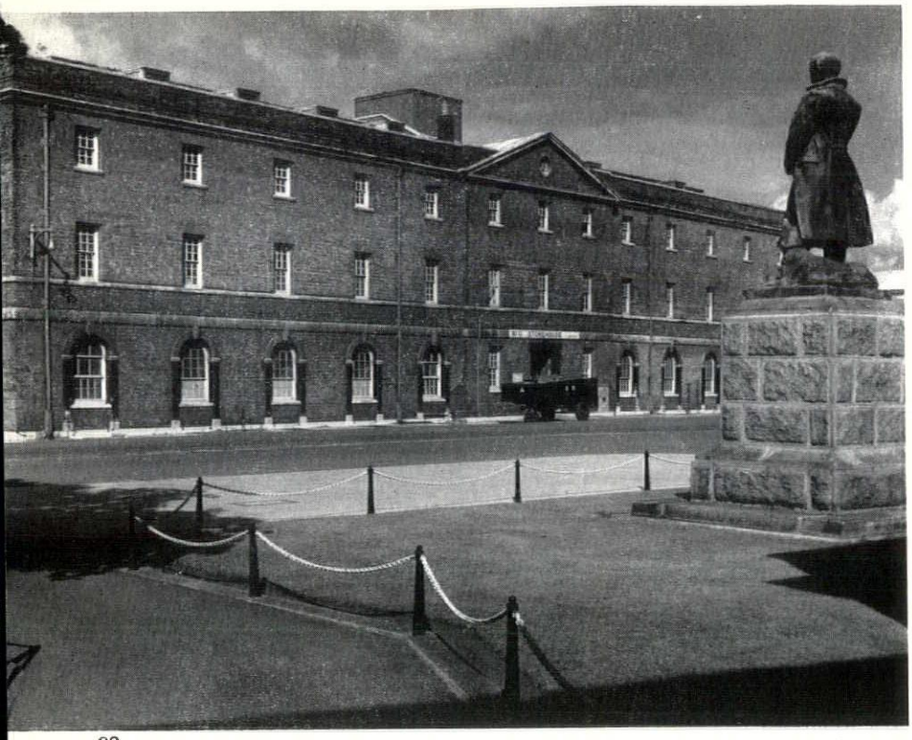


60



61

Portsmouth has a fine range of eighteenth-century red brick buildings, in spite of losing several by bombing in the war. 60, the central archway of No. 18 Storehouse. It was built in 1770 and was formerly a ropery, being nearly a quarter of a mile long. Note how the strength of the design is not destroyed by the blocking up of one archway or the casual arrangement of windows, which have suffered much alteration. 61, the twin-gabled end of the same building (also with an uneven arrangement of windows, some being blocked up). The heavy timber floors inside are rotted with beetle and are shortly to be replaced by reinforced concrete.



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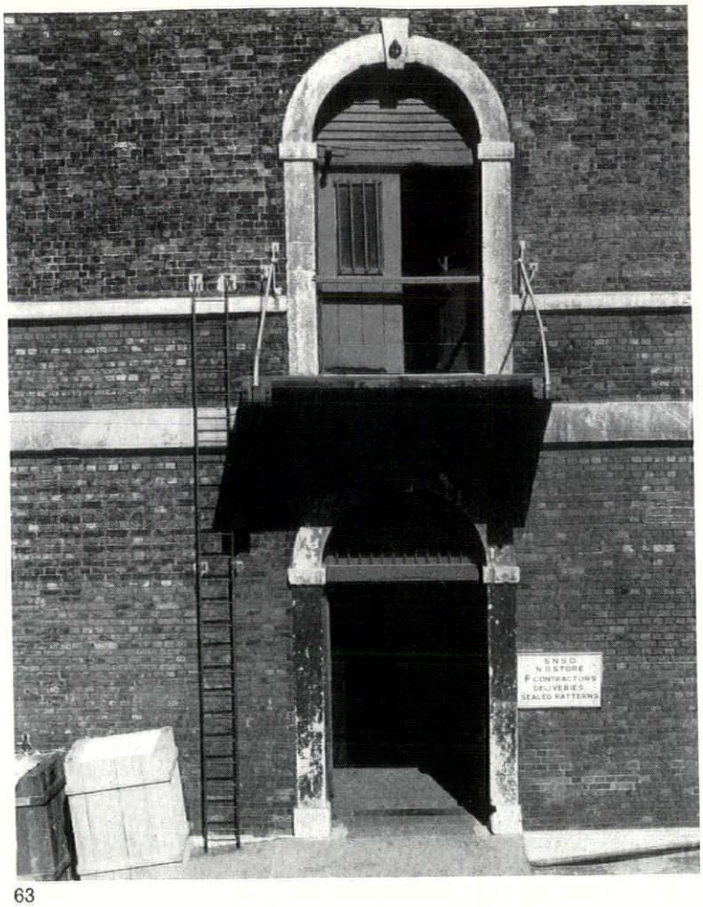
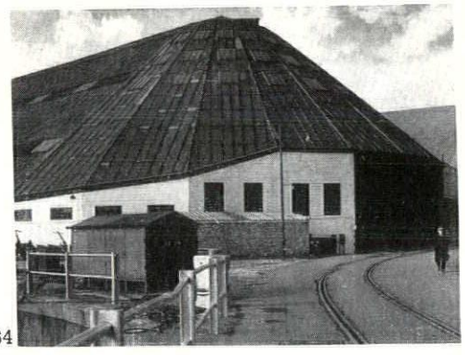


63

Dockyard architecture in its more formal aspect: 62, No. 11 storehouse at Portsmouth, built in 1778 (to the right, statue of Capt. Scott). The brick walls are 3 ft. thick at the bottom and 2 ft. 3 in. above. The floors are of timber. 63, the side doors of the same building, with plain stone trim.



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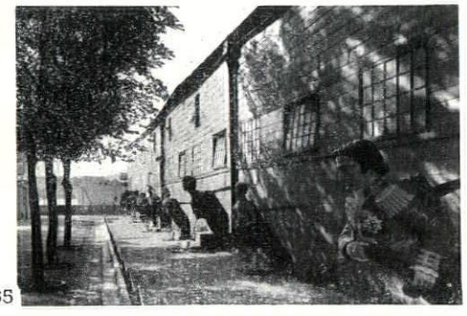
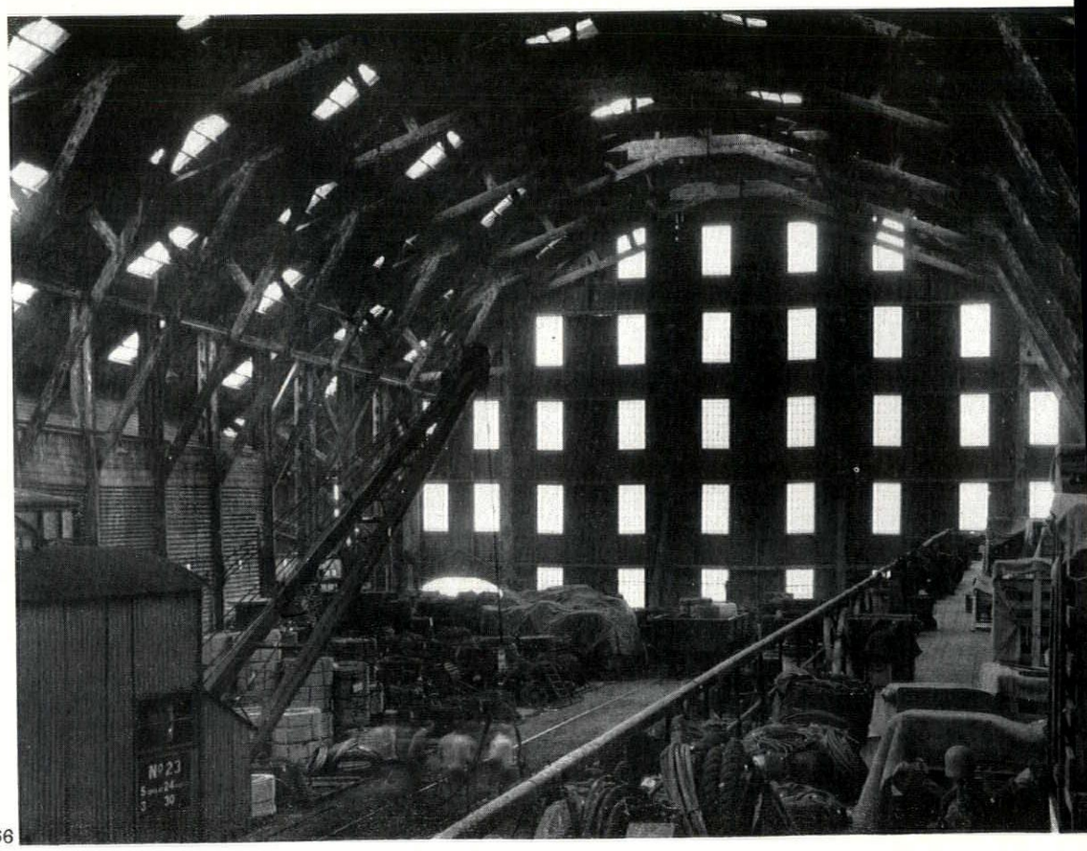


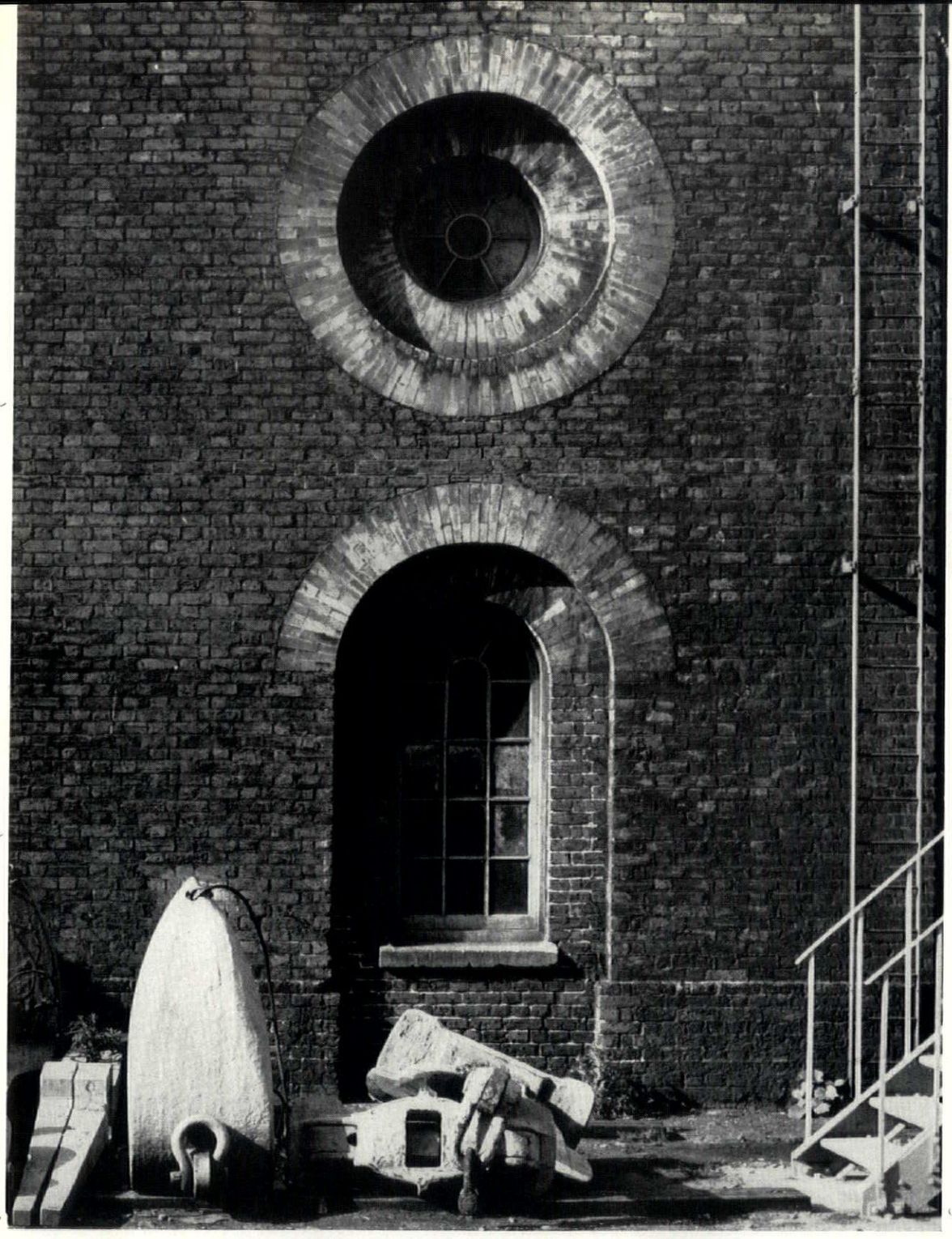
65

64, rear view of No. 60 boat store, Chatham naval dockyard, built in 1837. 65, side view of No. 53 boat store (also at Chatham—see page 26 for front view from the Medway). It was built in 1813. 66, interior of the same building showing the original timber roof.



66

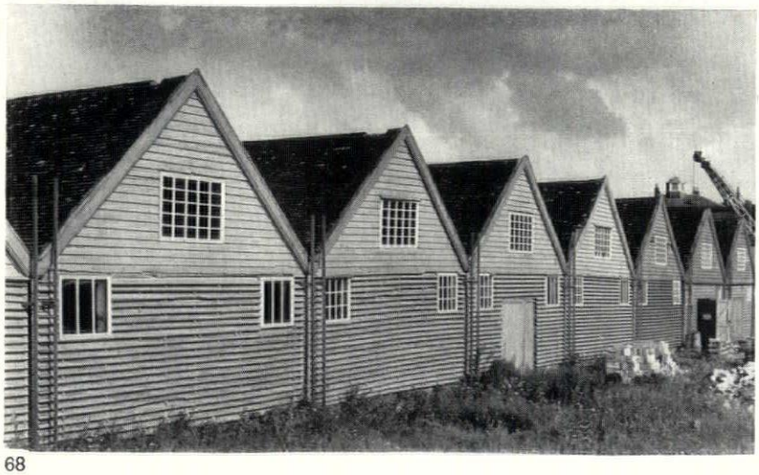
NAVAL DOCKYARDS



67

Sheerness Naval Dockyard uses yellow brick, often to produce bold and vigorous geometrical effects which show the functional tradition at its best. 67, the chain testing house of 1856. The dockyard was planned by Sir John Rennie, assisted by Joseph Widbey, Master-Attendant of Woolwich Dockyard, but the designs of the main brick buildings are thought to be the work of Edward Holl, civil architect to the Admiralty, and his successor George Ledwell Taylor, who also designed buildings at Chatham and Woolwich.

68 (below left), timber storehouses at Chatham, built in 1809, with louvred walls for ventilation and solid weatherboarding in the gables only. They are painted grey with white window frames and have tiled roofs. 69, the Clock Tower office at Chatham. Built in 1772, it was formerly a moulding house and the Victory's lines were laid out in the mould loft at the top. It is of red brick with timber floors and a tiled roof.



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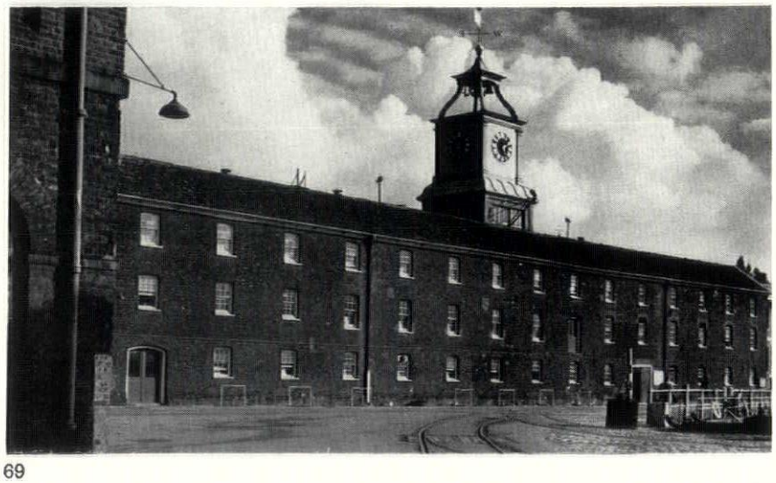

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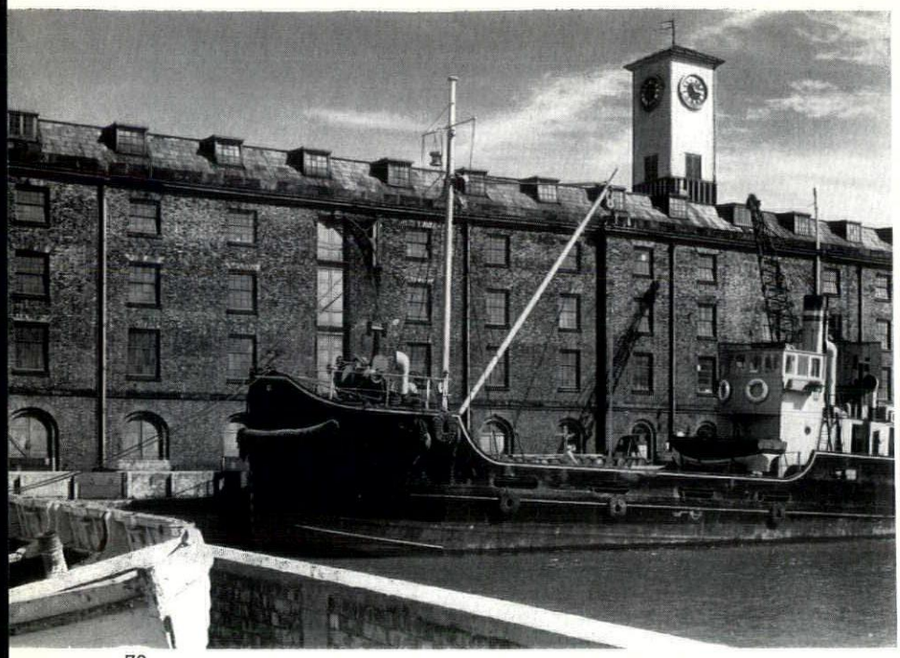

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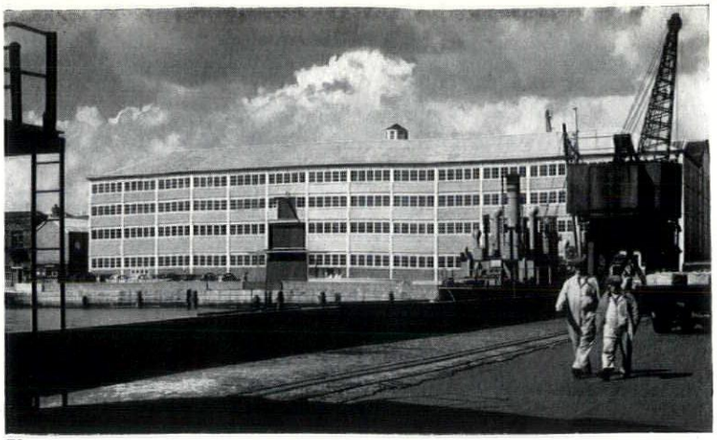
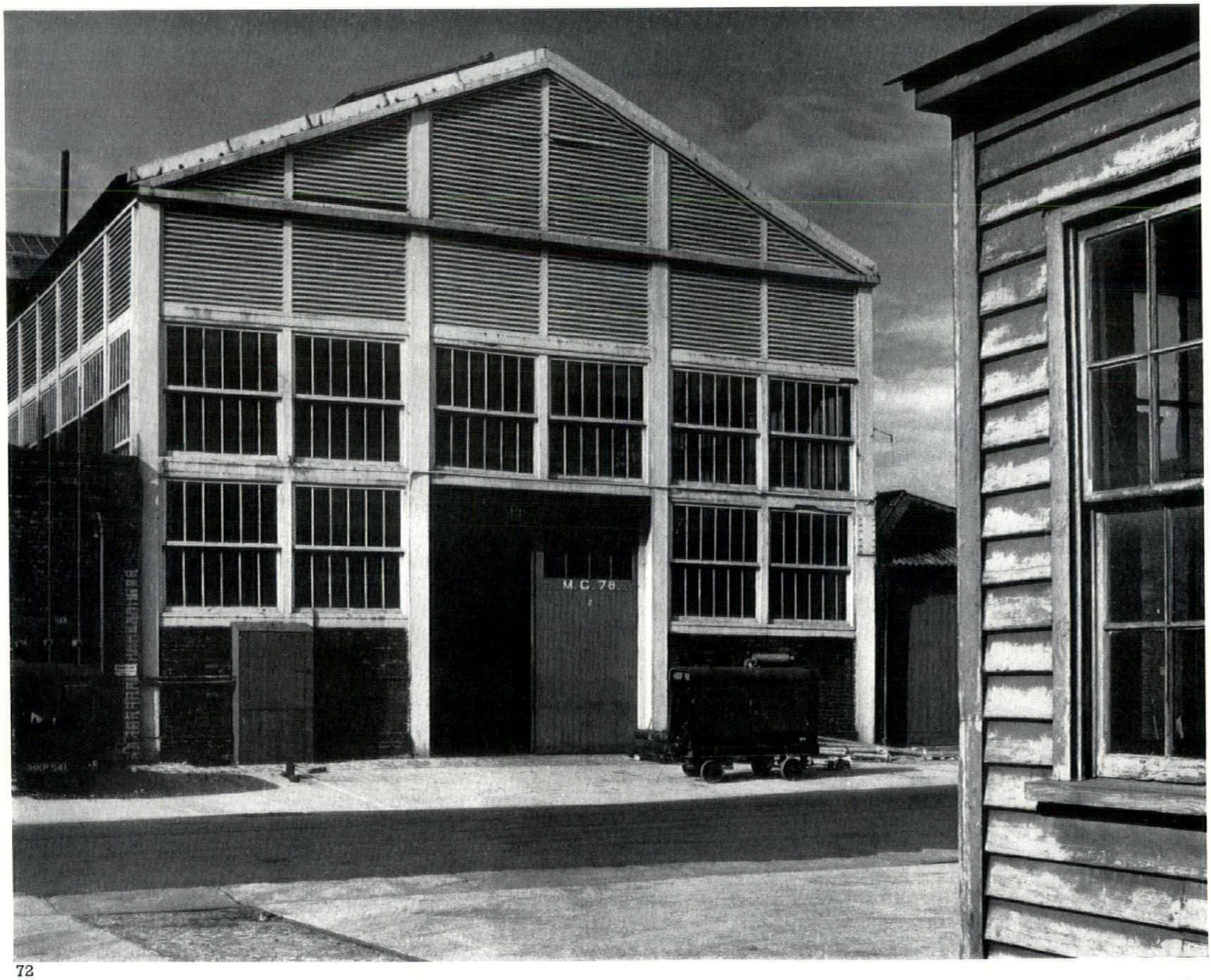


71

70, the Quadrangle at Sheerness, a square building of 1829 in yellow stock brick, containing stores and workshops. Its central courtyard is now covered over. Inside it has cast-iron columns and floor beams, in two rows to each wing. 71, a boat house of 1861. Its functionally expressed cast-iron frame makes it a prototype of many modern frame buildings. The original slate roof has been replaced by asbestos.

72, below, another iron-framed building at Sheerness: a smithy, erected in 1858.



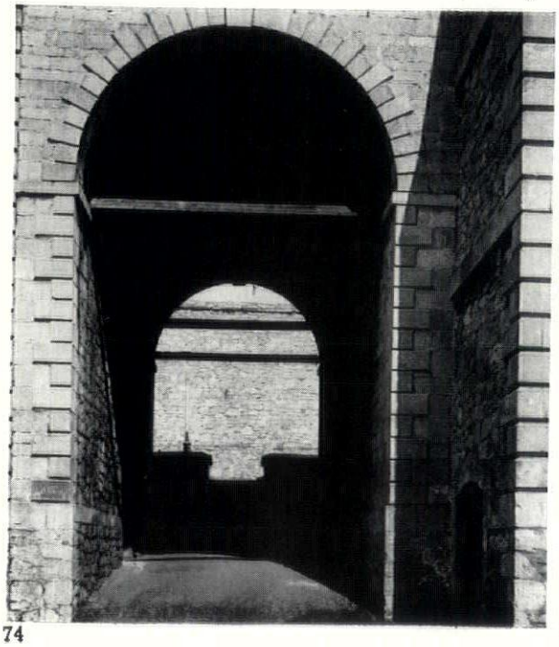
72



73

NAVAL DOCKYARDS

73, Devonport: Slip No. 1 in the Naval Dockyard, similar in style to those already illustrated at Chatham (pages 26 and 30), but this is still open at the end. It was built in 1772 and has its original timber roof.



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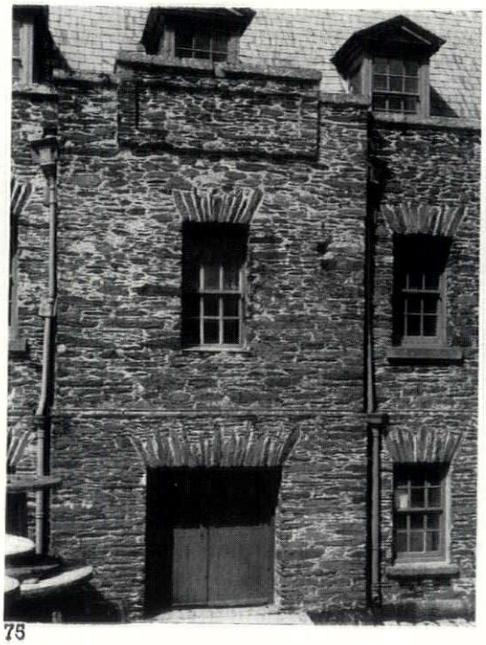

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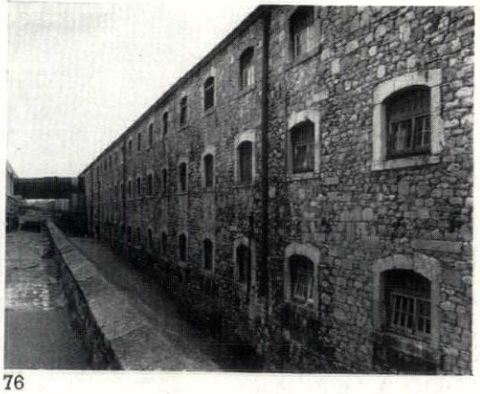
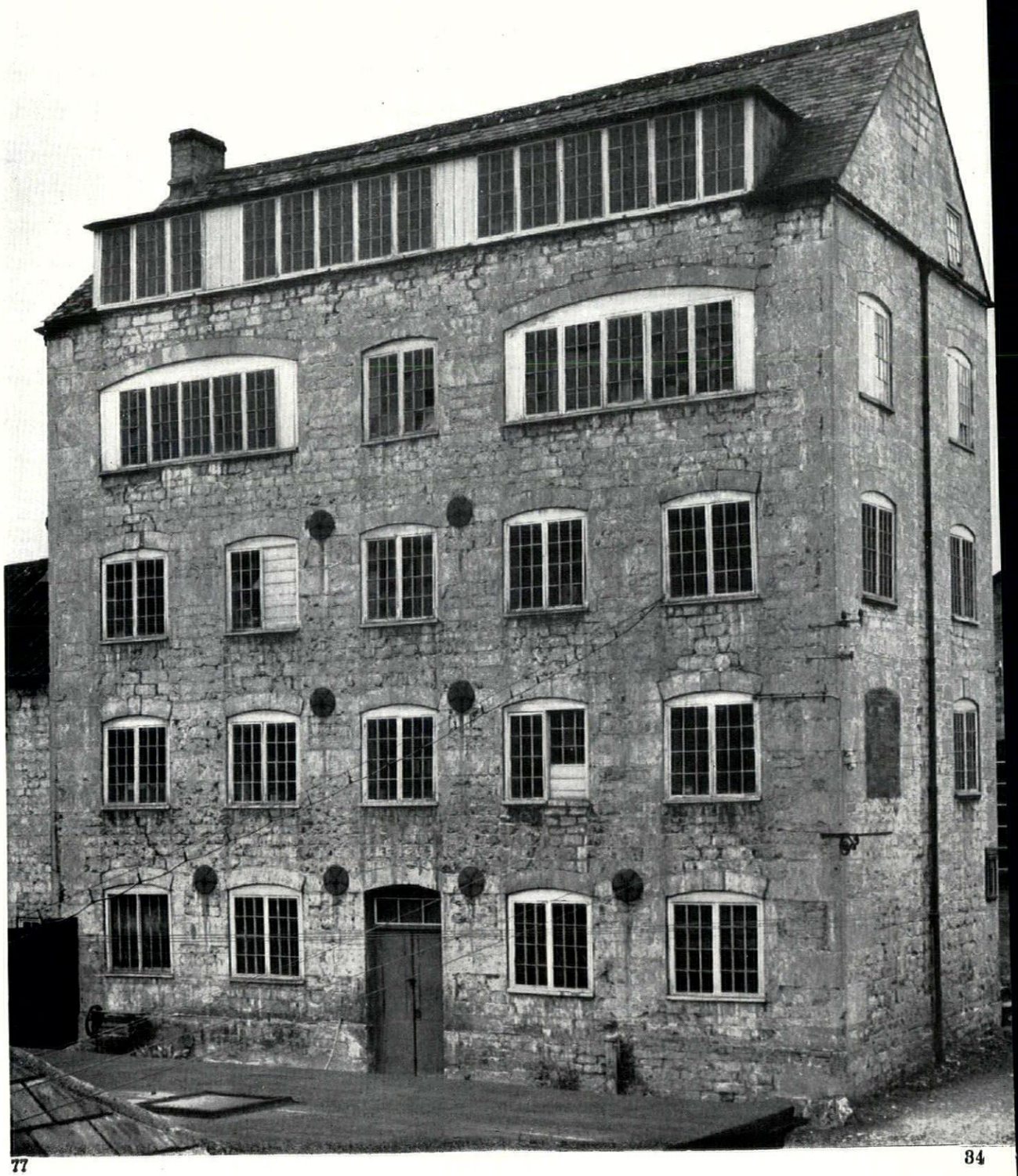


76

74, the central archway of No. 27 Store at Devonport Naval Dockyard, built in 1769. 75, the rough stone-built No. 4 Store at Devonport, in Marine Yard; one of a row of similar buildings, put up as barracks in 1723. 76, the East Ropery, Devonport (now No. 14 Store), built in 1814, nearly ¼-mile long. The north end was destroyed by bombing.

TEXTILE FACTORIES



The first textile mills were built where water-power was at hand. A tall stone woollen mill at Nailsworth, near Stroud, Gloucestershire, with the long 'weavers' windows' on the upper floor and a symmetrical pattern of tie-irons. It is now Bentley's piano factory.

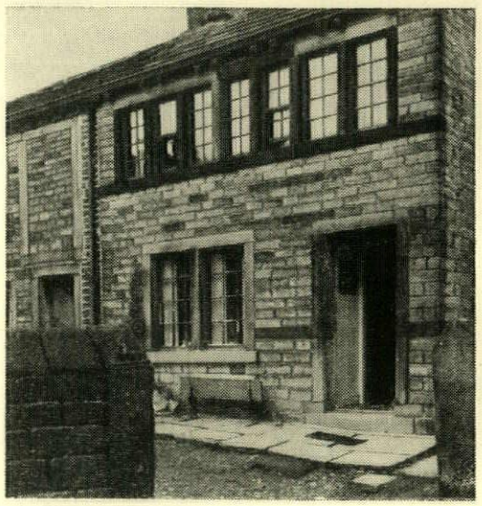
Most of the buildings shown under this heading are (or were when they were built) what are commonly known as textile mills, but the word 'mill' applied to such buildings is misleading. They were factories for spinning and weaving wool, cotton, flax or silk, and because they were originally driven by water-power like the older water-mills for grinding corn (Latin: molere, *to grind) they borrowed the name. Water-mills are shown in the next section.*

Before textile mills were established, spinning and weaving were carried out by small firms, and much of the work was done by families and individuals in their own cottages. From this practice derive the so-called weavers' windows—long horizontally linked windows lighting top-storey workshops in weavers' dwellings. They can still be seen in many parts of the country, for example the silk towns of Macclesfield and Leek, and the tradition is continued in the horizontal window found in many types of industrial buildings.

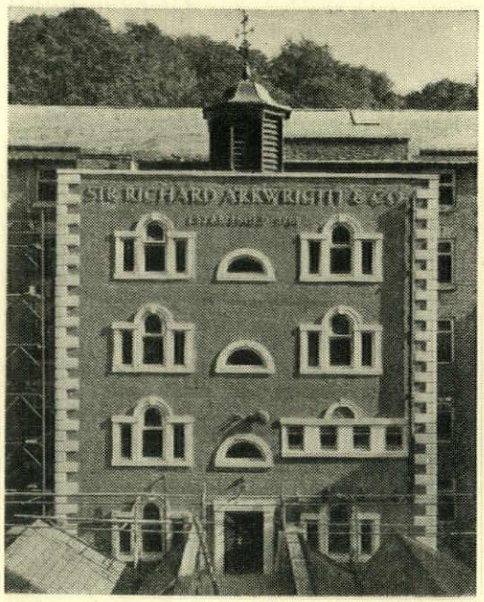
The big change came with the inventions of Arkwright, Strutt and the others responsible for the mechanization of cotton-spinning. The demand thereafter was for concentrated labour and large sources of power. Hence the number of textile factories dating from the late eighteenth and early nineteenth centuries, built not in towns but in (sometimes remote) valleys where water-power was available; for example, the Stroud valley in Gloucestershire for woollen-mills (close to the source of raw material, the sheep-farms of the Cotswolds) and the Derbyshire and Lancashire dales for cotton-mills (where the damp air was suitable for the spinning process). The earlier cotton factories were spinning-mills only, weaving remaining a home industry. With the spread of the power-loom in the 1830*'s and* 1840*'s spinning and weaving were combined in the same mill.*

These early factories are described by Prof. Turpin Bannister as 'rectangular masonry boxes with timber beams and posts supporting the several floors.' 'John Lombe's silk mill,' he goes on, 'built at Derby,* 1718-22, *set the pattern. This building was* 39 *feet by* 110 *feet, with five storeys plus the "underworks," furnishing eight large apartments lit by* 468 *windows. An* 18*-foot-diameter water-wheel activated* 26,000 *machine-wheels. Arkwright, Strutt and Need's mill at Cromford,* 1771, *Arkwright and Strutt's mill at Belper,* 1776, *and Arkwright and David Dale's mill at New Lanark, south-east of Glasgow,* 1784, *were*

* In his article 'The First Iron-Framed Buildings,' THE ARCHITECTURAL REVIEW, April, 1950.

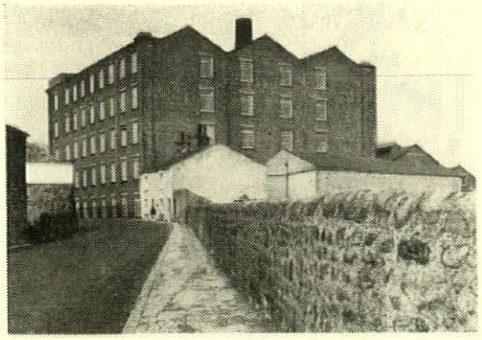


78, 'weaver's window' in a cottage at Golcar, Yorks, a functional element repeated in many subsequent industrial buildings.



79, Arkwright's Masson Mill at Cromford, Derbyshire, built in 1783, not far from his first mill of 1771. Besides being of historic interest it illustrates the naive version of Georgian architecture with which the builders of the earliest textile factories sometimes elaborated their functional structures. It is now part of the English Sewing Cotton Co.'s factory—the inheritors of the Arkwright business.

TEXTILE FACTORIES



80, the persistence of the Georgian tradition, especially in the proportions and design of windows—though the smallness of windowpanes may have been functionally justified as preventing glare inside. Galgate Silk Mills, Lancashire, were built as late as 1860 (see also page 42 for another example of 1853: the Wellington Mills at Leek). The Galgate mill is now used by William Thompson and Co., and is the oldest working silk-spinning enterprise in the country.

typical solutions of this new architectural problem, but their timber-framed multi-storey system had descended through the centuries from Roman tenements, Hanseatic warehouses and metropolitan lofts.'

And they could not for long satisfy the needs of a scientifically inquisitive age, intent on progress; especially in this instance progress in the direction of factory buildings that would be not only capacious and economical but fire-resistant. For mills and warehouses crammed with valuable goods were constantly burned down (often as a result of the friction of the primitive machinery), and the search for fire-proof building methods was stimulated especially by the destruction by fire in 1791 *of the Albion flour-mills in London (built by Rennie and Wyatt), said to be the most up-to-date industrial building in Europe. This search resulted in the evolution of the iron frame and led eventually to the great steel-framed structures of today.*

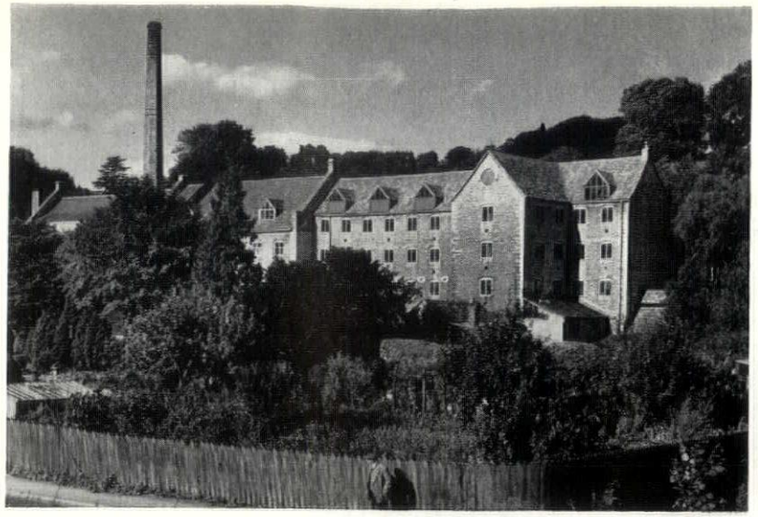
That is what gives these early textile mills a special historic significance, over and above the great contribution they make to the enlargement of the functional tradition with which these pages are more particularly concerned. The pioneer example of iron frame construction was for long thought to be Strutt's own six-storey calico mill at Derby, begun in 1792 *and having brick segmental vaults spanning across its* 30 *ft. width and supported by beams resting on cast-iron columns. But Prof. Skempton has recently shown† that timber beams were used, so the calico mill (which has now disappeared) cannot be called an iron-framed building. His candidate for the first multi-storey building with both beams and columns of iron is a flax-mill at Shrewsbury designed by Charles Bage and begun in* 1796. *Bage was helped by the designer of Strutt's Derby mill and the Shrewsbury building has similar brick arch floors and cruciform iron columns.*

After the 1790*'s iron-framed structures developed very rapidly, but their main architectural effect is internal, providing spacious machine-halls interrupted only by the slenderest columns. Externally these massive early factory buildings display the same characteristics—the same simple response to problems boldly met—that we have seen in the warehouses and other buildings already illustrated. Walls are for the most part of local stone (the river valleys where water-power was found lie within the limestone belt), though not always,‡ but brick was more freely used later. Timber was used but little, presumably because of the fire hazard.*

As in the other types of early industrial building, Georgian features of various kinds, as well as Georgian proportions, appear almost everywhere, due no doubt to the employment of local masons and builders with inherited traditions; and it is remarkable how long the traditions persist. Many of the buildings have been drastically altered, for water-power gave way to steam-power, involving the construction of chimneys and the like, and then many of the big mills left their rural valleys to congregate in towns where reserves of labour were available, and where they were nearer to the new railways, to sources of fuel and to outlets for their products. Many of the early textile mills were converted to other uses, but most retain a great deal of their forceful architectural character, especially those in remote rural areas, where it is so surprising to come upon them.

† In a paper to the Newcomen Society, December, 1956. An article on his investigations, by Prof. Skempton, will appear in a future issue of THE ARCHITECTURAL REVIEW.

‡ The most famous of the Stroud valley mills, the Stanley Mill of 1813 (already illustrated in the REVIEW for February, 1943) has more red brick than stone—see frontispiece. It also has very sophisticated interior iron work compared with that of only twenty years earlier.



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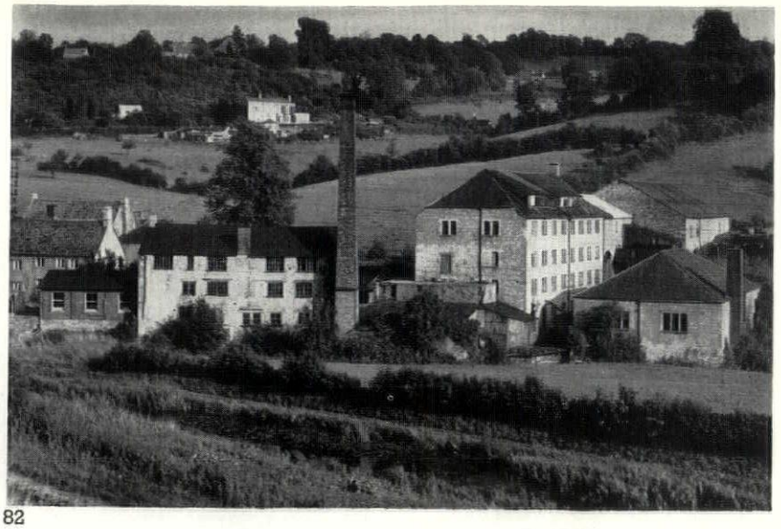
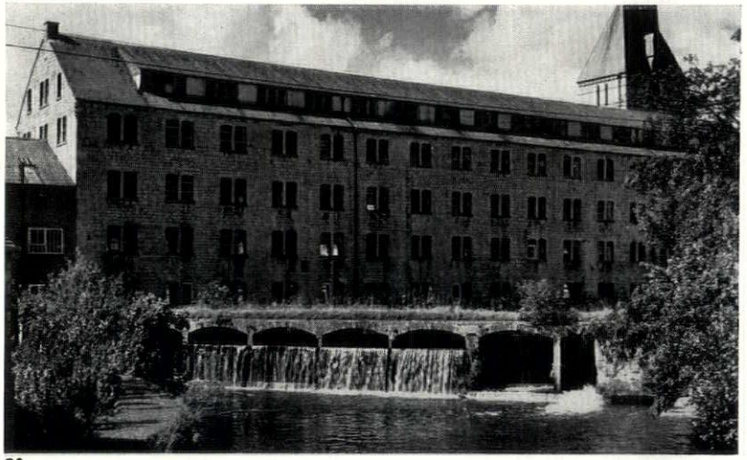


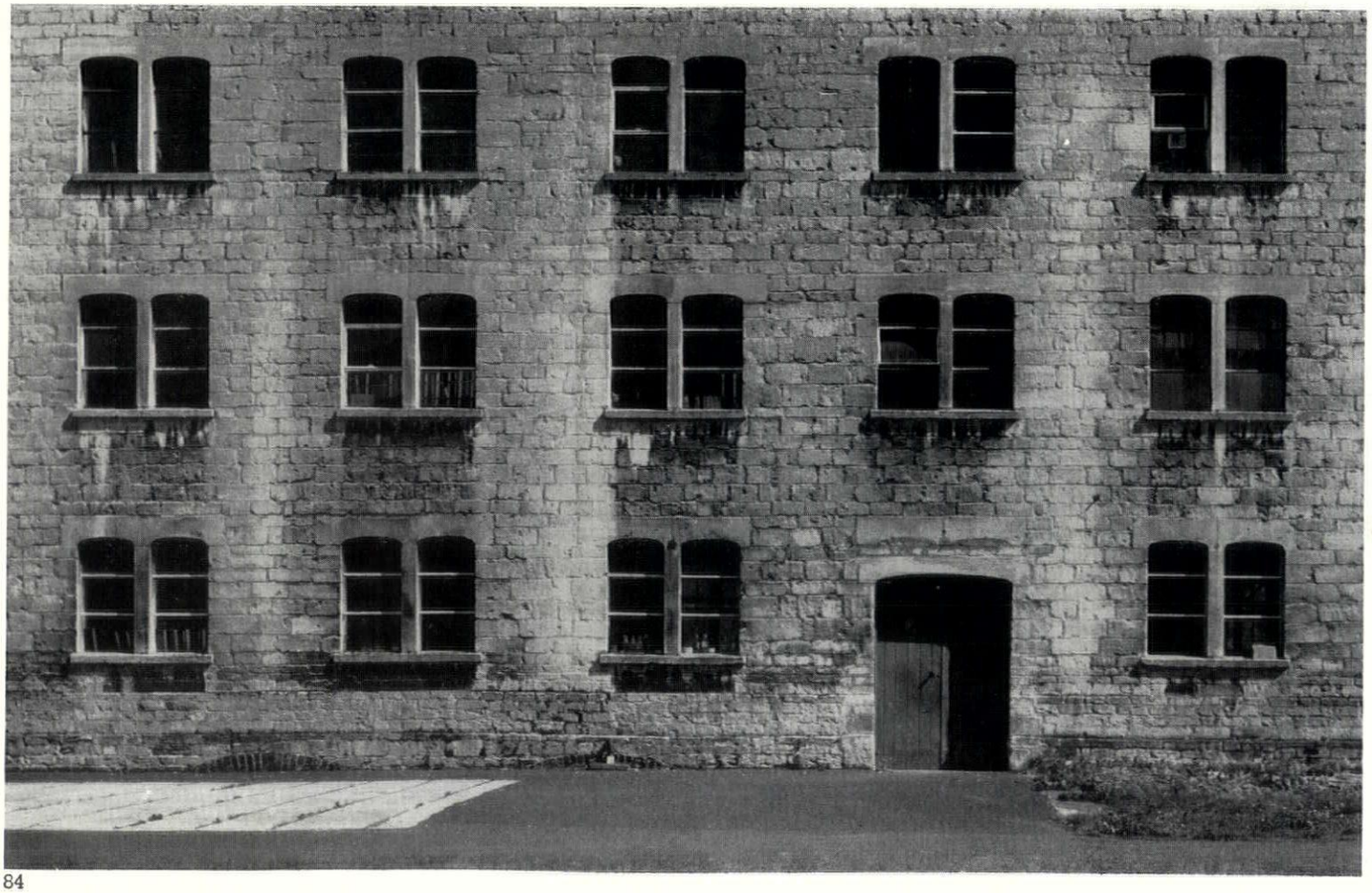
82

Two typical stone-built Gloucestershire woollen mills, with chimneys added later, indicating the change from water to steam power. 81, Dunkirk Mills, Nailsworth, the mill described in *John Halifax, Gentleman*. It is composed of three parts, dated (left to right in photograph) 1818, 1798 (the centre part by the millstream) and 1827. They are now used separately by three firms: Walker's Sticks, Kosiclad and Wright, Bindley and Gell of Birmingham, makers of umbrella fittings. 82, in the Stroud valley, which is rich in similar mills: in the foreground, the derelict Thames-Severn canal.



83

83, Ebley Mill, near Stroud, still a woollen mill and owned by Marling and Evans, who also own Stanley Mill (see frontispiece). 84, close-up showing the delicate outlines and beautiful masonry of the windows.



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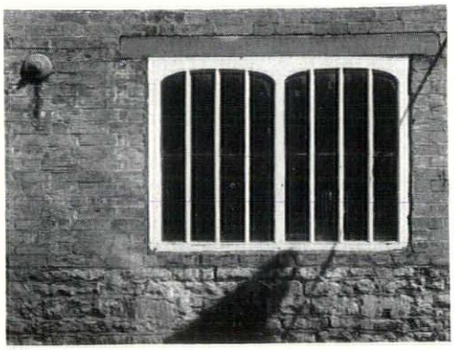

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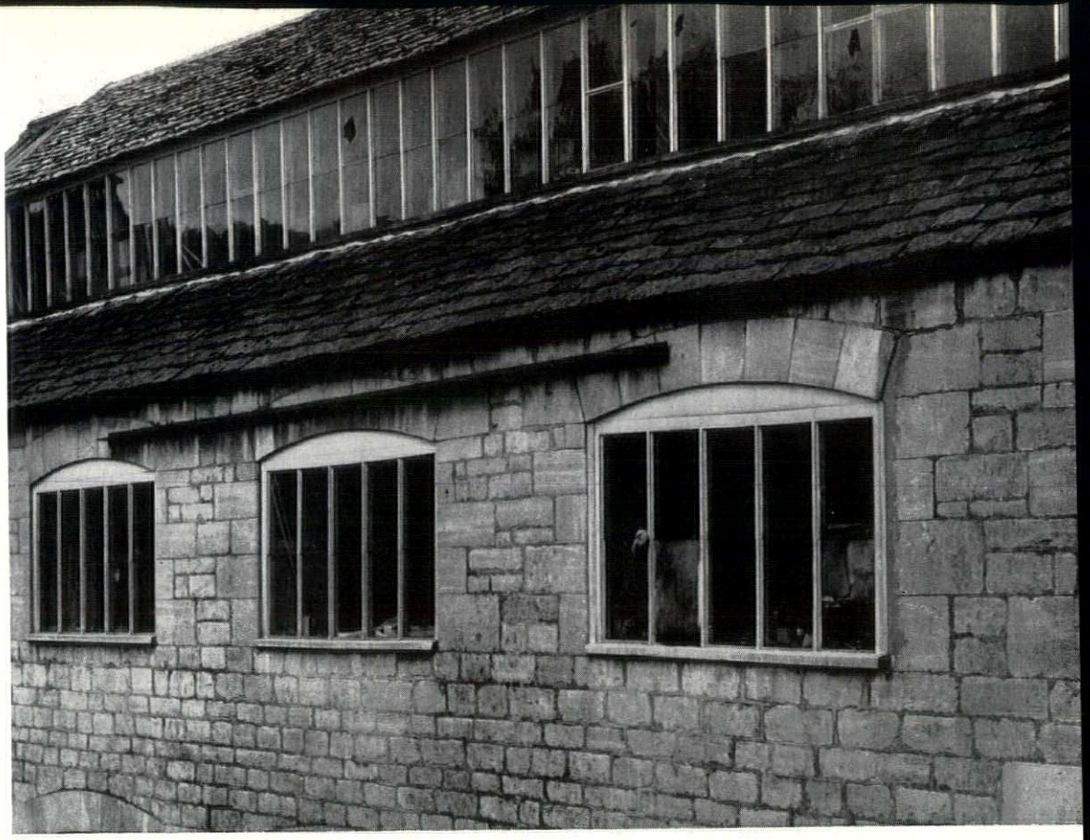
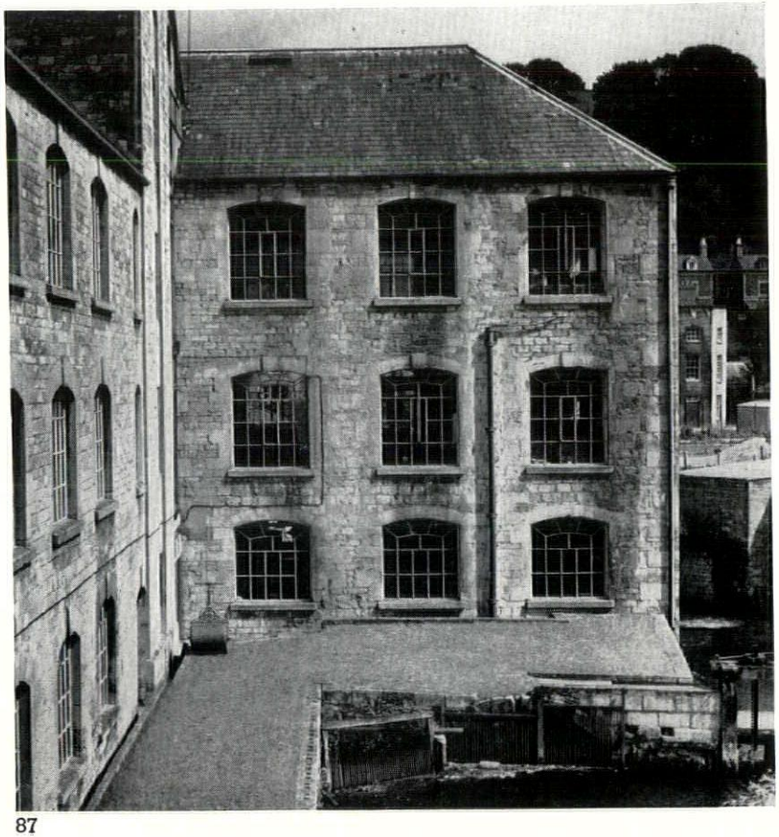


86

Window details: 85, window in brick wall of Ebley Mill, near Stroud, showing wooden frame echoing the shape of the stone head and mullion in the main part of the mill—see preceding page; 86, wood-framed windows in outhouse at Nailsworth Mill, illustrated on page 34.



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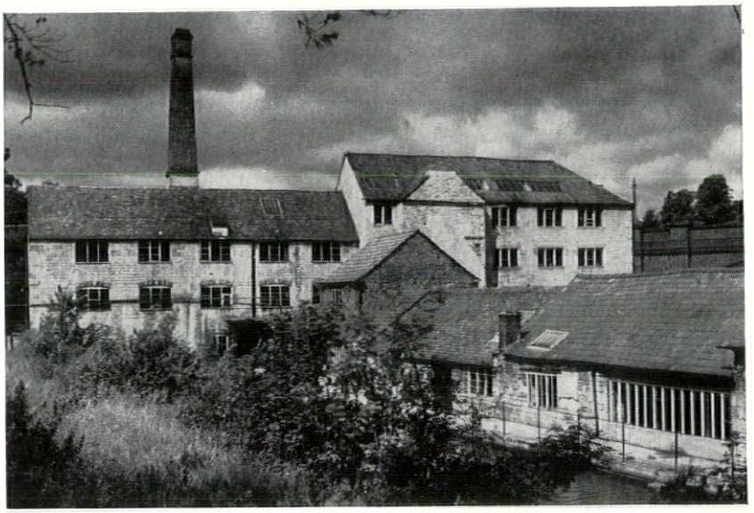

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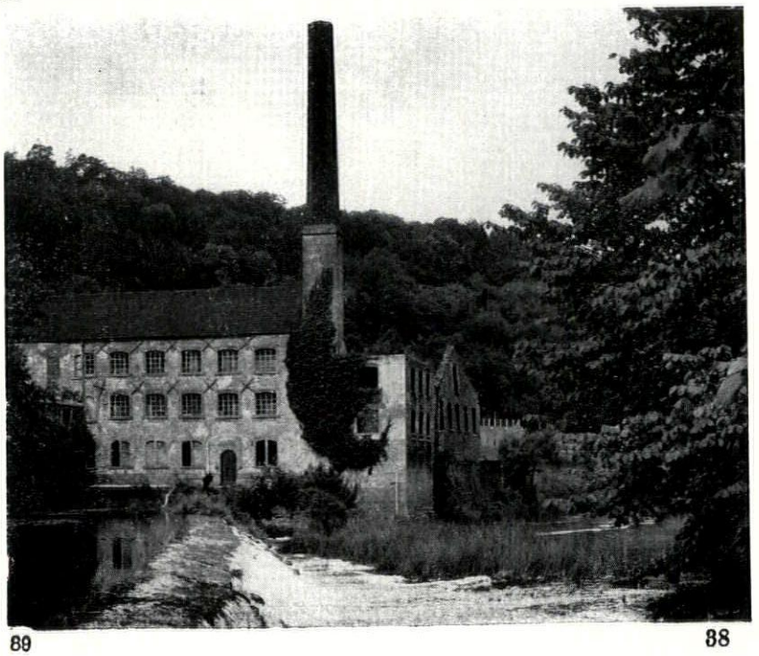
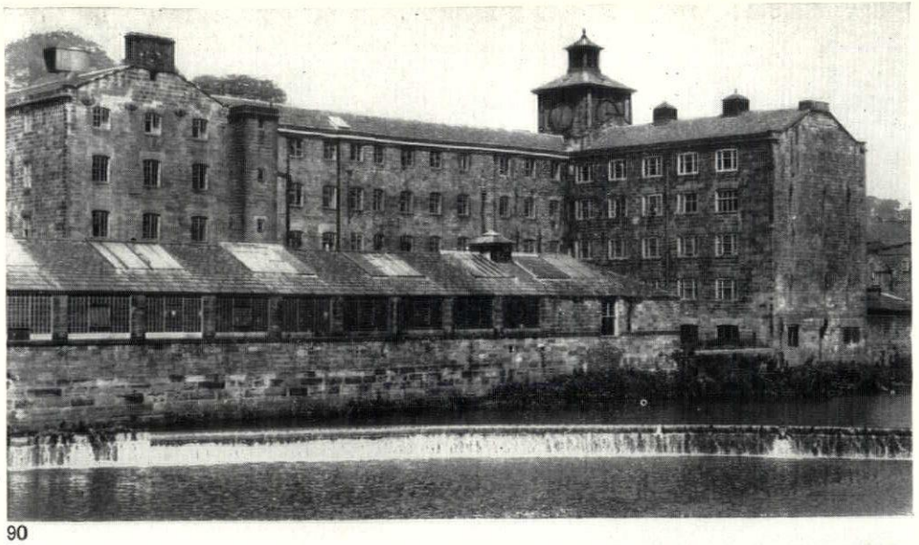


89

87, another Stroud Valley mill, at Brinscombe, now Benson's tool works. The windows here are of iron, set directly into the stonework. The upper horizontal glazing bar follows the curve of the window arch. 88, Walbridge Mill, Stroud—still a woollen mill, owned by Howard and Powell. The part on the extreme right, with the characteristic horizontal window (also seen at Nailsworth, above and page 34), is as early as 1646. 89, a derelict woollen mill (one part in use for making wire fencing) dominated by its later chimney: Limpley Mill, near Bath—like the Stroud Valley mills within easy reach of the Cotswold sheep-grazing areas.

TEXTILE FACTORIES

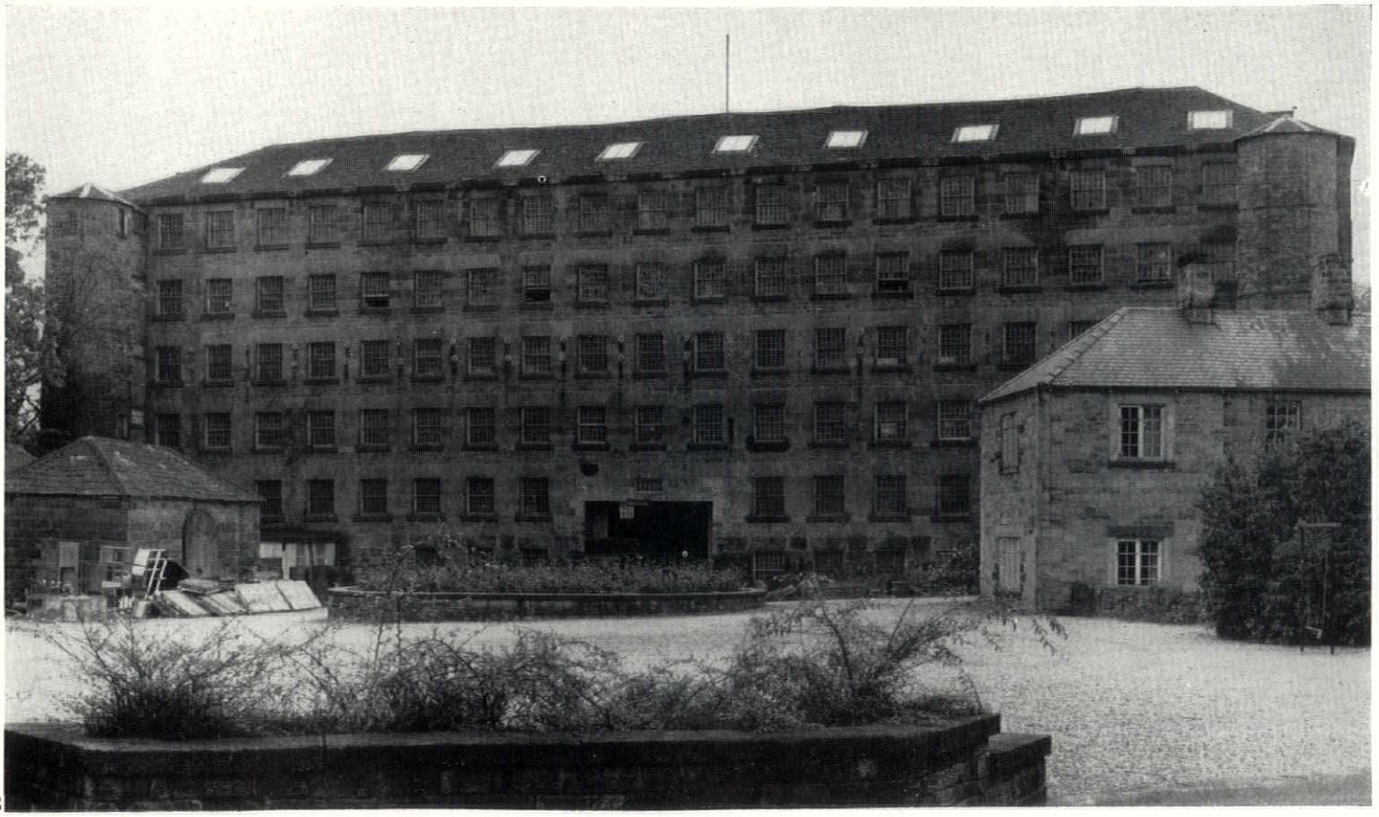
The Derbyshire and Lancashire cotton mills have a more imposing scale and a more industrial character than the Cotswold woollen mills, but they also were established where water-power was available to exploit the inventions of Arkwright and others. Arkwright's first mill was at Cromford, near Matlock (built 1771)—see facing page. The mills on the right were also pioneer buildings associated with the pioneer industrialists. 90, Milford, Derbyshire, where the present buildings are of varying dates but the original mill was founded in 1780 by Jedediah Strutt, partner of Arkwright and responsible for some of the earliest iron-framed buildings—see introductory text. 91, Cressbrook Mill, Millers Dale, also has associations with Arkwright, but the early mill of 1779 was burnt down and the present building dates from 1815. Additions were made in 1887. The building, which is still a cotton mill, stands in a remote valley. Mill owners are said to have taken their factories to such valleys to avoid the anti-machinery rioting in Lancashire. 92, the six-storey Calver Mill, also remotely situated to the west of Curbar, near Middleton, Derbyshire, built in 1785 (see following pages). The opening in the centre of the north facade, shown below, is recent, having been made to serve the present use of the building, the manufacture of stainless steel kitchen equipment by Sissons of Sheffield. The corner turrets were probably designed for bales of cotton to be dropped down them.



90

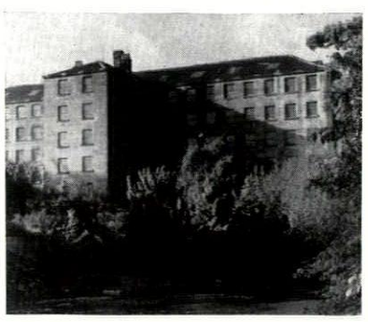


91

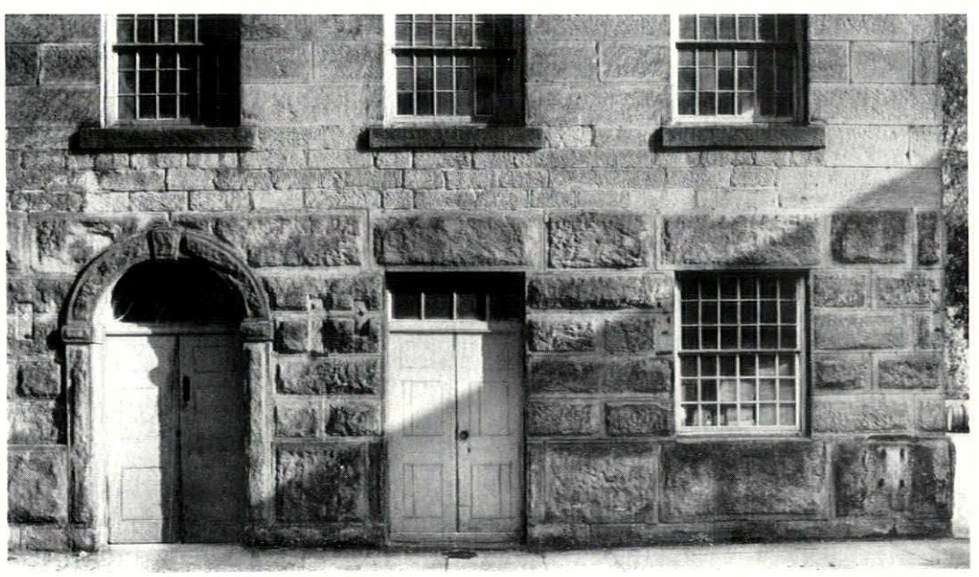


92

93

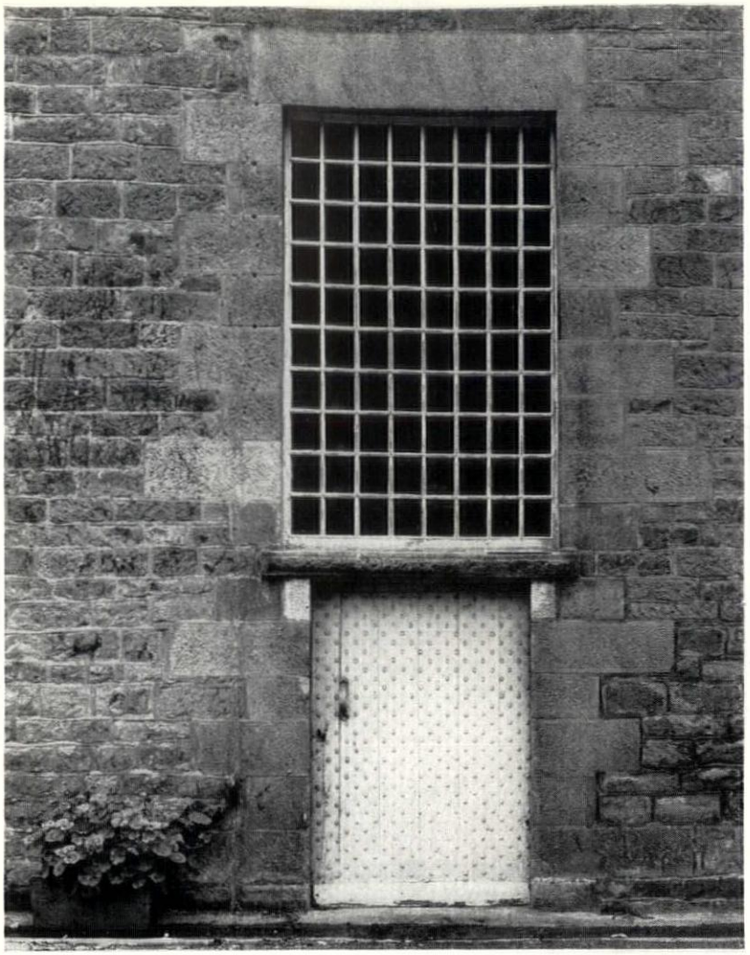


94



95

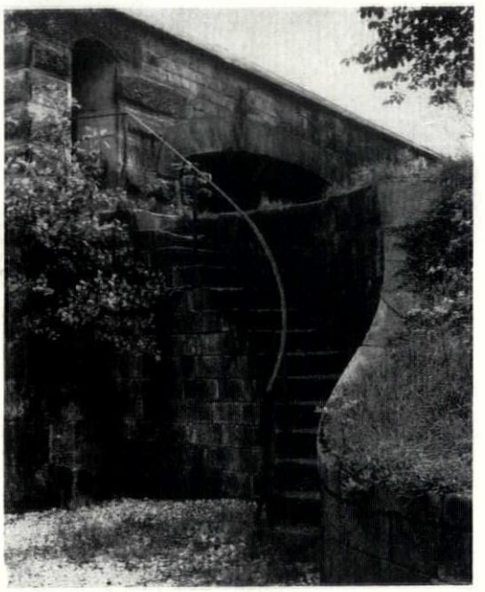
Calver Mill, Curbar, Derbyshire, towers above the River Derwent (94, distant view from the south). It originally had cast iron columns inside supporting wooden beams, now replaced by steel beams except on the top floor. It is said to have been built without scaffolding, by working from inside from floor to floor. 95, close-up of door and windows seen above. The stone walls are rockfaced, up to and including the lower floor lintels, and smooth above.



96

96, Calver Mill (1785): detail of nail-studded door, with large iron-barred window over, at the end of the storehouse wing—the low wing on the left of the photograph opposite. Note the variety of textures in the stonework: coursed rough stone for the walling generally; dressed stone, bush-hammered for jambs and window-lintol; a projecting rock-face for the door-lintol, the latter echoing the more elaborate treatment of the lower part of the main building. The stone is local.

TEXTILE FACTORIES

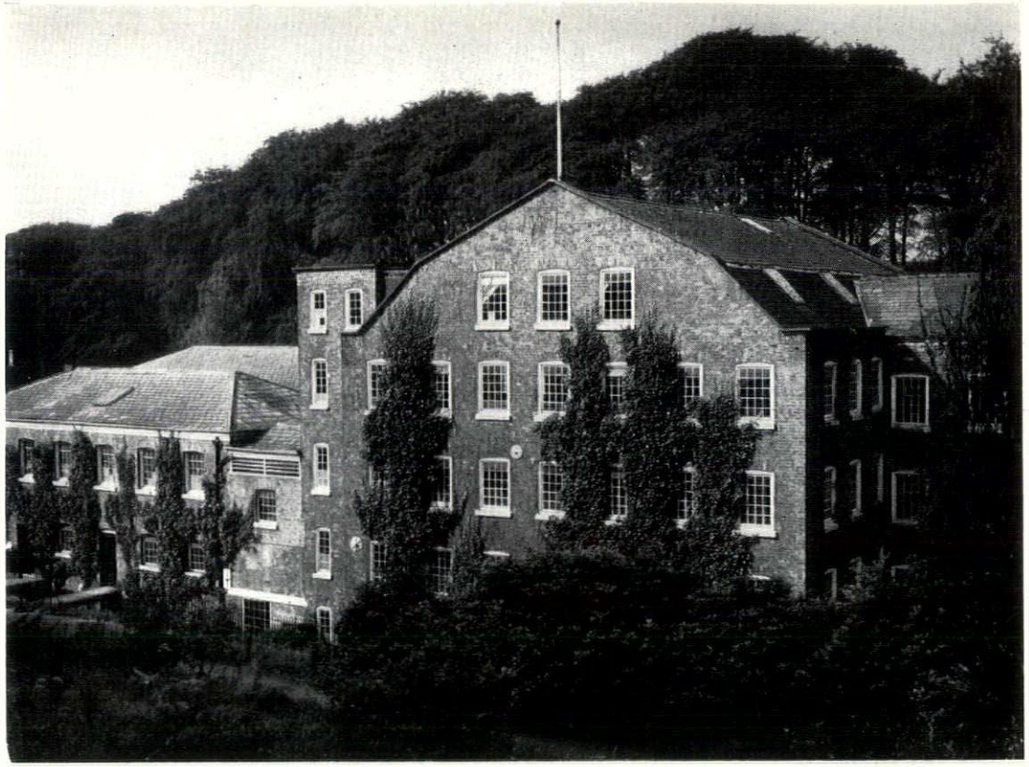


97

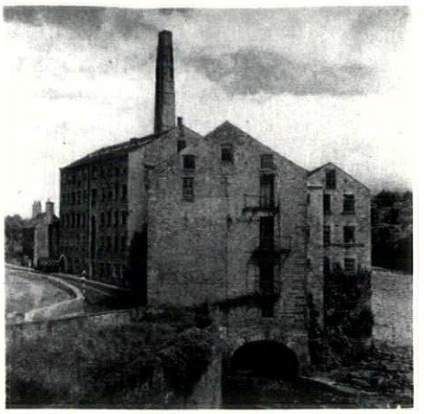


98

At Calver Mill the wheelhouse, which contained the great water-wheels that supplied the power to the looms and spinning machinery, still survives, 97 above. It is a complex piece of masonry construction, with its main openings bridged by elliptical arches. But the wheels themselves have gone; they were removed for scrap during the second world war. 98, the interior, whose massive stonework still conveys an effect of the power of this primitive machinery. There were two iron wheels, separated by the stepped wall seen in the photograph.

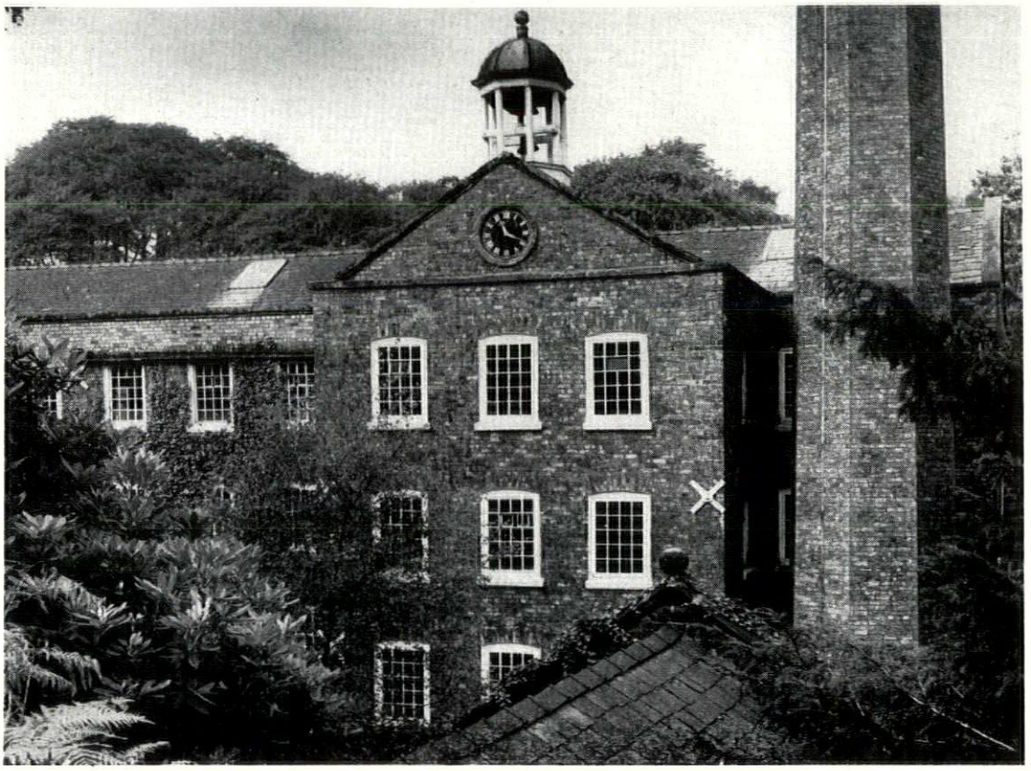


99



102

102, typical north-country stone-built mill, with mill-stream arch at bottom of picture and the later chimney that supplanted it at top: at Barnard Castle, Co. Durham, now used by Pollock & Co.



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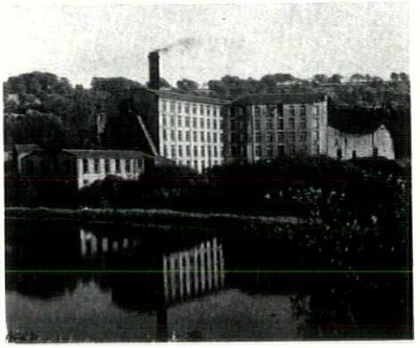
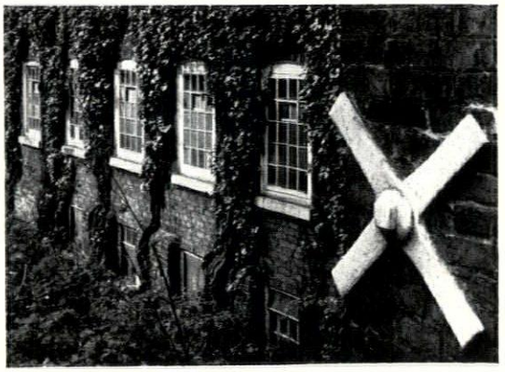


103

The woollen industry, centred to begin with in the west of England, afterwards developed in Yorkshire on a far greater scale. 103, a typical Victorian woollen mill at West Vale, near Elland, Yorkshire.

A well-preserved cotton mill in Cheshire, in a simple version of the Georgian vernacular: Quarry Bank Mills at Styal, near Wilmslow, built in 1784 by Samuel Greg, of Belfast (a name that still survives in the cotton industry hereabouts). The buildings are of red brick. An addition was made at the rear in 1810. The group of buildings and the village of Styal, built soon after the mill and forming with it a complete industrial community, was given to the National Trust, together with the surrounding woods, by Mr. A. C. Greg in 1939. 101, a detail from the main block showing the cross-shaped tie-iron typical of such buildings.



101



104

104, red brick Victorian silk mill: the Wellington Mills, Leek, Staffs. Built in 1853 it is nearly seventy years later than the group of buildings on the left, yet the Georgian proportions and window style are still in use.

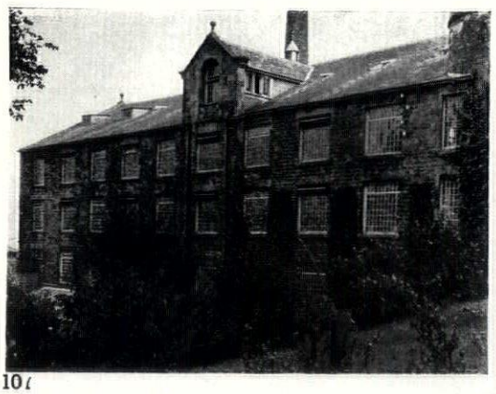


105

Macclesfield, together with the neighbouring towns of Leek (see facing page) and Congleton, was the chief centre of the silk industry from the 1770s until its decline following the removal of the heavy import duties in 1860. 105, former silk mill in Chester Road, Macclesfield, now the card factory of Henry and Leigh Slater. 106, the long unbroken Georgian-style façade of the silk mill in Mill Lane, Macclesfield. Some of the small Georgian panes have been replaced by plate glass.



106



107

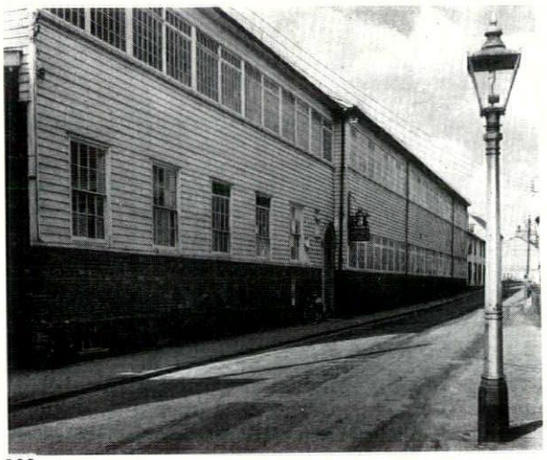
The same very small window panes occur in the White Cross cotton mill at Caton, near Lancaster (detail on right, 108). The design of such window panes was not only a matter of the survival of a style; the multiple bars served to reduce glare inside. This mill was first built in 1784, but largely rebuilt after a fire in 1838. Note the bold rock-faced stonework round the door, resembling that at Calver Mill (pages 39–41). White Cross Mill now belongs to Storey's of Lancaster, cotton finishers and makers of plastic fabrics.



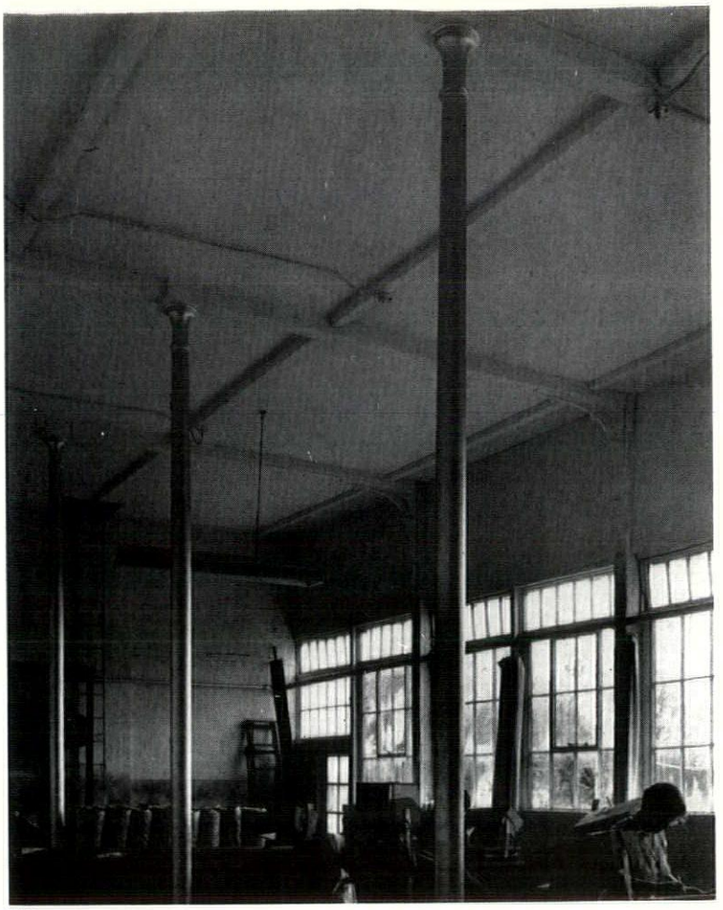
108

TEXTILE FACTORIES

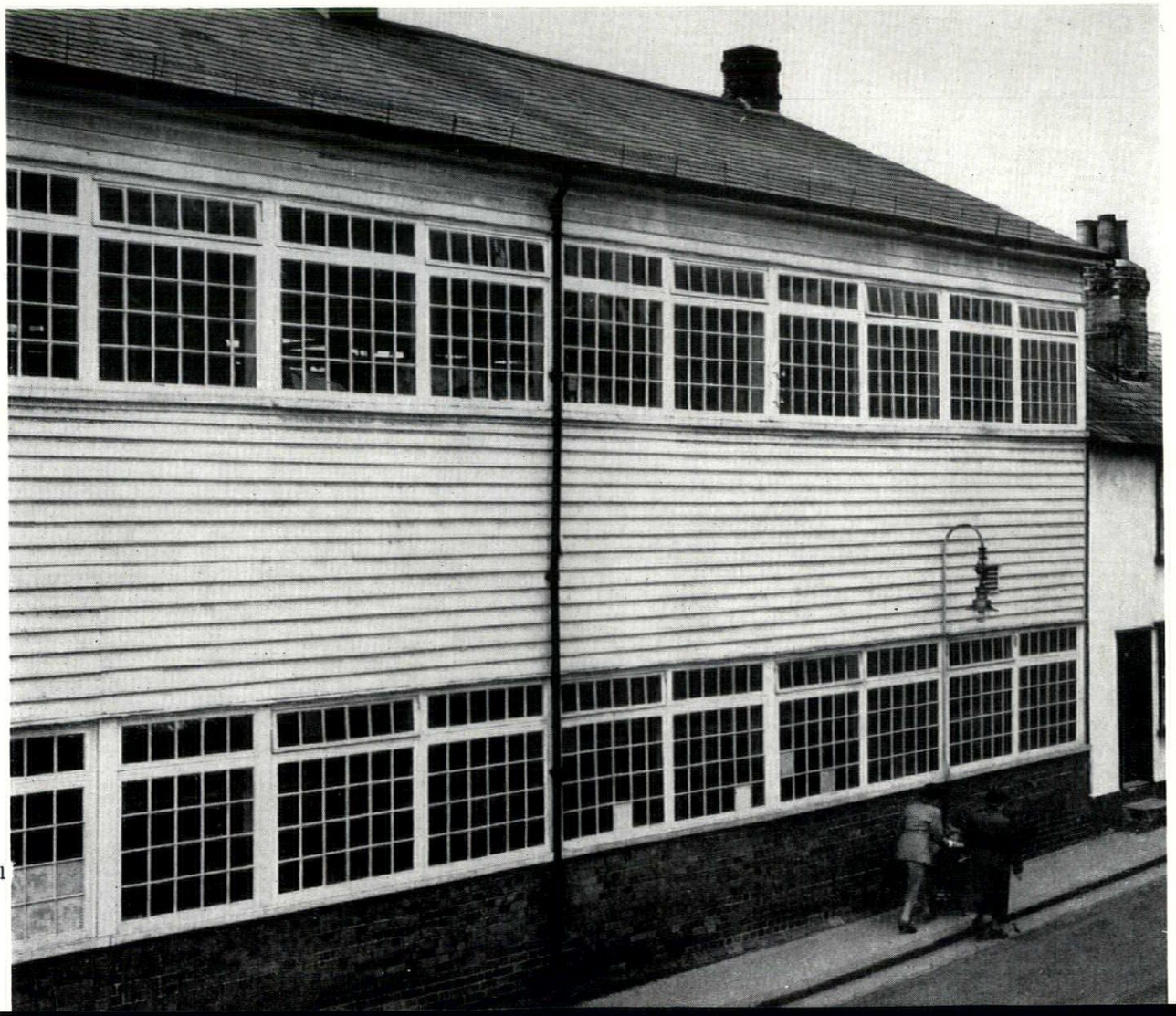
East Anglia was another centre of the silk industry, where it was established as a result of the arrival in England of refugee weavers from the Low Countries and later (after the Ediet of Nantes) from France. This silk mill at Braintree, Essex, is still in use by Warners. The present building dates from 1858, but follows an earlier East Anglian tradition of construction in brick and white-painted weather-boarding. Note especially the long horizontal windows (in this case of iron set in a timber frame) that can be regarded as a prototype of the windows used with modern frame construction—see detail, 111 below. The interior of Warner's silk mill, 110, shows a light iron framework with cast-iron columns. The roof of the building is slate.



109



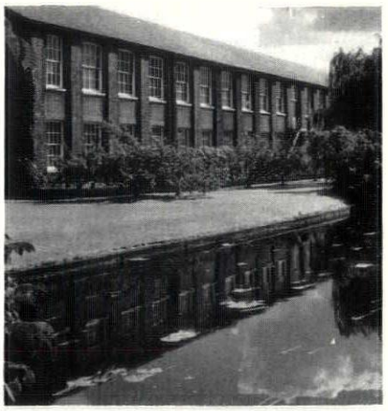
110



111



112, stone-built factory, with slate roof, at Bridport, Dorset. The plaque between the second-floor windows reads, 'Joseph Gundry and Co., established 1665, manufacturers of fishing nets, lines, twines, spinners and doublers.' It is dated 1844, but is clearly earlier; this may be the date of some reconstruction. It is still occupied by the same firm and is scheduled as an ancient monument.



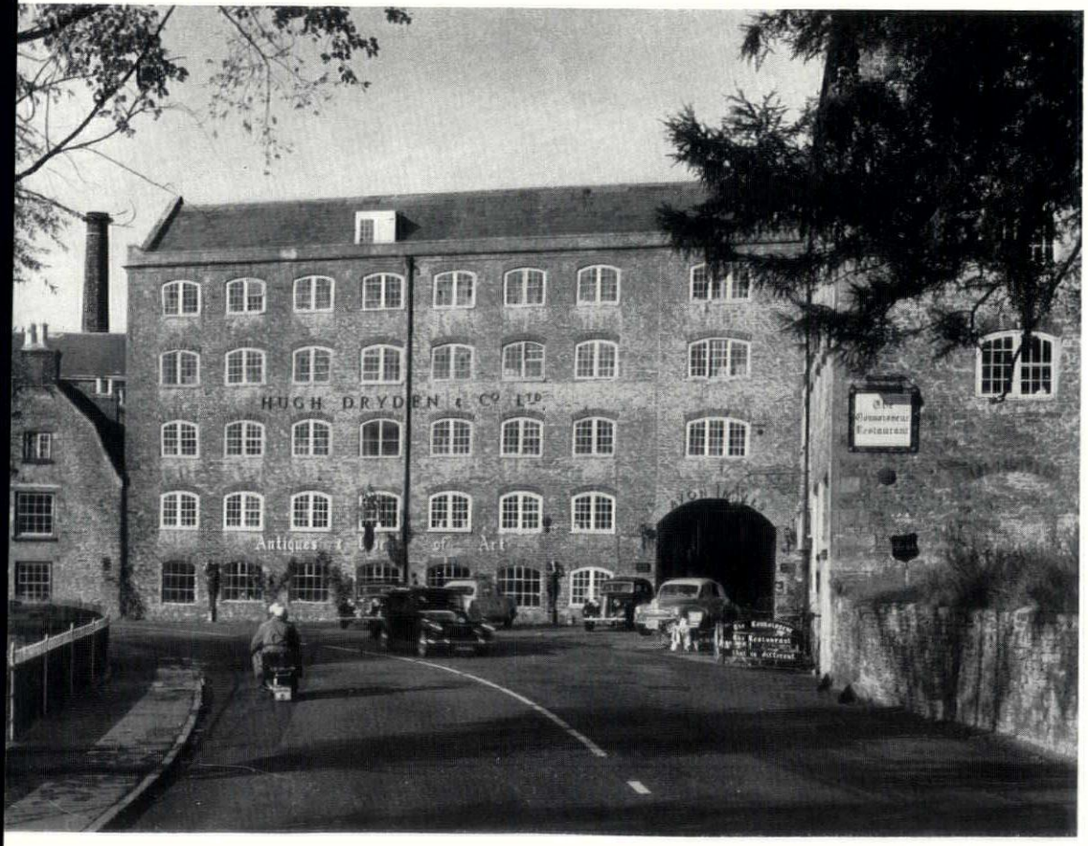
115

Red brick textile mill beside the River Colne at Halstead, Essex, built in 1883; part of the earlier Courtauld silk works—see page 48.

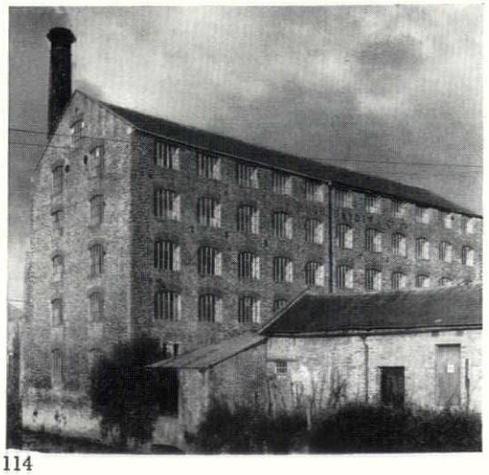


116

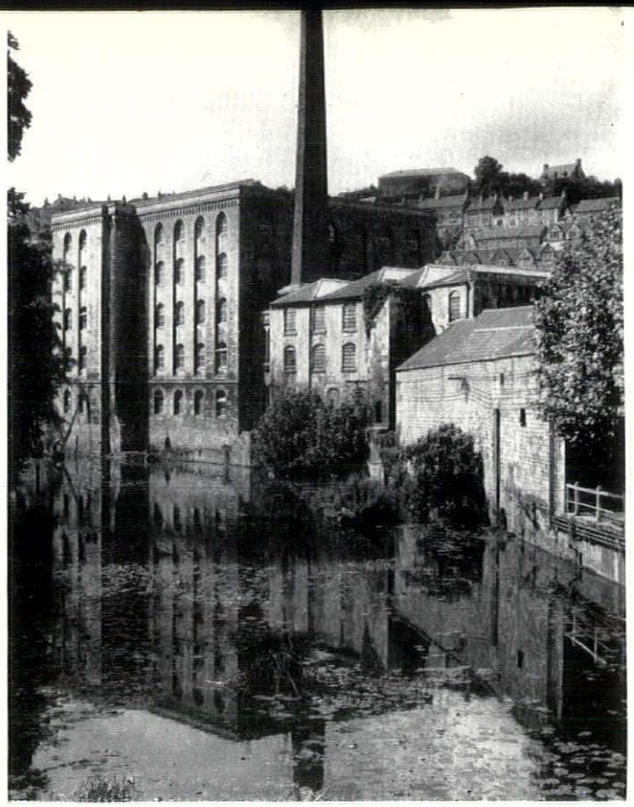
In the main street at Witney, Oxon: the classically embellished front of the hall of the blanket weavers' company, 1771—not a factory, but representing another aspect of the architecture of the wool industry on which these stone-built Cotswold towns depended.



113, Avon Silk Mills, Malmesbury, Wilts, now partly an antique shop and restaurant: another example of the effective use of white paint. 114, the water side of the same mill.



114



117



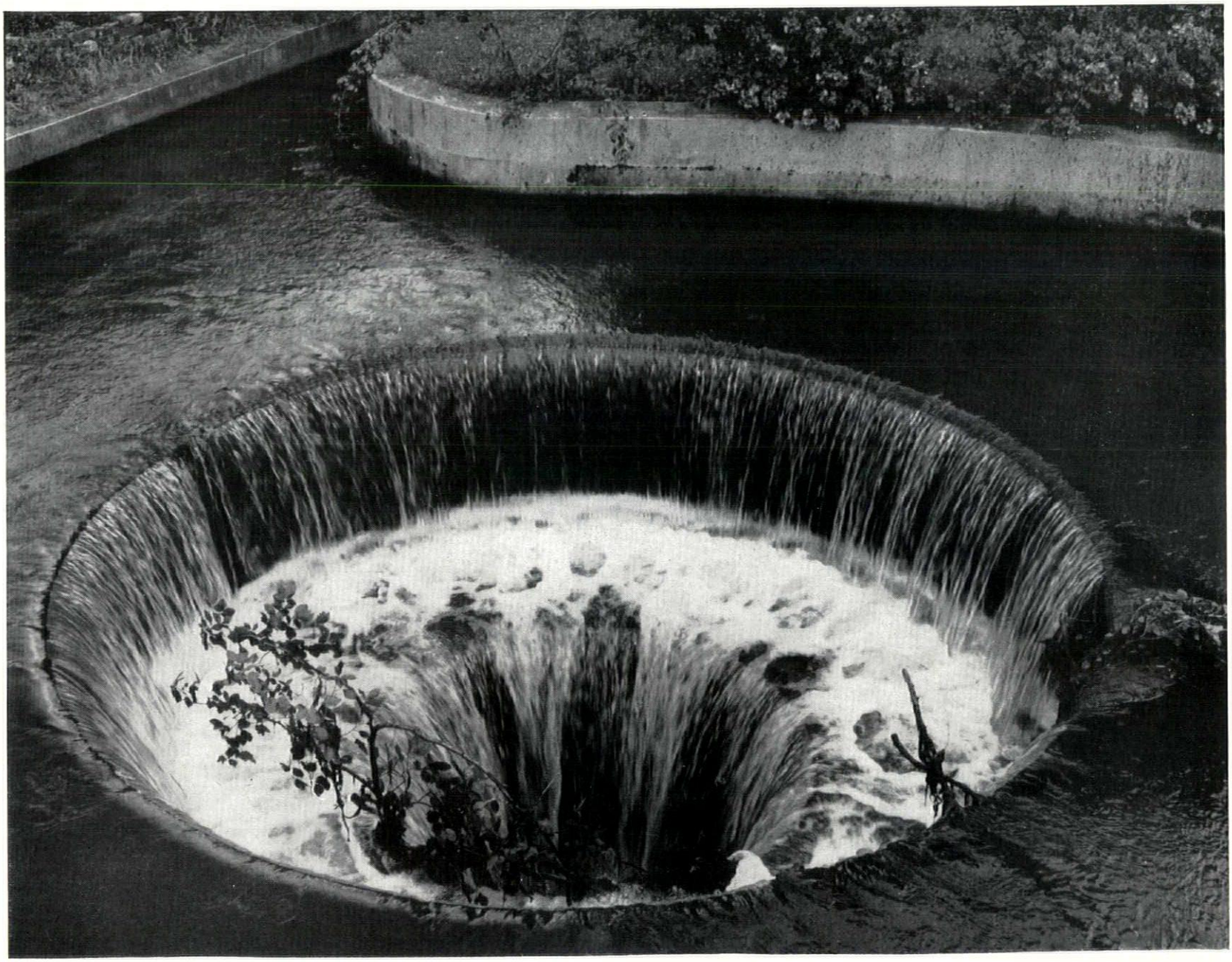
118



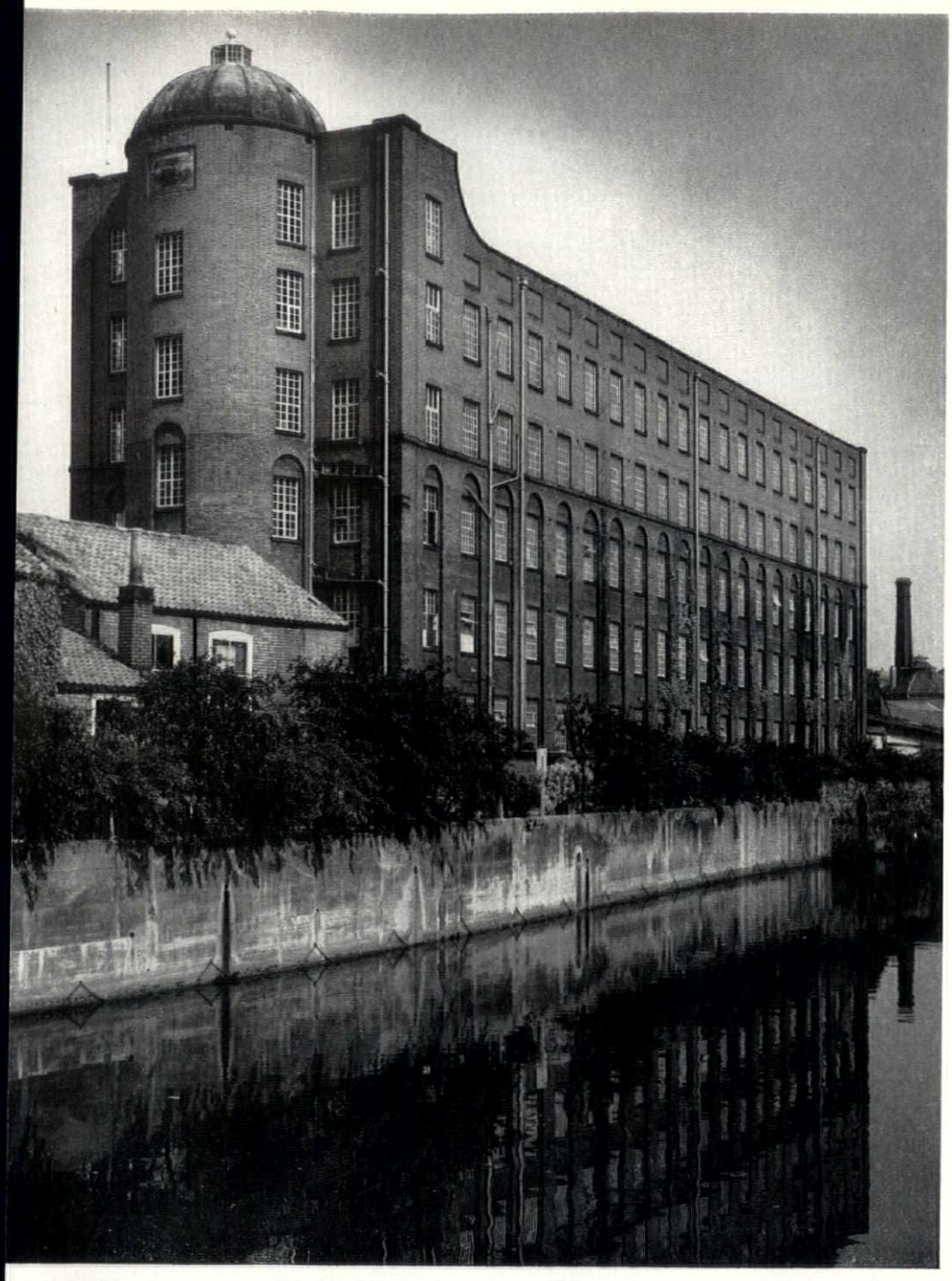
119

117, left, the large woollen mill that dominates the river front at Bradford-on-Avon, now used by George Spenser, Molton & Co. and owned by the Avon India Rubber Co. Though tinged with Victorian eclecticism it shows the functional tradition persisting well into the nineteenth century. Above, early factory buildings of indeterminate date, typical of many that give character and variety of skyline to small country towns all over Britain. 118, at St. Blazey, Cornwall; 119, at Holt, near Bradford-on-Avon.

There is visual drama in the engineering, as well as in the architectural, works at the early textile factories. 120, a tumbling weir at an eighteenth-century serge mill at Ottery St. Mary, Devon, the only weir of this type in the country except on the Staffordshire and Worcester Canal.



120



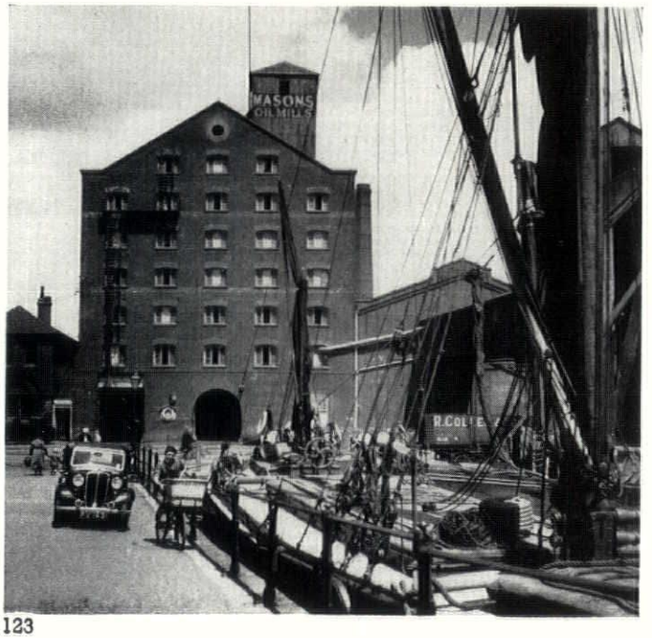
121, a red brick yarn mill beside the Wensum at Norwich with a turret down which bales were dropped. The plaque high up on the turret reads 'Norwich Yarn Company 1839.' The builders (and probably also the designers) were Dawkins and Cattermole. The building is now Jarrold's printing works.

TEXTILE FACTORIES

Below, two East Anglian mills which, though not concerned with textiles, belong to the same architectural tradition. 122, linseed mill at Boston, Lincs (now Willer and Riley's dried pea and canning factory). 123, Mason's oil mill in the port area of Ipswich. The word mill is here correctly applied (see first paragraph of the introduction on page 36).

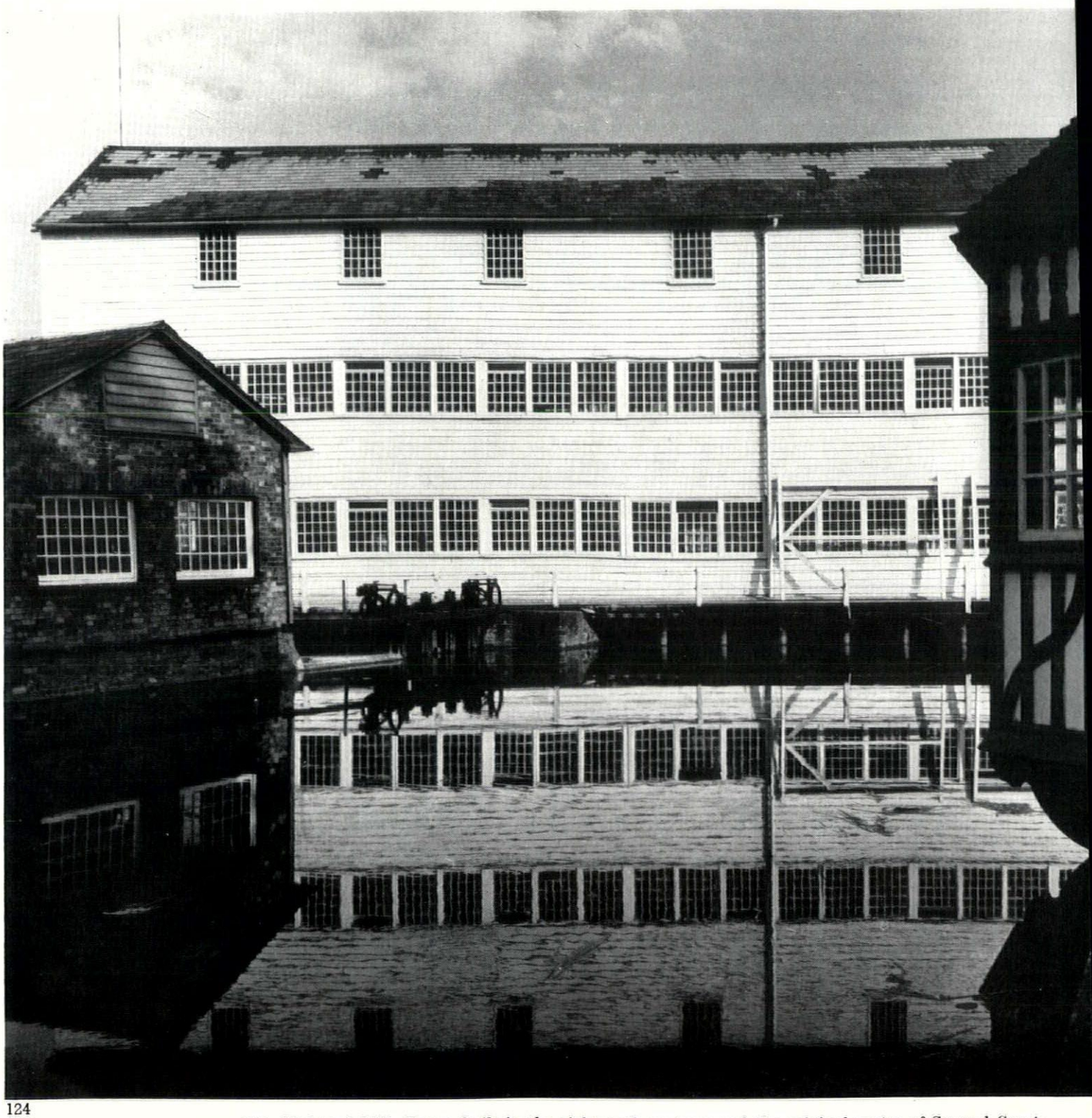


122



123

WATER-MILLS

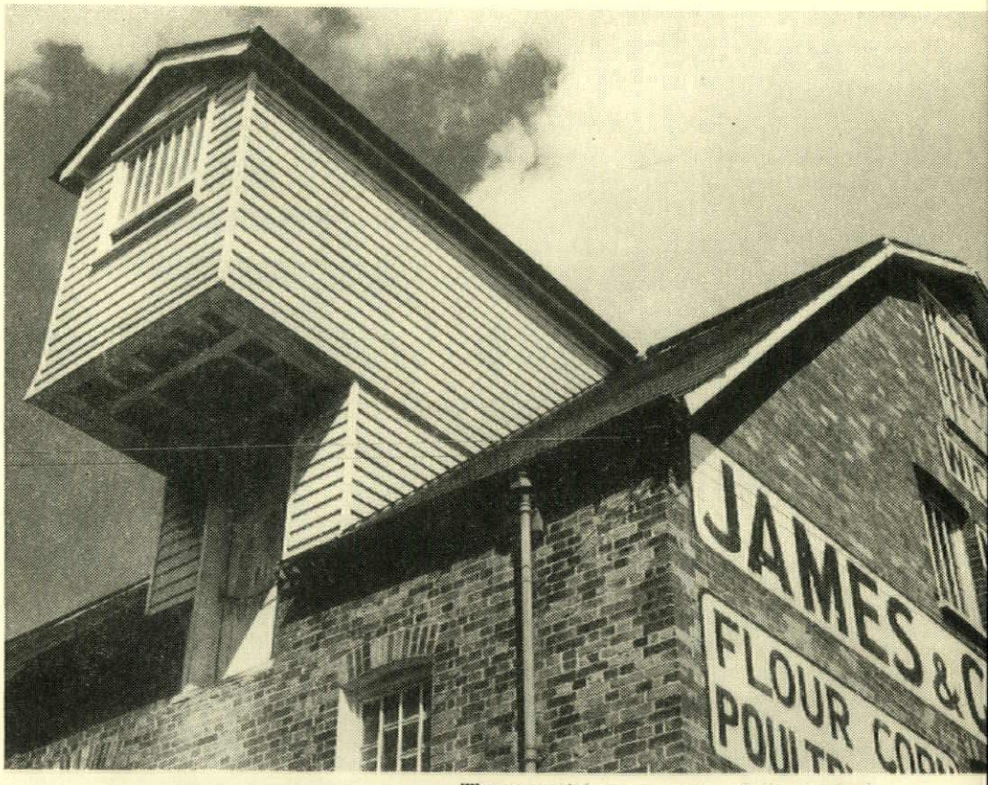


124

124, Halstead Mill, Essex, built in the eighteenth century and the original centre of Samuel Courtauld's. It is thus not a corn mill like the other examples in this section, yet is the classic type of the East Anglian weather boarded water-mill and provides a link between this and the preceding section.

This issue has so far been concerned with buildings (except for some of those in the naval dockyards) arising out of the industrial revolution. With water-mills we go back to an earlier tradition, though many of the examples illustrated must have been built over the same span of years. Whether built earlier or later, they show that the functional tradition, though it was given new impetus and power by the opportunities opened up by the industrial revolution, has its roots a long way further back. The accumulated knowledge, and the instinct for applying it rightly, of millwrights and similar anonymous craftsmen is one of its essential sources.

The water-mill is the classic industrial building of the rural landscape, antedating even windmills (see the next section). Many more water-mills than windmills, moreover, survive in England today, and a surprising number still use water-power for grinding corn. Others have been converted to other sources of power, such as electricity. An early instance of such a conversion is the water-mill at Chilham, Kent—an unusually fine complex of red brick and weather-boarded buildings, now virtually derelict—which changed from water-power to steam-power in the nineteenth century. The consequent additions, including a sturdy chimney, harmonize completely with the original building—evidence of the strength and timelessness of the functional tradition.



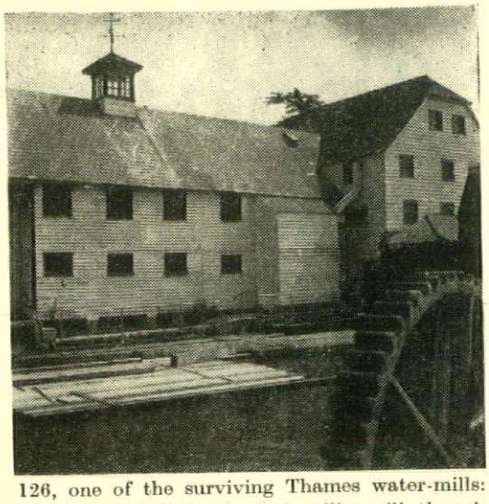
The essential components of the typical water-mill are the boldly cantilevered structure housing the hoisting machinery; weather boarding (often combined with brick; white paint freely used. 125, Wickham Mill, Wickham Bishops, Essex, still in use as a water-mill.

Water-mills, nevertheless, are inevitably going out of use with the passing of the age of rural self-sufficiency (they were originally sited within hauling distance of the farms by horse-drawn wagon, and modern transport has ended the need for this). Other causes of their decline are the invention of rolling mills and the present taste for fine-ground flour, as white as possible. There is now a water-mill section of the Society for the Protection of Ancient Buildings.

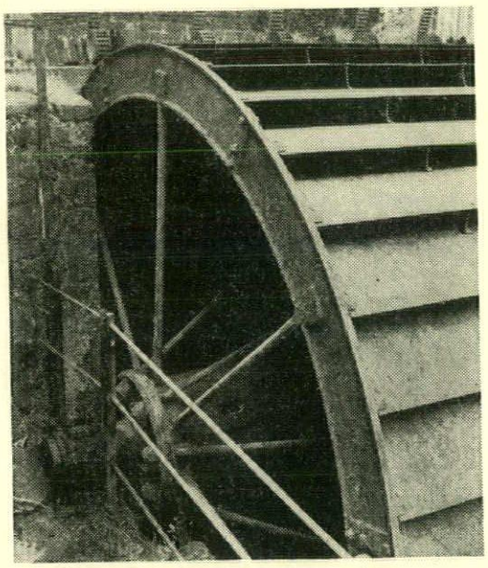
Though most English rivers possess their water-mills, they are specially frequent along the Thames, where water-mills have probably existed ever since

villages were established on its banks in prehistoric times. It is impossible to determine whether the Thames weirs were first built to provide a head of water for these mills or to help navigation, since the two purposes required dams in the same places—that is, wherever there was a rapid stream. In 1884, *out of twenty-six locks below Oxford, only five were without mills. Today there are still some seventeen water-mills on the tideless stretch of the Thames between Teddington and Oxford (none are left above Oxford), but not one of these works any longer by water-power. Some are disused altogether; others, like those at Goring and Whitchurch, have been converted into small electric power-stations.*

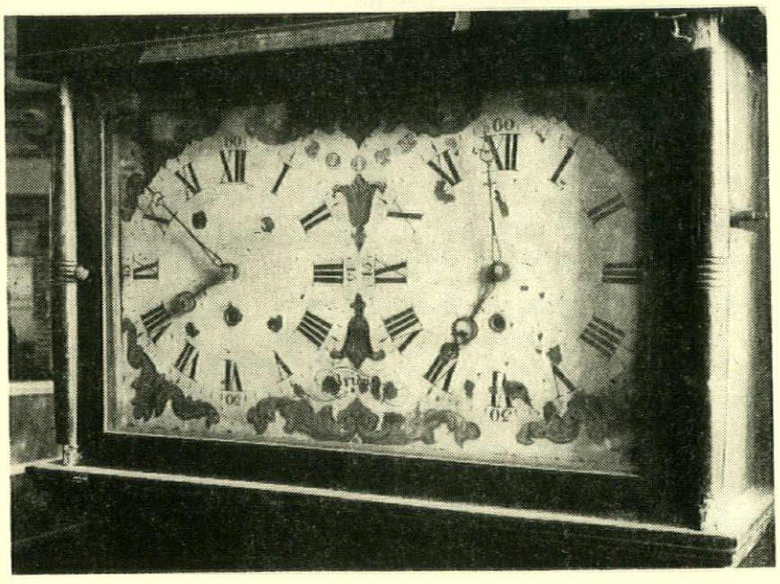
On the following pages it has been noted whether the example illustrated still works or not, but for the purpose of this issue neither that nor the charming picture created by their setting among idle or moving waters, shaded by trees and fringed by reed-beds, is so important as the established architectural vernacular of the buildings themselves, which unlike their machinery does not go out of date. The buildings are mostly of timber—at least in the Midlands and the south and east of England—and so originally was the machinery. It often had gears of hard apple-wood, though much of this was later replaced by iron. The post and lintel timber construction with superimposed cladding gives the buildings affinities with modern frame construction, some of whose characteristic features, like the long horizontal window, are part of the traditional millwrights' vernacular.



126, one of the surviving Thames water-mills: Hambledon Mill, Bucks. It is still a mill, though no longer worked by water-power (the iron wheel in the foreground is not the mill-wheel but part of the lock machinery).



Surviving articles of mill equipment at Pyemore Mill, near Bridport, Dorset: 127, iron water-wheel of 1887 (inside the building some of the gears are of apple-wood); 128, a Victorian clock, made by Booth of Bridport. The left-hand dial is an ordinary time-keeper; the right-hand is geared to the water-wheel and adjusted to keep time with the other dial if the right amount of water is passing over the wheel.



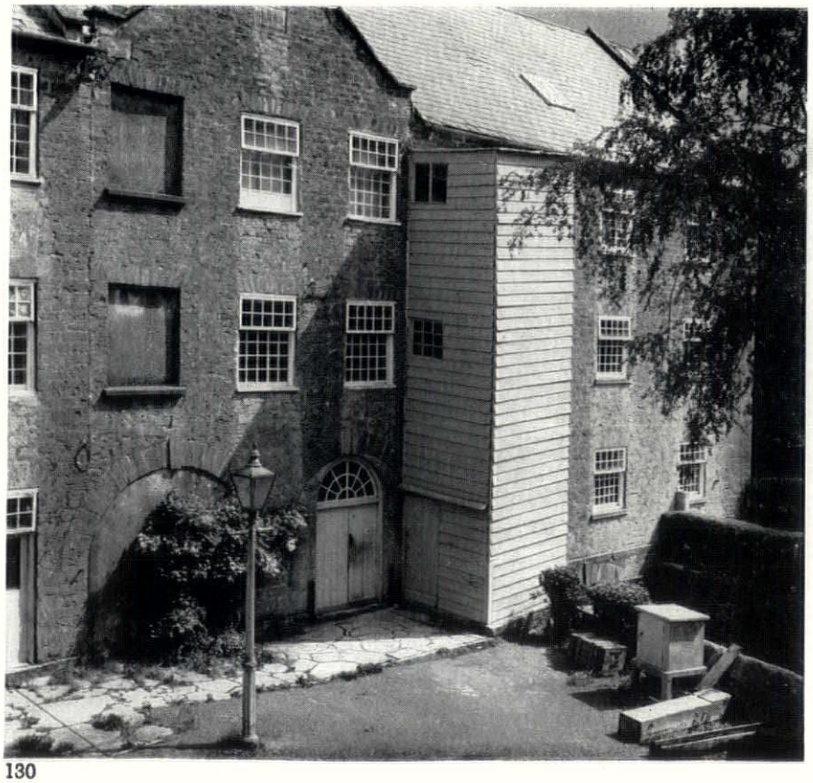
A feature common to nearly all water-mills is the boldly projecting structure framed in timber, sometimes carried on brackets, sometimes cantilevered clear from the wall, which houses the hoisting tackle. This raises the sacks of grain delivered from the farms into tall storage lofts from which it descends by force of gravity to the grinding chamber. The milled flour then passes into the lower buildings alongside, where it is stored in bags. Water-mills gain much of their architectural effect from the contrast between these long low ranges of weather-boarded buildings (usually painted white) and the tall granaries with the bold geometry of their hoist housings, all doubled by reflection in mill-stream or pond.

WATER-MILLS



129

Pyemore Mill, near Bridport, Dorset, a more substantial building than the others illustrated here and, like Halsted Mill (page 48), forming a link between the water-powered grinding mill and the textile mill, since it has served as both. It was built some time before 1800 as a grist and linseed mill but was later converted for flax and hemp spinning, when the parts shown in 130 and 131 were added. After five generations have used it as a spinning mill, it has just closed down owing to the difficulties of obtaining labour locally. Part of the building is now used for small boat building. The river is the Brit.



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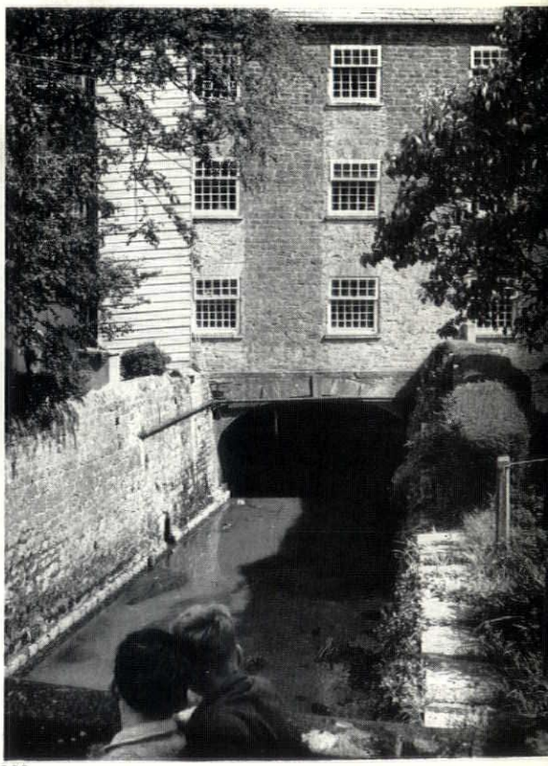

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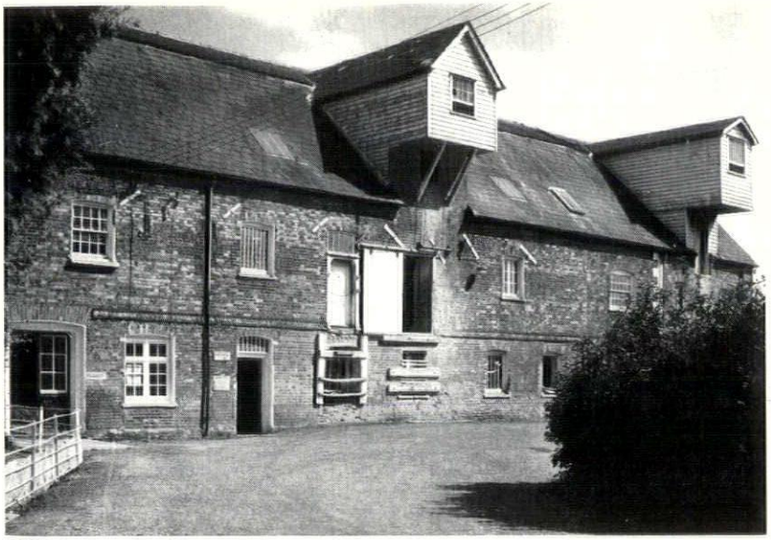

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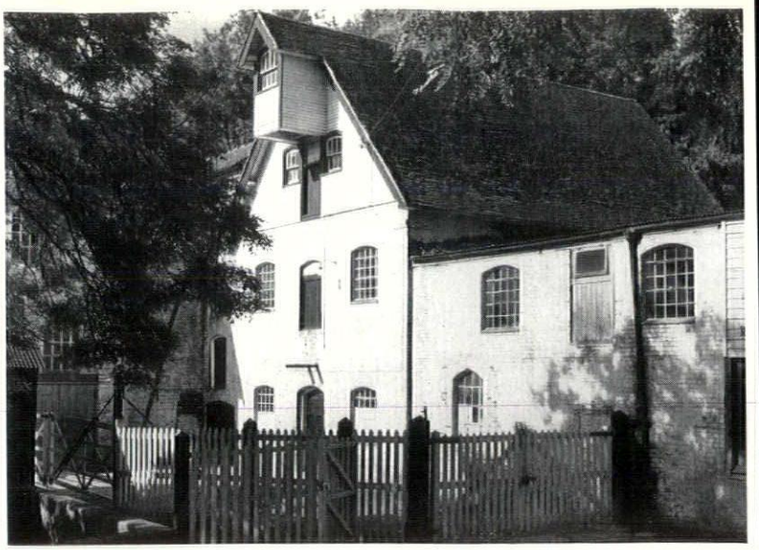

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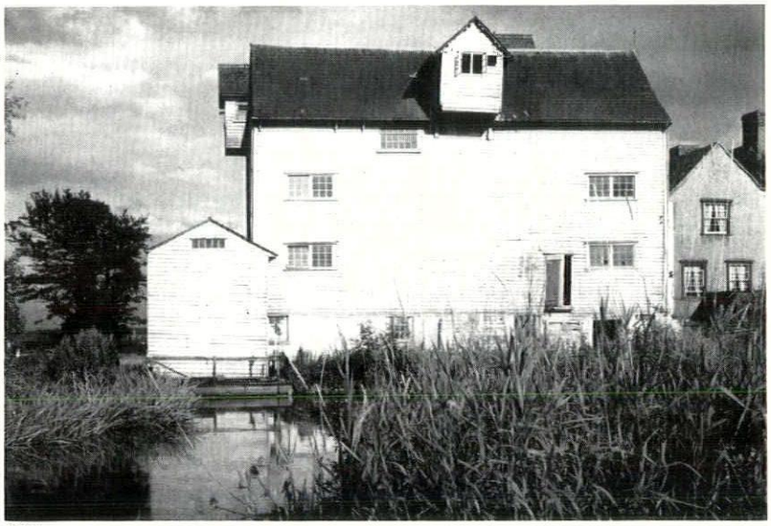

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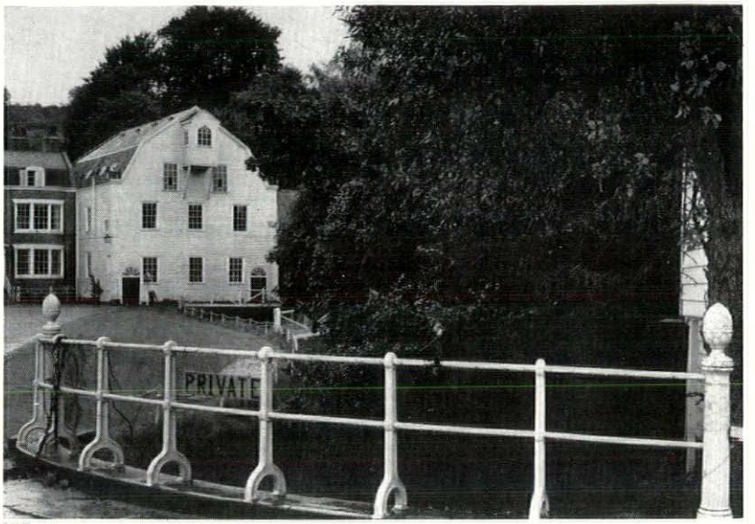
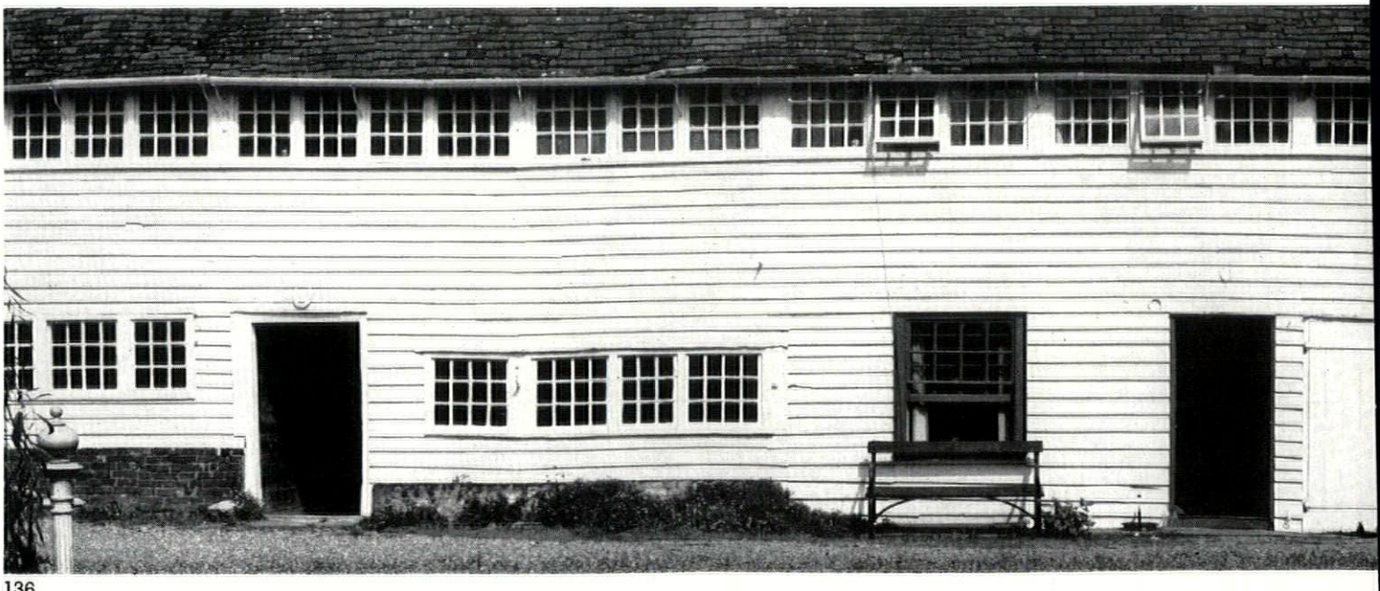


135

The features most characteristic of water-mills are white-painted weather-boarding contrasting with brick-work, the gabled structures that house the hoisting tackle, breaking into the skyline, and windows irregularly arranged to suit function rather than taste, but satisfactory in the pattern they create. 132, at Wickham, Essex, a Georgian mill owned by James and George H. Matthews and still working. 133, at Chartham, Kent, no longer working and used by the Kent River Board as their Stour Area depot. 134, at Chelmsford, Essex (still working; owners, W. H. Marriage and Sons). The boarded part is Georgian; the rest, in yellow brick, Victorian. 135, at Farningham, Kent; now a private house; the right-hand door and fanlight are faked.

The longitudinal window is another characteristic feature of these timber-boarded water mills: 136, at Coggeshall Mill, Essex.



136

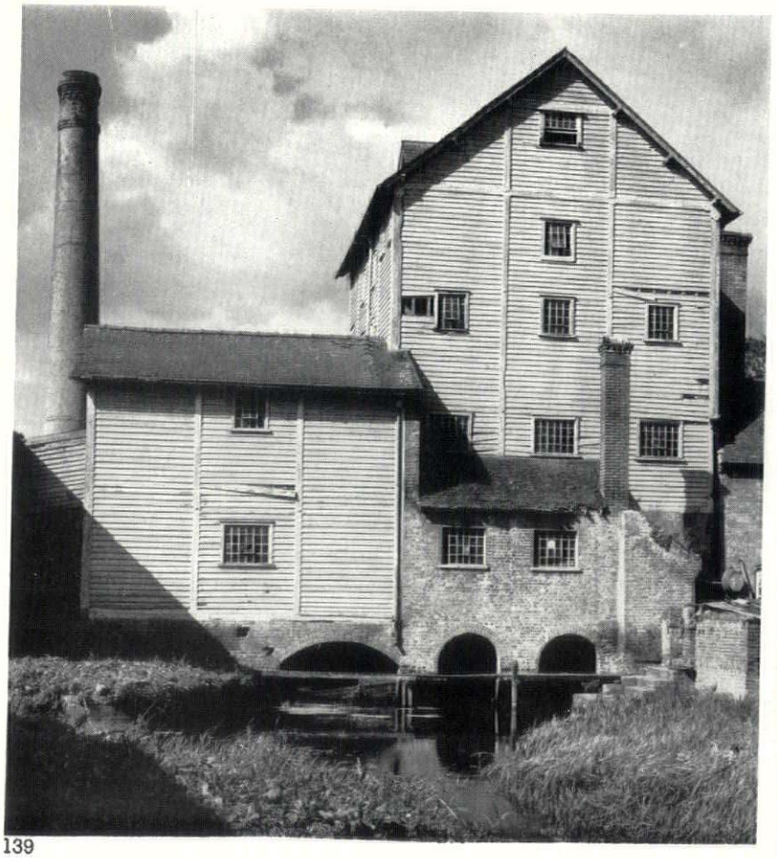
WATER MILLS



137
Coggeshall Mill, Essex, still working as a grist mill, but no longer by water-power. A medieval mill stood here first, owned by the local monastery. A new one was built in 1600 by refugee Flemish velvet weavers, to whom the roof-shape of the present buildings as well as the window-style (see 136) are attributed. It was converted to steam power in the nineteenth century. 138, the typical white-palinged footway across the mill-stream. The river is the Blackwater.



138



139

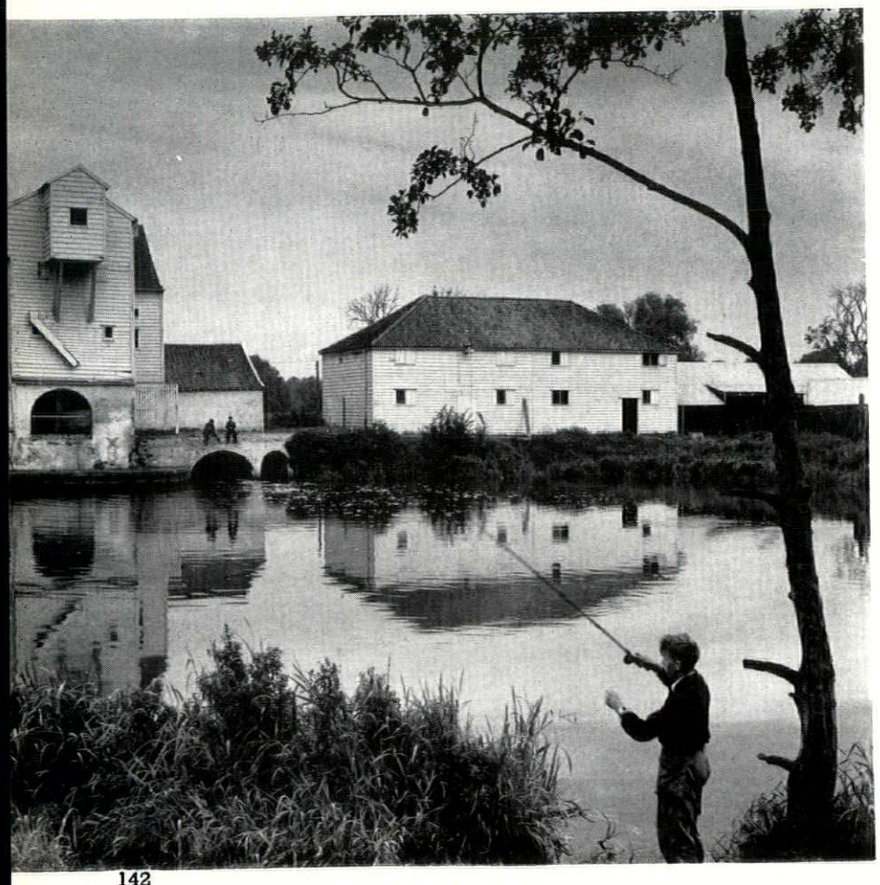
139, 140, another water-mill converted to steam-power in the last century, but now used as a farmhouse and partly derelict: Chilham, Kent, on the Stour.



140

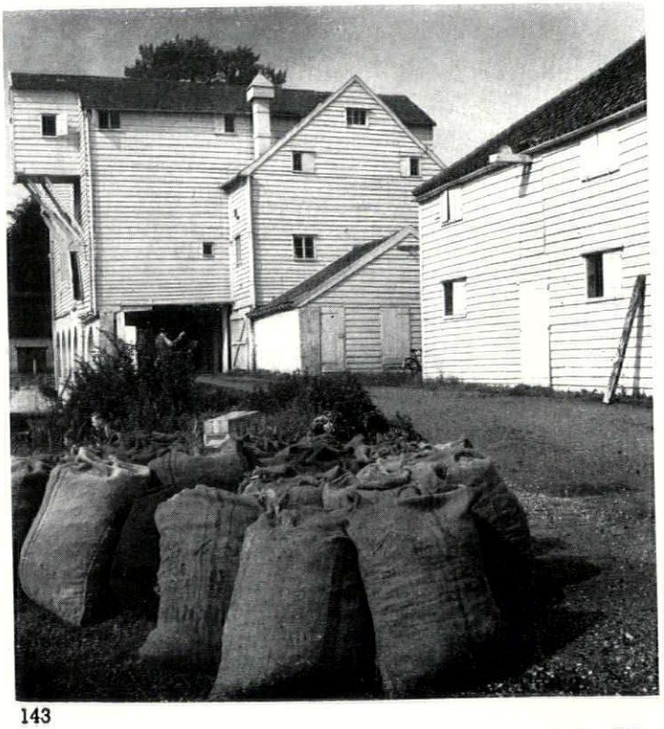


141



142

Horstead water-mill, near Coltishall, Norfolk, fine in scale and particularly well placed on the River Bure. It is still working by water-power. The arches carrying the boarded superstructure are of whitened brick. 143, side view, looking into the driveway beneath the main building which passes behind these arches.



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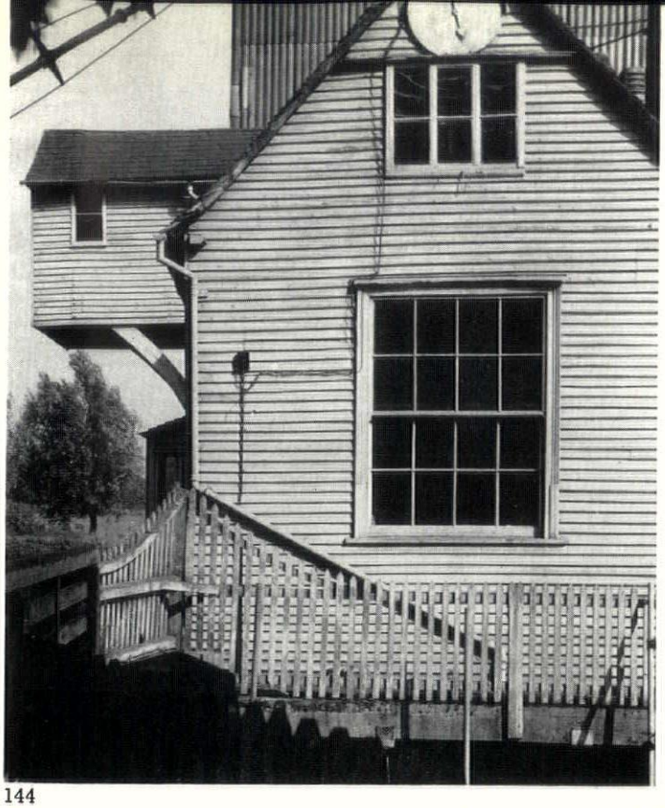

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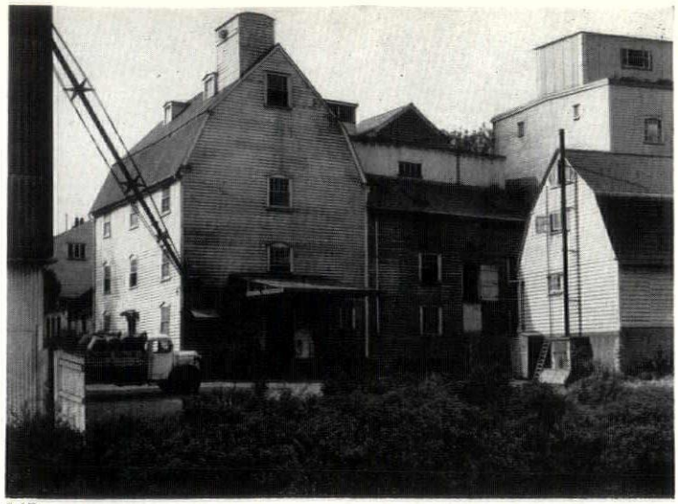


145

At Sawbridgeworth, on the Herts-Essex borders: a complex of weather-boarded buildings, yellow painted and with slate instead of the more usual tiled roofs, by the River Stort. It is still a flour mill, owned by T. Burton, but it no longer uses water-power.

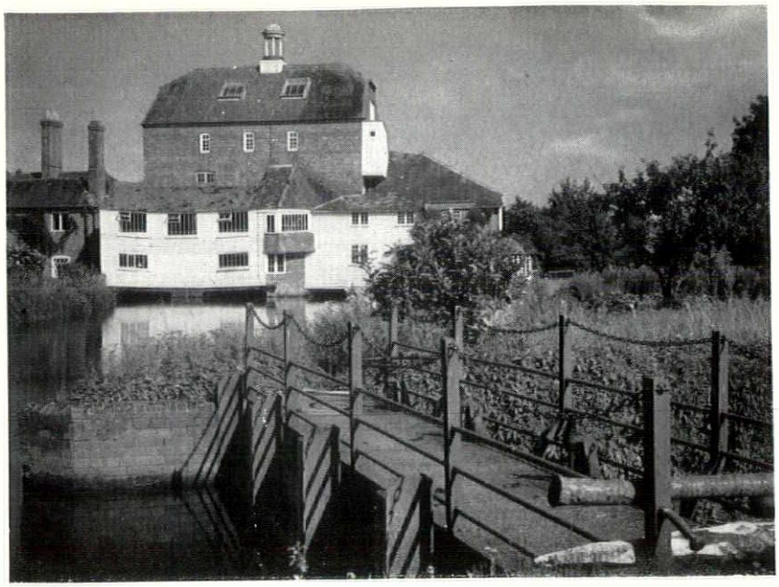


146



147

146 and 147, Bocking mill, Essex, on the Pant, still working by water-power. Though there is no design behind their composition, the functionally determined arrangement of planes and angles gives such buildings vigour and their own kind of coherence. Note again the casual placing of windows, which the eye does not find distracting.



148



149

Elstead water-mill, Surrey. It has a tall brick central portion of elegant Georgian character, surrounded by lower wings of brick and weather-boarding, with the characteristic mill and workshop windows, vertically subdivided. It is all eighteenth century, and has been used for corn, malt and fulling. Although it is now a private house, the mill remains in working order. The river (150, below) is the Wey.

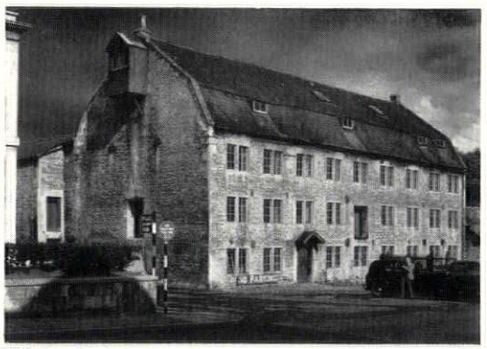


150



151

On this page are some mills from the north and west of England, very different in character from the timber-boarded water mills of East Anglia and the Home Counties. 151 (left), a red-brick corn mill owned by F. E. Stevens at Sherdlow, Burton-on-Trent, built in 1780. It may however originally have been a warehouse; the wide arched opening resembles the covered loading dock common in canal-warehouses, such as 5, 25 and 30 (pages 10, 15 and 16). It still grinds corn, but no longer by water-power.



153



152 (left), stone-built water mill at Garstang, Lancashire, in farmhouse style, no longer working. 153 (above), at Chippenham, Wilts, also of stone and resembling in style the early textile mills of the same region—for example, 112 and 113 (page 45). It belongs to Pound, Taylor and Collins, flour millers, but is due to be demolished soon to make way for a row of shops.



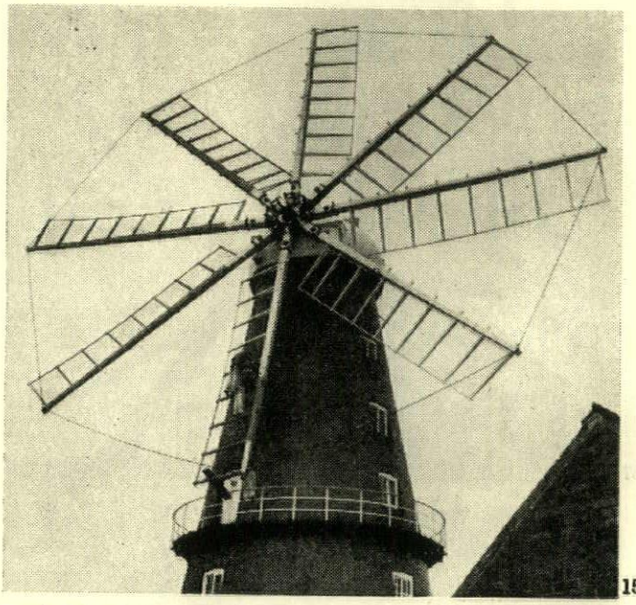
154, tower mill at Boston, Lincs (see page 60): looking up from beneath the gallery. This kind of robust timber detail has a timelessness that allows the modern architect to learn from it without being guilty of archaism.

Windmills have already been fully documented and their beauties are well known. They are, therefore, only briefly represented here. They cannot be omitted because, leaving aside their familiar role as romantic objects in the landscape, the architectural form they have evolved is a first-rate example of the challenge of function producing a style of architecture both elegant and robust. The vigorous detailing of things like balcony railings is particularly noteworthy, and meet for modern architects to study; so is the simple use of contrasting materials—brick and white-painted or black-tarred timber.*

Water-mills (see previous section) seem to have preceded windmills, the latter being used where no water-power was available. Mr. Wailes notes that no mills are recorded in western Europe at the time of Domesday Book, the mills mentioned there being either water-mills or cattle-mills. The earliest references to windmills in England occur in the twelfth century when they were evidently still a curiosity. A century later they were familiar objects. They were regarded as portable property, capable of being moved from one site to another. The first windmills were of the type known as a post-mill; that is (Mr. Wailes's definition): 'a box-like timber body, carrying the sails and containing the machinery, is mounted on a massive, upright oaken "post" on which it can turn.'

The other kind of mill, with a fixed body, is known as a tower-mill, though a timber-built, weather-boarded tower-mill, painted white, is often called a smock-mill because of its resemblance to the pattern of a countryman's smock. It is usually eight-sided, but may be six, ten or twelve-sided, and has a brick base anything from a few feet to a

* Notably by Mr. Rex Wailes. See his *The Windmills of England*, Architectural Press, 1948.



155

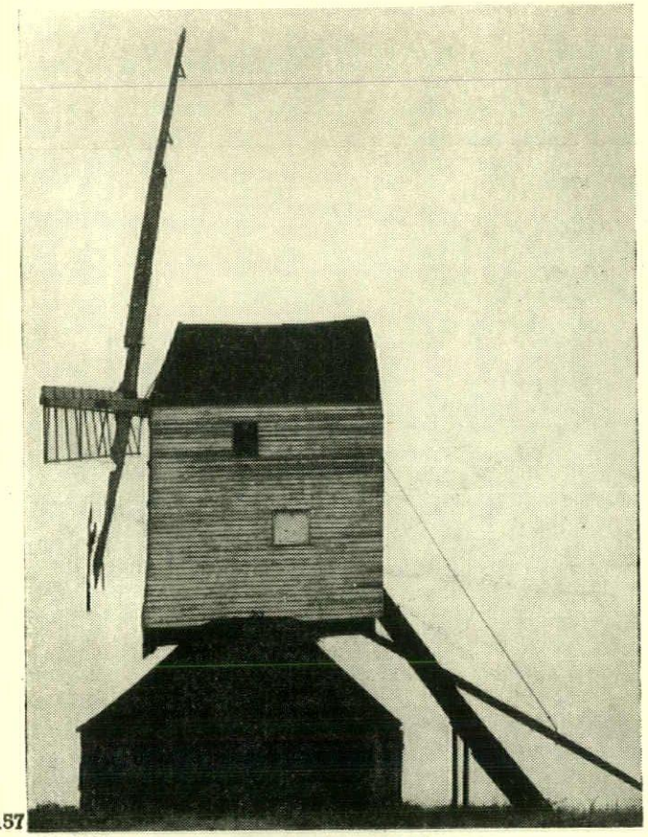


156

Right, two windmill rarities. 155, the only eight-sail windmill left in Britain: at Heckington, near Sleaford, Lincs. Usually there are four sails. Heckington Mill (a tower mill —see overleaf) originally stood on the site of Boston Docks, but was re-erected in a burnt-out tower. It was taken over by Kesteven County Council in 1951 and is now in good condition. 156, an unusually tall tower-mill (with sails replaced by the wheel of a modern wind-pump) attached to a five-storey mill building: Leach's Mill, Wisbech, Cambridgeshire.

couple of storeys high. In other tower-mills the main structure is all brick. The revolving caps, carrying the sails, windshaft and brake-wheel, are the crowning feature of tower-mills, each part of the country having its own traditional design of cap.

*Windmills are located in corn country where there is need for grinding grain; also in fen country where they are used for land drainage, though strictly these are not windmills but wind-*pumps. *At one time there were said to be as many as ten thousand windmills at work in England, but other sources of power long ago deprived them of their place in the rural economy. In* 1945 *Mr. Wailes estimated that there were less than a hundred still performing their original function. Happily the windmill, like the windjammer, was superseded at the moment when it had reached its peak of development and unselfconscious beauty. Hence the aesthetic appeal of the specimens that survive.*



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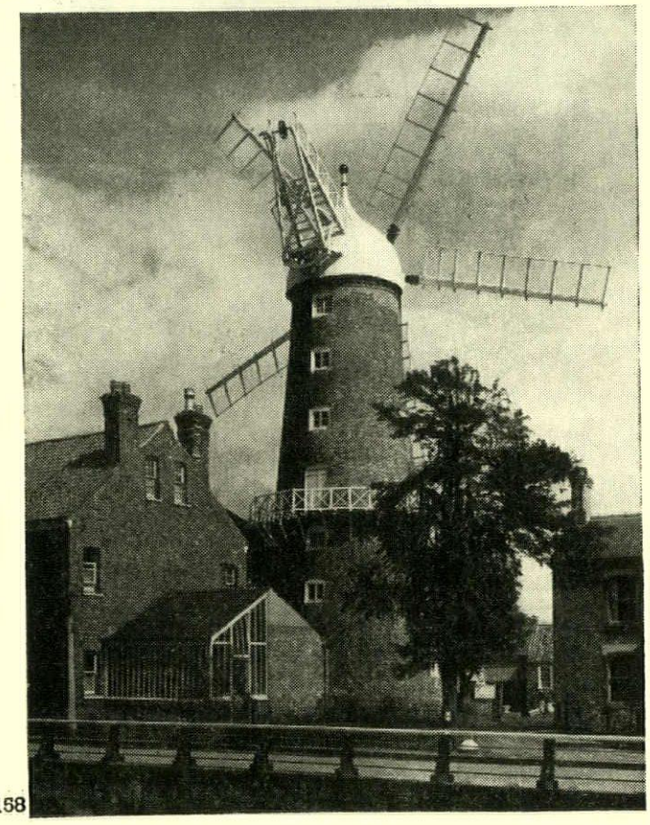


158

The basic types of windmill. 157, a post-mill, the most primitive type, in which the whole upper part of the building revolves on its base: Mountnessing Mill, near Ingatestone, Essex. 158, tower mill, in which only the cap, carrying the sails, brake-wheel, etc., revolves: the Maud Foster Mill, Skirbeck, Boston, with five sails—the last of the Boston mills to work by wind. 159 (below), Smock mill—a tower mill with the main structure above the gallery of timber, weather boarded and painted white: at Willesborough, just outside Ashford, Kent. In Kent the sails are called sweeps.

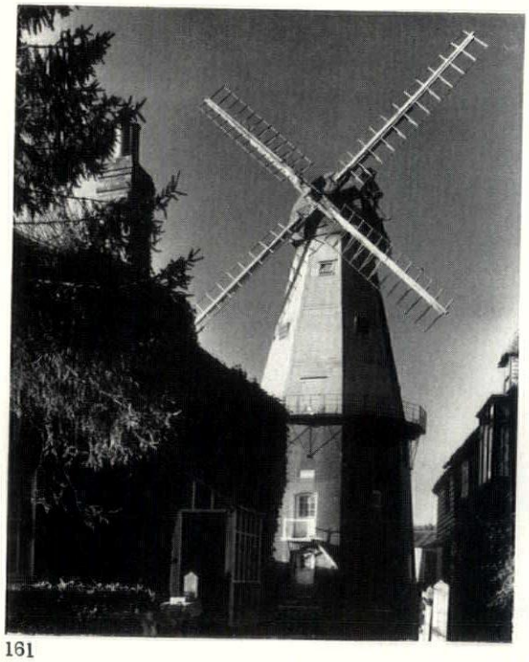


159

160 (right), detail of doorway at the Boston windmill shown opposite and on page 58: a painted battened door set in the round base of the tower. Note how the brick reveal is also painted, emphasizing the shape of the opening; a traditional practice deriving presumably from the painter's convenience (it is easier to make a clean line at an external than an internal angle) and from the advantage of a white surround to make the aperture still easily visible when the door is open.



160



161

Cranbrook mill, Kent, one of the best surviving examples of the smock mill. It is still working. The tablet above the upper door reads 'Henry Dobell, 1814, Humphrey Builder.' The mill is painted grey and white. The delicately designed gallery, 162, is of iron.



162

BREWERIES, MALTINGS AND OAST-HOUSES



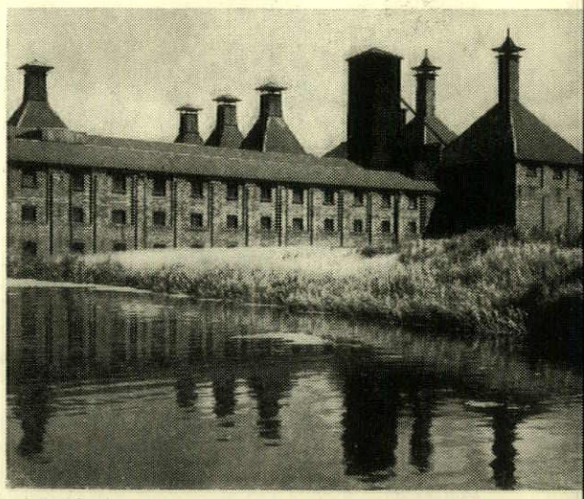
163

In the whole wide range of anonymous industrial architecture, maltings are probably the buildings whose beauties have been least noticed. They have neither the rural charm of water- and wind-mills nor the romantic associations of the pioneer textile-mills. They are mostly nineteenth century—the red and yellow panelled brickwork, and the use of projecting brick courses in this example at Mistley, Essex, are typically Victorian—yet their direct response to the challenge of function gives them the same vigour that the earlier buildings display, and the robust detailing of features like their characteristic louvred windows is especially rewarding for modern architects to study—see close-ups of some of these windows on pages 68 and 71.

The brewing of beer was one of the first activities to undergo the transformation from home to factory—in 1419 *there is a record of no less than three hundred breweries in London. It was not, however, until the eighteenth century that brewing became almost wholly industrialized in London, and not until the Victorian era that the process was completed elsewhere. Before then the wealthier classes brewed their own beer, and for long afterwards many farmers brewed beer for their labourers, and publicans for their customers. The latter practice died out as the tied house system spread during the nineteenth century.**

As far as can be discovered no brewery buildings earlier than the eighteenth century still operate in England, but there are several fine examples of this time.† Although large towns and cities have their breweries, it is essentially an industry of the small country town, where the brewery is often one of the most satisfactory buildings. A brewery must be sited near a good water-supply, not only for brewing but for steam-raising and cleansing. At Burton-on-Trent the whole town is devoted to the brewing industry, owing to the exceptional suitability of the local well-water for brewing pale ale, but the existing buildings are mostly late Victorian or Edwardian and provide but few illustrations of the functional tradition at its purest.

The unmistakable geometry of the brewing industry: the pyramidal roofs of maltings, breaking the skyline with their capped vents, and the long low brick buildings with square, louvred windows. 164, Banks's maltings beside the canal at Langley, Worcs.



A brewery of the normal type is arranged either on the tower system, in which the raw materials (malt, hops, water, etc.) are first hoisted or pumped to the highest point and the wort (or beer in process of manufacture) descends by gravitation as it passes through its various processes, or (in larger breweries) on a horizontal system with pumps employed to raise materials or wort as required. The cooling of the wort after the incorporation of the hops took place in old breweries by letting it lie in shallow open vessels; in modern ones refrigeration is used. The next stage is fermentation, usually completed in four or five days. Some draught beers are then matured in cask for varying periods according to their strength; some are chilled, filtered and carbonated; some are 'naturally conditioned' in bulk storage tanks. Bottling is another complicated process. A brewery is, therefore, a complex affair: the malt-house, hop room, sugar-store, brew-house,

* William Cobbett wrote in his *Cottage Economy* (1821) that 'forty years ago there was not a labourer in his parish' (that of a large Sussex farmer) 'that did not brew his own beer; and now there is not one that does it, except by chance the malt be given him. The causes of this change have been the lowering of the wages of labour compared with the price of provisions . . . the enormous tax upon the barley when made into malt; and the increased tax upon hops. These have quite changed the customs of the English people as to their drink. They still drink beer, but in general it is of the brewing of common brewers, and in public houses, of which the common brewers have become the owners.'

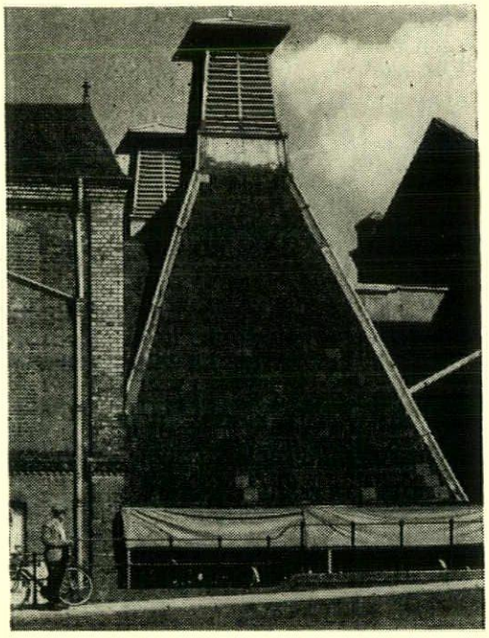
† Also brewers' houses, which adjoined the breweries. These are outside the scope of this issue but will be dealt with in a separate article by Mr. Brian Spiller, to be published shortly.

fermenting-room, cellars, cooperage, stables, vehicle sheds, maintenance shops, bottling store and offices require considerable space, and there are also power and heating plants. The buildings often surround a yard, enclosed within a high wall.

Next to the breweries themselves, the most important buildings serving the brewing industry are maltings, where barley is converted into malt by encouraging, and then arresting, the process of germination. Many breweries possess their own maltings, but independent maltings are very numerous, especially in country towns in the Home Counties and East Anglia. They are unmistakable on account of their kilns with steep pyramidal roofs.

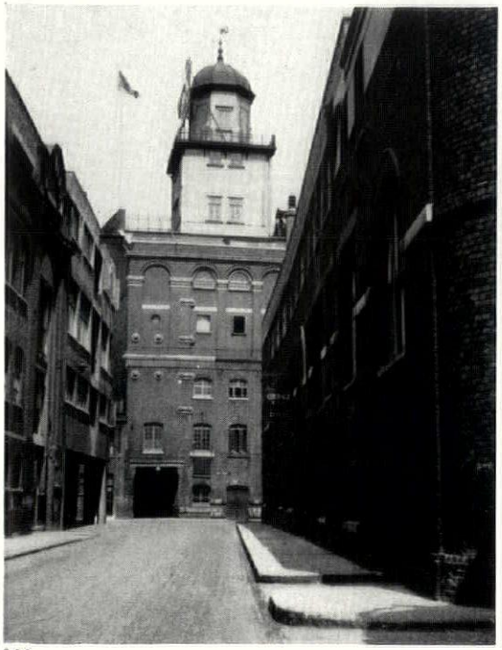
Leaving aside the recently introduced system of drum-malting, in which the barley is germinated in revolving drums through which moist or dry air at various temperatures can be passed, the system used in England is that known as floor-malting, involving a rectangular building of several storeys with cisterns at one end and kilns at the other. Here the barley passes through a sequence of processes, occupying several days, including steeping in the cisterns, 'couching' to enable it to gather heat, turning, drying and finally curing in the kilns. After this it must be dressed and polished, weighed and sacked and stored until the finished malt is discharged, all of which requires substantial subsidiary buildings, as in the case of a brewery.

Most maltings now in use date from the nineteenth century. The main building—the flooring block just referred to—usually has three floors, but with a height from floor to ceiling of only about six feet or even less. It has regular small windows, usually squarish in shape, serving as vents and filled with louvres—thus arises the typical exterior facade of a malting: long and low with blind apertures given depth by the robust detailing of the louvres, and also given interest by the fact that the building is often strengthened by cross-ties which appear on the outside in the form of regularly spaced heavy iron crosses or round or oval plates. Providing a geometrical contrast to this building is the kiln or group of kilns at one end of it—tall with pyramidal roofs, usually tiled or slated, crowned with vents whose vigorous shapes are usually seen silhouetted against the sky.



165, malt kilns at Mistley, Essex (Free, Rodwell and Co.): steep slated roofs, crowned with louvred vents. The typical nineteenth-century panelled brick flooring-block of the same maltings is shown on page 62.

The oast-house, for drying hops, is the third type of building that serves the brewing industry, and the bold shapes of its early circular, and later square, towers (either single or in groups) are familiar features of the Kentish countryside where three-fifths of all English hops are grown, originally for reasons of soil and climate and now also because of the specialized labour and experience available there. The kiln, built of brick and about twenty feet in diameter, has a tall conical or pyramidal roof which terminates in an opening about three feet in diameter, surmounted by a wooden cowl. The cowl is pivoted and provided with a vane to keep the opening turned always away from the wind. The design of the cowl —painted white, in sparkling contrast to the dark red brick and tiling of the tower it crowns—is a first-rate example of a shapely form arrived at by the long process of trial and error. Oast-houses are usually seen as part of a group of farm buildings, but the latter are outside the scope of this particular issue, devoted as it is to early industrial buildings, to which category oast-houses belong only by virtue of the expression they give to a specialized technical activity. The very great contribution that farm buildings, and the rural craftsmen responsible for them, have made to the functional tradition over several centuries is a different story.

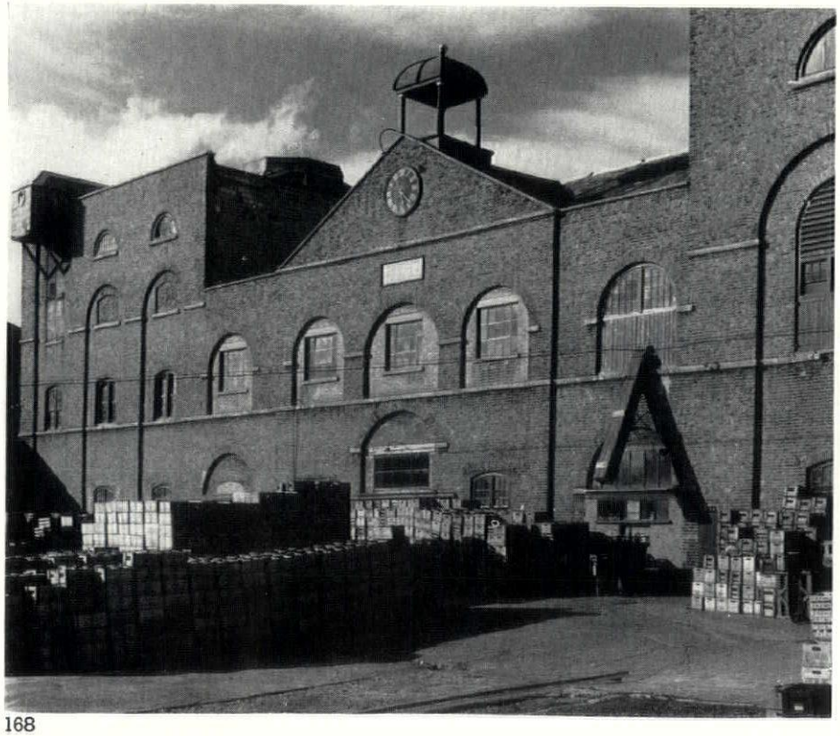


166



167

The city brewery: 166, Courage's at Butler's Wharf, just downstream from Tower Bridge, London, facing St. Katherine's Dock; 167, Bullard's Anchor Brewery, Norwich, 1868, in red brick—another example of the long persistence of Georgian motifs.



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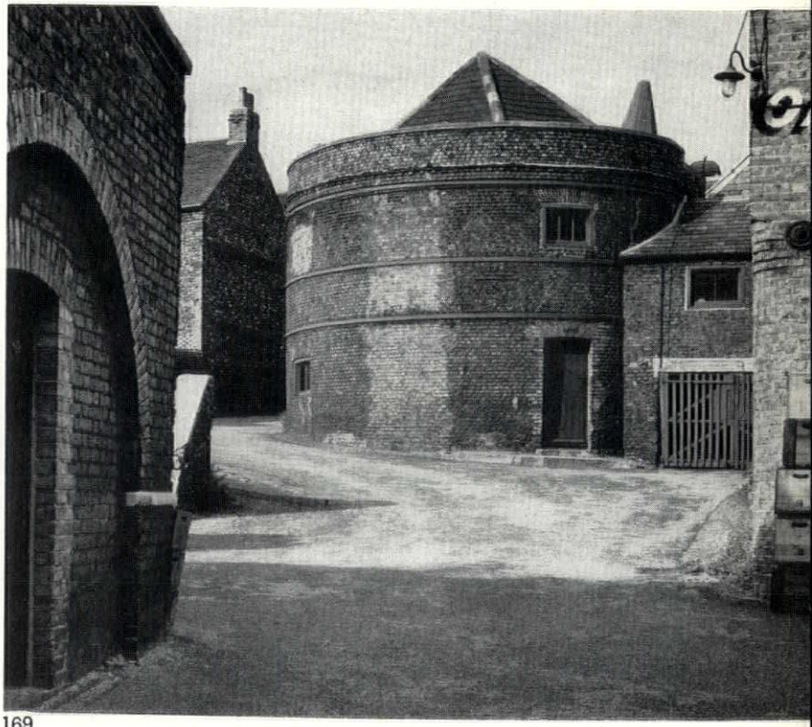
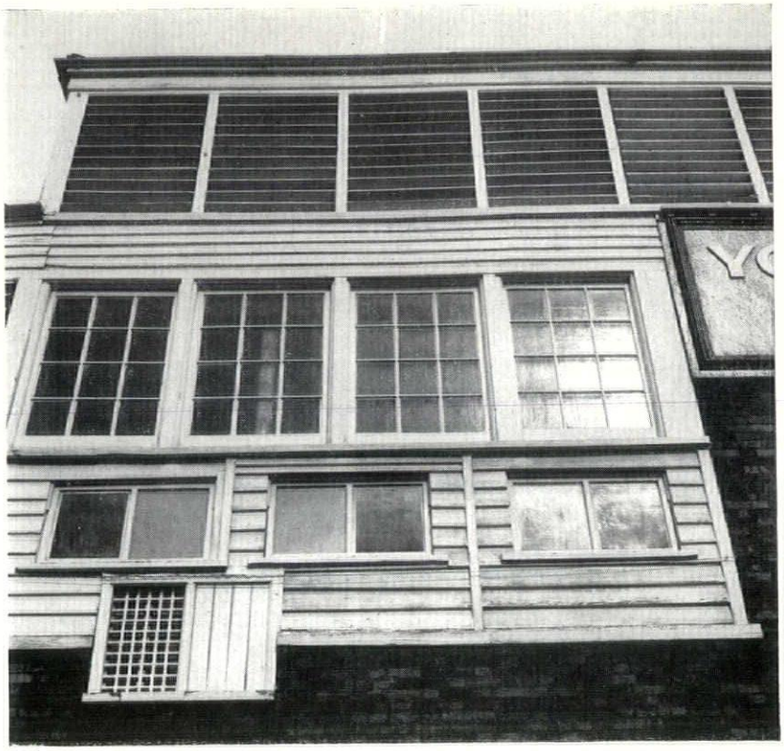


169

Cobb's Brewery, Margate, built of yellow brick: 168, the main façade (the plaque beneath the pediment reads 'Foundation laid 6th July, 1807. Brewed in 6th July, 1808. Wm. Teanby, Architect'); 169, the approach from King Street, leading to the unusual circular brewhouse.



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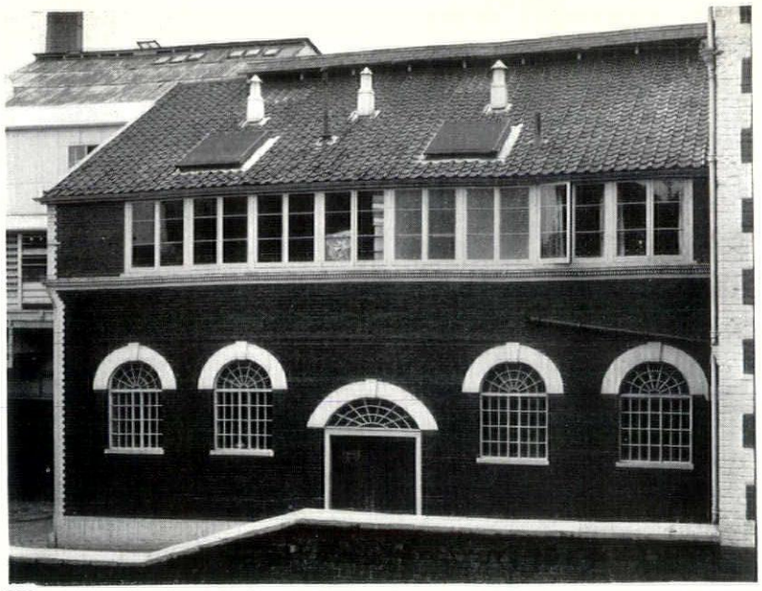


171

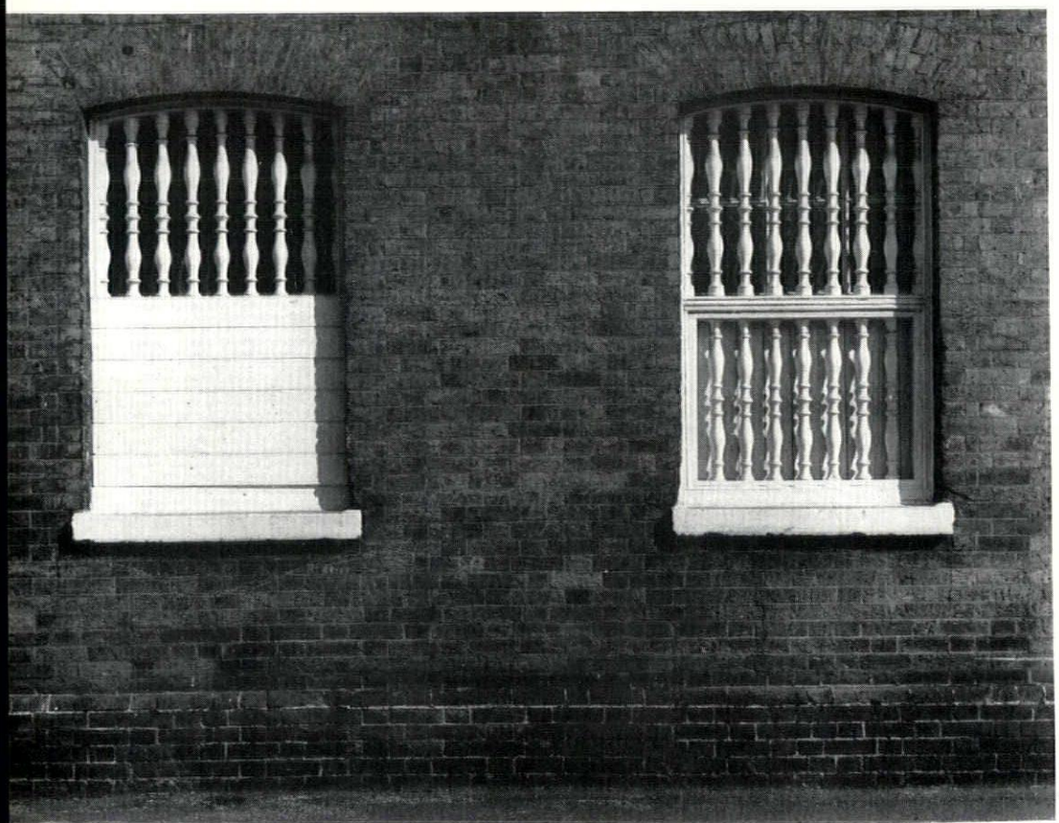
A contrast in brewery styles, both from Norwich: 170, the timber-framed superstructure of the Crown Brewery, King Street, with variously shaped windows crowned by a louvred storey; 171, Anchor Brewery, Costany Street, (about 1868), in painted brick with an odd combination of horizontal window and Georgian stable-block style.

BREWERIES

172 (right), Simpson's Brewery in the High Street at Baldock, Herts—yellow brick in front and red behind, relieved by white-painted woodwork. Ground-floor windows and fanlights are fitted with a grille of turned wood balusters of unusual elegance—173 and 174 below: windows white; door a fresh green.



172



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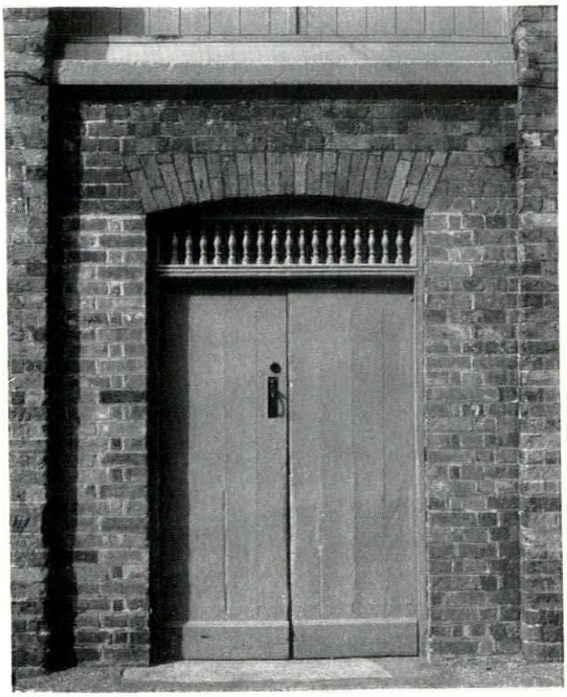


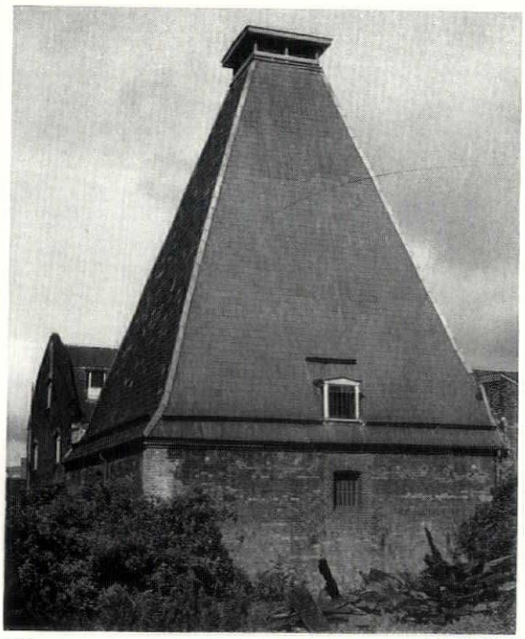
174



175

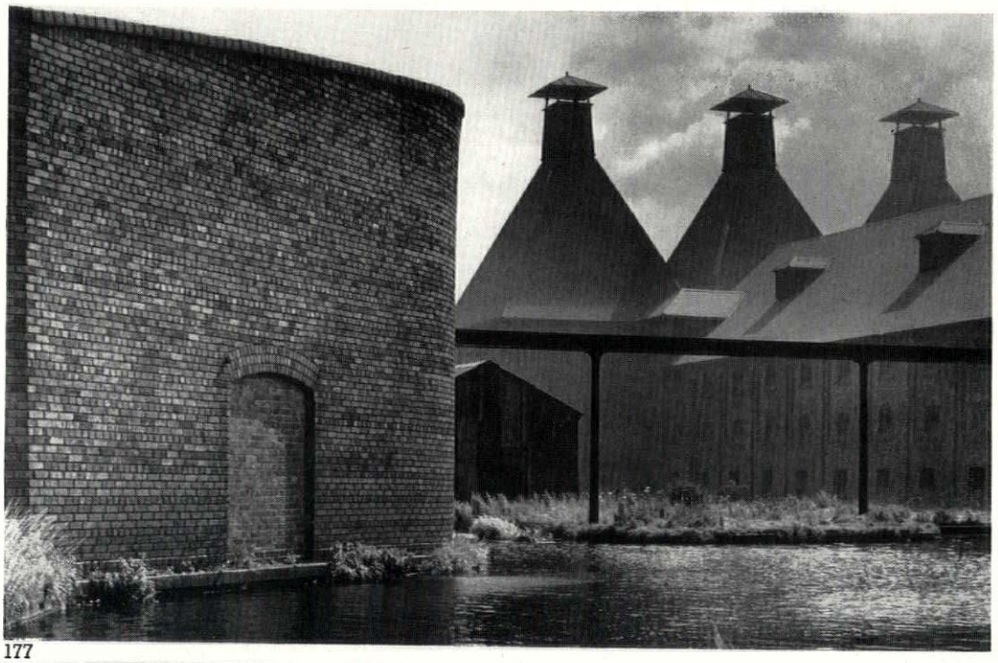
175, the spectacular scale of the free-standing malting (Gilstrap, Earp and Co., Walton, near Peterborough) is derived from its long, symmetrical façade, steep dormered roof and the rows of small windows crowded beneath it.

MALTINGS



176

The architectural ingredients common to all maltings: 176, the high pyramid-roofed kiln, slate-covered (R. C. W. Paul, Ipswich); 177, the grouping of kiln-vents against the sky (Langley, Worcs.); 178, a pattern of small segmental windows, barred or louvred, and superimposed on this a pattern of tie-irons, in this case white painted (Ipswich Malting Co.).



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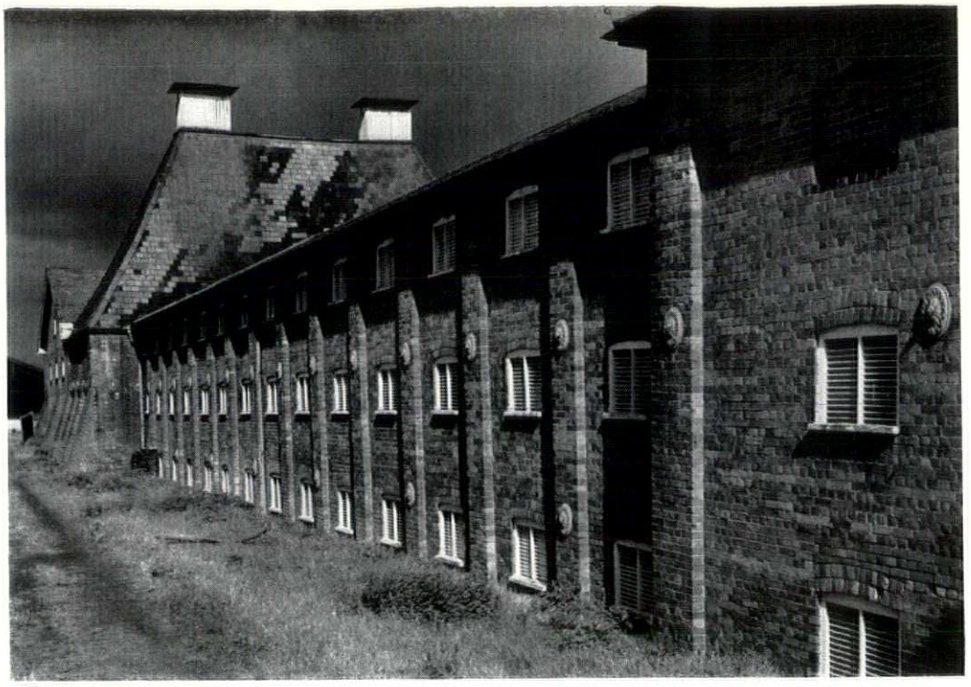
178



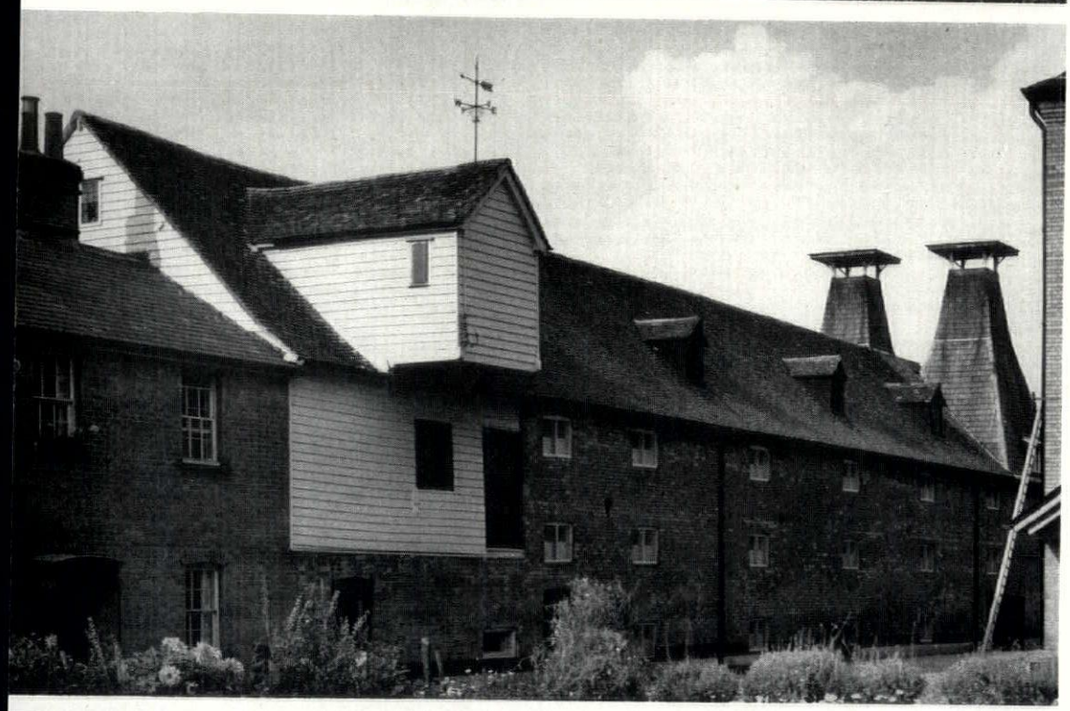
A typical flooring-block, with simply buttressed brickwork, square segmental windows with white painted wooden louvres and a regular pattern of tie-irons, in this case elaborately moulded: at Colchester, 1853. The surprising scale of these buildings is given by the small distance (sometimes less than six feet) between floors, and therefore between the rows of windows.

179



180



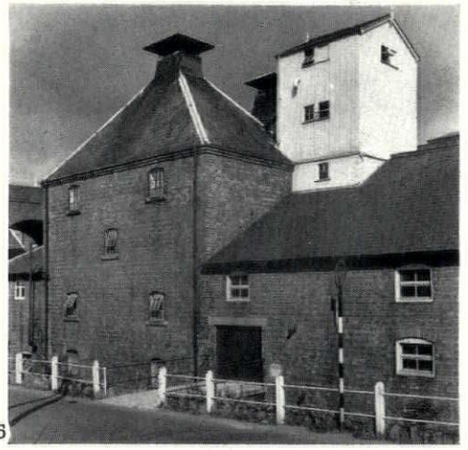




White painted weather-boarded structures, contrasting with the predominating brick-work, are features of most maltings: 181, St. Stephen's Maltings, Canterbury (Mackeson and Co.), a fairly late nineteenth-century example; 182, the rather earlier red brick Bishop's Stortford maltings; 183, by the River Lea at Stanstead Abbots, Herts. Here the tie-irons occur as a single white-painted row beneath the hipped gable.



184



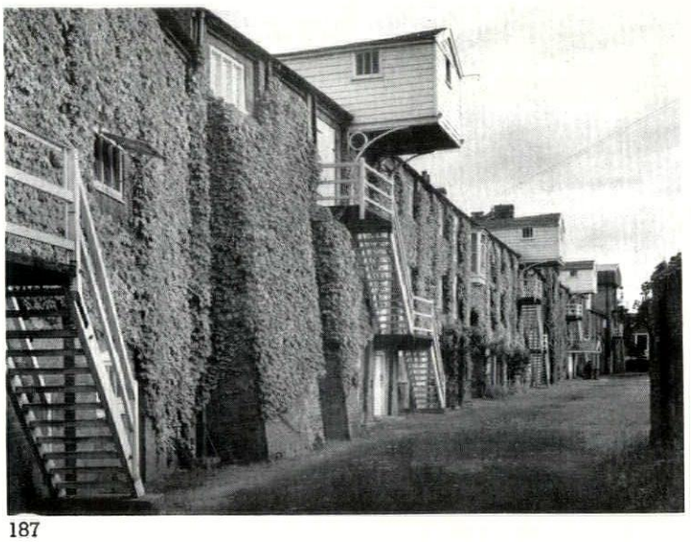
185

At Stroud Brewery, Glos. In 184, conical kiln-vents, faced with tiles, grow out of a slated roof; 185, has the usual mixture of brick, slate and white-painted timber—in the form of an obviously later, but wholly consistent, addition.



186

The maltings at Snape, Suffolk, in which dwellings are incorporated in the main range of buildings (on the left in 186, above), is not only one of the finest specimens of its kind, but shows how work of several different periods maintains a unity of character when it all follows the same functional principles. The long façade, 187, consists of buildings dated 1859, 1884 and 1885, and at the extreme end (just left of 187) is an addition of 1952, simple and completely harmonious. 188, a typical example of the robust wooden detailing. Here the circular tie-irons are painted black instead of white.

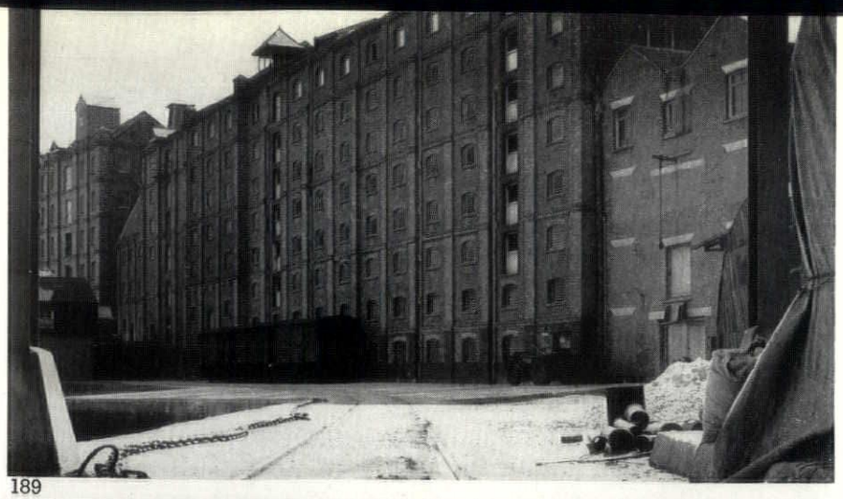


187



188

The huge eight-storey maltings at Mistley, Essex (Free, Rodwell and Co.) in yellow and red brick, notable for its strongly modelled details: 190 (below), close-up of windows—see also page 62. On the right, types of East Anglian maltings.



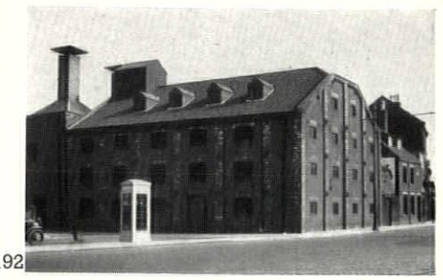
189





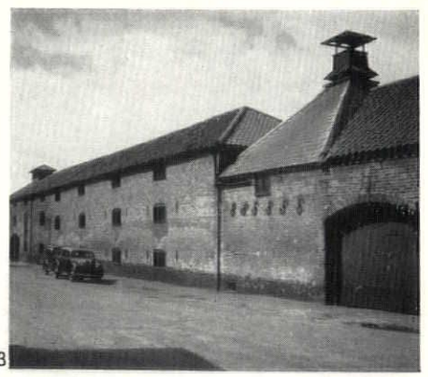
191

191, at Beccles, Suffolk (by the station); built 1860; owned by John Crisp and Son.



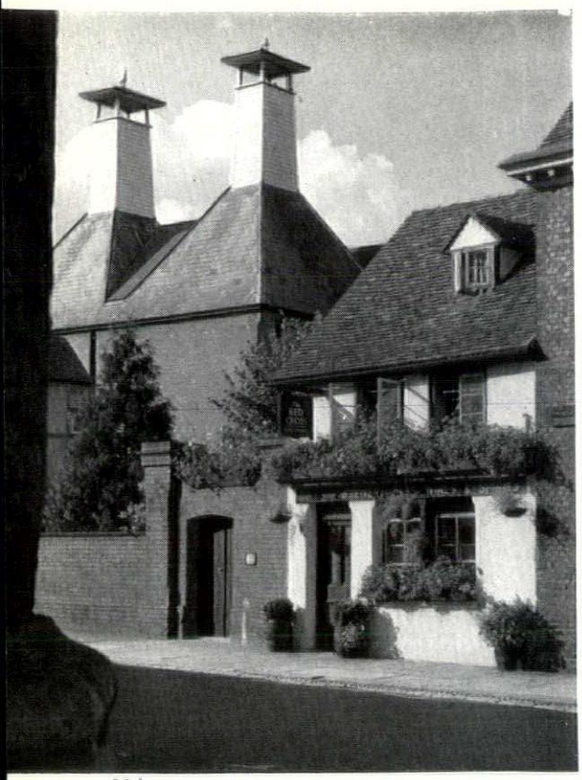
192

192, at Great Yarmouth, Norfolk (North Quay); owned by R. S. Watling and Son.



193

193, also at Beccles; here the usual slates on the roof are replaced by pantiles; S-shaped tie-irons.



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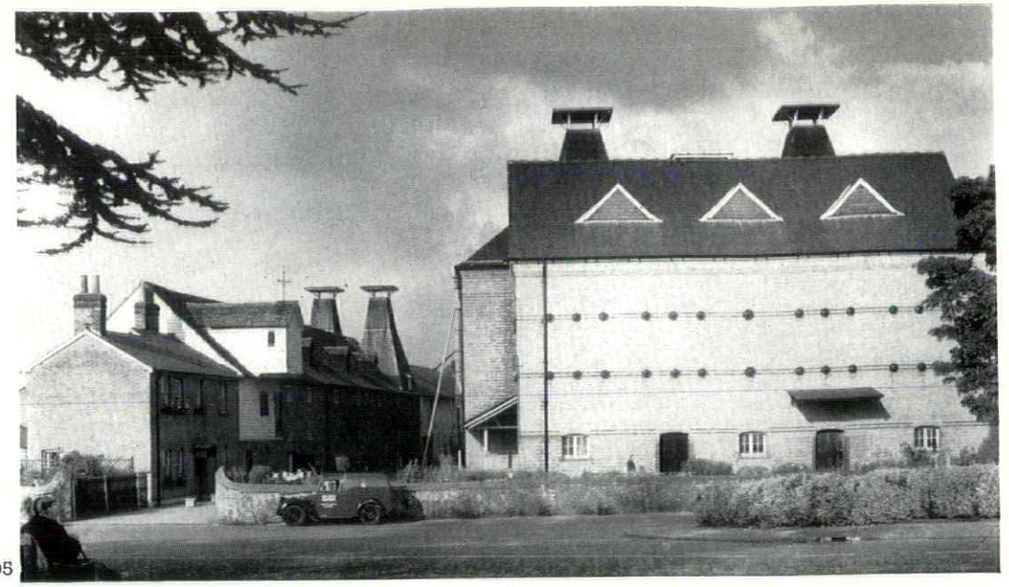
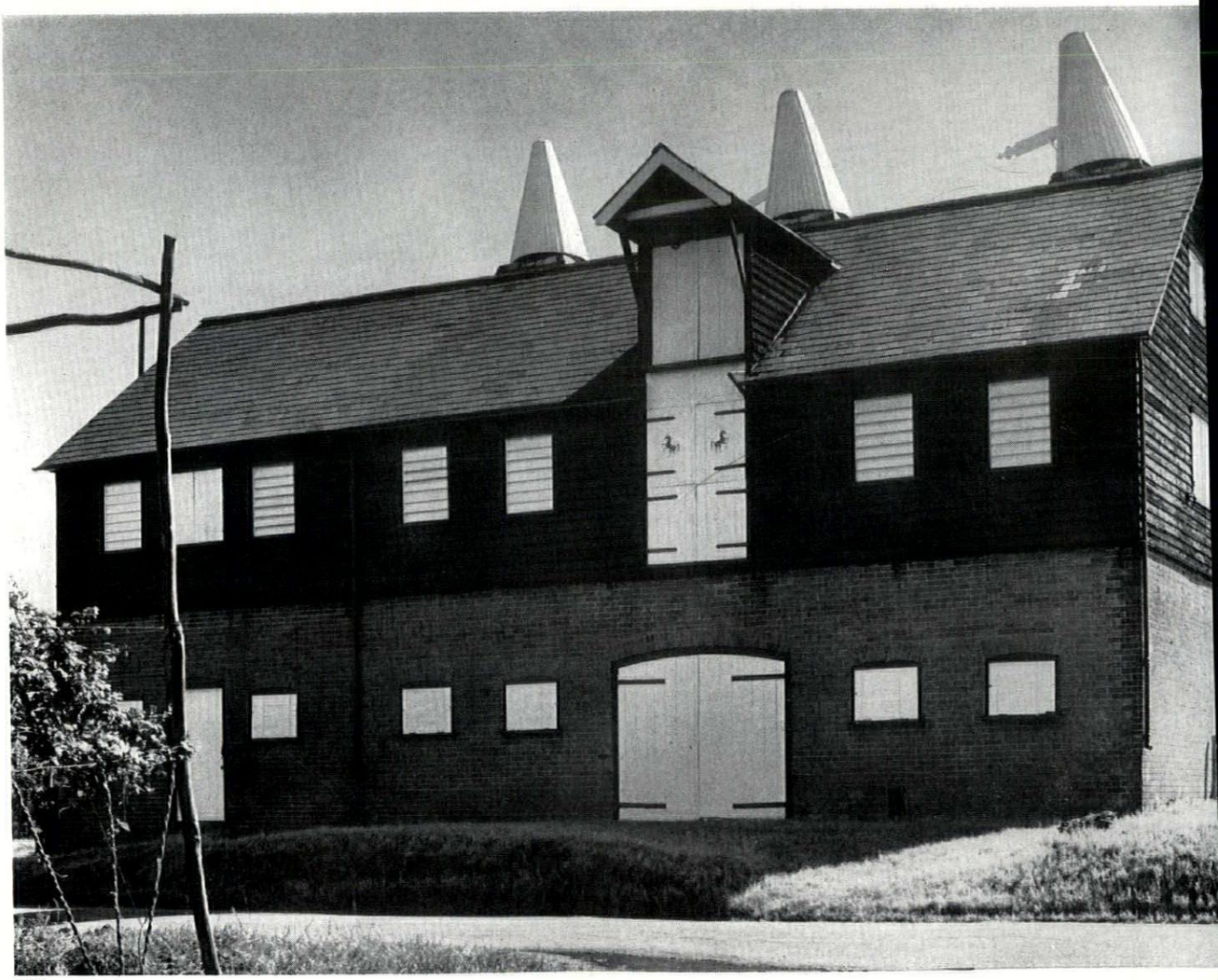


195

Maltings and dwelling-houses happily grouped, as often occurs in small towns: 194 (left), at Henley-on-Thames, where the white kiln-vents match the white walls of the house; 195, at Bishop's Stortford. Note the interesting spacing of the black tie-irons in the building on the right and the closed triangular dormers in the roof.

MALTINGS

OASTHOUSES



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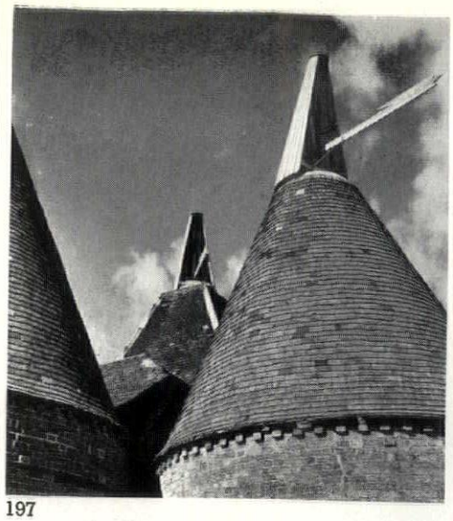
196, the combination of black-painted weather boarding, white-painted doors and window-shutters and a red brick base give richness of tone to this oast house at Boughton, Kent.



197

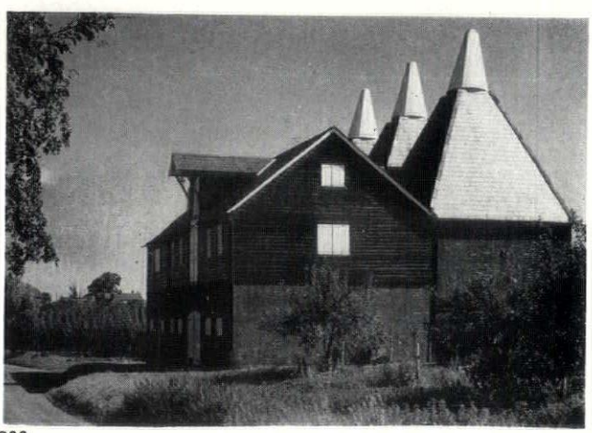


198



199

Above, the familiar pattern of Kentish oast house, with conical-roofed drying kilns, 197, crowned with delicately detailed wooden cowls. This example, at Cobham, has square kilns also, 198. 199, close-up of the entrance, showing subtly varied geometry in brick.



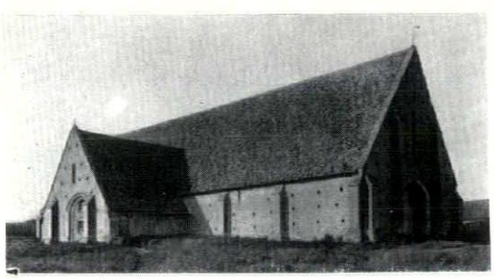
200

200, side view of the oast-house opposite, with its triple drying kilns.

THE FUNCTIONAL TRADITION, PAST AND PRESENT

This issue of the Review *deals with the functional tradition as shown in early industrial buildings, and it is pointed out in the introductory article (pages 5-7) how the same tradition runs through the history of English architecture, emerging strongly wherever the challenge of function is most simply, economically and unselfconsciously met. Herewith is a sequence of reminders of the way the timeless qualities characteristic of the functional tradition show themselves in buildings of all periods and styles.*

1, the medieval tithe-barn at Great Coxwell, Berks, where the great span of roof, the consequent buttressing and a pattern of ventilation apertures are relied on for the building's forceful architectural effect. 2, Twizel Bridge, Northumberland, with the widest span of any surviving medieval structure in England. Its strength is



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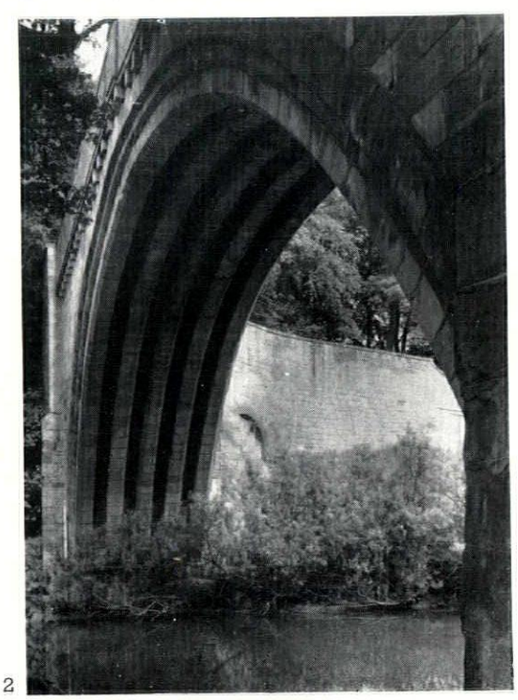
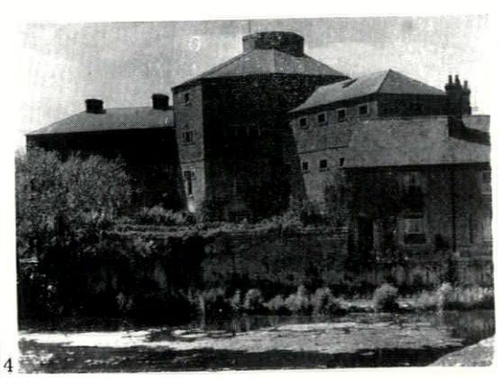


2



3

emphasized by the emphatically ribbed arch. Farm buildings illustrate the timelessness and the vigorous geometry of the functional tradition: 3, a stone-built farm near Belper, Derbyshire. 4, a later example of the same anonymous vernacular: Abing-



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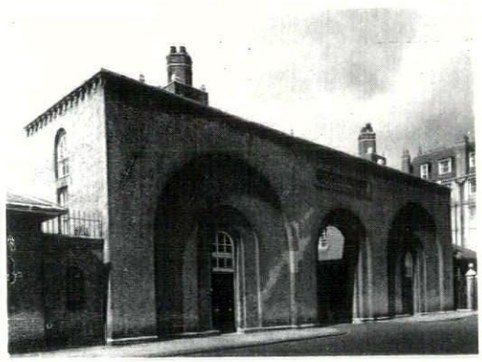
don gaol, 1801, now used as a granary.

Although the tradition is in its essence anonymous, its principles have been understood and applied on appropriate occasions by a number of famous architects, notably Soane. 5, the stables at the Royal Hospital,



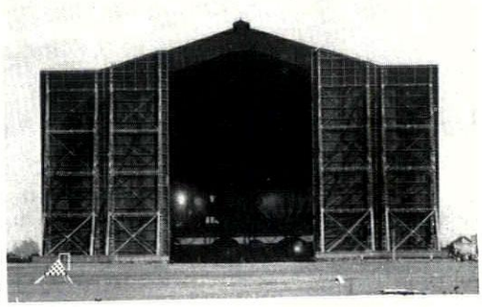
5

Chelsea, 1814-17, a precedent which suggests that modern architects, in spite of living, as Soane did, in a self-conscious age, could learn from the products of this unselfconscious tradition. 6, new materials used lightly and delicately to make a typical



6

Victorian contribution to the tradition: a furniture store at Macclesfield, with cast-iron façade presumably of the 1870's. 7, the unsought-for impressiveness of the great steel envelope—an early example: the air-



7

ship hangar at Cardington, Bedfordshire, built in 1917. 8 and 9, two of the twentieth century's anonymous contributions to the

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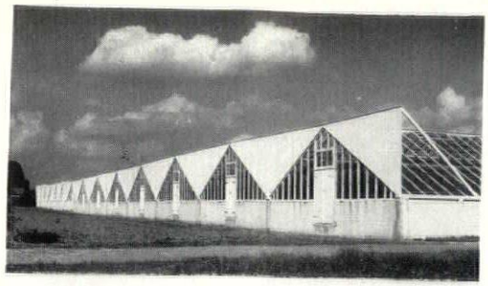

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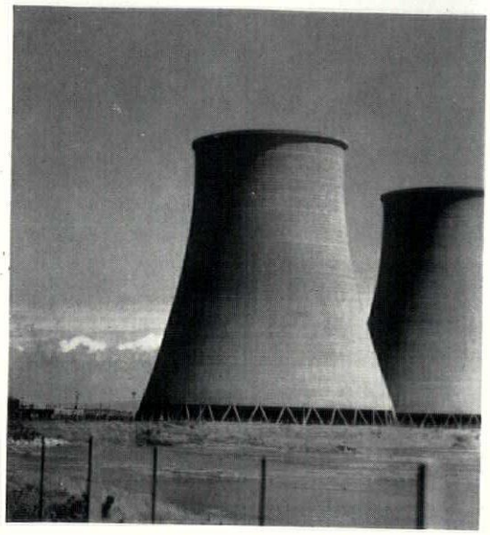


9

continued from page 74]

tradition: glass-houses at Spalding, Lincs, and that now common object of the English countryside—splendid in shape if not always found where one would want to find it—the concrete cooling-tower of the modern power-station—this example is at Fleetwood. J.M.R.

MEMOIR

SIR PATRICK ABERCROMBIE

When Sir Patrick Abercrombie, seventy-seven years old, died at the end of March, Britain lost its first and probably its last great town and country planner. He was fortunate in his time, as the time was fortunate in him. The first forty years of deliberate planning, the years of opportunity for the new profession of planning consultant, coincided almost exactly with all but the last years of his working life. And since he had qualities that were far superior to those of his contemporaries, he dominated the planning field for the whole of that time.

He began as an architect. But he never much practised architecture in its more limited sense; and he had few actual buildings to his name. And although his early plans (especially the design which in 1913 won the international competition for the replanning of Dublin) were notably fresh, imaginative and humanistic, and although the professorial chair which he occupied for twenty years at Liverpool has the title of Civic Design rather than Town Planning attached to it, his major contribution was not to the architectural aspects of planning. It was as a *regional* planner, rather than a *town* planner, as a designer working on a wide territorial basis rather than a narrow one, that he made his greatest contribution and had his greatest success.

It has to be admitted that some of the later town plans with which his name is associated are below his best work. But because of his manner of working, it is difficult to estimate the full measure of Abercrombie's direction or participation in these. Throughout his working life he never had an 'office' of his own in the ordinary sense. He always worked in collaboration. Even in the early plans for Dublin and Stratford-on-Avon he was joined with others—in the case of Stratford with neither fellow-architect, fellow-planner nor local surveyor, but with a poet, his brother Lascelles. In almost every place or region that he planned, except Hull, where his collaborator was Lutyens, he worked in association with a local man. Of all his plans up to those of the 1940s, it is safe to say they are wholly his own, and that his collaborator was little more than a local survey-agent, his acknowledgment of the 'collaboration' on the title page on the published report (and how elegant as well as authoritative those reports were!) being more an expression of his characteristic generosity than anything else. But for the later *town* plans, those made during and after the war, one has the feeling that they were less than wholly his: they lacked something of his characteristically sensitive handling: and one feels that the collaboration there was of a much fuller kind, and that in it Abercrombie took over attitudes and ideas which at a freer time (for though he was in his mid-sixties he was immensely active during those years) he would not himself have naturally inclined to.

The regional plans were a different matter. There he was both pioneer and indisputable master. Beginning with the plan for the Doncaster coalfield (1920–22), the first plan of its kind in Britain, and probably anywhere else, he produced a series of something like a dozen others, culminating in the plans for the county and region of London. To the making of these plans he brought a remarkably extensive knowledge and understanding in the fields of sociology, topography, geology and economics, an imaginative



Sir Patrick Abercrombie presenting his master-plan for Addis Ababa to the Emperor Haile Selassie, in Addis Ababa last year.

sensibility, a fine deep humanism—and, in addition, his highly developed sense of large-scale design. It was this sense of overall design which in the end made all the difference between his plans and those later practioners in the same field. His regional plans were not, as is so often the case, a mere co-ordination of differing considerations and of small local plans. They were plans for imaginatively (though solidly practically) *designed* regions.

That was Abercrombie's most distinctive contribution to planning. That, and the related activities which went with it—his founding and direction of the movement for rural preservation: his labours on the Barlow Commission to secure, beyond the regional planning he had been so much engaged on, a still wider planning—national planning through the control of industrial location, through the development of new towns, through the establishment of national parks; and through the massive machinery of the Planning Act of 1947 (which resulted largely from his advocacy) to make all those things, as well as local planning, possible. It was a very great contribution and the honours and fame that it brought him were splendidly deserved.

But the planner's profession can be, and very often is, an unrewarding one in the end. Few activities can be more frustrating—in Britain at least. And Abercrombie had his share of that, though he bore it with remarkable resilience and vigour. He saw most of his plans ignored or mutilated. He saw the mountainous powers of the Planning Act produce, after years of labour, mousy little plans that were hardly plans at all. And he saw his chosen profession, his lifetime's vocation of planning consultant, dried up when planning passed into the hands of officials. After 1947, Abercrombie, along with other consultants, was denied almost all work in connection with planning in Britain. While junior assistants in planning offices (the upper officials being too busy with committees) were designing the redevelopment plans for the cathedral cities, the county towns, the market towns which are one of the glories of England (to say nothing of the industrial towns which are not), while the juniors who had only just finished their studies were doing this work which requires such subtlety of touch and such maturity of judgment, Abercrombie and his fellow-consultants were unemployed. He, with his international reputation, the biggest planning reputation in the world probably, was sometimes called on to plan abroad—Hong Kong, Cyprus, Addis Ababa. But never in England. It is true that he was old by then; but he was extremely vigorous and vital, and was eager to be working still.

If the Planning Ministry, the planning authorities and the planning officers gave him and his fellow-consultants no work, the Town Planning Institute gave him its Gold Medal (the R.I.B.A. and other bodies had done this earlier, but the T.P.I. medal was instituted only in 1953, and Abercrombie was the second recipient of it). But perhaps it had better not have done so. For, at the special ceremony which was called for the presentation, less than a dozen people saw fit to come and do honour to the greatest member of their profession.

It has been said that Abercrombie was the first and probably the last great British planner. He was the first because his great qualities met the great opportunities he was given. He was probably the last because officialdom has killed the independent planner by denying him all opportunity of work. If another Abercrombie is on the way somewhere (though they are rare spirits) he had better not be born in Britain.

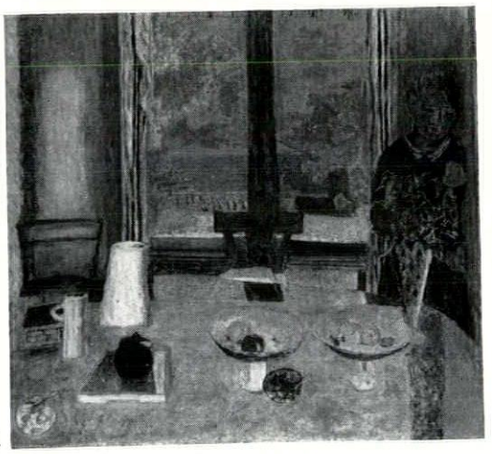
Thomas Sharp

EXHIBITIONS

The selections from two famous collections of modern paintings recently shown in London under the auspices of the Arts Council contained pictures of exceptional merit but, for opposite reasons, made unsatisfactory exhibitions. In spite of its impressive examples of Matisse, Picasso, Braque, Rouault and Chagall, the Musée d'Art Moderne show was too ambitious. The one hundred and sixty-four good, bad and indifferent works hung in the R.B.A. Galleries were jockeyed into an exasperatingly make-shift survey of the School of Paris, and the large and important-looking pictures by unimportant painters which revealed the unexportable side of the School of Paris were brought into unnatural prominence.

The Solomon R. Guggenheim Museum is not subject to the compromises and pressures which bedevil the acquisition policies of state-owned museums, but the seventy-four works, ranging from Seurat to Jackson Pollock and Riopelle, extracted from the collection for a European tour, made a somewhat whimsical miscellany, and the basis of selection remains a mystery. The Director, Mr. J. J. Sweeney, says that the Museum is not attempting to embrace as many aspects as possible of twentieth century art, but is assembling 'a choice body of paintings and sculpture which may be held up to the public as a gauge or standard of quality.' On the face of it, and if the selection shown at the Tate is in any way representative of the collection as a whole, those members of the public who take it as a gauge of quality are likely to acquire some curious biases. What conclusions will they draw, for instance, from the presence of three not very good paintings by Franz Marc and the total absence of Matisse? What are they to make of the fact that there are five large paintings by Robert Delaunay and only one small work by Mondriaan? And does Mr. Sweeney think that the picture by Stuart Davis, say, represents a higher standard of quality than an early Chirico or one of Max Ernst's 'forest' abstracts? Perhaps there would have been no need to ask such questions if Mr. Sweeney's introduction had been more informative. In any case, once one had accustomed oneself to the fact that some of the inclusions and omissions were on the eccentric side, it had to be admitted that almost every painter in the show was represented at his best.

The solitary example of Bonnard was a case in point. It is one of those interior-exterior compositions at which he excelled, and in which, without a trace of impasto, he gives a wonderful account of the density



1

of the real world, 1. His complacent delight in his surroundings as he found them is reflected in the superb indifference to 'priorities' which enabled him to give his entire picture surface an amiable and tempting sensuality.

Bonnard's 'Dining Room on the Garden' was painted in the 'thirties, but the foundations of such perceptual triumphs were laid before the conceptual approach of the cubists and surrealists put a primitivistic emphasis upon the obsessional presence, and now, when a painter like Masson attempts to hide from the phantoms he has raised by gaining a footing in that focusless world where Monet and Bonnard bear witness to the equality of a thousand small sensations, he only succeeds in giving us an account of the vertiginous sensation he experiences when he unfocuses his vision. But less sensitive men

than Masson, such as the painters connected with the Spazialismo movement who have been exhibiting at Marlborough Fine Arts, do not even transmit their giddiness, although they claim to be painting their imaginary experience of outer space. I must confess, however, that all those devotees of popular astronomy whose turbulent brushstrokes are supposed to be read as solar disturbances seem to me to be following one of the least rewarding byways of action painting.

Reg Butler's third exhibition at the Hanover Gallery was devoted to bronzes of the female nude. The struggle between open construction and closed form that added drama to his previous exhibition has been succeeded by an equally dramatic struggle between his interest in primitive fertility symbols and nubile girls, 2. These



2

tense, brilliantly conceived and sometimes brutal-looking hybrids, absorbed by their own nakedness, create a sensual atmosphere which is very far from Bonnard's amiability. Their closeness to the human effigy suggests that Butler may be striving to obtain his release from the regiment of obsessional presences that picket the course he has followed, but if this is so, he is not finding it easy to elude them.

The Italian sculptor Mirko, less turbulent than Butler, has a way of being able to draw the sting of those emblems of primitive magic that prompt him to raise his pillars of cut metal. The large tubular form which dominated his first London exhibition, held at the Arthur Jeffress Gallery, was frankly entitled 'Totem,' but by the time he had completed his complex and elegant surgery it had shed its phallic connotations and every hint of barbarity, and turned into an image of rustling leaves imprinted with the last startled gaze of Diana, 3.

The obsessional presence turns up in

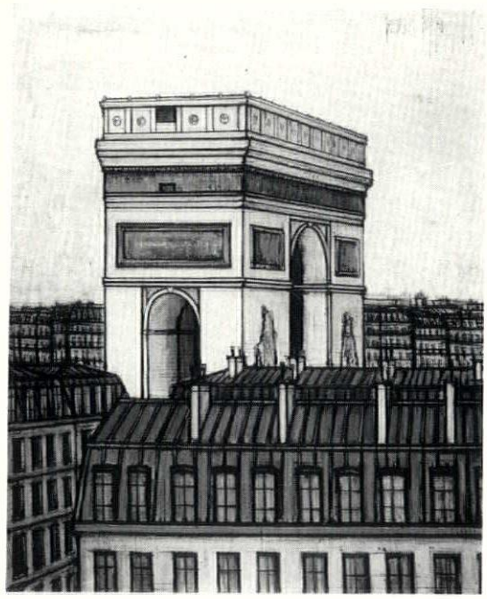


3



4

unexpected places. It regarded the visitor with an almost baleful watchfulness from Edward Burra's flowerpieces at the Lefevre Gallery, 4, and arose with the simple authority of a very Freudian dream from the *Arc de Triomphe de l'Etoile* 5, in



5

Bernard Buffet's exhibition at Arthur Tooth & Sons. Buffet's studies of Paris gave one the shivers, for it was as if he had ordered every living soul off the streets before settling down to stare with cold eyes at her monuments.

It was very different at Whitechapel Art Gallery when the paintings and drawings by Bernardo Bellotto from the collection of the National Museum of Warsaw were on view. One could watch there the bustle in the streets of eighteenth-century Warsaw as if one were standing on the terraces and at the open windows from which Canaletto's nephew established the points of reference for his large, accurate and wonderfully detailed vistas of an animated and rapidly developing city. This view of the Church of St. Bridget, with the Arsenal just beyond it, 6, is on the outskirts, and one wouldn't want to stay there long for fear of missing the comings and goings of the gentry and soldiery and the animated interchanges of the common people nearer the heart of the city. I found myself returning again and again to



6

Dluga Street and the market place in the new town and Miodowa Street, to watch the crowds in the shadows cast by buildings which rose nobly and imperturbably into sunlight. Bellotto did not rival Guardi or Canaletto as a painter, but he was their equal in his continuous and loving respect for a great city and their superior in his consistent regard for accuracy.

Robert Melville

COUNTER-ATTACK

BUREAU BULLETIN

This bulletin is now a regular monthly miscellany feature operated by the Counter-Attack Bureau. Cases under investigation have a code number which for easier identification will be used in subsequent progress reports. Examples of good planning and of outrage averted will also be included regularly.

14. S.O.S. Bottisham, Cambridgeshire. The cottages around the church, 1, which are a



1

foil to the tower and an essential visual part of the village, are to be demolished as part of a 'slum clearance' scheme; Newmarket R.D.C. want to build old people's bungalows behind a new 'improvement line.' Reconditioning and improvement of the cottages is the obvious solution and would cost far less than building new houses. Any new building which has to be done should at least keep to the existing building line—anything else would totally destroy the unity of this little green.

15. Esher Common, Surrey (Central Electricity Authority). A 275 kv line is proposed running from West Weybridge to Chessington across Esher and Arbrook Commons. This is a clear case for putting the wires underground—these commons are the first open space south-west of London and their small scale informal scenery is the type most likely to be broken open by pylons—as has just been done in similar scenery near Bagshot in West Surrey. The rest of the route is arcadia which would really justify the estate agents' description of 'high class residences'; wayleaves are likely to be hard to get, and might well result in a public inquiry which would cost a good deal of the extra money needed to put the wires underground on this short length (about 7 miles).

16. Mortlake, Surrey. (Barnes Corporation). Mortlake High Street is just finishing a fearful metamorphosis. It started jolly and bustling, 2, and is finishing sterile and reactionary, 3: evidently modern architecture might as well not exist in Barnes-and-Mortlake. It has been done 'to enable



2



3

lorries to park comfortably there,' which in this case is reasonable, for there are factories jammed between High Street and river without any parking space at all. This could have been provided in lay-bys, not with a general and horrible improvement line; in particular the slice which has still to come off the churchyard is quite unnecessary; it is only being done to make the map look tidy. A tiny bit of Mortlake could thus be saved; the next thing that is needed is something to camouflage the flats!

17. St. John's Wood, London. (St. Marylebone Borough Council). The St. John's Wood Preservation Society have been fighting hard for over a year against concrete lampstandards in the side roads. The Council—which seems to regard St. John's Wood as an expensive luxury for a 'progressive' and 'go-ahead' borough—has agreed to halt the programme while the R.F.A.C. considers the scheme, but now proposes yellow sodium lighting on the main roads in St. John's Wood. Once there, uniformity will probably enforce it on side roads as well.

Here is the solution. Colour corrected mercury gets rid of the worst colour distortions; it costs 8 per cent more than sodium on the main roads, 6½ per cent *less* than sodium on side roads. The mileage of side roads in St. John's Wood is nearly four times that of the main roads, so that over the whole area colour corrected mercury would be cheaper: it should be fitted in the existing Victorian standards, and the concrete ones taken away again. At present they are standing side by side like Cinderella and the Ugly Sister, 4.



4

If the Society gets no satisfaction, this is a case for a public inquiry, for even though it is a local matter, it has a general application—and the fate of St. John's Wood is a national matter, not a local one.

18. Feckenham, Worcs. (Central Electricity Authority). A supergrid substation covering eighteen acres is proposed in one of the least spoilt parts of E. Worcestershire as part of a spur from one line in the supergrid which here loops around the west of the Black Country from Burton-on-Trent to Penn near Wolverhampton, and then to Astwood Bank near Redditch, diverting through Feckenham on the way. If the line ran direct from Penn to Astwood Bank it would go through more spoilt countryside nearer the Black Country, would be shorter—hence cheaper—and the substation could be put near Astwood Bank, which is itself a fairly grim late Victorian manufacturing village. Wherever it's put, it ought to be camouflaged, and it is the planning authorities' job to see that this happens. A public inquiry will probably be held, at which the Bureau will be represented.

19. Whitehall S.W.1. (Ministry of Housing and Local Government): The recent white paper on functions of County Councils and County district councils seems likely on the face of it to make a bad town planning system worse. It recommends automatic delegation of Town Planning powers to county district councils with a population greater than 60,000. Unless the Ministry insist on the policy of 'no delegation without qualification' (Counter Attack, page 432) this could mean an end of any hopes of coherent regional planning; at best this will add many more separate authorities to the hegemony from which a regional planner would have to coax some real planning. What is needed is a complete review of delegation, with big decisions kept firmly in the hands of the county (or region) where they can be seen as a whole, and smaller things delegated only if there is a visually qualified man to administer them.

Planner's Casebook: Edinburgh and Elgin, Morayshire. Shopfronts set back behind arcades are an invaluable town planning technique, at the same time increasing the effective road width by dispensing with a normal pavement and creating a pedestrian piazza.



5

It has been used in face-lifting Edinburgh's Royal Mile, 5, and is now proposed by the *Moray Courant* as a solution to a traffic bottleneck in Elgin, where arcades formerly existed, 5 and 6. This is a copybook example of Improvement—a change which would make Elgin both look better and work better—and in producing the scheme the *Courant* have given a lead which many local papers could emulate.



6

Outrage combated: Abingdon, Berks. The concrete standards around the Town Hall, shown in *Outrage*, 7, have been removed and replaced by steel standards and brackets, 8, which are not



7



8

elegant, but—far more important—light and unobtrusive. The photographs convey the change exactly: before, you saw Post-Restoration dormers competing ineffectively with a Post-Planning swan-neck; now you see Abingdon Town Hall first and the lamp-standard second. We wish the Town Council could be credited with this improvement: in fact they merely carried out the change at the request of the Fine Art Commission.

WEST END PARKING

The parking meters are about to go up in Mayfair at the same time as post-Suez traffic has demonstrated that congestion is far more a matter of stop-and-start intersections on the main streets than anything else. The symbol of the metropolitan traffic jam is not the parked car in the side street but the traffic lights all the way down Regent Street. You could always get around *inside* Mayfair, parked cars or no; the trouble started when you tried to get out of it.

Even when the traffic is reduced, you still can't drive down Oxford Street easily; and for the Oxford Street shopper, playing a perpetual game of look-right-look-left, life is still hell. Parking meters won't help this, nor are they really likely to discourage parking, though they will cost the government a lot of money—from 8s. 6d. to 19s. 6d. in the pound, depending on the size of the profit of the firm who owns the car in question. If they are intended as an attempt to stop private motoring in cities *per se*, fair enough—but let's not deceive ourselves with talk of good intentions about 'speeding London's traffic flow.'

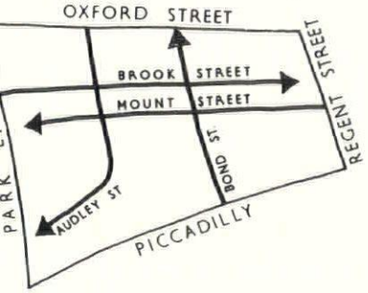
It might be worth while to take a look at other solutions. In fact, one of them has been lying around in plain view on the South Bank for six years. When the new Waterloo Bridge approaches were built at the time of the Festival, the north end of Waterloo Bridge Road became one side of a triangular island and the street in the middle of the triangle was blocked by carrying the pavement across one end. What happens? The blocked street becomes a safe and inoffensive car park in which vans can still deliver and turn round easily (and at the same time it becomes a more pleasant street to live in—from the road safety point of view it is almost a play street); the pedestrians going to the South Bank have one less road to cross, and through traffic circulates easily round the island thus created.

This might be a possible solution for the West End, and for any town where there is still room

[continued on page 79

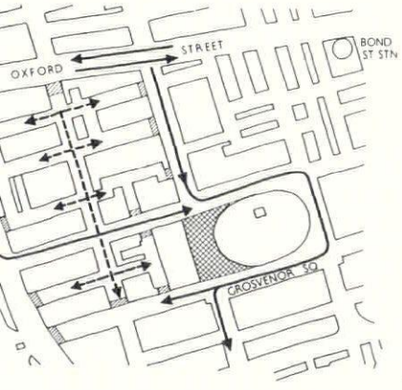
ued from page 78]

ver and turn round in the blocked streets, *here* the main traffic roads are big enough to huge flow of traffic as long as it is moving y.* The solution is to treat all Mayfair Soho as vast islands, hinging on the paradox he more side roads you block up, hence ng traffic lights, the easier is the traffic ong the main streets and the easier the job pedestrian struggling along the pavement. d to Mayfair the scheme—providing the um number of one-way streets penetrating ea—would look rather like this, 1:



two intersections on each side of the ateral: eight sets of controlled intersec- nstead of the present twenty-one. The system is in the same sense—anti-clock- o that traffic from inside would either e or cross straight over at the inter- without jamming itself (as it does, e.g., if e wants to turn right at the top of Bond cross the traffic). Similarly, you would only o Mayfair by infiltrating. All the other would be reached from inside Mayfair stem which itself would incorporate more streets and through pavements.

ttedly the result would be a maze—but se is Mayfair now? Nobody goes there—body drives in London as a whole—unless ow their way around and know what hicles can do. Judged by the statistic ents per vehicle-mile, London must be one safest places in the world. On the other he suggested advantages are: easy passage he roads that matter, free parking which obody, near-precincts inside the area, rly continuous pavements along the main g streets round the perimeter.



sults of sealing off a whole area of London must inevitably be no more than guess- ut on a small scale it would certainly d could be tested easily and cheaply. One ork could put up temporary wood pave- er the ends of the blocked streets; the one-way system could be tested by using ONNO and thus provide a try-out for two schemes at the same time. The easiest place to start is the N.W. tip of Mayfair behind Marble Arch, which is already self-contained with little through traffic, and the scheme for this is given above, 20. An incidental bonus—just one of many that would follow from adopting this principle—is that Saarinen's new U.S. Embassy could have a piazza joining it to the gardens in Grosvenor Square.

Ian Nairn

y of London is an example of the other type: the are narrow and the minor roads are microscopic: f street parking will cause congestion. Realising rejected parking meters and proposes multi-storey This in townscape terms is very convenient, for he City are usually on a mediaeval plan and have pedestrian network of alleys: areas like the West ually 18th. or 19th century, more or less gridiron, need their own pedestrian network, formed in this tinuous pavements over the ends of the blocked

S.O.S.

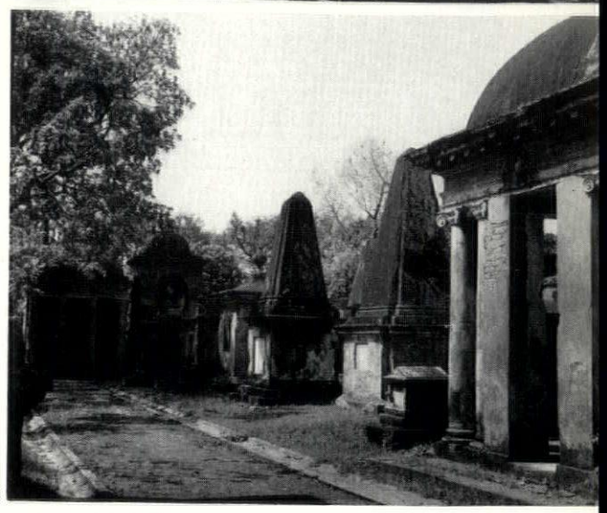
A CALCUTTA CEMETERY

Among the forgotten monuments of British Architecture in the East India Company's Presidencies (described in AR, February, 1957) one at least is now being carefully restored, although an appeal has had to be launched for more funds,* in order to ensure adequate completion of the work. It is one of the small Christian cemeteries, associated with the early settlements, and valuable for the great stylistic range of the tomb architecture it contains—South Park Street Cemetery in Calcutta, where, beneath spacious avenues, classical cupolas, obelisks and pyramids, 1–9, lie the men and women who built that noble and once beautiful city out of a simple trading establishment, surrounded by jungle.

The cemetery originally stood some distance beyond the limits of the European settlement—so far, in fact, that the Council found it necessary to grant the Chaplain a special allowance for the hire of palanquin bearers—and was opened just ten years after the battle of Plassey to receive the remains of a young writer in the service of the Honourable East India Company. It remained in use during the days of Warren Hastings (many of whose colleagues were buried here), and of the Napoleonic Wars. The love of classicism which dominated Europe at that time was carried in the hearts of the young adventurers to a strange and alien land, and is reflected perfectly in the

* See Intelligence, page 2.


1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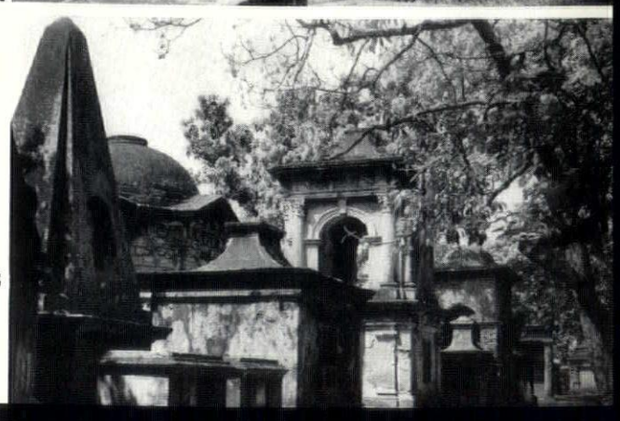
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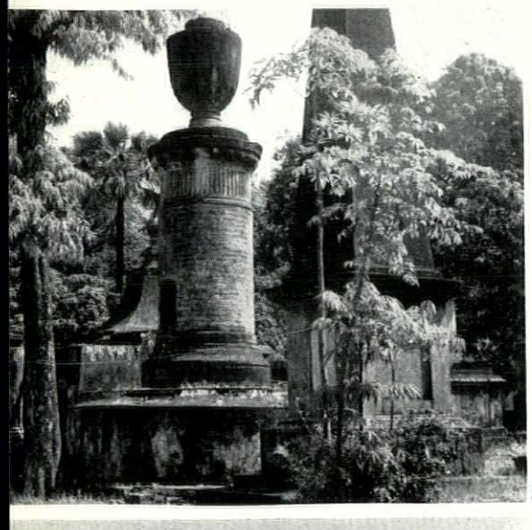
Obelisk, Dome, Column and Arch were the repertoire of architectonic forms deployed and re-deployed in the mausolea of the South Park Cemetery, Calcutta: the tombs seen in this column of views range from the seventeen-seventies (Lucia Palk, arch and columns, in 5) to the late eighteen-forties (Captain Hollings, dome and columns, in 2) and reveal a continuously vigorous classical tradition in Calcutta Presidency.



6



7



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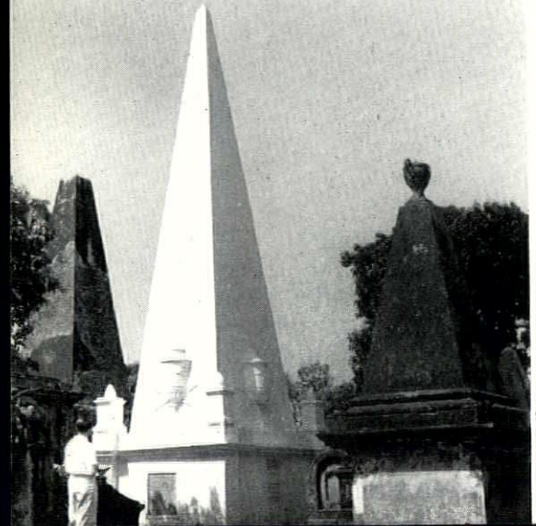

9

a Calcutta cemetery

The present ruinous condition of many of the monuments in the South Park Cemetery, Calcutta, is most lamentable in the case of those with delicate detailing, such as the Adamitic swags in 6. *Robuster modelling, and simpler forms,* 7 *and* 8, *survive monsoons and neglect more successfully, but the gleaming purity of Sir William Jones's obelisk,* 9, *seen against the chipped outlines and maculate surfaces of adjoining tombs, shows how much even the simplest will benefit when duly restored.*

mausolea which they erected to each other's memory. Graceful Roman cupolas and elegant Grecian urns were chosen to glorify the memory of those like Colonel Charles Russell Deare, who was slain by a cannon-ball at the storming of Tippoo Sultan's stronghold at Santinungulam, and of Sir John Clavering, the Commander-in-Chief, who for one day set himself up behind his guns in Calcutta's Fort William and declared himself Governor-General in Warren Hasting's place; and the solidity and confident serenity which is a key-note of their style contrasts markedly with the hectic and dangerous times in which the monuments were raised.

Since the alluvial mud of the Bengal delta is entirely stoneless, the monuments are universally constructed of brick and plaster. Stone for the inscriptions was at first shipped from Madras at very considerable expense, until a certain Samuel Oldham, the first professional undertaker in Bengal, revolutionized the procedure, and cut his costs by shipping marble down the river Hooghly from the ruins of the ancient capital of Gaur, in northern Bengal.

Architectural styles were copied from books of drawings in the library of the Company's College at Fort William, and builders avoided repetition as far as possible by attempting to combine styles and orders—frequently with no lit ingenuity. But perhaps the most no worthy feature of the cemetery is the of the pyramid, which appears to ha achieved almost universal popular between the years 1790 and 1810, and th disappears completely. These plaste giants were apparently inspired by study of Egyptology, then in its infan but it is remarkable that the forms sho have taken root in Bengal, for two b decades, and yet have remained virtua absent from Europe. Generally speaki the architectural styles of the Europ settlements in the East have always b adaptations of contemporary West fashions, yet the pyramidal form co scarcely have come direct from Egy and although by its very size it doubtedly satisfied the craving for disp engendered by a short life spent amor riches, the question of its origin in Be remains unanswered.

Unfortunately the ravages of nea two centuries of monsoon rain, and da sultry heat, have begun to tell on plasterwork of these graceful monume it is to be hoped that the restoration f now set up will not only lead to restoration of those which still remain, will also provide for grassing the site those monuments which have alre crumbled beyond repair.

R. Pear

THE INDUSTRY

D.P.C. Insertion

The cost and difficulty of inserting a damp-proof course in an existing masonry wall is so great that it is customary for architects to dissuade clients from undertaking it on all but the most expensive improvement jobs.

It is interesting, therefore, to note two new machines which have been devised by Brooks of Oldham to cut horizontal slits in masonry walls for the easy insertion of a d.p.c. Since these machines have to run on a level, the insertion can only be made above ground floor level, and the 'travel' of the machines is such that it must be between 1¼ in. and 5¾ in. up from the floor. The two machines (which are both required: the one for straight runs and the other for corners) cost about £500; and in view of the fact that they are reckoned to cut the cost of this class of work by two-thirds, this seems a reasonable investment for the medium sized builder and one which architects should encourage him to make, so that in time these may become as common as, say, floor sanding machines. Another advantage is the expedition which this method shows: the makers claim that with the help of these machines two men can insert 60–80 ft. of coursing in one day.

One specialist firm who undertake damp-coursing work, using these machines (Damp Coursing Ltd., of 83 Lambs Conduit Street, W.C.1) inform us that the average cost of damp-proofing is 7s.-8s. for a wall, 11s. for a 13½ in. wall.

Brooks D.P.C. Machine Co., ville Mill, Vulcan Street, Old Lancs.

Built-in Patterning

The idea that patterning is s thing which is essentially too sonal to be the subject of production is an idea which dies with the architect. He will accep notion that texture should be produced because texture, afte is no more than a means of giv form its true value: but once a ture becomes a pattern there implication that it requires atte in its own right and in doi threatens to come into collision with traditional artistic ethics modern architectural theory. publication by Bakelite Ltd. new series of Warerite mela sheets which are described as 'a tectural patterns' represents a se attempt to get over this dile The patterns (there are seven i five of them being obtainab seven colours) are most of excellent. They are doubtless 'architectural' because their pa ing has a strong geometric basis small scale repetition so that are calculated to bring forms e to the eyes' attention and t may be considered more te than pattern.

It is difficult to foretell how will fare in practice. One factor

[continued on p

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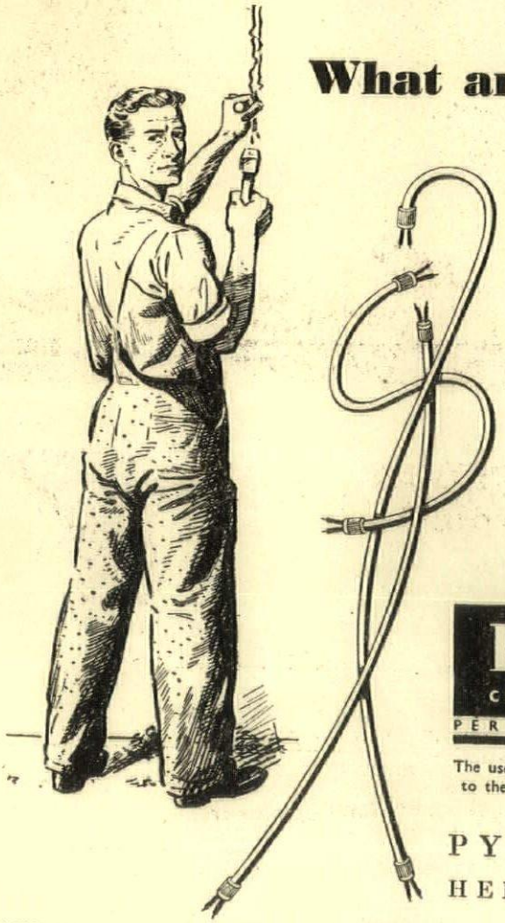

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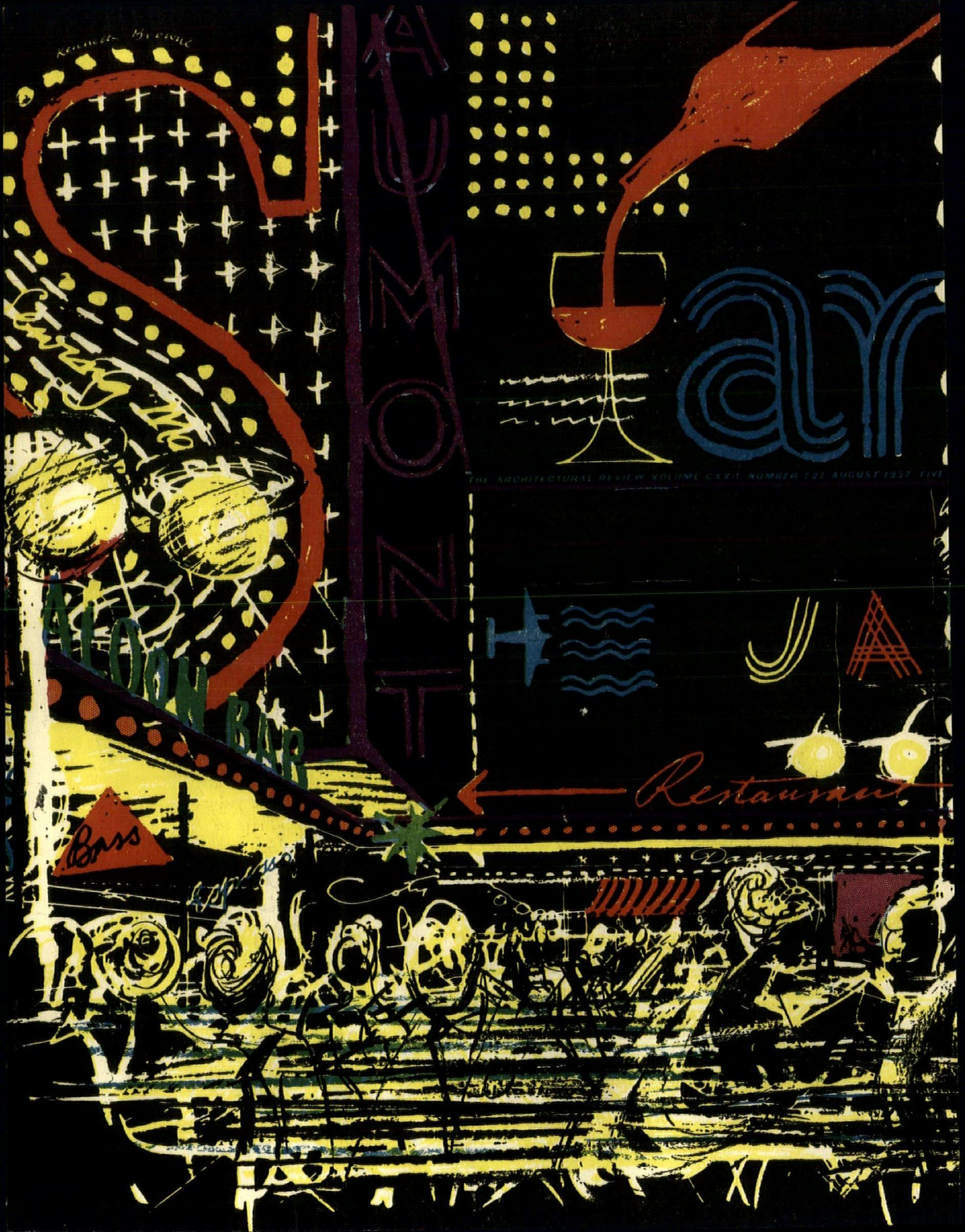

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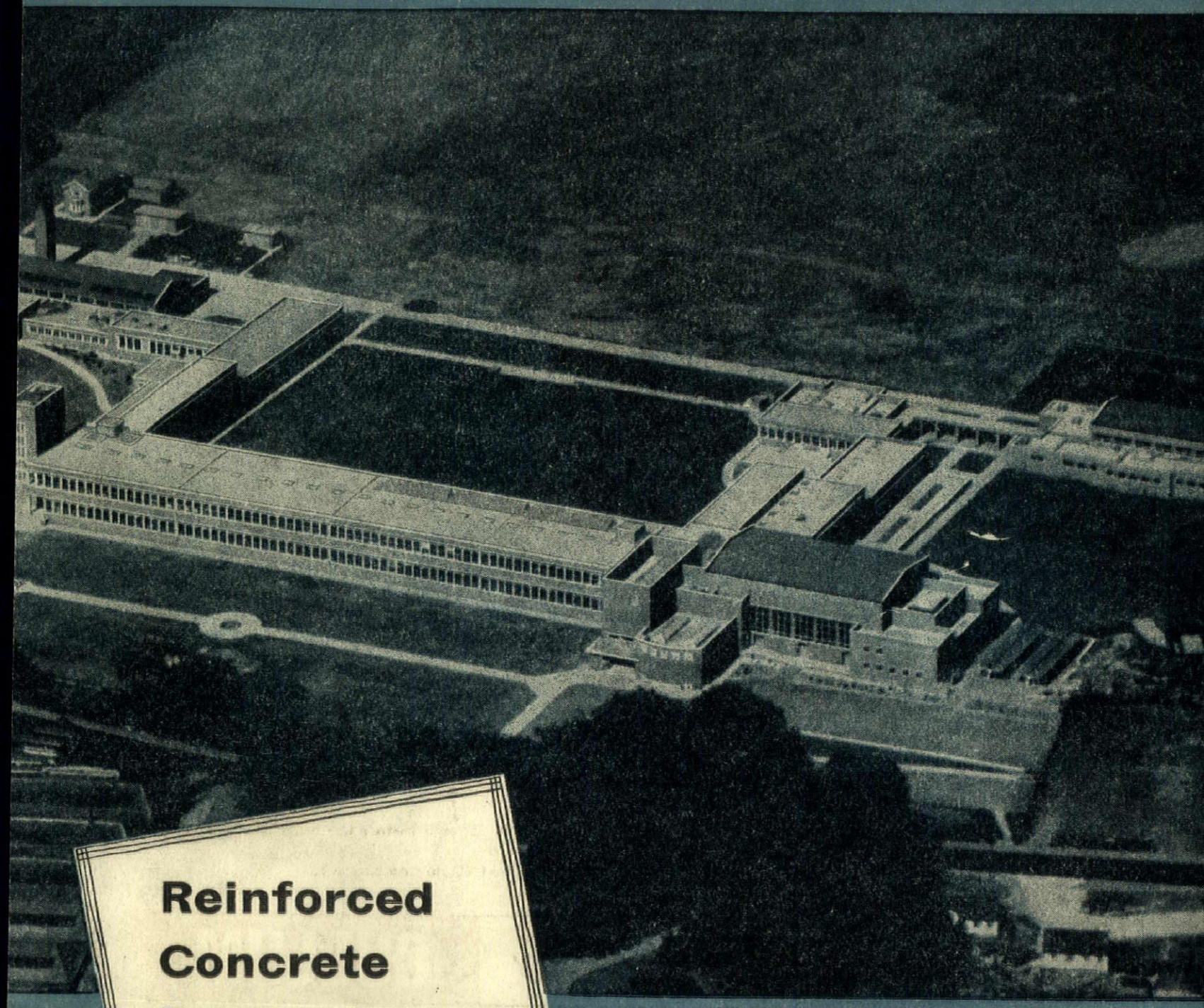

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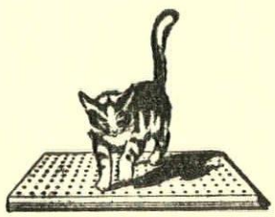

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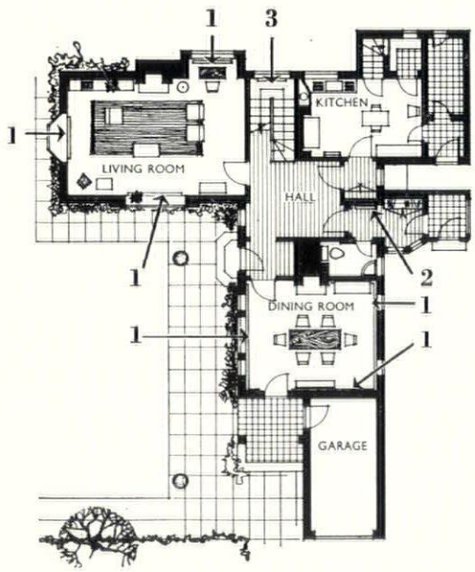
This 3-bedroomed house near Tunbridge Wells was built in the 1930's. It has a fine view across the Weald of Kent. The up-to-date heating system is oil-fired, with fuel supplied by Shell-Mex and B.P. Ltd.

A HOUSE WITH MODERN HEATING

and a lovely view



1. *Skirting heating*
2. *Concealed radiator in hall*
3. *Boiler room with outside access below stairs.*

A DELIGHTFUL FEATURE of this attractive house is its beautiful situation. Built in the early 1930's, it is over four hundred feet above sea level and has an open view of over seven miles to the North across the Weald of Kent.

In 1954 the house was purchased by its present owner who, before moving in, added to its comfort and amenity by installing central heating. Lounge, dining room and landing were fitted with Crane skirting heating, while five radiators were installed in other rooms. An oil-fired boiler, situated in a small separate room below the stairs, supplies the hot water requirements as well as the central heating system.

Oil-fired heating is supremely clean, efficient and labour-saving; and oil fuel bought in bulk is surprisingly economical. It is suitable for blocks of flats and public buildings and, increasingly, it is being installed in houses of every type and size.

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If you are designing or modifying almost any kind of building, public or private, you may well find it worth your while to make provision for this modern, convenient heating method. For further information write to Shell-Mex and B.P. Ltd., Fuel Oil Dept. FD1J, Shell-Mex House, Strand, W.C.2. This, naturally, will not place you under any obligation.

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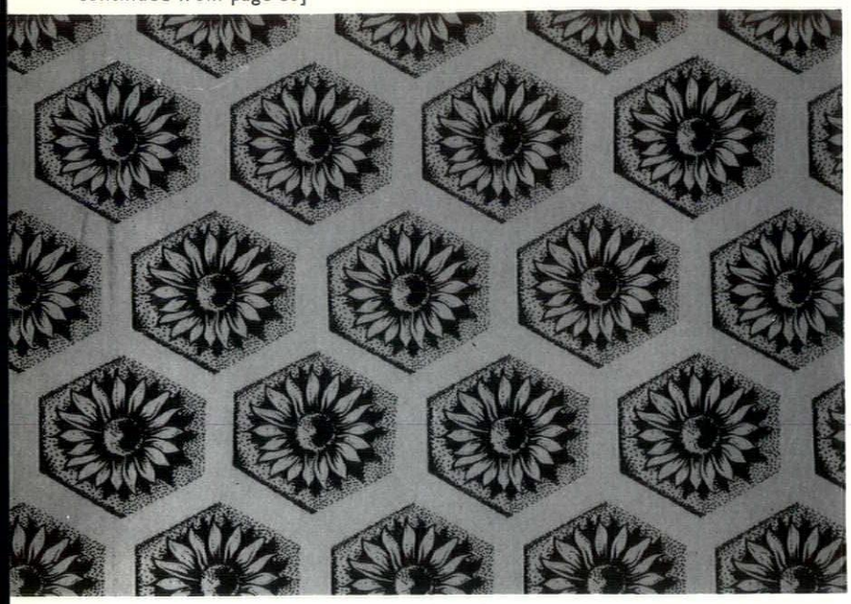


'Apia,' one of the 'architectural patterns' in the new Warerite range.

is bound to affect their use is their cost: 5s. per sq. ft. for those printed in one colour and black, 8s. per sq. ft. for the one ('Exotica') which is multi-coloured. This means that their use will be restricted to positions (such as the walls of coffee bars and bar counters) where their redoubtable wearing qualities come into play or to places where, by common convention, 'expense is no object.' This means that there will be a tug-of-war between the aura which their social use will give them (and which may discourage some architects) and their intrinsic quality as good printed patterning on an excellent surface. Whatever be the outcome, there is no doubt that they are in the right line of experiment.

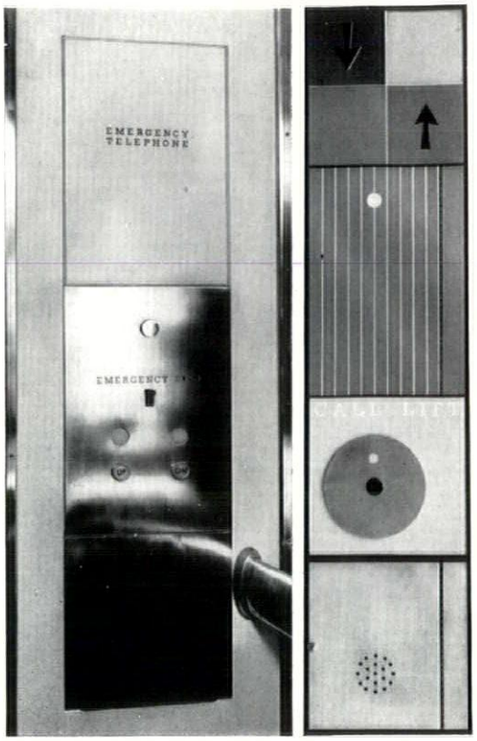
Bakelite Ltd., 12–18 *Grosvenor Gardens, London, S.W.*1.

A New Lift Book

When an article on lifts was written for the AR (February, 1955) it was very clear that the existing literature on lifts for architects in this country was exceedingly defective. There were, of course, the Codes of Practice (CP.407.101:1951 for electric and CP.407.301:1950 for hand-powered lifts), there was one useful trade publication (two, if we count that of a Swedish firm published in English) and there was, of course, a voluminous and, to the architect, inaccessible literature prepared for electrical engineers. It is therefore with pleasure that we note another excellent trade publication on lifts, this time by Hammond and Champness Ltd. Entitled *The Hammond and Champness Lift Book*, it is priced at three guineas, but we understand that it will be sent free to architects' firms.

The book is divided into four parts. The first is entitled 'Planning Lift Installations' and in fact runs through all the mental operations the architect must make, asking the questions which he must ask and supplying the data and tables which will enable him to work out the answers. Information is also given on more specialized applications, such as lifts to council flats, the special lifts the LCC requires in office blocks for firemen, hospital lifts and basement hoists. This section concludes with a very useful note on 'builders' work' specifying categorically what the builder must provide and fix and in what sequence.

Section 2 describes intelligibly the different elements of lift equipment and the alternatives for each. Architects will not need to avail



Left, car control panel and, right, landing panel designed by Maxwell Fry and Jane Drew.

[continued on page 84

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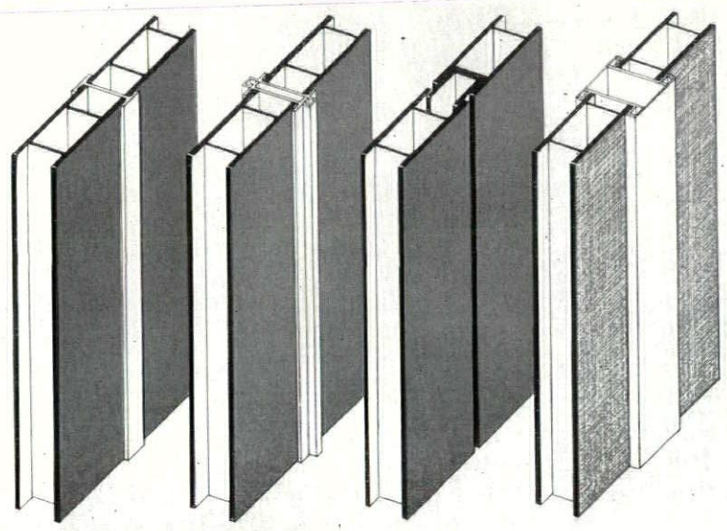
continued from page 82]

themselves of the 'suggested decorative treatment' for lift cars, but may contemplate instead some admirable push panels by Maxwell Fry and Jane Drew (see photograph). The third section is concerned with that almost extinct variety, the home service lift, and the fourth and last presents an anthology of extracts from the official Regulations and Recommendations. In all, this is a very useful addition to the office library.

*Hammond and Champness Ltd., Gnome House, Blackhorse Lane, Walthamstow, E.*17.

Holoplast Movable Walls

The new Holoplast catalogue entitled *Holoplast Movable Walls*, though it clearly pretends to be helpful, is, in fact, more of a prestige publication than a useful office reference. Its object is to make clear the methods and use of the different systems of jointing which Holoplast Ltd. have evolved for movable partitions. These appear to be four in number: the 'standard' for use where little rearrangement is envisaged, the 'assembly' for use where wall positions have often to be changed, the 'interchangeable' for use where it may be desired to insert different panels (i.e. to insert a door in a new position), and the 'universal' system for use where you are likely to want to do both these last two operations at the same time. To these we must add a fifth system, which is only for jointing panels in the same plane, entitled the 'tongue and groove' which, as its name suggests, enables them to be jointed without an intervening post. Our chief grumble about this catalogue concerns the full size details which, despite their generous scale, tell you nothing about how the parts are fixed together, in what sequence, or, indeed, what they are. This is very unfortunate because Holoplast must by now have an unrivalled experience of lightweight fixing and because for the architect this is the critical factor which differentiates the few good systems of partitioning from the others. The catalogue concludes with a section on sound insulation. This is inevitably the Achilles heel of lightweight partition, not only because the best sound reduction that Holoplast (or any other comparable panel makers) can promise is some 7 decibels worse than the 4½ in. brickwork plastered both sides, but also because the difficulty of jointing makes even this degree of sound reduction difficult to realize. As is pointed out, however, all that is required in most cases is that the sounds in the next room should be reduced below the noise level in this one; and as in offices this is likely to be of the order of 40 decibels the situation is not so impossible as it might seem—or perhaps we should say, sound. This is fortunate, for there is no doubt about the inherent rightness of the lightweight panel in the context of our architecture, or about the contribution which Holoplast have made—and will continue to make—towards the solution of its problems.



Isometric drawing showing four systems of jointing Holoplast panels.

Holoplast Ltd., 116 *Victoria Street, London, S.W.*1.

Asbestos Cement Pocket Compendium

Those of us who have been discouraged from using asbestos cement by the voluminousness of asbestos cement trade literature will find relief and encouragement in Universal's new 'pocket compendium.' This runs through the full range of products: sheeting, slates, sandwich constructions, ventilators, rainwater goods, cisterns, flue pipes and the rest, with a small clear photograph, a drawing and sizes of each. Such a bird's eye view reminds us at one and the same time of the extraordinary technical advances which have been made in manufacture during recent years and the extraordinary lack of imagination which has accompanied it. The fact of the matter seems to be that the asbestos people have only been prepared to make products for which a market already existed; which has meant in practice manufacturing in asbestos cement products which have hitherto been 'developed' in galvanized iron (e.g. cisterns and sheeting), in cast iron (e.g. rainwater goods and soil pipes), even in ceramics (flue pipes) and slate. It is, of course, a tribute to the extraordinary qualities of asbestos cement that it can be used to make so many divergent products; yet we cannot help feeling that an even more brilliant future awaits those who can imagine products which serve our practical and visual needs and which, exploiting to the

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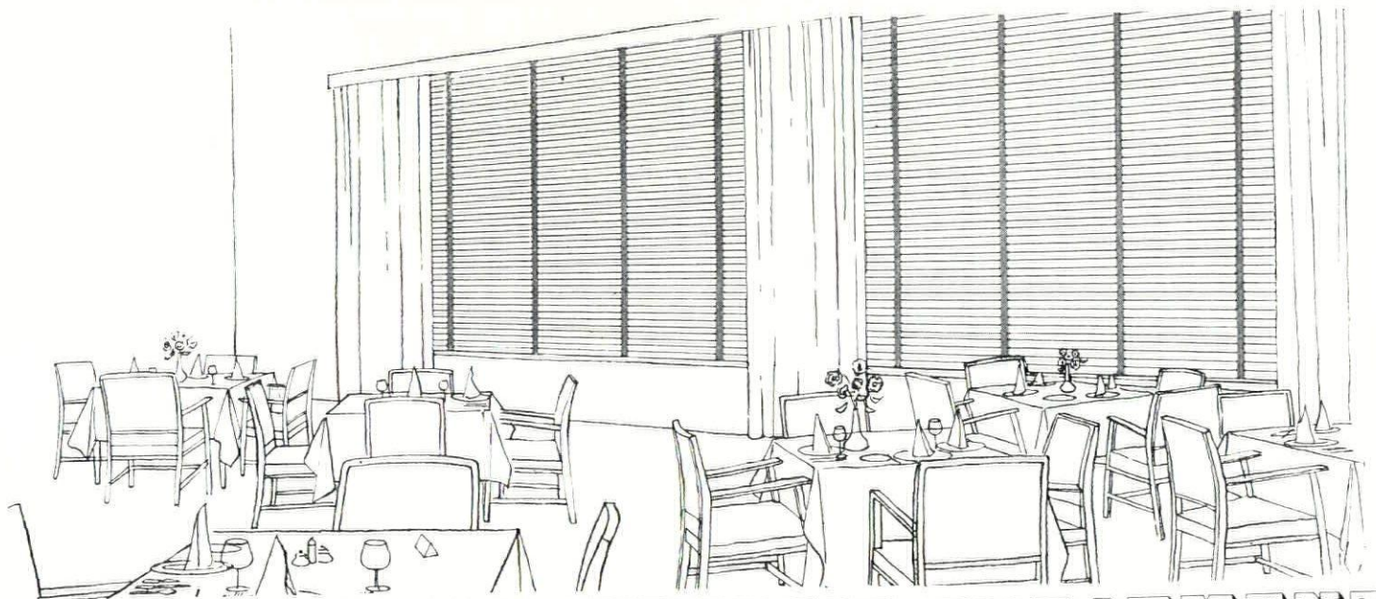

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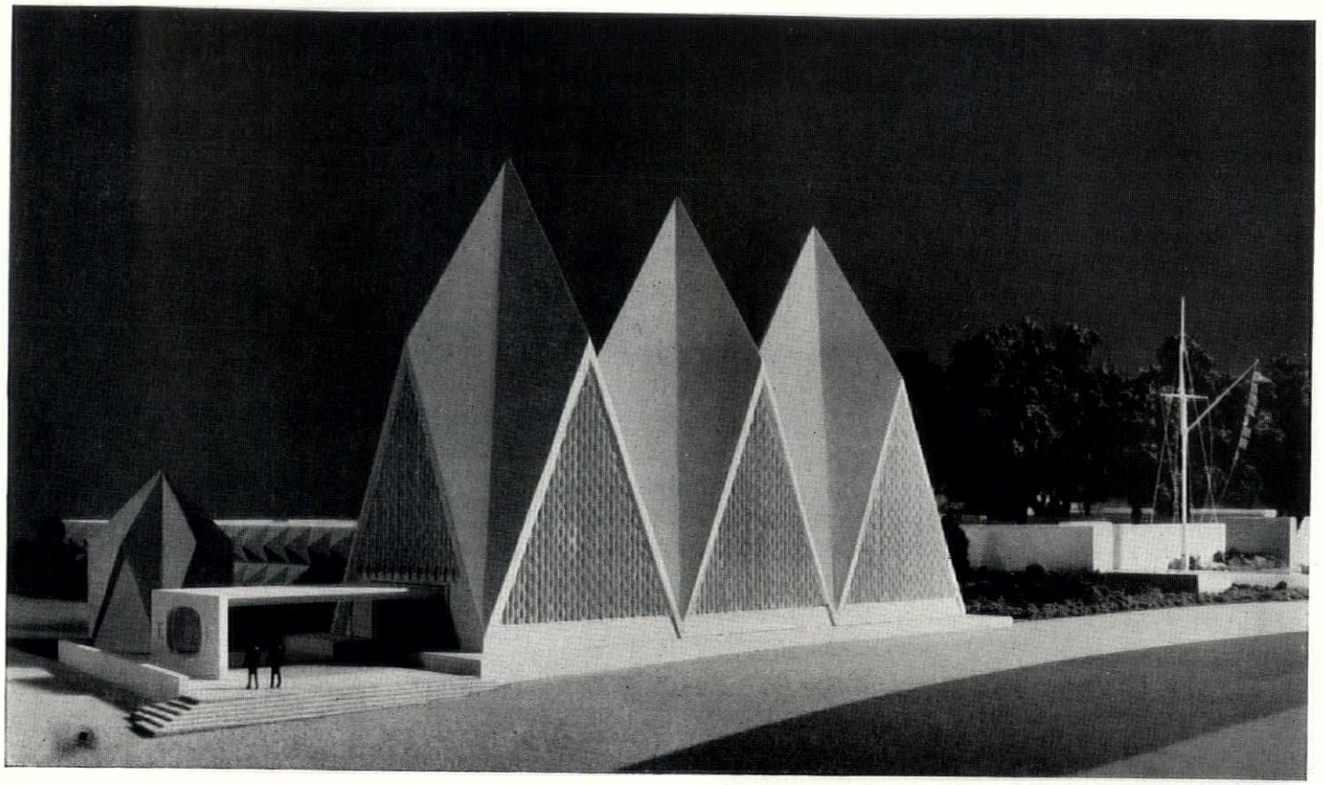

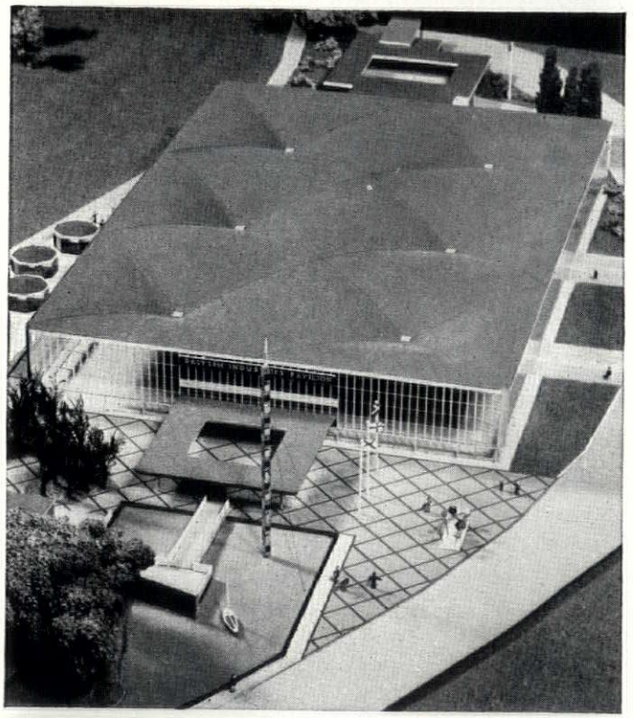

All U.K. buildings at Brussels Exhibition

At the 1958 World Exhibition at Brussels the British Government Pavilion and the British Industries Pavilion will occupy approximately five acres.

The Architects for the Government Pavilion are Messrs. Howard V. Lobb & Partners, who are also the co-ordinating Architects for the whole of the U.K. site.
The Architects for the British Industries Pavilion are Messrs. Edward D. Mills & Partners, and the Consulting Engineer for both Pavilions is Mr. Felix J. Samuely, B.Sc., M.I.C.E.

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continued from page 84]

full the properties of the material, disregard the forms which other materials have found convenient.

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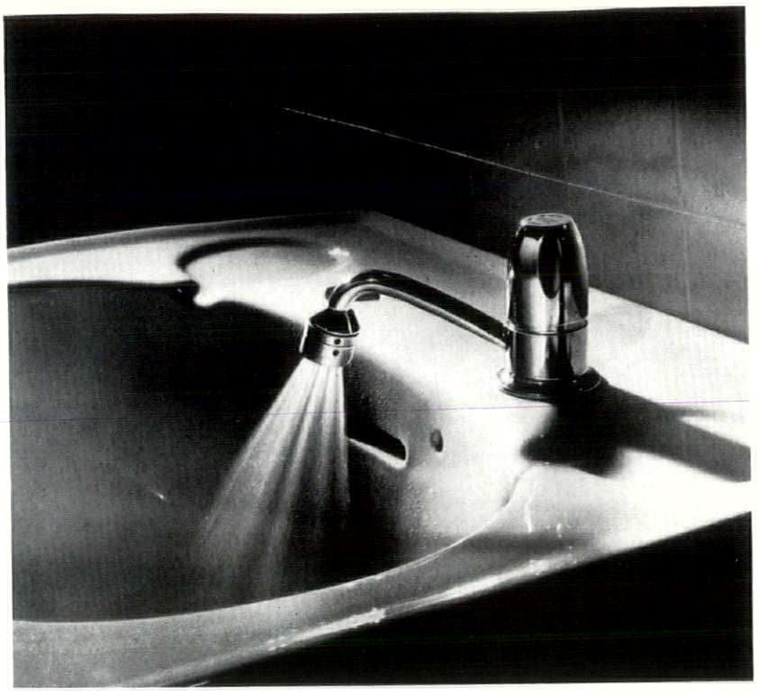
The Spray Tap

With the spread of the habit of excessive washing we have become far more prodigal in our use of water than we can afford to be. Impressive as our reservoirs appear, they in fact carry a wholly insufficient margin of water, so that whenever we have a fortnight's drought we have to be told to stop watering our gardens. The remedy is either to increase the size of our reservoirs—which would be exceedingly expensive—or to find a less wasteful method of washing. There has never been any serious doubt that our present-day habit of filling fairly large containers of water into which we put the parts of us we want to wash is inherently extravagant in water, and this has now been very neatly proved by Crisp and Sobolev of BRS, who carried out a series of tests in an MOW office building in which the use of ordinary taps in washbasins was compared with a special kind of spray tap. This experiment showed two interesting facts. The first (which is merely of sociological interest) is that whatever kind of tap you use, women use rather more than twice the amount of water *per capita* than men. The second is that by substituting spray taps for ordinary bib cocks it was possible to cut the consumption of hot water by considerably more than a half and of cold water by exactly a third. The actual weekly consumptions were as shown in the table, right.



Walker Crossweller's 'Unatap.' Below, table of comparative water consumption rate, with spray taps and ordinary bib cocks.

type of supply	weekly consumption in gallons		
	hot	*cold*	*total*
fully normal suites	16,000	6,000	22,000
spray suites (each with one normal basin) ..	7,000	4,000	11,000
saving in water	9,000	2,000	11,000

Furthermore, a ballot established that the majority preferred to wash their hands in a spray than in a pool. Following this success, the firm who developed the spray tap with BRS —Walker, Crosweller & Co. Ltd.— have now marketed their product under the trade name of 'Unatap.' This is, of course, a mixing spray tap which provides water at a standard flow (4 to 5 pints per minute) but at a variable temperature. At the first turn of the handle it sprays cold, and the temperature of the water rises as the handle is turned further. It is interesting to notice that in the tests the preferred temperature for handwashing was 105°F. In addition to saving water, the use of the tap saves the hot water load and saves also in the first cost of the basin: since basins which do not have to retain water do not need a plug, a chain, or an overflow. The tap has been accepted for use by the British Waterworks Association provided it is connected to supplies of equal pressure from storage tanks and not to the rising main. The price is £6 15s.

Walker, Crosweller & Co. Ltd., Cheltenham, Glos.

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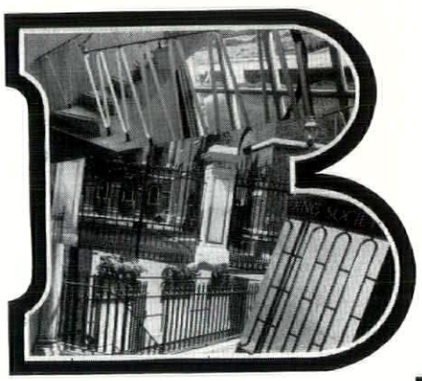

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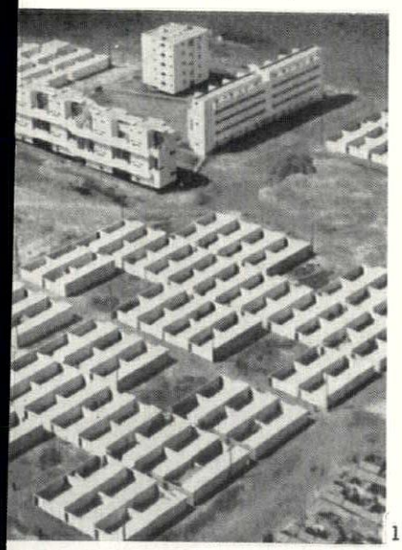
MARGINALIA

Forms in Sunlight

Much-discussed and long-awaited, the scheme for Muslim housing outside Casablanca by ATBAT-Afrique (on ATBAT, see AR, September, 1956) now affords a concrete example of the application of the housing standards worked out by CIAM, but under circumstances of extreme economic pressure. As the air-view shows, 1, a large part of the scheme, in single storey accommodation with patios, is at a density that—though lower than the adjoining 'bidonvilles'—is still spectacularly high by European standards. The scheme is saved from diagrammatic monotony, however, by the provision of communal open spaces threaded through the close-packed housing, and by three taller blocks, two planned slab-wise and one as a compact tower, all designed for through-ventilation at all levels, and enclosed patios on every floor, giving the feeling that a traditional Kasbah had been dismantled into its elementary components and then re-assembled in a kind of space-frame. The result, 2, provides the kind of accommodation that the climate and the Muslim pattern of life require, while at the same time creating a sophisticated European constructivist sculpture on the grand scale of which the constructivists once dreamed, but under a blaze of sunlight such as they could never have hoped for in Tatlin's Moscow or Lissitsky's Berlin.



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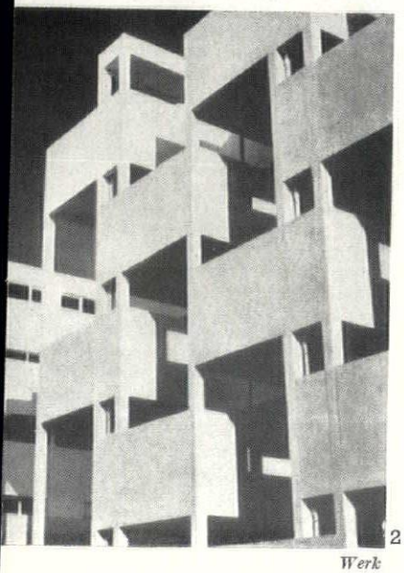


2

Werk

The Art of Re-issuing VI

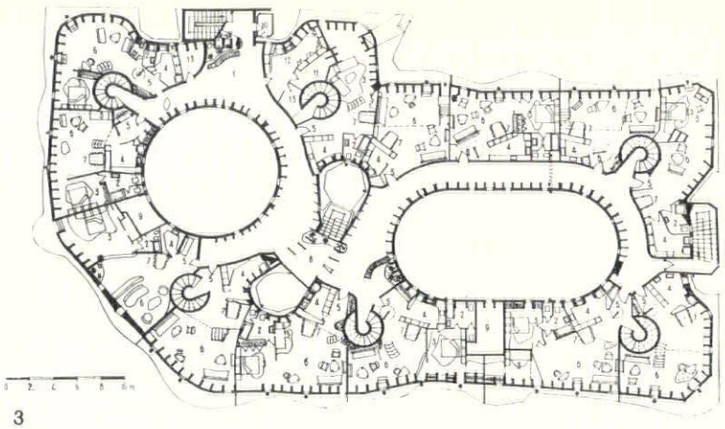
England's first native architectural book that was purely 'Modern Movement' in outlook was F. R. S. Yorke's *The Modern House*, which appeared in 1934, and had been preceded only by translations, such as those from Le Corbusier or Bruno Taut. As it first appeared it was a profession of faith, a polemical weapon, a gesture of defiance in the face of garden-suburb Neo-Georgian and By-Pass Variegated half-timbering, and the buildings it illustrated were as familiar to two generations of architecture students as Palladio's must have been to eighteenth-century Burlingtonians.

Now, twenty-three years later, its battles have been won, and the eighth edition, much revised, is like an old soldiers' retrospect of forlorn hopes, desperate stands, raids and victory. The introductory chapters, virtually unaltered, recall the battle cries and the war-aims, the heroes and the visions; still set in uncompromising Gill Sans, they have acquired no gloss of period charm, but distil the spirit of an embattled generation in a way that may still surprise and excite the young, or enrage and repel the old and the prematurely senescent.

But with the buildings illustrated the position is different. They are a record of achievement, certainly, but they are also the record of the Modern Movement's progress from muscle-flexing aggression to suave and refined acceptance. They no longer illustrate a concentrated programme of reform, but survey the richness and variety that have been attained in a quarter of a century. If the eighth edition has a hero it is Marcel Breuer, rather than Walter Gropius; it includes such comparative oddities as Hans Scharoun's *Landhaus Schminke* and Harris Armstrong's canyon cottage in Missouri; and it finishes now with Philip Johnson's Wiley, Rockefeller and Hodgson houses, preceding Mies's Farnsworth House and Corb's Jaoul—and the fact that no unbridgeable gap really separates these last two is the true measure of what has been achieved since 1934.

Gaudi's Garrets Refurbished

One can hardly envy Francisco Corsini the position in which he found himself when commissioned to make over and render habitable the attics and garrets of Antoni Gaudi's Casa Mila apartment block in Barcelona. A-formal in their disposition, and covered by skewed parabolic vaults on ribs at 80 cm. centres, these upper rooms were to be made into rentable apartments. Some aspects of Corsini's solution were given, such as making access corridors around the existing light-wells, 3, but in the rest he shows a mixture of logic and fantasy that is a fair measure of the problem Gaudi had unwittingly left him. Where an Anglo-Saxon architect would almost certainly have opted for rectangularity, in order not to 'compete' with the vaults, Corsini has used free-forms extensively, coupled with the use of brick, clay-tiles, ceramics and other 'natural' materials in an entirely programmatic way. In spite of this, there is a certain amount of standardization in the fitted carpentry, such as tables and cupboards, and in the detailing of the balcony-fronts of the bedroom floors which have been fitted under the crests of the vaults, 4, to make what are, effectively, duplex apartments.



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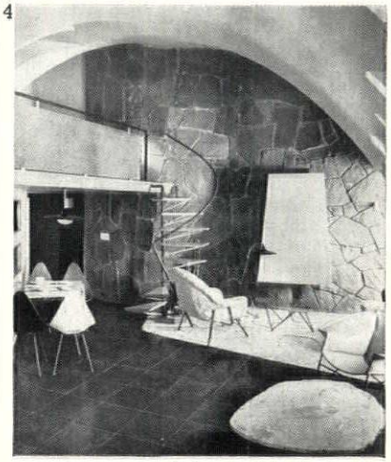
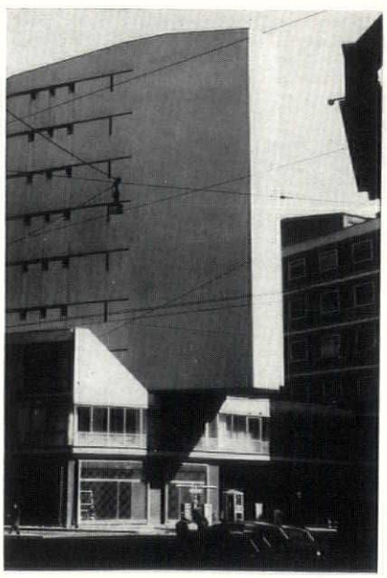


4

Informes de la Construcion

New Shape in Milan

With the design of the Pirelli skyscraper returning closer to the rectangular Milanese norm with every successive redesign, it seems likely that Luigi Moretti will be left securely in the lead among designers of Milan's most extraordinary building forms. He has just completed the large and intricate complex of buildings behind Sant'Eufemia that began with the split-slab, warp-ended block for Palmolive, and the final element, 5, is a tower of flats, roughly lenticular in plan, above a podium of offices and draughting-studios. As will be seen, the cantilevering forward of this slab's blank end, to the point where it catches the sun against a shadowed background, provides a spectacular townscape feature and focus of attention among all the confusions of commercial rococo and sub-baroque.



5

Morris Exhibition

William Morris died in 1896. An interval of sixty years between the lifetime of an artist and one's own time is propitious for a reassessment of the values for which he stood. He is no longer topical; nor is he any longer old fashioned. Two new possibilities for appreciation arise—the historical proper and that of a new topicality. In the case of Morris both apply and the William Morris Society, which was founded last year, has this double *raison d'être*. It can now be seen clearly that Morris as a designer of patterns was supreme in his century and it is no accident that younger architects have begun to look round once again for wallpapers or textiles designed by Morris in order to use them in their ensembles.

Typography up to now had hardly shared in this revival. The exhibition which is now being held at the St. Bride's Foundation Institute off Fleet Street and which will move on August 19 to Leighton House in Kensington and on September 16 to Manchester Central Library after which it will go to Glasgow, cannot fail to contribute to such a revival. The catalogue is exceedingly well done and describes Morris's connections with printing, lettering and illumination more fully than has ever been done before.

The exhibits range from Incunabula via *The Germ*, the Pre-Raphaelite magazine of 1848, the *Oxford and Cambridge Magazine* of 1855, and the best commercial printing of the 1880s to William Morris's own illumination, to the Century Guild and its *Hobby Horse* which preceded the Kelmscott Press and beyond the Kelmscott Press to the work of other private presses in Britain and abroad. It is a most impressive display.

British S.A.H.

A Society of Architectural Historians has been in existence in the USA since 1940 and after initial difficulties is now flourishing, with about a thousand members, and publishing a lively quarterly; practically everybody who is anybody in the field of architectural history, whether training architects or teaching art historical students, takes part in it as is shown by the list of those serving as directors, which includes Kenneth J. Conant, Henry-Russell Hitchcock and Philip Johnson. A few months ago a few enthusiasts centred around northern universities, notably Mr. Frank Jenkins of the School of Architecture, Manchester, decided at the suggestion of Dr. Turpin Bannister that it was time that something ought to happen here, and some weeks ago a meeting to further the foundation of an English Society was held in York at the Institute of Architectural Study (the future headquarters of the society) which was addressed by Mr. Howard Colvin, who gave an absorbing account of the historiography of English architectural history: there are, he said, three approaches—first, the architectural, discussing the actual building only like an archaeologist lacking all written documents; secondly, the historical; and thirdly, a recent addition, the art-historical.

The English society will be independent, but affiliated to the American society and, though it is right to keep close contact with the parent society, one must beware of becoming an appendix concerned with minor problems of merely local interest. The Society hopes to publish an annual volume of papers to be distributed to members. There will also be an annual conference—that of the American Society taking place in conjunction with the College Art Association and so giving it a definite art historical flavour, bridging the gap between architecture and the fine arts; and if such subjects are discussed as 'Some Aspects of Architectural Theory' and 'Criticism from the Renaissance to the Twentieth Century' (1956) or 'Redefinition of Styles' (1957) important work will certainly be done.

One must, therefore, hope that all interested in architectural history will join (£2 2s. a year, students £1 1s.) and moreover that many 'patron members' (from £5 5s. a year) will be forthcoming so that the most important aim of the parent society will be reached: 'to foster an appreciation and an understanding of the great buildings and architects of all historic cultures.'

Applications for membership should be addressed to the Honorary Secretary, Society of Architectural Historians, Great Britain, School of Architecture, University of Manchester, Manchester, 13.

CORRESPONDENCE

Failure of the New Analysis

To the Editors,

SIRS,—Mr. Gomme, in his recent note in the REVIEW (AR, March, 1957, page 199) might well have pursued his argument further. Having proved beyond doubt that high densities are in themselves meaningless, and are no indication of urbanity, he omitted to state that high street-density, even when allied to compactness, would still not be enough. Urban planning requires urban architecture. A typical New Town terrace would hardly benefit by being longer, or a few yards closer to the similar terrace across the road. In the New Towns, the generally uninspired, provincial quality of the architecture, the lack of contrast in the true sense (which cannot be achieved simply by placing a ten-storey block of flats in the middle of a housing estate) are as much the cause of their failure as the open spaces and misuse of land. Whatever principles may guide the planning of a town, it is clearly of great importance that the nature of the architecture reflects those principles.

Yours, etc.,

GEOFFREY NEWMAN.

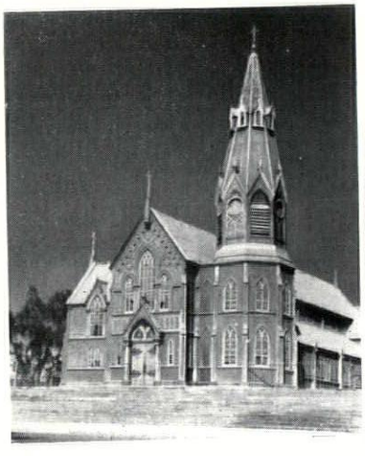
Hove, Sussex.

Andor Gomme replies: *I think one trouble with the new towns is that their architecture isn't provincial enough. You can stand anywhere in (new) Hemel Hempstead and not be sure whether you're in Crawley or Stevenage—or in the new extension of Swindon. It's the end of Southampton and the beginning of Carlisle all over again—even if the houses are nicer to look at. Contrast with this the intense localism of seventeenth-century domestic architecture in Oxford, in a style which literally doesn't exist outside the city and which makes Oxford a place instead of an area. Lancaster, York and Newcastle are full of uninspired provincial architecture: they're among the finest towns we have. Islington has at least four local styles of architecture, which makes it one of the most attractive boroughs of London. The trouble now seems to be that architects are asked to design 'a row of houses' (to go behind a garden behind a fence behind a verge behind a footpath behind a verge behind a concrete kerb) instead of 'a street in Crawley' (or Swindon). Perhaps this is what Mr. Newman is stressing in his last sentence. But I wish I were more certain about 'contrast in the true sense' (he's right about the odd loose tower of course): what I think needs emphasizing now is the contrast of Bath and Clifton, or what makes Canonbury and Bloomsbury so subtly different and yet so equally in the London way.*

Iron Church in Chile

To the Editors,

SIRS,—The enclosed photograph is of a church which I have recently visited at Arica in northern Chile, said to have been built by Eiffel. It is entirely of iron except for a wooden roof supported by exposed iron vaulting. The nave has four bays with clustered piers, painted to represent marble, and wrought iron spandrels enclosing plate tracery. The interior effect is quite winsome, with walls and roof painted a soft greenish blue and the vaulting, tracery and window surrounds white.



I shall be extremely interested to know whether Eiffel is known to have visited this remote Chilean port, or if this church is an early example of prefabricated iron building—possibly shipped out from France in sections? No one whom I questioned on the spot seemed to know or care in the least about the answer.

If my description sounds rather amateurish it is because I am one of your lay subscribers who follows with admiration your efforts to induce ordinary citizens to use their eyes and collective influence in shaping our everyday surroundings.

Yours, etc.,

MARY STEWART EVANS.

London, S.W.3.

Archer Abroad

To the Editors,

SIRS,—The letter from Mr. Edmund Esdaile in your July issue raises several interesting points. Archer's travels on the Continent can be dated with certainty, not in 1689–93 as hitherto supposed, but 1691–95. The evidence for this is a Travel Pass issued on January 10, 1690/91: 'Pass for Mr. Gilbert Shelden and Mr. Archer recommended by the Bishop of London, to go to Holland' (S.P. Dom. Warrant Book 36, p. 22). There can be little doubt that the Mr. Archer was in fact Thomas and not his elder brother who is elsewhere referred to as 'Mr. Archer Parliament man.' The four years abroad must therefore have been 1691–95, and the war with France implies that if Archer went to Italy he must have travelled via Germany and Switzerland, or the Tyrol. Sedlmayr has pointed out that Austrian Baroque was virtually the creation of Fischer von Erlach in the years 1690–1700, so that Archer may well have been on the spot.

There are resemblances between his work at Chatsworth and the Stadtpalais Liechtenstein (Domenico Martinelli, 1692–1705) in Vienna, and the pavilion at Wrest (1702–12) seems to be related to the Pilgrimage Church at Waldsassen (Georg Dientzenhofer, 1685–89). Finally, there is the curious fact to which you have recently drawn attention that, at the height of the Palladian dictatorship, there appeared an English edition of Fischer von Erlach's *Entwurff einer historischen Architektur*. The first English edition, as your readers will remember, came out in 1730. It was followed, surprisingly, by a second edition in 1737. Although it cannot be affirmed that Archer had anything to do with this translation, it does seem to indicate an unexpected Anglo-Austrian link.

Yours, etc.,

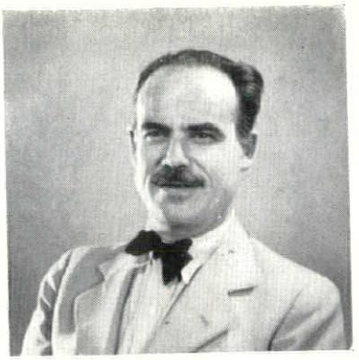
PETER MURRAY.

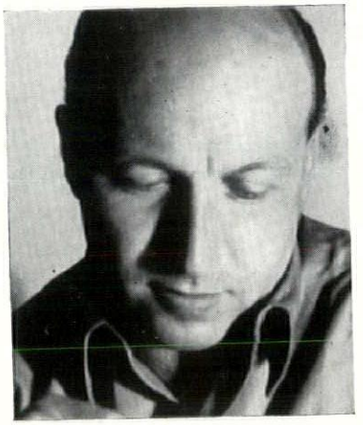
Courtauld Institute, W.1.

Intelligence

The Council of the Royal Society of Arts have appointed Misha Black, O.B.E., to be a Royal Designer for Industry in recognition of his work for exhibition and interior design. The distinction of RDI was established in 1936 by the Royal Society of Arts and is the highest honour to be obtained in the field of industrial design. The number of living recipients is strictly limited.

Architect of the Coach Hotel at Dover (pages 117-118), **Louis Erdi** was born in 1909 at Daruvar, Yugoslavia; his father was a Hungarian architect. Educated in Budapest, he took his degree in architecture at the Swiss Federal University, Zurich, worked in Switzerland and Hungary and with his father in Yugoslavia, on flats, hotels, houses and factory extensions; came to England in 1939, worked five years with a London architectural firm interested in prefabrication and automation. He started his private practice in 1947; other interests: music, painting, indoor gardening and photography.





Architect of the Hotel in Stockholm (pages 119–120), **Georg Varhelyi** was born in Budapest in 1914 and settled in Sweden in 1939. The Hotel Malmen is his first work as an independent architect.

ACKNOWLEDGMENTS

The colour blocks on pages 137–139 appear by courtesy of Mr. John Wright.

URBS IN RURE, pages 92–97: 8, Vasari. VILLAGE HOUSING IN SUFFOLK, pages 98–102: Galwey, Arphot. TRAINING COLLEGE AT WIMBLEDON, pages 106–110: 2, 3, Colin Westwood; rest, Galwey, Arphot. AN ITALIAN MISCELLANY, pages 111–118: 2–7, S. Lang; 10, Direzione Civici Musei; 13, Mansell Coll.; 14–16, Museo Civico, Padova; 17–19, 21, 22, Georgina Masson; 20, Gabinetto Nazionale delle Stampe; 23, Soprintendenza ai Monumenti delle Marche, Ancona. COACH HOTEL AT DOVER, pages 117–118: Galwey, Arphot. HOTEL IN STOCKHOLM, pages 119–120: 1, Inge Holm; 2, 3, 4, Atelje Wahlberg; 5, 6, K. Bernhard. CURRENT ARCHITECTURE, pages 127–8: 1, Galwey, Arphot; 2–4, John Maltby. MISCELLANY, pages 129–136: Functional Tradition, 1, John Piper; 2, Eric de Maré. Exhibitions, 1, Toomey, Arphot; 3, Hermann Weishaupt; 6, Nathan Rosenberg. Paintings, National Museum, Warsaw. Travel, Roderick Cameron. COUNTER-ATTACK, 1, 2, Mathieson, Arphot; 3, Windsor and Eton Express. SKILL: Interiors, pages 137–9, Galwey, Arphot. Design Review, pages 140–1: 1–4, Toomey, Arphot; 5–7, Heal's.



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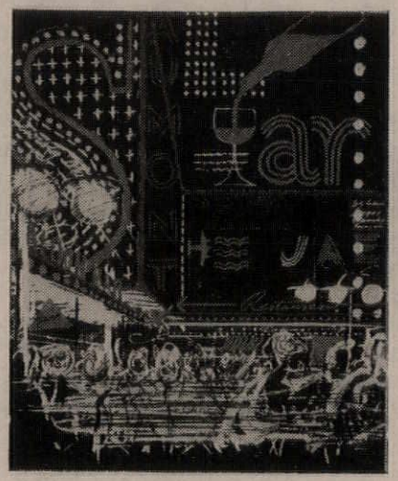
THE ARCHITECTURAL REVIEW

Volume 122 Number 727 August 1957



This month's cover, drawn by Kenneth Browne, explores the possibilities of illuminated advertising in the urban scene, when that advertising is in planned relationship to the architecture, is proper to its disposition—whether horizontal or vertical, seen against the grids of the architecture or against the blank of the sky—and proper to its own nature as bulbs or tubing, and not imitating solid lettering illuminated from without. The possibilities and problems of these gay intruders into the urban scene (including an occasional use of movement, such as a filling glass) are discussed in an article on pages 122-126, occasioned by the new proposals for advertising in Stevenage Town Centre.

87 **Marginalia**

88 **Correspondence**

90 **Frontispiece**

91 **Urbs in Rure** *by Hilda Selem* One of the most remarkable architectural achievements in post-war Italy has been the creation of new settlements in backward rural areas. Not only do these settlements represent a major improvement in the social and material condition of their inhabitants, but some of them have achieved great success in terms of architectural quality and the creation of urban scenery. Dr. Selem explains the special administrative and financial circumstances that helped to produce these results, and the psychological factors involved, particularly the architects' desire to treat the future inhabitants of these settlements gently, for not only were the rehoused communities suspicious of planning activities on this scale, but their traditional way of life, however squalid in some respects, nevertheless contained valuable cultural and social elements that were worth preserving as a contribution to the vitality of their new villages. In most cases this care for community life reveals itself in the creation of semi-enclosed public spaces with a strong sense of place and character, to act as natural fora for the life of the inhabitants. Such complementary planning for both community life and townscape character is the basis of all live town design, and the fact that it is not completely forgotten in England is shown by the description of the scheme for Rushbrooke in Suffolk, which follows Dr. Selem's article.

98 **Village Housing in Suffolk:** *Architects: Richard Llewelyn Davies and John Weeks.*

103 **Bauhaus: first phase** *by Helmut von Erffa* The Bauhaus has contributed most to the development of modern design as the fountainhead of a strict, responsible and austere conception of the designer's responsibility in an age of machine-production, but in its earliest days in Weimar it presented a very different picture of expressionist enthusiasms, religious and mystical fervours, a handicraft attitude to design. Professor von Erffa recalls the atmosphere of the Bauhaus at the beginning of the Twenties in Weimar, the enterprising activities of its students, the dominating figure of Johannes Itten who invented the celebrated preliminary course, and the succession of visiting poets, eccentrics, and fanatics who galvanised the attention of the students from time to time—culminating with the visit of Theo van Doesburg, whose arrival heralded the end of first stage, and a complete change of atmosphere and intentions.

106 **Training College at Wimbledon** *Architects: Yorke, Rosenberg and Mardall*

111 **An Italian Miscellany** Beside the great names and dominant themes that tend to monopolise the attention of students of Italian architectural history, there are many tributary themes and unclassifiable individuals who have contributed to the living body of that history's development, and these four notes touch upon some of them: the *Heads at Capua* discussed by S. Lang are an unusually late example of looting from a Roman remain; in *Pedrocchino and some Allied Problems* Nikolaus Pevsner examines the intrusion of Anglo-Gothick ideas into Italian Neo-classicism, and particularly the improbable Gothicising extension added to Pedrocchi's coffee-house in Padua by Giuseppe Jappelli; and in *Children's Prison in Rome* and *Vanvitelli's Lazaretto at the Port of Ancona*, Georgina Masson gives accounts of two buildings embodying advanced ideas of social responsibility built for the Papacy during one of its most enlightened periods of temporal power.

117 **Coach Hotel at Dover** *Architect: Louis Erdi*

119 **Hotel in Stockholm** *Architect: Georg Varhelyi*

122 **Space to Let** *by Kenneth Browne* Stevenage Development Corporation has recently instituted an unusually liberal and progressive policy towards advertising in the New Town centre. Their proposals start from the assumption that, far from being an unmitigated evil, posters, illuminated signs and other advertising devices can make a positive contribution to the lively character of the urban scene, and indicate how this contribution can be positively designed into an integrated townscape by means of brightness zoning, and other regulations whose tendency is permissive rather than restrictive. This commendable attitude is capable of extension and development, and Mr. Browne's article illustrates with text and pictures how this could be done.

127 **Current Architecture**

Miscellany

129 **Books**

131 **Functional Tradition**

131 **Travel**

132 **Exhibitions**

134 **Painting**

134 **Counter-Attack**

Skill

137 **Interiors: Shipping Offices, Cockspur Street, S.W.1.** *Architect: John Wright*

139 **Design Review**

141 **Techniques: Draughtproofing and Weatherstripping** *by Peter Whiteley*

146 **The Industry**

150 **Contractors, etc.**

Author: Hilda Selem graduated at Rome University Architecture School literally with full marks; she is now an assistant in the Interiors department of the school. As the result of winning the INA Casa competition she has designed houses in many parts of Italy, from Catania to Lido di Venezia; among her other jobs have been a centre for delinquent children in the Abruzzi, the design and supervision of low-cost housing at Matera (Lucania) and a public park at Macerata. Dr. Selem has studied town-planning abroad, and in 1956 was awarded the British Council scholarship for studying the planning of London.

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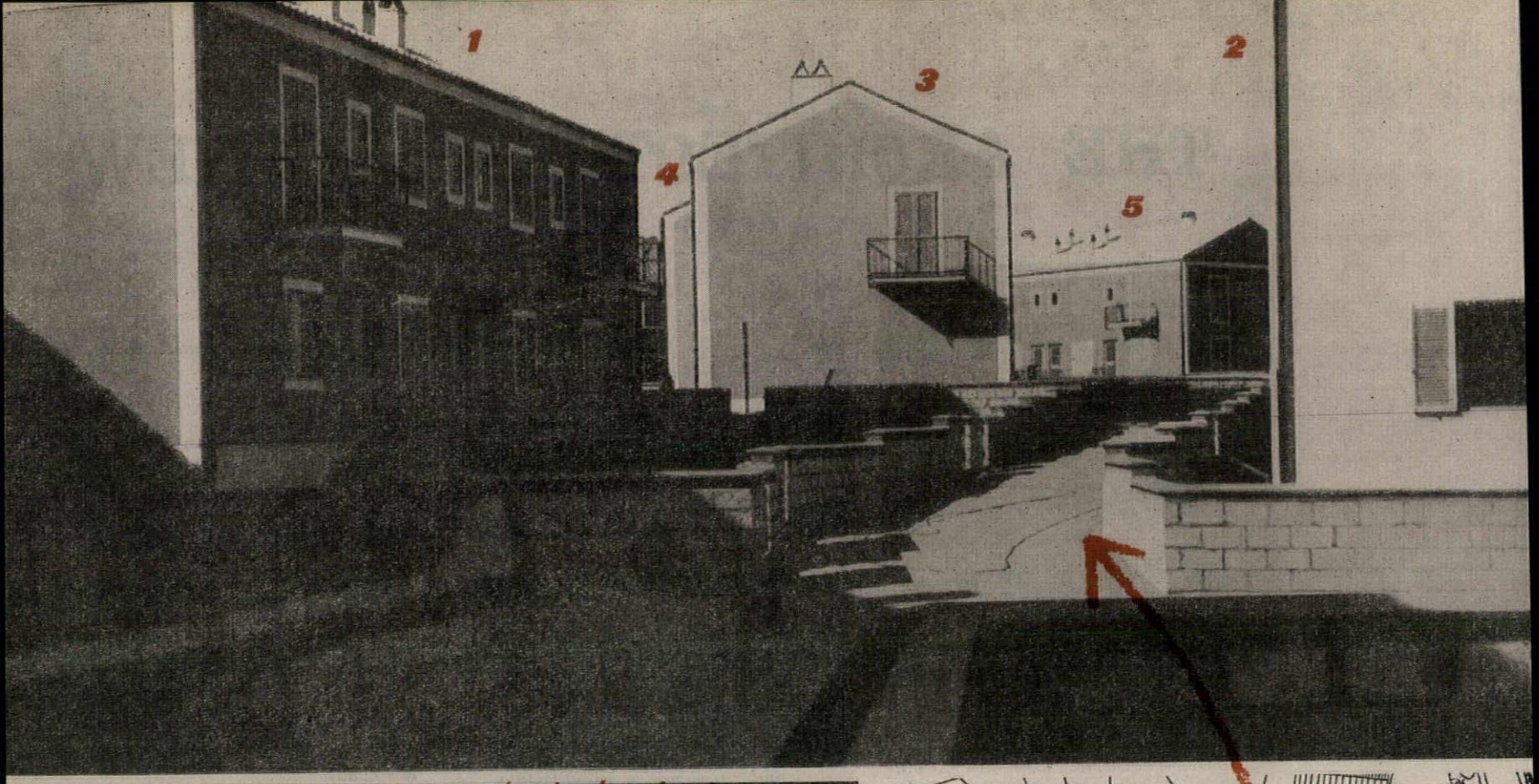
FIVE SHILLINGS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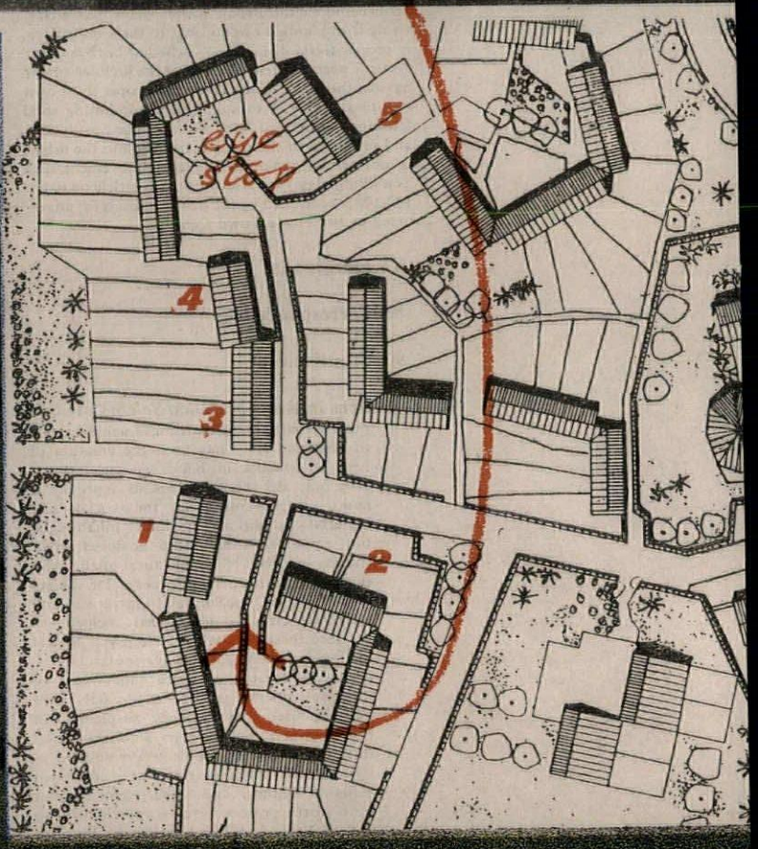
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The margin of difference between merely dumping houses in the countryside, and making an urban centre of them, is chiefly a matter of so grouping them as to create an enclosure, a sense of place. On the pages that follow, Italian and British methods of achieving this end are discussed and illustrated, and they are exemplified, opposite, by a new settlement at San Basilio, a suburb of Rome, top, where asymmetrically disposed loops of houses are laid out in a freehand manner that allows the eye to see from one enclosure into another, but never wildly out into empty country; and by Rushbrooke in Suffolk, below, where it is proposed to achieve a sense of enclosure, partly by the shapes of the houses themselves, but also by breaking up the boredom of ribbon development, a, *by graded setbacks,* b, *and screen walls,* c—*these last, again, to keep the eye within bounds.*

Hilda Selem

URBS IN RURE

URBAN NUCLEI IN THE ITALIAN COUNTRYSIDE

One of the most significant responses to the post-War situation in Italy, in the spheres of both architecture and social progress, has been the creation of new settlements in rural areas. The main aim of such activities has been the social, productive and moral rehabilitation of communities that were either suffering from the effects of the fighting, or from long periods of economic stagnation and neglect. In some places these pockets of social blight had become so bad that they constituted a threat to the health of society. The impetus behind planning policy and architectural practice in these cases was therefore very different from the social pressures in post-War England that have decanted large numbers of skilled, productive, physically and socially healthy townsmen into the countryside.

But there are also other important differences. Italian developments have not be sponsored by central authorities, operating on a national scale, but by local and regional bodies, such as *Ente-Sila, Ente Riforma per la Lucania,* etc., most of which are concerned with land reclamation, agricultural improvement and similar activities. This gives to development programmes a greater sense of integration into local life, and into local social progress, than is the case in most English instances, and this sense of involvement with the locality and its inhabitants has been deepened by the attitude of mind of the architects and planners themselves.

One must understand that planning of this kind is a new and strange thing in most parts of Italy. In England there exist social habits and relationships that enable the planner and architect to work efficiently without having to consider the inhabitants of their projects as much more than units in a statistical rearrangement. But in the undeveloped parts of Italy such activities may be met with suspicion or even hostility, because planning is

The small settlement at **san basilio** *on the outer fringe of the suburbs of Rome, has been designed by its architect, Mario Fiorentino, to have something of the character and natural liveliness of a village. As can be seen opposite, the means at his disposal were extremely simple— straightforward, low-budget terrace houses, garden walls, slight changes of level—but by using these to form small enclosures with a sense of place and identity, he has created an urbanity which has often eluded British designers with greater facilities and far easier budgets.*

either unknown, or has been known only as part of an oppressive political regime. The designers of Orto Nuovo (Cutro) and La Martella have had to approach their public with caution, with sympathy and imagination, because they are conscious that they are invading patterns of life and social arrangements that are ancient and ingrained, and, however squalid they may appear in some ways, still enshrine warm and valuable human relationships.

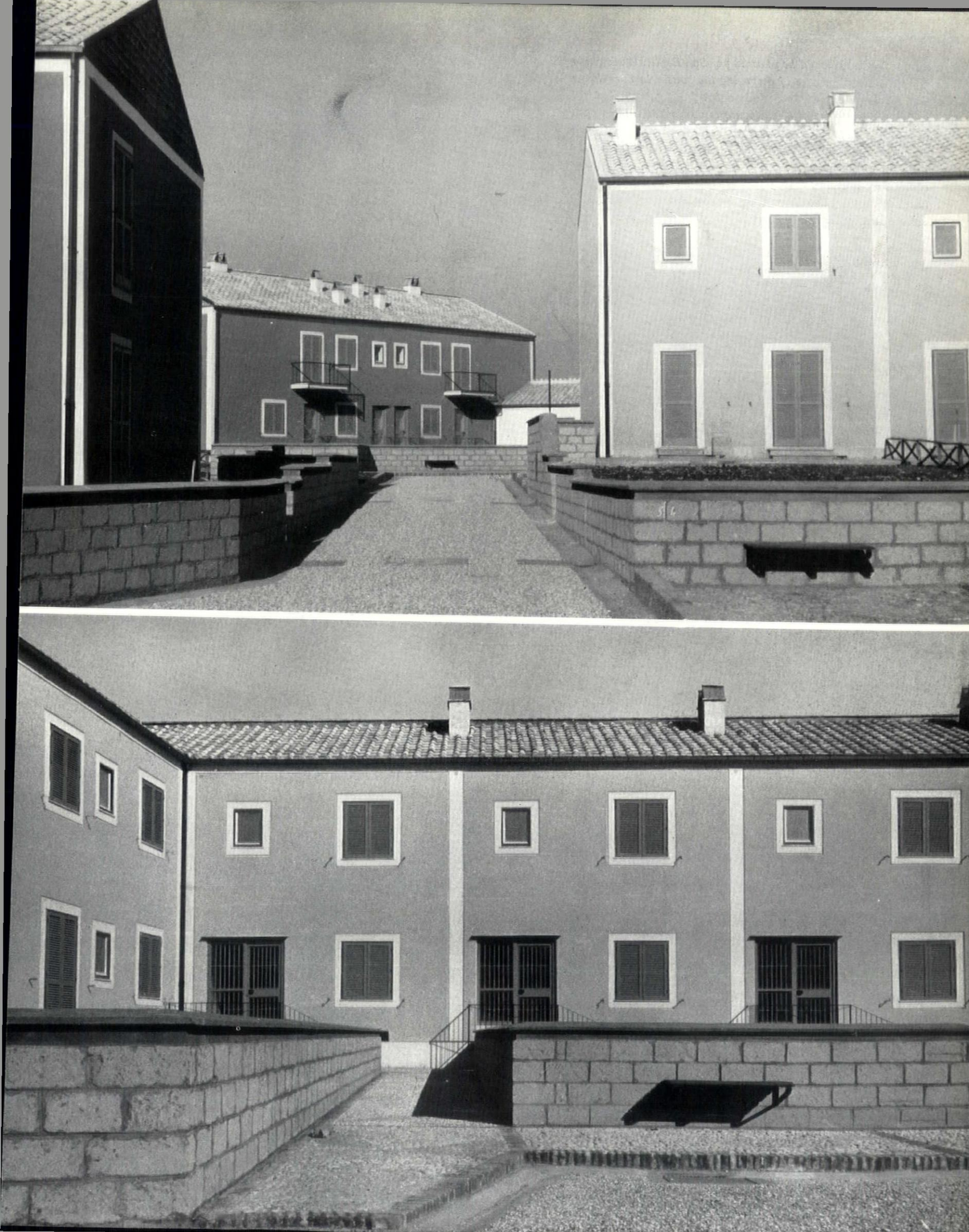
This is particularly true of La Martella, the new agricultural village in Lucania built to house workers who had been rescued from miserable cave dwellings dug in the cliffs around the town of Matera. Though conditions in these *Sassi* were so bad that a large proportion were adjudged incapable of being brought up to a standard where they would be fit even for animals, the inhabitants had evolved a social structure well adapted to their living conditions and their work in the remote fields, had acquired a certain moral dignity and spiritual strength, and enjoyed a way of life that was both human and civil. Such a way of life possesses cultural and folkloristic qualities that are worth conserving, and can only be preserved within the way of life.

La Martella was therefore built 'with art, but not geometry,' endeavouring to impose no formal pattern, however elegant, on the life of the inhabitants but creating, by the widening and constriction of the streets in which the new houses were ranged, a series of open-air fora that could contain and focus the warm and vivid social life that had flourished on the steps and terraces of the *Sassi*, while the design and construction of the houses themselves went further even than the architect had originally foreseen in deferring to local preferences and local materials, in order that the good aspects of the life of the inhabitants should be disturbed as little as possible.

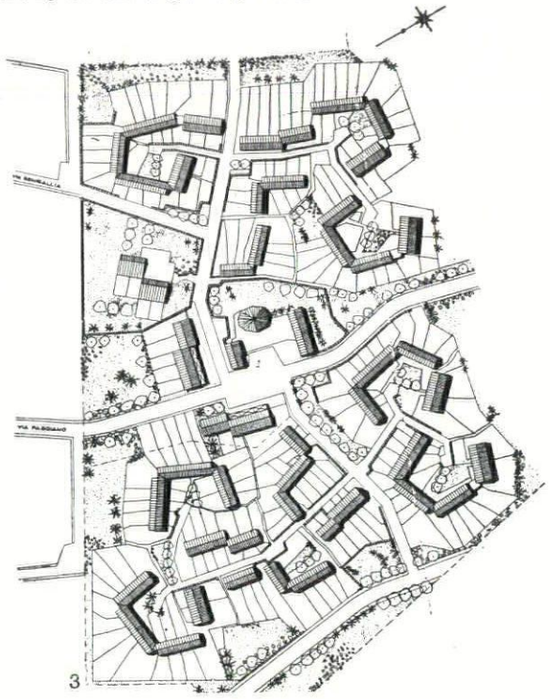
Other settlements have presented different problems—at Orto Nuovo special provision has had to be made for the activities of rural craftsmen, while San Basilio is really a type of suburban settlement, only fifteen kilometres from Rome itself—but in both cases the planning aims to create for every group of households a natural forum for its social activities, and the type of architecture aims to find something valuable and expressive in family life and local traditions.

The experimental and unconventional nature of much of this work is to be attributed in part to the reaction against a rather diagrammatic functionalism that prevailed in Italy after the War, and partly due to the freedom enjoyed by Italian architects working for these fairly small regional organizations. Unlike their English contemporaries, caught up in the co-ordination of the conflicting claims of numerous powerful authorities, and left with little to do but follow a statistical routine, Italian architects working on the creation

[*continued on page* 97



san basilio, *The planning of San Basilio,* 3, *depends upon the simple device of disposing the houses in open loops that are large enough to include a few front gardens but not so large that the sense of enclosure is destroyed. Within each loop is the natural focus of its social life, a pocket of open ground, public but not vehicular, provided with seats on the rough-cut tufa walls,* 4. *The loops of houses are neither continuous nor closed. It is possible to see from one focal zone towards another, but direct views into another loop are usually interrupted by the end or gable of one of the blocks,* 5.



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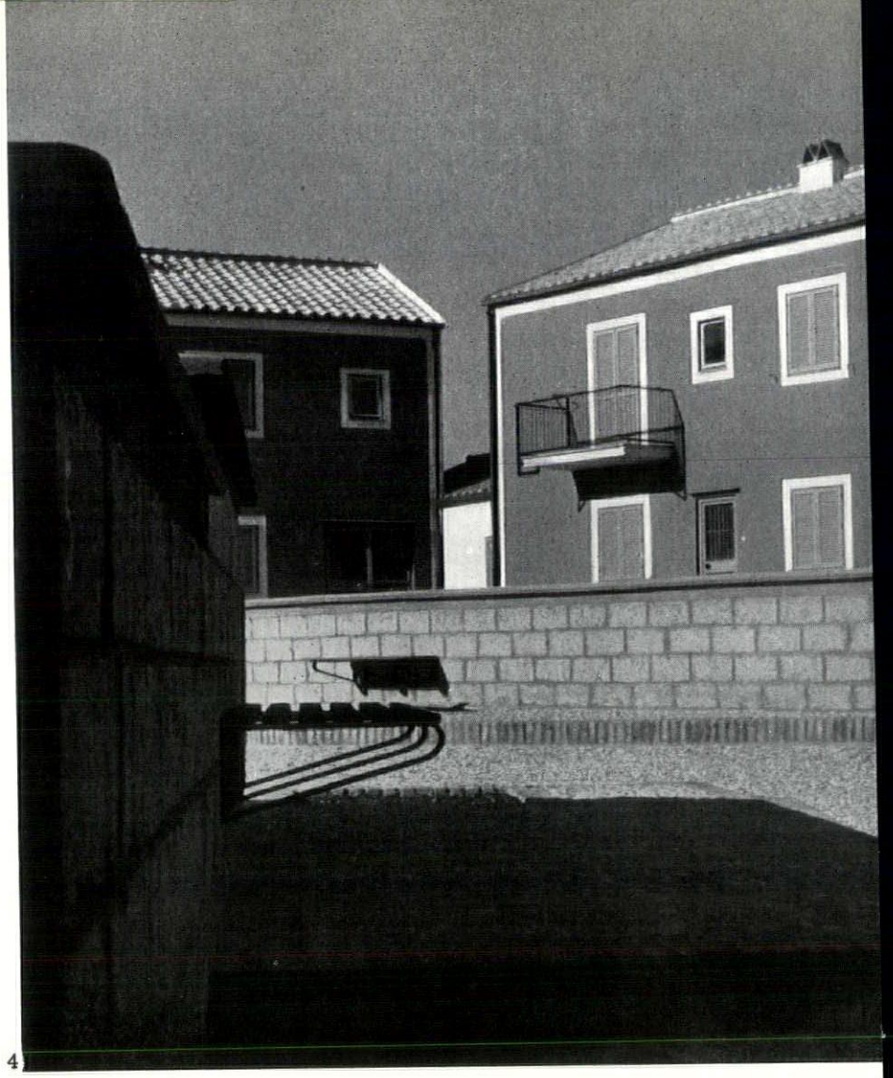

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la martella, *in Lucania, represents one of the most heroic acts of social reclamation undertaken in Italy since the war: a community of farm labourers was removed from insanitary cave dwellings of apalling squalor, and resettled in a new clean village,* 6 *and* 7, *with its own fields on the open plain. That the new village was not just a 'clean slum' is largely due to the originality and imagination of the design team led by Lodovico Quaroni, and their sympathetic approach*



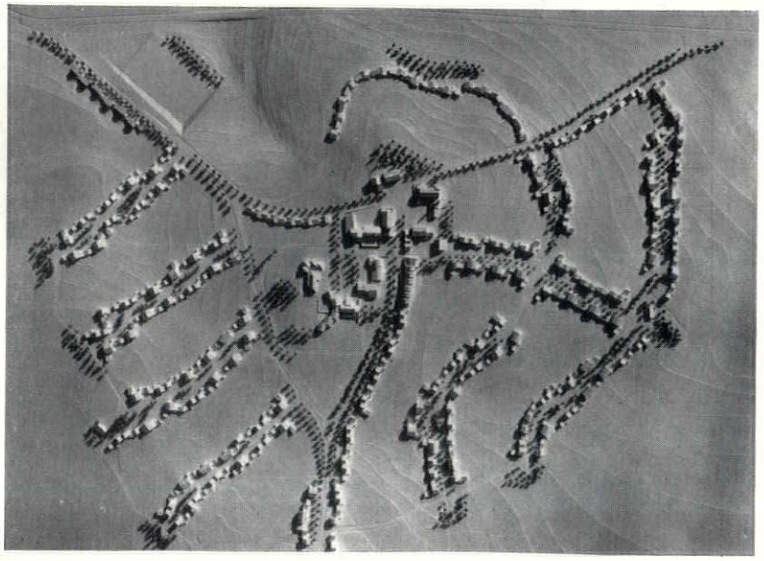
6

to the displaced peasantry and their traditional mode of life. The planning-concept was of loosely-aggregated streets of houses and stables widening and narrowing to make foci for the social life of the inhabitants, 8, *and this, combined with*



7

the uninhibited use made by the architects of local materials and structural methods, produced a townscape that is as successful as it is unique, 9 *and* 10, *urban in feeling, yet unmistakably agricultural in character as befits a peasant community.*



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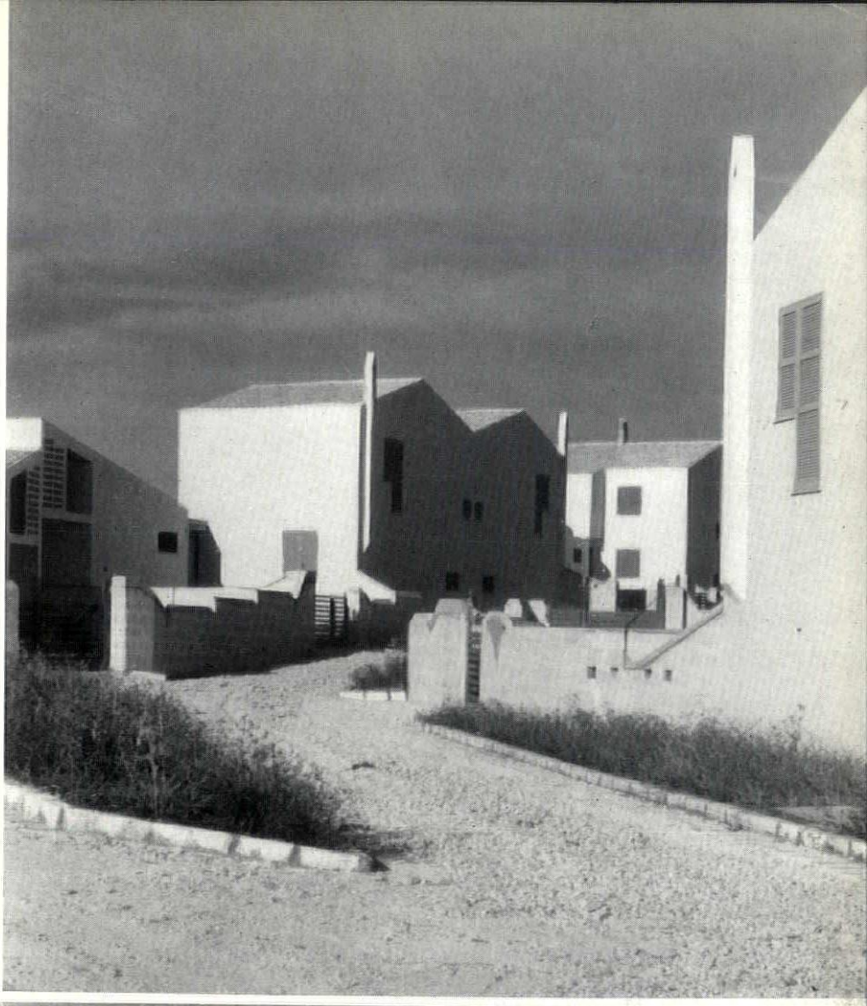

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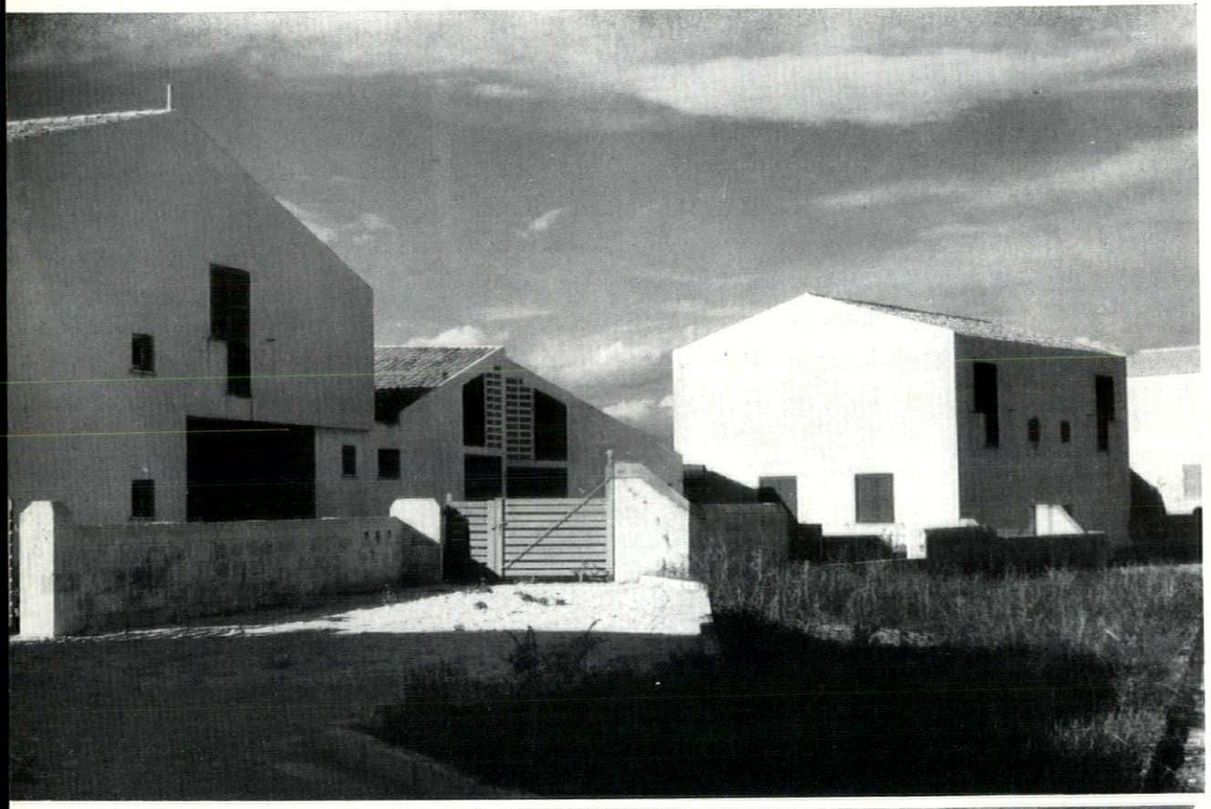

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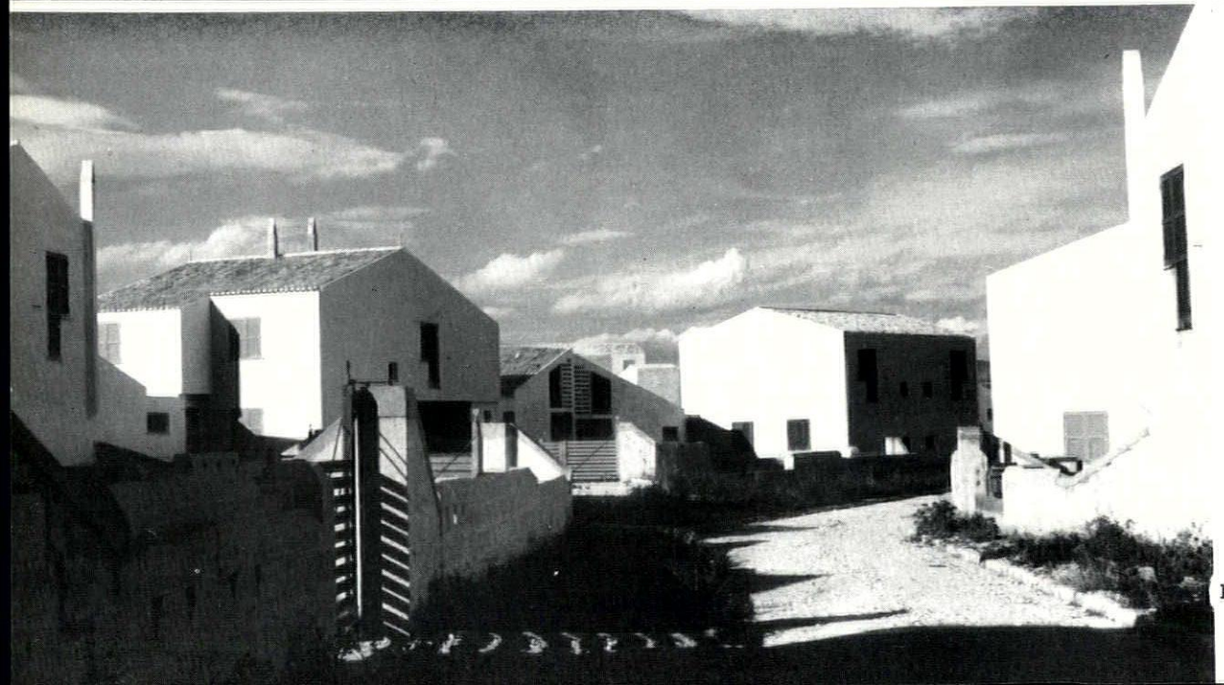


13

la martella, *though not large, is nevertheless a town. It has its own character and it has its focus of urbanity around the church,* 11, *which is permitted a degree of formality, as in its square tower and its entrance steps, but still falls within the programme of building 'with art but without geometry' that the architects set up as a guard against preconceived planning notions. As at San Basilio, building work was financed from UNRRA funds, and the budget was too restricted to permit of anything but the simplest of structural methods and local materials. House-types and elements such as doors, windows, grilles, etc., have been almost completely standardized, as can be seen in* 12 *and* 13, *and these bring the discipline of repetition into a townscape otherwise characterized by considerable freedom in the disposition of buildings in relation to one another and to the roads that serve them. This seeming freedom, however, is as programmatic as the use of standardization, and serves to create the continuous changes of view, the openings-out and constrictions of the scene, that create the local senses of place within the larger identity of La Martella as a whole. The result is still, clearly, a town of people living close to the subsistence line and not endowed individually or collectively with any surplus of goods or equipment. Yet for all its dirt roads and simple construction, the town is as rich in character as its inhabitants, and the two characters are complimentary. Of how many well-equipped, landscaped, conscientiously variegated post-war developments with properly metalled roads in northern Europe could the same be said?*

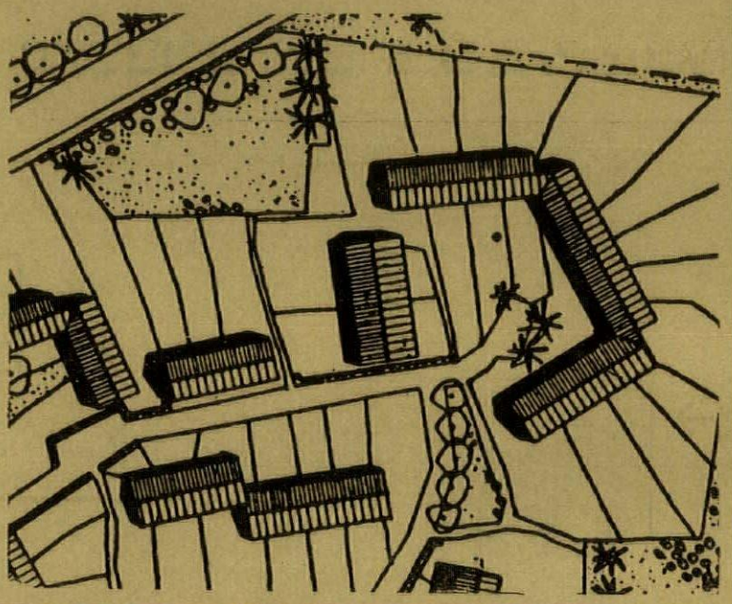
Yet the ability to design in this vein, and introduce the right kind of urbanity to the rural scene is not a preserve of Italian architects. We can do equally well in England, given propitious circumstances and the right intentions. On the pages that follow, are descriptions and illustrations of a promising beginning made by Richard Llewelyn Davies and John Weeks at Rushbrooke in Suffolk.

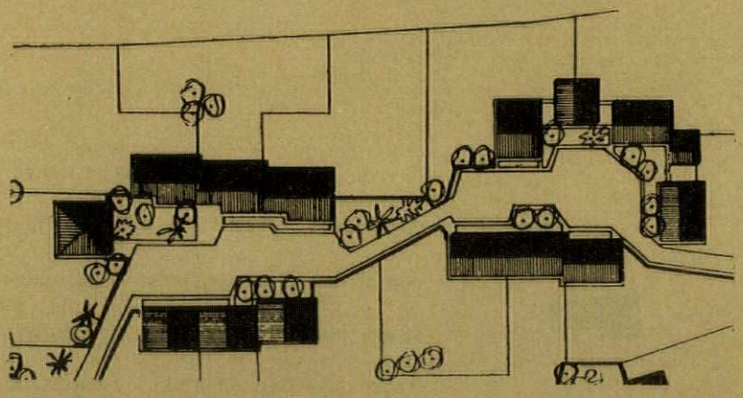
[*continued from page 92*

of these new urban nuclei enjoy the liberty to create at a regional level an architecture of humanity and warmth that satisfies the regionally differentiated needs of the inhabitants. If further support is available for these lively experiments, and a continued understanding on the part of the administration, then there is hope that the present period in Italy will achieve results immeasurably better than those of the past in the fields of housing and neighbourhood planning.

plan analysis of San Basilio, La Martella and the uncompleted scheme for Cutro

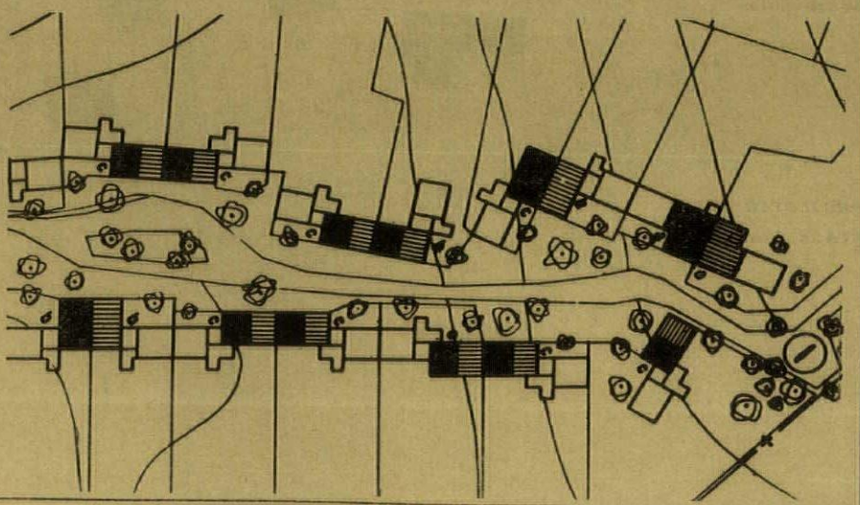
san basilio *The kind of urban landscape that characterises the new Italian settlements described on the previous pages is not the product of stock planning solutions or standard bye-laws, and the general aim—of creating natural social foci with a strong sense of place—is achieved by different architectural means in every case. At San Basilio, for instance, the basic planning unit is a loop of two- or three-storey houses, into which a service road runs and stops. The sense of having arrived is thus as strong as the sense of enclosure, and the road-head, toward which most of the houses face, is the inevitable focal point of aspect and activity.*





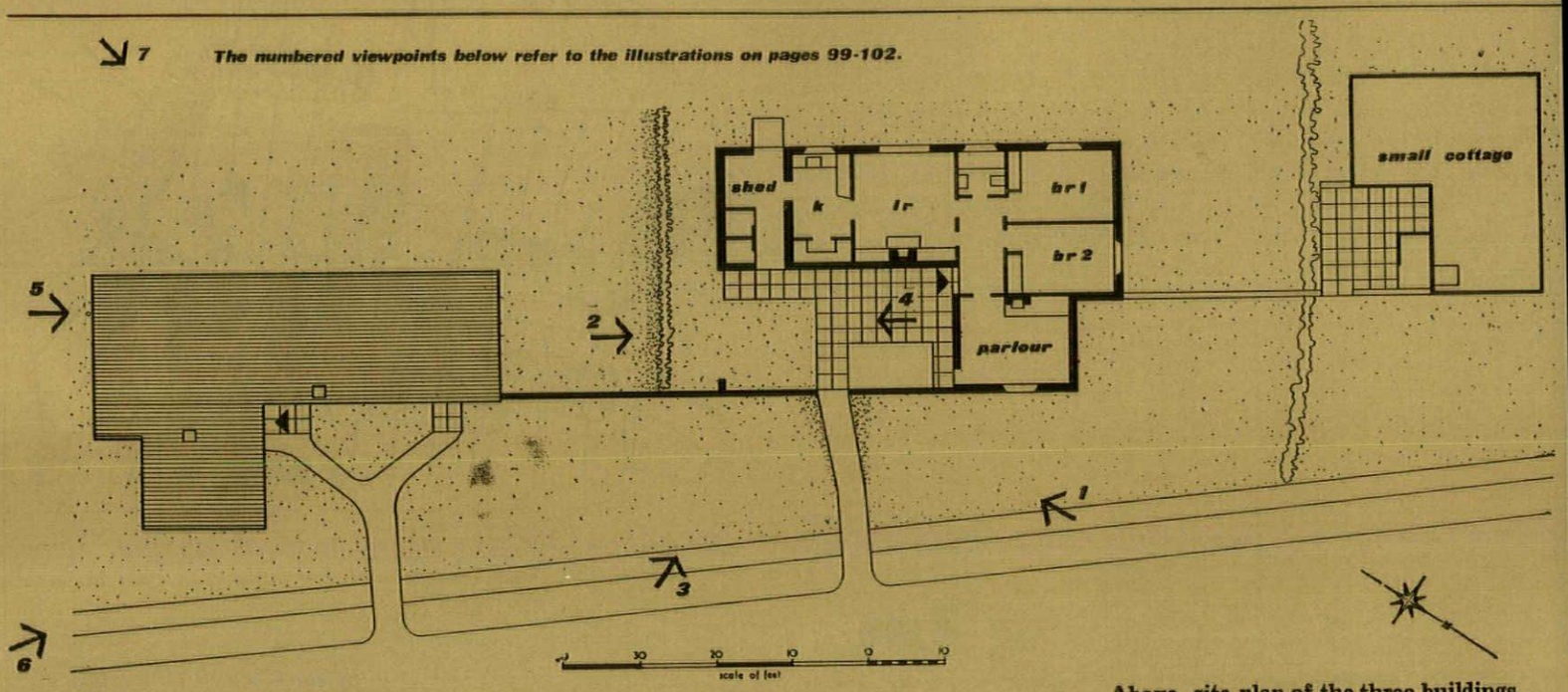
cutro *But even at San Basilio the architect, Mario Fiorentino, makes occasional use of sub-foci on through roads, usually marked by sudden narrowing of the gap between facing rows of houses. In his—as yet—uncompleted scheme for Orto Nuovo (Cutro) seven out of eleven foci are on through roads, and the sense of enclosure is given by disposing the single storey houses and workshops in a slightly formal manner around little squares or closes (that should appear slightly familiar to readers of Thomas Sharp's* Anatomy of the Village) *and by preventing any corridor-views through square after square.*

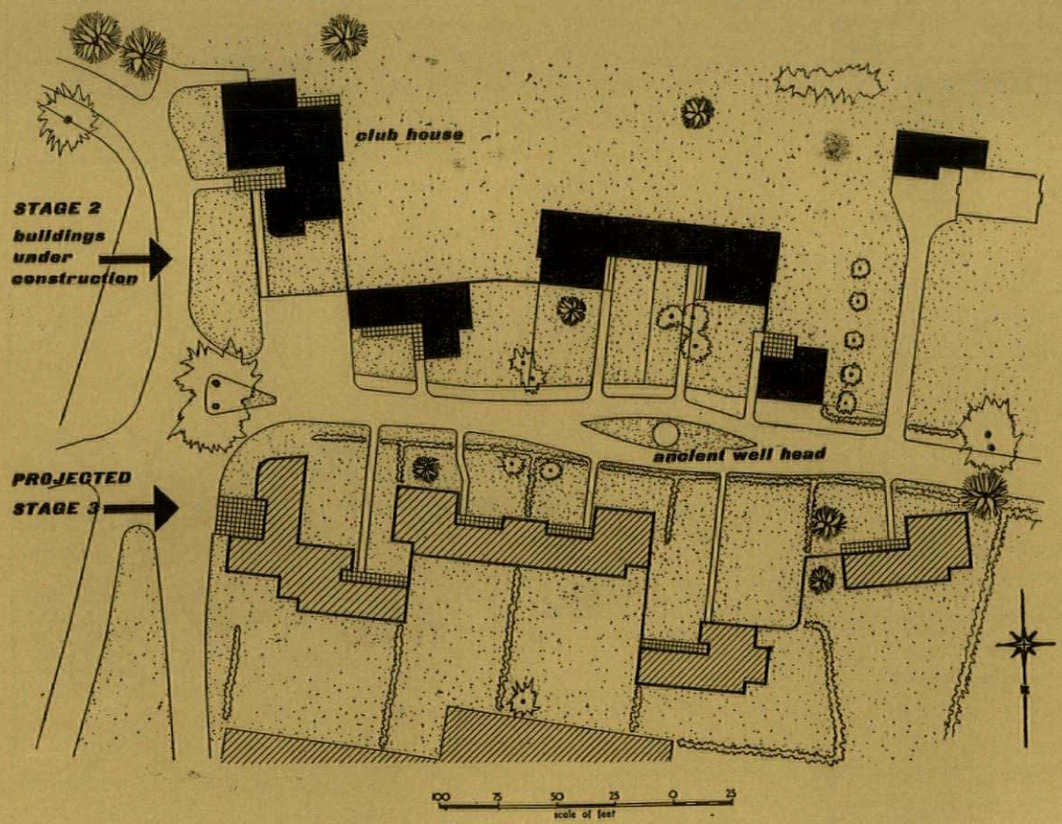
la martella *At La Martella, however, the residential planning is entirely in terms of through roads, and Quaroni's townscape would probably be a perilous example to imitate without his firm grip on the social factors involved and his sure eye. The houses seemingly straggle at an unpromisingly low density, but the visual density is fully made up by the stables and other ancillary buildings, which thus prevent destructive lateral views of empty countryside, and the roads, graded and surfaced for purely agricultural traffic, make just enough use of serpentinings or contours to prevent longitudinal corridor-views. The continuity of the road as a road is maintained, but the houses stand close enough to it for every change of orientation or building line to register with maximum effect as the creator of enclosure, locality and social focus.*



VILLAGE HOUSING IN SUFFOLK

7 The numbered viewpoints below refer to the illustrations on pages 99-102.



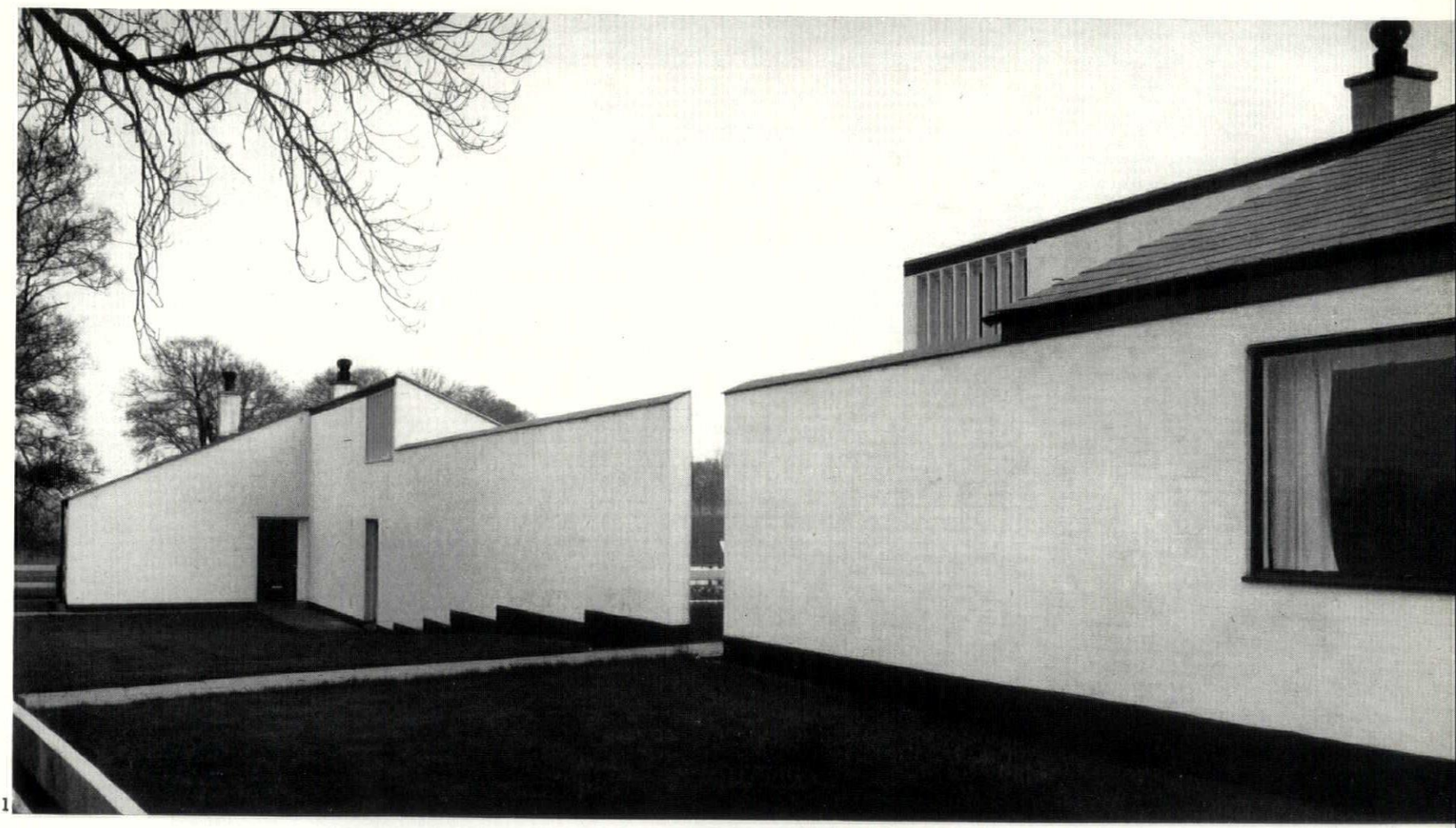


Above, site plan of the three buildings, two houses and a cottage, which comprise the pilot scheme. The single-storey plan is the same for both houses but reverse-handed, and they are linked by a high wall which forms a court-yard to the house on the right. Left, plan of the proposed layout of the completed village. The buildings shown black are at present under construction and include a new club house. Large trees mark the extremities of the village and, instead of keeping equidistant from the road, the linked houses open out in the centre of the village to form a core.

1, the first two completed houses seen from the road. Behind the high linking wall is a courtyard with the entrance to the house on the right.

ARCHITECTS ***RICHARD LLEWELYN DAVIES AND JOHN WEEKS***

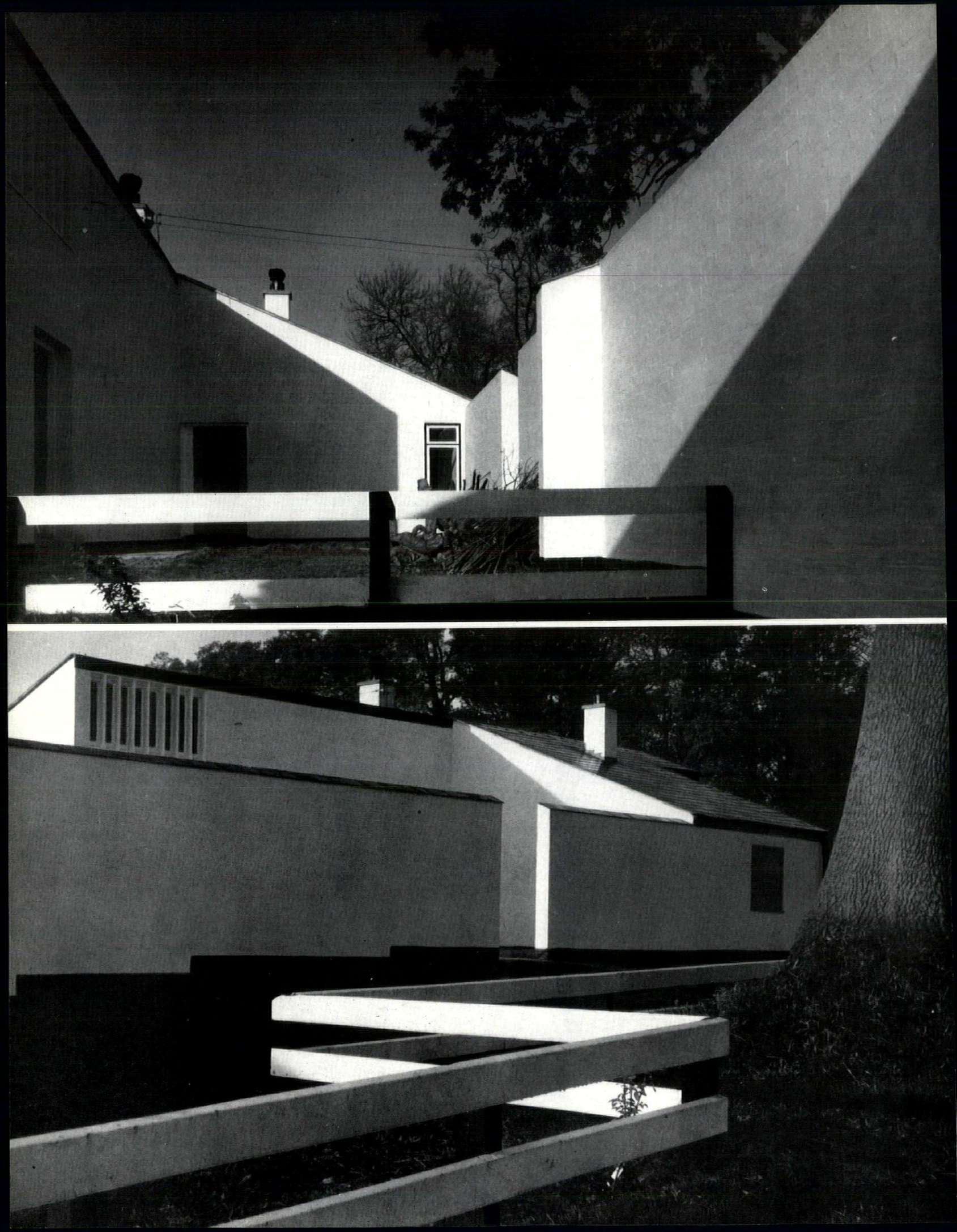
executive architect ***Michael Huckstepp***



The rebuilding of Rushbrooke, near Bury St. Edmunds, is an all too rare example of the imaginative grouping and linking of small houses in order to re-create a real, homogeneous village instead of the usual soulless repetition of evenly spaced and identical housing units. By staggering the buildings and linking them by high walls, the architects have exploited the value of enclosure and continuity of surface, and their ingenious variations on a single basic house plan have enabled them to avoid monotony while maintaining a family likeness between the houses.

Rushbrooke is a small village with a church and about two dozen houses. There is no public house ; instead, the social focus of village life is a club run by a local committee, which provides, in addition to a bar and clubroom, facility for dances and whist drives. Nearly all the houses are occupied by local farm workers, and the existing village was inadequate to accommodate them. About half the old cottages were too small and did not lend themselves to conversion.

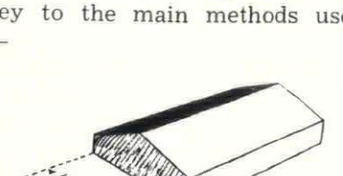
The first stage in rebuilding the village was to build two new houses on a vacant site, just beyond the edge of the village, as a pilot scheme. The second stage, at present under construction, involved the demolition and



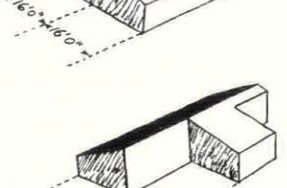
rebuilding of four houses on one side of the village street and a new building for the village club. A final stage, with the houses on both sides of the street rebuilt, is shown here by a model. The first pair of houses, sited on a slope, have identical plans, reverse handed, and an interesting relationship has been achieved by staggering them relative to the road line and linking them by a brick wall. The entrance to the upper house is through a gap in this wall, while that to the lower house is at right angles to the wall on the face of the building. A small one-bedroom cottage, attached to these two houses, is now under construction ; this is at right angles to the first two buildings and its entrance is also through a gap in the connecting wall, with a small courtyard.

An analysis of the shape and relationship of the two pilot houses gives a key to the main methods used throughout the village :—

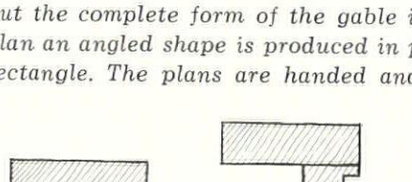
The house plans are contained within a rectangle 32 ft. wide, with an equal pitch roof, A. From this basic shape slices are cut away, B, sometimes right back to the ridge to show a wall rising through the full height of the house. Thus the gable end profile may be a single pitch roof or an unequal double pitch but the complete form of the gable is never shown. On plan an angled shape is produced in place of the regular rectangle. The plans are handed and also staggered in distance from the road so that the eaves of one house lines up with ridge of the other, C. They are linked by a wall which continues the eaves line of one of the buildings and the exposed spine wall of the other, D. It should be noted that high walls are an essential part of the scheme as they prevent houses from being seen as single units and at the same time provide a feeling of enclosure and, by withholding the view, one of surprise.



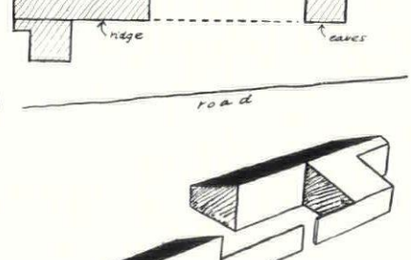
A



B



C

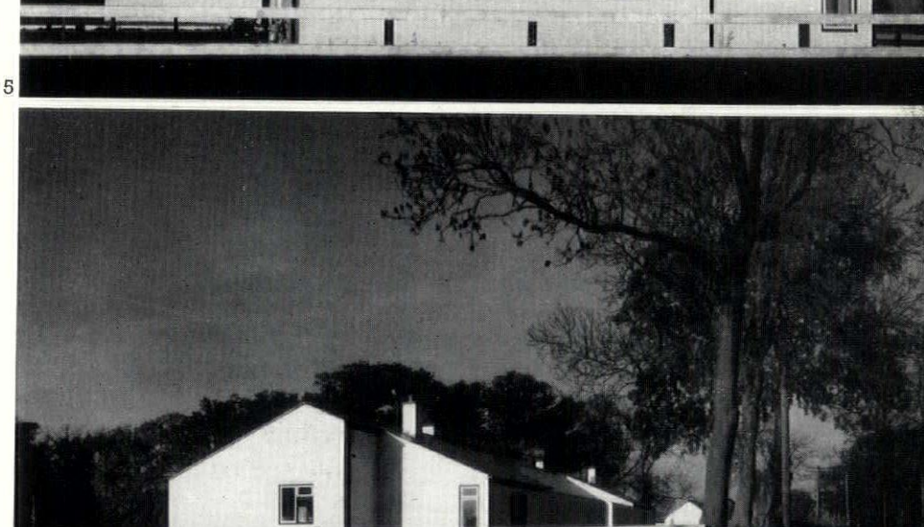

D

The houses have been designed so that they may be easily and naturally connected together to form a con-

Facing page : 2, interior of courtyard with entrance from road on the right and front door straight ahead. 3, view from the approach road, with the high linking wall between houses and in the foreground the simple trim of deep horizontal wooden rails painted white supported on black posts. Right : 4, another view of one of the entrance courtyards looking in the opposite direction to 2. 5, gable end elevation to the first two houses. 6, view from the approach road. 7, the two houses seen from the meadows behind.


4


5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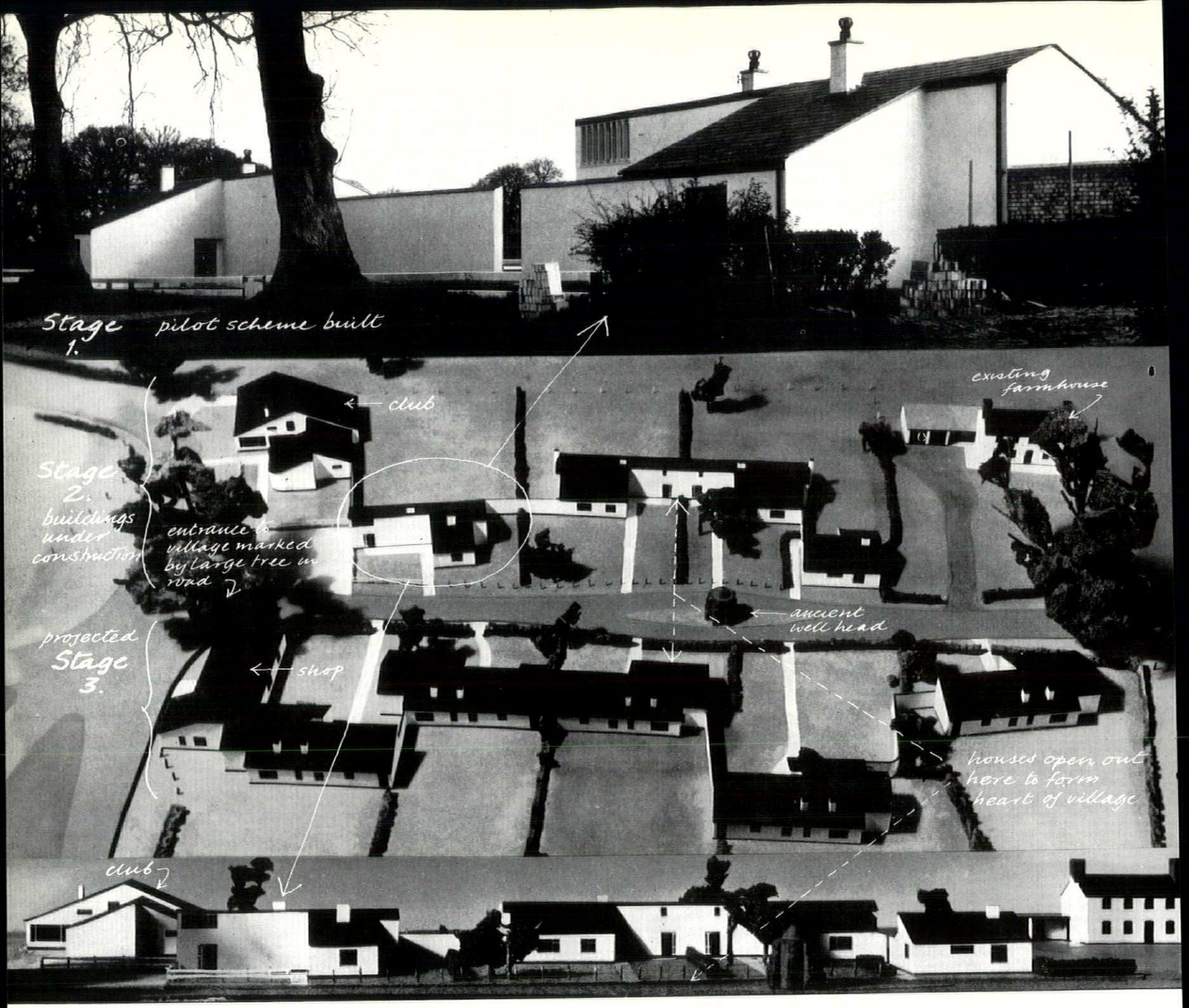


8, the centre and lower views show a model of the completed village which will be made up of variants on the two houses already built nearby (top). An essential part of the scheme is the continuous linking of the buildings to form enclosure and the opening out of the space between opposite houses in the centre of the village.

tinuous band of building along the side of the village street, while at the same time opening out to give a heart to the village. Each house is a variant on the basic plan, and can be placed in a variety of positions; it can also be connected in a variety of ways with the adjoining house. There are four types in all: a small one-bedroom cottage for single persons; two-bedroom houses with living-room and parlour; three-bedroom houses with living-room and parlour, north of the street; and three-bedroom houses with living-room and parlour, south of the street.

All the houses are of brick construction with slate roofs. They are single storey, but in each house there is a large room in the roof which can be used for storage or as a children's playroom. Each house has a storage shed enclosed by the main walls. The brick walls are painted white, the fixed portions of windows are painted black with white opening lights, traditional colouring in this part of Suffolk. The same roof pitch is used on all the houses, and the eaves' height varies according to the distance of the lateral walls from the centre line of the roof. The use of timber fencing with deep white horizontal members on black posts gives a strong linear emphasis which also helps to link the buildings together. There is to be a new building to house the club, the construction and details of which are similar to those of the houses, and it will be linked visually to the rest of the village in the same way. The club is sited on the edge of the village and not in the centre; this is because so many country people today use cars, and the noise of car engines starting up after evening parties would have been a nuisance in the village centre.

Helmut von Erffa

BAUHAUS: FIRST PHASE



At a time when a new Bauhaus has been built up at Ulm by Max Bill[1], few can imagine the courage, vision and idealism that Walter Gropius needed to found the original Bauhaus in 1919. Courage; to plan for industrial design when Germany was down and out after the defeat of 1918. Vision; to imagine and project a centre where student and teacher would work together to learn about the materials they used, and then work together with industry on new designs for products. Idealism; because Gropius went far beyond the conventional patterns of training for artist and artist-craftsman. The student who came to the Bauhaus in those early years could have no lucrative career in mind, but only the desire to develop his creative powers, and in the highly Romantic atmosphere of post-War Germany that meant that the Bauhaus became for him a way of life.

At the foundation of the Bauhaus in 1919, Gropius issued a proclamation addressed to the youth of Germany, or—we might truly say—to the youth of the world. It reads (in part) 'Together let us conceive and create a new building of the future which will embrace architecture and painting and sculpture in one unity, and will rise one day towards heaven from the hands of a million workers, like the crystal symbol of a new faith.'

This call to action rallied young men and women from all walks of life, from all over Germany and even a few from abroad. Many were art-students who had become dis-

[1]. In fairness to the *Hochschüle für Gestaltung* at Ulm, it should be pointed out that though Max Bill was its first Rector, and did heroic and universally acknowledged service in getting it started, the school is now directed by a governing council of five members, and its policy is oriented away from the idea of a 'new Bauhaus' or 'second Bauhaus' toward the elaboration of an educational policy better adapted to the needs and technical capacities of the mid-century.

satisfied with academic teaching, some were genuinely interested in the new experimental approach to education in general, which was implicit in the programme of learning-by-doing and the desire to lay bare the innate abilities of the students, and others of course were just dreamers, poets and mystics who were attracted by the idealistic and, in some ways, other-worldly atmosphere of group endeavour. Yet, wherever we came from, and whatever we contributed to the strange but stimulating atmosphere of the Bauhaus, we had all come because we believed that we could find there something that we could not find elsewhere.

We all hoped for a better life, and these hopes centred, not around Gropius at first, but around Johannes Itten. Gropius might share our simple meals in the canteen, and go walking with us, but it was Itten who was our leading spirit in those early days.[2]

His influence was strong among the students—it was not easy to get oneself accepted for his preliminary course which prepared one for the workshops, but after we had had an interview with Gropius, we still had to be passed by a kind of one-man Student Council. I remember my trepidation as I was led into the room, whitewashed and totally bare except for a huge black wooden cross on one wall. On a simple iron bedstead sat a haggard young man in a monk's habit. His cheeks were hollow, his eyes burned feverishly, and he was one of Itten's most trusted pupils—'Really a saint' my companion whispered. He looked me over while my companion stood in respectful silence, then he said something in an ecstatic sing-song voice and nodded. He had seen none of my drawings and barely heard me utter a word, but I had passed the test and was accepted. 'The master has complete trust in his intuitive judgement,' my companion explained after we had left the room.



1, *the first Bauhaus seal.*

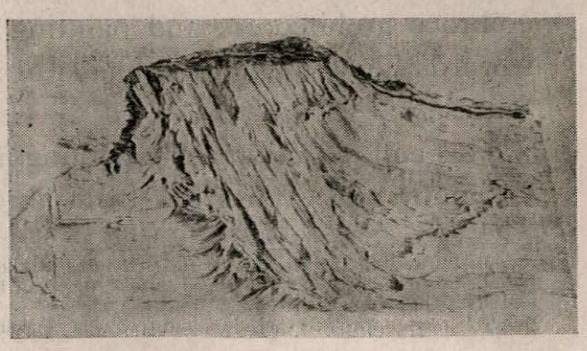
Intuition! The Unconscious! These were the master-keys of Itten's teaching. Before long we would all be using the jargon of Freud and Jung, but in 1920 and 1921 we were all trying to read the works of the mystics. Meister Eckhardt, Suso and Tauler were our constant companions, but more to us than these were Lao Tse and Chuang Tse. In the latter we found the story of a butcher who could cut meat without his knife even grazing a bone—the reason for his extraordinary dexterity being his possession of the Tao, which some scholars have translated as *logos*, though admitting the inadequacy of the translation. The point of Chuang Tse's story for us was that the butcher was somehow in touch with the cosmos, or—to be more specific—he had an intuitive comprehension of the structure and physical properties of the carcass.

Itten and his follower Georg Muche demanded that we should develop a similar affinity between our unconscious and the materials that we intended to work with. If Gertrude Grunow tried to deepen our sense of colour by having us contemplate it in a trance-like state, and did not fully succeed, it was because the ways of the East were not those of the West, as Jung explains at length in his writings. Nevertheless, the hold which this appeal to our inner selves had on some students was demonstrated by a visit, not organized by the Bauhaus, from Werner Heuser. He came in a long black robe, and a long black full-bottom beard, and whether he was a prophet or a charlatan, his fiery sermons on the *Imitation of Christ* hit some of the students very hard indeed. They started to wander off in search of the inner life of which he had spoken, and Gropius had to post a warning on the bulletin-board that those who left in the middle of the term would not be re-admitted.



2, *woodcut from the first proclamation of 1919, by Lyonel Feininger.*

The teaching methods that Itten used in those early days, and which were partly his invention, are now widely used in the United States—though with local modifications. He made us feel and experience whatever we drew, and, in fact, he wanted us to feel and experience every daily event, however trivial, as profoundly as possible. He made us draw a thistle so



3, *drawing showing characteristic structure of wood, by L. Leudesdorff-Engstfeld, 1922.*

[2] The novelist Erich Pfeiffer-Belli, who was an early Bauhaus student, wrote in his article *Die Maler Am Bauhaus* (*Frankfurter Hefte*, Vol. 5, No. 7, page 789) 'Itten (now Director of the Zurich Museum of Applied Art) was the strongest personality at the Bauhaus; he was a teacher in the true sense of the word, while Klee and Fieninger in their Weimar years more or less handed on what they knew in studio conversations—their paintings spoke for them.

that it would really prick you; we had to experience its sharpness and prickly character. Of course there was also a great deal of purely superficial application of early expressionist methods, like those in *The Cabinet of Dr. Caligari*, but all these hectic, jazzy, angular patterns were soon displaced by a true expressionism based on our inner experiences.

Thus, after a masterly analysis of Chinese South Sung painting, Itten made us draw a tree wet with rain, or a mountain meadow fresh with spring flowers, but what he wanted was not parallel diagonal lines symbolizing rain, but an abstraction of this inner feeling of wetness or of spring.[3] Many other analyses of old masters have been made famous by being reproduced in *Bauhaus* 1919-1928, and we learned a great deal from them about texture, rhythm, space and chiaroscuro. Texture was one of our major subjects of study, for it brought us closer to an understanding of our materials. We made scales of texture from hard to soft, and we drew it—the kind of *trompe-l'oeil* illusionism that the layman values so highly was done only in the early part of the course, and the final test was collage. For collage tested our creativeness, our sense of form, and our feeling for the combination of different textures.

As we worked together, so we played together, and our relaxations were as typical of the time and place as were our studies. At first our extra-curricular activities were quite simple—painting bathing-trunks on nude statues and so forth—but these student pranks were soon abandoned as altogether too conventional. Much more typical was an evening with Itten's students when they read the *Judith and Holofernes* of the Viennese *Biedermeier* master, Nestroy. I remember also Gerhardt Marcks the sculptor reading a story by Heinrich von Kleist, and, on other evenings Gropius would read to us from *Das Gesims* (The Cornice) by an author whose name I forget, though his deep reverence for the profession remains in the mind while the text is forgotten.



4, design for a programme by Peter Röhl, 1921.

Then there were those memorable Saturday evenings when we danced in folk-dance style to the tune of Ludwig Hirschfeld's accordion. Later, at soirées that were open to the public, a pianist named Erdmann played modern music; there was a reading of the epic of Gilgamesh by candle-light, the last candle being snuffed out at the end to leave us in utter darkness with the great death-lament still ringing in our ears. I recall, too, the thrill of hearing the shrill staccato rhythms of Frau Lasker-Schuler reading her own poetry, but who remembers even her name now, after thirty years have passed.

There were more organized dances also, and masked balls on set themes, some of which are mentioned in *Bauhaus* 1919-28. The 'Head-dress' theme produced the most marvellous confections—and Hausenstein's *Barbaren und Klassiker* must have been heavily drawn upon for ideas. At the other extreme was a spontaneous Saturday night performance of *The Dance of Death*, a revived mediaeval mystery play that one of us had seen, which we acted in costumes improvised on the spot.



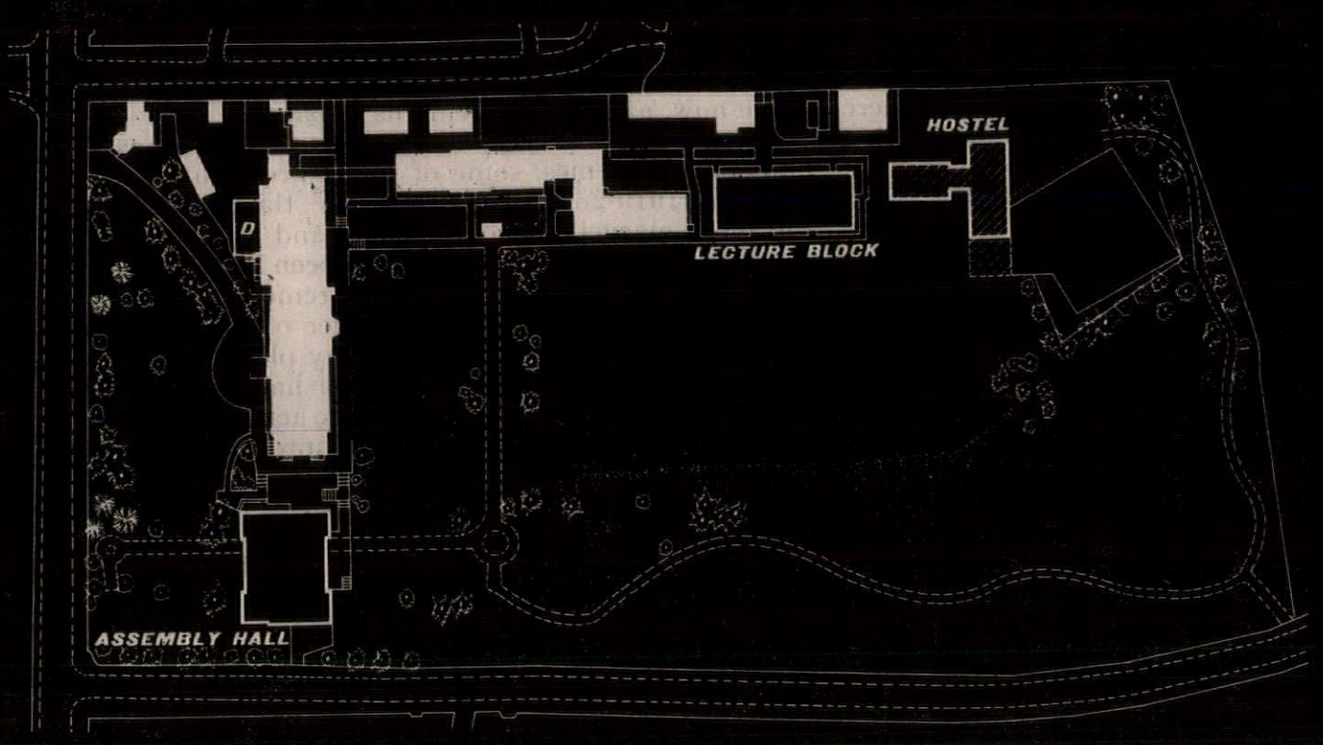
5, Cain and Abel: woodcut by Gerhard Marcks, 1923.

Yet, by the spring of 1922 all this had changed. Itten was soon to resign, and with his going the Expressionist era, of which he was the moving spirit, came to an end. Theo van Doesburg, the propagandist of the Dutch *de Stijl* group had already been living quietly with his charming wife in Weimar for a year. Now he burst upon us with a lecture on his group, while his wife played *de Stijl* music—practically all in octaves as I remember, but with a definite affinity to squares and rectangles. As a champion of geometric purity in architecture, Van Doesburg must have thought us very provincial at first—I can still see his tall black-shirted figure monocling the students' collages with unconcealed horror—but he rallied to our defence when the Bauhaus was attacked in 1924.

De Stijl certainly had some influence on us, but even without van Doesburg's presence in Weimar, abstract Art would have driven out Expressionism. There were abstract elements even in Itten's painting; Klee toyed with abstraction in his own inimitable manner, and Oskar Schlemmer was never anything but abstract. However, asymmetry and the use of the Golden Mean are a very specific kind of abstraction, and these elements were the special contribution of *de Stijl*. The influence may be seen in the typography of the Bauhaus publications, and very soon after that in architecture also, but never as merely slavish imitation.

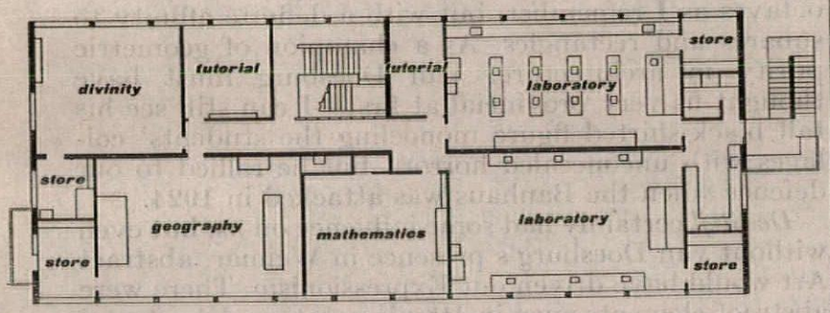
It was something much more profound than that, as appeared when Gropius lectured on *Art and Technics—a new unity;* as appeared when firm contacts were established with industry; when Moholy's lighting fixtures showed that the metal-working shop had freed itself from Expressionism and Primitivism; when Albers and Kandinsky continued and developed Itten's preliminary course. As these changes became effective, the new course of the Bauhaus was set, the course it was to pursue after its transfer to Dessau, and for the rest of its German existence.

[3] 'An artist should identify himself with the landscape and watch it until its significance is revealed to him.'—Shan Shui Hsun, *Comments on Landscapes*, in Kuo Hsi, *An Essay on Landscape Painting*, translated by Shio Sakanishi (London, 1949) Itten may have gained his understanding of Chinese landscape painting from Otto Fischer, *Chinesische Landschafts-Malerei*.

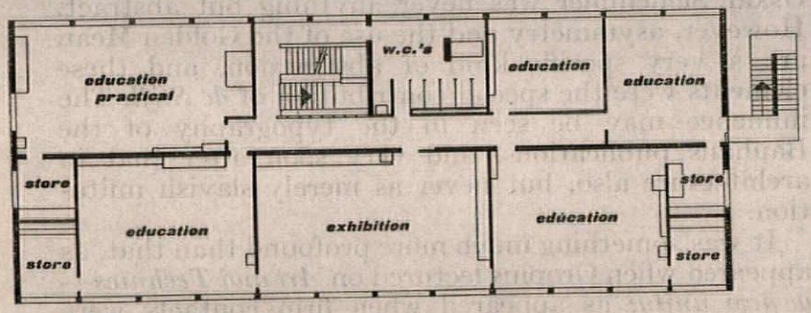


site plan:
buildings shown in white were already existing; those in black are discussed in the following pages, and the hatched building is due to be begun in 1958. D=dining extension.

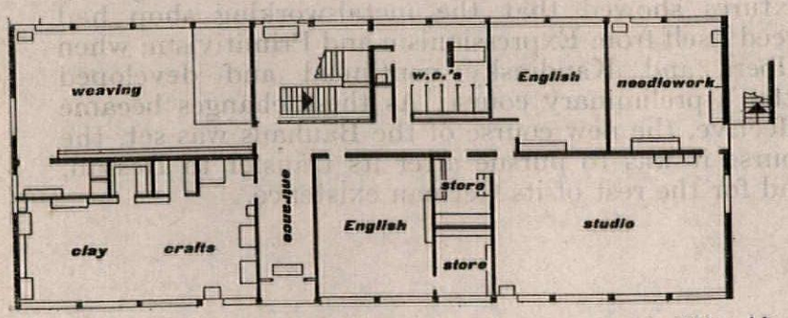
TRAINING COLLEGE AT WIMBLEDON



lecture block : second floor

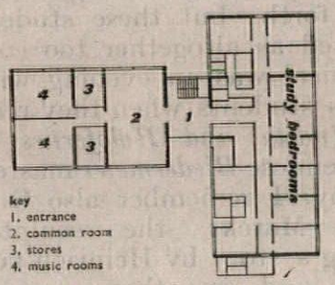


first floor



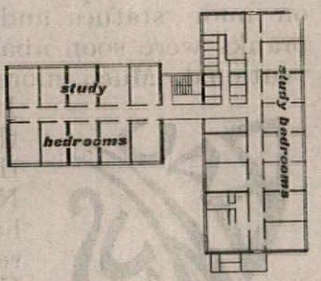
ground floor

scale : 1/32 in. = 1 ft.



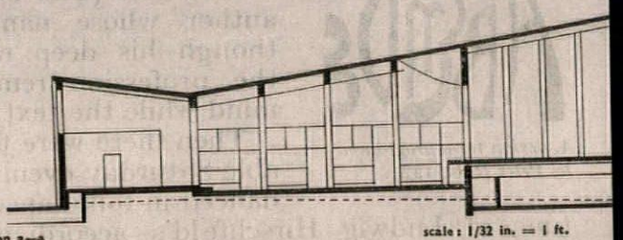
key
1. entrance
2. common room
3. stores
4. music rooms

hostel : ground floor



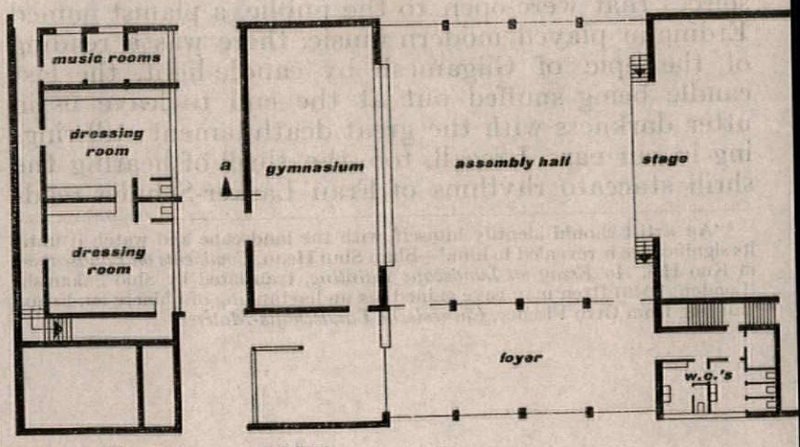
upper floor

scale : 1/64 in. = 1 ft.



assembly hall : section a—a

scale : 1/32 in. = 1 ft.



lower ground floor

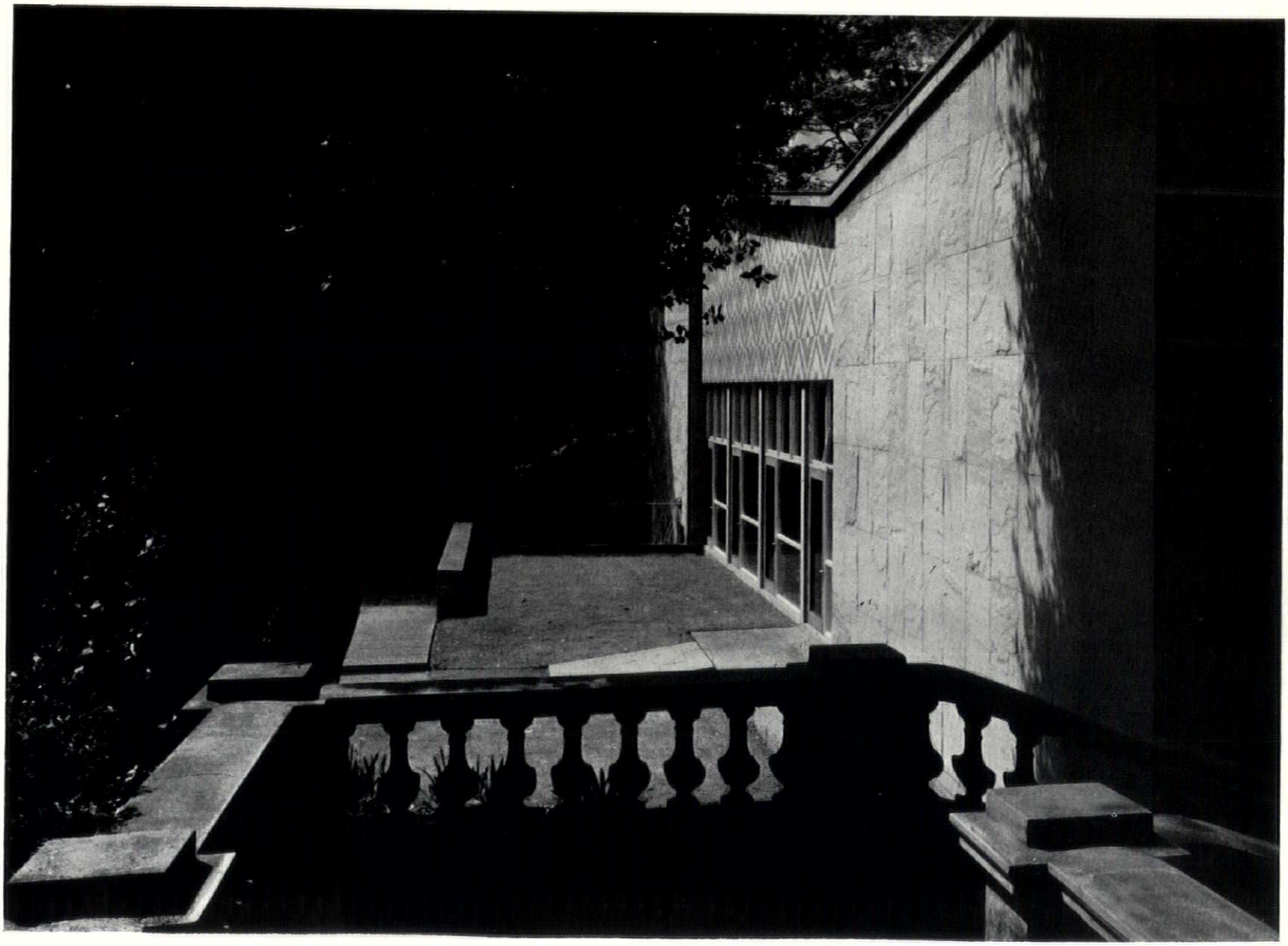
ground floor

TRAINING COLLEGE AT WIMBLEDON

ARCHITECTS	***YORKE, ROSENBERG AND MARDALL***
associate architect	***T. R. Evans***
assistants in charge	***Julian Sofaer and Lloyd A. Smith***

The buildings of Southlands Training College for Women have been erected at different times over the last 100 years and occupy 11 acres east of Wimbledon Common.

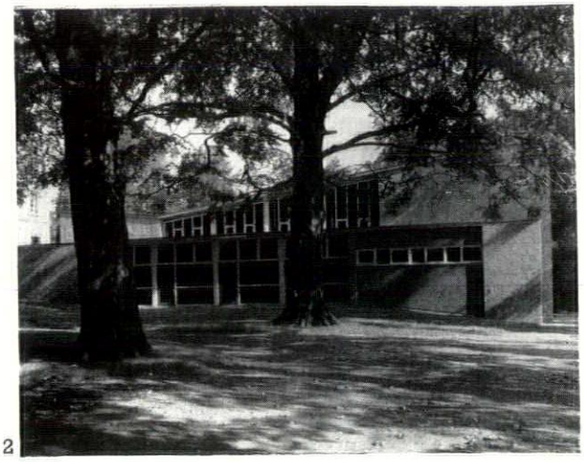
In the post-war expansion programme the following buildings were required by the College: a memorial hall, to be used for morning assemblies, dramatic productions, concerts and other college activities; a lecture block, Nissen huts having previously been used as lecture rooms; an extension to the existing dining hall, and



1. looking along the eastern side of the assembly hall from the terrace of Chapman House, one of the older buildings on the site. The structure of this wall is load-bearing brickwork; the facing is of York stone slabs and purpose-made tiles, coloured red-brown and white, designed by Peggy Angus.

1

TRAINING COLLEGE AT WIMBLEDON



2

Facing page: 4, the south wall of the lecture block; the sunbreakers over the windows are galvanized steel painted light grey. The wall tiles in the entrance are brown, white and green, and were designed by Peggy Angus. 5, the south-east corner, showing the end wall which is brick, faced with specially quarried York stone. 6, detail of the York slab facings. 7, east wall, with escape stair, which has a reinforced concrete spine and an expansion joint in the landings, as it is structurally independent of the main block; the greenhouse on the top landing leads into a preparation room serving two laboratories.

4 | 5
6 | 7

a hostel to accommodate 50 students in study-bedrooms and to include two staff flats, a common room and music practice rooms.

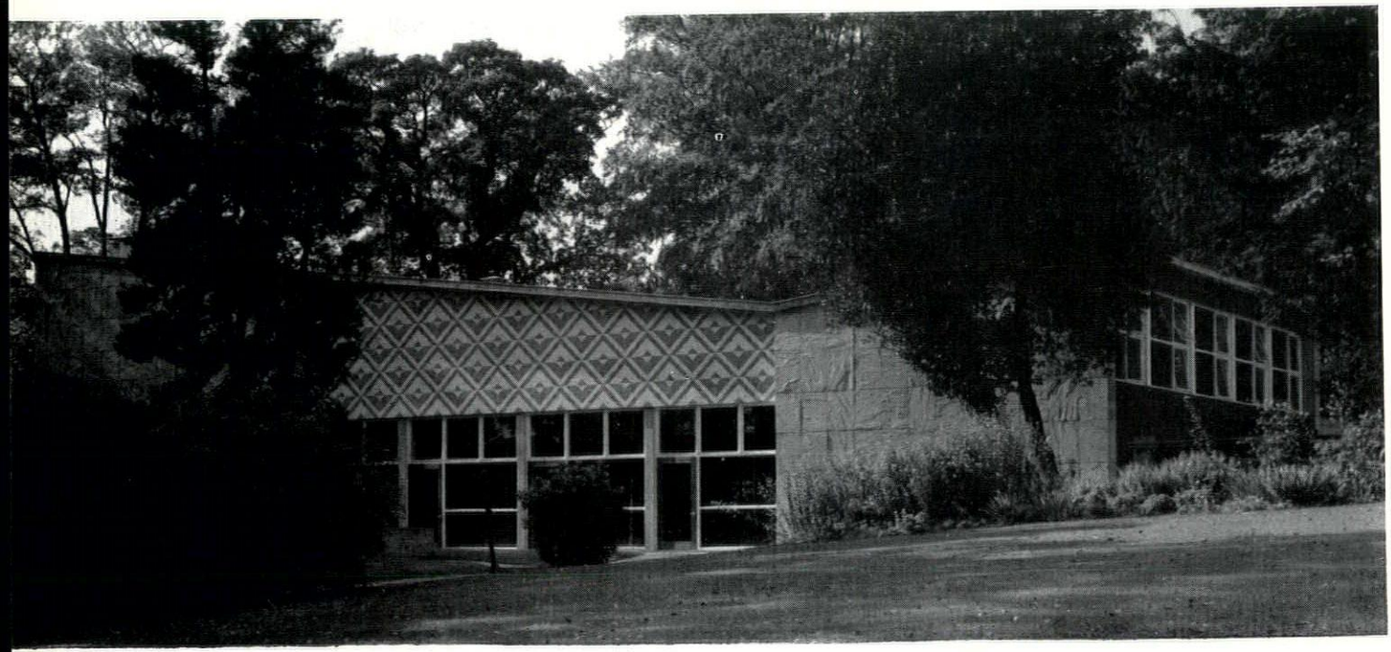
The new Memorial Hall is sited in the south-west part of the college grounds, where existing stone stairways descend 8 ft. to basement level (containing kitchen and boiler-house) of the existing buildings. From these stairs the site drops a further 7 ft. to the south boundary.

Required were: seating for 300; a fully equipped stage; dressing rooms and music practice rooms; a gymnasium (not fully equipped) which could be combined with the assembly hall to seat 480; and a foyer, cloaks and lavatories. The stage is on the south, the fall in the site enabling the dressing rooms to be accommodated under it. The two-way slope of the roof is due to the maximum roof height being necessary above the stage only, the gymnasium and the rear part of the assembly hall not needing to be so high.

Three reinforced concrete frames span over the assembly hall. The east and west walls of the stage and the proscenium wall are load-bearing brickwork, the south wall being reinforced concrete, framed; the roof beams bear on to the proscenium wall. The gymnasium is similarly constructed. The external facings to the assembly block are York stone slabs, rendered brickwork and purpose-made tiles; on the lower block, fair-faced stocks and rendering.

The north of the site was chosen for the lecture block and hostel: here there would be a natural expansion of

2, above, the assembly hall from the west. 3, the north-eastern corner of the assembly hall block.



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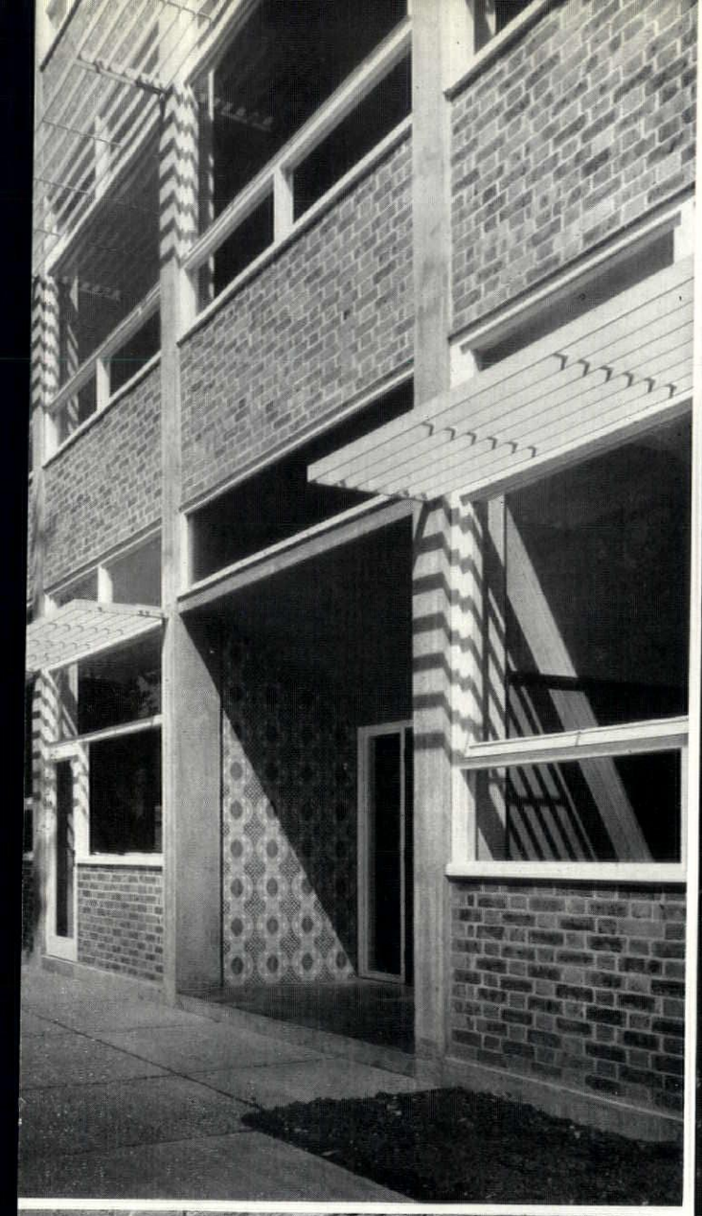

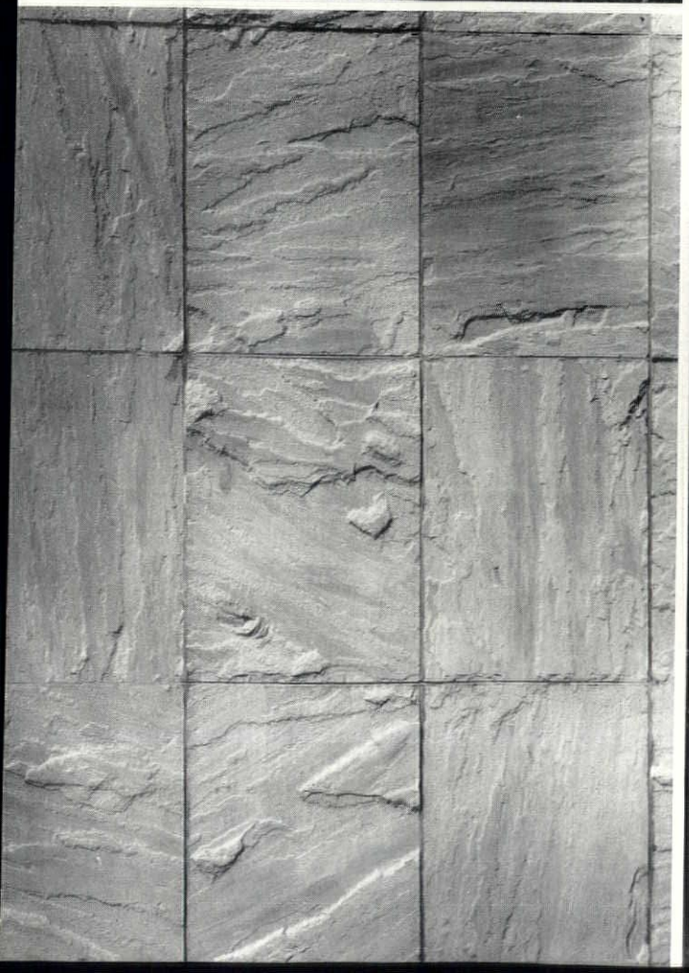





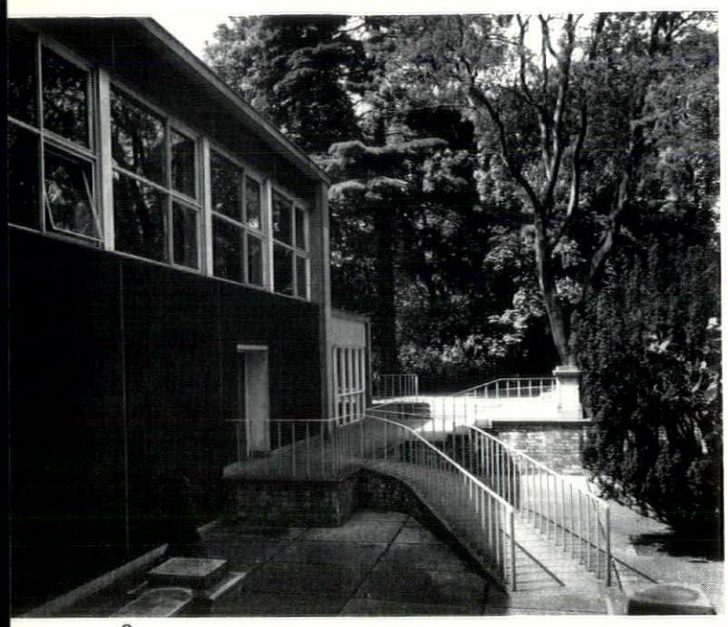

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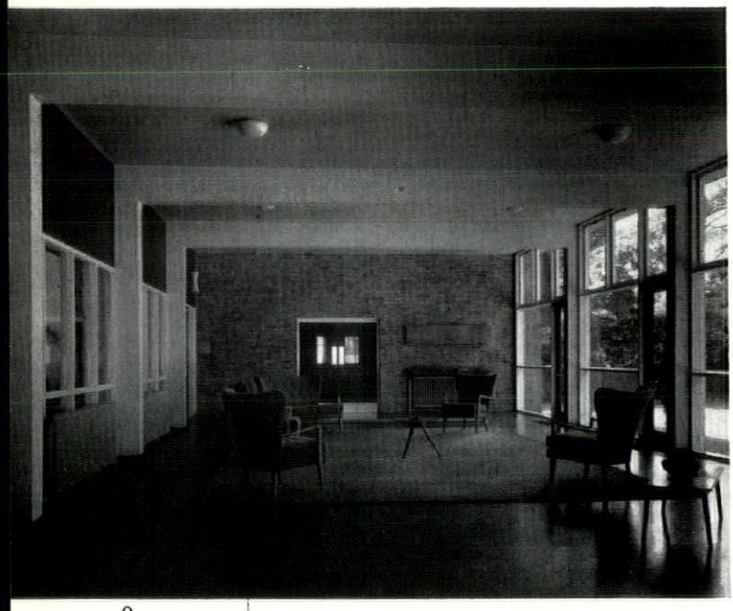
8, the north wall of the assembly hall block; the wall has a finish of spatterdash up to the windows, coloured dark brown. 9 and 10, the students' foyer, on the west side of the assembly hall. The plastered panels over the windows to the assembly hall are red.

circulation areas, and both blocks could be served by an existing boiler-house. The structure is of reinforced concrete columns and floors, with the beams spanning on to a central spine wall of load-bearing brick-work. The east and west end walls are also load-bearing and are faced with York stone slabs. The external columns are fair-faced concrete and the cavity brickwork panels spanning between are faced with multi-coloured stocks.

Internally the floor finishes are polished oak wood block in the lecture rooms, heather brown quarry tiles in circulation areas, and terrazzo for the treads, risers and landings of the main staircase; window cills, projecting above radiators, are polished asbestos. The suspended ceilings are mainly fibreboard with the remainder plaster on lathing.

The dining hall extension provides additional accommodation for 60 students: it is of cavity wall construction and the facing bricks are Dorking multi-coloured. The internal finishes are oak strip flooring, oak panelling to the end walls and a ceiling of plaster on expanded metal.

The hostel will be of three storeys; it is hoped, subject to Ministry approval, to begin building early in 1958.



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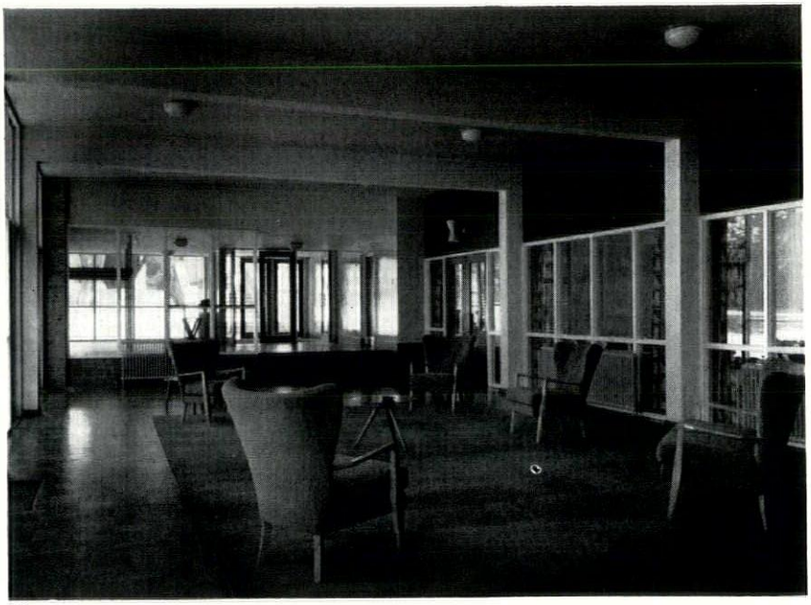


10

AN ITALIAN MISCELLANY

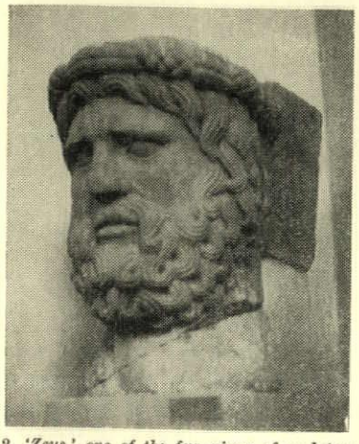


1, *Anfiteatro Campano outside Capua, second in size to the Colosseum only, a ruin for centuries, it was already despoiled of most of its sculpted keystones when Clérisseau drew it.*

HEADS IN CAPUA *by S. Lang*

Today's Capua takes its name from Roman Capua which, according to Cicero, was second only to Rome in importance and magnificence. This Roman Capua was destroyed in the ninth century and the present town was subsequently founded near it on another Roman site. The town, now, can lay claim to few advantages; situated in the plain near Naples it cannot boast of any beauty deriving from its natural position nor of any very picturesque views; the plan is of the Roman chequerboard pattern. Were it not for the puzzling remnants of the building activity of Frederick II few people would find their way there. As it is the Hohenstaufen emperor, possibly attracted by the historical associations of Capua, intended not only to create there a centre of learning attracting the great men of his time, but also to adorn it architecturally by creating a Castello with a triumphal arch (begun 1234). All that now remains of this great undertaking is several heads, formerly embedded in the structure and now in the local museum, 2. These are one of the more celebrated problems of art history, because, in spite of their being undoubtedly work of the thirteenth century, they look quite incredibly classical and Roman—an illusion, it must be admitted, which is less likely to be created by the originals than by photographs. However, the traveller arriving by bus and descending opposite the Palazzo del Municipio is greeted by another set of heads no less puzzling and very much less known. There is one head inserted as keystone into the rusticated entrance porch of the sixteenth-century palace, 3, and in addition one underneath each ground-floor window. Are these heads of the sixteenth century? The satirical head, 4, could be, but what about the Apollo, 5, or the Mercury, 6? Are they Roman or could they also date from the thirteenth century?

The solution of this puzzle will be found a few miles out of the town. There still stand the considerable remains of a large Roman amphitheatre, 1, second only in size to the Colosseum in Rome; the keystones of two of its ground floor arches are



2, *'Zeus,' one of the few pieces of sculpture surviving from Frederick II's Triumphal Arch in Capua, possibly influenced by those of the Amphitheatre.*



3



4



5



6

3, 4, 5, 6, *the ancient Roman heads imbedded into the fabric of the Palazzo del Municipio are obviously some of the keystones from the Amphitheatre.*



7, a tragic mask—one of the heads from the Municipio, originally perhaps high up on the amphitheatre.

formed by busts of a god and a goddess and these are in character and style exactly like the ones on the Palazzo del Municipio.[1] So the Anfiteatro Campano, built by Hadrian in the first half of the second century, is the source of these puzzling heads. Whether the keystones of all storeys of the amphitheatre were decorated in a like manner is not known, since none of the higher arches has survived; it may well be that heads larger than those *in situ*, as e.g. the Tragic Mask, 7, may have been made for positions more distant from the ground. The sculptural quality of these heads is in one way outstanding, but what may endow them with a quite uncommon historical importance is the possibility of their having formed the Emperor Frederick's inspiration in his sculpture for the *Porta Capuana*.

[1] G. Pesce, *I Rilievi dell' Anfiteatro Campano*, Rome, 1941.

PEDROCCHINO AND SOME ALLIED PROBLEMS

by Nikolaus Pevsner



8, left, the Pedrocchino and, right, Caffè Pedrocchi, Padua, both by Giuseppe Japelli.

'I cannot possibly pass over in silence a structure which was in active progress the last time I was at Padua. This elegant and spacious edifice . . . was executed for the owner of the Pedrocchi coffeehouse who purposed transferring his business thither. It is also intended to serve as an assembly room and casino and will certainly be one of the most magnificent in the world, . . . and unless a person were apprised of the reality, such a building would appear to him much more like a palace or temple than a coffeehouse.' Thus Valéry's *Historical, Literary and Artistical Travels in Italy*, published in 1839.

The Caffé Pedrocchi is indeed one of the noblest buildings of the Greek Revival in Italy, 8, 13, reticent with its few well placed and well spaced accents of low Doric columns, of pilasters and of panels in relief and feigned relief. Its main front faces north, with two symmetrical one-storeyed projections. To the south there is only one of these, and what corresponds to it is a rude awakening from the dream of Doric poise and equanimity, a tall, narrow, bristling piece of Neo-Gothic display, ill-advised in this position and ill-adjusted to its Grecian neighbour which it immediately adjoins. Yet it is the design of the same architect and was put up on the completion of the main building. It is popularly known as the Pedrocchino. Mario Labò several years ago pointed out the little horror to me as the first example of Gothic Revival in Italy, except for garden furnishings and theatrical settings. Last summer I could follow his hint, and now wish briefly to present the story which emerges and which may be of some minor interest to English readers.

Antonio Pedrocchi was over forty when, in 1819, he asked Giuseppe Jappelli, an architect of thirty-three, to take over the unpromising beginnings of a new café started by him on a more ambitious scale than any existing café. A bottega da caffè had been established by Pedrocchi's father as early as 1772, and Stendhal in 1815 called the café then in existence 'le meilleur de l'Italie et presque égale à ceux de Paris.'[1] The building now was to emulate the quality of the establishment. Valéry in his *Travels* says that it was meant to cost £6,000, 'but a Parisian architect would not get through it with £40,000.' He also says that the building was carried on entirely without sub-contractors. 'There are only the architect who gives orders in the morning, and the master who pays at night.'[2] The café was opened in 1831 but not entirely completed until 1842.

Jappelli had studied engineering before he decided to go in for architecture, and he never in later life gave up the former for the latter. From 1800–1803 he read mechanics and hydraulics at the Accademia Clementina in Bologna. In 1803 he moved back to Venice, where he had been born, to join for a period of four years the office of Gianantonio Selva, then the most distinguished architect of Venice.

Selva was born in 1751. He was a pupil of Temanza, the protagonist of anti-Baroque, Palladian principles in Venice. The years 1777–80 he spent in Rome, a friend incidentally of Canova. From Rome he went to France, England and Holland. The experience of the style developed by Piranesi in his etchings and by the scholars of the French Academy in Rome and then of the Boullée-Ledoux circle in Paris made him a Grecian rather than a Romanist. His recent biographer does not do justice to this most interesting aspect of his art. His design of 1813 for a pyramidal monument to Napoleon to be erected on Mont Cenis, 10, is the most direct reflection of the Boullée style anywhere in Italy. It has a Greek Doric portico in front of the pyramid, and Greek Doric also is the portico of the round church of Possagno begun by Selva in 1819 to a joint design of his own and Canova's (who paid for the church).

From Selva Jappelli derived his Doric order at the Caffè Pedrocchi and elsewhere, also probably the Durandesque character of his vast project of 1824 for a new university for Padua, and certainly a horizon wide enough to embrace France and England. The English example was indeed paramount in Jappelli's first designs of importance, designs not for buildings but for 'English gardens.' The first of these near Cremona dates from 1814, the most famous is that of the Villa Cittadella-Vigodarzere at Saonara near Padua begun in 1817. They were not the earliest, but they were early examples of landscaping in Italy. Ippolito Pindemonte in a paper of 1792 to the Accademia di Scienze, Lettere ed Arti at Padua had spoken of *giardini inglesi* and mentioned two as existing in Italy, one at Caserta, the other near Genoa, laid out for Senator Lomellini, former Genoese minister in Paris. Long before then, the Padre Lodoli, that socratic character who talked much to his Venetian friends on function and reason in architecture and design and who died in 1761 had liked in gardens the manner 'che a' tempi suoi fu particolarmente introdotto dagl' inglesi e con arte nascosta incita più la bella natura.'[3]

The Lomellini garden seems to have been the first example of landscape gardening in Italy. Mario Labò has kindly identified it for me. It is at Pegli and now called Rostan Reggio. It was laid out *c.* 1760 by the architect Andrea Tagliafiche and had a formal and a picturesque part, the latter with a grotto (Bath of Diana), winding paths, a hermit's cell and a sham Roman ruin.[4] The English garden at Caserta was the work of a German, Graefer, who came to Italy from England where he had been 'publicly celebrated . . . for the Invention of prepared Vegetables.' He was introduced to the King of Naples by Sir Joseph Banks.[5] Pindemonte's paper of 1792 was followed at once by other papers and books (a paper of 1796 by L. Mabil, a book of 1801 by Count Ercole Silva, a translation of 1801 of Hirschfeld's *Theory of Gardening*).[6]

So the ground was prepared for

[1] *Journal d'Italie*, ed. P. Arbelet, p.337.

[2] *ib.*, p.214.

[3] *Elementi dell' Architettura Lodoliana* (by A. Memmo), Rome, 1786, vol. I, p. 60.

[4] *See* Pescetto: *Guida igienica ai bagni di mare*, Genoa, 1862, p. 256, etc.

[5] *See* John Graefer: *A Descriptive Catalogue of Herbacious or Perennial Plants*, London, 1789; also L. Dami: *Il Giardino Italiano*, 1924, and G. Chierici: *La Reggia di Caserta*, Rome, 1937.

[6] For all these *see* Arturo Graf: *L'Anglomania*, etc., Turin, 1910. Roberto Carta Mantiglia calls the first English garden in Italy that of Count Silva at Cinicello near Milan. Selva's Villa Manfrin at S. Artemio near Treviso also had an English garden.

Jappelli, and he became the most successful of purveyors of English gardens from about 1815 to his death in 1852.

Of special interest in connection with the Pedrocchino is one of the garden furnishings of Saonara, the Chapel of the Templars, 14, a gimcrack piece of romantic Gothicism, belated progeny of Walpole's Chapel in the Wood at Strawberry Hill. I am not certain how novel the use of Gothic forms for such pavilions was in Italy. Since for instance the gardens of the villa of Senator Angelo Querini at Altichiero near Padua, published by Giustina Wynne, Countess of Rosenberg in 1787, though not picturequely laid out, had a *boschetto di Young*, a Chinese pavilion, and an Egyptian Canope,[7] similar toys in the Gothic taste can safely be assumed.

Other early instances of designing *alla gotica* are a church drawn as a *capriccio* by Juvara and referred to by Professor Wittkower 7a and two plates in Vittone's *Istruzioni Diverse dell' Architettura Civile* of 1766. However, the latter were 'ideate per la celebre cattedrale di Milano' and thus point backward to the Gothicism 'by conformity' of the sixteenth and seventeenth century projects for S. Petronio in Bologna rather than forward towards the Romantic Gothic Revival.

Gothic forms of an equally fantastical kind had also occurred here and there in eighteenth century stage design, though apparently not often.[8] They may well have been Jappelli's inspiration in his effort at Saonara.

But they don't explain adequately the design of the Pedrocchino. This baffling appendix was designed considerably later than the Doric building. It was completed in 1837, and there is reason to assume that it was designed only in 1836. For in that year Jappelli had visited both France and England. I suggest that the Pedrocchino is the outcome of this journey. The forms are indeed half-Northern and half-Italian. North Italian in general is the curious polygonal tower (cf. S. Antonio, Piacenza, etc.), and specifically Venetian (cf. 11) the fenestration, and the balcony railings. Northern are the arcade arches on the ground floor with the diaper of the spandrels (cf. e.g. the chapter house of Westminster Abbey, 12) and also the tracery and the gables of the upper windows. Beyond individual motifs Jappelli's decision to build Gothic may well have been influenced by the large number of Neo-Gothic and original Gothic buildings he could see in London. In Paris in 1837 there were virtually none.

Jappelli's main interest in London

[7] On this see N. Pevsner and S. Lang: in THE ARCHITECTURAL REVIEW, vol. CXIX, 1955, pp. 243, etc.

[7a] *Bolletino della Società Piemontese d'archeologia e di belle arti*, vol. 3, 1949, (published Turin 1951.)

[8] *See* C. Ricci: *La Scenografia Italiana*, Milan, 1930, especially plate 43, after Francesco Galli Bibiena, 1739.



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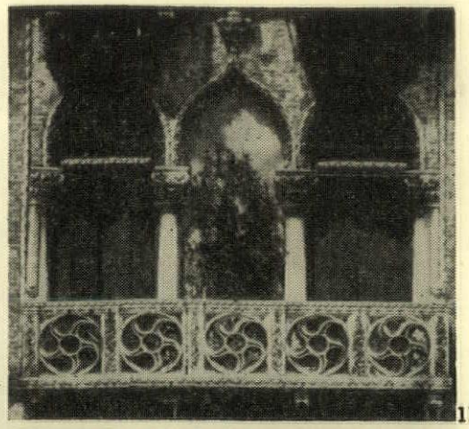

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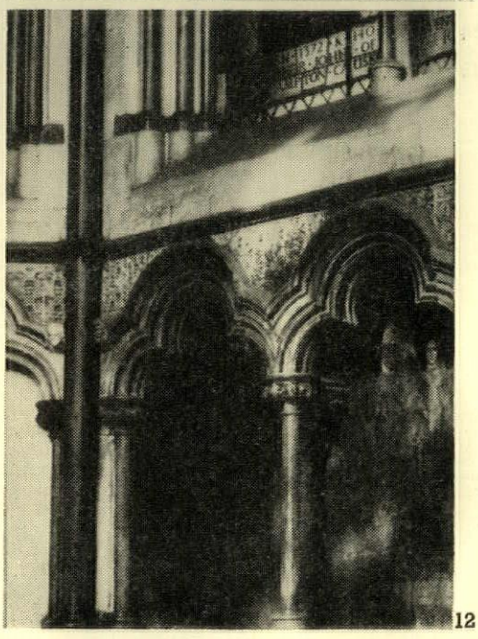

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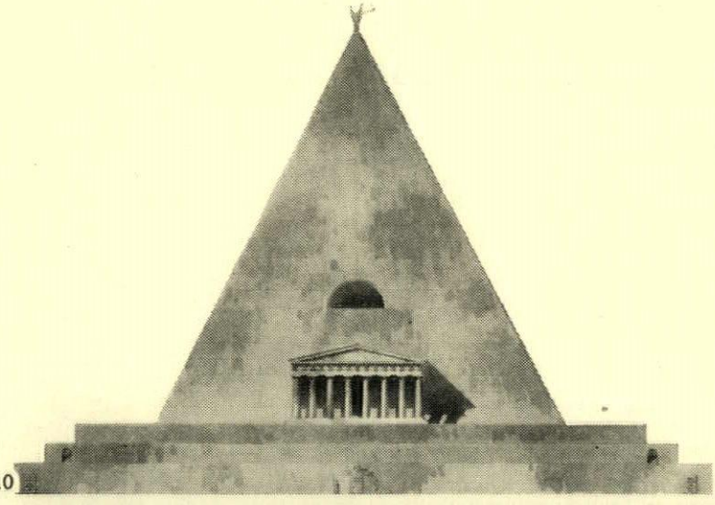

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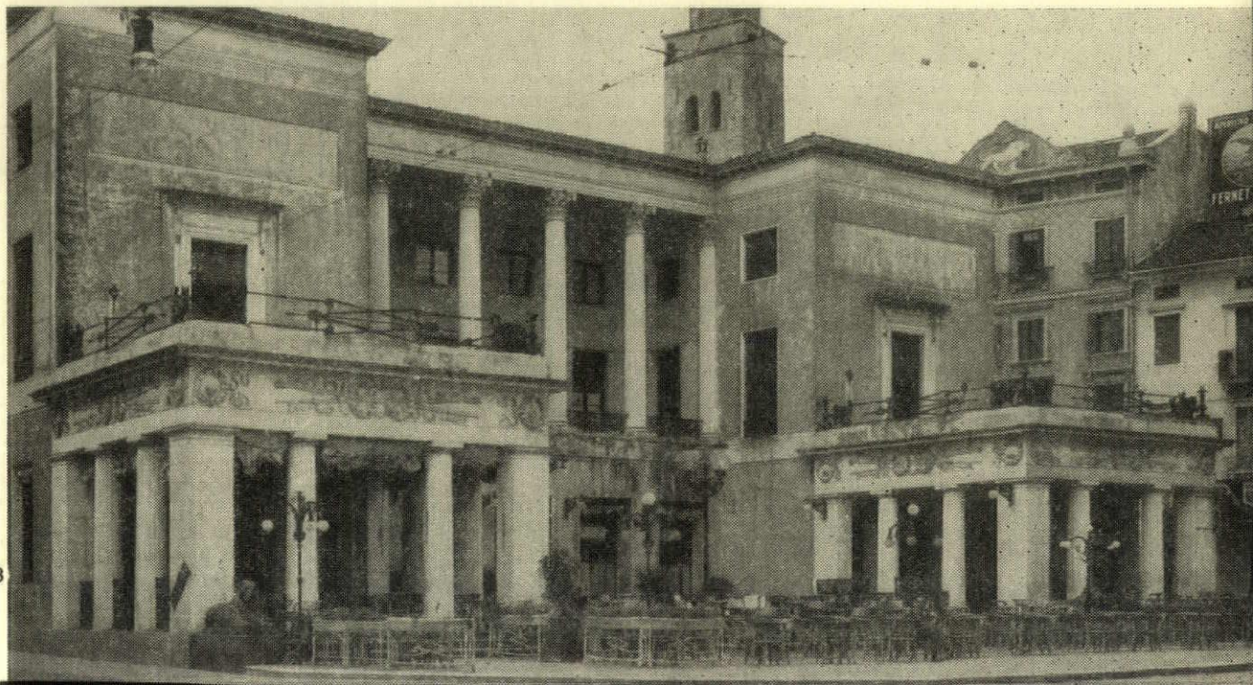
Japelli's Pedrocchino of 1836-7 *is the earliest major example of Neo-Gothic architecture in Italy. It stands oddly next to and connected with the same architect's Caffè Pedrocchi,* 9. *The Grecian style of this,* 13, *derives from that of Jappelli's master Selva (whose proposed monument to Napoleon to be erected on Mont Cenis is illustrated in* 10) *but the details of the Pedrocchino are an unexpected blend of Venetian motifs (see the balcony of the Palazzo Contarini Fasan,* 11) *and English motifs (arcading from the Chapter House, Westminster Abbey,* 12). *Jappelli had visited England in* 1836.



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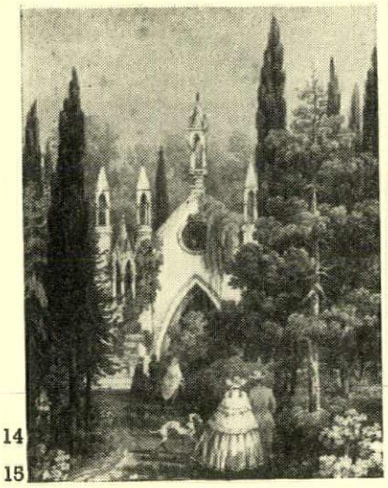

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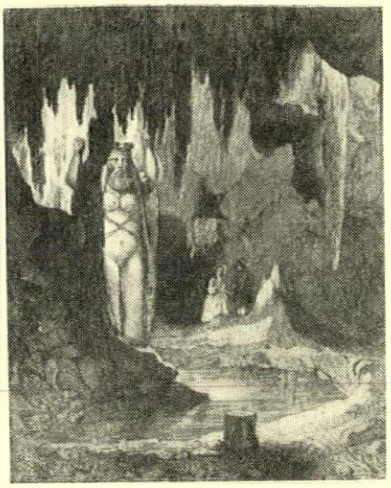

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The Chapel of the Templars, 14, *and the Grotto at Saonara,* 15, *where Jappelli started work on the gardens in* 1817. *The English inspiration is evident.*

had, however, not been architectural. He was an engineer by training, had after his training under Selva joined the Regio Corpo di Strade ed Acque and never ceased to be consulted on matters of engineering. The only surviving letter which deals with his journey reports of introductions to Rennie and Brunel, of their presenting him to the Institute of Civil Engineers and its president James Walker, to the offices of such firms as Parkins, Maundsley, Cotton and Joel Spiller, and of orders for machines.[9] Amongst his papers preserved at the Museo Civico at Padua are a memorandum on English patent law, notes on the English systems of parish apprenticeship, on the slave conditions of workmen in English factories (quoted from Greg and Shaftesbury), on Davy's safety lamp, and on gutta percha.[10] Moreover in 1850 Jappelli was consulted on a reorganization of the planning for shipping and railways at Venice, and he proposed a scheme for docks with a suspension bridge and warehouses clearly imitated from those of the docks of London. Jappelli indeed in his memorandum called the St. Katherine's Dock 'un vero modello di tal' genere di costrutture.'[11]

It is worth remembering in this connection that Schinkel, the greatest European architect of Jappelli's generation (he was born in 1781, two years before Jappelli), when he went to England eleven years before Jappelli, that is in 1826, also took the closest interest in English commercial architecture and technological achievement.[12] He too for instance visited Maundsley's workshops. But when he, like Jappelli, turned to Neo-Gothicism after his visit to England, he favoured Tudor forms (e.g. at Babelsberg Palace and in the proposed church for the Oranienburger Vorstadt), whereas Jappelli did not. This absence of specific English details in the Pedrocchino must be emphasized, because it contradicts the most important contemporary statement in print on Jappelli's ideas in imposing on his Pedrocchi the strident contrast of the Pedrocchino.

Pietro Selvatico (1803–80) was a pupil of Jappelli. One of his best-known works is the Gothic façade of the church of St. Mark's at Trento (1848). He is also reported to have built the mausoleum of the Pisani Family at Vescovana in the Elizabethan style. On the Pedrocchino he writes in his *Guida di Padova* of 1842 [p. 262] 'Close (to the Caffè) and as a part of this precious edifice rises another building which Signor Pedrocchi had destined to be an *ostelleria* and a reading room. This also originated in the mind of our Jappelli. The site was irregular and narrow. How could one thus adapt to it with good effect the gracious lines of Greek and Roman architecture? Any thought of order, of symmetry, of conventionally handed down rules was made useless by this Procrustean bed. What was needed was capricious architecture, something fantastical that would fit any corner of space and cut a handsome figure on any site. The acute mind of Jappelli realized that only a medieval design would work, and he saw also that an erect and intricate style would by comparison admirably suit to bring out more grandiosely the masses of the main building to which he had dedicated all his care. Anyone who understands the arts will notice that this ornate building is an expedient, but few expedients have ever been as ingenious and as light as this. Amongst all the varieties of the system of building with pointed arches he found most fitting to his particular case that practised in England at the time of Queen Elizabeth. So his inspiration was taken from the bold piles of Cambridge and Windsor whose elegant effects he reproduced without servile imitation.'

[9] Man. Antichi 750.

[10] On this *see* N. Pevsner: *High Victorian Design*, London, 1951, p. 40.

[11] Padua, Mus. Civ. C.M. 481, especially No. 23.

[12] *See* L. Ettlinger, in THE ARCHITECTURAL REVIEW, vol. 97, 1945.

CHILDREN'S PRISONS IN ROME

by Georgina Masson

The building activities of the Popes of the seventeenth and eighteenth centuries are frequently regarded as being limited to the erection of churches, and the magnificent palaces and villas for the Cardinal or Princely 'Nipoti' who would subsequently inherit the vast accumulation of wealth, which was one of the less praiseworthy aspects of the exercise of papal power at that period.

While recognizing to the full the splendour of these more familiar and spectacular aspects of papal architecture, the student of some of the more utilitarian buildings, such as hospitals, prisons, granaries, port and defence works, commissioned by the papal department of Public Works will discover much that is interesting, and sometimes surprising.

Even a superficial study reveals the fact that Rome of the seventeenth and eighteenth centuries was surprisingly advanced in some of its social institutions. There was, for instance, the Lying-In Hospital of San Rocco, which was subject to no civil jurisdiction, and which asked for no name or identification from those of its patients which entered the part known as the 'Cellata' where they could even remain masked if they so wished. Nevertheless the erection of the Carcere Nuove in 1655 by Antonio del Grande for Pope Innocent X must have called forth plenty of 'Coals in the Bath' comment from authorities accustomed to the medieval horrors of the Tor di Nona; and as late as 1845 authorities on prison systems were still referring to the prison as the most 'Solid and salubrious' in Europe.

There is a certain austere dignity about the façade of the Carcere Nuove which gives on to the Via Giulia. It is built of brick, with stone facings, is four stories high, and appears to have undergone little alteration since the seventeenth century, 17. The prison occupies an entire block between the Via Giulia and the Tiber; which resembles a truncated isosceles triangle in shape with the narrow truncated end facing towards the river. The solid mass of the south-western wall is broken by a courtyard of the traditional Italian type, with a fountain, which looks somewhat frivolous in its severe surroundings. On this side, and on that facing the river, something of the original grimness has disappeared with the substitution of larger windows for those of the original cells. The prison is now used as offices for a department of the Ministry of Grace and Justice.



17

17, *the Carcere Nuove from the Via Giulia. It was built in* 1655 *by Antonio del Grande.*

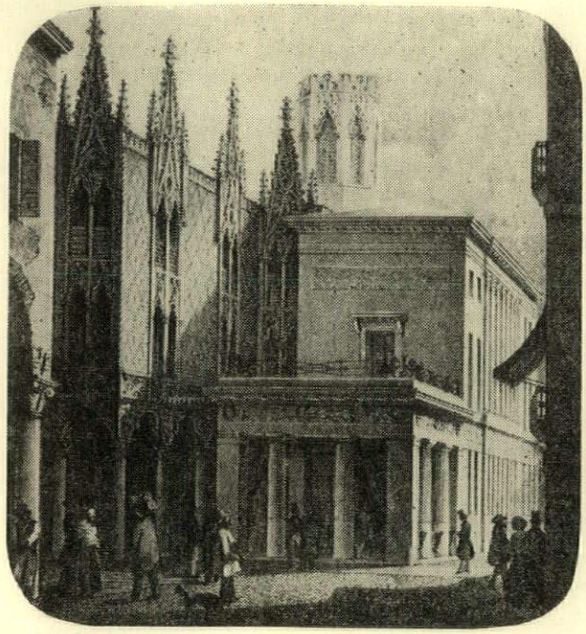
Even more revolutionary in design, and in fact the first prison to be built introducing the modern concept of the segregation of the young offender, is that of San Michele at the Porta Portese, 18; which was designed by Carlo Fontana for Pope Clement XI in 1703. This original building, which has remained

Without servile imitation indeed. Nothing of Cambridge and Windsor has crept into the design of the Pedrocchino, let alone anything of the Elizabethan style.[13] But the inspiration to build Gothic at all may well have come from Jappelli's English visit and even more probably that to build picturesquely and with a bold contrast of opposed styles.[14]

The Gothic Revival never became popular in Italy. It could not; for it is as English as it is un-Italian. So the Neo-Gothic buildings of Italy which one remembers are no more than façades to genuine Gothic churches: to S. Croce in Florence (1857–63) and to the cathedral of Florence (1875–87). The Pedrocchino deserves a place of honour in this small and undistinguished band.

[13] Although Roberto Carta Mantiglia still calls the Pedrocchino 'cambridgeiano'; *l.c.* p 541.

[14] The upper storey at the back of the Caffè incidentally also contained an Arab and an Egyptian Room (*see* Selvatico, *l.c.*, p. 262). The latter may be noted as a postscript to the paper by Dr. Lang and myself in THE ARCHITECTURAL REVIEW.



16, *Pedrocchino and Caffè Pedrocchi shortly after they were built.*

literature

Jappelli:

C. Cimegotto, O. Ronchi and G. Fiocco: Special centenary volume on the Caffè Pedrocchi, privately printed 1931.

N. Galimberti in *Bollettino del Museo Civico di Padova*, vol. 24, 1931.

G. Damerini in *Rivista di Venezia*, Oct.-Nov., 1933.

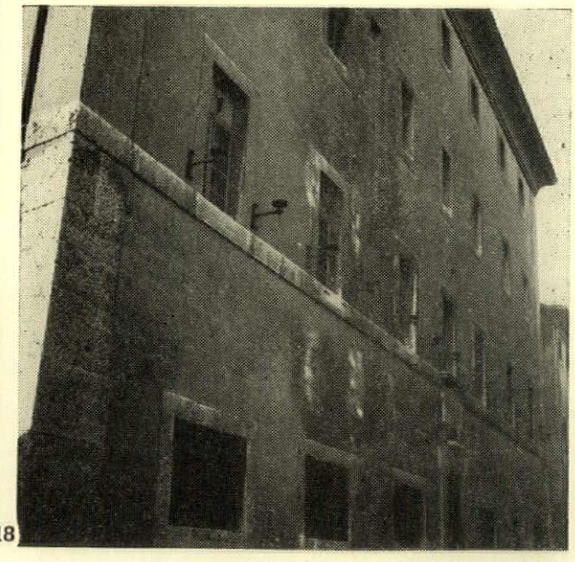
B. Brunelli on Jappelli's gardens in *Le Tre Venezie*, vol. 9, 1933.

C. Cimegotto in *Padova*, No. 9, 1938.

Finally, a paper with ample illustrations appeared after I had completed my research: it is by Roberto Carta Mantiglia and was published in *L'Architettura*, Nov.-Dec., 1955.

Selva:

E. Bassi, Padua, 1936.



18



19

18, *the prison of San Michele at the Porta Portese, designed by Carlo Fontana in* 1703.

19, *another prison, adjoining San Michele, built by Ferdinando Fuga in* 1735.

practically intact, consists of a large rectangular hall, whose two lateral walls are flanked by a triple row of cells (64 in all), built one above the other and opening off galleries which could be watched by a single guard seated at one end of the hall. The hall itself is lit by two large windows, under one of these was an altar; but the main body of the room was used as a workshop in which the young prisoners were taught to spin and weave wool. Beneath this central hall were more workrooms and places for storing the wool; while on the roof there was a large space designed for drying the cloth and clothes.

In 1735, following the orders of Pope Clement XII; Ferdinando Fuga built another prison, 19, adjoining that of Fontana. This was intended to be a house of correction for women. It was built at right angles to the prison for children but, in order to preserve the architectural unity of the whole, Fuga continued to build in the same style as Fontana, and the interior arrangement of the two prisons is also very similar.

Later in the eighteenth century the young offenders were removed to the Carcere Nuove in the Via Giulia, and were subsequently moved several times. By the middle of the nineteenth century Rome was no longer the socially progressive city it had been one and two centuries before; and at the time of the Risorgimento the prison at Porta Portese was being used for the solitary confinement of political opponents of the Papal regime. Today it has reverted to its original role, and Fontana's and Fuga's buildings house what are now the most modern institutions of their kind in Italy, run on the lines of a Borstal, and an Approved School.

LAZZARETTO AT ANCONA

by Georgina Masson

'Per il detto Pontefice (Clement XII) feci la gran fabbrica del Lazzaretto a Porto di Ancona,' wrote Luigi Vanvitelli in an autographed list of his own works made in his old age. The first stone of the Lazzaretto, or quarantine hospital for the Port of Ancona, was laid in 1737 with a religious ceremony, a manuscript copy of which is still preserved in the library of the Corsini Palace in Rome. The building is said to have cost half a million scudi, and may have been finished in 1738 when Vanvitelli made an engraving of the Port of Ancona, with detailed drawings of all his work there; the mole, the lighthouse, and the Arco Clementino; but he himself describes his work as having been carried on by his pupil Carlo Marchionni, and this probably included the Lazzaretto.

Vanvitelli was commissioned to undertake this work in the Port of Ancona (then part of the Papal States) by the Corsini Pope; after he had failed to win, but been judged one of the most promising runners-up, in the competition for the rebuilding of the façade of the Basilica of St. John Lateran in Rome.

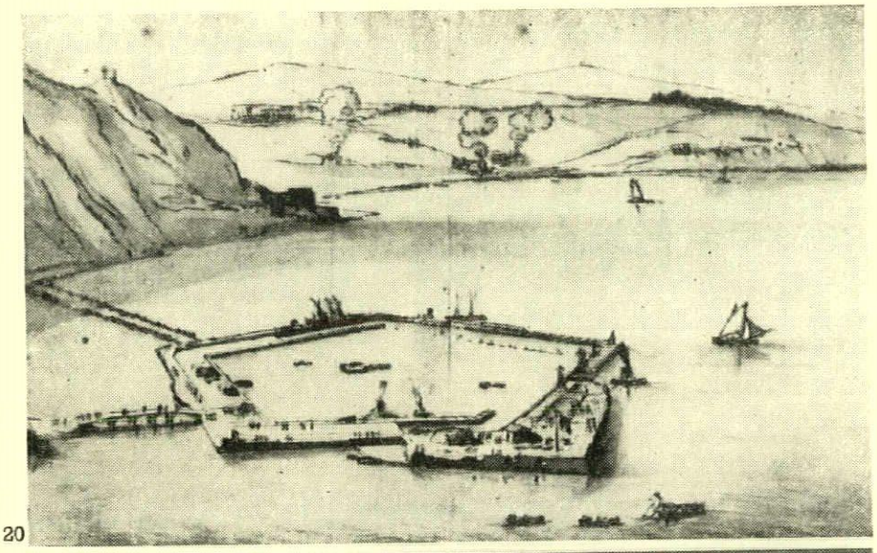
Ancona is a port which has always served Italy in her trade with her oriental neighbours of the Balkans and the eastern end of the Mediterranean; and its history bears witness to the terrible epidemics which have scourged the port at different periods. In order to profit from past experience, Vanvitelli studied the Lazzarettos of Leghorn, Genoa, and Venice, before beginning the plans for his own building. As a result of his observations there emerged the austere pentagonal building, with its curtain wall and double battery, reminiscent of a fortress; which was originally surrounded on all sides by the sea and at some little distance from the nearest shore, 20.

There is a curious resemblance between the hollow pentagon of the Ancona Lazzaretto, 21, and the basic plan of the Farnese Villa at Caprarola. The central courtyard of the Lazzaretto preserves the external pentagonal outline; but the transition from pentagon to circle, which is so notable in the Farnese Villa, is repeated by Vanvitelli in the steps and dome of the charming little chapel, dedicated to San Rocco, the patron saint of travellers, which dominates the courtyard of the Lazzaretto, 22. This chapel, built in imitation of a Roman shrine, is open on all sides so that the inmates of the quarantine cells and dormitory wards could witness the celebration of the Mass from their windows, without leaving their places of segregation. The grace of this little building is remarkable, and it is brought sharply into relief by the massive bulk of the Lazzaretto itself. Vanvitelli recaptured some of its charm in the façade of the cavalry barracks at Maddalena near Naples; but it is more closely related to the Arco Clementino at Ancona, and the designs for the façade of St. John Lateran, than any other of his works.

The chapel is raised above the level of the courtyard by three steps; and both this platform and the floor of the chapel itself, are pierced by a series of manholes; which according to local tradition form a species of water 'oubliette,' in direct communication with a subterranean sea channel. They are said to have been used, in order to prevent the spread of infection, for the direct sea-burial of persons suspected or known to have died from contagious diseases. It is probable that the tradition has its foundation in fact, as any other use for these manholes, in what must have been a consecrated place, would be difficult to explain.

The Lazzaretto suffered a certain amount of war damage from bombing. The main entrance, 23, with its laurel garland and its trophy supported by dolphins, was a casualty; but it is to be rebuilt from the remaining fragments; and it is the peacetime uses to which the building has been put that have wrought far greater havoc. First as a sugar factory, whose unsightly factory chimneys were fortunately destroyed by a bomb, and now as a warehouse for tobacco; which is a carefully guarded state monopoly and therefore effectively denies access to the building by the general public. Each type of commercial occupation has left behind its quota of hideous brick sheds and other excrescences, that mar the sober and satisfying lines of a building which is probably unique in its design and construction in the world today. Perhaps when normal relations have been restored between Italy and her Balkan neighbours, and the port of Ancona flourishes again, the Lazzaretto could be put to some use, such as a hotel and entertainment centre, for which it could be eminently well adapted.

20



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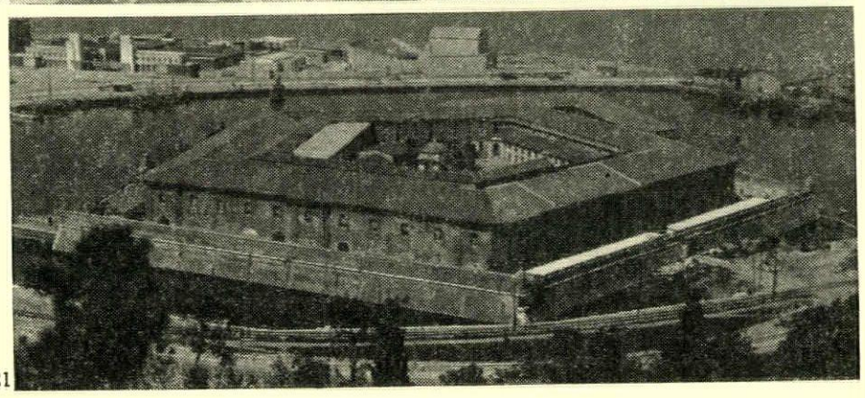

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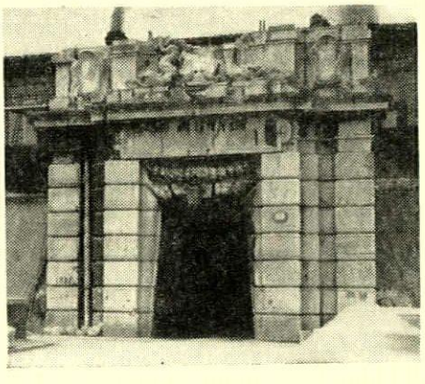
23



20, the foundations of Vanvitelli's Lazzaretto at Ancona, sketched in 1734, four years before it was completed. 21, the Lazzaretto as it is today, no longer surrounded by the sea. 22, the chapel in the courtyard, dedicated to San Rocco. 23, the main gateway, destroyed by bombing in the last war, but to be rebuilt from surviving fragments.

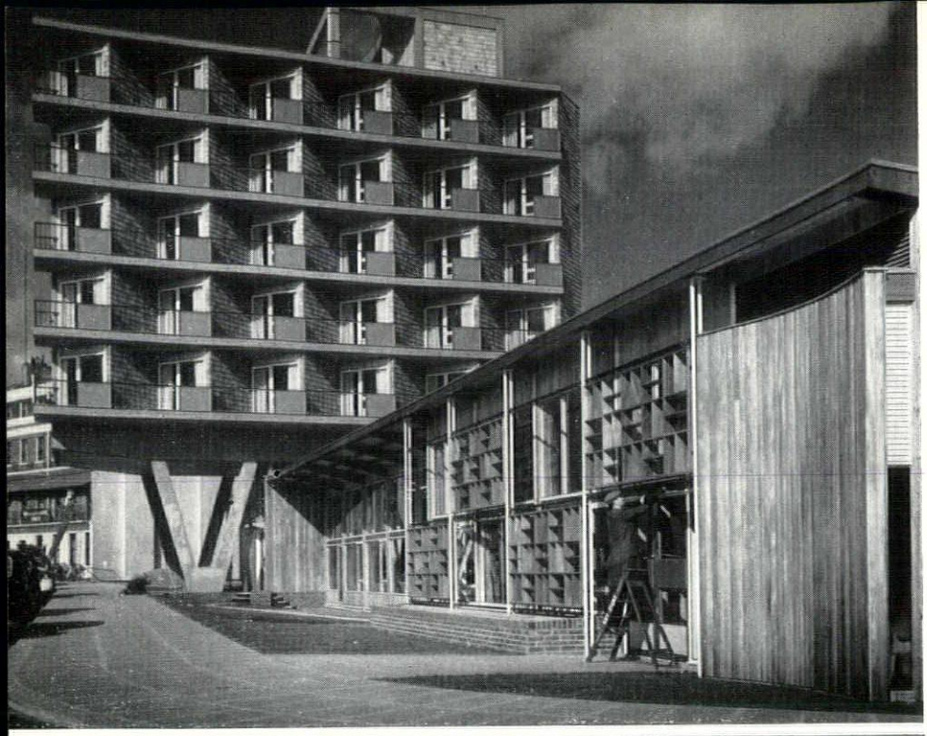
COACH HOTEL AT DOVER

ARCHITECT	**LOUIS ERDI**
assistant-in-charge	**Alan Fairbrass**

1. the bedroom point block from the south-east: the echelon treatment of the east wall is designed to give each room a private balcony and a good view of Dover Castle. The bronze letters have yellow glass in front and white behind, to cast a glow on to the wall at night.



1



2



3



4

The conception of a hotel to cater exclusively for motor-coach traffic—this is the first to be built in the country—was due to a hotel owner, Mr. Graham Lyon, who is, with Watney's, the joint owner of the hotel. The idea arose from the discouragement given by most hotels to motor coach parties. Furthermore coach traffic, bound for the Continent via Dover, had increased from about 500 five years ago to 2,600 last year. It was necessary that the rooms in this hotel should be lettable at a very reasonable price; this criterion does not usually apply to this extent in conventional hotel business.

The site was formerly occupied by two terraces of houses stretching between the eastern and western docks; these terraces were demolished, following severe bomb-damage, and the new A2 road is to cross the site. Three-quarters of the area between this road and the sea are to be devoted to council flats; the remaining quarter is occupied by the hotel.

The bedroom block is of reinforced concrete construction raised above the single-storey block of public rooms on four V-columns, which are on pile foundations sunk to a depth of about 50 ft. The site had once been used as a tip for highly sulphurous clinker and slag, which made it necessary for the piles to be encased in brick waterproof chambers. The infill in the point-block is 6-in. light concrete blocks, faced with shingle on battens. The single-storey block is of timber construction, with brick as infill and between the public rooms and services, as a sound insulator. Finishes, beside fair-faced brickwork, are glass, shingle and vertical boarding.

Amongst the floor covering materials are Italian marble tiles, terrazzo, and thermoplastic tiles. The lounges and bedrooms have fitted carpets. The ballroom has a sprung strip floor, the dining-room parquet with aluminium backing on account of floor heating. The staircases have timber treads plugged into a reinforced concrete structure, with fitted carpet. The partitions between bedrooms consist of hardwood studding, sound insulated by a loose glass-wool blanket between, with plasterboard externally, with a total thickness of 3 in. Windows pivot at the top, and slide down as far as the centre of the window space when fully opened. They are timber framed and close tighter under wind pressure. Where possible, internally, constructional materials have been left exposed; however, timber panelling and wallpaper have been used in some focal positions.

The plumbing was prefabricated in floor heights. Bedroom heating is by specially designed convector heaters; in the public areas on the ground floor electric wires in tubes are embedded in the concrete floors, and the ballroom has a plenum system, which ventilates and also heats and cools according to the temperature. All the systems are thermostastically controlled, and can be switched on or off from a central control panel in the manager's office.

COACH HOTEL AT DOVER

2, from the east, looking along Camden Crescent. The mahogany grilles in front of the ballroom windows are sun breakers, on tubular framing.
3, the entrance; the soffit of the overhang is plaster on metal and clay lathing. 4, the saloon bar. A pinewood grille is suspended below the butterfly ceiling; the panel on the end wall is mahogany. Wallpaper colours are: end wall, bluish grey; above the bar, red.

HOTEL IN STOCKHOLM

ARCHITECT | **GEORG VARHELYI**

1, the street front of the hotel, which is faced with light concrete panels, rendered in warm and cold greys and white. The footings are black granite.



The hotel is in Götgatan, a street in the c
Södermalm, Stockholm. It has eleven and a ha
of which three and a half are underground, the f
ment housing rooms and halls for private funct
sub-basements stores, staff changing-rooms, centr
and clock equipment and the air conditioning, a
lowest sub-basement the heating plant. The 288
are on six floors ; of these 158 have an ordinary be
a reversible sofa, and may thus serve one or two p
all rooms have a dual-purpose writing desk cum dre

* About the same size as the Westbury Hotel, Bond Street, London.



2

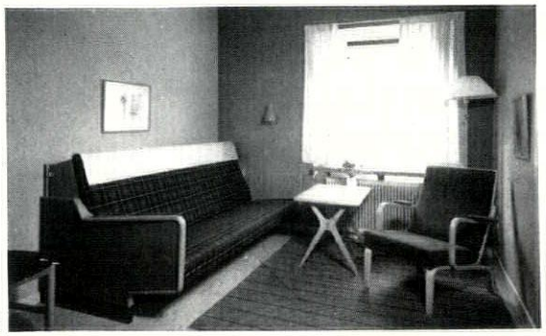
2, writing desk and suspended showcase in one of the lobbies. 3, sitting-room in a two-room apartment, with a sofa which is convertible into a bed. 4, In many bedrooms the endwall is painted a dark colour, and the carpet stripes placed across the shorter dimension of the room, to make the room seem wider and shorter than it is. 5, textile decoration in the breakfast room, of a cock and a hen, by Marianne Richter. 6, decoration in the grand gallery by Olle Gill. The background is blue.

table. Much of the furniture is attached to the walls, thus saving labour in cleaning.

Construction is of reinforced concrete slabs; the external wall panels are insulating lightweight concrete, colour-rendered. Non-load-bearing internal partitions consist of wood-wool acoustic board in three layers. The kitchen roof is of reinforced concrete, with a single span of 65 ft., and glass bricks. Labour-saving devices in the kitchen department include electrically driven service trolleys on which loads of 275 lb. can be conveyed into the dining room; door-openers between the restaurant and kitchen department operated by photo-cells, and stools for the kitchen staff which can be clamped to the work tables. The bedroom floors have shoe-cleaning machines. Of the ten lifts three carry passengers, and a collective operation system automatically brings the most convenient lift to the caller. Twenty-four air-conditioning plants deliver 3,500,000 cubic feet of air per hour; the heating plant consists of three oil-fired boilers.

Chief consulting architect was Sven Wallander; Carl-Axel Acking was responsible for the interior design.

HOTEL IN STOCKHOLM



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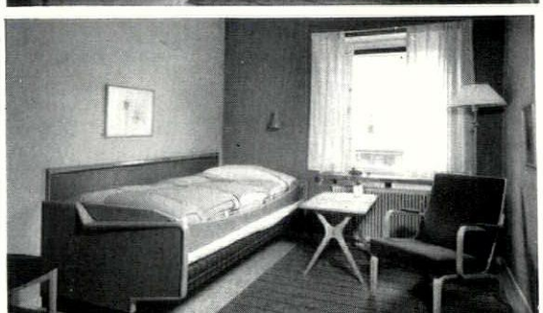

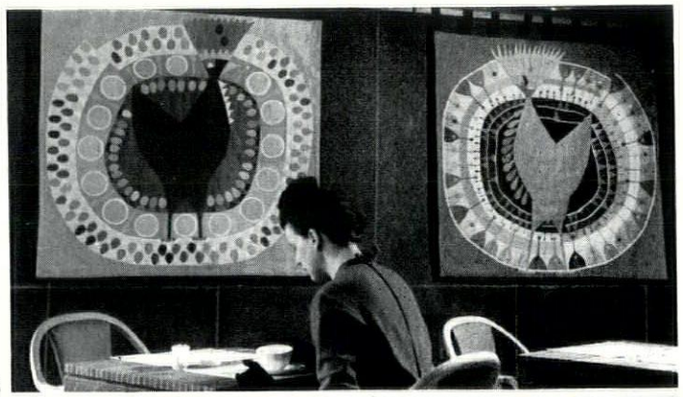

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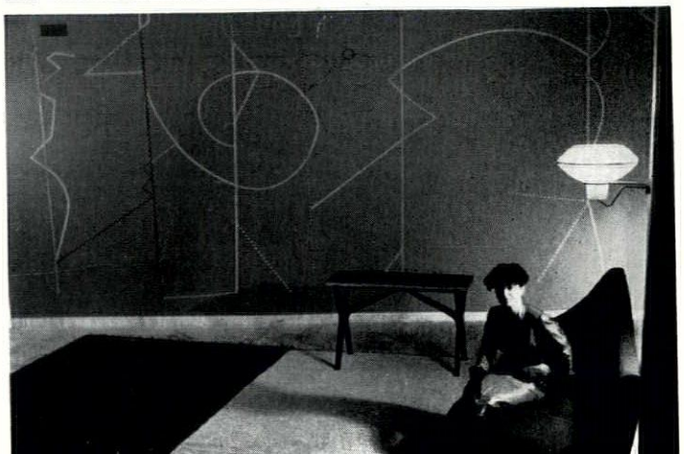
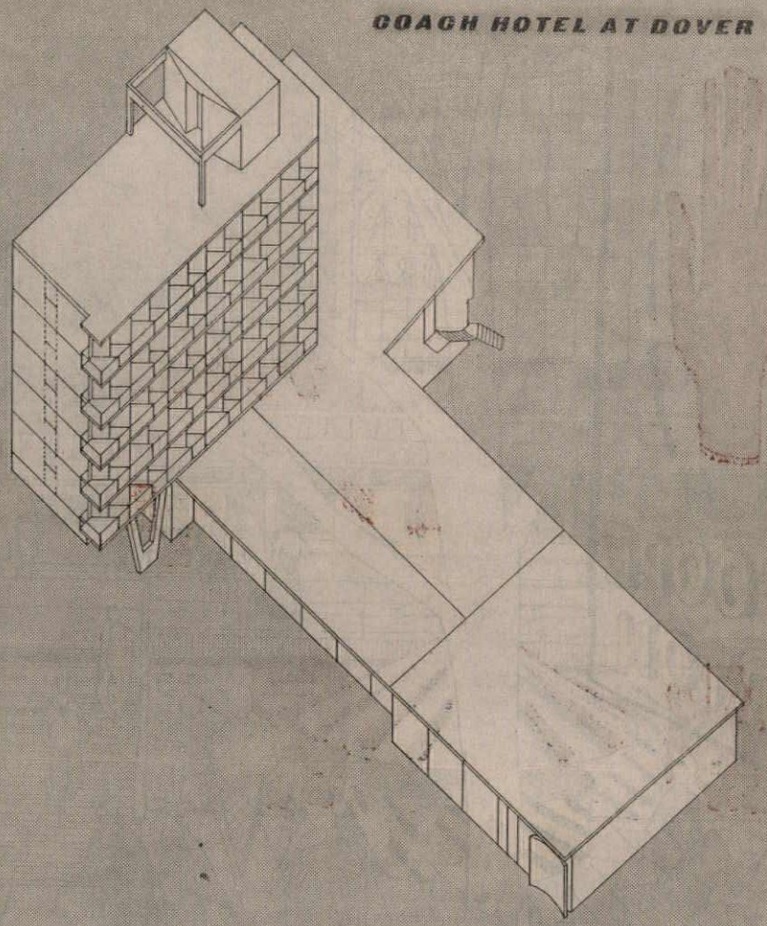
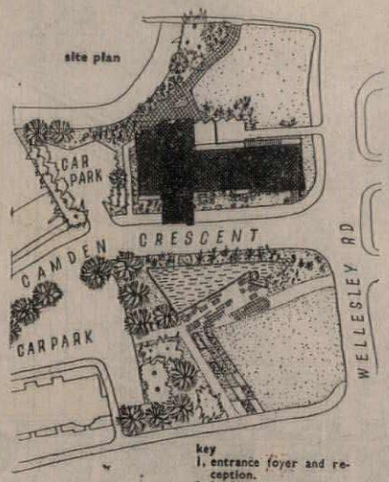
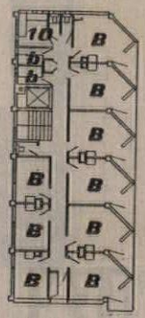


COACH HOTEL AT DOVER



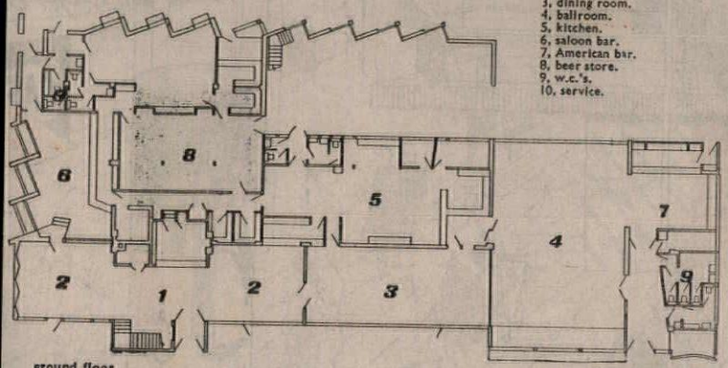
site plan





typical upper floor

key
1, entrance foyer and reception.
2, lounge.
3, dining room.
4, ballroom.
5, kitchen.
6, saloon bar.
7, American bar.
8, beer store.
9, w.c.'s.
10, service.

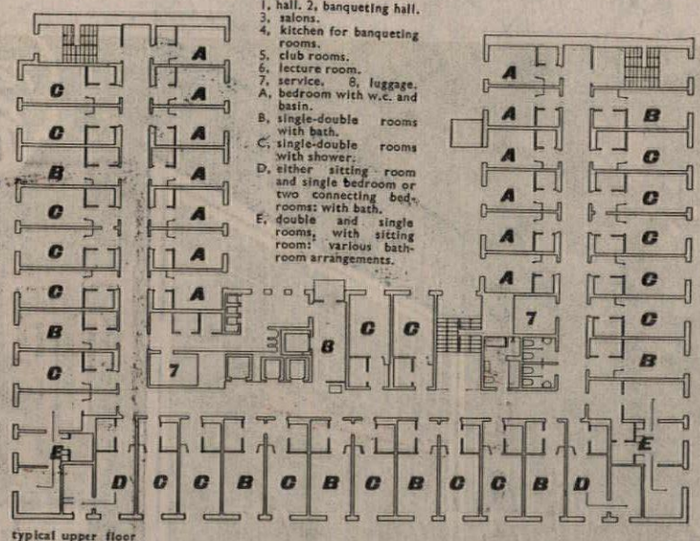


ground floor

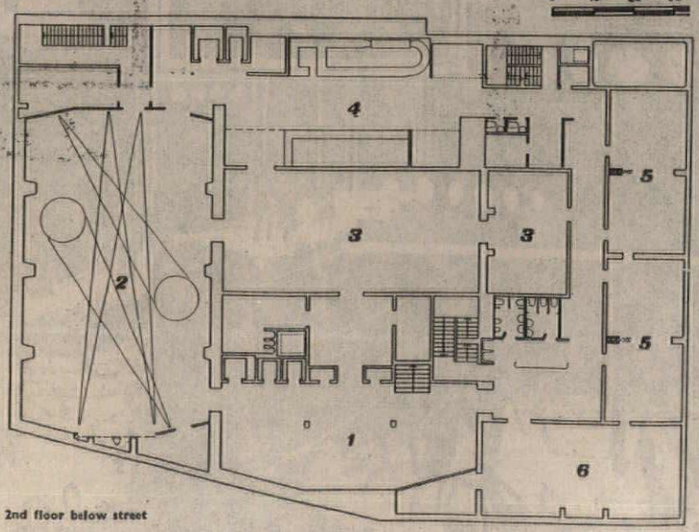
(scale 1/40 in. = 1ft.)

HOTEL IN STOCKHOLM

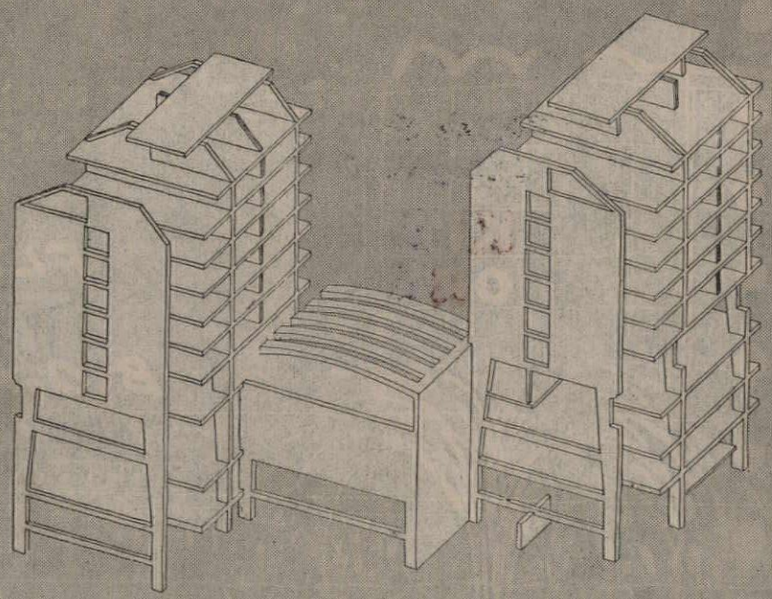
key
1, hall. 2, banqueting hall.
3, salons.
4, kitchen for banqueting rooms.
5, club rooms.
6, lecture room.
7, service. 8, luggage.
A, bedroom with w.c. and basin.
B, single-double rooms with bath.
C, single-double rooms with shower.
D, either sitting room and single bedroom or two connecting bedrooms: with bath.
E, double and single rooms, with sitting room: various bathroom arrangements.



typical upper floor



2nd floor below street




DUNLOP
PLAZA
Restaurant
SPORTS
TWA
B.O.A.C
KIA ORA
Marks & Spencer
FLY
B.O.A.C
Dancing
Restaurant
DUNLOP
PLAZA
Kenneth Brown

Advertising can play a double role in the drama of the urban scene. This has been appreciated by Leonard Vincent, chief architect of Stevenage, and in Kenneth Browne's interpretations of his proposals for advertising displays in Stevenage New Town Centre, opposite, signs, symbols, giant lettering and coloured posters (such as those screening the bus station, middle distance) are seen in the upper sketch contributing to the daytime architecture of the central square. In the lower one, illuminated signs (gathered in some concentration, for this is a maximum-brightness zone) become the dominant elements in the same view and create a glittering pool of brightness that is the planned climax to a series of approaches through less strongly illuminated zones.

Kenneth Browne

SPACE TO LET

PLAN FOR ADVERTISING IN A NEW TOWN

The recent statement by Stevenage Development Corporation that it intends to encourage outdoor advertising in its new shopping centre and the positive proposals put forward for using it to create a 'live' core to the town deserve high praise. This will be in direct contrast to the negative attitude so far taken in the new towns where publicity has been looked on at best as a necessary evil, to be banned wherever possible or emasculated in the name of good taste. In consequence any publicity which has appeared has been over refined, insipid, completely lacking in punch—in fact all toned down and nice so that it won't be noticed.

This negative attitude has arisen from confused thinking; from equating advertising with outrage. Though advertising of any kind is rightly condemned as an abomination in a rural landscape—a 'natural' landscape where it is incongruous—that is not to say that it must be outlawed everywhere. Stevenage has had the good sense to see that it really has something to contribute in a man-made landscape and that the vitality it can bring must not be suppressed for fear of a little vulgarity. Its vitality must be harnessed to townscape.

The shopping centre, market place, entertainment area are the right places for advertising—it is appropriate there and is all part of the feeling of 'place'. Buying and selling, entertainment, gaiety—advertising. It's no good purists trying to separate them and art them up. Illuminated sky signs, giant lettering, neon lights, shop signs, posters are all part of a robust modern life and can add colour, movement, surprise both by day and by night—these are features to exploit, not to kill, for they add the business which, together with the people, makes a shopping centre alive and not just an overgrown model.

However, as we know to our cost, publicity run riot can smash architecture or feeling of place entirely—the advertiser doesn't care a hoot, so the planner must. Consequently, and rightly, the Stevenage plan, prepared by the Chief Architect to the Corporation and his staff* (the architects who are designing the centre itself), defines where skysigns, façade signs, neon and flood-lighting shall go and relates them to the buildings and to an imaginative over-all scheme of brightness zoning at night.

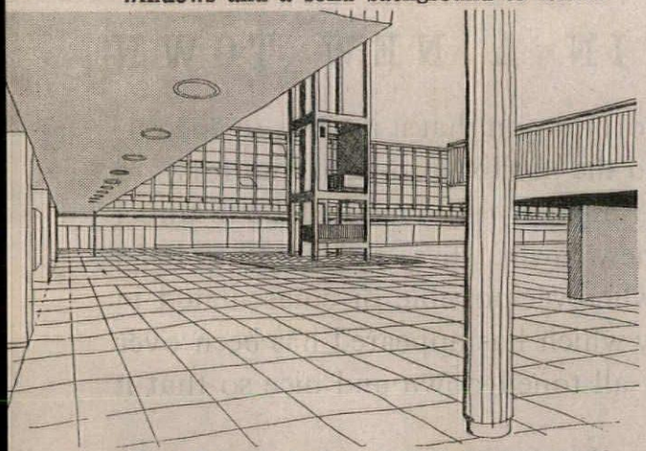
* In particular I. M. Purdy who is largely responsible for the scheme.

ANALYSIS OF THE OVER-ALL ADVERTISEMENT POLICY FOR STEVENAGE NEW TOWN CENTRE, PROPOSED BY THE CHIEF ARCHITECT.

signs

In certain places, such as blank end walls giant full façade height signs, lit at night, will shock by sudden incongruity of scale. Illuminated sky signs will top many of the main buildings and these, in addition to their immediate impact, will pinpoint the heart of the town from a distance.

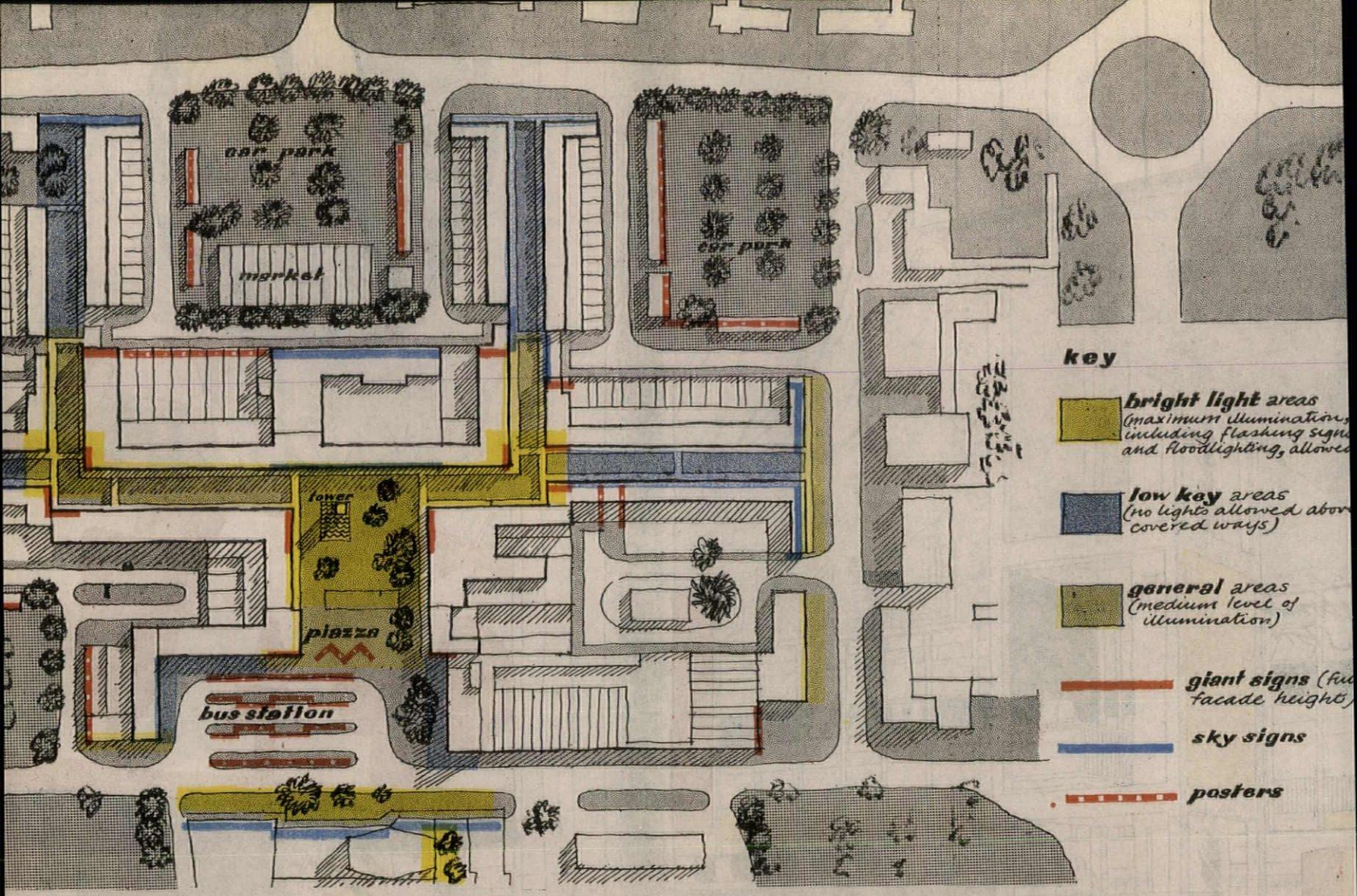
To keep an architectural control, advertisement lettering on the face of buildings will be disciplined to fit into the horizontal bands of opaque glass panelling between the windows and a solid background to letters



Above: the central piazza at Stevenage as it would appear devoid of people and publicity and, right, when the vitality and colour of shoppers and advertising are introduced, as suggested by Kenneth Browne's drawing. The lettering, like the shop symbols, must be bold, not fussy or over-designed, and tailored to the structural discipline of the architecture.

will only be allowed when they are fitted between the structural grid of the façade. If, however, the lettering is free standing it will be allowed to go across the grid and this will give quite a bit of freedom whilst ensuring that the architectural unity is not destroyed. Any signs projecting from the face of a building will have to be at right angles to it and it is to be hoped that in some places illuminated vertical lettering will be encouraged as it gives the necessary interest of an opposing emphasis to the more usual horizontal. Lettering fixed on arcade canopies will have to be open, no solid backgrounds being allowed so that the architecture will still dominate and the height will be regulated to keep a fairly even size. Under the canopies direction signs (i.e. chemist, baker, etc.) only will be allowed but plenty of variety in appearance should be welcomed. Symbols such as fish, umbrella, glasses, etc., have a living tradition and are immediately 'read,' even by a


COURAGE
KGB
LEMO
PAA
Books & Stationery
CAT



Above, zoning diagram of the new shopping centre, prepared by the Stevenage architects and planners, which defines the intensity of lighting at night. All advertising proposals which make use of illuminated signs, skysigns, neon and flood-lighting will be related to this basic scheme and used to get preplanned effect.

foreigner; but again for heaven's sake don't make them 'arty.' Keep them bold.

*lettering**

Considerable freedom will be allowed in the choice of lettering faces, but a guide chart showing preferred faces will be sent to prospective advertisers. That does not mean to say that lettering falling outside the scope of the chart will necessarily be disqualified but it will have to be vetted by the chief architect, who will have power to refuse it.

brightness zoning at night

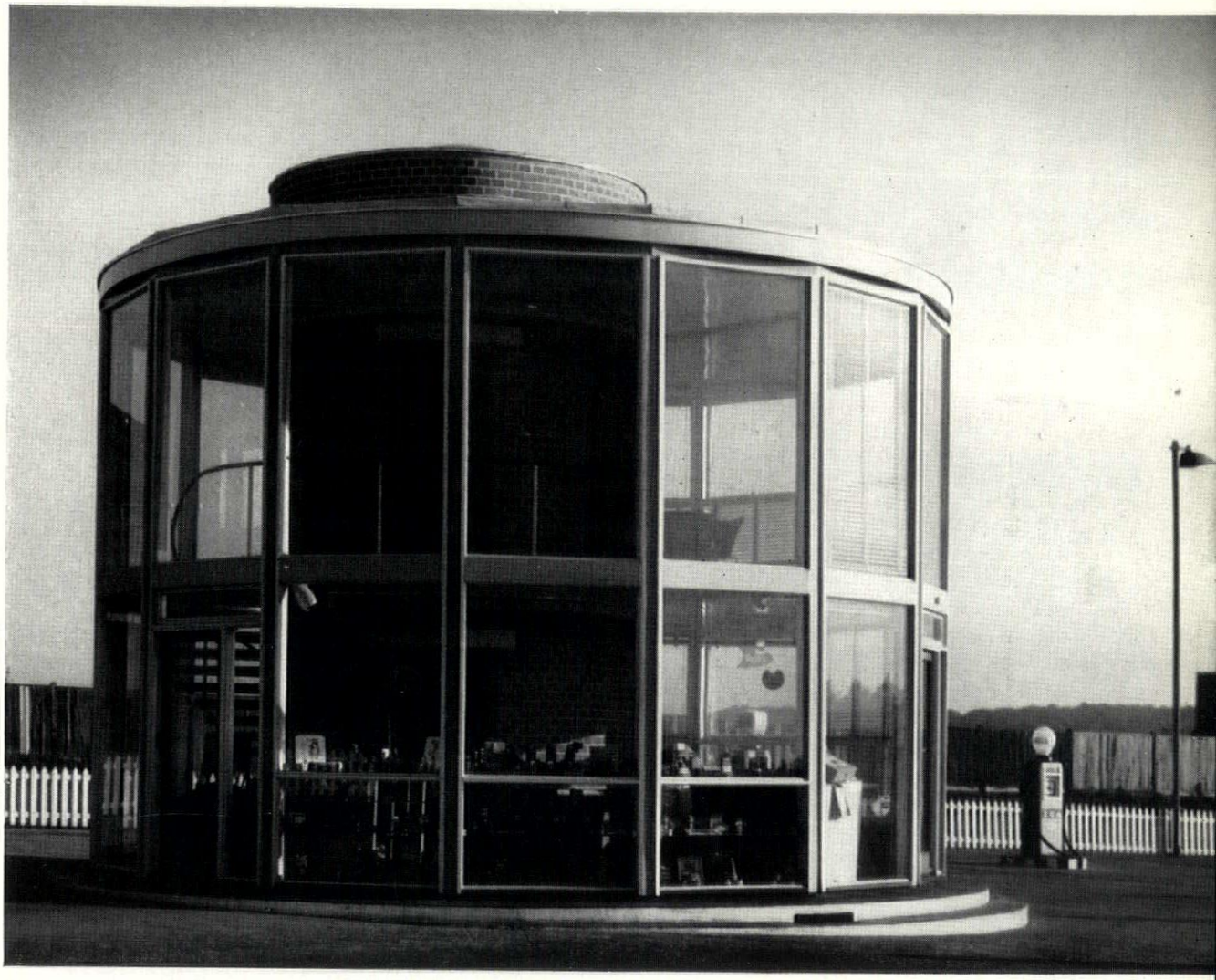
As the diagram above shows, the small central piazza, the focal point of the whole shopping centre, is approached down partially covered pedestrian alleyways in which the lighting is purposely kept in a low key with no illuminated signs permitted above canopy level. This gives added drama to the event of coming upon the square itself where all the stops are pulled out and maximum light and visual gaiety are encouraged. (See frontispiece, page 122.)

* Note that neon lends itself especially to certain faces, e.g. a heavy sans serif made up of lines following the outline (see 'DUNLOP' on frontispiece and 'ar' on cover) and for cursive ('Marks and Spencer' on frontispiece) where it is like writing on the darkness of the sky.

posters

The proposal for using posters is an interesting one. Designed hoardings will partly surround the large car parks, adjacent to one of which is the market, giving a tremendous splash of colour on first arrival at the shopping centre and also hiding the ranks of parked cars. The bus station shelters will be formed of poster screens and there will be space for a limited number of posters on zig-zag panels in the central piazza itself. There is, perhaps, a case for more liberal use of them here provided position and size (small) is controlled. For instance, the continental poster drum makes an exciting object in its own right, spaces on walls of arcades might be provided and the walls surrounding the raised area in the centre of the square could be solid with small posters. After all, posters are always changing, unlike costly fixed signs, and, therefore, subtly altering the appearance of the square itself.

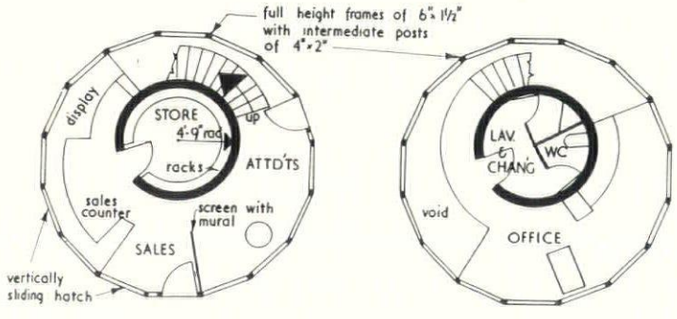
Anyway this is a really creative use of advertising and it will help to reintroduce fun and life into the town centre, where it is most needed.



1, *the west side of the administration building.*

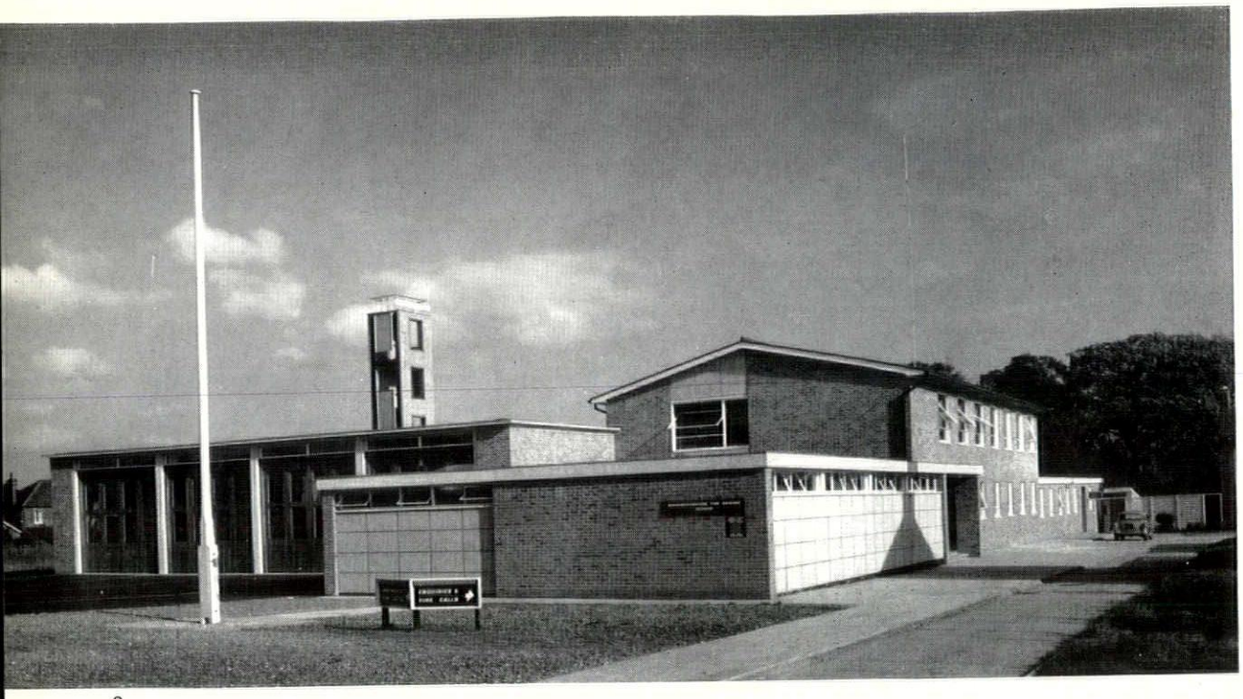
FILLING STATION AT SWANLEY, KENT

ARCHITECTS : JOHN BURKETT, GORDON SHEERE, R. W. WILKINSON ; ASSISTANT ARCHITECT : SUSAN WALKER.



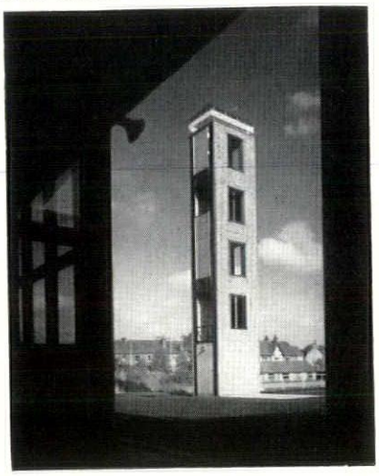
Ground and first floor plans [Scale : 1/16 in. = 1 ft.]

This oilwell filling station is on a three-cornered site on the main Maidstone road, near Swanley. Economical buildings were required with all-round vision from the staff rest room and the manager's office. The two-storey administration building contains a brick drum of which the ground floor is storage space, and a lavatory is above. The floor and ceiling joists radiate from the central drum and are supported by the outer glass-clad framework of 6 in. by 3 in. timber posts, to which prefabricated timber window frames are bolted. The stair is reinforced concrete and cantilevered. Fluorescent lighting shines on the drum and ceiling. The circular public lavatory block on the site is of cavity construction with an outer skin of 4½ in. brickwork and an inner skin of 4 in. clinker blocks. The layout was worked out by the client in consultation with Shell Mex and B.P.



2

2, the fire and ambulance station from the main approach road. 3, the drill tower from the doors of the appliance room. 4, the firemen's dormitory where, as firemen sleep there on alternate nights, there are two sets of bedding and two kit cupboards for each bed. The ceiling is white and the beams white.



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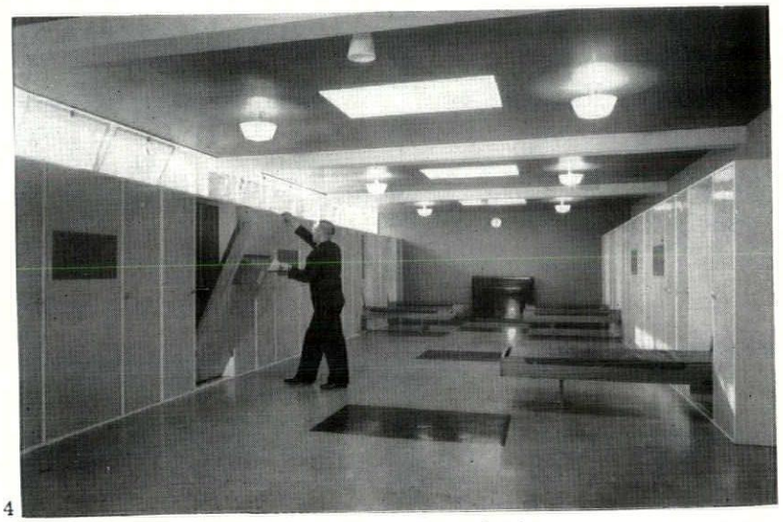
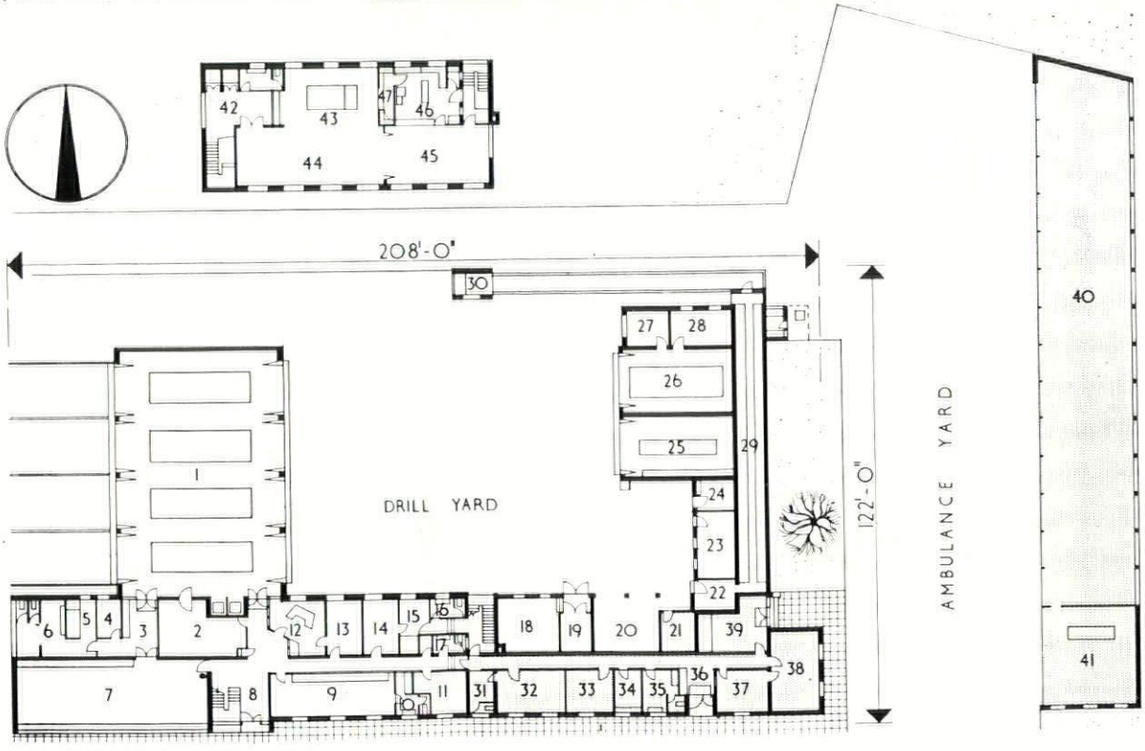


4

FIRE AND AMBULANCE STATION AT SLOUGH

COUNTY ARCHITECT: F. B. POOLEY; ASSISTANT COUNTY ARCHITECT: R. WALKER; ARCHITECT-IN-CHARGE: NORMAN TAYLOR.

The station is near the junction of Tuns Lane and the Bath Road. It departs in several respects from usual fire station design: the firemen's dormitories are on the ground floor of the two-storey block, with the recreation room above, and the hoses, instead of being hung vertically, are dried in a special hose drying room, in which they are laid out on horizontal racks, connected with hot-air trunking, and have hot air forced through and round them, the drying process taking two hours. The hub of the scheme is the watchroom, from which all station activities are overseen and the traffic lights outside the station can be controlled; the public also have ready access to it. The steel framed tower is used for practice climbing with hook ladders, hose drill, etc.; the sheet metal panels are painted light blue. The appliance room and garages are steel frame; elsewhere load-bearing brickwork is used. Staircases are concrete; that in the main entrance hall is a concrete spine beam with cantilevered teak treads. Horizontal centre-pivoted metal windows are used in most parts.



fire station
1, appliance room.
2, locker room.
3, equipment cleaning.
4, drying room
5, showers.
6, ablutions.
7, dormitory 1.
8, entrance hall.
9, dormitory 2 (officers)
10, bathroom.
11, quiet room.
12, watch room.
13, officer in charge
14, station office.
15, station store.
16, staff toilet.
17, women's toilet
18, boiler room
19, fuel store
20, garages.
21, emergency lighting room.
22, fan room.
23, hose repair store.
24, breathing apparatus store.
25, workshop.
26, AFS appliance room.
27, AFS office.
28, store.
29, hose drying chamber.
30, drill tower.

ambulance station
31, women's toilet
32, women's dormitory.
33, men's dormitory.
34, kitchen.
35, men's toilet.
36, entrance hall.
37, statistics office.
38, control room.
39, driver's room.
40, garage.
41, repair garage.

combined accommodation
42, landing.
43, billiards recess.
44, recreation room.
45, dining room.
46, kitchen.
47, bcr.

The name miscellany implies, of course, an architectural miscellany—one that will include subjects which, though marginal to architecture, are nevertheless vital to it.

BOOKS

BY THE DAWN'S EARLY LIGHT

ROMAN MORNINGS. *By James Lees-Milne. Wingate,* 17*s.*

Rome, for all the wealth and magnificence of its buildings, has received less attention from the English critic of architecture than either Florence or Venice. It may be this very opulence which, in contrast to the grace of the northern cities, fails to find in us so responsive a chord. It has been remarked that Rome is a city for the professional rather than the tourist. St. Peter's and the Spanish Steps may make their immediate effect, but in general the fierce paganism which underlies much Roman life and work needs slow assimilation before a near approach may be made to æsthetic appreciation.

Mr. Lees-Milne analyses eight examples of building from the Ancient, Early Christian, Romanesque, Renaissance, Baroque and Rococo periods. In spite of his attempt to view his chosen subjects in the dispassionate morning light, it is significant that the two most successful portraits are those of essentially pagan origin—the Pantheon and the Fountain of Trevi—in which some of their atmosphere contrives to break through the architectural criticism and to defy its objectivity.

The history of the Pantheon presents a study in the spasmodic development of an archæological conscience, showing doubtful progress from the outright plundering in 663 by Constans II, Byzantine Emperor, to the further thefts by Pope Urban VIII almost a thousand years later, and to the various unhappy efforts at restoration. Nevertheless, the building remains in essence undisturbed and clearly recognisable as the same magnificent structure which raised its dome to dominate the surroundings early in the second century.

The other buildings described all suffer severely from the lack of good illustrations without which no book such as this can be considered complete. In some degree the literary and historical backgrounds we are given help to conceal this deficiency and many interesting comments are brought to light such as Dickens's assessment of the works of Bernini and Borromini as 'the most detestable class of productions in the wide world.'

Bramante's Tempietto finds a rightful place in representing the classic Renaissance and, as one of the purest of Roman buildings in concept, form and detail, achieves an importance far beyond its size. The charm almost amounting to gaiety of Borromini's style is seen to be curiously at variance with his known character, introspective and depressive, and is instanced in his church of San Carlo alle Quattro Fontane.

Mr. Lees-Milne laments from time to time the Subtopian accretions and the popping, seething swirl of Vespas which prevent peaceful contemplation of past masterpieces. He should not, however, be too unhappy; for Rome can never have been a place of rest or quiet and to imagine it so would be to imagine it a dying city.

Elaine Denby

ANDREWS, JAMES & VEBLEN

ARCHITECTURE, AMBITION AND AMERICANS. *By Wayne Andrews. Harper & Bros., New York.* $7.50.

This book is a racy run-through of American buildings, well worth reading, accompanied by a peck of salt: the first pinch to be taken on the first page of the foreword, where the author says . . .

> 'This is a book, not about building in America, but about architecture as a fine art. Or to put the matter more directly, this is a book about *taste*. As I intend to use the word, taste is the record of the ambition which leads the architect to spend more time and energy than is reasonable, and the client, often but not always, to invest more money than common sense would dictate.'

Taste as thus defined is a quality which may coincide with architectural quality or it may not. There is no direct link between the two: sometimes the most money and the trickiest detail has brought out the best architecture (Adam in the 1760's, Southwell and Exeter in 1320): at other times it has conspicuously failed to do so (the 1830's with the National Gallery, the 1920's with the Dorchester Hotel and the Bank of England remodelling).

This definition seems to premise in the rest of the book a pyramid of overdressed buildings with Addison Mizner—who certainly used up more money, if not time, than most—at the top. In fact, most of the right buildings get in, apart from the two huge self-excluded segments of engineering (no taste) and the vernacular (no money): only when a furore of 'taste' was in progress is the roll call seriously defective and a smart practitioner like R. M. Hunt, quick on the drawing board, appears side by side in the scale of architectural values with the several brands of genius contained inside the firm of McKim, Mead and White. By the end of Chapter Six we have got through the Chicago School and Frank Lloyd Wright without any serious worry. Then, in the chapter on Modern Times, comes the bombshell. What Mr. Andrews has done is to oppose two types of modern architect, which he calls Veblenite and Jacobite, after the economist Thorsten Veblen and the philospher William James. Their qualities are best explained by reproducing his own table:

Veblenite Architects	*Jacobite Architects*
Cool.	Warm.
Impersonal.	Personal.
Anti-invididualistic.	Individual.
Dogmatic.	Casual.
Absolutist.	Pragmatic.
Worshippers of the machine.	Willing to take the machine for granted.
Spellbound by modern materials such as steel and glass.	Much more concerned with the texture of materials than with their modernity.
Experts at factories, sanitariums, and other impersonal buildings.	At their best in domestic work.
Willing to disregard the site.	Haunted by the site.

Having made this division, the profession is carved up: Gropius, Mies and S.O.M. are inevitably Veblenite: the Jacobites are the Bay Regioners, Mr. Andrews himself, and the inevitable archetype, Frank Lloyd Wright. Belluschi and Neutra become schizophrenic, the former J. but occasionally V. (Equitable Building, Portland): the latter V. with lapses into J. (wooden private houses).

This is absurd, for two reasons, both of which show the same kind of wrong headedness—of replacing an infinite number of shades of grey by equivalent lumps of black and white. The first fallacy is statistical: to cut a complex and fairly homogeneous profession up the middle and shuffle off its members to one extreme or the other is rather like a sociologist inferring from the Kinsey statistics that there were two—and only two—types of woman, iceberg and nymphomaniac.

The other point at issue is older and sadder. Veblenite and Jacobite are just new names for opponents in the oldest dispute in architectural criticism—form v. content or function v. expression. Whether it is Pope railing at Blenheim for not being functional or Pugin screeching over Grecian churches for not expressing the true principles of Christian architecture, critics have always assumed in theory that they are opposites—at best to be reconciled, at worst to be fought to the death over. Surely we can see past that now, to what in fact most critics have always admitted in practice: that form and content are abstractions for sets of constituents of the total architectural problem. 'Function' and 'expression' are abstractions for similar (but not identical) sets. And in all works of architecture worth the name the constituents have never been separable—they have become fused. As in fact they were fused in Hilversum Town Hall—but not in the saddening harvest of English imitations like Hornsey and Romford; as they are fused in Ronchamp but are most

unlikely to be fused in the crop of bogus Ronchamps we are due for.

And there's the rub. What Mr. Andrews is exalting above everything else in calling himself a 'frantic Jacobite' is personal vision and self-expression—which is fine if your name happens to be Dudok or Corbusier or Harwell Harris. But to make the brilliant exception into a standard and then to expect Joe Bloggs, A.R.I.B.A. (or A.I.A.), to produce comparable buildings shows childlike but undeserved faith in human ability. Genius will come to the top anyway, even if it comes out skew, like C. R. Mackintosh: the difficult thing is to create a basis for a respectable average, and that is part of what the maligned Veblenite architects like Mies and Gropius are trying to do: to produce clichés, in fact. Imitate Mies badly and you will have a dull job but one which will fit into the land-surface well enough; imitate Wright or the Bay Region style badly and you may very well have an irreparable nonsense.

Ian Nairn

THE STONES OF MALTA

THE BUILDING OF MALTA, 1530-1785. *By J. Quentin Hughes. Alec Tiranti.* 42*s.*

Maltese architecture has had to wait an unconscionably long time for an historian but at last Dr. Quentin Hughes has come forward with a full-length study. He describes every important building on the island, diligently tracing the sources and development of the various styles employed, and reproduces over two hundred photographs which, together with some ninety plans and elevations, form a unique and valuable corpus of plates. Yet it may be doubted whether he has done justice to his subject.

The wealth of architecture produced under the aegis of the knights is remarkable not only for its occasional flourishes of baroque accomplishment, but for the unlikely circumstance, which Dr. Hughes rightly stresses, that it was designed almost exclusively by local Maltese architects and masons. It is mainly interesting, therefore, as a provincial and sometimes distorted reflection of sophisticated continental fashions. Unfortunately Dr. Hughes will have none of this. So ardent is his enthusiasm for his subject that he is blind to its natural limitations and thus he is led into discussing the meanest Maltese chapel as if it were some masterpiece by Michelangelo or Bramante. He compares, for example, the rude and cumbrous Verdala villa at Rabat with the villa Farnese at Caprarola, draws a parallel between the parish church at Quormi (plainly the work of some unlettered mason) and Giuliano da Sangallo's project for S. Lorenzo at Florence—and even goes so far as to suggest, in a footnote, that Sir Christopher Wren might have derived some features at St. Paul's from a study of Maltese village churches. Such preposterous fancies inevitably reduce one's confidence in the author's critical and stylistic comments; and, it must be added, a similar lack of discrimination is evident also in the scholarly material, for Dr. Hughes fails to indicate the degree of reliability of the various printed sources from which he draws his information on authorship and dating.

However, great indulgence must be allowed to the enterprising pioneer—and it is as such, no doubt, that Dr. Hughes would wish to make his bow before the public. His book goes a long way towards filling an important gap in the history of European architecture and he must be congratulated on the diligence with which he has assembled so imposing an amount of material on these interesting and often surprisingly beautiful buildings.

John Fleming

STRUCTURALLY OLD, SPATIALLY NEW

FIFTY MODERN BUNGALOWS. *By Felix Walter. Architectural Press.* 18*s.* 6*d.*

The terms of professional relationship which survive today between architect and client were framed when clients were substantial, labour was cheap, and the designing of private houses could bring in a living. This collection of recent designs, of which 45 are already built, is a testimony not only to the architects, who have accepted a type of commission more exacting and less remunerative than any other, but to those clients who have succeeded in finding out what architects really do and what a gulf lies between the custom-made house and the estate developer's product. Our deteriorating surroundings remind us that the wealth of professional skill now available and evident in these examples has hardly begun to make its mark on the scores of thousands of private houses now built annually.

If this talent were brought to bear, would a new vernacular make its appearance? The best conditions for this would be created by an alliance between a centralized but adaptable source of design and a system of factory production. Such a prospect is hinted at in one design, evolved by a firm prefabricating houses in timber to a modular system which allows for a good deal of individual modification to each of a number of standard plans. Of the remaining designs no fewer than thirty-eight have conventional cavity-wall construction; four are timber-framed; two are framed in reinforced concrete and one in steel. Two have concrete cavity walls and one is stone-built; the remaining design has a single thickness of brick lined with glass fibre and plywood. This prevalence of conventional building methods brings us face to face with the fact that the visual and spatial qualities of these buildings, modern though they may seem, are not, as most of us have been taught to believe, the result of developments in materials and technique. In planning, moreover, the universal characteristic is the extension of the common living-dining-cooking space at the expense of the bedrooms. Here at least open planning—whatever its structural ancestry—shows a comforting reversion to traditional cottage and farmhouse practice, with plate glass—the only new material found in almost every design—transforming the relationship between household and environment into something new and exhilarating.

Useful comparisons between building costs can be made with the aid of this book; they vary in the case of two houses built in 1954 from 36s. to 75s. per square foot. It is not always possible however to determine whether the figures quoted are inclusive of drainage work, outbuildings, etc., and a slightly more uniform presentation of technical data would improve an otherwise informative and well-illustrated book.

David Thomas

Shorter Notices

REBUILDING ST. PAUL'S. *By Jane Lang. O.U.P.* 42*s.*

This was the third book to appear on Wren in 1956. The other two—by Viktor Furst and E. F. Sekler—both had new material to describe and new things to say about it: this book is effectively a rake-over of the available published material made up into a chronological account of the building of St. Paul's, which is also a personal biography of Wren in a style that can sometimes be rather embarrassing—'About now a small incident occurred which Sir Christopher never forgot . . .', etc. The story is competently put together, and very readable apart from the coy moments, but is devoid of anything but second-hand opinions and interpretations of Wren's work. The illustrations are good, mostly ex-Wren Society, and oddly enough the two most interesting things in them concern Old St. Paul's: the drawing showing Inigo Jones's Bramantesque detail solemnly wrapped round an apsidal Norman bay in the south transept, and Hollar's engraving of Jones's west front and the extraordinary little church of St. Gregory, which used one of the cathedral's turrets as its tower. The west front of St. Gregory is Artisan Mannerist, like St. Catherine Cree, and must have been refaced within a year or so of Old St. Paul's, which is odd, to say the least.

There are still no adequate biographies of—to name only a few—Hawksmoor, Chambers, the Cockerells, Barry, Burges, Butterfield, Pearson and Voysey; each redundant book that nibbles at an already depressed market lessens the chance of there ever being any.

I. N.

CAERNARVONSHIRE, *Vol.* 1; *Royal Commission on Historical Monuments in Wales and Monmouthshire.* 1956. £3 5*s.*

This sets out to be a survey and inventory, and is: what more can be said? Celtic countries are most unrewarding to the ordinary architectural antiquarian, for the complete monuments are few and crude, and the ruins and early remains need expert excavation and interpretation, not an inventory. Meanwhile most of the true interest, whether in vernacular painting of Methodist chapels or the 'group value' of farms and town streets, and the small but vigorous North Wales modern vernacular, slips by unrecorded. There is not even a word of assessment of Plas Mawr at Conway, one of the few worthwhile monuments in the book (though, to be fair, a third volume, appearing in 1960, will contain 'appendices giving a general discussion of the monuments.')

It seems sad that when so much imaginative and scholarly thesis material is almost inaccessible for lack of a publisher, these volumes, whose contents could so well be stored at a national archive, with photostat copies where needed, keep trundling on.

I. N.

FUNCTIONAL TRADITION

MULTIPLE USE IN SHREWSBURY

A familiar combination in early industrial architecture is a fine, simple structure in the functional tradition (AR last month) concealed behind a naive, neo-classical frontispiece. This example in Howard Street, Shrewsbury, is an extreme case: the street elevation, 1, in stucco painted cream and Indian red, is unusually naive and clumsy, though effective in its fashion, and through it one walks into an unusually impressive, lofty warehouse, 2, with brick walls, iron columns and a heavy, open timber roof.

The building has also had an unusually varied history. It is now used as a railway warehouse but it began as the terminal warehouse of the Shrewsbury (or Norbury) branch of Telford's Shropshire Union canal —a branch that is now derelict. It was chiefly used for cheese and butter, and served at the same time as a market for this kind of produce. It was converted to take railway rolling-stock when the south end of the canal was filled in, and on one occasion was used as a mayoral banqueting hall.

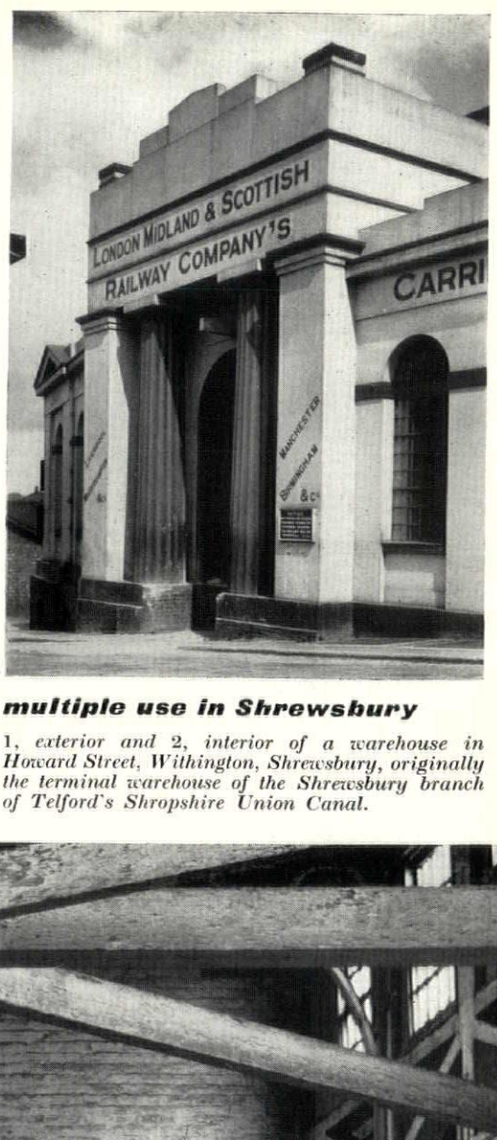
The building, which was built by Fallowes and Hart, of Birmingham, in 1835,* has a vaulted brick basement, formerly a wine and bottling store, and still preserves parts of its original floor of slate slabs. It is now scheduled as an ancient monument. **J.M.R.**

*Information from Dr. Pevsner, from the forthcoming Shropshire volume in his "The Buildings of England" series.

TRAVEL

LA MARTINIÈRE, LUCKNOW

The very grand scale and uninhibited eclecticism of La Martinière College make it one of the most spectacular monuments of British India. Built for Claude Martin, a French soldier who changed sides after Pondicherry and later did well out of indigo, its detailing just fails to live up to the promise of the fine



1

multiple use in Shrewsbury

1, *exterior and* 2, *interior of a warehouse in Howard Street, Withington, Shrewsbury, originally the terminal warehouse of the Shrewsbury branch of Telford's Shropshire Union Canal.*

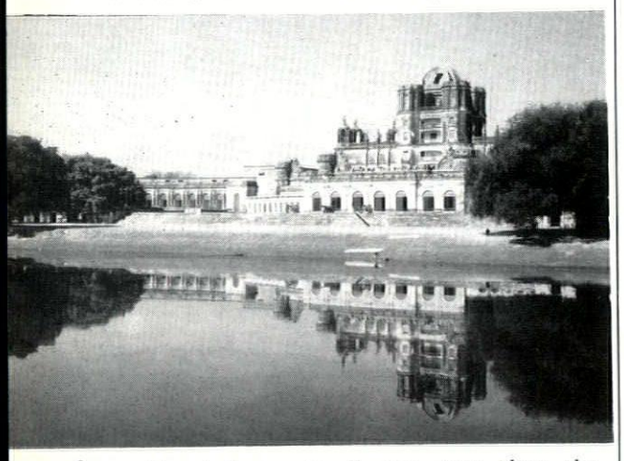


2



1

column, 1, with its echoes of Blenheim or Stowe, that stands in the lake before the house, or the rather Vanbresque grouping of the main masses of the house itself. The combination of castellar elements in the centre-piece with quadrant colonnades as open as the *barchesse* of a house by Palladio, 2, is clearly very proper to the country retirement of a military man, but in the handing of the smaller elements one senses that his unknown architect had not taste nor practice enough to keep book-learning within bounds—beyond the dra-



2

matic statuary in 3 one sees that the coupled Doric columns of the colonnade, derived from Serlio or Vignola, are too thoughtlessly related to the panelling of their pedestals below and of the parapet above. Martin died in 1800, having lived in his house only five years, but he perpetuated his name by endowing it as a college.

Roderick Cameron

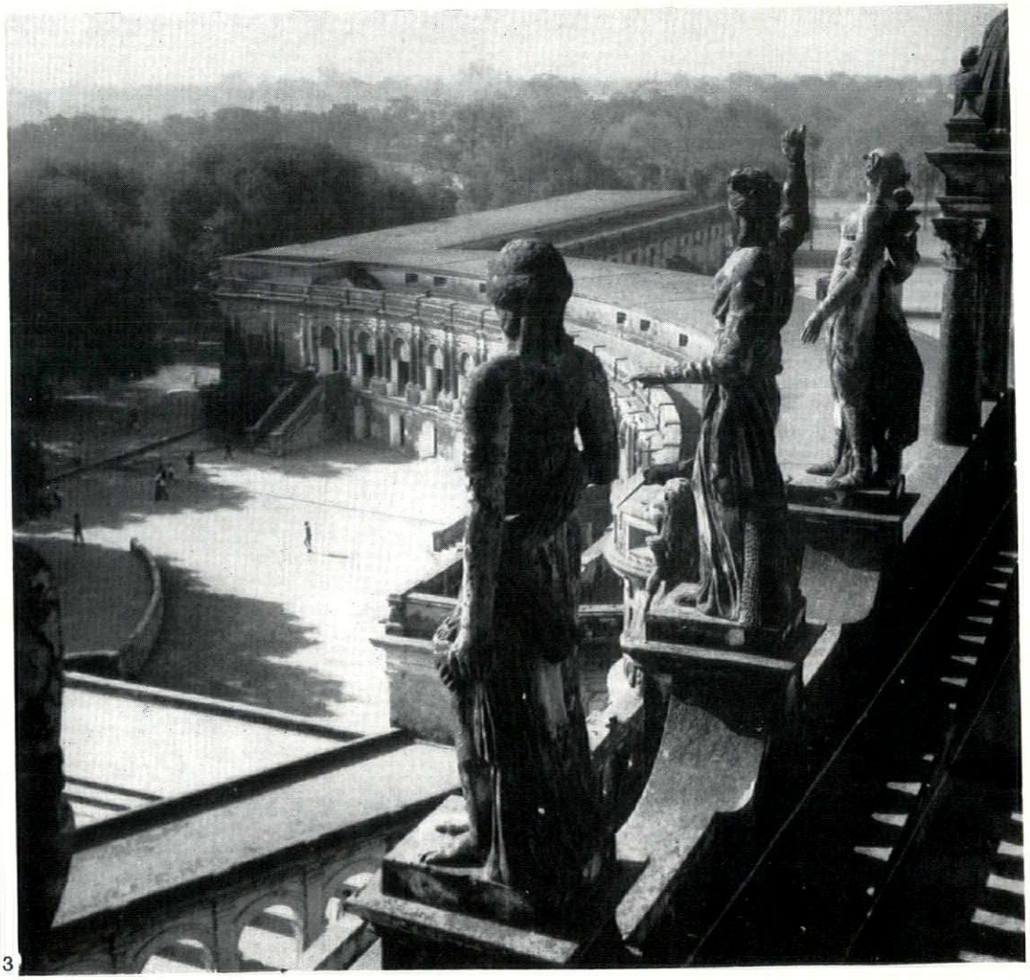
EXHIBITIONS

SCULPTURE

Almost every good 20th-century sculptor has, at one time or another, held a position of trust in the polytheistic temple without walls, so it does not come as altogether a surprise when one of them produces an idol on his own account. But it doesn't happen very often, and because I find it difficult to see the point of sculpture which does not engage my appetite for idolatry I am almost excessively grateful when I can say that another one has appeared. It is sometimes contended that there is no middle course open to a sculptor, and that if he does not produce an idol he only makes a knick-knack. But this is an extreme point of view, and is usually put by religious intellectuals intent upon defending specific iconographies. In any case, it goes without saying that many knick-knacks have great beauty and expressiveness.

A very pure example of the knick-knack, quite unscathed by beauty or expressiveness, is the massive piece outside St. George's Hospital which Nikolaus Pevsner calls 'an ill-advised portrait in stone of a big gun.' A very fine example of the idol is Henry Moore's stone carving of a recumbent figure in the Tate: it is inscrutable and undemonstrative; it has freed itself from the problems of the man who made it; it is ripe for anonymity, and because it inspires respect for the irrational and the unknown will find a place in the temple without walls. The Big Gun and the Recumbent Figure might be said to mark the limits of the contemporary sculptor's field of operations.

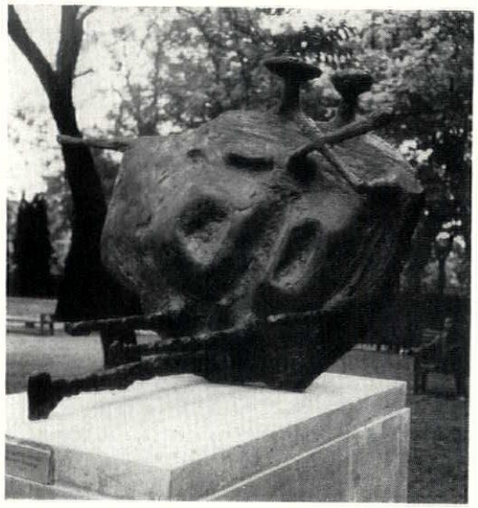
At the second open-air exhibition presented at Holland Park by the LCC, there is nothing quite as fatuous as the Big Gun and certainly nothing as fine as Moore's Recumbent Figure. The sculpture standing in the open represents the good committee man's dream of a working compromise and is an extremely chaotic spectacle. The mid-nineteenth century marbles housed in the orangery are intended as a 'startling and stimulating contrast' to the contemporary work outside, but the contrast is meaningless because the nineteenth-century pieces only represent the ultimate degeneracy of the academic approach to classical sculpture: they never did and never will constitute any kind of a challenge to anything. They are none the less fascinating, for the sculptors, almost to a man, were virtuosi of the strip-tease, and by devising unnecessary ingenuities of



3

posture and playing exaggerated tricks with sliding drapery they gave the unexposed parts of their anæmic gods and goddesses a highly inflationary value.

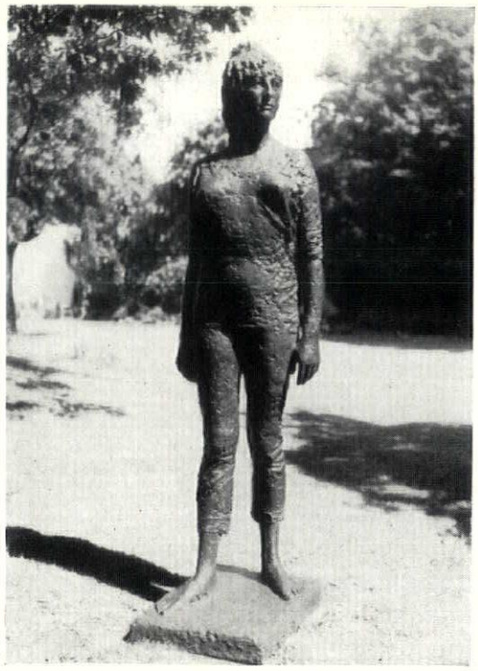
This is the only open air exhibition organized by the LCC from which the work of foreign exhibitors has been excluded, and so many of the pieces on view are of indifferent quality that visitors from abroad may well be given the impression that our so-called renaissance is fizzling out. Even Moore's 'Warrior with Shield,' is far from satisfactory, and the wounds which one supposes the figure to have received in battle do not account for all its formal shortcomings. Moore's only serious challenger is Butler, but his rather ludicrously named 'Girl 5456' (is this a misprint of the date?) is not the best of his recent works and is too vital to be true. The gleefulness of Kenneth Armitage's



1

crazy, mixed-up girls has become a little mechanical in his 'Two Seated Figures,' 1; furthermore, the formal joke does not carry far, and from a distance the configuration looks like an old table that's rotting away. The unhappiest case of all is Robert Clatworthy's 'Bull.' For some time Clatworthy has seemed to be one of the most promising of our younger sculptors, but this bull is closer to the banality of the Big Gun than any of the knick-knacks produced by members of the Royal Academy of Arts and the Royal Society of British Sculptors. It is a mere facsimile of a bull, with angular slices cut out of its flanks to simulate the slab-like construction of some of his more successful works—a treatment which in fact looks like a jocular reference to beef-cubes.

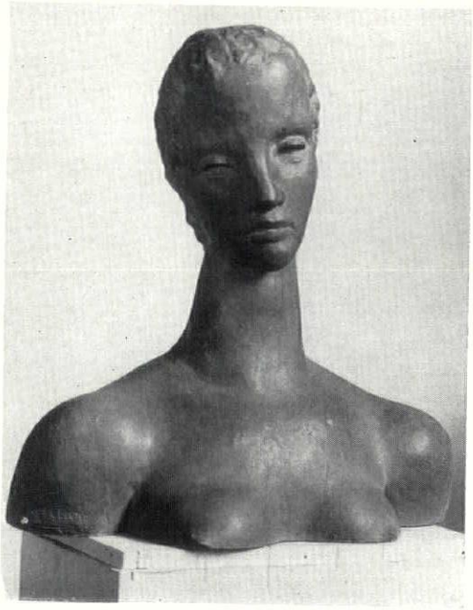
McWilliam's 6ft.-high portrait of Elisabeth Frink, 2, is a likeness which brilliantly reproduces her imposing presence, without managing to become a presence in its own right. Miss Frink herself displays her rather feverish style in a full-length 'Warrior' without arms: it establishes a curious correspondence with McWilliam's effigy, for it has the look of being a male



2

version of her own physique, and can be considered not simply as a warrior, but as an unpremeditated image of Mars disarmed by Venus.

The German sculptor Wilhelm Lehmbruck, who died in 1919 at the age of thirty-eight, was exceptionally gifted, but the notable selection from his sculpture and drawings shown at the Tate Gallery under the auspices of the Arts Council makes it clear that we were seeing his greatest work when his 'Kneeling Woman' was included in an open air exhibition at Battersea Park a few years ago. Sometime before he created the 'Kneeling Woman' he came under the influence of Maillol, and enough of his feeling for the Frenchman's warm paganism remains in this pensive masterpiece to keep its expressionistic elongations within bounds and give its profound melancholy a kind of sensuous equilibrium. Thereafter, his tall, lean



3

figures hunger too demonstratively for the Absolute and lead him into macabrely tormented interpretations of thinking and praying. Even the exquisitely graceful forms of his 'Bust of a Girl,' 3, dated 1913-14 and completed just before he left Paris, seems to me to be marred by the neurotically romantic treatment of the eyes.

The miscellany of sculpture and drawings by six sculptors recently sponsored by the Zwemmer Gallery was given distinction by a masterly bronze of a horse, the work of Marino Marini, 4. It was imagina-



4

tively placed in the proximity of that huge empty shell of a sculpture by Moore, previously exhibited at the Leicester Galleries, which he calls 'Exterior Form'—a kind of deserted womb which ought to look horrible but is made seemly by a hard, strong roundedness—and the Marini horse looks as if it grew inside it and took its shape from it. It would be difficult to pay the Moore a greater compliment, for the Marini, made in 1939, is one of those rare works which, if I may quote Adrian Stokes out of context, we 'go over' with eye and touch 'like devotees clambering over a gigantic idol.'

The name of Ivor Robert Jones is new to me, but he is not a young man and deserves to be better known. His predilection for images of people in late middle-age is not likely to bring him great popularity, but the large figures which he recently exhibited at the Beaux Arts disclose a fine sense of sculptural mass even when, as in the example reproduced here, 5, the



5



6

figure is hollow and backless.

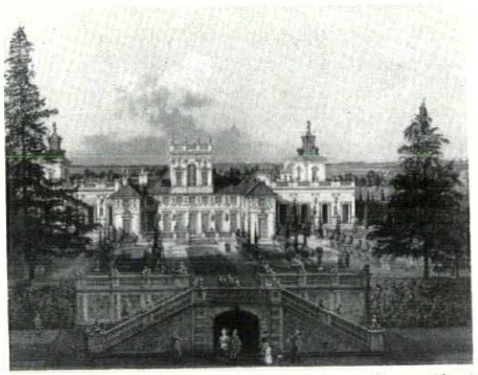
It is rather a long time since Eduardo Paolozzi exhibited a large work, but he has contributed a 68in. bronze called 'St. Sebastian,' 6, to a travelling open air exhibition arranged by the Arts Council, which is probably his most considerable achievement to date. It owes something to Dubuffet's mordantly comic knick-knacks, but has a haunting presence of a kind that is not to be found in Dubuffet's snooty little pumices. Paolozzi's figure is also comic in a fashion, but it is about as amusing as that charred Korean who was seen walking about after being burnt by a naphtha bomb. This may well be Paolozzi's offering to the temple without walls, for, as idols should, it inspires respect for the irrational and the unknown.

Robert Melville

PAINTING

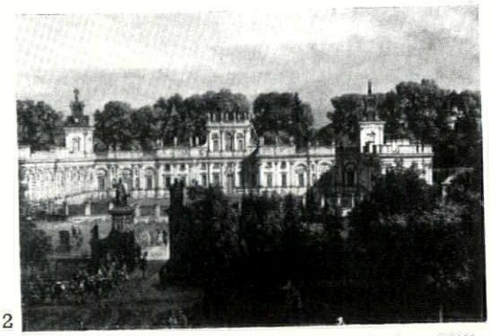
BELLOTTO'S WILANOW

Though unworthy men may gain occasional immortality at the hands of a great portrait painter, it is doubtful if the same is ever true of buildings: the Wilanow palace, that made so great an impression at the recent exhibition of Warsaw Bellottos at the Whitechapel gallery, was clearly worthy of the four great views in which Bellotto fixed its image in its hey-day. Yet it was not the creation of a single architectural mind, and its building history is most unclear. The core of the building is the simple block with short side wings, reputedly designed by King John III Sobieski himself, soon after he bought the site outside Warsaw



1

in 1677. But the rich centre-piece that crowns it in 1 seems to have more in common with the grandiose treatment of the court-face on the entrance side, as it appears in 2, of which Agostino Locci had charge from 1681 onwards, together with a varying team of assistants that included at one time the great Andreas Schluter.



2

However, the main part of the Villa Nuova (for which Wilanow is simply a Polonization) must have been completed before Schluter joined the team, and he seems to have been employed chiefly as a sculptor. Construction work was not re-

painting: Bellotto's Wilanow *is seen opposite*  *in two views of the garden side, from the eastern corner in 3, top (detail), and from the other end of the terrace in 4, below.*

sumed until after the Princess Sieniawski acquired the property in 1720, and set Spazzio and Fontana to work adding the strange 'neo-classical' open galleries on the rear corners of the wings—in 3, Bellotto affords a view into the hollow void of one of these galleries, as well as the equestrian statue of John III in the flanking bay. The sense of spatial penetration in the painting of this gallery is remarkable in an artist of the 1770's, and this rather domestic cornerwise view of so grand a building is also remarkable in another sense, for it provides a clue to Bellotto's mastery in architectural painting. Reference back to 2 will show that there was no structure high enough, nor in the right place, for 3 to have been painted by direct observation, and all the views of the rear of Wilanow have the air of having been constructed from measured or annotated drawings—in other words, the painted buildings were constructed almost as real buildings are. One wonders even if Bellotto had access to architects' drawings among the estate papers, because the grand view along the garden-terrace, 4, raises a problem that suggests he did. The terrace was never completed in the form there shown, but his view cannot be a pure piece of fancy because out of its most fanciful features—the four fir trees planted along the terrace edge—two at least, flanking the central steps, and probably more, can be identified in photographs taken early in the present century.

Michel Santiago

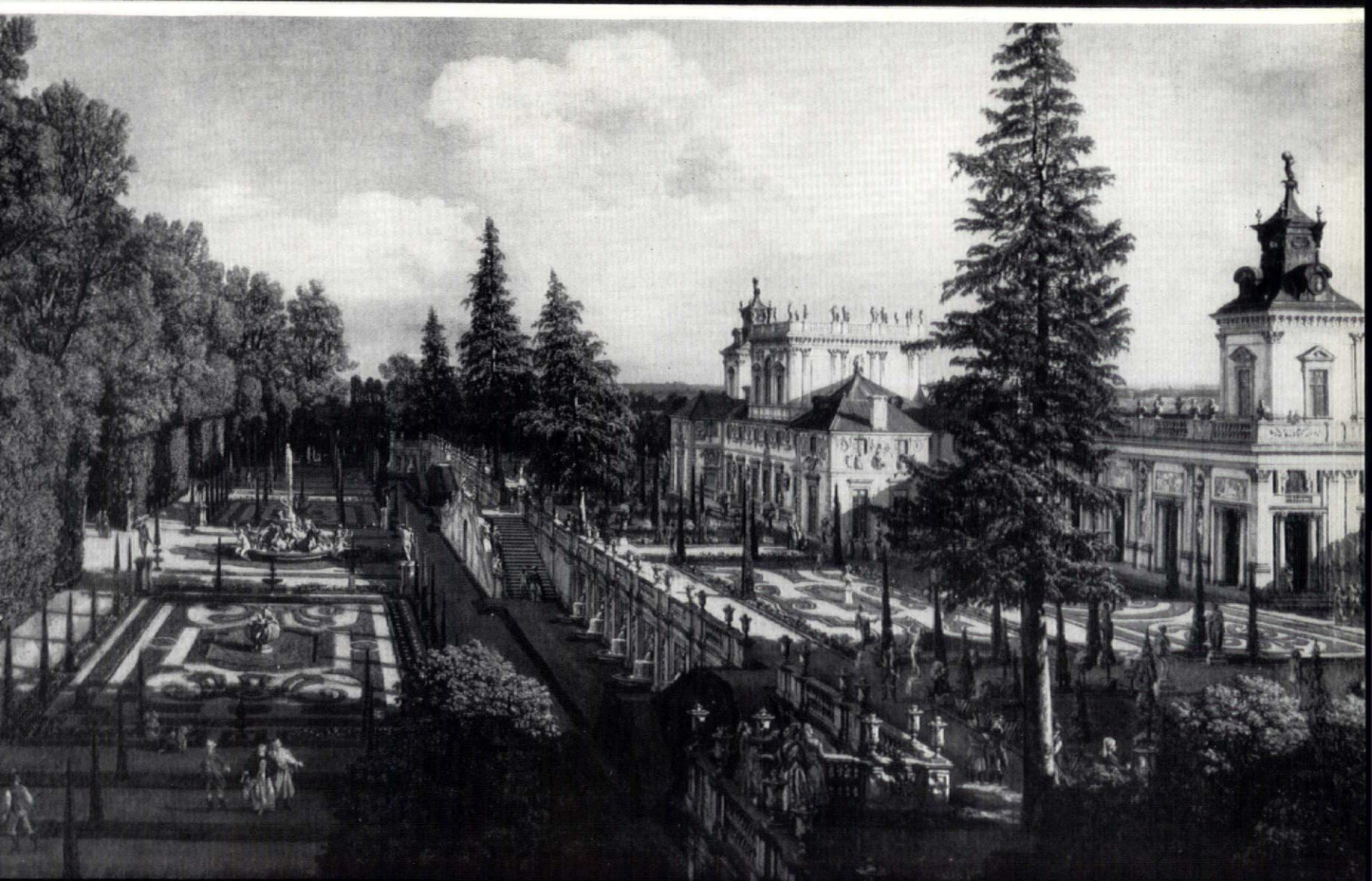
COUNTER-ATTACK

20. Fulham, London (Borough Council): Fulham Grange has now been declared by the Minister of Housing to be 'past saving,' a decision which will hardly surprise anyone who has seen it recently, 1. The Minister's report says: 'Had the Fulham Borough Council been willing to come to terms with Captain Broadwood at the outset, and had the building not become the ruin it now is, there would in all probability have been a good chance of restoring it.' Captain Broadwood wanted to buy the Grange, which consists of nos. 38 and 40 North End Crescent, among the earliest semi-detached houses to be built in this country, and once the home of Samuel Richardson and Burne-Jones, and convert it into flats and maisonettes. He did not want the Council to do the work, or give him the money to do it, he simply wanted to buy the house from them, but they carried out delaying tactics, refused to agree a price, and now the building has deteriorated so much



1

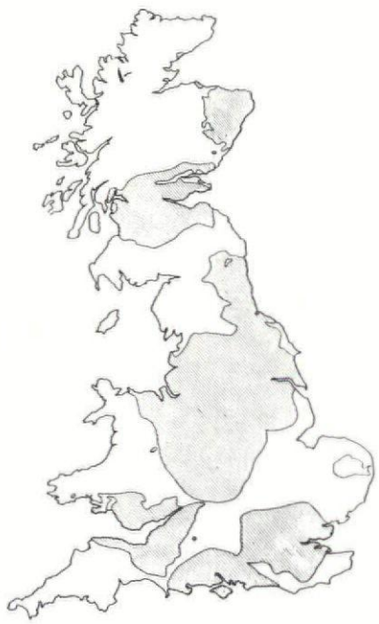




that it will have to be pulled down; the roof has already gone and the house is little more than a ruin, surrounded by a wilderness where the garden once was.

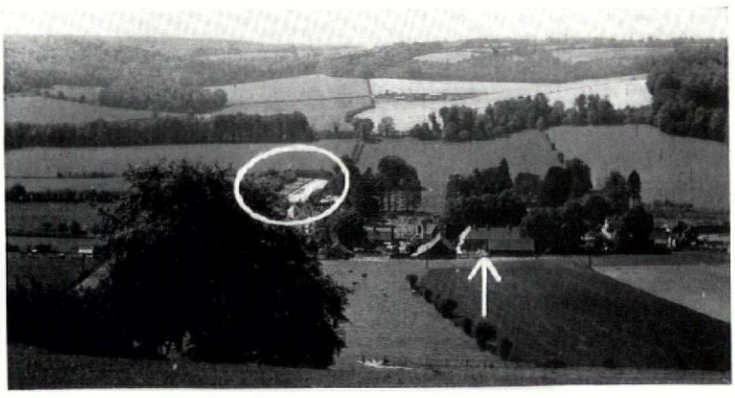
This is a particularly shocking example of the way in which local authorities can, if they wish, legally destroy a building even though it has a preservation order on it; they can harry and muddle and refuse to give a decision, and all the time the timbers are rotting, the windows are broken and no one can do anything about it. There is no reason why decisions like this, where the owner is a public body, shouldn't be subject to the same sort of time limit as ordinary planning applications.

21. Indoor TV aerials: On page 150 are brief details of Labgear Bi-Square indoor aerials. The map, 2, shows the area (shaded) in which the Band 1 aerials will give good results providing the building isn't steel framed. For the first time indoor aerials are now practicable over a large part of the country: the outside aerials have a fairly short life and it is up to planning officers to publicize the indoor models as much as they can: the Bureau will gladly give more information.



2

22. Turville, Bucks (Wycombe R.D.C.): This is the best village in the Chilterns, and the best part of it is the view down by the windmill on the road from Fingest to Ibstone, 3—an immemorial English village group, completely unspoilt, and under forty miles from London. The Council have recently put up two sets of buildings, the cottages (arrowed) which fit into the village beautifully—which in fact make the group look *more* compact than it was before—and the bungalows (ringed) strung out away from the centre along a fearful chalky gash, which will never become part of the village. They seem, inexplicably, to be equally proud of both; in fact one is an ornament and the other an eyesore. Would they, for Turville's sake, do the only thing possible with the bungalows and plant around them as thickly as possible?



3

23. Burnham, Bucks (Eton R.D.C.): In the late 1930's a hole was made in Burnham's pleasant Church Street by the demolition of the old market house and some cottages. Now the Eton R.D.C. plan to fill this gap—with a car park and public lavatories, which will simply perpetuate the hole which one could previously hope was only temporary. The obvious solution here is to build houses or shops back up to the pavement instead of making the street fall even further and more hopelessly apart. It is not too late to think again



4



5

about this and we hope the Council will; the car park could easily be provided with an arched entrance like a coaching inn; Godalming, Surrey, has recently done a very neat job in this way. The then-and-now photographs, 4 and 5, are a fearful example of how a village centre can disintegrate: 4 was taken less than thirty years ago.

24. Richmond, Surrey (Borough Council): Richmond Council seems to have very little interest in the fate of one of the most rewarding towns near London. Its latest lapse has been to approve the demolition of the eighteenth-century shop front of the famous Maids of Honour cake shop, which is to make way for yet another dress shop in a town which already has an unusually large number of them. Although this front is scheduled the Council 'feels it has insufficient power to prevent its replacement'—which is not true, as this could be included as a condition of planning consent—and it has apparently overlooked the obvious solution, of allowing the shop interior to be modernised while keeping the existing windows. In fact, a dress shop window would be far more likely to attract custom as the 'Maids of Honour Shop' than as one more bit



6

of plate glass and marble veneer. Richmond Council should think again before it is too late; if they are not interested in character themselves, they should remember that much of the town's prosperity depends on visitors who come to admire it, and who will soon find little left to admire.

25. Cavendish, Suffolk (Preservation Society and S.P.A.B.): The group of sixteenth-century thatched, lime-washed cottages which cluster round the church on Cavendish Green had been neglected for many years and were in danger of demolition, 7 and 8. They have now been bought by the Cavendish Preservation Society with the help of the Society for the Protection of Ancient Buildings, and will be restored and converted into five homes for elderly and needy people. A



7



8

unique corner of Suffolk will be saved and a new charity created. This could happen just as easily at Bottisham (AR, July, '57): Newmarket R.D.C. please note.

26. Queenborough, Isle of Sheppey (Municipal Corporation): Queenborough is a little-known Kent town with a great deal of character and an impressive wide street running down to the Medway estuary. The Corporation have done their best to keep the street intact in rebuilding, and now they are hoping to obtain a grant from the Ministry of Housing which will enable them to buy the six old houses opposite the church, whose present owners have allowed them to decay to such an extent that it was feared they would have to be demolished. The Council plan, if they can get some money, to modernise the inside of the houses so that people will be happy to live in them, and to preserve the exteriors, which they consider a valuable asset which it is their duty to save; if every town felt like this there would be little need for the Bureau to operate: in particular the nearby towns of Faversham and Milton Regis have magnificent town centres which are rotting away for lack of imaginative official action such as this.

SKILL

A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design review
3 techniques
4 the industry



1, the teak entrance front on Cockspur Street, with specially designed lettering cut out, the white glass being lit from behind.

1 INTERIORS

SHIPPING OFFICES, COCKSPUR STREET, S.W.1

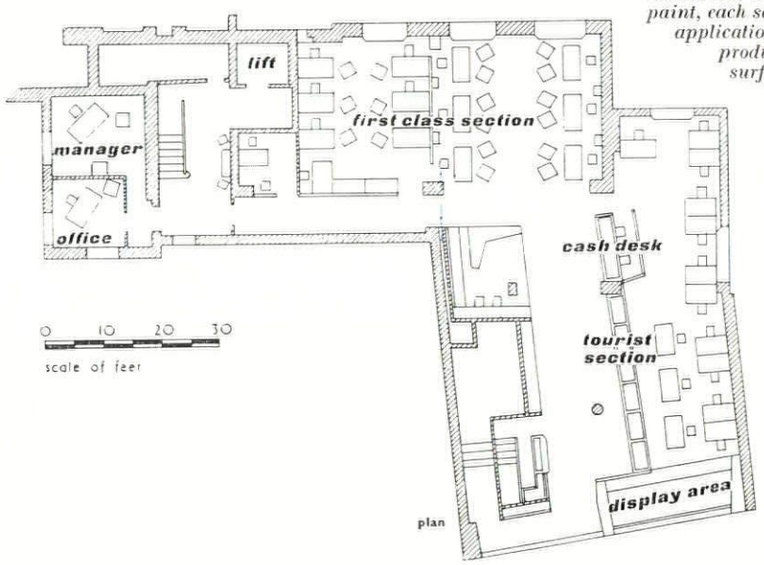
Architect: John Wright

Number 26-27 Cockspur Street is the new booking office of the Orient Steam Navigation Co. Two distinct areas for first class and tourist travel respectively maintain the company's tradition that tourist passenger business is conducted over a counter, and those travelling first class are personally interviewed at desks. The plan is approxi-



2, the waiting space between the tourist and first class booking areas. The melamine plastic table surface was designed by Julia Omen; the painted lines on the walls are coachwork, i.e. numerous layers of paint, each sandpapered before the application of the next layer, to produce a perfectly smooth surface for the black line.

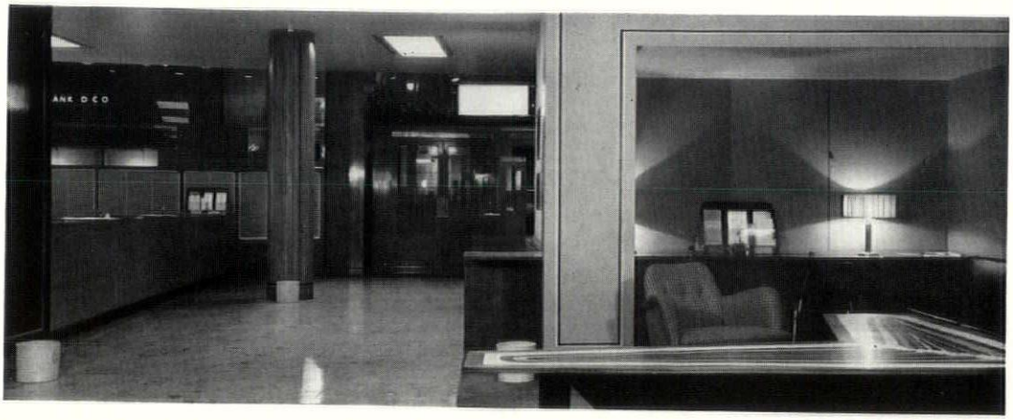
mately 'L' shaped, the top of the long leg of the 'L' being the entrance from the street; the main traffic goes through the front or tourist section, into the first class interview area at the rear. The street elevation has been made with traditional materials, chosen for their weathering qualities.



The interior is designed like a ship, the very high ceiling being lowered and lighting coming from behind it. The room is long and low and the oblong 'windows' of light lead the eye down the length of the tourist counter to the far end. The walls are painted pale blue, plain except for some brass-framed Dufy lithographs fixed flush against them; there is no advertising or display of posters in the interior. In the tourist area all wood work is natural oak with a waxed finish; the counter and the desks

SHIPPING OFFICES IN COCKSPUR STREET, S.W.1

3, *looking towards the entrance and the tourist booking counters.*
4, *view from the entrance towards the first class area.*



3

behind have been designed together, the detail being a fine white inlaid line round each panel and an incised line around the top. The line motif on the furniture is carried through on some columns and one, glossy dark blue, is coach-painted in white and beige. The larger desks in the first class area are of the same design, but made of teak with a pull-out flap on the client side; all the writing surfaces are matt plastic. The chairs are Scandinavian teak and steel with padded seats. A waiting space between the two booking areas is defined by walls painted a khaki beige, and there are shaded lamps and a built-in writing shelf with banquettes.



4

5, *the entrance doors with ceramic handles and push pads.*



5

2 DESIGN REVIEW

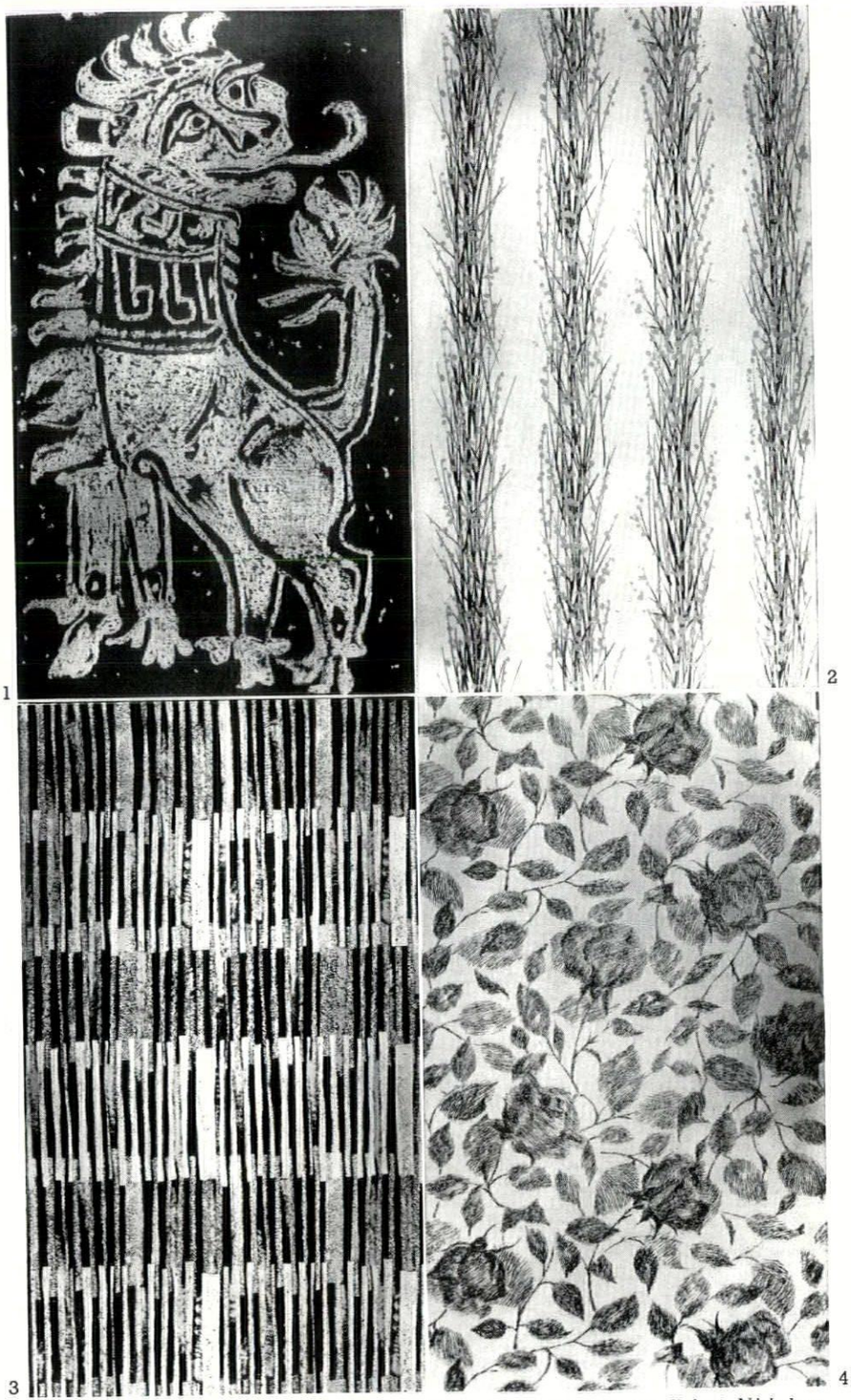
FABRICS AND WALLPAPERS—THREE RANGES

The trend in furnishing fabric design towards new treatments of natural motifs has gathered force in recent years. Even abstract patterns have assumed an irregularity of treatment that seems to derive more from the random mutations of nature, or the accidents of human endeavour, than the ideal perfections of geometry. It is a trend toward the picturesque: nature re-ordered but left with no obvious order imposed, sophisticated but human in scale.

To a greater or lesser extent this trend is reflected in most of the printed furnishing textiles from British firms and is finding expression also in Jacquard woven fabrics which for many years had little to contribute to a modern style. Photography as a tool for reproducing accurately the drawn design, or, in the recent experiments of Tibor Reich, as a technique for creating images which are valid in their own right as sources for pattern making, has contributed more than is perhaps realized. A designer is no longer content to see his deliberately varied line 'improved' and straightened by an anxious-to-please roller maker. At the same time, the camera remains a tool only, and in the decorative arts it is, perhaps, to Jackson Pollock and his followers that we owe our present day concern with the complex surface appearance of nature almost to the exclusion of its underlying architecture, which had been the preoccupation of Braque and Mondrian.

Palladio wallpapers

The second collection of 'Palladio' wallpapers by The Lightbown Aspinall Branch of the Wall Paper Manufacturers has brought a new strength to a range of designs of a type that previously had only existed in isolated examples. Although several straightforward geometric patterns are included, the character of the range as a whole is derived from those designs (either representational or abstract) which, in their scale and execution, evoke the bold growth and the varied textures of nature. Water colour on waxed paper, 1, a dragged brush, 2, chalk on a coarse surface, 3, photographically enlarged pen drawings, 4, have been the artists' means to break down the hard defining edges of flower and animal motifs



Palladio wallpapers 1, *Sicilian Lion, designed by Robert Nicholson. Four colourways, from* 57*s.* 6*d. per piece.* 2, *'Mimosa,' designed by Julius Frank. Four colourways, from* 41*s.* 5*d. per piece.* 3, *'Impasto,' designed by Audrey Levy. Three colourways, from* 41*s.* 5*d. per piece. (One colourway of this design was chosen from The Design Centre as one of the* 12 *'Designs of the Year' by an R.D.I. panel at the invitation of the C.o.I.D.)* 4, *'Phantom Rose' by Audrey Levy. Four colourways from* 32*s.* 6*d.*

and to create visual interest within broad masses of tone. The silk screen technique (comparatively new for paper printing) has been the manufacturer's method of ensuring that the artists' designs were interpreted with accuracy. This combination of imagination in design and skill in reproduction has opened out many new possibilities for wallpapers, both in themselves and in their uses. The industry, which for some time has appeared to rest content with its production of small scale 'contemporary' patterns, has been given a new direction with this range; but there are many householders and architects whose enthusiasm has cooled rapidly when the design of their choice had to be reconciled with their budget for the job. A serious effort should be made to bring the next collection into a more popularly acceptable price bracket.

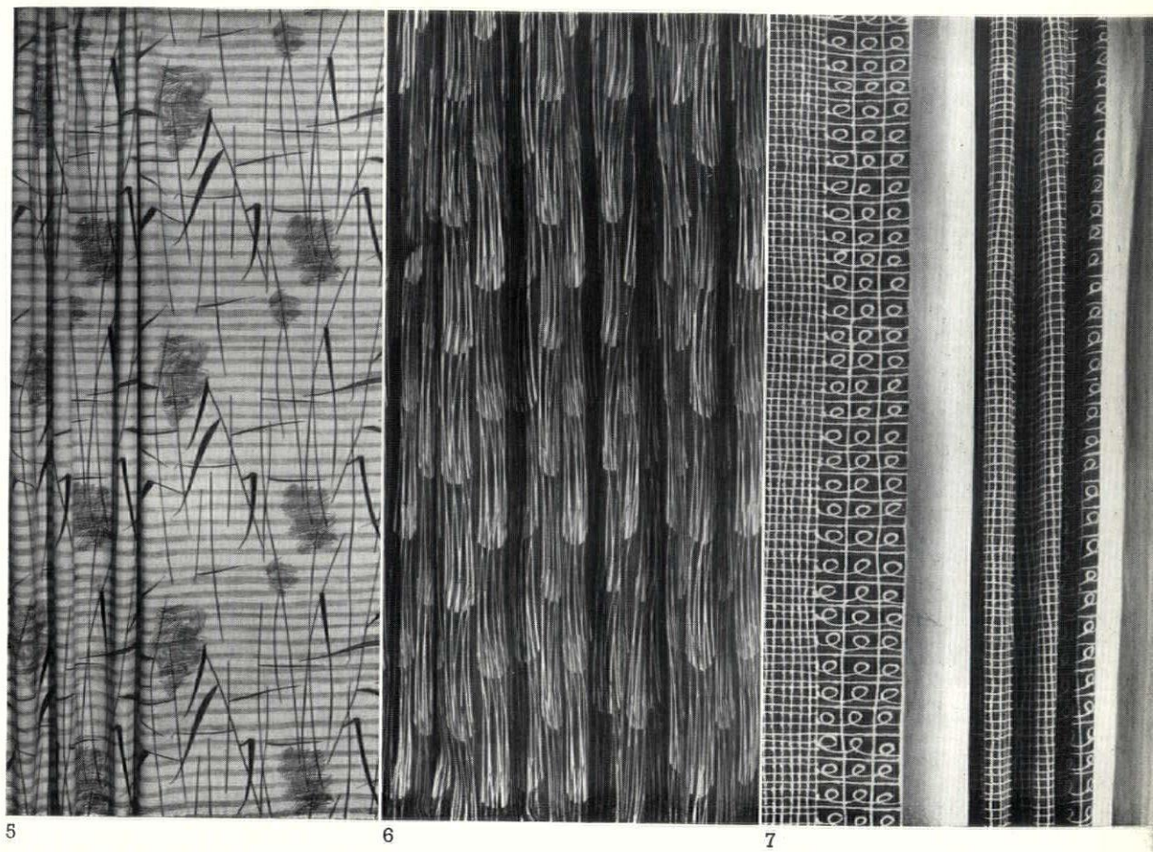
fabrics from Heals and Conrans

The current ranges of fabrics from Heal & Son and Conran Fabrics reveal a more modest interpretation of the naturalistic style in some, but not all, of the individual designs. Both ranges show the influence of previous work, though with Conran the derivation is from a field that is by no means confined to textiles.

For several years Heals have commissioned leading designers for both screen and roller printed fabrics as well as woven designs. The majority of these designs have maintained a fairly rigid geometric character linked with pure and imaginative colour harmonies. The latest range shows a significant departure from this style and an acceptance of the loose, informal abstractions from nature that can be seen in ranges from several other manufacturers. Here, however, quantity production with rollers has led to a restraint in execution which makes some of the designs perhaps more suitable for the average home than the more full-blooded, and expensive, patterns from rival firms.

Although originally a textile designer, Terence Conran shows in his new range of fabrics less affinity with his early work than with his more recent designs for furniture. The skilful use of photographic enlargements of engravings, and more particularly of micro-photographs, as decoration on cupboard doors or table tops, is strongly reflected in the choice of motifs for his new textiles. The intricate but informal network of cells in the 'Tree Section,' by Shirley Conran, is a particularly successful use of micro-photography to create an all-over effect which suggests nature not by representation of recognizable objects, but by the irregularity of natural growth. An enlarged engraving in 'Leaf,' and a drawn texture in 'Matrix' are further examples of visual complexity within a simple structure which are more original than the exercises in Swedish inspired geometry.

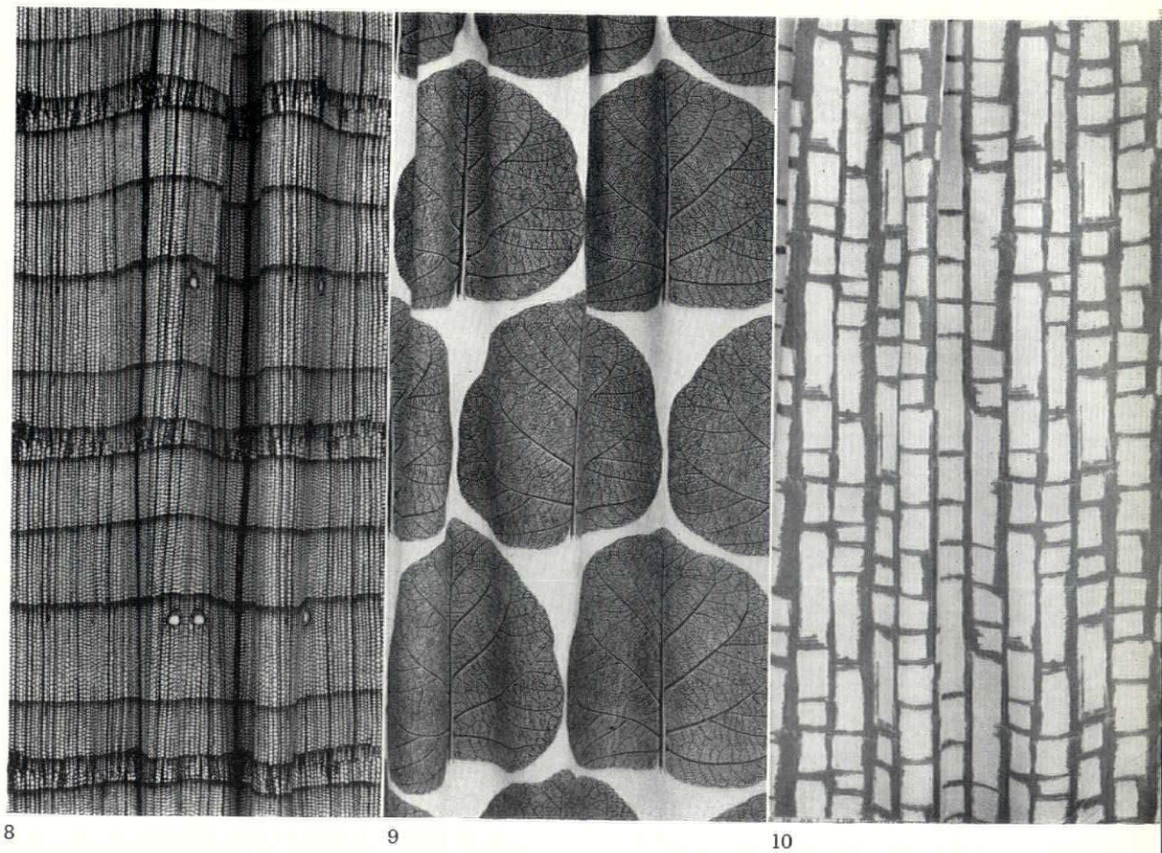
Heal fabrics



5 6 7

5, 'Tarn,' designed by Lucien Day. 6, 'Random,' designed by W. Herrmann. 7, 'Syncromesh,' designed by Michael O'Connell. These designs are printed on cotton, 48 inches wide, at 11s. 9d. per yard.

Conran fabrics



8 9 10

8, 'Tree Section,' designed by Shirley Conran, linen 22s. 9d. per yard. 9, 'Leaf,' designed by Terence Conran, linen 27s. 3d. per yard. 10, 'Matrix,' designed by Shirley Conran, linen 22s. 9d. per yard. These designs are also available in linen voile at 29s. 6d. per yard.

3 TECHNIQUES

DRAUGHT EXCLUSION AND WEATHERSTRIPPING

by Peter Whiteley

The realisation that about a third of the heat loss from a building is accountable to ventilation has caused new interest in the various methods whereby unauthorised ventilation can be stopped. This month, therefore, Peter Whiteley reviews the various methods of draughtproofing windows and doors now open to the English architect, taking into account both those which he can effect himself by careful detailing and those which involve the use of proprietary gadgets.

purpose

The most obvious benefits to be gained by draught proofing external doors and windows are those of prolonging the life of exposed joinery and metalwork due to the extra protection offered, and the improvement of general comfort conditions which follows from the reduction or elimination of *uncontrolled* ventilation, i.e. draughts. It will be useful to define this latter generalization by briefly reviewing the relevant aspects of heating research which has been done in recent years, mainly by BRS, and particularly in relation to housing. The twin goals of improved heating methods and reduced fuel consumption can be equated with reducing the heat loss from a building. In order to reduce heat loss from a building there are essentially three measures which can be taken (in this order of importance):

- **a.** The insulation value of the ground floor, external walls and roof can be improved;
- **b.** the ventilation rate through openings, i.e. flues, windows and doors can be controlled;
- **c.** and double glazing can be provided to windows.

Measurements have been taken which show that heat loss by conduction (i.e. items **a** and **c** above) accounts for approximately 65 per cent of the total heat loss, and the remaining 35 per cent loss is heat loss by ventilation (i.e. item **b** above). It has also been demonstrated that by reducing the air change rate to a reasonable minimum of 1½ to 2 air changes/hour (Egerton Report recommendations), which can be achieved solely by means of well fittings doors and windows, this 35 per cent loss can be reduced by between one third and one half.

BRS therefore recommend that for new buildings (particularly housing) taking into account the cost and availability of materials and the limitations on capital expenditure, a reasonable standard of protection against heat loss will be provided if the U-values of the enclosing walls, floor, and ceiling conform to Housing Manual Standards (Technical Appendices, 1949) *and* if the external doors and windows are well fitting and draught proof.

effectiveness and cost

What should be two quite separate issues, first the relative effectiveness of the various methods or patent systems of draught proofing available, and second the initial cost, tend at the present time to be inextricably mixed; thus it is not possible for the architect to say that **a** method of draught proofing is 50 per cent effective and costs so much, and that **b** method is 100 per cent effective and costs so much. This is regrettable and is due to a lack of reliable data on the effectiveness of each method; manufacturers' catalogues in this field most frequently consist of extensive claims unsupported by any figures arrived at by an agreed system of measurement. So that in the absence of convincing and reliable data as to effectiveness the choice of method at the moment is probably made on first cost (or personal recommendation). But even in the matter of cost, comparative overall prices are difficult to assess due to the mixture of methods: e.g. at one extreme a system which is almost entirely dependent on profiling of joinery and the cost of which is therefore hidden in with the cost of the joinery; and a system which is mainly applied equipment, the cost of which is relatively easy to assess but which may appear artificially high.

If it is assumed that it is desirable that most types of building should be efficiently draught proofed, then it is probably cheaper in first and maintenance costs to design for draught proofing which relies for its effect primarily on the profiling of the sections with the addition of a minimum of applied 'equipment.' Care must be taken in both design and supervision to ensure that frames are adequately and correctly bedded into their surrounds, otherwise they may be a source of draughts—particularly around jambs and heads. With reference to openings in brickwork the relevant code of practice recommends that 'all openings should be rebated if no other weathercheck is intended.' In considering draught and weather proofing which is mainly a matter of joinery sections, it must be taken into account that timber moves seasonally—even if correctly primed and finished; so that although doors and windows may be designed and manufactured to be initially relatively draught proof—additional measures may have to be taken at a later date to improve their performance. On the other hand most 'equipment' has a limited life before replacement becomes necessary, either due to the nature of the material—felt, rubber, plastic, are all perishable, or due to mechanical damage or wear.

There is a proliferation of devices for the draught proofing of internal doors—a characteristically English approach to the problem of draughts, which is, to treat each room as a separate volume with its own openings to be draught proofed. This approach probably springs from an attitude to economy which requires that each room in turn shall be draught proofed, beginning with the living room, until relative comfort is achieved. It will probably be found that if external doors and windows are well fitting and draught proof and if bedrooms are vented into the roof space, then the draught proofing of internal doors will be largely unnecessary, except in special circumstances.

But efficient draught proofing and weather stripping requires more thought and time given to construction details than is customary in English practice.

Details of cost are given, where available, under individual items in the examples illustrated.

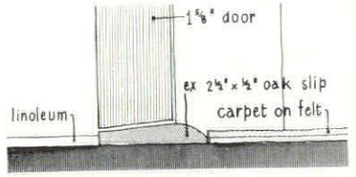
The material will be divided into the following categories:

- (*a*) internal doors;
- (*b*) external doors;
- (*c*) windows.

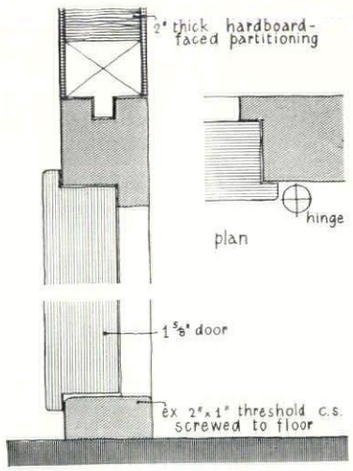
(a) internal doors

The simplest method of reducing draughts around internal doors is the traditional one of providing a raised threshold; either chamfered to match a chamfer on the bottom edge of the door, 1, rebated to fit a system of rebates on the door: variations on this method are still standard practice in Sweden, 2 and 3. In addition it helps to have correctly fitted, good quality ironmongery and a substantial rebate on the stops of the frame—a minimum of ⅝ in. One advantage of the fixed threshold is that differences in floor level and finish cause no difficulty in use. There are at least two non-timber types of fixed threshold; the first is the *Unda-Door* plastic foam threshold by Sealdraught Ltd., which consists of rounded section expanded plastic strip clamped into a metal carrier, which is screwed to the floor in such a position that when closed the door contacts the rounded top of the resilient foam and so effects a draught-proof seal. The price for this is 12s. 6d. for a 2 ft. 6 in. width to 13s. 9d. for a 3 ft. door width. A similar type, but rather more sub-

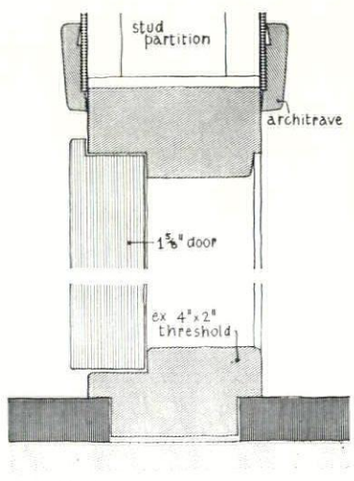
[continued on page 143



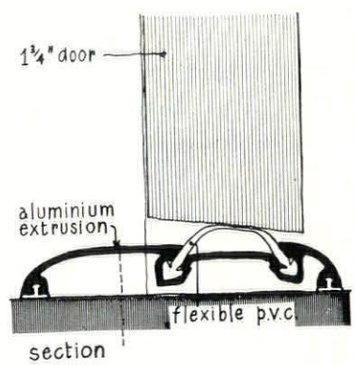
1, *traditional English detail of internal door threshold.*



2, *internal threshold in experimental flats at Gothenburg by William-Olsson, Granholm & Carlsson.*

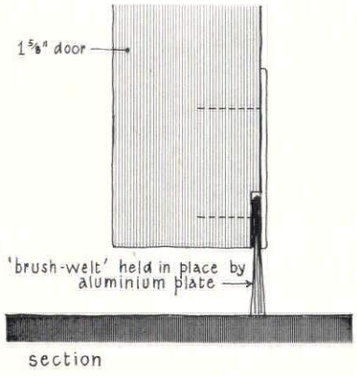


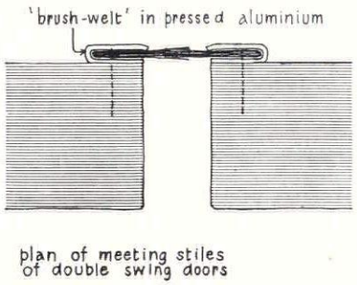
3, *internal threshold in prefabricated houses designed and manufactured by member firms of Aktiebolaget Svenska Trähus.*



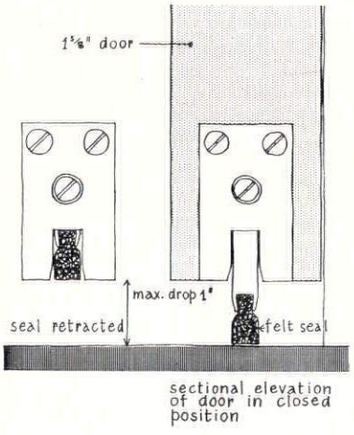
4, *'Duraflex' threshold by Adams & Benson. Price £1 16s. 9d. for 3 ft. width (supplied only).*

internal doors—(cont.)

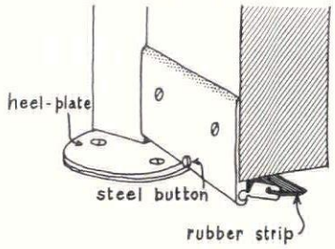




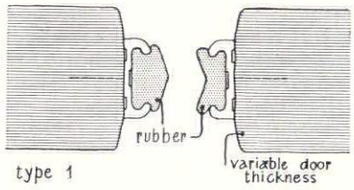
5, 'Brush-Welt' *by Kleen-e-ze Brush Co. Price 2s. 0½d. per ft.* 'Kez-strip' *(not shown), price 1s. 11½d. per ft.*

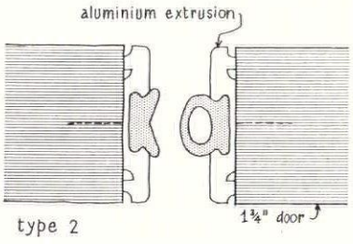


6, 'In-dor-seal' *by Chamberlin Weatherstrips. Price approx. £3 for 3 ft. width (supplied and fixed).*

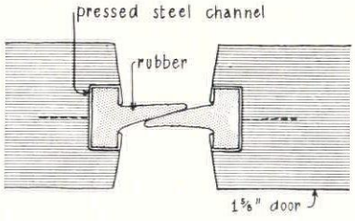


7, 'Fix' *internal door seal No. 340 by Tomo Trading Co. The clearance between the bottom edge of the door and the floor should be 20 mm. or ¾ in. Price £3 for 3 ft. width (supply only).*





8, *two types of sliding door buffer strip and draught excluder by Metal Mouldings. Aluminium extrusion supplied in 12 ft. lengths only. Price: upper one—17s. 0d. for two meeting edges of pair of 6 ft. 9 in. doors (supply only): lower one—£1 12s. 6d. (supply only) for same quantity.*



9, *swing door draught excluder by Metal Mouldings. Metal supplied in 12 ft. lengths only. Price 12s. 3d. for pair of meeting stiles of two 6 ft. 9 in. doors.*

continued from page 142]

stantially made than the first, is the PVC in aluminium threshold, 4, which may be used to seal the thresholds of both internal and external doors. The *Duraflex* threshold, which has been in use in the USA for a number of years, consists of a flexible PVC strip arched into a base of extruded aluminium and is effective by means of a 'spring action' against the bottom of the door. The manufacturers claim that it is also rain and snow proof when used externally, but due to the rounded profiles of the PVC and aluminium and the action of the door it is difficult to see how this can be so.

Another material which is being increasingly used as a draught and dust excluder, particularly in industrial and vehicle applications where other materials or methods are inapplicable, is continuous brush strip; the bristles being held together by either a sewn canvas backing '*Brush-Welt*' or within a continuous aluminium pressing '*Kez-strip*,' 5.

The following two examples are of the vertical movable seal type attached to the bottom of the door, the seal being raised on opening, and lowered on closing the door. Both types can be face fixed or recessed into the thickness of the door; in the first example, 6, the movable seal is a strip of hard felt, and in the second by British Hermeseal Ltd. the movable seal is an extruded rubber strip.

Another movable seal type of which there are three examples is where the seal is a door-width hinged strip (of a variety of materials) which is raised around a hinge on opening the door. The first of these, the *Sikrex* Newfour draught bar by Neilson & Barclay Ltd., is a face fixed construction of hard aluminium alloy or brass in which the seal is a purely mechanical one of metal to metal. The sealing strip, which is hinged within a metal slot, is fixed to the door and operates by gravity against a lipped metal threshold; unfortunately the whole device—threshold and movable seal, both of which are still fully visible when the door is closed—looks rather unsightly in use. The second of this type, the *Auto-Seal* by Sealdraught Ltd., does not involve the use of a threshold, but consists of a hinged rubber blade fixed by a continuous hinge to a plate which in turn is fixed to the underside of the door; a small stud on the opening edge of the door at floor level engages in a catch set into the door frame and lowers the seal when the door is closed by means of two springs. Price of internal drop seal (including fixing) is £4 15s. 0d. for 3 ft. width. The third example, 7, is a Swedish pattern fixed to the face of the door (which consequently also acts as a kicking plate) and consisting of two brass profiles of which the visible one is nickel plated, and into the other movable member is fixed the rubber strip. The brass profile has a steel button which slides up the wedge-shaped 'heel plate' as the door is opened, which lifts the movable section clear of the floor. The reverse action is by gravity operating the weight of the brass and rubber seal.

The familiar spring phosphor-bronze strips may also be used around the edges of internal doors—as with external doors and windows (see 24), though there is always the danger of mechanical damage to the floor strip—perhaps even more so on internal doors where a slight threshold obstruction is more nuisance than a substantial one.

As an aid to some of the previous methods and for use on existing internal doors there are the foamed rectangular strips, the first of which is *Stick-a-seal* self-adhesive plastic foam by Sealdraught Ltd., which is obtainable in thicknesses ⅛ in., 3/16 in. and ¼ in., and in widths from ⅜ in. to 4 in., price 5s. 3d. for 20 ft. coil of ½ in. by ⅜ in. section, a second type is an adhesived sponge rubber sealing strip—*Stika-strip* by Howard Clayton-Wright Ltd. This is sealed against water or moisture absorption and will stick (on moistening with petrol) to most materials and surfaces; this is also available in many rectangular and square sections from ⅛ in. to ¾ in. thick and 3/16 in. to 1½ in. wide. Price 6s. for 16 ft. coil of ⅛ in. by ½ in. section.

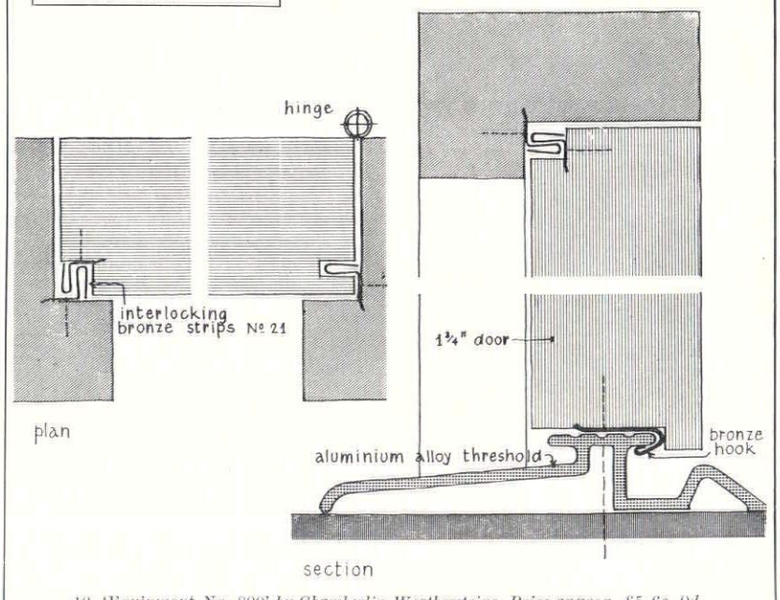
One firm supply draught excluder and silencer strips for sliding doors and also for swing doors. The first, 8, is a sliding door buffer strip and draught excluder of stainless steel or aluminium extrusions containing a variety of rubber profiles to suit different conditions. The second, 9, is a swing door draught excluder and silencer the operative parts of which are rubber profiles set into pressed steel channel sections which are screwed into a recess within the thickness of the door.

(b) external doors

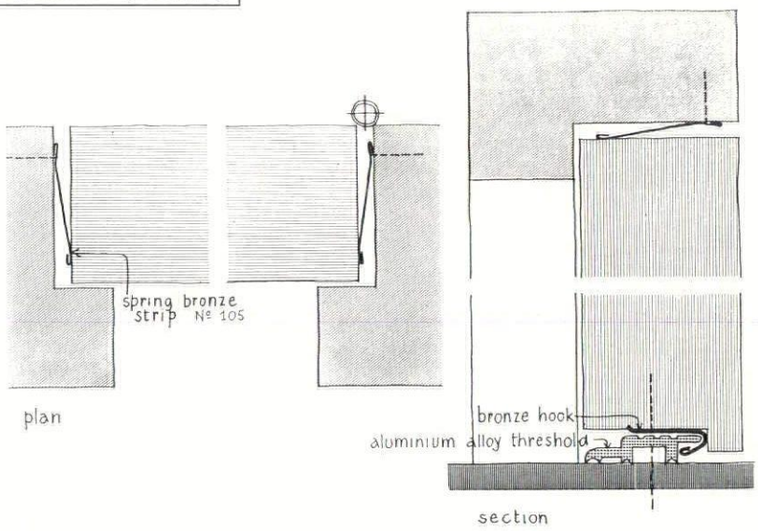
The traditional methods of detailing external doors, particularly at the threshold, where the effectiveness is entirely a matter of joinery profiling, are not altogether successful from a draught-proofing and weathering point of view. The problems to be solved are more difficult in the case of inward opening doors which are the custom in English domestic buildings, coupled with a singular unconcern for side and head frame details which are generally just a single rebated stop as on an interior door. It would seem that to be draught proof the side and head members of an external door frame need to be as carefully detailed as the threshold section; or to put it another way, that the detailing of doors requires as much care as the detailing of windows if both are to be weatherproof.

The first two examples are of all-metal sections added to simple joinery; 10 is a concealed interlocking system in zinc or bronze strip for inward opening doors and a cill which

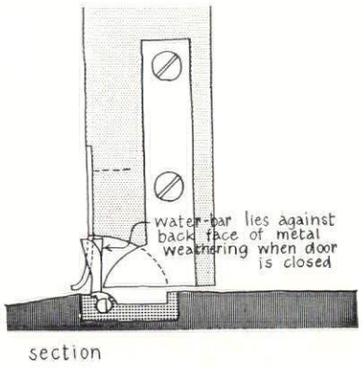
external doors

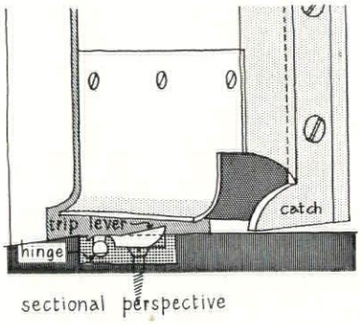


10, 'Equipment No. 800' *by Chamberlin Weatherstrips. Price approx. £5 6s. 0d. for complete equipment for a 6 ft. 9 in. by 3 ft. door (supplied and fixed).*

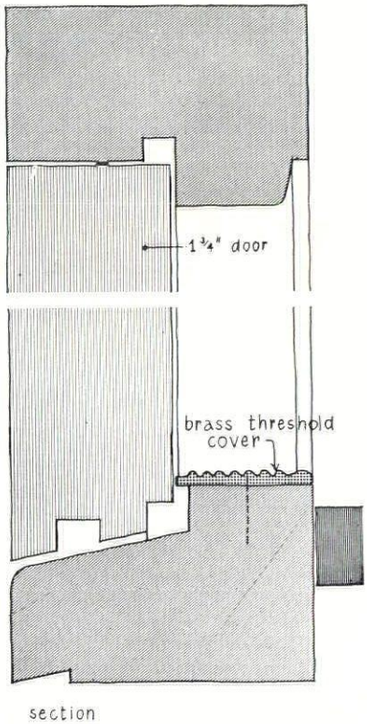


11, 'Equipment No. 800-A' *by Chamberlin. Price approx.* £4 16*s.* 0*d. for complete equipment for a* 6 *ft.* 9 *in. by* 3 *ft. door (supplied and fixed).*

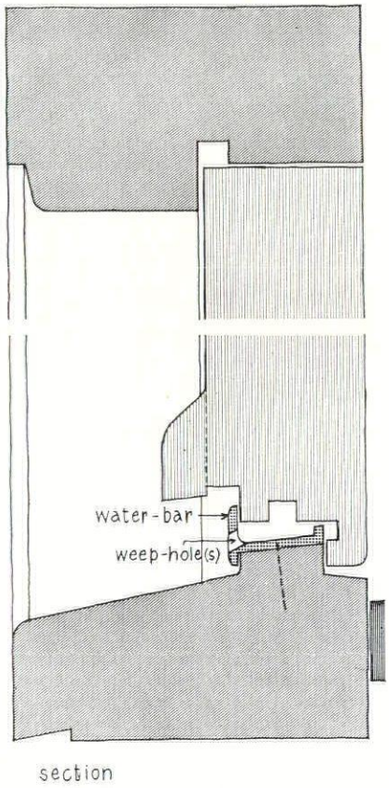




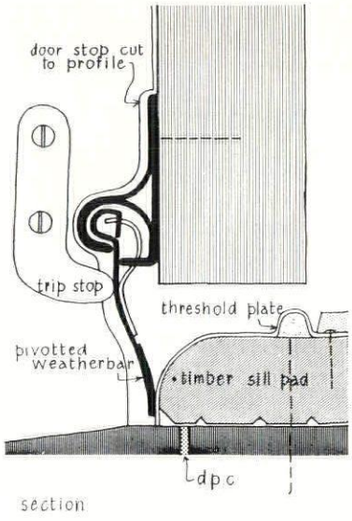
14, 'Water Bar' *B4213 (shown) for flush thresholds by James Gibbons. Price* £4 2*s.* 6*d. for* 3 *ft. width (supplied only). Also B4213A for raised thresholds, price* £4 7*s.* 6*d. for* 3 *ft. width. Both of these types are available for use with inward opening or outward opening doors.*



12, 'Fix' *internal brass threshold cover No.* 480 *by Tomo Trading Co. Price* 4*s.* 6*d. per ft. (supplied only).*



13, 'Fix' *aluminium water-bar No.* 350. *Price* 3*s.* 3*d. per ft. (supplied only).*



15, 'Sikkar' *weatherbar Type No.* 1 *by Neilson & Barclay. Price approx.* £1 *for* 3 *ft. width (supplied only).*

is a simple mechanical joint of a toughened bronze hook fitting over a threshold section of aluminium alloy (or manganese bronze) appropriately shaped to receive it when the door is closed. This system is more appropriately fitted to new joinery. Another type by the same manufacturer, 11, is that of spring bronze sections fitted to jambs and head of the frame and a simple hook threshold; this system is adaptable to existing joinery.

An imported Swedish type of brass threshold cover is illustrated in 12; it is intended for use with single or double casement doors opening outwards with a suitable system of rebated and grooved stops. The front edge of the threshold acts as a stop for the door, and also when the door is shut as a draught excluder. Another type by the same firm, 13, is an extruded hard aluminium alloy water bar for use with inward opening doors and casement windows (see also 17); it is generally screw fixed to a hardwood cill and at intervals along its length is provided with a number of weepholes to allow water to escape.

There are a number of types of threshold seal which rely for their effect on a hinged action. The first, 14, is a bronze hinged water bar operated by an automatic catch on the lock side of the door at threshold level, obtainable for flush or raised thresholds, and for inward or outward opening doors. This is a most suitable type for an exposed situation where there is much traffic and consequently where a cumbersome raised threshold would be dangerous. (It is also beautifully made and finished.) Another type of movable water bar threshold seal is the *Sikkar*, 15, weather bar in four types. This is made from *Dalzo* weather resisting steel and is gravity operated; it consists of a hinge bar assembly (consisting of a fixed plate and a hinged plate) which is screwed to the bottom of the door, a threshold plate, and a trip stop which pushes the hinged plate down against the threshold when the door is closed.

(c) windows

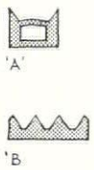
The most common traditional arrangement, aimed at draught-proofing casement windows, is probably that of fitting the sashes proud of the frame and giving them a lip to cover the necessary clearance be-

[continued on page 145

continued from page 144]

tween the two members, generally referred to as 'storm proofing' (variations according to the manufacturer), 16. Designers and manufacturers of good quality wood windows, particularly those in the Scandinavian countries, generally agree that it is virtually impossible to obtain draught-proof windows by relying on this or any similar system of single or double rebates; most of them are in favour of depending on one of the rebates only for draught proofing, leaving the other slightly open and adding one large square groove where the inrushing air can expand and thus help to check its speed. Experiments by the Swedish State Building Research establishment indicate the value of this groove (which must be square in section) to prevent driving rain from entering. The rebate designed for a close fit will depend for its efficiency on the hardware used to hold the sash into the frame, but with the need to allow adequate room for paint (or clear finish) and also for the moisture movement of the wood, it is desirable to fix into this rebate a continuous flexible strip to seal the gap completely when the sash is shut, 17, 18 and 19.

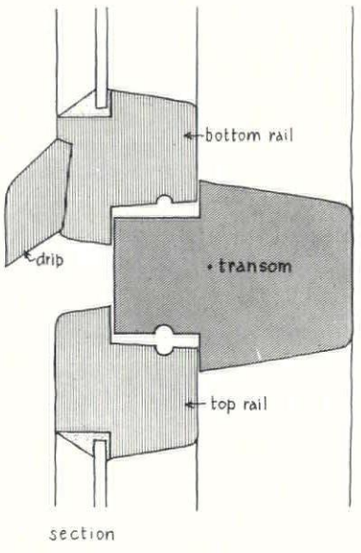
Gaskets of rubber, neoprene (synthetic rubber), felt, plastics, and woven woollen cords are the most common alternatives. In Scandinavian experience it has been found that some of the fabric, rubber, and plastic gaskets have not stood up well to wear and weather, so that now the two most generally preferred sealing strip materials are good quality woollen cords (it is important that they should be of the correct dimension for the job) and a newer extruded neoprene obtainable in two alternative sections.



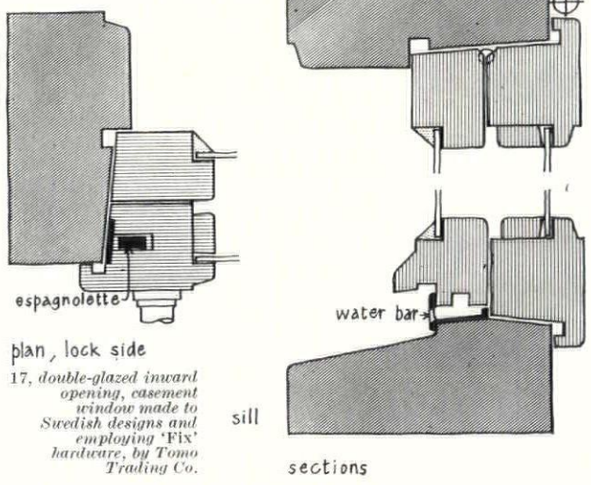
20, 'Fix' *weather sealing strips of neoprene: A, No. 768 intended for a pre-cut groove; and B, No. 770 for surface fixing. Each approx. 6d. per foot.*

20A is intended to be fixed into a pre-cut groove in the sash, and 20B is for surface fixing to new or existing window sections. In the case of woollen cord, it should be remembered that the cord to retain its springiness must not be covered with paint, in fact it should normally be fixed into its rebate after all painting has been done (and similarly again at each re-painting). The first, 21, is an interlocking system for outward opening casements, the equipment being concealed within rebates in the sashes; it allows for moisture movement of the sash or frame, and as the equipment does not interfere with the swinging action of the sash, the windows are consequently easy to operate. Another system, 22, is an exposed interlocking one for inward opening casements which is equally suitable for fitting to existing unprotected windows. Experience has shown that if there is no objection to the metal sections being visible this system is effective in extremely exposed situations. The third example, 23, for timber windows is a simple system of metal loops sliding in grooves in the sashes, for sliding sash windows in which the balances—tapes or weights—are housed within the sash stiles. 24 shows cushion bronze equipment fitted to standard metal casements.

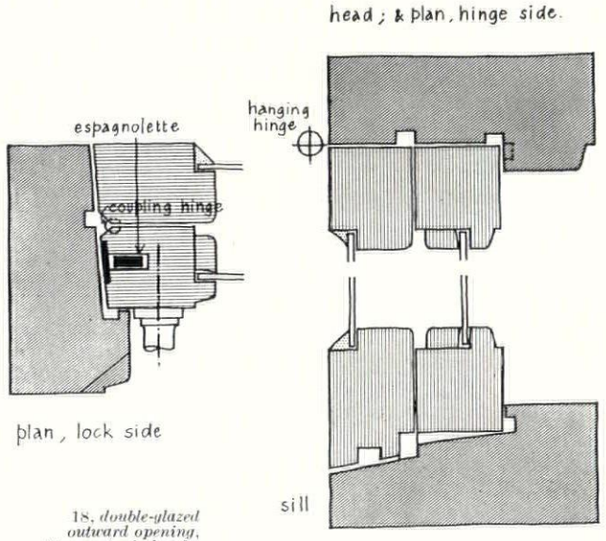
windows



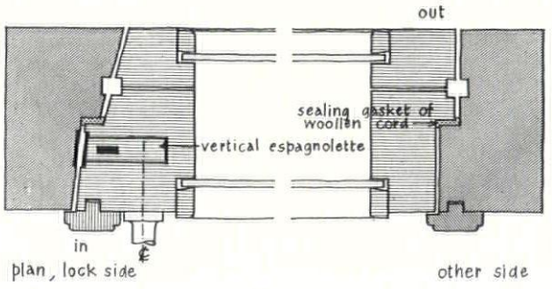
16, *vertical section through transom with opening lights of typical E.J.M.A. type casement window.*

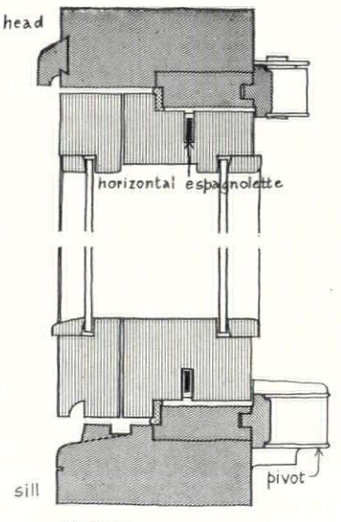


17, *double-glazed inward opening, casement window made to Swedish designs and employing 'Fix' hardware, by Tomo Trading Co.*

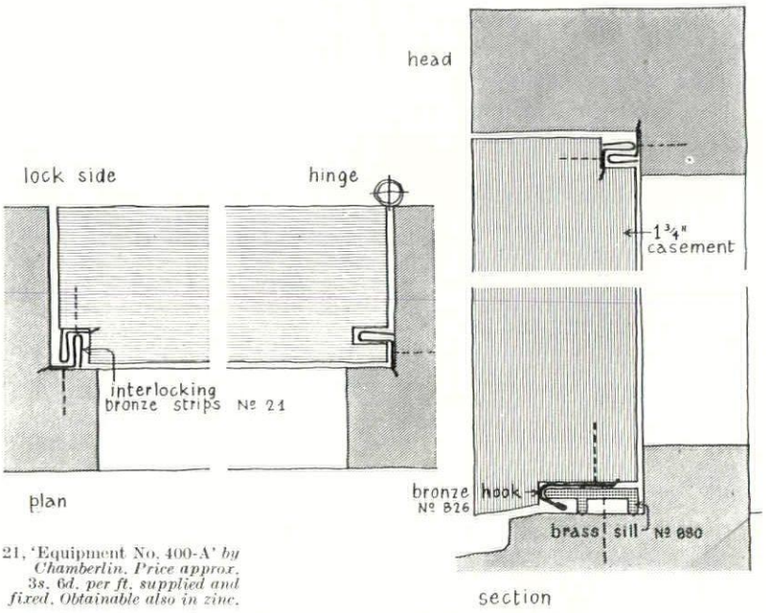


18, *double-glazed outward opening, casement window by Tomo Trading Co.*

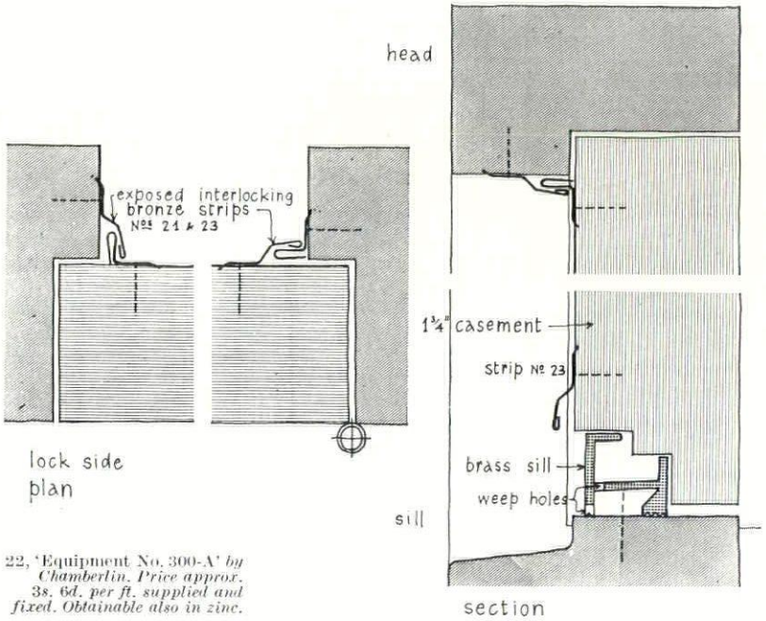




19, *vertically pivoted double glazed window by 'Reventa' made under licence by C. W. Norris Ltd.*

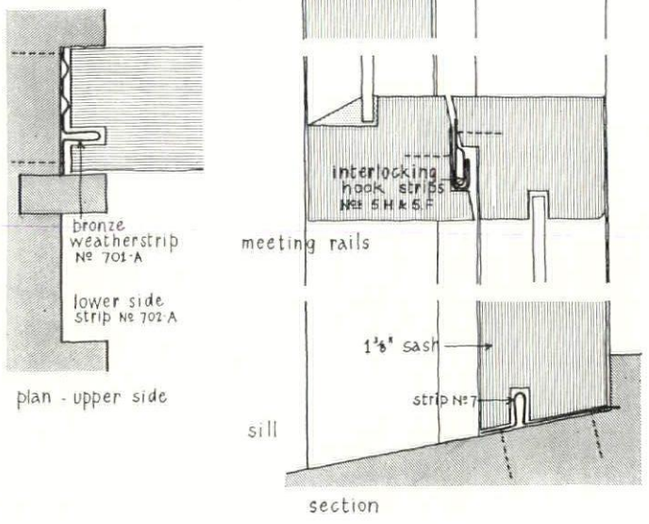


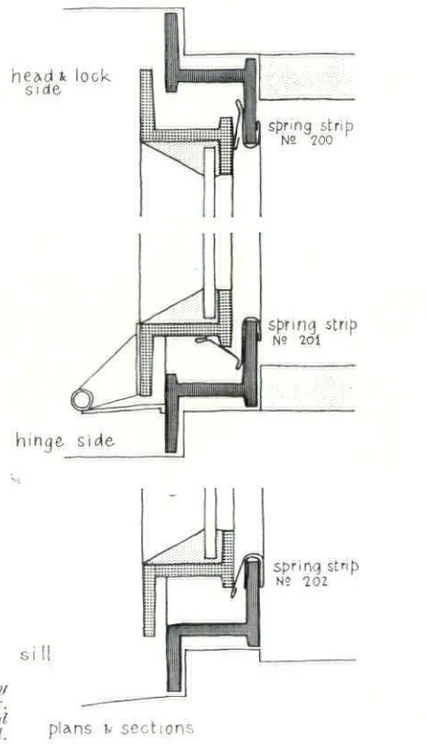
21, 'Equipment No. 400-A' *by Chamberlin. Price approx. 3s. 6d. per ft. supplied and fixed. Obtainable also in zinc.*



22, 'Equipment No. 300-A' *by Chamberlin. Price approx. 3s. 6d. per ft. supplied and fixed. Obtainable also in zinc.*

23, 'Equipment No. 100' *by Chamberlin. Price approx. 4s. 3d. per ft. supplied and fixed. Obtainable also in zinc.*





24, 'Equipment No. 700-A' *by Chamberlin. Price approx. 4s. 6d. per ft. supplied and fixed.*

If the windows to which this equipment is to be fitted are already moderately tight-fitting the spring compressive action of the cushion bronze will make them extremely difficult to operate.

manufacturers

Aktiebolaget Svenska Trälus, Birger Jarlsgatan 27, Stockholm.
Sealdraught Ltd., Chandos House, Buckingham Gate, S.W.1.
Kleen-e-ze Brush Co. Ltd. (Industrial Division), Hanham, Bristol.
Chamberlin Weatherstrips Ltd., 436 Hook Road, Chessington, Surrey.
British Hermeseal Ltd., 4 Park Lane, W.1.
Tomo Trading Co. (Fix), Packet Boat Dock, Cowley Peachey, Middlesex.
Metal Mouldings Ltd., Park Royal Road, N.W.10.
James Gibbons Ltd., 74 Southampton Row, W.C.1.
C. W. Norris Ltd. (Reventa windows), Farnworth, near Bolton, Lancs.
Neilson & Barclay Ltd., Laighcartside Street, Johnstone, Renfrewshire.
Adams & Benson Ltd. (Duraflex division), Oldbury Road, Albion, West Bromwich, Staffs.
Howard Clayton-Wright Ltd., Wellesbourne, Warwick.
Draftsele Ltd., 44 Dean Street, Newcastle-on-Tyne.

4 THE INDUSTRY

Fire Protection of Large Factories

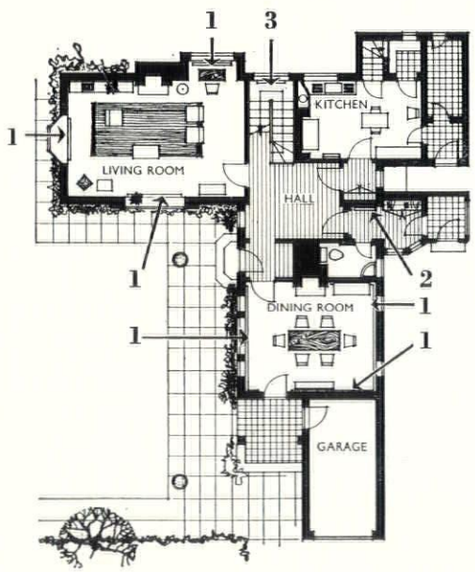
One of the effects of the Jaguar fire on what we may call 'professional fire-fighting quarters' has been to direct attention to the problem of fire limitation in large factories. The dream of architects and industrialists alike of vast uninterrupted floor areas presents a new and exceptional fire hazard which requires a new approach to fire-fighting. The problem is how to contain fires within these wall-less spaces and, having contained them, how to prevent the build-up of smoke (which hinders fire-fighting) and the build-up of heat (which risks an explosion). In order to investigate this problem and to test their solutions for it, two manufacturers, Cape Building Products Ltd., and Colt Ventilation Ltd., carried out a test on May 28 last on a specially erected building representing in dimensions and structure three bays of a typical single-storey factory. The solution proposed was to install (*a*) an asbestos fire curtain to contain the fire and shield adjoining spaces from the heat



This 3-bedroomed house near Tunbridge Wells was built in the 1930's. It has a fine view across the Weald of Kent. The up-to-date heating system is oil-fired, with fuel supplied by Shell-Mex and B.P. Ltd.

A HOUSE WITH MODERN HEATING

and a lovely view



1. *Skirting heating*
2. *Concealed radiator in hall*
3. *Boiler room with outside access below stairs.*

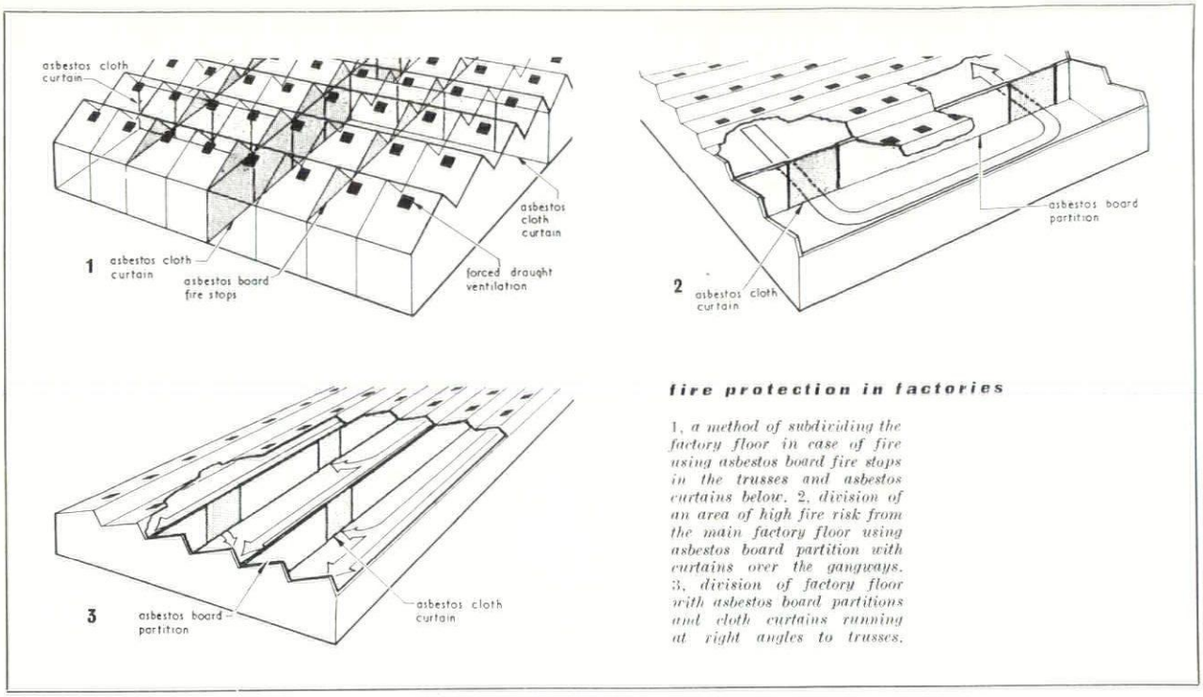
A DELIGHTFUL FEATURE of this attractive house is its beautiful situation. Built in the early 1930's, it is over four hundred feet above sea level and has an open view of over seven miles to the North across the Weald of Kent.

In 1954 the house was purchased by its present owner who, before moving in, added to its comfort and amenity by installing central heating. Lounge, dining room and landing were fitted with Crane skirting heating, while five radiators were installed in other rooms. An oil-fired boiler, situated in a small separate room below the stairs, supplies the hot water requirements as well as the central heating system.

Oil-fired heating is supremely clean, efficient and labour-saving; and oil fuel bought in bulk is surprisingly economical. It is suitable for blocks of flats and public buildings and, increasingly, it is being installed in houses of every type and size.

From hot water supply in the smaller home to full central heating in larger buildings there are now available special oil-fired units designed for every requirement. Two kinds of oil are supplied for heating – Shell Domestic Fuel Oil for the larger installations and BP Domesticol, the new fuel specially developed for the smaller boilers with vaporising burners.

If you are designing or modifying almost any kind of building, public or private, you may well find it worth your while to make provision for this modern, convenient heating method. For further information write to Shell-Mex and B.P. Ltd., Fuel Oil Dept. FD1J, Shell-Mex House, Strand, W.C.2. This, naturally, will not place you under any obligation.



fire protection in factories

1, a method of subdividing the factory floor in case of fire using asbestos board fire stops in the trusses and asbestos curtains below. 2, division of an area of high fire risk from the main factory floor using asbestos board partition with curtains over the gangways. 3, division of factory floor with asbestos board partitions and cloth curtains running at right angles to trusses.

continued from page 146]

generated, and (*b*) Colt dual-purpose fusible link heat and smoke ventilators to eject smoke (and thence heat also) through the roof. The building itself was lined throughout with Asbestolux and was sheeted partly with standard corrugated metal, partly with Robertson Thain's 'Galbestos,' and partly with the same firm's R.P.M. sheeting. One side of the building was loaded with combustible material which, on being lit, rapidly produced a maximum temperature of 2,450°F. The curtain unrolled, the ventilators switched on in the compartment containing the fire, and after half an hour's burning the fire was put out and stock was taken of the damage. Briefly, it was established that the ventilators were able to clear the smoke and effect a reduction in temperature after ten minutes and that the asbestos curtain was able to hold the fire in check and to provide an effective shield against radiant heat. In the discussion which followed the tests a number interesting points were made. Cape Building Products Ltd., proposed that the incidence of fire curtains should be based on the LCC's requirement that no factory space should be greater than 250,000 cu. ft.—which means in effect a floor area of 10,000–12,000 sq. ft. The diagrams on the left, taken from Cape Building Products literature, shows three ways in which this can be done. The cost of a fire wall 100 ft. long by 18 ft. high was given at about £1,300–£1,500. Another point discussed was how to get the smoke away in a multi-storey factory. Granted that it is essential to eject it through the roof, the only acceptable suggestion put forward was that of Mr. Strauss of the New York Office of General Motors, which was to run a vertical duct adjoining the stair wall. Another important point which is as yet unsettled is the correct area of roof ventilation. It seemed agreed that this should be related to the fire load. The only figures given were those attributed to General Motors, who were reported to be working on a 2 per cent area for a 'low fire load' and 5 per cent for a 'high fire load' in their factories in America, reducing these figures to 1½ per cent and 3 per cent respectively in their factories in this country. In all this was a very worth while event. If all British manufacturers were to interpret their interests in this intelligent and helpful way, how much more rapidly would our building technology advance!

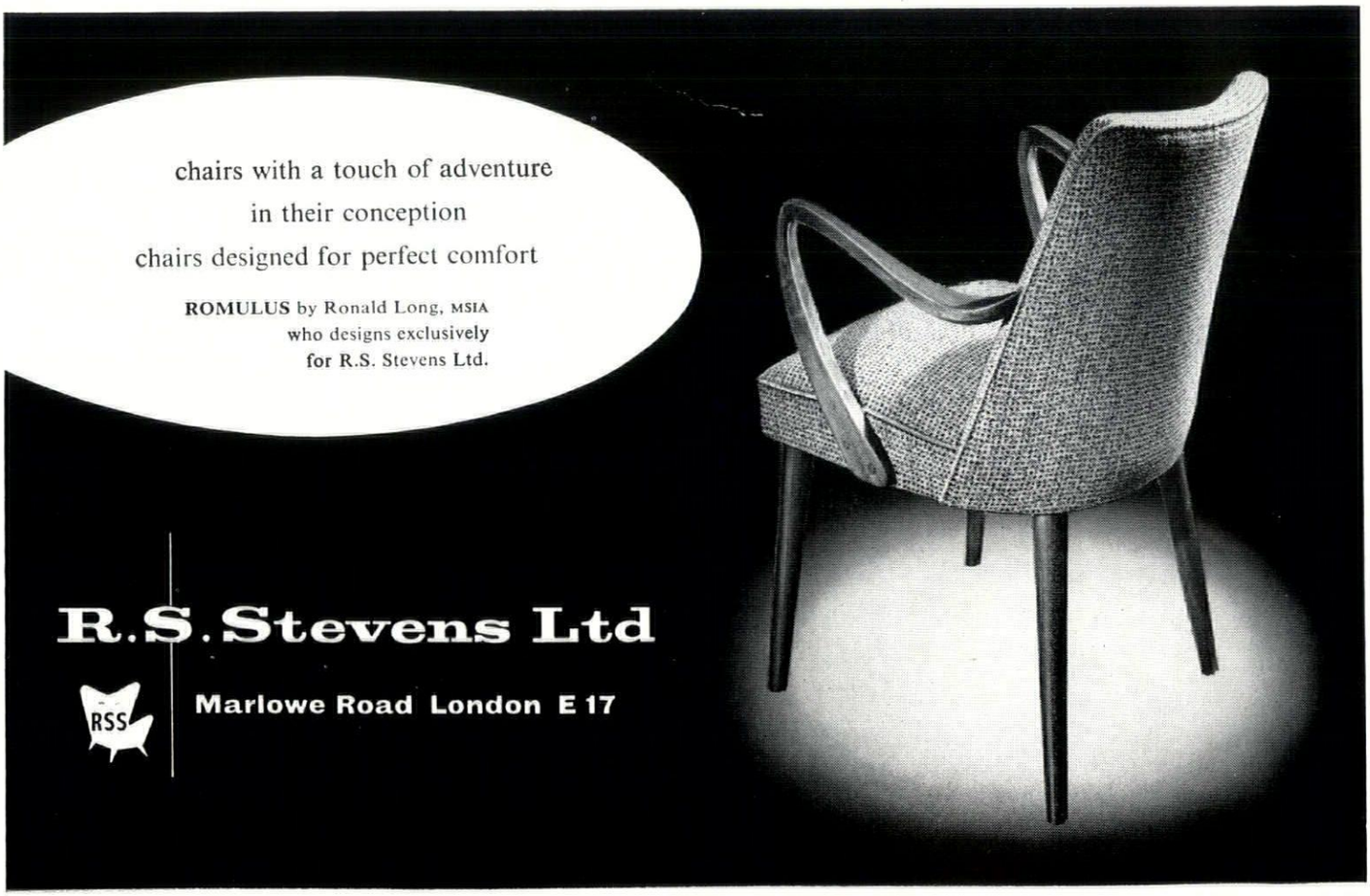
Cape Building Products Ltd., Cowley Bridge Works, Uxbridge, Middlesex.

Colt Ventilation Ltd., Surbiton, Surrey.

Pierhead Flat Slab

The desire for flat uninterrupted ceilings which was originally based on aesthetic motives and was therefore somewhat ridiculed in those circles where aesthetics are traditionally disregarded, has now proved to be at

[continued on page 150





Fibreglass behind the iron curtain

Why was Fibreglass lining used for the Rustless Iron Company's curtain-walling in the new Allnatt Office Block at Park Royal? Approximately two hundred panels of various sizes are backed with ¾" Fibreglass resin bonded slab.

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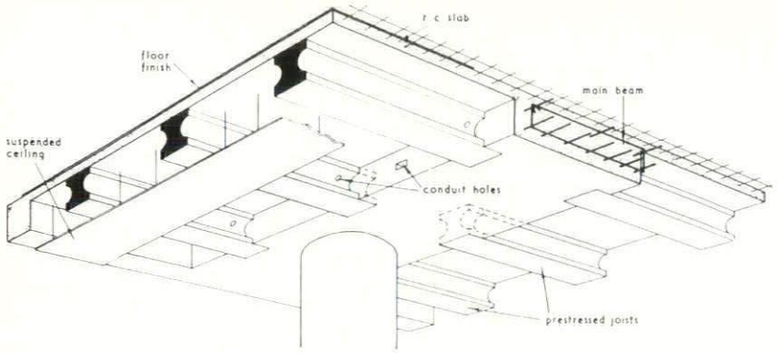


Isometric diagram of Pierhead Flat Slab construction.

continued from page 148]

once practicable and a great money saver. A new method for producing a flat ceiling economically has been designed by C. J. Pell and Partners for a ten-storey office building in the Edgware Road and has now been taken up by Pierhead Ltd. (whose precast prestressed concrete joists are used in it) and presented as a 'system' which may be adopted by anyone. Though it is called the Pierhead Flat Slab, purists might prefer to describe it as a 'shallow beam.' Flat *in situ* concrete slabs are set out at a spacing of up to 25 ft. centres and Pierhead precast prestressed concrete joists are laid with their ends cast into the slabs and their undersides flush with the undersides of the slabs. An *in situ* concrete floor is then laid over the beams and slab alike giving a total floor thickness of 10 in. The secret of a system of this kind lies in the reinforcement used, which is here composed of simple prefabricated units which avoid congestion at the junction of structural members and lend themselves to rapid assembly. Methods of this kind which combine a measure of prefabrication with a measure of *in situ* work have the great advantage that they avoid tolerance difficulties and therefore are well adapted to the present state of the building industry.

Pierhead Ltd., Feltham, Middlesex.

TV Aerials that you don't see

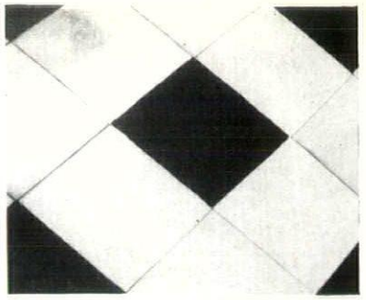
Though TV aerials have ceased to be funny (for, surely, all the possible jokes have been made about them) they have not ceased to be ugly and obtrusive, and as they become daily more and more numerous the case for stowing away as many as possible out of sight becomes more overwhelming. A booklet issued jointly by the Radio and Electronic Component Manufacturers and the British Radio Equipment Manufacturers Association entitled 'Television Aerials—Outdoor or Indoor' discusses the different types of aerial and the situation in which each is likely to fill the bill. The moral seems to be that it is essential to have tests before you choose your aerial type and that, if you are at all sensitive and public-spirited, you will choose the loft or room type if the tests show their use to be feasible. Generally speaking they will prove satisfactory where the signal is strong, interference is slight, and the country is not too hilly. One indoor aerial which has proved satisfactory in a wide range of conditions is the Labgear Bi-square made by Labgear (Cambridge) Ltd., a subsidiary of the Pye group. This is suitable for Band I reception only, though the firm also market another version, Labgear Model 309 L which is designed for Band III reception.

Labgear (Cambridge) Ltd., Willow Place, Cambridge.

Leather Floor Tiles

The general rise in price of good flooring materials and perhaps the discovery that some of the strongest competitors in this field are surprisingly difficult to keep clean, have prompted the leather industry to try whether the public will take to leather tiles. Using the same type of leather as is used for the soles of shoes, Barrow-Hepburn and Gale Ltd. now market a range of 6-in. square leather 'tiles' in natural brown, black and a range of strong colours. These tiles, which are leather all through of a thickness of perhaps $\frac{3}{16}$ in., can be stuck direct to wood or to a cement screed. They cost 2s. each (i.e. 72s. per square yard unlaid), are very resistant to all normal abrasion or scuffing, and are, as you would expect, warm and exceedingly pleasant to walk on. Furthermore, they are easy to keep clean. One misfortune of the present range is that the coloured finish tends to obscure the grain, so that unless you are told, you might not realize that you were walking on something unusual. With the natural colour finish (which can be seen in the photograph, alternating with black) you are in no doubt, and the total effect is sufficiently admirable to deserve consideration.

*Barrow-Hepburn and Gale Ltd., Grange Tannery, The Grange, London, S.E.*1.



Leather floor tiles in natural hide and black

CONTRACTORS etc

Village Housing in Suffolk. *Architects:* Richard Llewelyn Davies and John Weeks. *Executive Architect:* Michael Huckstepp. *Contractor on*

[Continued on page 152

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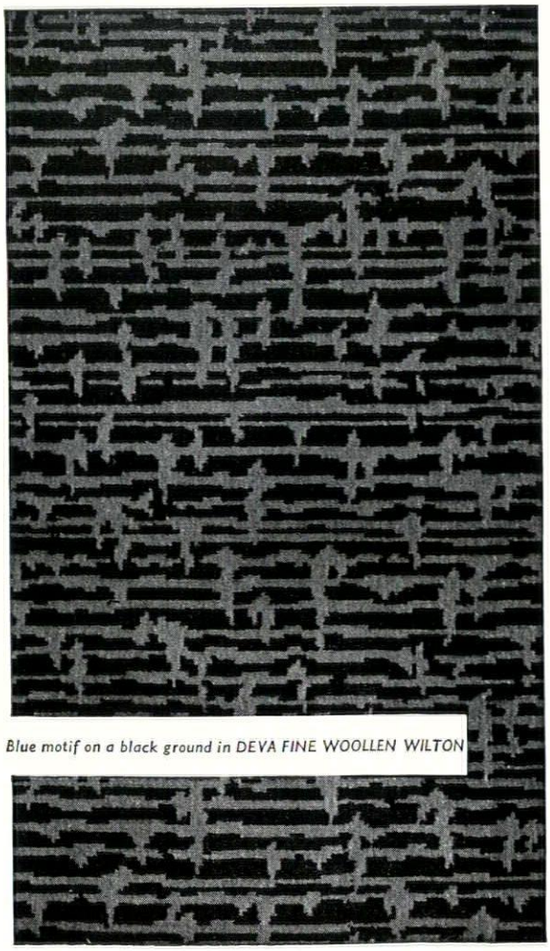

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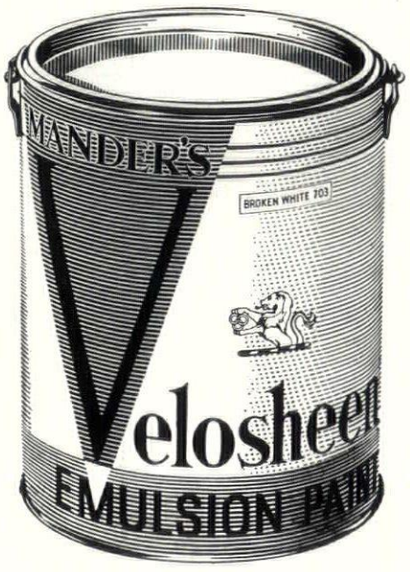

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Training College at Wimbledon. *Architects:* Yorke, Rosenberg and Mardall. **Memorial Hall.** *General contractors:* Hall, Bedall & Co. *Sub-contractors: Asphalt tanking and pitch mastic flooring:* Excel Asphalte Co. *Built-in fittings and sliding folding partitions:* Rippers, Ltd. *Concrete tiles:* Jaconello, Ltd. *Cloak fittings and balustrades:* Clark, Hunt & Co. *Doors:* Gliksten Doors, Ltd. *Heating:* Norris Warming Co. *Hardwood flooring:* Hollis Bros., Ltd. *Stage lighting:* Strand Electric & Engineering Co. *Stage curtains and track:* Hall & Dixon, Ltd. *Suspended fibre board ceilings:* Sundeala Board Co. *Suspended plaster ceilings:* W. H. Colt (London), Ltd. *Windows—metal:* Aygee, Ltd. *Dividing screen, curtain glides and rails:* Tidmarsh & Sons. *Electrical equipment:* A. H. Cornwall & Sons. *Roofing:* Wm. Briggs & Sons. *Sanitary fittings:* Stitsons Sanitary Fittings, Ltd. *Stone facing:* S. Marshall & Sons. *Tiling:* Carter & Co. *W.C. partitions:* Mosaic and Terrazzo Co. **Lecture Block.** *General contractor:* C. J. Sims, Ltd. *Sub-contractors: Electrical installation:* A. H. Cornwall & Sons. *Heating, hot and cold water and gas installation:* Z. D. Berry & Sons. *Laboratory fittings:* Baird & Tatlock, Ltd. *Felt roofing:* William Briggs & Sons. *Boiler chimney:* Chimneys, Ltd. *Terrazzo paving and partitions:* The Mosaic and Terrazzo Precast Co. *Suspended ceilings:* Roof and Lining Construction, Ltd. *Wood block flooring:* R. W. Brooke & Co. *Joinery fittings:* William Lacey, Ltd., *Window blinds:* Tidmarsh & Sons. *Greenhouse:* William Wood & Son. *Mild steel louvred sunbreaks and mild steel balustrades:* S. W. Farmer & Son. *'Colterra' lathing:* Scaffolding (Great Britain), Ltd. *Wall tiling:* Carter & Co. *Suppliers: Ironmongery:* Alfred G. Roberts, Ltd. *York stone facing slabs:* S. Marshall & Sons. *Casement windows:* Tomo Trading Co. *Flush doors:* Veneercraft, Ltd. *Sliding folding doors:* William Lacey, Ltd. *Sliding door gear:* E. Hill Aldam & Co. *Sanitary fittings:* Stitsons Sanitary Fittings, Ltd. *Domed roof lights:* Aygee, Ltd. *Bricks:* Richard Parton, Ltd.

Coach Hotel at Dover. *Architect:* Louis Erdi. *Assistant-in-charge:* Alan S. Fairbrass. *Contractor:* R. J. Barwick. *Quantity Surveyors:* Harris, Rourke & Simpson; *partner in charge:* Mr. Spiller; *assistant in charge:* Mr. Saw. *Structural engineer:* Dr. Hajmal-Konyi; (*assistant in charge:* Mr. Szmidt). *Electrical heating, ventilation, plumbing:* Advanced Heating and Air Conditioning Co. *Flooring:* Bennett's Wood Flooring Co.; Linoleum Manufacturing Co.; Limmer & Trinidad Lake Asphalt Co.; Horsley Smith & Co.; Marriott & Price, Ltd.; Marley Floor Tile Co. *Signs:* Bush Signs. *Windows:* East & Sons. *Lift:* Aldous & Campbell, Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings, Ltd. *Facing slabs:* Cheecol Processes, Ltd. *Ironmongery:* Yannedis & Co. *Felt roofing:* Pilkington's Asphalt Co. *Cedar shingles and cladding:* Hall & Co. *Furniture and fittings:* Bobby & Co.; Maple & Co.; Nason's (Canterbury), Ltd. *Kitchen equipment and sundries:* South Eastern Gas Board; Radiation, Ltd.; W. M. Still & Sons; Wm. Page & Co. *Refrigeration:* Windsor Refrigerator Co.; Longford Engineering Co. *Cash registers:* F. Stevenson & Sons (Manchester), Ltd. *Fire appliances:* Pyrene Co. *Blankets:* J. Churchward & Sons. *Crockery and glass:* H. Hart & Co. *Cutlery:* Alexander Clark & Co. *Cleaning equipment:* Hoover & Co. *Radio:* Sound Diffusion, Ltd. *Television:* Rediffusion (South East) Ltd.

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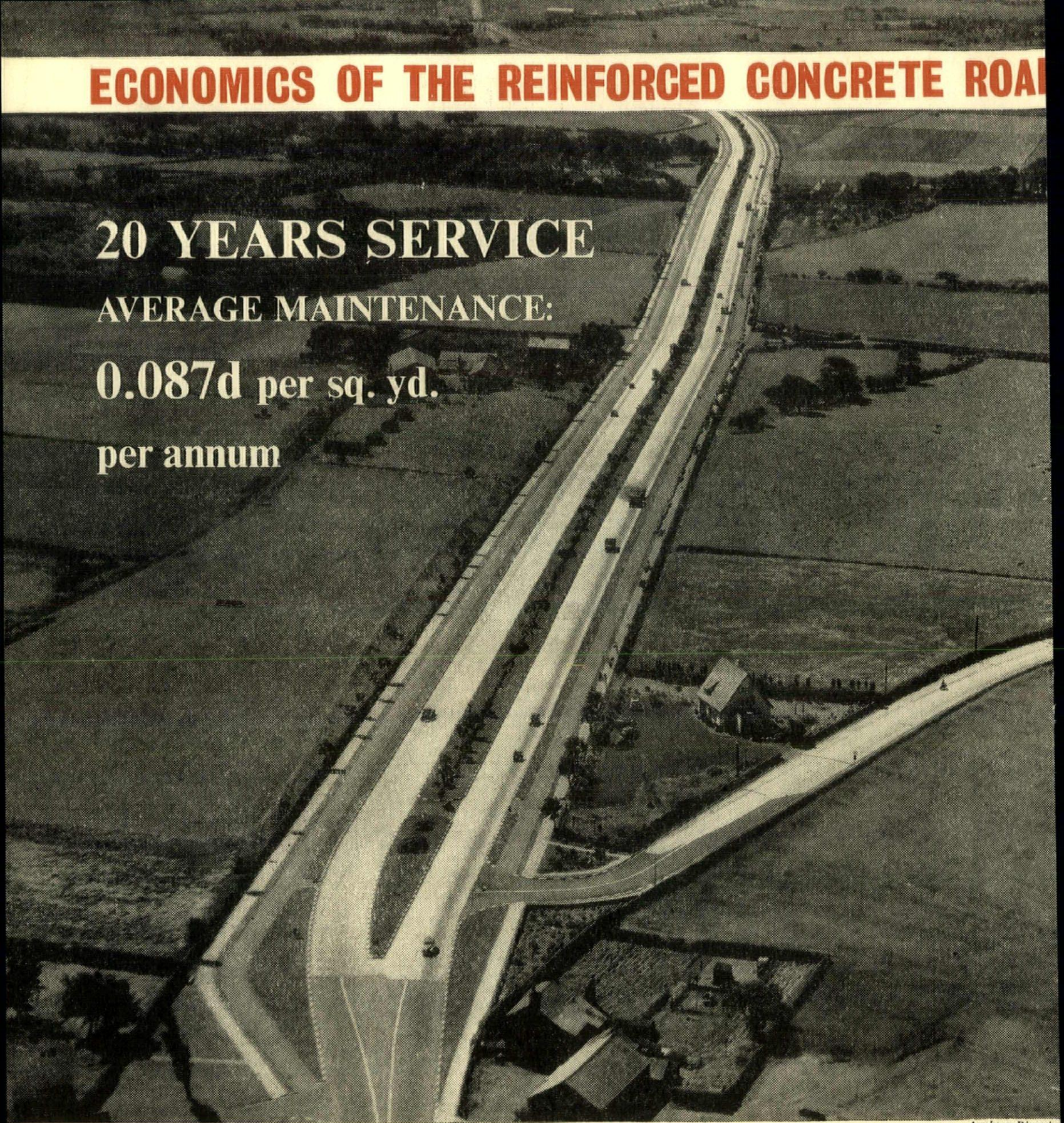

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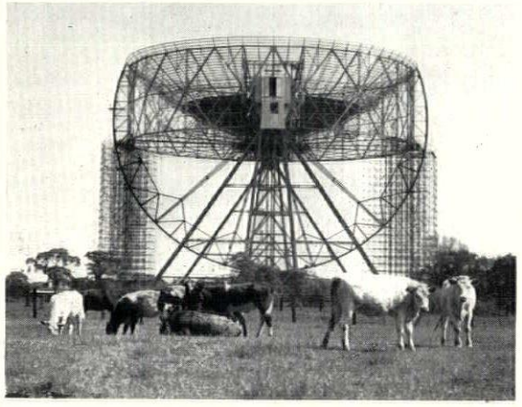
MARGINALIA

New Shape in Cheshire

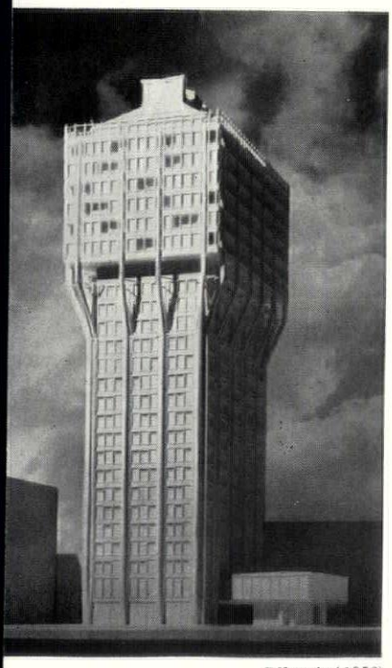
Manchester University's new giant radio-telescope at Jodrell Bank in Cheshire—a joint project with DISR and the Nuffield Foundation—is among the world's half-dozen largest pieces of research equipment, its reflector, seen partly clad in 1, weighing over 750 tons and exceeding 250 feet in diameter. This puts it in a class with the most powerful particle-accelerators for sheer mass, but unlike them it makes a better visual gesture on behalf of the extremities of scientific research. Although the structure is more complex than appeared from the earlier project-drawings, the final form—when the last scaffolding has been removed—is more dramatic than the ground-hugging buildings of the average cyclotron, more clear-cut than the aggregations of structures that house the average nuclear power-plant, with the added landscape advantage over the latter that only one giant radio-telescope is ever likely to be needed, not one in every piece of unspoiled country (though the Cheshire landscape has special advantages, see p. 208).



1

Familiar Shape in Milan

A project that was much discussed two Triennales ago, but has since lapsed from architectural discussion, was 'Rogers' Tower'—the skyscraper in the via Velasca, Milan, designed by the BBPR office. Now, however, after lengthy delays for the inevitable negotiations, work on this half-forgotten project is proceeding with all speed, and the current annual report of the *Societa Generale Immobiliare* not only shows that the structure has been completed since February, 1956—a remarkable feat for a 26-storey building in Italy—but also gives a photograph of the model of the final version of the design, 2. What is most remarkable about the design, as seen here, is its strikingly Gothic aspect, not only in its rib and panel structure, which the Modern Movement inherited from nineteenth century Gothicists anyhow, but also in its silhouette, which seems to follow a tradition whose last notable representative was the tower of Big Ben.



Bilancio (1956)

Hansa Quarter

The principal job of the Interbau, the International Building Exhibition in Berlin, is to demonstrate building by erecting a new quarter while the public watches. The Old Hansaviertel, 3, was bombed flat; it housed about 6,000, it will house now, 4, about 3,000 in over 1,200 dwellings distributed among 39 houses: 6 are point blocks of 16 storeys, 6 slabs of 8 to 10, 9 terraces of 3 to 4, 9 two-storey single family houses, and 9 single-storey villas or bungalows. In addition there are two churches, an underground station, a creche and a school.

The organizers, that is the Building Division of the City of Berlin, called in 53 architects, 19 from abroad, 16 from West Germany, 18 from Berlin. Among them are men of the stature of Gropius, Aalto, Le Corbusier and Niemeyer, and all the best Germans. The plan was to show one third complete, one third nearly complete, and one third under construction. As it is, three of the six point blocks are not started, and one of the six slabs, and hardly any of the single-storey and two-storey jobs exist as yet, not Arne Jacobsen's, not Kay Fisker's, nor incidentally F.R.S. Yorke's, the only English contribution.

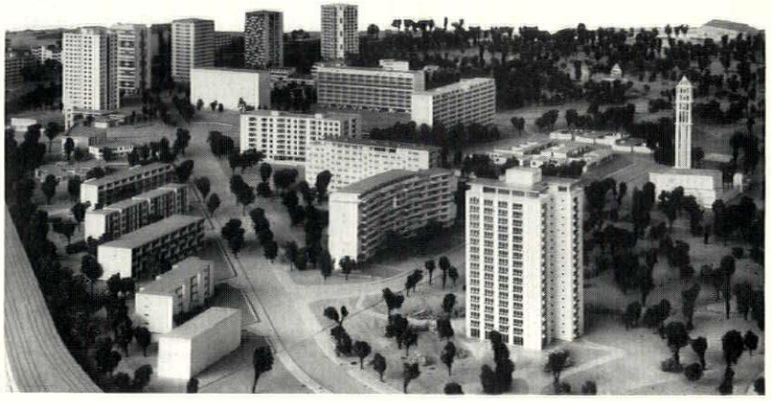
Technically the big jobs are mostly box frame or other concrete slab constructions. Steel-skeleton is hardly used in Germany. The technically most interesting building is Hugh Stubbins' Congress Hall, a gift of the Americans. It is going up further East than the Hansa Quarter, not far from the former Reichstag. With its two huge concrete arches leaning widely forward in opposite directions from the same two points of support, with its concrete ring in tension between their apexes and the roof suspended by steel wire it will be up to the most daring American structures of the same character, notably Nowicki's arena at Raleigh. But it is not ready yet. Architecturally it is curiously undecided or perhaps ruthless with the wide processional open staircase leading up to the principal auditorium, but not its main entrance for this lies at right angles to it under the shelter of the concrete arches. What faces the processional staircase instead is a tiny emergency staircase and an emergency exit. The concourse below the auditorium is divided by massive circular concrete supports which carry the auditorium floor and take part in carrying its walls. They also are obviously intended to be inelegant or perhaps one ought to say anti-Swedish. That the building will be extremely impressive there can be no doubt.



3

Hansa quarter

The Hansaviertel, built in the 1880's *—* 3, *as it was before the war and* 4, *as it will be in* 1958. *For an explanation of the models, see AR December* 1956, *page* 351.



4

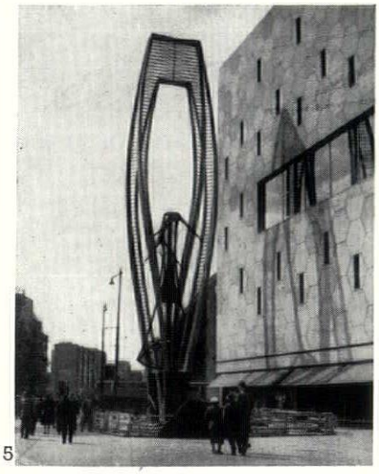
The design of the Hansa Quarter is excellent, free, bold and airy, and landscaping and floor-scaping are impeccably picturesque. It is true that for such a New Town look—in the best sense of the term—the quarter seems rather near the city centre, but it is bounded by the Tiergarten and no traces of a closer and denser urban past remain. Besides, as the quarter is also an exhibition, one could not have kept these slab- and point-builders together, unless one had given each a detached, fairly isolated job to do. Gropius's is a little disappointing, Aalto's surprisingly classical and beautifully planned inside, Vago's is interesting in plan, and somewhat chic outside with its arbitrary geometrical pattern of white, light-blue and yellow glass plates. Niemeyer's appears the most forceful, especially now that it is still unfinished, and Le Corbusier is working away miles from the Hansaviertel to be left alone with his Unité.

The others comply with the plan in positions, heights and bulk, and that makes for ideal exhibition conditions. Whether it will in the end be ideal for a permanent quarter of Berlin, remains to be seen. If you have five point blocks to mark the north boundary of a quarter, surely from the point of view of permanency, they should be to the same design—as they are at Vällingby or Roehampton. The variety which delights in the exhibition may well prove to be carried too far for ultimate town-planning unity.

Still, the Hansaviertel remains an enterprise bolder than any that England could possibly have undertaken. One hates to be asked polite questions by German friends about the Barbican area. And at Berlin this boldness is not even an exception for an exceptional purpose. It is the very quality which pervades the whole of the reconstruction.

Rotterdam Gabo Completed

The seventy-foot steel sculpture designed by Naum Gabo to stand by one end of the façade of the new *de Bijenkorf* (previously discussed in AR for March and May, 1956) is now



5

finished and installed, 5, the steelwork having been fabricated and erected by a Rotterdam shipyard. Certain aspects of the project that could not be appreciated from the model can now be more clearly assessed, notably the competition afforded visually by lamp-posts and other kerbside vertical features, on the debit side, and

the effects of shadows and reflections on the adjoining façade—transient benefits on the credit side that were not part of Gabo's original conception.

Shell at twenty-five

Shell advertising is part of the legend of the Thirties—one of the more durable parts, for it is still happily with us. To honour the silver jubilee of the merger that created the Shellmex-BP combine, the firm has issued (for internal circulation only) a survey of its advertising in the last quarter century. A study of it will reveal a number of points that have been forgotten in the myth-making process, and will go some way toward explaining why Shell advertising has survived when other well-meaning adventures of the period have not. For a start, the McKnight Kauffer posters, the Betjeman guides, the Bawden graphics were only a part of a total campaign that was far wider in scope, and leaned heavily on topical ephemera, gimmicks, awful puns, and even on self-mockery—Jack Beddington must have been the first publicity man to poke fun at his own advertising in his own advertisements. In other words, the book reveals that Shell not only contributed to the arts of the past twenty-five years, but—more important—participated in the life of the period as well.

Vista from Glasgow

Now in the third issue of its third incarnation, *Vista*, the journal of the Glasgow School of Architecture Club, can boast an unique history among student publications. It first appeared in the period 1908–15, when the Glasgow school (the academic institution) was very young but the other Glasgow School (the Art Nouveau of Mackintosh) was at the height of its fame. *Vista* remained dormant until 1931, when it was revived by Warnett Kennedy under the impact of the International Style, and after a further lapse has now been revived, primarily to celebrate the school's fiftieth anniversary in 1954, but with a determination to keep it running. The three issues of the new set are typographically and visually heterogeneous, not to say disappointing, but many of the contributions have been of the first quality in one way or another, notably Professor Smith's history of the school in *Vista* 1, articles by Maxwell Fry and Walter Gropius in *Vista* 2, and surveys of contemporary Swiss architecture and current student opinion in *Vista* 3.

Croft Castle

The owners of Croft Castle Herefordshire, want to give the house to the National Trust with an endowment; most of the money has been raised by members of the family but £5000 is still needed. This house, which will otherwise have to be demolished is medieval, but its unique feature is eighteenth century Gothick plasterwork in the same style as Shobdon Church, the only instance so far of any correspondence with that extraordinary building. It was owned and landscaped by the elder Thomas Johnes and may have been the prototype for both Hafod and Payne Knight's Downton Castle. Donations should be sent to Croft Castle Endowment Fund, 47, Downshire Hill, London, N.W.3.

Moore Up-to-Date

The success of the Lund Humphries picture-books on Henry Moore's sculpture is a just reward for a brave publishing enterprise as well as a tribute to the worldwide interest in Moore's work. An expensive book on a single modern artist is normally expected to sell in its hundreds rather than its thousands, yet since the Henry Moore book was first published in 1944 it has run through three editions, and the production of these, the new edition* just out and the supplementary (1955) volume on Moore's work since 1948 has totalled no less than 13,000 copies.

The third edition (1949) was enlarged and revised and the fourth has been further revised by Mr. David Sylvester, only Sir Herbert Read's introduction remaining unchanged. Among 140 new blocks are illustrations of 30 sculptures and 39 drawings not included in the earlier editions, and a catalogue of all Henry Moore's works in sculpture from 1921 to 1948, whether illustrated or not.

*HENRY MOORE: volume one, sculpture and drawings 1921-1948. London: Percy Lund, Humphries & Co.; A. Zwemmer. 1957. Price £4.4.0.

CORRESPONDENCE

Collins Almshouses, Nottingham

To the Editors,

SIRS,—My attention has been called to what is said on page 451 of the June, 1957, issue of your magazine about the Abel Collins Almshouses in Nottingham. This is a most undeserved attack on the Nottingham Corporation based on completely incorrect information.

The true facts are as follows.

The almshouses do not belong to the Corporation, have never belonged to the Corporation, are not the subject of any contract for purchase by the Corporation and are not the subject of any negotiations for purchase by the Corporation.

They are privately owned and the Corporation, as the Planning Authority, received an application for permission to develop the site which involved the demolition of the existing buildings.

The buildings are in the Ministry's list and the Corporation, as the Planning Authority, therefore had to notify the Ministry under the Town and Country Planning Act. The Ministry did not intervene.

As far as I am aware and as far as any responsible official of the Corporation is aware, the Ministry did not at any time send a telegram to halt the demolition as is alleged.

As far as I am aware, the Ministry, having failed to intervene when they received the notice, did not have any power to halt the demolition after the time expired.

The demolition was carried out by the owners and not by the Corporation, and as far as I am aware the demolition of the whole of the vacant part of the building was completed. The remaining part which has not as yet been demolished, still stands because it is occupied and I assume that the demolition will continue until it is completed when the present occupiers vacate.

No distinction was made by the Planning Committee of the Corporation between these owners of the property and any other owners.

Yours, etc.,
T. J. OWEN
Town Clerk, Nottingham.

[*The Editors reply: We apologize for our incorrect information which was obtained, first, from an official source, second, from Nottingham Corporation's City Engineer's Department, and third, from press reports at the time of the demolition. As all three sources corroborated one another we did not make a quadruple check: evidently we should have done so.*

We would, however, like to amplify this letter a little. The Corporation forwarded the Trustees' application to the Minister of Housing on March 5, 1956, saying that they were not satisfied that the almshouses merited preservation on architectural and historic grounds (Dr. Pevsner, 'Nottinghamshire': 'one of the best almshouses of its date in England'). The Ministry disagreed but neither made a preservation order nor told any of the interested societies; the statutory period of notice expired on May 5, 1956, a Saturday. Demolition started at 7 a.m. on the following Monday. The Georgian Group, S.P.A.B., and the Nottingham Society of Architects all wrote to the Ministry after it was too late protesting that they hadn't been told; if they had known they would obviously have opposed the demolition.

So the story is less sensational, and quite within the letter of the law, but just as deplorable. These almshouses were a national monument, Nottingham Corporation notwithstanding: to the shocking philistinism of the Corporation now must be added the shocking inertia of the Ministry.]

Counter-Attack

To the Editors,

SIRS,—I was delighted to receive a copy of *Town and Country Planning* this week.* It is unmistakably evident that your campaign has succeeded in scaring many brooding hens off their nests. From all the cackling one gets the idea that the most effective means of awakening the barnyard was employed.

Again, my congratulations and admiration.

Yours, etc.,
RUSSEL BOURNE.
New York.

*The June issue, which contained several articles on Counter-Attack.

Modern Church Architecture

To the Editors,

SIRS,—If there is any contemporary architectural problem which calls for radical solutions it is certainly that of church design, as you remark in the caption to the frontispiece of the June number of THE ARCHITECTURAL REVIEW. Unfortunately, very few of the 'radical' solutions which we have been offered in recent years really go to the root of the problem, and in singling out the use in Carl Nyrén's church at Vällingby of *'beton brut*, naked and unadorned.' as symptomatic of a widespread feeling that radical solutions are necessary you would appear to confuse two widely divergent schools of thought.

There are those who, rejecting the assumption (which seems to be implicit in your caption) that church design is the one field in contemporary architecture where functional disciplines can be thrown to the winds, insist that good churches—no less than good schools or good hospitals—can only be designed through a radically functional approach. Those who take this view would add that the roots of the present problem are ultimately theological and liturgical in character: that one cannot hope to design a good church unless one is prepared to face, fairly and squarely, the question of what a church is for—and the answer to this question is by no means so simple, or so universally recognized, as is often supposed.

There are others—far more numerous—who are concerned rather to give to *modern* church architecture an emotional appeal which is assumed to to be an indispensable property of certain past styles but which is felt to be lacking in most contemporary buildings—'the glazed boxes of reason and maximum illumination.' The premisses of this school of thought are aesthetic and stylistic in character, and its 'solutions'—however beguiling on aesthetic grounds—are essentially superficial.

The use of *beton brut* may well be symptomatic of a desire to build a church which is honestly contemporary. The fact remains that some of the least satisfactory of recent churches are those which are most frankly 'modern.' The really radical problems of church design are of a different order.

Yours, etc.,
PETER HAMMOND.
Bagendon, Glos.

Intelligence

The R.I.B.A. Vice-Presidents for 1957–58 are: Harold Conolly, Essex County Architect; J. H. Forshaw, Chief Architect, Ministry of Housing and Local Government; Leonard C. Howitt, Manchester City Architect; and Thomas E. Scott. The honorary secretary is Basil Spence and the honorary treasurer is E. D. Jefferiss Mathews. The R.I.B.A. have also appointed a Secretary for Professional Relations, Miss J. M. N. Milne, to conduct research into matters affecting the future of the profession.

Sir Alfred Bossom has been elected Chairman of the Council of the Royal Society of Arts for the next twelve months.

The Civic Trust has been founded under the presidency of Mr. Duncan Sandys. The Trust will raise funds from industry and use them to stimulate keener interest in the appearance of towns, villages and countryside, by means of conferences, films, television programmes, exhibitions and research. The other trustees are the Archbishop of Canterbury, Sir Herbert Manzoni, Mr. Herbert Morrison, Sir George Nelson, Lord Justice Pearce, Sir Howard Robertson, Sir Edward Spears and Mr. C. M. Vignoles.

ACKNOWLEDGMENTS

The colour block on page 201 appears by courtesy of Mr. John R. Harris, A.R.I.B.A.

MARGINALIA, pages 153–4: 3, Luftbildtechnik; 4, Kessler; 5, Associated Press. FRONTISPIECE: B. Holtman. THE WALDEGRAVE, STRAWBERRY HILL, pages 157–161: Dell and Wainwright. SCHOOL AT SYDENHAM, pages 162–5: Galwey, Arphot. WALLS OFF THE PEG, pages 166–187: 2, 5, 9, 12, 18, 20, Toomey, Arphot; 6, 10, 13, Peter Pitt; 3, Geo. Wragge; 4, Colin Westwood; 8, Hylton Warner; 11, G. L. Blake; 15, John G. Wilson; 16, Pictorial Press; 17, Cecil H. Greville. SHEPTON MALLET, pages 188–193: 1, 2, 3, 14, 18, 19, Cullen, Arphot; remainder Nairn, Arphot. HOUSE AT WATFORD, pages 194–7: Toomey, Arphot. ROMAN CHURCH IN YORKSHIRE, pages 198–200: Galwey, Arphot. MISCELLANY, pages 203–8: Functional Tradition, Eric de Maré. Exhibitions: 4, Sidney Nolan; 6, S. Lambert. Counter Attack, Gomme and Nairn, Arphot. SKILL, pages 209–end: Interiors, 1, Zim Navig. Co.; 2, I. Kalter; 4, 5, 6: SS 'Sylvania,' Elsam, Mann and Cooper. SS 'Gripsholm,' Gösta Liden.

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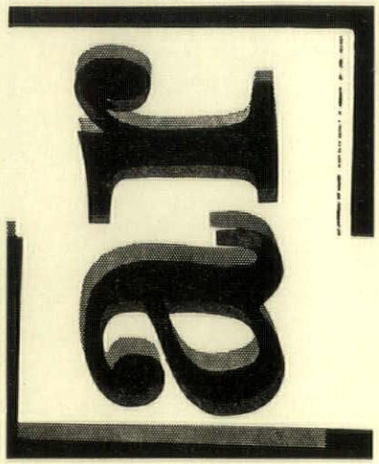
Volume 122 Number 728 September 1957



This Month's Cover, a photogram of the Review's initials, emphasizes the revolution in graphic design and lettering that is taking place at present. Produced photographically from standard mechanical tints, the forms of these letters lie beyond the purview of any of the traditional creators of letter-form—penman, stone-cutter, engraver or architect. They could be reproduced photographically on new plastic-faced materials, thus by-passing another set of traditional formal determinants, the sign-writer's tools. They belong to a new world of lettering, one of whose provinces was explored by Kenneth Browne in August A.R. a world where success will depend, not on the ability to reproduce one or two fashionable prototypes, but on a knowledge of lettering as encyclopaedic as that provided by Nicolete Gray's articles, of which another will appear next month.

153 **Marginalia**

154 **Correspondence**

156 **Frontispiece**

157 **The Waldegrave Strawberry Hill** *by Osbert Wyndham Hewett* Though Strawberry Hill is chiefly a monument to the Gothick fantasy of Horace Walpole, much of what the visitor sees there today, and might take to be Walpole's responsibility, should be credited to Lady Frances Waldegrave, who took the place in hand in 1856, when it was in a semi-derelict condition. Her needs, as a political hostess of international influence, shaped her attitude to the house and the extensions to be made; her resources, and those of two successive husbands, governed the speed and manner in which the work was done—but only just, and Mr. Wyndham Hewett, who has recently completed a standard biography of Frances Waldegrave, gives a picture of a patroness of building whose determination and energy put her almost in the class of Bess of Hardwick.

162 **School at Sydenham:** *Architects, Basil Spence and Partners*

166 **Walls off the Peg** *by Michael Brawne and Alan Craig* Though it is almost fifty years since the pioneers of modern architecture first demonstrated the possibilities of the curtain wall, it is barely five since it has become commercially available. It is, nevertheless, the most dramatic and visible aspect of the slow industrialization of building techniques, and, as such, has acquired an almost symbolic status. But it presents its own special problems as well as such conspicuous virtues as speed of erection and lightness of structure, and in the first part of this extended survey of curtain walling, Messrs. Brawne and Craig discuss the practical aspects of the method as it affects the working architect, with particular attention to the dominant questions of the performance of jointing materials and joint-types, the various structural sections available and the behaviour of the now widely differing infill panels that can be employed. On this basis of practicality they then consider the potentialities of curtain walling as a building technique in development, and make an assessment of the relative merits of the different systems currently available 'off the peg' in Britain.

188 **Shepton Mallet** *by Gordon Cullen* In this, the second of the REVIEW's series of townscape studies undertaken in the West Country in association with Bristol University, Mr. Cullen considers the case of a town whose elements are simple enough, but assembled in a manner that gives them an unique quality. Quite apart from the subtleties of grouping of those major features which focus the Market Place and make it the town's outdoor room, the Lower Town, though it flanks the High Street on both sides with its own pattern of lanes, squares and pedestrian ways, enjoys the continuity of this pattern by an underpass below the High Street. Thus a main shopping street and the residential area it serves can lie in the closest proximity to one another without being mutually destructive, and the real nature of a compact small town is accentuated and enlivened.

194 **House at Watford, Herts:** *Architects, Alison and Peter Smithson*

198 **A Roman Church in Yorkshire** *by Hugh Honour* The *Album di Roma* is not a customary source for information on churches in Yorkshire, but the magnificent chapel adjoining Everingham Hall justifies a place in it by virtue of its architectural quality as well as its denominational connections. Presumably finished in 1839, it is a building of an entirely Roman character, columniate and vaulted within, illuminated by windows above the cornice and the oculus of its domical apse, and lined with niche'd statues between the columns of either wall. The statues are the work of Leopoldo Bozzoni, the fine plasterwork was produced by Crabtree's of York, and the design of the building as a whole is open to debate. Mr. Honour, however, sets out the evidence for supposing that Agostino Giorgioli gave the basic sketches, and John Harper altered them in working them up for building. But whatever the correct attribution, the chapel—barely altered since 1840—is a notable monument to the first years of Catholic emancipation.

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212 **Techniques: Panel Infillings**

The Industry

220 **Contractors**

The Authors: *Osbert Wyndham Hewett* was educated in England; New Zealand—where he acquired a passion for Victoriana; South Africa—where a classmate for years was Bill Holford, and Trinity Coll. Dublin. In the early thirties he opened Peter's Bar in a sixteenth-century palazetto in Ragusa-Dubrovnik; speaking eight languages he wandered round Europe, spending two years in Germany loathing Nazism, and opening English Clubs. Lectured for the British Council in Sicily, Greece and Turkey on the Victorians; in the war, a commission in the R.A.F. landed him into a gaggle of archaeologists instead of pilots. Is now editing a Victorian diary, lecturing and broadcasting on the Victorians. *Michael Brawne* studied mathematics and physics at Edinburgh University before serving in the R.A.F. as a meteorologist; since then his architectural education has consisted of studying at the A.A. from 1948 to 1953, at M.I.T. from 1953 to 1954 on a Smith-Mundt fellowship, being married to a town-planner and having two children. At M.I.T., where he got his M.Arch., he worked out a system of prefabrication and in the following year he was on the Research and Development staff of a major curtain wall manufacturer in California. He is now with the Architects' Co-partnership. *Alan Craig*, born 1925, educated at King's College School, Wimbledon and the A.A. School. Awarded the Building Centre Scholarship 1950. Works for James Cubitt and Partners and is at present helping to build up the firm's Nigerian office. *Hugh Honour* was born in 1927, educated at The King's School, Canterbury and St. Catharine's Coll., Cambridge; at the Leeds City Art Gallery and Temple Newsam House for a year, and now lives in Italy working on a long-term study of Italian sculpture of the seventeenth and eighteenth centuries, and meanwhile writing a book on European *Chinoiserie*; has contributed articles to *The Connoisseur*, *Country Life*, *Apollo*, *The Antique Collector* and *The Burlington Magazine*.

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FIVE SHILLINGS



The *Stuttgarter Fernsehturm*, designed by Fritz Leonhardt, is more than the television-mast of Suddeutsche Rundfunk, for at the top of the main 528 foot concrete tower, just below the mounting of the transmitting mast, are viewing platforms, 1 and 2, in section above, and a two-storey restaurant, 3, 4, commanding enormous panoramic views over Stuttgart and its surroundings.

THE WALDEGRAVE STRAWBERRY HILL

When at the beginning of 1856 Frances, Countess Waldegrave began to restore Strawberry Hill, the house had been lying derelict since the sale in 1842. Her second husband, the seventh earl, furious with the Twickenham magistrates for having committed him to the Assizes for a drunken brawl,[1] had determined to leave the rotting lath and plaster walls of Horace Walpole's villa as a reminder of their ingratitude to the Waldegrave family. His widow had sometimes held a picnic there during the summer, but one of her guests in April, 1854, considered that 'its end is near at hand.'[2]

After eight years of childless marriage, Lady Waldegrave's elderly third husband, George Granville Harcourt, felt that some preparation should be made for a home for her eventual widowhood, since his own estate at Nuneham Park would pass to his brother. It was not, however, of such a contingency that Frances herself was thinking. Nuneham Park was a pompous, classical mansion, and its chilly, rather shabby splendour never attracted her. With twenty thousand a year of her own, Frances was the most hospitable woman of her generation, and loved to fill her houses with crowds of young people. It led to endless quarrels with Mr. Harcourt, but with a home of her own as near London as Strawberry Hill she could give the gayest of parties the whole season.

The clerk of the works for the Nuneham estate, Mr. Ritchie, must have been an extremely able man; for to him the plans for the restoration were apparently entrusted. By the beginning of March, Messrs. Cobb, builders, were busy 'putting up a new set of battlements, patching up pinnacles, etc,'[3] while indoors Battam, the decorator, and Nosotti, the glass man, were working to get the place ready for the first party in June.

The party was an immense success. All her friends were enchanted with the alterations, and crowded to visit her for the rest of the summer. It soon became obvious that Walpole's toy castle was far too small to accommodate even the more intimate of her friends. Lady Waldegrave therefore decided to have the stables converted into bedrooms,[4] and a temporary passage built to them[5] until such time as she could arrange for the suite of vast reception rooms[6] she planned—all to be slightly larger than those at Nuneham to put Mr. Harcourt in his place.[7]

Messenger, the great oarsman who held the title of Queen's Champion, was commissioned to build the best of all boathouses,[8] and to accommodate visitors' servants Frances ordered one of those iron houses (the Mid-Victorian version of a pre-fab.), which were being extensively bought by emigrants to the colonies.[8]

Horace Walpole had claimed that 'the chief boast of my collection is the portraits of eminent and remarkable persons'[9] an idea which appealed to Frances. Sant, the fashionable portrait painter of the moment, was set to paint all the more beautiful of her women friends for the Gallery at Strawberry Hill. In the autumn she dragged old Mr. Harcourt over to Paris to buy furniture and a parquet floor for this gallery,[10] which she was having redecorated and the walls hung with crimson silk.[11]

The library was also redecorated, and, early in 1857, the gold stars and Frances's monogram painted on the ceiling of the great staircase.[12] The chapel was restored the following year,[13] but it was not until 1860 that the plan for the great new suite was again discussed.

Mr. Harcourt did his best to restrain his wife's reckless extravagance. He was a shrewd business man, and realized that few estates could stand the strain of the sudden call she was making upon hers for tens of thousands of pounds. Unfortunately he was too inclined to curb her in endless petty ways,[14] and so, when he preached caution, she simply thought it was yet another attempt to be a wet blanket. The news that her coal mines at Radstock were doing capitally,[15] thanks to a hard winter, came at just the moment to encourage her to ignore her husband's arguments. At Nuneham she scarcely improved the old man's temper by announcing that 'I cannot say how shabby and uncosy I find this place after old Strawberry . . . it is fortunate I have no children as I am sure they would all be marked with a Strawberry.'[16]

From her mother, who in 1835 had built the Saint James's Theatre, Frances inherited a passion for building, and was constantly either building or planning new buildings on her Essex and Somersetshire estates as well as at Twickenham.[17] In June, 1860, Lady Waldegrave found herself with £20,000 with which she had intended to pay off a mortgage. However, the mortgagor was prepared to renew the bond, so Frances at once decided to build at Strawberry.[18]

The temporary passage between the Round Tower and the West Wing was to be replaced by a large ante-room opening into the great new drawing room, and into a passage leading to a large dining room and to the bedrooms built in '56. On the ground floor were to be new kitchens and servants' rooms. Kelk was the builder Frances was now employing, and it was his foreman, Chapman,[19] together with the Nuneham clerk of the works Ritchie,[20] and Lady Waldegrave herself,[21] who drew up the plans. Chichester Fortescue, the devoted Irishman who was to become her fourth husband, wrote in his diary on November 1 1860: 'Ritchie came with improved plans for her new rooms, the dear lady was delighted and *very angry* with me for advising her to consult a good architect such as Burns.'

Meanwhile the old high road had been moved back some distance to provide a more dignified approach,[22] and it was decided to convert Walpole's 'Abbot's Garden' into a large entrance hall.[23] By the end of November Frances was 'rather frightened at the expense of her S.H. building,[24] which is scarcely surprising since altogether she spent over £100,000 on her alterations to Strawberry Hill.[24] Fortescue's sister had married David Urquhart, the eccentric publicist who re-intro-

[1] See *Times*, July 1, 1840, April 30, 1841, May 4, 1841.

[2] C. Fortescue's diaries, April 9, 1854.

[3] C. Fortescue's diaries, March 6, 1856.

[4] C. Fortescue's diaries, July 21, 1856.

[5] C. Fortescue's diaries, October 2, 1856, and May 2, 1857.

[6] Letter from Lady Waldegrave to Fortescue dated August 25, 1856.

[7] C. Fortescue's diaries, November 2, 1860.

[8] C. Fortescue's diaries, August 16, 1856, and May 9, 1857.

[9] See Middlesex by Norman G. Brett-James, Hale, 1951, p. 195.

[10] Letter from Lady Waldegrave to Fortescue dated November 24, 1856, and letter from Miss Bolton to Lady Waldegrave dated March 13, 1857.

[11] Nearly a hundred years later—during the summer of 1955—it was again redecorated. This recent restoration owes a great debt to the Ex-President of the Royal Academy, who has generously devoted a considerable amount of time to helping the present owners to maintain the whole place so perfectly.

[12] Letter from Lady Waldegrave to Fortescue dated February 2, 1857.

[13] C. Fortescue's diary, March 14 and May 23, 1858.

[14] See 'Strawberry Fair,' Chap. 10. (This, Osbert Wyndham Hewett's biography of Lady Waldegrave, was published by John Murray in 1956.)

[15] Letter from Lady Waldegrave to Fortescue dated November 21, 1856.

[16] Letters from Lady Waldegrave to Fortescue dated December 8, 1856, and January 23, 1857.

[17] For an account of building activities elsewhere see 'Strawberry Fair.'

[18] C. Fortescue's diary, June 5, 1860.

[19] C. Fortescue's diary, November 2, 1860, August 23, 1861, and March 2, 1862.

[20] C. Fortescue's diary, November 1, 1860, December 24, 1860, and letter from Lady Waldegrave to Miss Bolton dated December 5, 1855.

[21] C. Fortescue's diary, June 10, June 24, November 2 and November 11, 1860.

[22] C. Fortescue's diary, October 14, 1860.

[23] Undated letter from Fortescue to Lady Waldegrave and a letter from Ward Braham to Lady Waldegrave dated September 18, 1861.

[24] C. Fortescue's diary, November 26, 1860, and August 20, 1861.

duced the Turkish bath to England, and in her Christmas letter to Fortescue that year Frances wrote: 'I wish very much that you would get a design from your beau-frère of the plainest possible Roman Bath. I have spoken to Ritchie about it, & he is all for having one on the ground floor of the West wing.'

The following August Lady Waldegrave and Mr. Harcourt set off on a continental tour to buy furniture and other things for the new rooms, but a few days before they left, Frances was able to show some more intimate friends the half-finished rooms. 'Met Lady W. on the road . . . then was taken at once, & solemnly to see the "new room" & everything else. She was full of it. I was first shown the outside, the great Oriel Window etc.—and then the inside—we were a long time in the room, & twice we all marched in procession from her little sitting room through the gallery to the end of the new room.'[25]

While Frances was busy buying parquet in Vienna,[26] and sculpture such as Magni's charming 'Reading Girl' in Florence,[27] progress reports were regularly sent her. She had commissioned Henry Phillips to do a series of paintings for the great drawing room, and Fortescue wrote to her at Geneva: 'Yesterday I took Phillips down to old Strawberry . . . and we were a long time with Chapman over his plans, and in the great room. Phillips was very much pleased with Chapman who got on capitally with him, and is to be at his studio today to measure the pictures etc. P. was delighted with the room, wh. is a much finer thing than he expected, and made him very proud and more anxious than ever to do it and you justice. Altogether it was a most satisfactory consultation and just at the right time, to secure the harmonising action of architect & artist. . . . The carpenters were putting up the timbers of the roof.'[28]

A month later her youngest brother in a letter to her at Vienna reported: 'Mr. Chapman says, the foundations of the screen are in at the principal entrance and the masonry is being fixed. The whole of the masonry is fixed in the Drawing room front and looks "crumocious"—(that is magnificent, beautiful). The lead gutters are fixed on the Drawing room and the slaters are putting on the slates.

'The walls of the new rooms in the Tower are built and the masons are fixing the new windows—the carpenters are forming the new staircase to round tower, the roof of the dining room is all boarded in and wood gutters are laid and the masons are fixing the parapet cornice over dining room windows. The new clock turrett is built and the carpenters are putting the roof to it—the turrett looks charming. The whole of the roof is on the kitchen—the area walls are built and the new coal vaults also,—and that's all.

Your aff. Brother
Ward Braham.'[29]

On her return to England, Frances immediately went down to Twickenham. Fortescue accompanied her and 'went about with Lady W. to see everything—heard all her observations and plans & shared her delights and admirations. She hit upon the blot of the new building, its lowness below the level of the ground, and ordered further excavation to be begun at once. She was very much pleased with the carving of the shields etc., and the man Plows who carved them.'[30]

In December, 1861, old Mr. Harcourt died at Strawberry Hill and for some time Frances could not bring herself to visit it. However, she found that her position as a great political hostess was in no way diminished by her widowhood, and that even in the country she could not escape endless visitors. By June, '62, Strawberry Hill was ready for the first large party her acquaintance forced her to give. With the exception of the billiard room, which was added in 1873, she made no further alterations.

Chichester Fortescue's devotion of eleven years was rewarded in January, '63, when he became her fourth husband. For the next sixteen years Strawberry Hill played probably a more dominant role in Victorian political and social life than even Windsor. So famous did the parties there become that the *chef du protocol* usually expected Frances to entertain any visiting foreign royalty there, while the annual balls for the Prince and Princess of Wales were among the most important features of the London season. To cope with the floods of guests the Southern Railway built Strawberry Hill station, and all were enchanted with Frances's riverside home. There was only one slight shadow on Lady Waldegrave's own happiness. As she expressed it to her greatest friend: 'Strawberry is more like a fairy palace than ever. This sounds like boasting of my handy work, but I feel inclined to do so, as I now constantly find young people thinking that Horace Walpole made *all* my pet creations & they only wonder that he should have had the reputation of making a mere lath and plaster house.'[31]

[25] C. Fortescue's diary, August 17, 1861.
[26] Letters from Fortescue to Lady Waldegrave dated September 11 and 19, 1861.
[27] C. Fortescue's diary, October 19, 1861.
[28] Letter from C. Fortescue to Lady Waldegrave dated August 23, 1861.
[29] Letter from Ward Braham to Lady Waldegrave dated September 18, 1861.
[30] C. Fortescue's diary, November 20, 1861.
[31] Letter from Lady Waldegrave to Lady Strachey dated June 13, 1876.

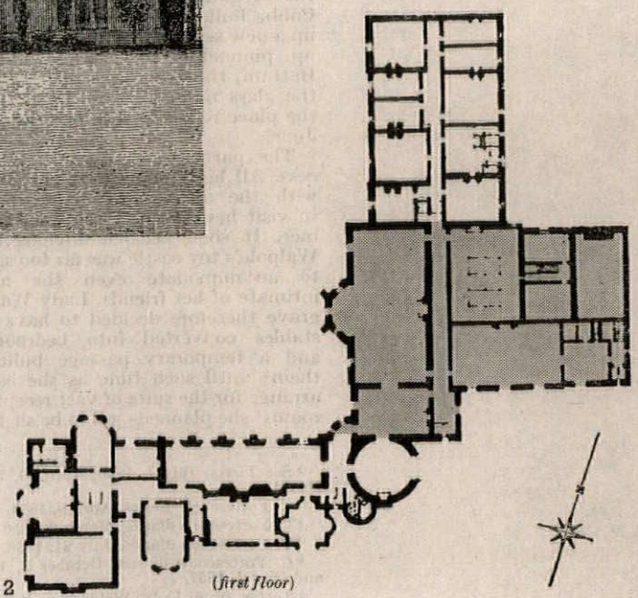
Most references in these notes are to the diaries of Chichester Fortescue, later Lord Carlingford, and to the correspondence of Lady Waldegrave, in the possession of Lord Strachie, all unpublished except for the material used in my biography of Lady Waldegrave, 'Strawberry Fair'.



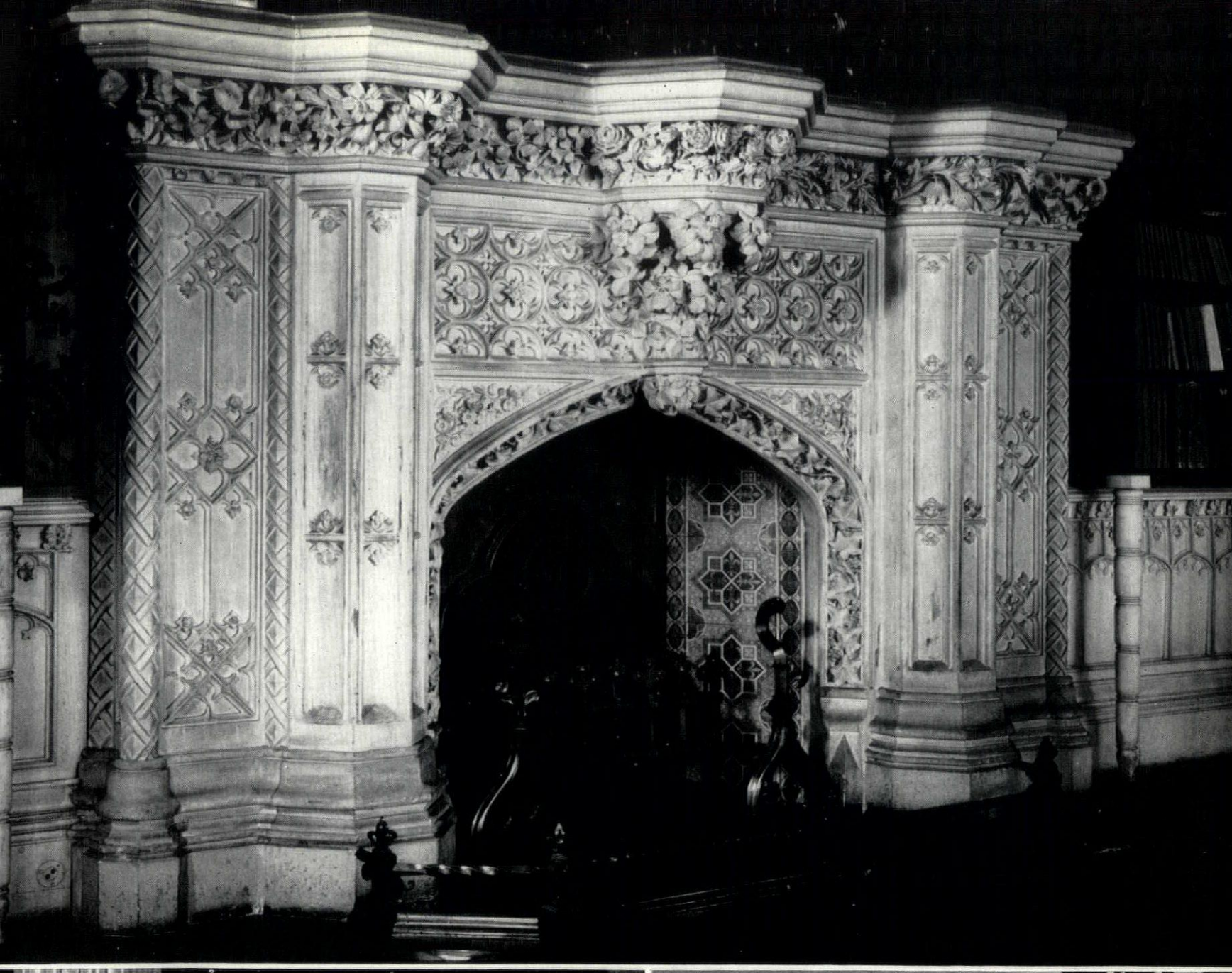
1

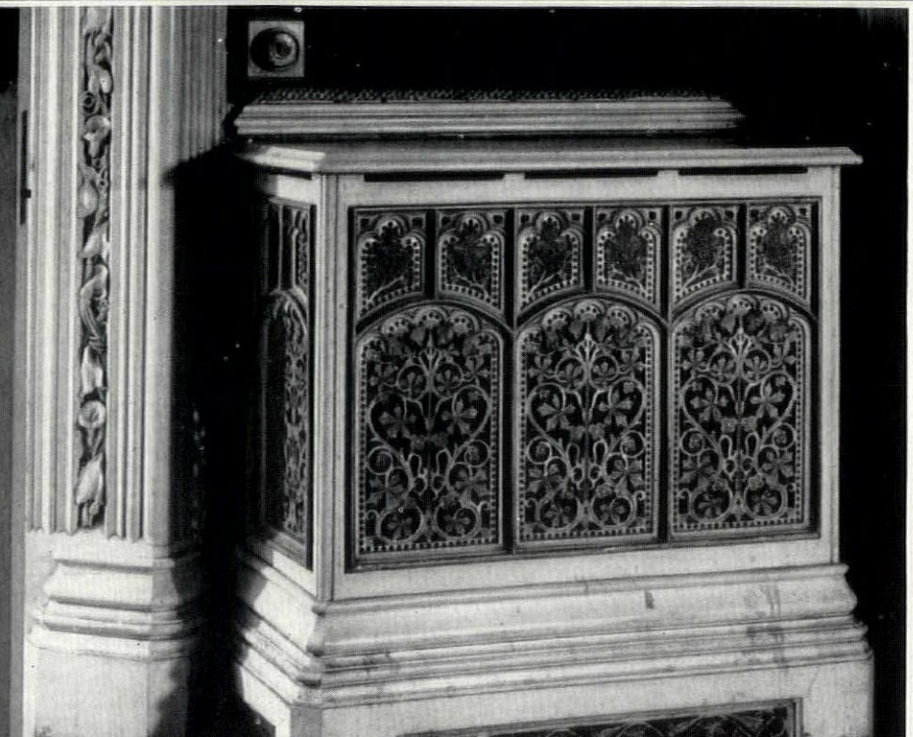
Horace Walpole's Strawberry Hill, 1, *forms only a small part of the present bulk of the building (now a seminary) and Frances Waldegrave's additions, shown shaded in* 2, *were larger in area than the original house. The largest single room in her additions were the drawing room, whose grandly foliate fireplace is seen in* 3, *and junction with the older work was effected by an ante-room whose radiator is seen in* 4, *and garden steps in* 5.

3
4 | 5



2 (*first floor*)







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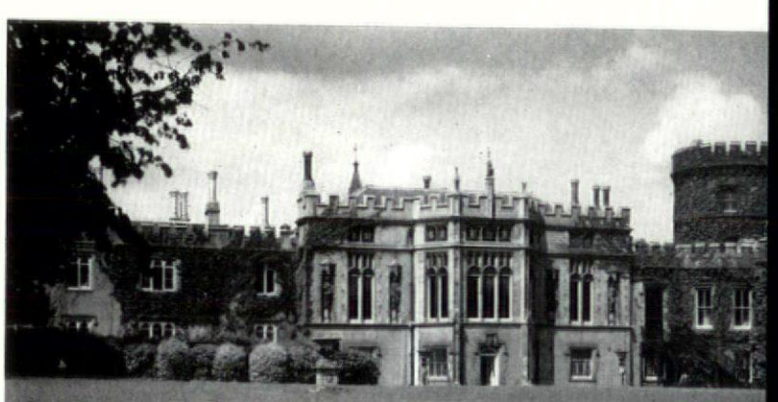
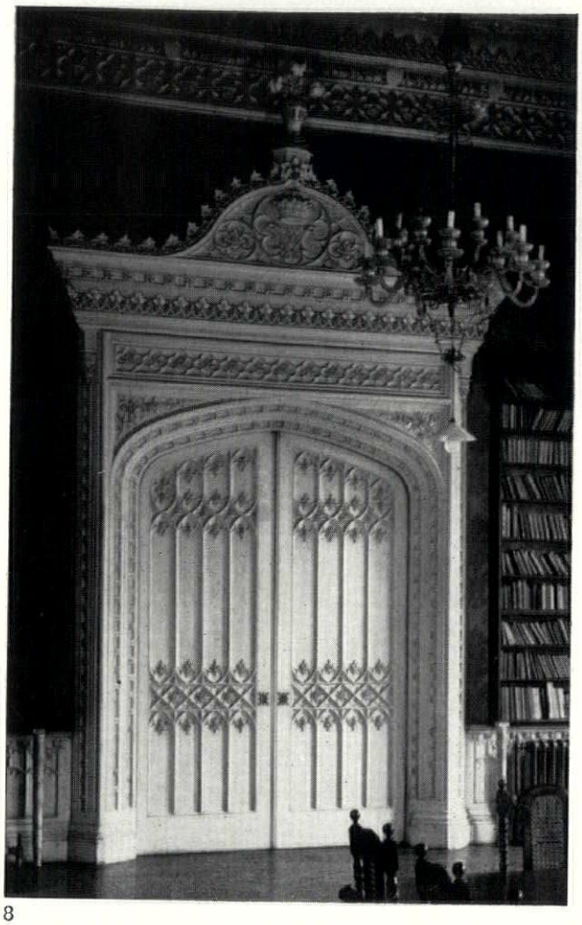


The Waldegrave ante-room at Strawberry Hill was connected to the the Walpole wing by a curved passage that by-passed the great Round Room under the tower, and can be seen beyond the door on the right of 6, while its windows appear below the tower in 7, above the garden stair. The new drawing-room, which occupies the centre of 7, was fitted between the original building and its stables, and the latter, converted into bedrooms at the same period, can be seen to

Waldegrave detailing at Strawberry Hill comes surprisingly close to Walpole's in spirit, but the sensibility of a later age manifests itself in a bolder modelling and richer individual forms. This detailing is sufficiently consistent to set a style for most of the new work—the panel treatment of the main doors of the drawing-room, 8, *is substantially repeated on the passage doors,* 9, *but this close-up also shows the softly naturalistic running ornament in the door jambs which is very far from Walpole in spirit. The dining room, which lies across the corridor from the drawing-room, has a more Jacobean treatment, particularly in its ceiling,* 10, *and elaborate ogee pelmets above the windows.*



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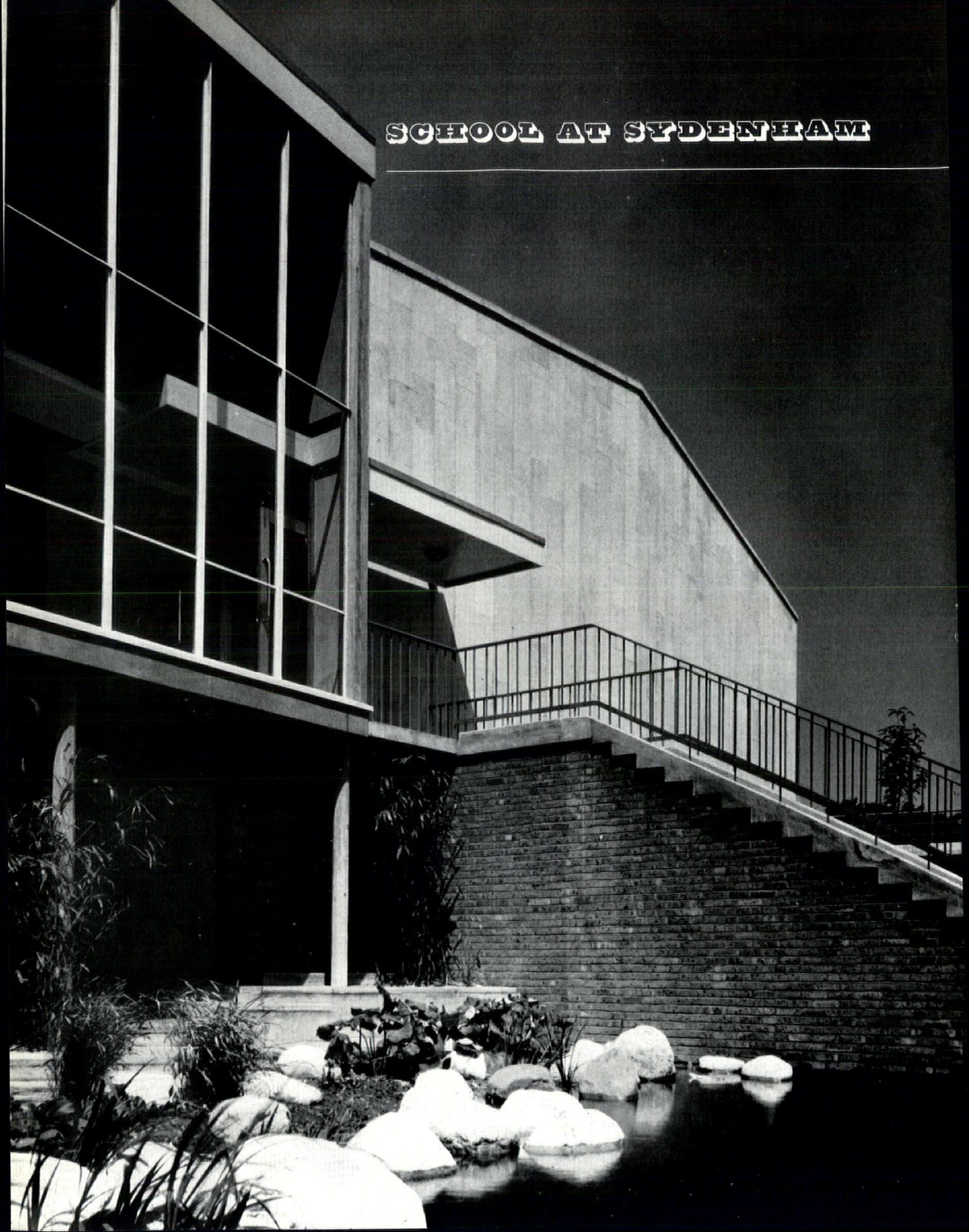
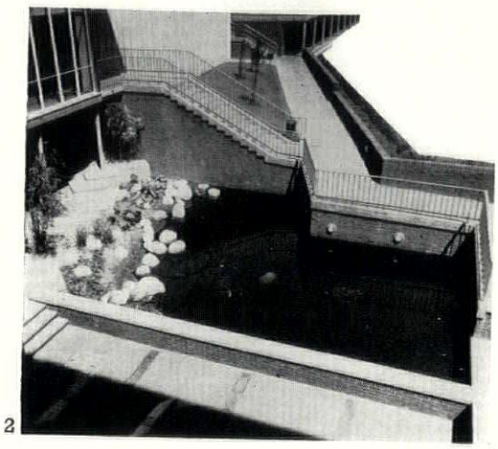
9



10


SCHOOL AT SYDENHAM

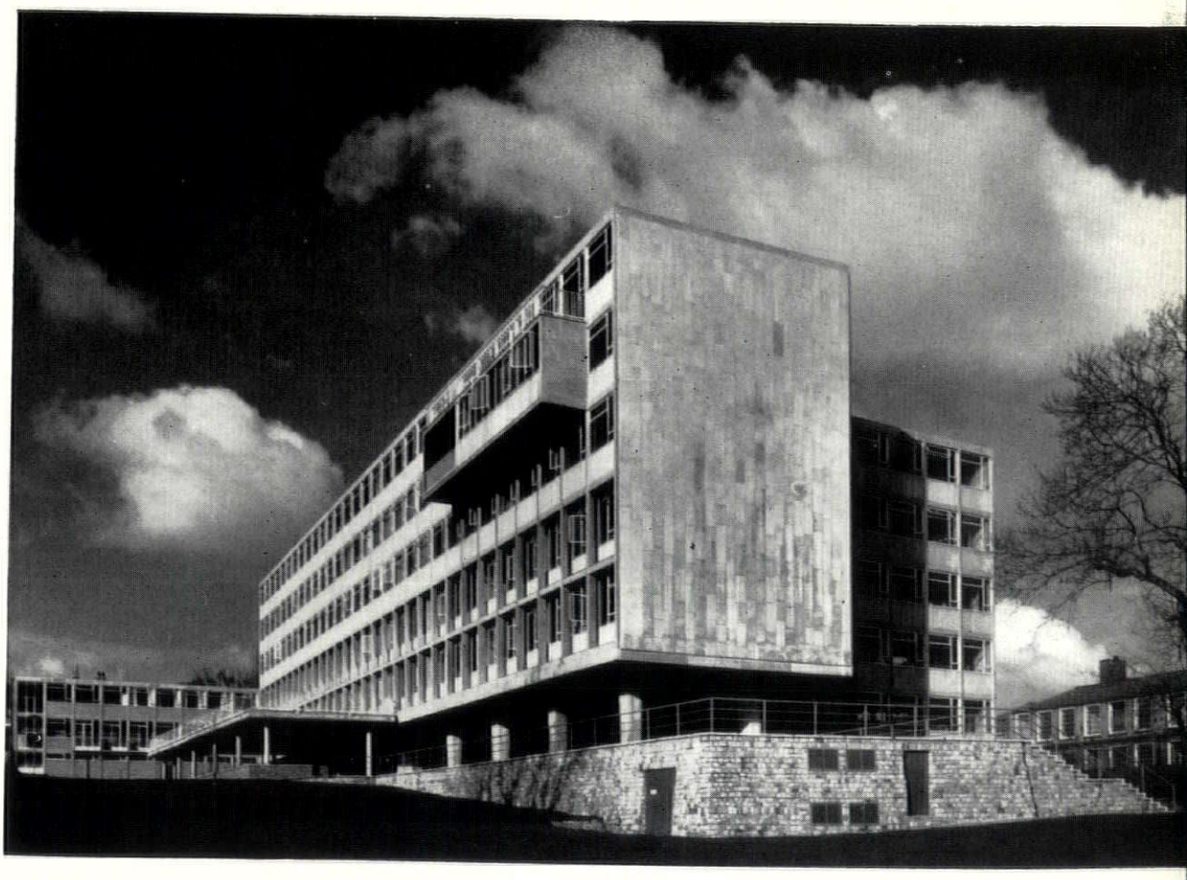
ARCHITECTS | **BASIL SPENCE AND PARTNERS**



2

This school for the LCC converts an existing girls' secondary school into a comprehensive by adding 1,140 places in the same way as Mayfield School, Putney (AR, March, 1956). The six-acre site is on the east slope of Sydenham Hill, with a 22 ft. fall from west to east: the east boundary is a busy traffic road, Dartmouth Road. The maximum area of open space was preserved by having an E-plan six-storey classroom block connected by a two-storey link to the three-storey administration block; the classroom block is downhill of the other blocks, on r.c. columns which provide shelter space and cycle stores underneath, thereby placing the main classroom floor on the same level as the assembly hall and gymnasia at the high end of the site.

The classroom block has r.c. construction on an 82 in. module, with 2 ft. thick vibrated concrete raft at 12 ft. above ground level on in-situ tapered columns. The south elevation above the raft is in 6 in. by 10 in. precast



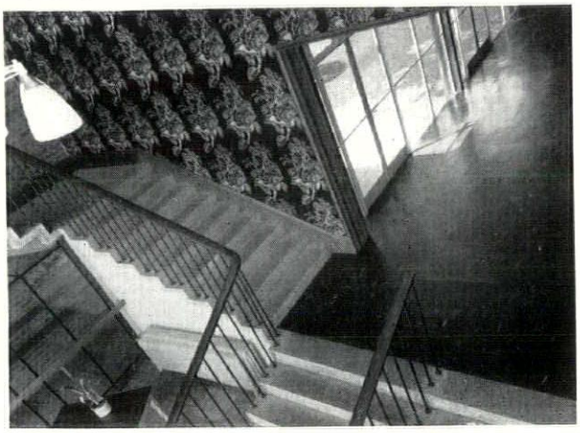
3

1, facing page, the entrance and entrance foyer, which is supported on precast columns, and on the right, the stone-faced wall of the assembly hall. 2, above, the biology pool, seen from the glazed link between the administrative and classroom blocks. 3, the classroom block from the south-east: the walls to the upper three floors being flush and the lower two inset is accounted for by the fact that the LCC education department stipulated for an extra classroom on each of the lower two floors after the main frame was on site and the precast mullions had been manufactured. Hence the partitions are not immediately behind the columns, each classroom occupying $2\frac{2}{3}$ bays instead of 3 bays. The deck at the west end is for outdoor teaching, and access is from the classrooms only; the projecting box on the fourth floor contains a balcony for the housecraft demonstration flat which was extended, for æsthetic reasons, to include part of an adjacent housecraft classroom.



4

4, looking towards the gallery at the east end of the assembly hall, which is fronted with natural-finished hardboard. 5, looking down from the



5

mezzanine bridge, seen from below in 6, towards the foyer between the hall and the outdoor terrace on the south. 6, the entrance foyer, which is paved with Derbydene stone slabs ; the bridge leads from the administration wing straight to the assembly hall gallery. 7, the south-western corner of the classroom block.

SCHOOL AT SYDENHAM



6



7

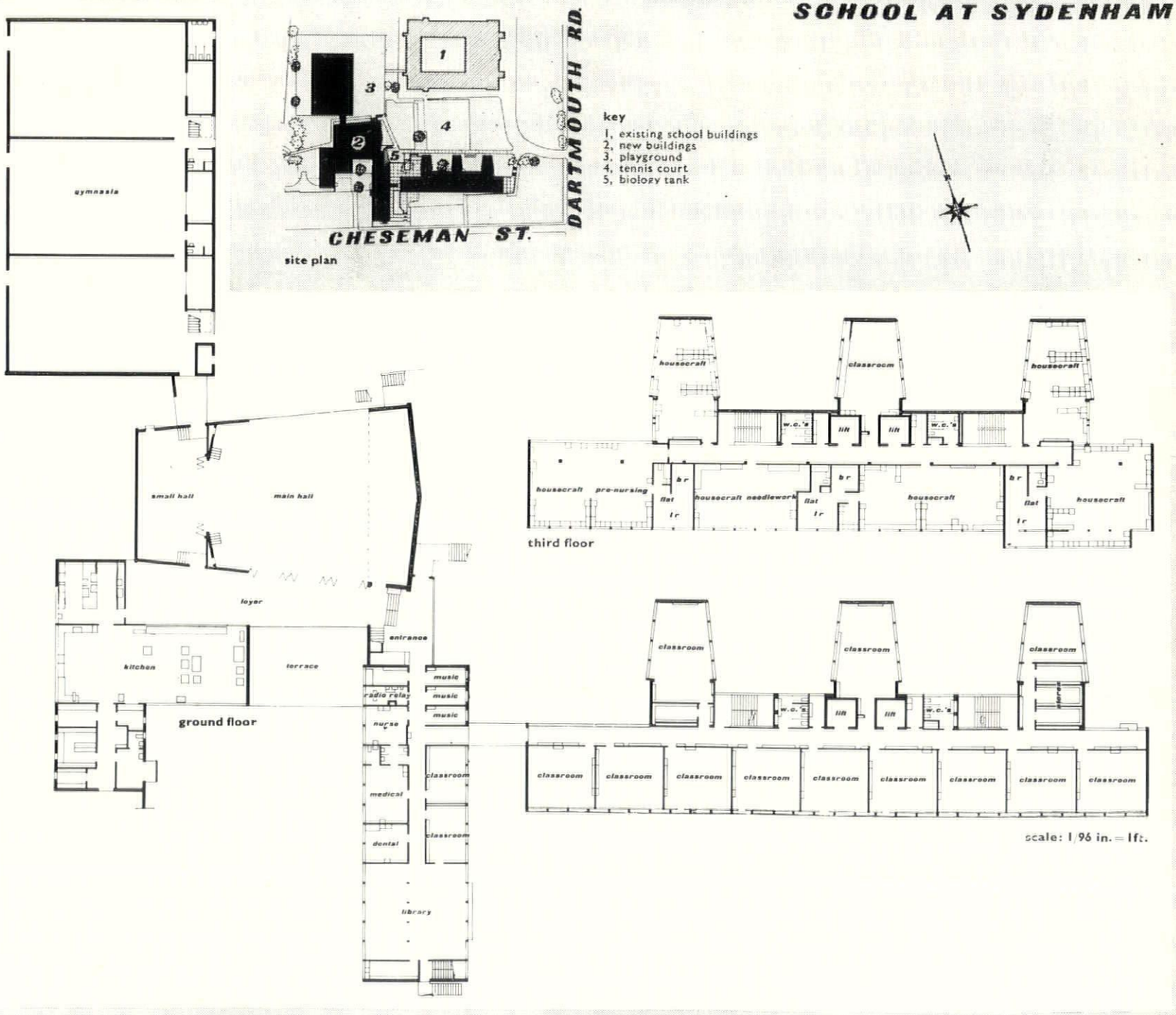
concrete columns in two lengths, with 5 in. thick gable end walls faced with Derbydene stone ; hollow tile and reinforced concrete floors and roof with spine columns and beams between rooms and corridor. The tapering five-storey annexes on the north side are similar, with mass concrete and r.c. strip foundations, column bases and retaining walls, the latter faced with granite setts. The external walling to the south side and sides of annexes consists of galvanized steel windows with cavity spandrel walls consisting of 1½ in. precast concrete panels with exposed aggregate tied back to a 3 in. breeze block skin. The north wall of the main block consists entirely of special metal window sections between metal T-shaped mullions which are fixed back to the edge of

the floor slabs. Spandrel walls of 4 in. breeze block are cement rendered externally and painted to show as coloured panels. The administration block uses the same module with gable ends in 11 in. cavity brick and spandrel walls in 8½ in. cavity construction with 4½ in. red facing bricks externally. The gymnasia are steel framed, part in two storeys with an in-situ r.c. first floor supported on 11 in. cavity brick walls and 6 in. diameter precast concrete columns ; the assembly hall is also steel framed, with exposed portal frames diminishing in overall width towards the stage, faced with 1½ in. Derbydene stone slabs at the east end and 11 in. cavity brick elsewhere. The entrance foyer is steel framed with in-situ reinforced floor, incorporating a bridge at mezzanine level connecting the gallery with the administration block. The schoolkeeper's lodge is a two-storey structure in load-bearing cavity brick with purple/black facings and vertical wood boarding in window spandrels.

The floor finish in all classrooms is 3/16 in. lino tiles in a range of mottled colours, one colour to each room ; the corridors generally are in thermoplastic tile. The assembly hall and housecraft flats are finished in muhuhu blocks and the gymnasia in maple strip. The entrance foyer is in Derbydene stone paving. Main stairs have precast granolithic treads with blue terrazzo risers and stringers.

Walls generally are plastered with plastic emulsion finish ; wall papers are used in the foyers, staff rooms and library, and perforated hardboard in natural finish gives an acoustic absorbent to back wall of the hall.

SCHOOL AT SYDENHAM





Curtain walling in England owe its origins to patent glazing far mor than in any of the other industrialize countries in which curtain walling i indigenous. Patent glazing, that is t say the methods of puttyless glazin patented from the mid-nineteentl century onwards, tried after all t solve much the same problems on th roof that curtain walling attempts o the wall. The principle most applic able in the new context was, o course, the mechanical joint betwee the glass and the bar which kep most of the rain out, but had, as a kind of secondary defence, a groove drainage channel in the glazing ba which also took away any condensa tion from the inside face of the glass. The principle is perfectly sound a long as the bar remains continuous and the horizontal joints weathe themselves through overlaps like fish scales. When horizontal members are inserted in the same plane as the mullion, difficulties arise and most of the weaknesses of the systems based on patent glazing occur here. It must, nevertheless, be recognized that this principle of the mechanical joint and the internal drainage channel is an important contribution to curtain walling technique. On the pages that follow Michael Brawne and Alan Craig survey current curtain wall problems and products with special reference to Great Britain.

Facing page, Bowater's tissue mill, Northfleet. Architects: Farmer and Dark.

Michael Brawne and Alan Craig *

WALLS OFF THE PEG

AN ANALYSIS OF BRITISH CURTAIN WALL SYSTEMS

It is just under half a century ago since Walter Gropius sheathed the Fagus Works in a curtain wall of metal and glass—an enclosure which he himself described as 'restricted to that of mere screens stretched between the upright columns of the framework'. Since that date the curtain wall has become the accepted and demanded idiom of contemporary architecture. In the States, as was demonstrated in the May number of the 'Review', it has almost become synonymous with it. And yet in that half century the curtain wall has not changed a great deal; it has in the last five years merely become commercially available —surely an inordinate time lag between prototype and production model.

The curtain wall is, of course, merely one manifestation of the very general movement responsible for the industrialization of building. It is, however, a highly visible and dominant manifestation which has acquired an almost symbolic quality. The curtain wall, more than any other element, has become the stylistic mark of industrialised architecture at its present stage of development and its success can undoubtedly be attributed in large measure to this emotional appeal; this inherent rightness of the lightweight enclosure sheathing the sparse load-bearing skeleton. The answer it provides is so strictly rational that it evokes an emotional response.

It has only recently become possible to translate this emotional appeal into building reality because only in the last few years has the material-to-labour ratio changed to such an extent that the curtain wall made sense in terms of economics.

In the article which follows we discuss in the main section the inherent technical

* The research on the curtain wall systems was done jointly by the two authors; the article itself was written by Michael Brawne.

problems as they seem this side of the Atlantic, and in the second section we line up the proprietary systems which can (or which could at the time of writing) be bought 'off the peg' in this country.

In terms of material, two of its great virtues—thinness and lightness—can seldom be fully exploited in this country. The back-up wall or the projecting ledge required by fire laws destroy any gain in usable floor area, and therefore annual return from additional rent, which might otherwise have been achieved. The reduction in structure and foundations which the light weight of the wall brings about becomes appreciable in any significant sense only on quite tall buildings, and we have not yet been allowed structures of twenty storeys or more. It does seem strange, however, that a number of relatively tall office buildings now being planned do not use curtain walling. The most conspicuous and controversial amongst these is undoubtedly Sir Howard Robertson's project on the South Bank where it would seem that a large corporation does not wish to advertise itself through an architecture as technologically advanced as its products.

The great economic virtue of the curtain wall is undoubtedly its rapid installation. The bulk of the time and effort required to produce the wall are spent in the factory where the best use of manpower and machines can be made, and where a precision product can be created under close control. Precise elements are, of course, required because only these can be assembled speedily and easily on the site. Rapid site erection has a number of important results. The most significant is the much earlier occupancy which becomes possible. For one group of office buildings in Pittsburgh it has been computed that a brick and masonry cladding would have taken six months to complete; the erection of stainless steel panels took three weeks. The additional rental which this shorter construction period made possible was just under two million dollars. It is interesting to note that the saving in the structural skeleton due to the difference in weight between masonry and panels on the same project of office buildings 19 and 23 storeys high was only a sixth of that figure. The quickest possible construction time is, however, not only of interest to those renting office space but also to those financing the building. Investment companies are always anxious that their capital should not be tied up for any length of time, for the loss of interest on investment during construction can be quite considerable.

In this country curtain walling has so far been used most frequently on schools where the same economic arguments of rental do not apply yet early occupancy is of course just as important, and it is probably true to say that without some such speedily erected form of cladding the great school building programme of the post-war years could not have been accomplished. This is especially so as a large number of these schools have been built in areas where building labour is extremely scarce, and it is significant that some of the earliest uses of curtain walling on any scale have, both in England and America, occurred in areas where there had previously been little building and there was, in fact, a labour shortage—Chaddesden Secondary Modern School by the Architects' Co-Partnership (AR, July, 1955) is built in Derbyshire, Pietro Belluschi's office block for the Equitable Savings and Loan Association built in Portland, Oregon, in 1948 (AR, December, 1948; see also AR, May, 1957), is in the Pacific North West.

In the nine years that have elapsed since Belluschi's elegant aluminium cladding was put up in the centre of Portland, the manufacture of curtain walling has become a considerable industry. In this country there are about twenty manufacturers, mostly established producers of metal or wood windows, or of patent glazing, who have recently added a number of sections to their range which form mullions, transomes, cills, covers, etc., and which together with their windows provide a curtain wall. In other cases makers of infilling panels or of sheet metal work have taken up curtain walling. Several of the producers export their cladding and most will also install it, a course to be highly recommended.

Although the principle of the curtain wall has respectable nineteenth century origins, its full scale manufacture is a matter of the last few years. It is thus, as most manufacturers will agree, still at a very primitive stage of development, with its many inherent problems not yet solved and many of its potentials not fully exploited.

The problems

the joint

The curtain wall, as we know it at present at any rate, is an impervious skin stretched over a building. Most of its problems arise from this simple fact. None of the rainwater is absorbed and so very large concentrations of water may occur at any one point. These may easily, especially with wind pressure behind them, find their way through the skin at a joint. The Building Research Station has shown in its Digest on light cladding, the first part of which has just been published, that in a heavy rainstorm about one gallon a minute will run down every hundred square feet of vertical surface exposed to the rain. It is not surprising, therefore, that most thought devoted to curtain walling has up to now concentrated on the problem of the junction.

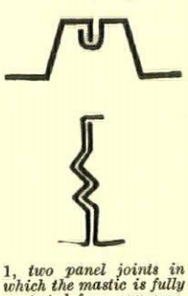
Two broad categories of joint seal can be distinguished: rigid and non-rigid. The rigid joint such as welding or glueing can seldom provide all the answers. Even if the design allows for movement of the cladding in folds of the material rather than at the joints, a perfectly feasible design with sheet metal, for example, it is rarely possible to weld or bond all the joints of the cladding after it is in place. A great many more joints could, of course, be fixed rigidly than is the case at present—the corners of metal windows are welded, the corner junctions between mullion and head in the curtain walling grid are not. This is especially true as the epoxy resin-based adhesives make metal to metal bonding a feasibility. Such rigid fixing only demands an even further concentration on shop fabrication.

It is the non-rigid joint which is the weakness of the system. Four types can be distinguished:

1. **mastic** This is probably the commonest sealer and in many ways the least satisfactory. The traditional oil based putty, a form of mastic, was only sound as long as it was kept painted. On curtain walls which often do not need painting, it soon fails. The same is true of many other mastics which, although not oil-based, only retain their elasticity for a limited period. Most are liable to erosion by wind and water and a number fail under direct ultra violet light.

Makers of mastics, like paint manufacturers, seem peculiarly reluctant to divulge the chemical base of their product or to publish any data on its physical characteristics. Such phrases as 'a specially prepared compound of unique properties' assume an excess of simple-minded trustworthiness on the part of architects.

If mastics are specified they should, whenever possible, be placed in positions which are shielded from both sun and extreme exposure, 1, and where they are not liable to be sheared by the movements of the joint.

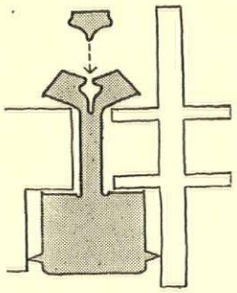


1, *two panel joints in which the mastic is fully protected from exposure.*

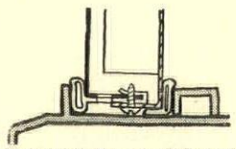
The most hopeful development in this type of joint is the use of a polysulfide synthetic rubber which is known by its trade name of 'Thiokol.' Strictly speaking this is not a mastic but a liquid polymer which, when compounded just before use with a curing agent such as lead oxide, forms itself without shrinking into a resilient rubber. Its properties are, in many ways, remarkable. It has adhesion in shear of at least 200 psi to aluminium, steel, glass, concrete, plywood, asbestos, brick and stone; it

shows no water absorption after being immersed for four days at 80°F, and, most important of all, it can be elongated 200 per cent before breaking. Accelerated weathering tests which included exposure to ultra violet light and salt spray indicated a durability of 30 to 35 years without significant change. The material has for some years been employed in the aircraft industry both here and in America and has recently been used on curtain walling in the States. Lever House was not long ago entirely recaulked using 'Thiokol.' A number of British curtain wall manufacturers are at present experimenting with the compound and should soon be in a position to supply it as their standard joint sealer.

2. **gaskets** These have, of course, been in use for a long time in the automobile industry but are relatively new in building. Every car windshield is weathered by an extruded gasket and in view of the extreme wind pressure which it may experience it is really a remarkably tight joint. Gaskets for curtain walls have been extruded from a number of plastics, the commonest being neoprene and vinyl. The curtain wall on Saarinen's General Motors Technical Centre (AR, May, 1957) uses an ingenious neoprene gasket, 2, which grips the panel around its edge A more common gasket consists of a hollow vinyl tube which seals the joint through being compressed against two planes, 3. At the corners the tube can be made continuous by being cut with a hot blade on the mitre and on making contact the two tubes will fuse. The great virtue of gaskets is that quite complex shapes can be extruded, both hollow and solid, with varying wall thicknesses giving different degrees of resilience and that, moreover, the die costs are relatively low. It is often quite easy to hold such gaskets in grooves which have been extruded in the aluminium section, 4. Such closures are frequently used on windows in air-conditioned buildings to reduce air infiltration. The latest curtain walling system to be developed in this country uses such an extruded gasket to seal both the glass and panels and is illustrated later.



2, the extruded neoprene gasket which joins the vitreous enamelled panel or the double glazing to the extruded aluminium framing on the General Motors Technical Centre. The gasket, 2¼ in. by 1¼ in., is tightened by inserting a neoprene filler strip.



3, two tubular extruded vinyl gaskets weathering the junction between panel and framing. At the corners tubes are cut and fused to make a continuous seal. Weep holes at the foot of the panel are intended to drain any condensation which may form from within the cavity.



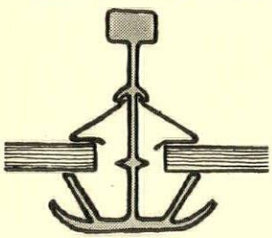
4, a hollow vinyl seal is gripped in a groove extruded as part of an aluminium window section and provides an almost air-tight closure. The glass is, incidentally, held by a spring clip pressing it against a mastic tape, a patent glazing method applied here to metal windows.

3. **cover tapes** These are usually impregnated fibre tapes which will bridge a joint and if kept under pressure remain watertight. They can also be used between materials which fit tightly, for example in the corrugations of aluminium sheeting and will, as long as they are under pressure, provide a seal, 5. They have so far been used rather more in the construction of caravans and similar coachwork than on curtain walls but their use should certainly be investigated further in building construction. Their ease of application is a point greatly in their favour.

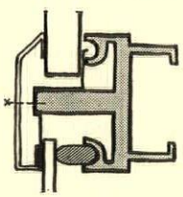


5, two synthetic rubber tapes reinforced with fabric are held under pressure on either side of the sheet metal screw. Such tape provides a very effective and easily applied seal.

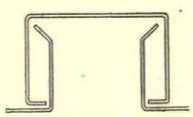
4. **spring stops** A number of forms of this particular seal exist. The most obvious is the spring clip which holds the glass tight in certain forms of patent glazing, 6. The bent cover strip which is used on one English curtain walling system also comes into this group, 7. The same is true of various interlocking joints between metal sheets which depend for closure on the spring action of the material, 8. The great weakness of the spring clip is at the corner where its continuity is broken. Patent glazing rather neatly solves this problem by never making the clip change direction.



6, the spring action of bent metal is fully exploited in this method of patent glazing where it provides both seal and fixing for the glass.



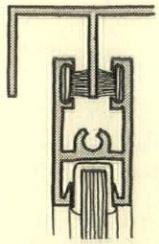
7, a system of curtain walling derived from the patent glazing technique, and again using the spring action of bent metal to hold the glass panel in position.



8, the familiar snap closure in which two pieces of bent metal press against each other. This device is often used in curtain walling when a cover fillet has to be applied.

A very similar spring action is to be found in the closure given by mohair strip. This strip is the familiar lining of most car windows. It is also a common seal on steel or aluminium sliding doors. The strip consists of a short mohair pile on a woven backing or in a plastic cord. To give rigidity to the strip it is further backed by a very thin sheet of metal. The elastic tufts of the pile are slightly depressed and give an extremely tight seal unlikely to deteriorate. Such a closure from an aluminium sliding door is shown in 9.

It becomes obvious that many alternative ways of achieving a weather-tight joint can be devised. Only a few have so far been tried on curtain walling, and a great deal of experiment remains to be done. The assumption that a curtain wall is only a series of windows which can be sealed traditionally with putty-like compounds has been proved erroneous and new methods must be found by the manufacturers of this new product.



9, metal backed mohair strip held in grooves extruded as part of a sliding door head member. The spring action of the slightly compressed tufts provides an extremely durable weathertight closure. This extruded aluminium section also shows the great versatility of such profiles: two grooves hold the mohair strip, the central three-quarter tube takes a self tapping bolt at each end to form a corner connection and the lower channel holds the glass and its vinyl seal.

materials

After the joint, probably the next most important problem has been the material of the curtain wall. This is, of course, as much an economic and visual question as a technical one. The cost figures given with the system described later amply demonstrate this: other things being equal, a grid in ordinary mill finished aluminium is about 40 per cent more expensive than that in galvanized steel, and again, the opaque appearance of a coloured metal panel is very different from the translucency of cast glass. The choice of material, unlike perhaps the detail treatment of the joint, is moreover still very much an architectural responsibility. Few manufacturers are in fact able to give really unbiased advice on this choice, for most have a vested interest in one material or another.

Metal, wood, glass and plastics have up to now been the materials most used on curtain walling. No single material has yet probably answered all the exacting needs of strength, durability, colour, texture, cost and so on. Perhaps none ever shall, though it must be remembered that chemistry has only very recently turned its attention to building materials and there is no reason to suppose that the effect of such research into cladding will be any less spectacular than it has been in textiles, for example.

1. *metals*

(*a*) **steel** Carbon steel has for long been used in the making of windows and its extension to curtain walling seems natural. It, of course, suffers from two serious drawbacks: it rusts and has a limited number of feasible shapes. Its obvious advantage is its cheapness. Many forms of protective coating exist; galvanizing, cadmium plating, sherardizing, stove enamelling, paint. All these have a limited usefulness as they are liable to damage or, like painting, last only for a few years. Galvanizing is still the most permanent and satisfactory of these coatings. Unfortunately, the only really certain protection, vitreous (or porcelain) enamel, can only be applied to sheet steel. This process is the fusion of glass granules to steel in a furnace at about 1,500°F. The resulting material is extremely durable, colourful and once safely in place (the danger of chipping through careless handling must be taken into account) highly weather resistant. It has long been used for signs and a great many of these belonging to

London Transport, for example, have suffered the severe strain of London grime without ill effect. Vitreous enamel must be clearly distinguished from stove enamelling which is merely the hardening of a special paint by passing the material through an oven.

Vitreous enamelled panels have been used with great success on a large number of buildings. They can be had in any colour except a metallic tint and can range from high gloss to semi-matt. They can also be textured by being corrugated or embossed before enamelling, and in many ways this is to be recommended as such depth will add strength to the sheet and it may be possible to specify a thinner gauge.

A somewhat analogous refractory process fuses small granules of stone to a steel sheet. The resulting panel has a dead matt appearance with a texture not unlike that of coarse sandpaper. Such matt appearance has, of course, the great advantage that any waviness in the metal is completely masked. There is also a great range of colours and the sheet can be either uniform in colour or have a number of colours sprinkled on at random or in a definite pattern. There is, however, a tendency for rainwater to lodge in the small pockets between the granules and for the panel to dry out unevenly if it is protected by a ledge somewhat in the manner of natural stone. Perhaps this material should always be mounted so that it receives completely uniform exposure. This particular refractory process has for some time been used as a lining for the exhausts of Rolls-Royce and Bentley cars and is just beginning to find its way into building.

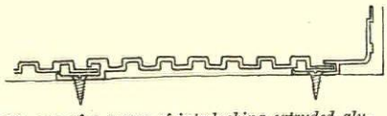
The limited number of possible shapes in bar steel is due to the fact steel cannot as yet be extruded and is normally hot rolled. Hollow shapes are impossible as are also the rather intricate forms of extruded aluminium or bronze which are so useful in achieving weathertightness.

(*b*) **stainless steel** Many different alloys are produced but the most useful from the point of view of building, are two groups, one which contains chromium and the other chromium and nickel. The chromium alloys are slightly less corrosion resistant than those which also include nickel, but are lower in cost.

Stainless steel being in any case a much more costly material than either vitreous enamelled steel or aluminium, particular attention should be paid in the design to achieving its most economic use. This usually means texturing the metal in some way to increase its stiffness. Not all attempts at such shaping need have as unfortunate an effect as the 39 floors of the Socony Mobil Building in New York by Harrison and Abramovitz. It is often quite useful to restrict stainless steel to critical areas where some sparkle is needed. Farmer and Dark have done this on their factory for Bowaters, for example, where the cover plates to the steel grid are in stainless.

Although stainless steel is a perfectly satisfactory finish by itself and variety can be obtained by different degrees of reflectiveness and by the brushing of the metal, it can also be coloured by being glazed in the manner of vitreous enamel. This is still an experimental process but its possibilities are very interesting. A translucent glaze can be used which allows some of the sheen of the metal to come through and it can also be applied merely to the low areas of patterned sheets so that the high points remain bright and metallic. Great potentials of rich colour and texture remain to be developed.

(*c*) **aluminium** Aluminium alloys have been used a great deal on curtain walling largely due to the fact that a great variety of shapes and forms of aluminium are available and that, properly coated, it will not deteriorate. Aluminium is available in sheet form, castings and extrusions. Its great virtue is undoubtedly the great range of profiles which can be extruded. Such profiles can be designed to include weathering bars, interlocking joints, pockets for mastic, stiffeners and so on. Extrusions have for long been used on aluminium windows (too often, unfortunately, imitating steel sections), and they are now common for curtain wall framing but flat interlocking extrusions, it should be remembered, can also form panels or column covers. One such shape which is in the standard range of



10, one of a range of interlocking extruded aluminium sections which can be used for cladding purposes.

an Italian aluminium company is shown in 10.

It is most important that aluminium should be adequately protected by being anodized. This is an electrolytic process which increases the thickness and effectiveness of aluminium's natural hard oxide coating. Without such protection it is really not a suitable material for urban use. Anodizing adds about 15 per cent to the cost. This is a rather high percentage which is still charged in this country owing to the very limited facilities for anodizing which are available. Specification for aluminium curtain walls should, however, always include for this additional price.

Special aluminium alloys may now also be had with coloured finishes. These are at the moment restricted to a very small range which includes blue, gold, green-yellow and black. It is still questionable whether these colours, with the possible exception of black, which has been used on Olivetti's recent office building in Milan, are really permanent. A dark grey colour, rather like gunmetal, can also be produced by anodizing an alloy with a high silicone content.

Aluminium sheets can also be vitreous enamelled using a low temperature process which fuses the glass frit at about 1,000°F. Unlike enamelled sheet steel, aluminium panels can be cut, drilled and pressed to some extent after enamelling and their edges are not vulnerable in the same way since even if the enamel should be chipped off, the metal will not rust.

Aluminium is a soft and vulnerable material and should be installed with great care and protected during erection. A temporary protective lacquer such as methacrylate should always be specified over the entire work to avoid staining the metal through contact with alkaline mortar and plaster. Metals (other than stainless steel, zinc and white bronze), concrete, masonry and timber which is liable to become wet or which has been treated with a preservative should all be painted where in contact with aluminium to prevent an electrolytic action.

(*d*) **bronze** Like aluminium this can be extruded though not in hollow sections; its weathering properties are, however, very different since bronze mellows to a dark brown with a slight green patina naturally and then retains that colour. It also has a hard precision which is sometimes difficult to achieve in aluminium. It was for these reasons used by Mies van der Rohe and Phillip Johnson for both framing and panels on their office building for Seagrams. Bronze has not been tried in this country on curtain walling since the war, presumably because of its high cost.

2. *wood*

This is in many ways a very good material for curtain walls especially if one of the timbers not needing painting, such as teak or Western Red cedar is used. Timber is, of course, particularly good from the point of heat insulation. Fire laws in built-up areas, however, are unfortunately likely to restrict timber curtain walls to schools and similar buildings.

The design of the wall must take into account the movement which is natural in timber and provide for joints which cope with this. Sections of the material will be a great deal bulkier than those in metal with a consequent emphasis on the vertical and horizontal grid. Window openings, if also in timber, will give yet more thickness and become dominant in the pattern. Their disposition on elevation can in no way be ignored. Windows can, of course, be in metal. The use of a hori-

continued on page 185

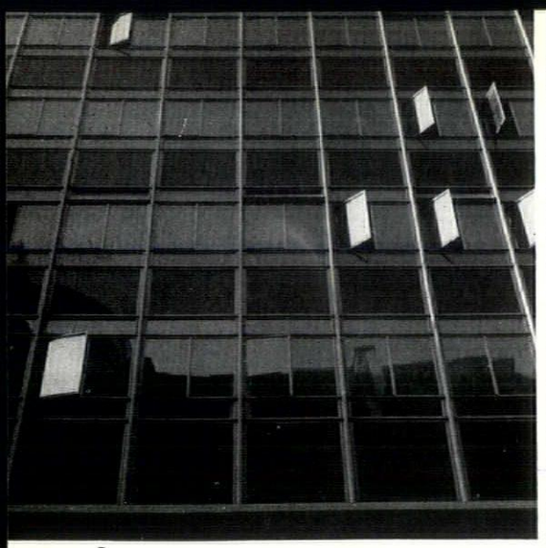
NOTE *a review of the standard infilling panels now on the market in Great Britain is given in the SKILL section of this issue, starting on page 212.*

steel **Curtain wall systems using steel derive either from the early factory walls or the pressed metal technique of shop fronts. Those based on industrial walling often use the so-called Detroit bar mullion to which standard window sections and transom bars are coupled up in the same way in which a large window could be constructed. As a very rough guide such a wall without glass or infilling panels might cost a little less than 10s. a square foot erected.**

John Thompson Beacon, Crittall, Henry Hope, Mellowes, Morris Singer, Williams & Williams and Wragge are some of the manufacturers who market curtain walls in steel.

1, This curtain wall some time ago took the place of Frascati's ebullience and now mirrors and distorts the silhouette of the south side of Oxford Street. The wall is composed of pressed metal mullions and flat transomes with 'Vitroslab' panels and was made by The Morris Singer Company. Architects: Fitzroy, Robinson and Hubert H. Bull.

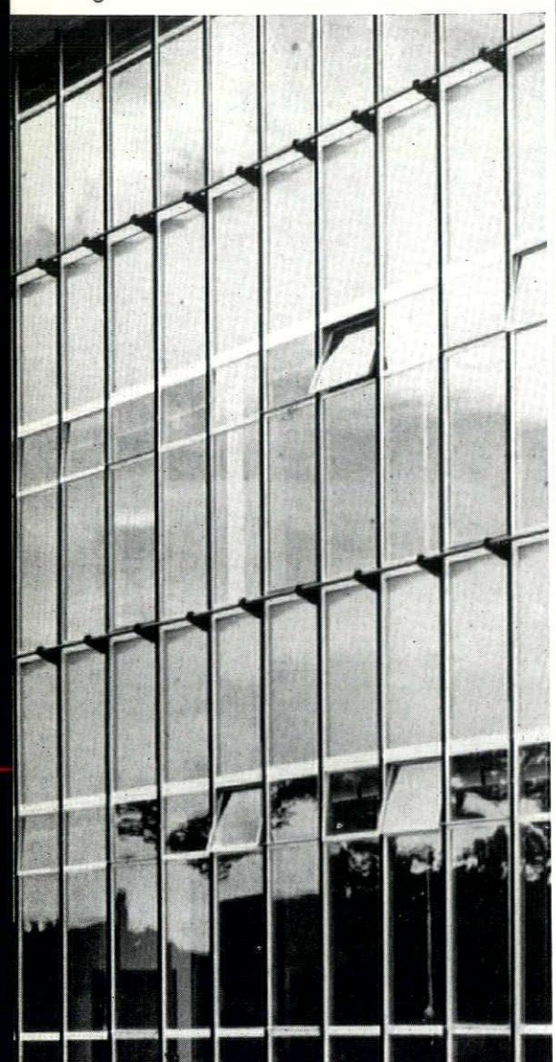




2

2, The mullions on Penberthy's building in Oxford Street are in pressed steel but differ in profile and effect from those in 1. The grid was made to the design of the architects by the Crittall Manufacturing Co.
Architects: C. Edmund Wilford & Son.
3, The small rail used as a support for ladders and the repetitive punctuation of its brackets provide the sort of functional enlivenment which curtain walls often lack. George Wragge were responsible for this cladding at Oldwood Secondary School, Wythenshawe.
Architect: L. C. Howitt, Manchester City Architect.
The visual importance of the relation of cladding to structure can be seen at Samuel Pepys Secondary Modern School, Deptford, 4; in the large block the wall is either in front or behind the columns, in the low block between them. The feeling of depth need not be incompatible with the use of curtain walling. This wall of standard rolled sections is by Henry Hope & Sons.
Architects: Gollins, Melvin, Ward & Partners.

3



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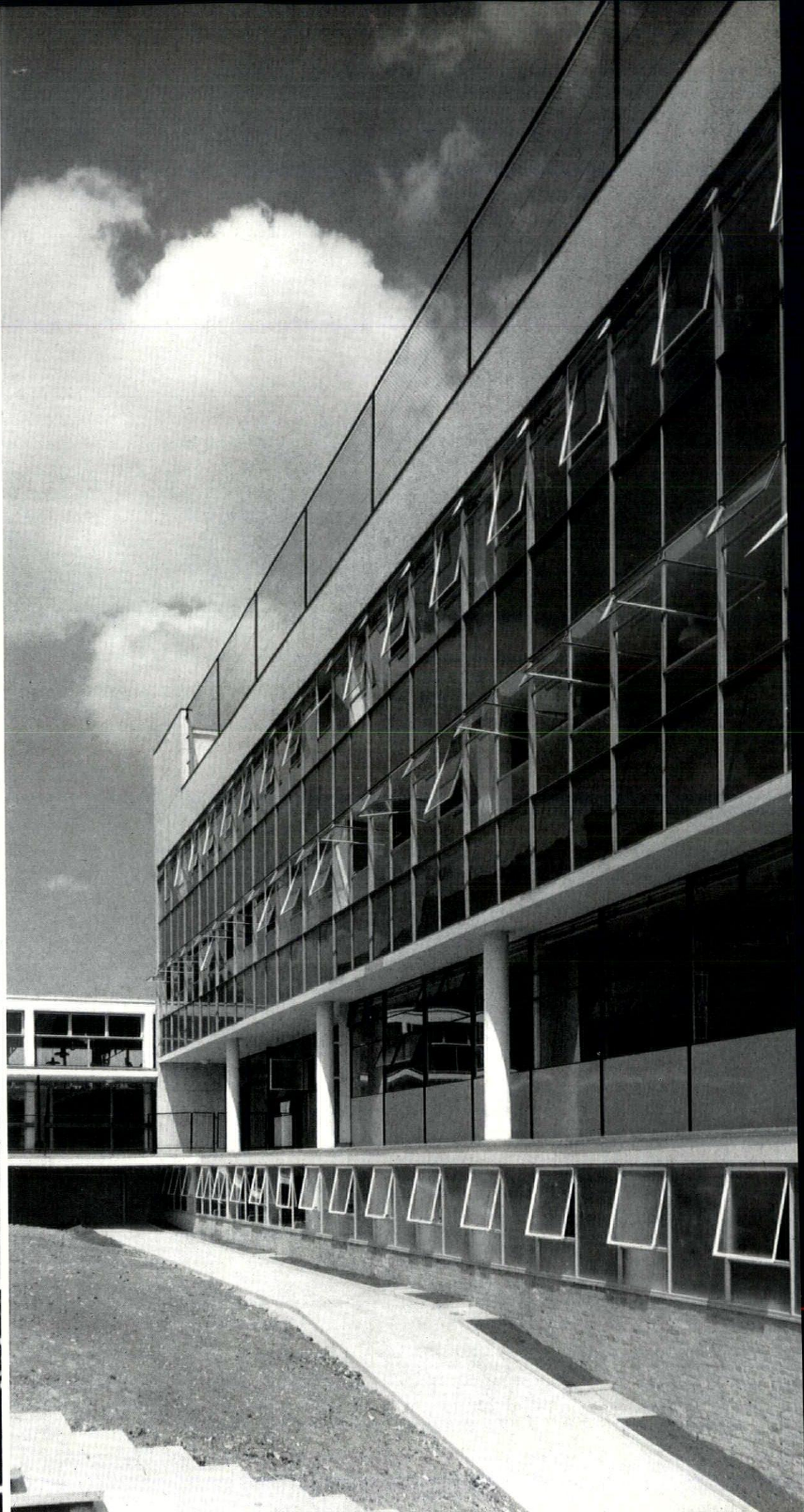
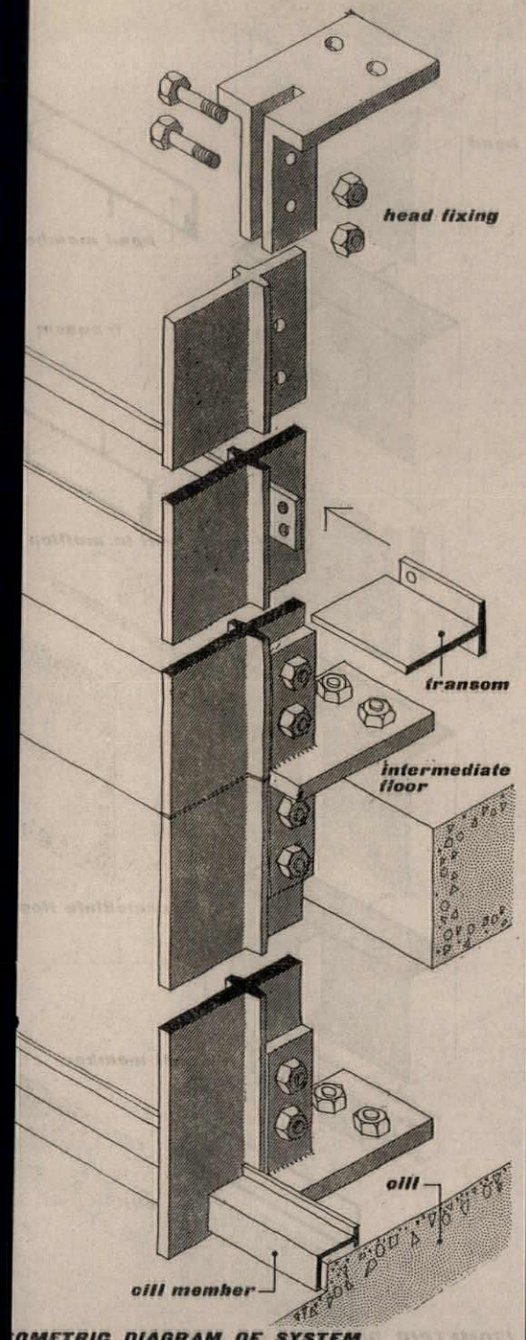
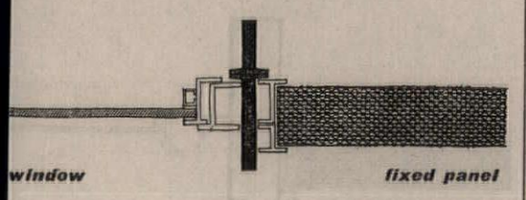




ISOMETRIC DIAGRAM OF SYSTEM



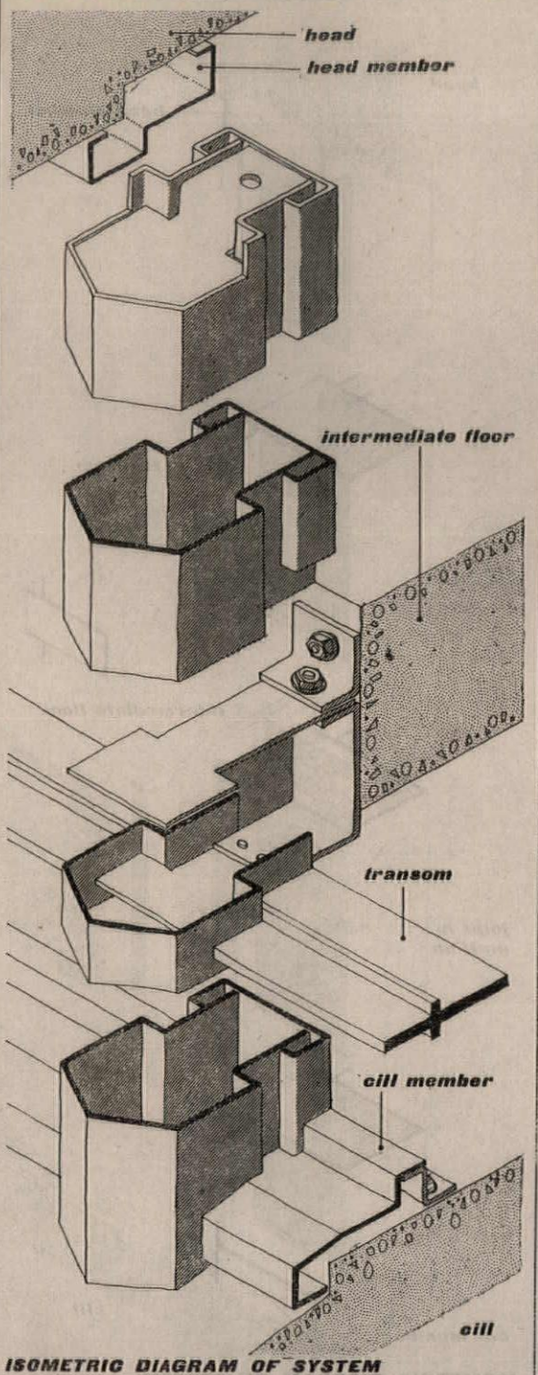
LAN OF MULLION

JOHN THOMPSON BEACON WINDOWS

Material Steel — Cost Index: 90*

Note The Detroit mullion used in this system has for long been employed on large expanses of factory glazing and this design really varies little from that practice except that it allows (without any great subtlety) for the use of solid infilling panels.

*The figure 100 has been assigned to the mean in the range of prices for grid and windows erected. No account is taken of infilling panels or glazing. This comparison is merely a rough guide and in no way a substitute for competitive quotations.



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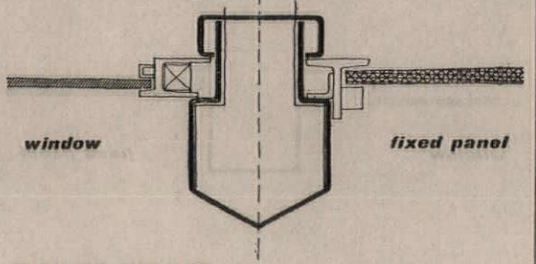
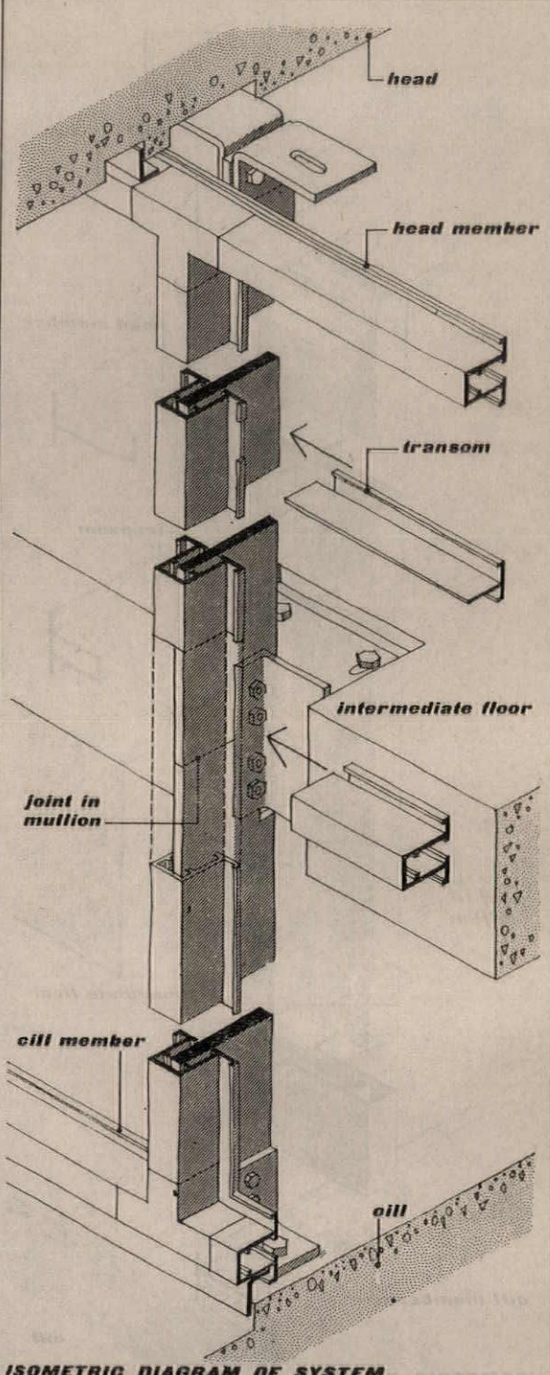


PLAN OF MULLION

MORRIS SINGER 'HOLOFORM'

Material Steel — Cost Index: 90

Note The main members of this system are pressed out of sheets which have been previously galvanized by the patented process which allows for fabrication after treatment. The simplicity of such fabrication makes it possible to vary the mullion's profile, for example, without a considerable tooling charge. The manufacturer also produces a number of other designs in steel including a system based on the Detroit mullion which has the main members of the grid capped by stainless steel covers.



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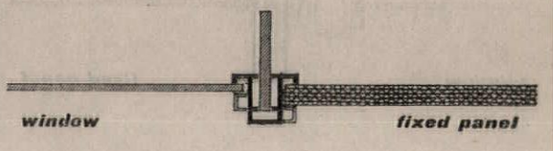
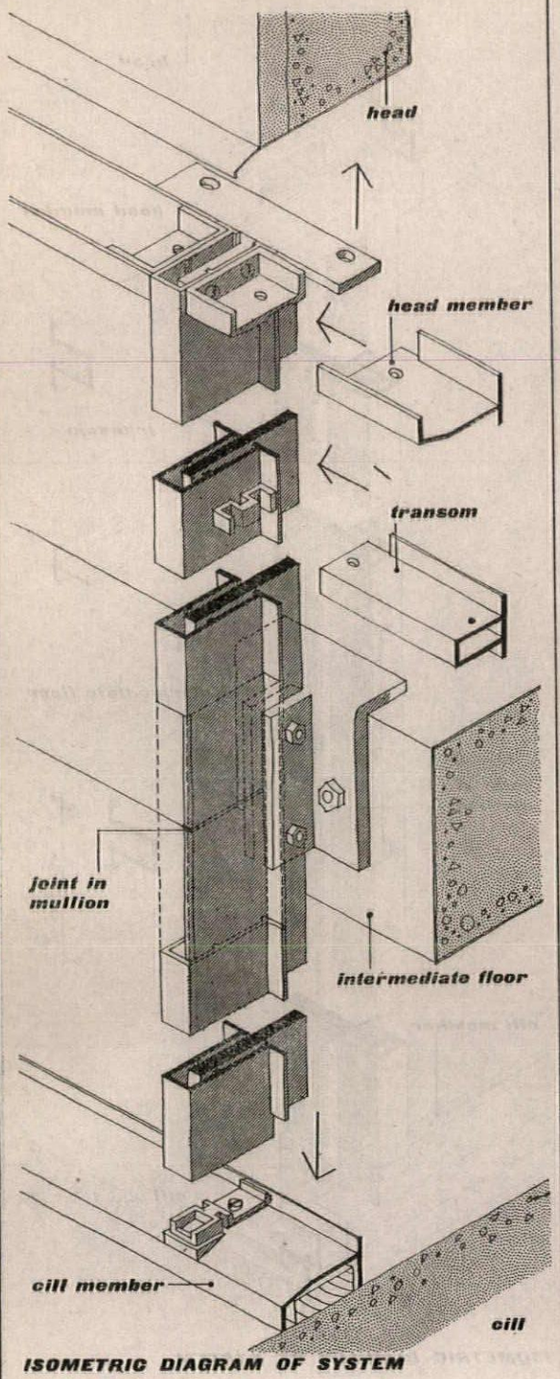


PLAN OF MULLION.

HENRY HOPE 'WINDOGRID'

Material Aluminium and steel — Cost Index: 115

Note A flat steel bar is used in this system to give rigidity to the vertical members. The bar is galvanized so that no problem should arise from its contact with aluminium. All fixings to the structure are made from this bar; the question of obscuring the head and cill fixings in the room does not however seem to have been dealt with.



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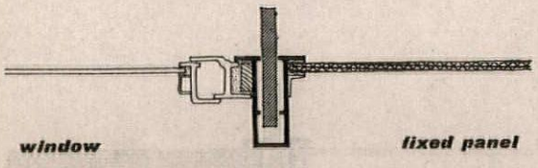
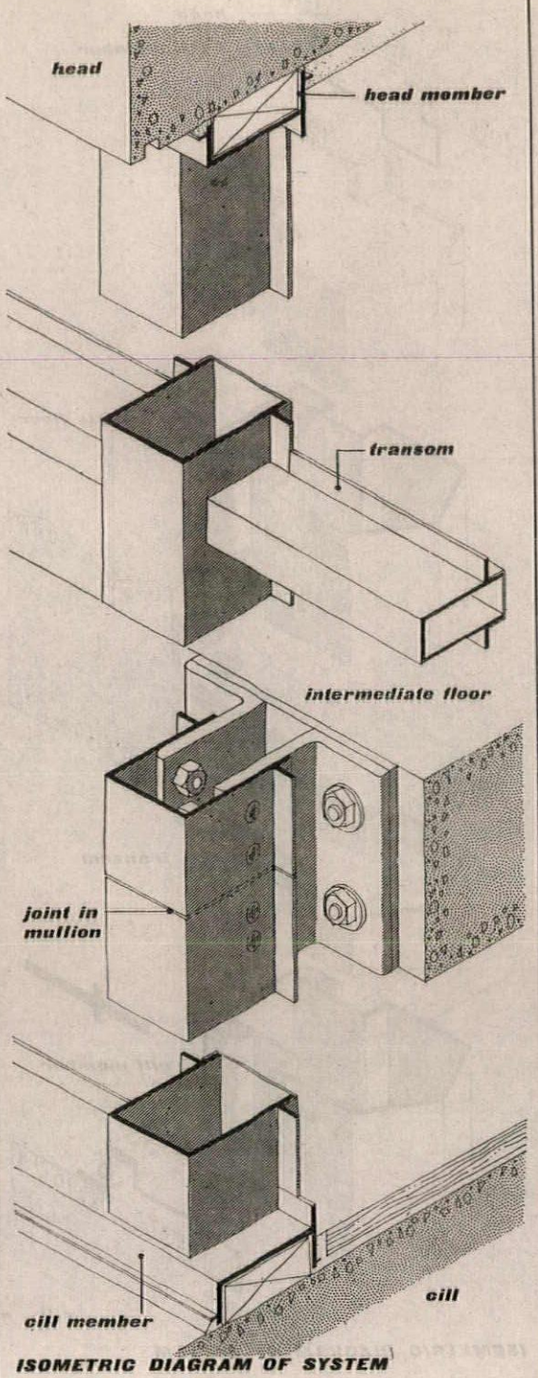


PLAN OF MULLION

JOHN WILLIAMS (CARDIFF)

Material Aluminium and steel Cost Index: 100

Note As in the case of Hope's 'Windowgrid,' a galvanized steel flat is the vertical structural member of this system. All aluminium members are, however, very much deeper than in Hope's design and the visual effect will be more like that of the box mullion systems.



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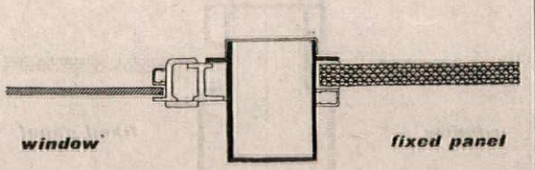
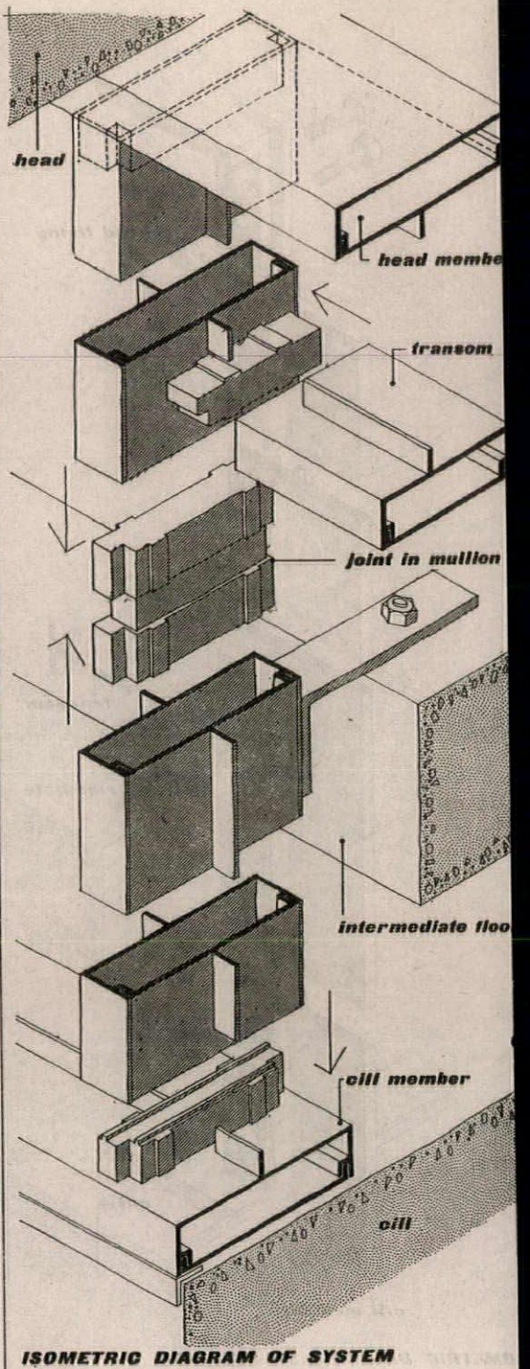


PLAN OF MULLION

AYGEE

Material Aluminium Cost Index: 125

Note This rather unsophisticated grid uses an open channel shaped section for mullions and transoms thus avoiding the cost of a hollow extrusion. The open mullion also makes it possible to take a partition right into the curtain wall; no similar advantage seems to be gained in the case of the transom. To reduce cold radiation from the wide mullion it may be advisable to line the cover strip with an insulating material.



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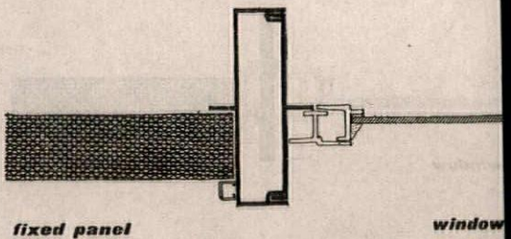


PLAN OF MULLION

JAMES GIBBONS 'WINDOWALL

Material Aluminium Cost Index: 115

Note This is one of the few systems which employs the split section principle for both mullions and transoms which would make it possible to preassemble large cladding units, were it not that in this particular version, the horizontal members are continuous. Thermal movement and erection tolerances can be absorbed in the overlap of the two sections. Windows and panels can also be fixed on the inside of the flange thus giving a greater depth to the mullion as seen from the outside.

steel and aluminium

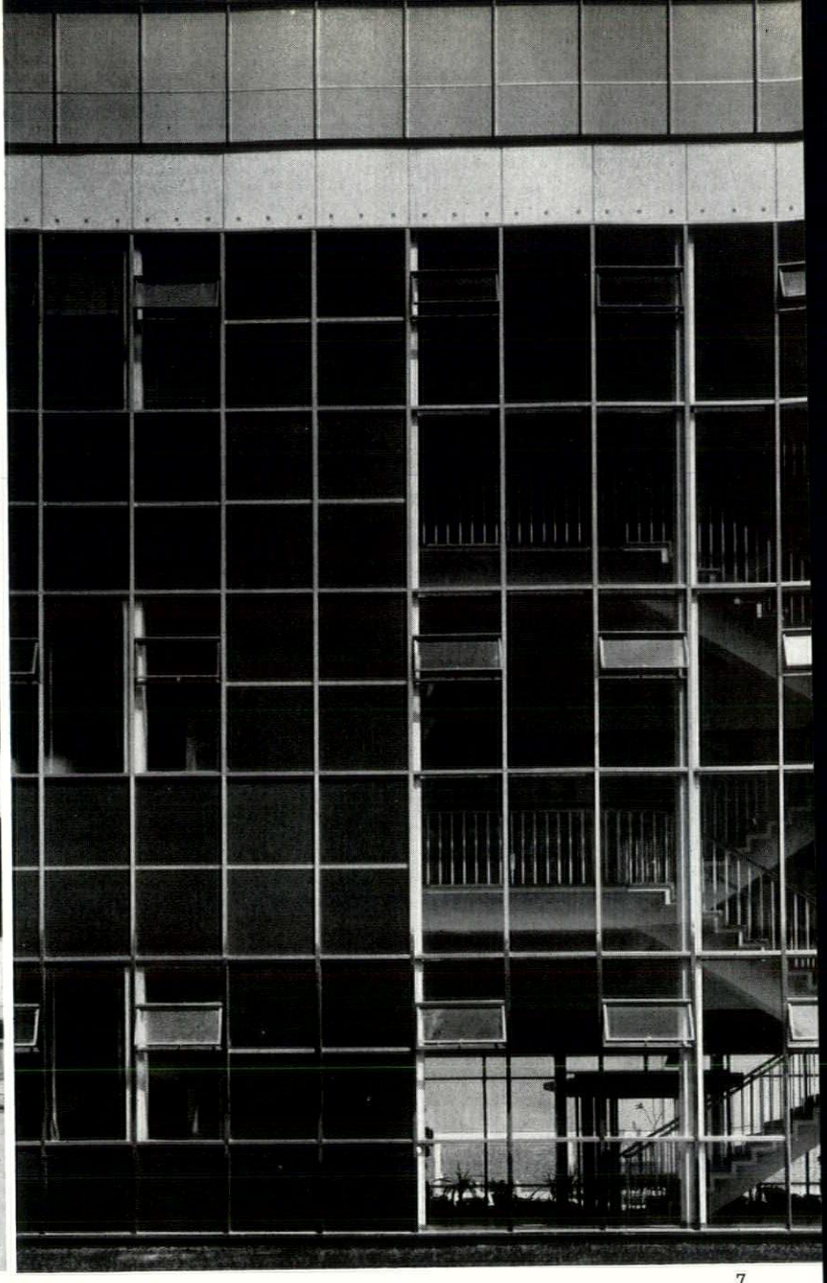
The earliest English curtain wall, Hills' patent glazing system, belonged to this group and pioneered the idea of using a structural system made of rolled steel sections, protected by a cover made from a rust-proof metal like aluminium or stainless steel. Since then, this technique has also been applied to the form of curtain walling shown in the previous section and in some instances developed to the extent that steel is merely used in an aluminium grid as a reinforcement to the mullion. Some examples, therefore, when seen from the outside, are indistinguishable from an aluminium curtain wall. At least five firms, Hills, Henry Hope, Morris Singer, John Williams and George Wragge, make walls of this kind and the cost varies greatly depending on the proportion of steel to aluminium.

5. New Cavendish Street, W.1, has the unusual spectacle of two curtain wall buildings by the same architects facing each other; this is the second of the two and is perhaps the first attempt in this country to achieve a horizontal feeling in a curtain wall. The black grid made by Mellowes & Co. is composed of steel sections covered with a 3-in. aluminium channel, and the panels are white glass. Architects: Gollins, Melvin, Ward & Partners.





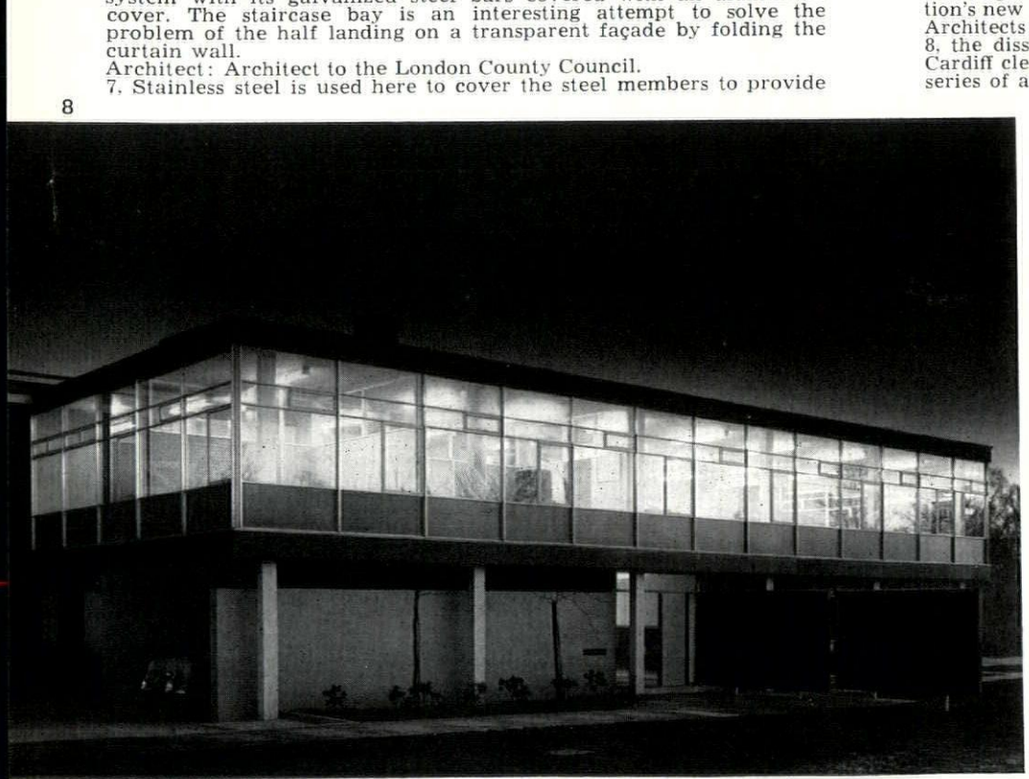
6



7

6, Strand Comprehensive School, Putney, which uses Hills' early system with its galvanized steel bars covered with an aluminium cover. The staircase bay is an interesting attempt to solve the problem of the half landing on a transparent façade by folding the curtain wall.
Architect: Architect to the London County Council.
7, Stainless steel is used here to cover the steel members to provide both protection and sparkle. This elevation is part of the considerable compl buildings using various forms of curtain walling at the Bowater Paper Cor tion's new plant at Northfleet.
Architects: Farmer & Dark.
8, the dissolution of the glass façade at night in this view of the Heinz off Cardiff clearly emphasizes the sparseness of the curtain walling grid; in this c series of aluminium extrusions reinforced by a steel bar made by John Willi
Architects: Grenfell Baines & Hargreaves.
9, Coloured panels behind glass have for some time been a n way of achieving colour on the façade; the use of patterning is tively new and obviously holds out both possibilities and pitfalls small office building at Ponders End uses Henry Hope's 'Window
Architect: Kenneth Boyd.

8



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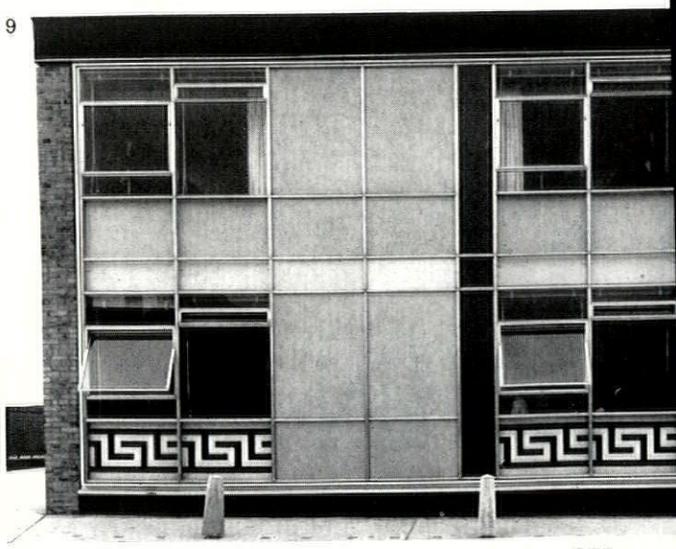
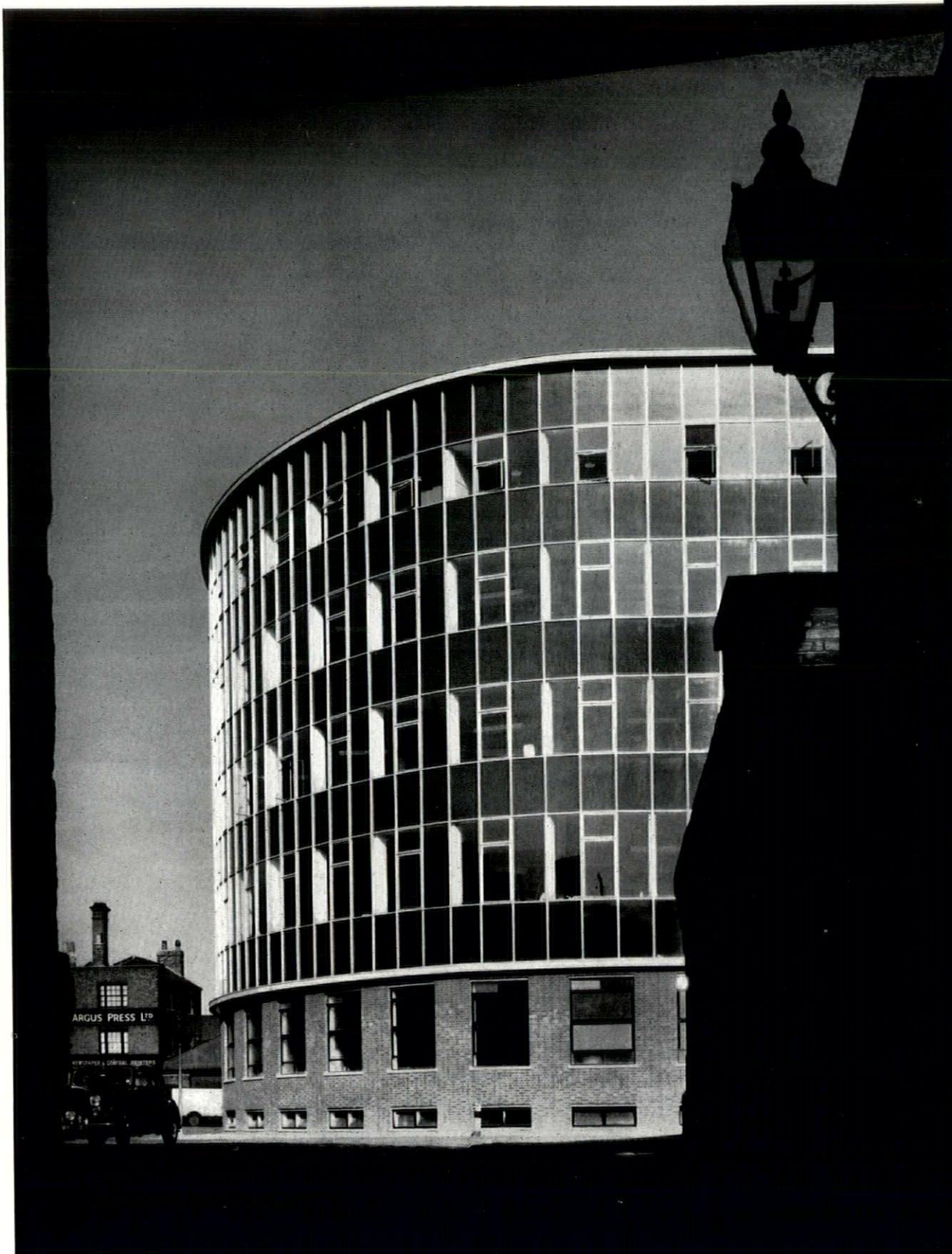


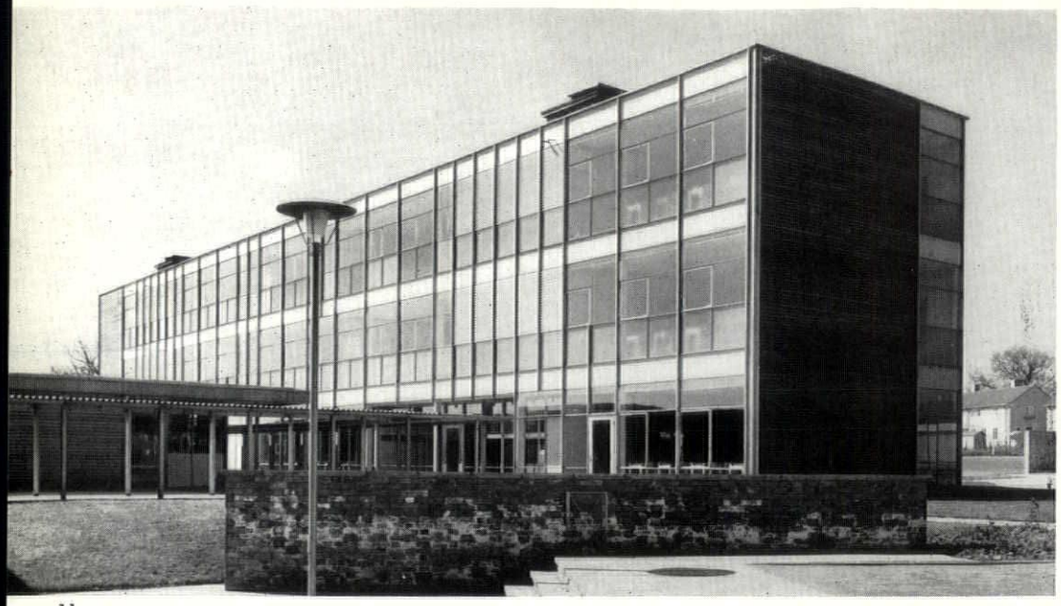
aluminium

The curtain wall built up from aluminium extrusions is, despite its higher cost, probably the most common form in use today. In terms of maintenance, aluminium or stainless steel seem to be the logical materials for a metal curtain wall structure. Many manufacturers have, therefore, developed aluminium designs; these include Aygee, Fred. Braby, Crittall, James Gibbons, Hawksley S.M.D., Hills, Holoplast, Mellowes, Quicktho, Standard Patent Glazing, Williams & Williams and W.B. Casement. Although, with the exception of Holoplast, these designs start from much the same assumptions, they differ greatly in technical detail but relatively little in appearance. Holoplast has also no marked visual characteristics but is designed so that a cladding unit consisting of grid, window and

[*continued on page* 181



10, provided the radius is not too small, curtain walling can be wrapped around a curved building without posing too many problems. Tower House, in Hopton Street, S.E.1, using 'Wallspan,' is one of the number of London buildings which have attempted the curved curtain wall with varying degrees of success. Architects: Alleyn & Mansel.



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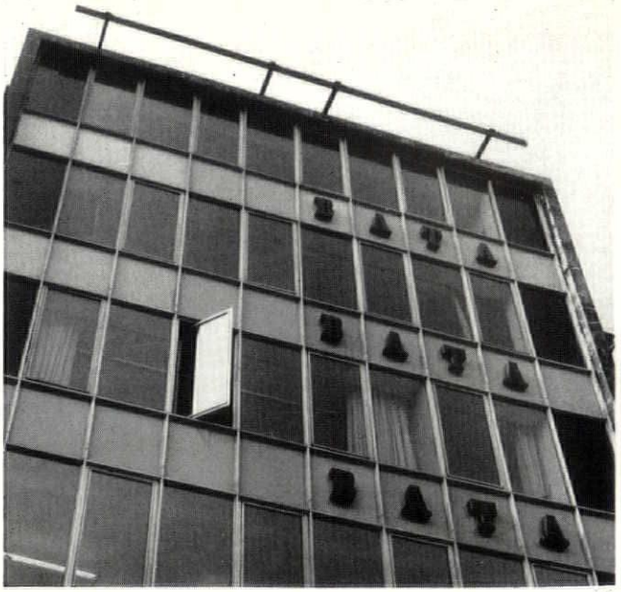
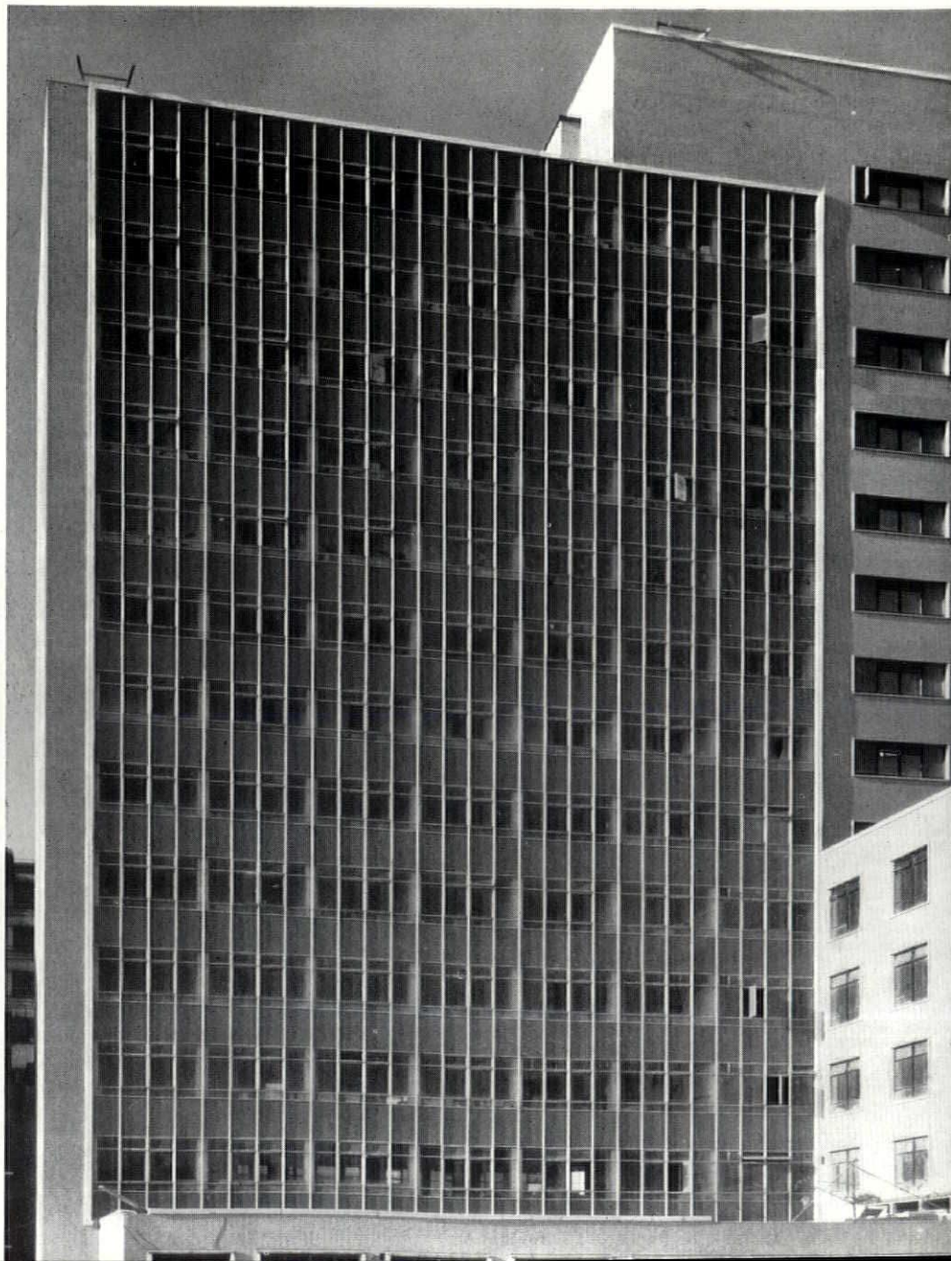


12

11, Cole Green Lane Secondary Modern School at Welwyn Garden City uses the heavier of the two curtain walling systems produced by Quicktho.
Architect: C. H. Aslin.
12, Bata's shoe shop in Oxford Street uses Williams and Williams' 'Wallspan' with coloured 'Vitroslab' panels and boldly projects the necessary gantry rail.
Architects: Katz & Vaughan.
13, an office building in Fenchurch Street is, like 11 and 12, another example of 'Wallspan' yet very different in effect. The curtain wall, as can be seen, greatly emphasizes the architectural importance of proportion.
Architect: W. H. Rogers; consultants, Easton and Robertson.
14, The juxtaposition of curtain wall to masonry or brickwork is a problem which has no easy architectural answers except perhaps its avoidance in the first instance. These offices in the Minories use Hills' new aluminium curtain wall.
Architects: Howard, Souster and Fairbairn.

13





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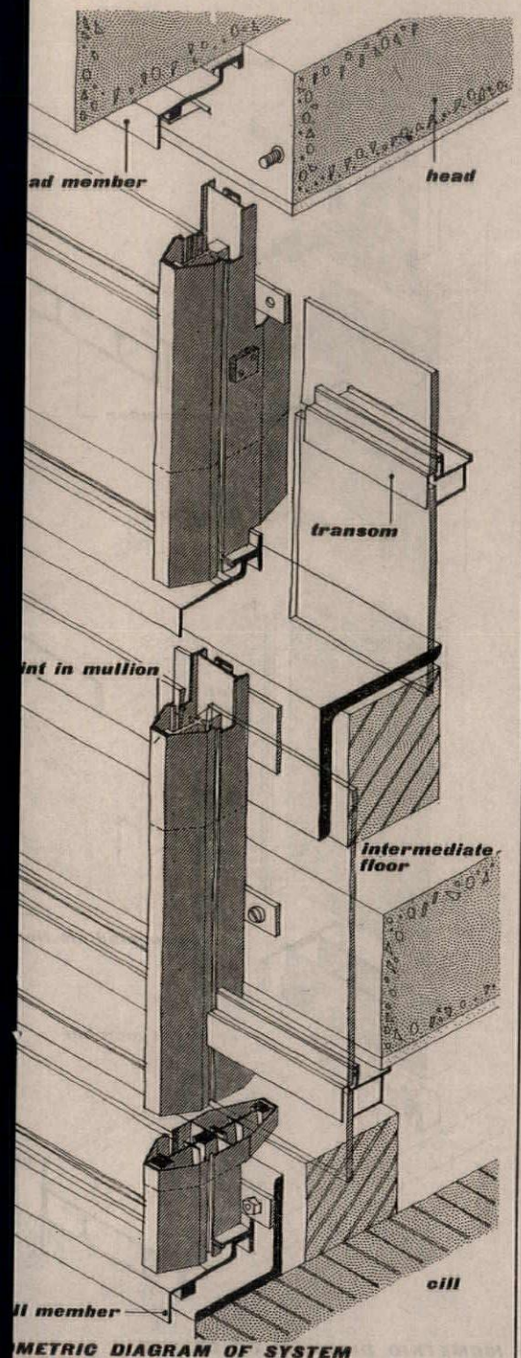
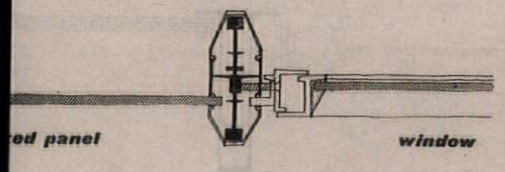


METRIC DIAGRAM OF SYSTEM

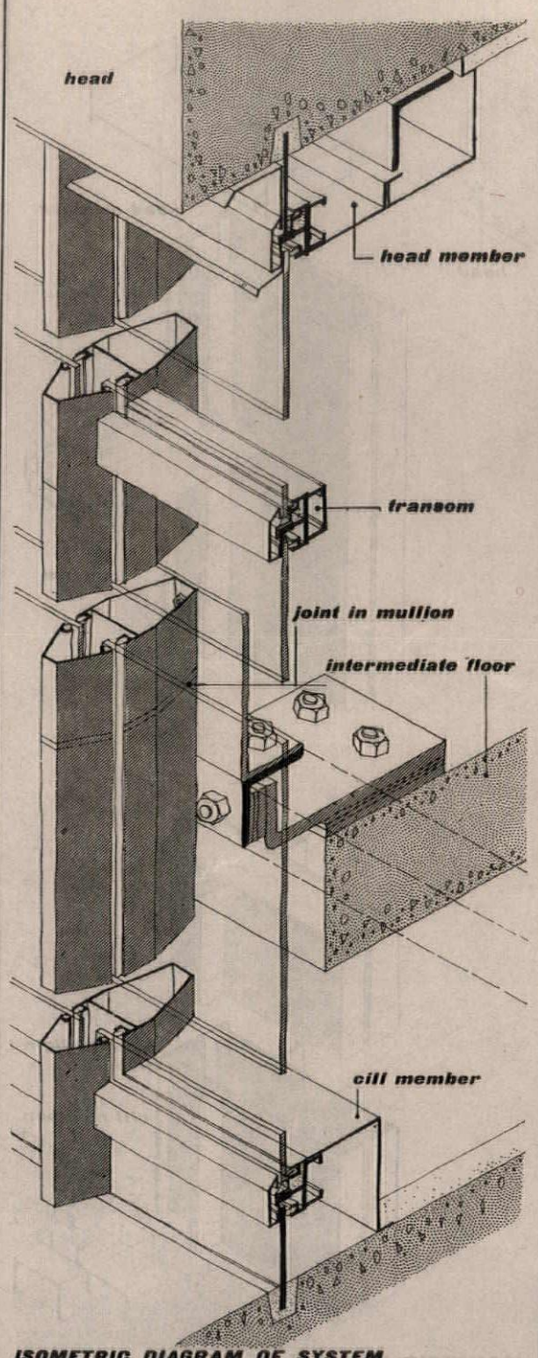


AN OF MULLION

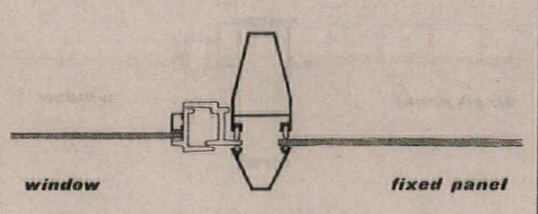
STANDARD PATENT GLAZING

aterial Aluminium Cost Index: 125

te The principle of patent glazing is here, as in the case of Hills, applied to curtain walling. Unlike Hills, however, the outer section is not used structurally so that there seems to be rather more material in the mullion than would seem necessary. A weakness of both these systems is that there is a strict limitation on the thickness of the panel or its flange which can be conveniently housed.



ISOMETRIC DIAGRAM OF SYSTEM

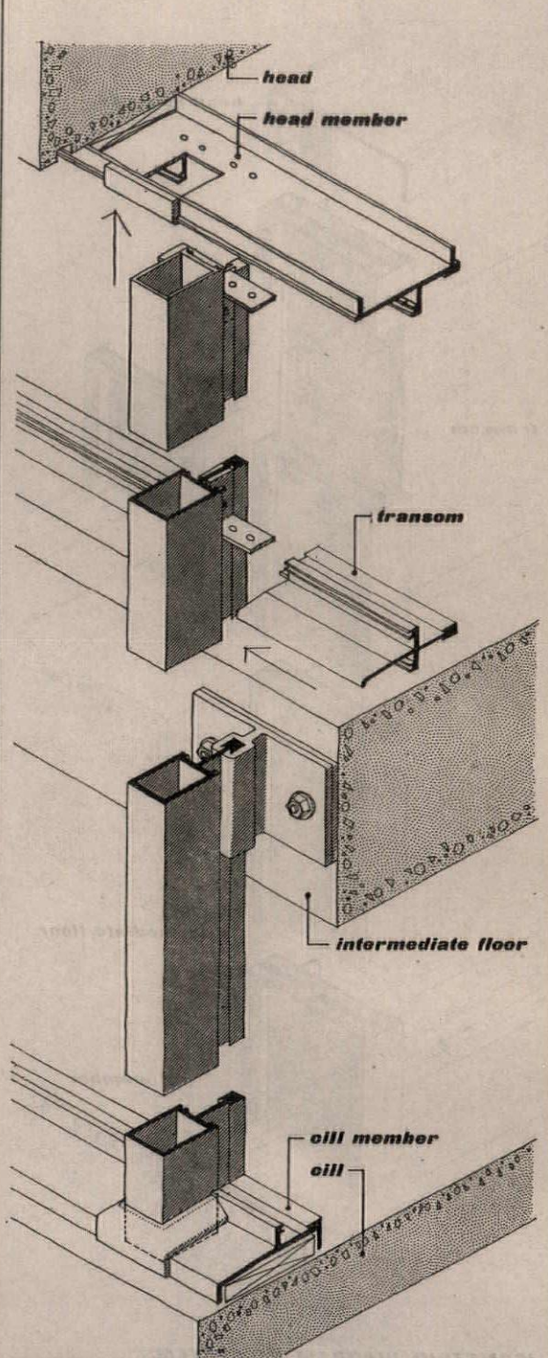


PLAN OF MULLION

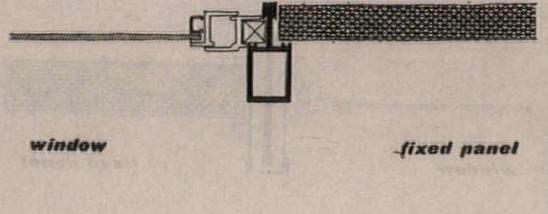
HILLS (WEST BROMWICH)

Material Aluminium Cost Index: 80

Note Some of the earliest English curtain walls used a much less refined version of this system based on patent glazing. This new and improved method is a very simple and economical curtain wall except for the curious weathering of the transom, where a piece of sheet metal has to act as a flashing behind the cover holding the glass in place. A series of accessories like ceiling and cill closures is also available and goes some way towards providing a complete cladding installation.



ISOMETRIC DIAGRAM OF SYSTEM

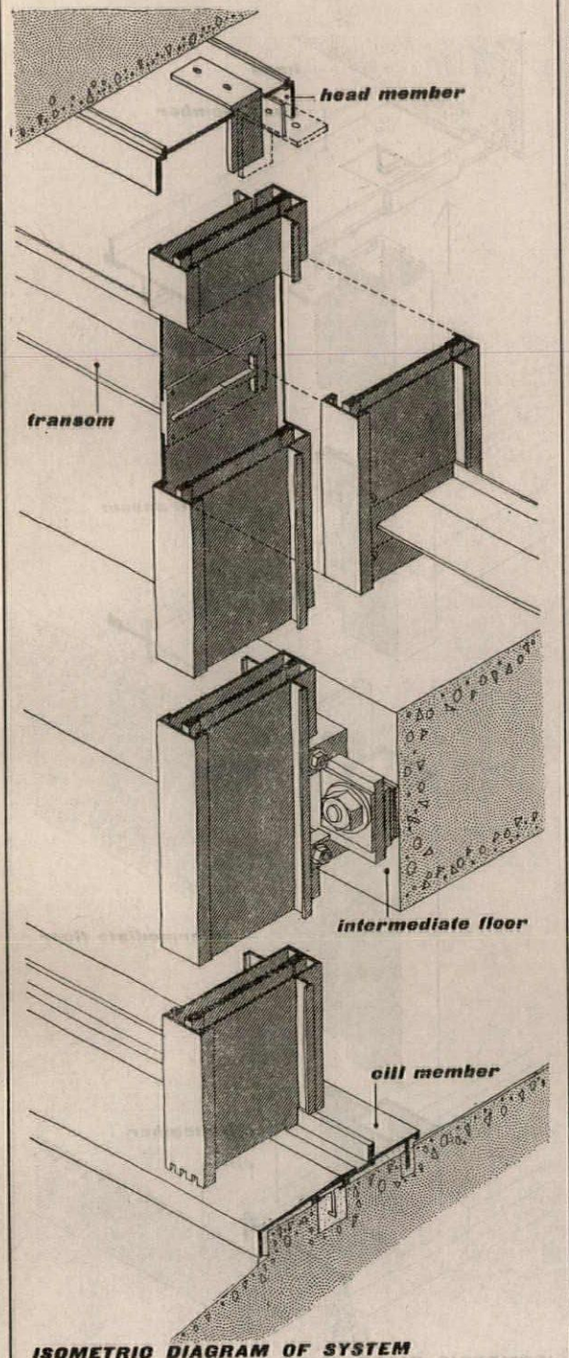


PLAN OF MULLION

W.B. 'VISTALITE'

Material Aluminium Cost Index: 100

Note The combination of a relatively wide hollow mullion with a thin transom shaped rather like a steel weathering bar will create considerable vertical emphasis in the grid. The relation of panels to the mullion has not been too fully considered and the necessity for timber to fasten the window seems questionable, particularly when one remembers that aluminium should be protected when in contact with wood treated with a preservative.



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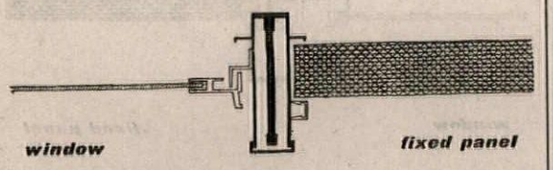
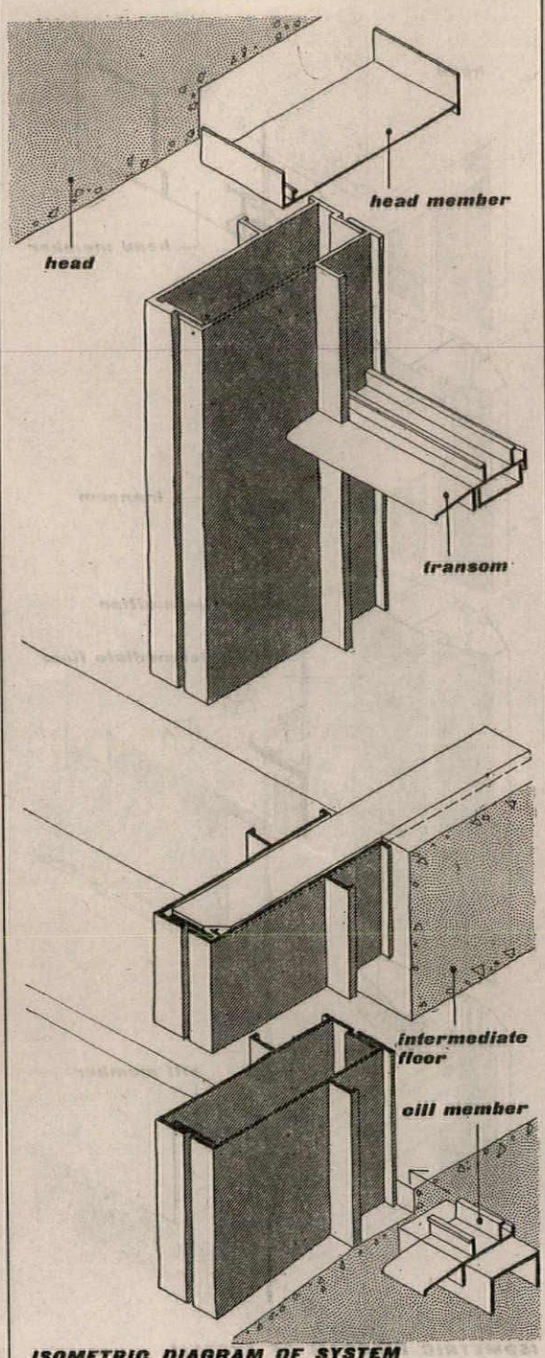


PLAN OF MULLION

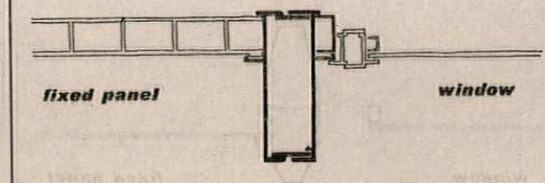
QUICKTHO 'WINDOWALL'

Material Aluminium Cost Index: 125

Note With great ingenuity the hollow mullions of this system are used as drain pipes for any moisture which may penetrate the joints. To achieve this, head and transom are taken through the outer webs of the mullion. A variant of this design includes condensation gutters in the transom and cill which also drain into the hollow mullion and which would be useful where large un-insulated areas occur. A wall composed of lighter sections is also available.



ISOMETRIC DIAGRAM OF SYSTEM

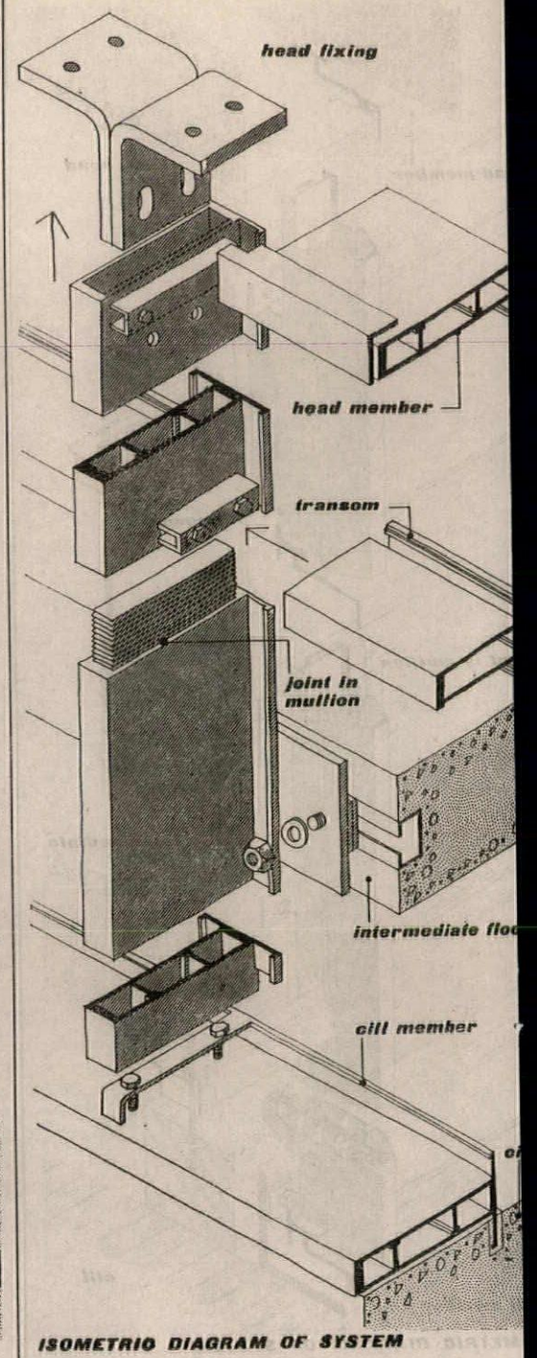


PLAN OF MULLION

HOLOPLAST

Material Aluminium Cost Index: 100

Note This is the only English curtain walling which may be erected from assemblies rather than components, making a much greater degree of shop fabrication possible. The split mullions are fixed rigidly at one point only so they may expand and contract freely. As the curtain wall is produced by manufacturers of hollow phenolic panels, it is intended that these should be incorporated. This may be a drawback, as the colour and textural effects available in this panel are limited.



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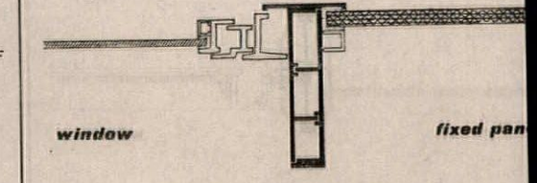


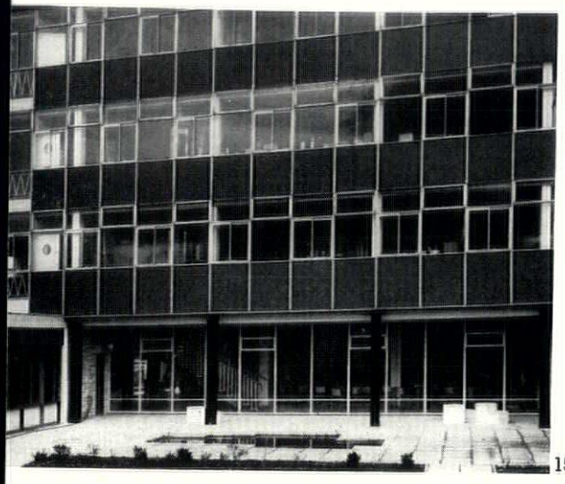
PLAN OF MULLION

MELLOWES 'MELLOWCLAD'

Material Aluminium Cost Index: 11

Note This is one of the three designs available which us a split mullion except that in this case, as in the ca of James Gibbons, certain features make it in possible to exploit one of the main virtues, name the fabrication of assemblies. Surprisingly t mullion is designed so that no sliding action ca take place to absorb both erection tolerances a thermal movement.

aluminium (cont.) 15. school at Bannockburn employing the Holoplast system of aluminium grid and phenolic infill panels. Architects: Alison & Hutchison.
16, the sixteen-storey block of flats at Golden Lane is probably the tallest curtain wall structure so far built in this country. It uses Quicktho's ' Integral ' system composed of quite thin extrusions fastened to timber members. Architects: Chamberlin, Powell & Bon.

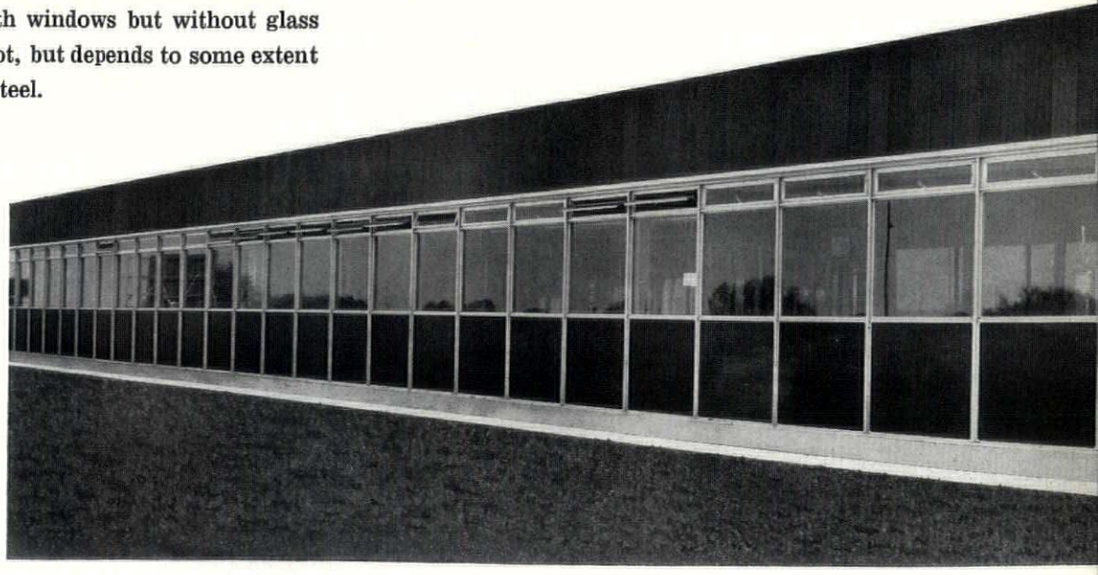


15



16

panel can be shop assembled and then fixed as a completed assembly. Most aluminium curtain walls can be supplied with an anodized finish which adds to the cost but is highly desirable in urban atmospheres; an acid etched finish, which in terms of weathering is also an improvement on the ordinary mill finish, is much less costly and is now the standard finish of 'Wallspan.' The cost of an aluminium grid with windows but without glass or infilling panels may be about 15s. a square foot, but depends to some extent on whether the windows are in aluminium or steel.



17

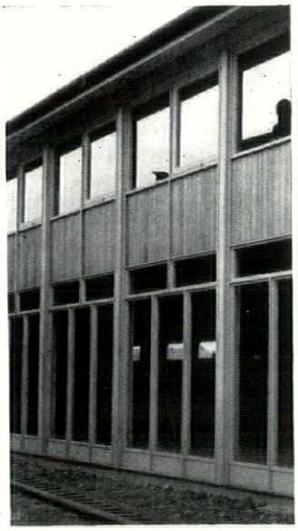


18

17 and 18, two curtain walls by the same architect for the Ford Motor Company. 17 is at Basildon and is a natural aluminium grid by Hawksley S.M.D. with the deep ribbed fascia and panels in black anodized aluminium. 18 is at Aveley and is ' Wallspan ' with blue ' Vitroslab ' panels.
Architects: E. R. Collister & Associates.

timber

Only two curtain wall designs in timber are being marketed at the moment—Newsums' 'Wallpak' and Janes's 'Modolite'—although ample precedent for prefabricated components would seem to exist in structural systems in timber like Derwent or Medway. Most of the timber curtain walls seen today are specially designed for a particular job and in fact two of the three examples shown belong to this latter group. The simplicity of working timber makes such special designs an economic possibility.

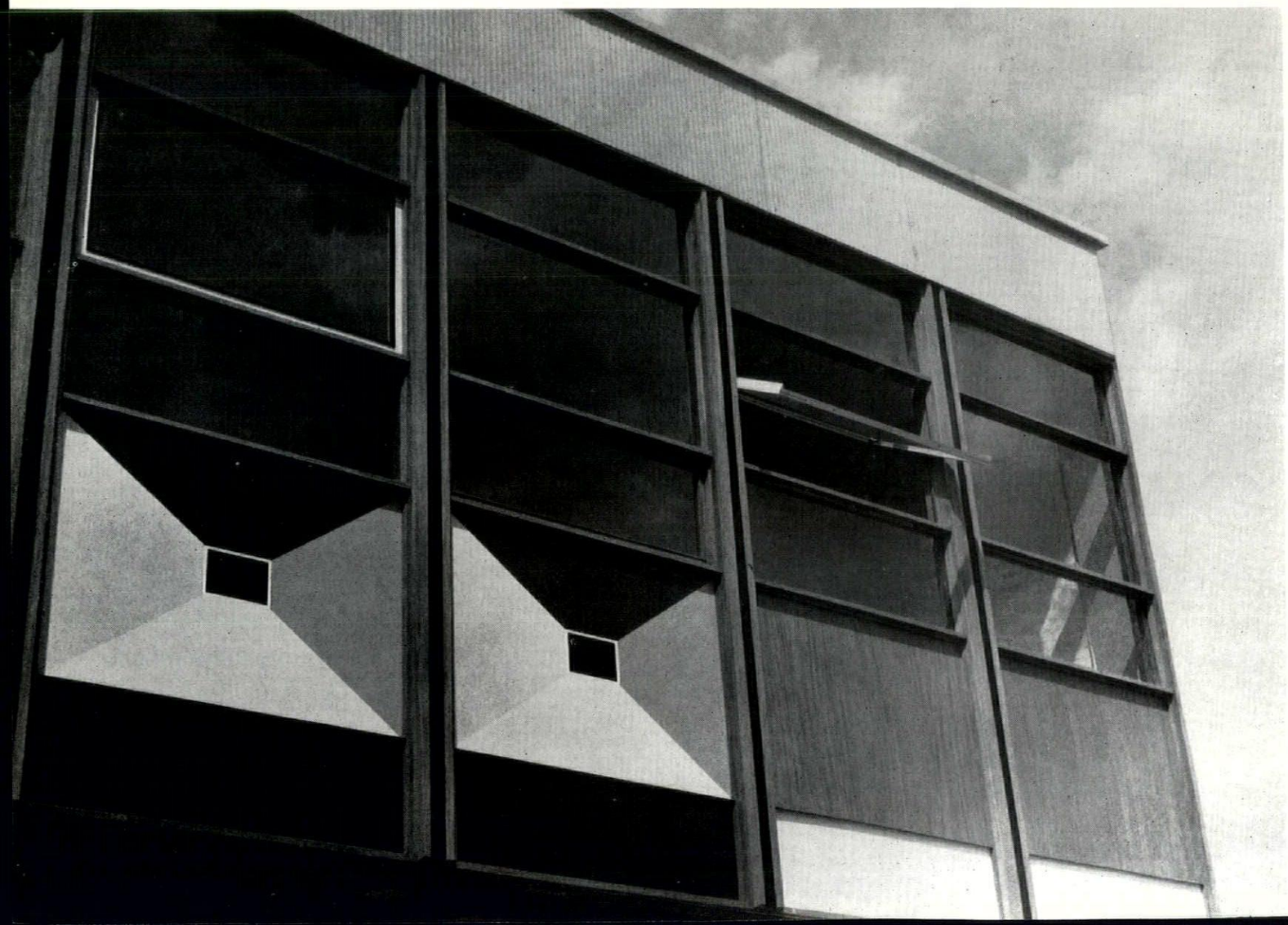


19

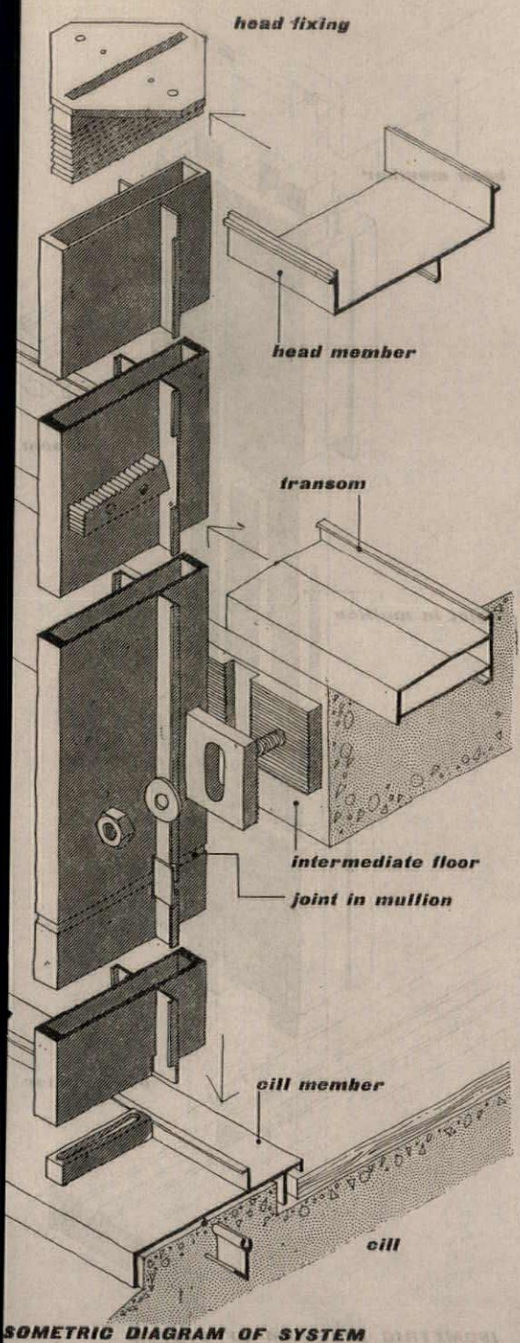


20

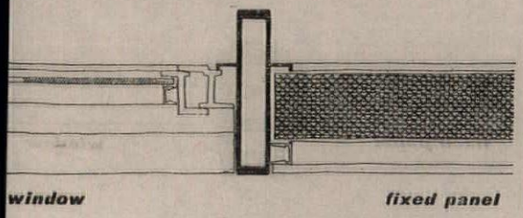
19, Janes's 'Modolite' at St. Andrew's School, Southgate. Architect: D. A. Pettit (assistant to Borough Engineer).
20, the Quintin School, St. John's Wood. Timber curtain walls tend to look bulky but the elegant white line down the centre of the mullion like the gap in the example below does a great deal to reduce the apparent thickness. This specially designed wall was made by John Sadd. Architect: Edward D. Mills.
21, a highly ingenious but specially designed timber system at the new Air Terminal, Cromwell Road. Designed by BEA Architects' Department.



21



ISOMETRIC DIAGRAM OF SYSTEM

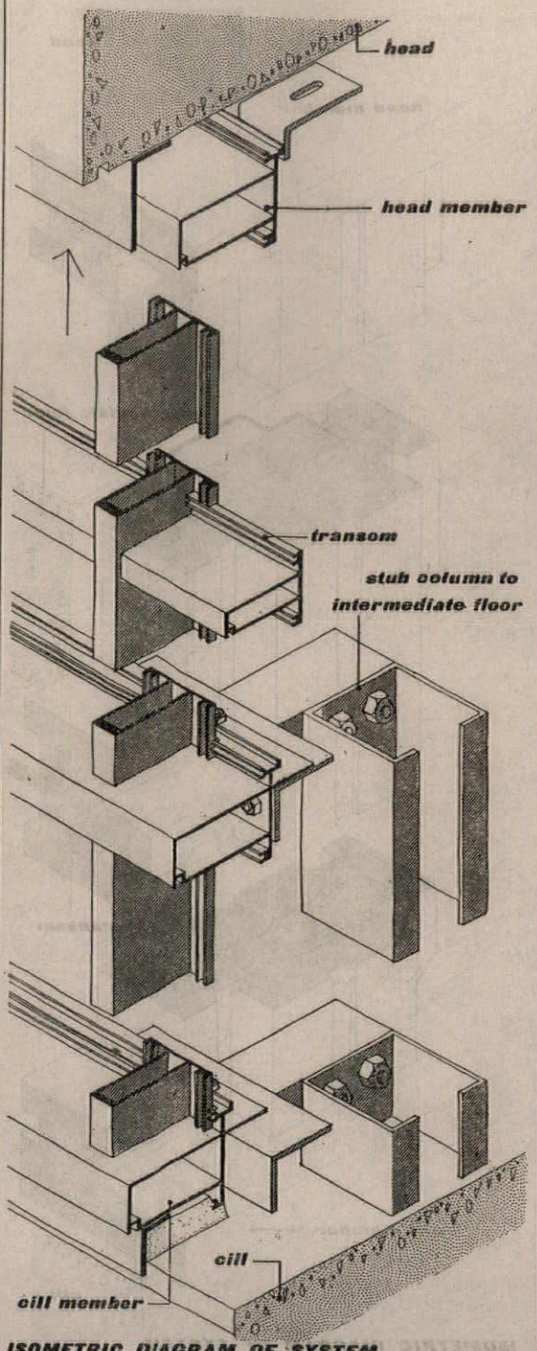


PLAN OF MULLION

WILLIAMS & WILLIAMS 'WALLSPAN'

Material Aluminium Cost Index: 100

Note The acid-etched finish now supplied as standard ensures much more even weathering than can be expected from plain mill-finished aluminium. Such consideration for weathering properties is commendable. The grooved spigots allow mastic to have some hold and not be squeezed out when sections are joined to each other. Unlike many other systems, this design acknowledges the existence of finishes in the profile of its head and cill members.



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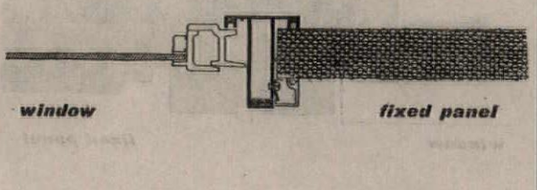
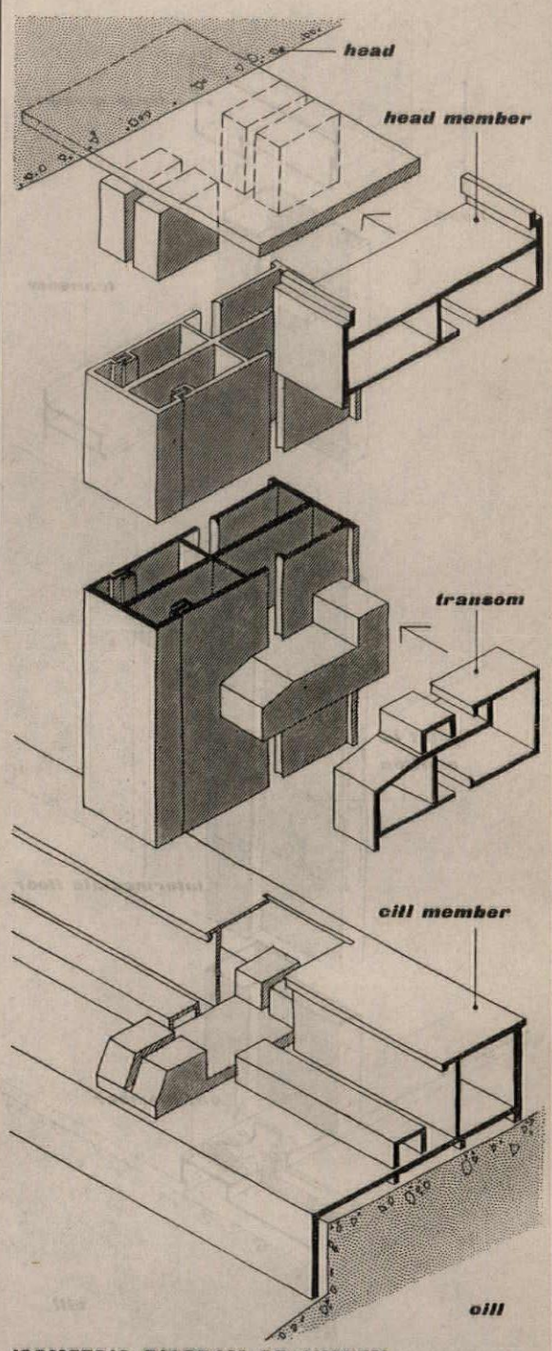


PLAN OF MULLION

CRITTALL 'FENESTRA'

Material Aluminium Cost Index: 125

Note An extruded gasket gripped in a groove provides a continuous seal and this is the first English curtain wall to adopt such a design. The stub columns which reduce the clear span of the aluminium mullions are equally new to this country; their relation to a back-up wall could create problems. The bead which is clipped on around panels prevents visible screws and the possible damage to aluminium from a slipped screw driver. (Exposed screw heads should thus always be Phillips head.)



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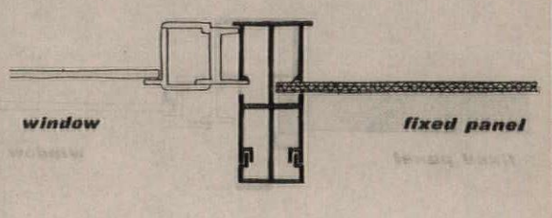
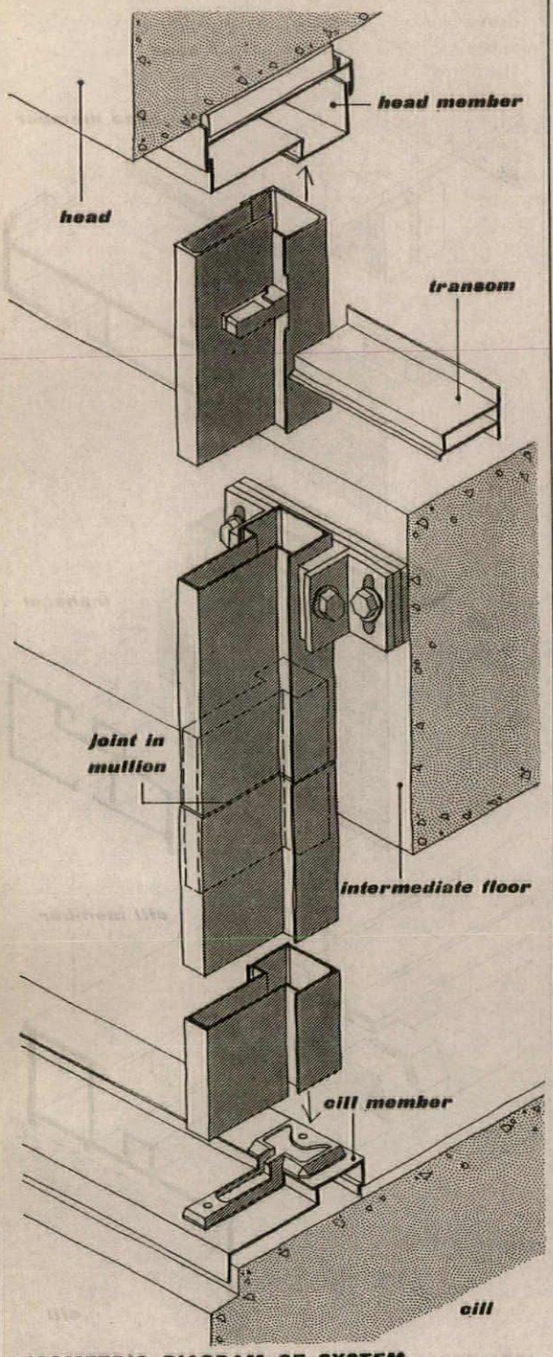


PLAN OF MULLION

S. WARNER

Material Aluminium Cost Index: 75

Note This is a revised version of an earlier design produced by this manufacturer. As in the case of 'Quicktho,' the horizontal members are taken into the mullion which can then drain any moisture to the ground. The cruciform mullions are built up from three sections thus saving the cost of hollow extrusions and making some of the fabrication easier. Like most other aluminium curtain walls, this grid can, for an additional cost, be had with an anodized finish.



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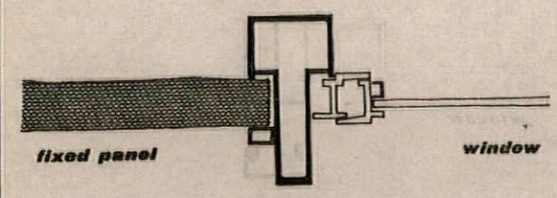
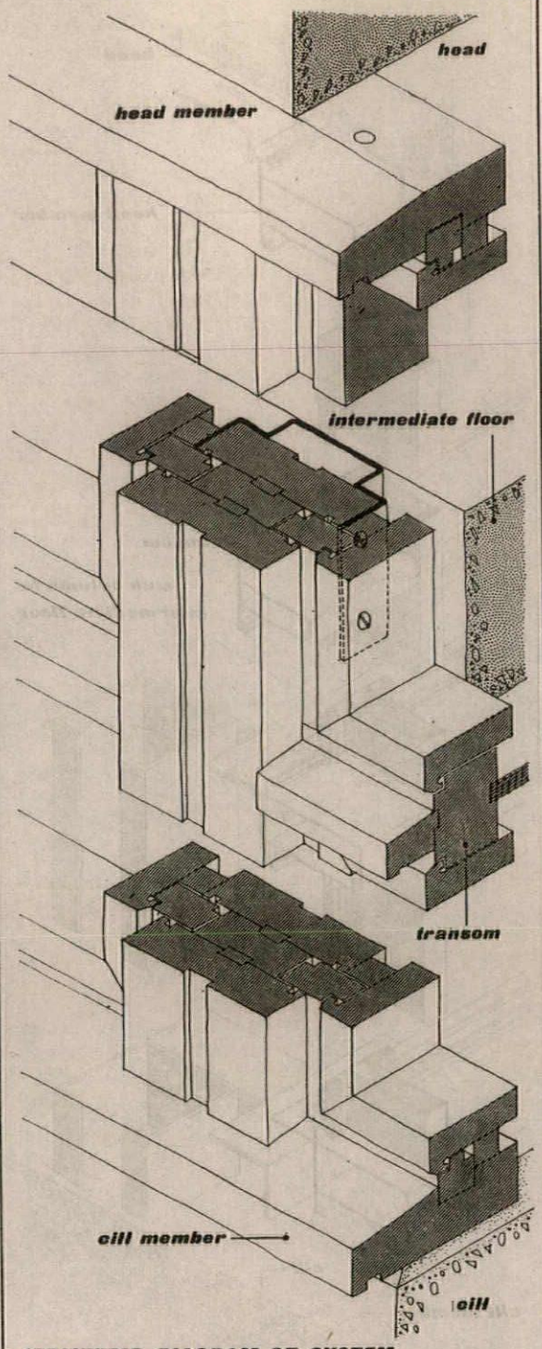


PLAN OF MULLION

HAWKSLEY S.M.D.

Material Aluminium Cost Index: 120

Note The additional width of the mullion on the inside face may prove useful when abutting partitions; the equally sensible rounded corner pieces on the fixing beads and curved drips on the horizontal members may, however, destroy the crispness often demanded from curtain walling. The sleeved expansion extrusion at the head, which would absorb movements in both the curtain wall and the structure, is a section too often omitted by other manufacturers.



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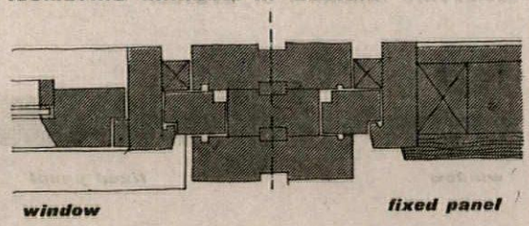
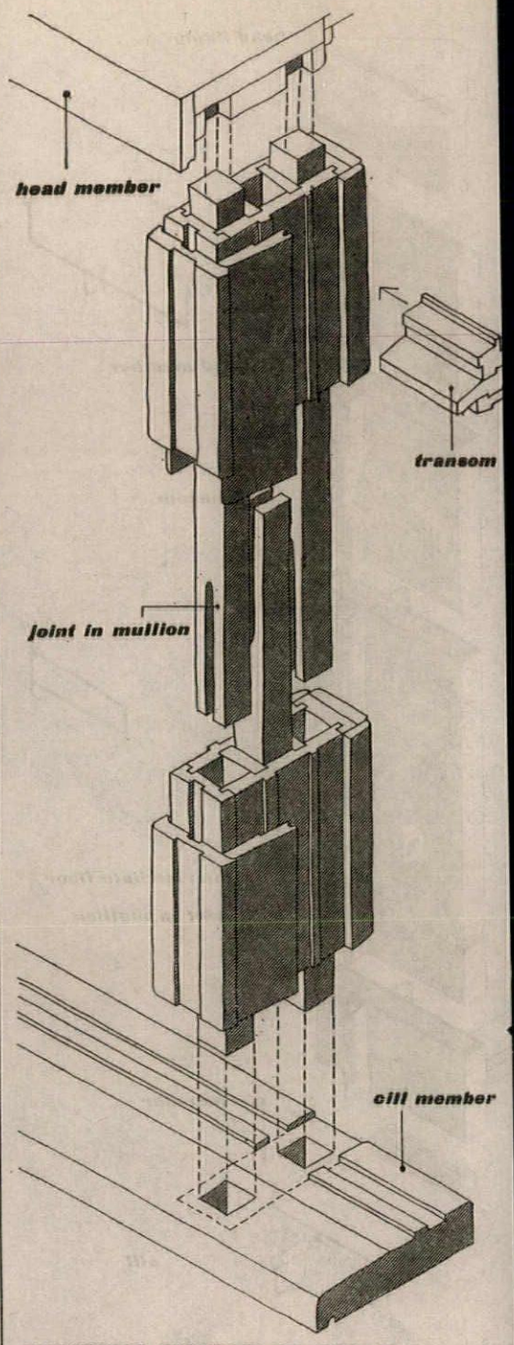


PLAN OF MULLION

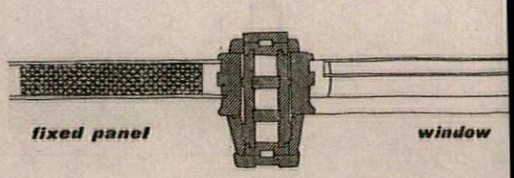
NEWSUM 'CLADEK'

Material Timber Cost Index: 50

Note This, like the other timber curtain wall, is a relatively new product but it provides an economic straightforward solution where it is permissible to use wood. The effect is very much robuster than the tracery of steel or aluminium particularly as in this system the mullion is wide rather than deep so as to get the inside faces of panels, window surrounds and mullions to be in the same plane.



ISOMETRIC DIAGRAM OF SYSTEM



PLAN OF MULLION

JANES 'MODOLITE'

Material Timber Cost Index: 80

Note The arrangement of timber is more complex in this design than in the other wooden curtain wall available, and the mullion almost resembles an oversize extrusion. The sleeve junction of mullion to mullion should allow for movement of the grid as a whole while the composite nature of the vertical member should, on the other hand, do something to restrain the movement of the timber itself. A number of mullion sizes are available to span various heights.

continued from page 170

zontal sliding window consisting of frameless plate glass sliding in hardwood grooves would appear to be highly appropriate.

Resin bonded plywood has in the past been used for infilling panels. Unfortunately a certain amount of bleaching of the protective varnish is not uncommon. The development of a plywood which uses the natural weathering qualities of certain timbers seems in fact long overdue. Two timber curtain wall systems are now available in this country, one of which seems to offer great advantages from the point of view of erection.

3. *glass*

Glass in its clear form has been the inevitable infilling material in a certain proportion of almost every curtain wall. The use of obscure glass, or of clear glass with an obscure backing, in the remaining areas of the walls seems a logical extension. It is indeed in many ways an ideal material: it resists weather and corrosion, it will not burn, it may be had in many colours and textures, and it may be transparent, transluscent or opaque. And yet there have been difficulties with glass in curtain walling. They can all be traced to incorrect fixing or the choice of the wrong glass.

It is essential that the glass is held in a cushioned position in which none of the stresses due to wind, thermal movement, building settlement or the addition of live loads are transferred to the glass. This means setting the glass in such a way that there is considerable clearance, a $\frac{1}{4}$ inch is not excessive, around it, and that the members holding it are sufficiently rigid as to prevent any bending under stress.

Failure has also occured through the use of wired glass. Wire in heat absorbent or coloured glass causes uneven thermal stresses and may easily lead to breakage. A clean-cut edge is also difficult to achieve with this type of glass, and there may thus be undue concentrations of stresses which will split the material.

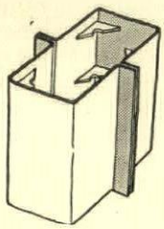
Transparent or translucent glass with an opaque material a short distance behind it raises problems in the treatment of the cavity. If the cavity is not ventilated, condensation will under certain conditions form on the back of the glass which will then look streaked. If, on the other hand, the cavity is ventilated, it becomes very difficult to exclude dust and soot which will settle on the glass or the opaque surface beyond it. A dark colour would thus be advisable for such a panel if this latter solution is used.

Glass is available in many patterns and several finishes. The majority are, however, glossy polished surfaces which on a façade act as mirrors, reflecting the sky or the building across the street. The difference in tone value between these two reflections, for example, may be far greater than any existing on the elevation and new patterns therefore superimpose themselves on the design. This is as true of clear as of opaque glass unless the illumination level behind the clear glass begins to approximate the light out of doors. Only thus can one arrive at that transparent luminous quality which a glass enclosed building seems to demand. So far perhaps it has only been achieved once: Skidmore, Owings & Merrills Manufacturer's Trust Company on Fifth Avenue dissolves the solidity of the enclosure.

4. *plastics*

A phenolic based panel has been on the market for some time and now forms the standard infilling of at least one British curtain walling system. It was, in fact, used on one of the earliest examples, the Hertfordshire County Council's Clarendon School at Oxhey. Plastic window frames are manufactured in the States and a grid formed from box-shaped polyester fibre glass, for example, would pose no problems.

A number of moulders in this country are at this moment experimenting with such a box-shaped grid which would also act as permanent shuttering to the concrete frame, 11, and may soon in fact be able to market such a product. The resin can be coloured and the column and beam casings include flanges for windows and panels. Though such a plastic curtain wall seems perfectly feasible, it would hardly exploit the inherent possibilities.

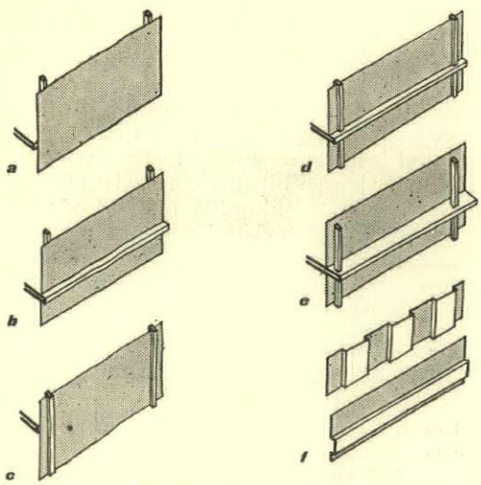


11, *fibreglass reinforced polyester used as permanent shuttering to a concrete frame. This can form part of a plastic curtain wall grid. The flanges on either side take windows and panels, those within, position the reinforcing bars.*

The plastics, probably more than any other of the curtain wall materials, should be used not to form a lineal grid to be fitted with panels, but to create large sheets which do not need additional stiffeners, which include interlocking joints, which are partly transparent and partly obscure, and which carry their own insulation. That such a form may soon be a reality has in some measure been demonstrated by the Geodesic radar domes of R. Buckminster Fuller and the recent experiments in plastic houses in this country, France and the USA.

the assembled wall

A distinction is sometimes drawn between an assembly projecting beyond the floor slabs and one spanning between slabs. The differences are more imagined than real and it would seem a pity to limit architectural expression by unduly emphasizing one particular form. A great deal of the variety possible in curtain walling in fact depends on the relation of the cladding to the floors and columns on both elevation and section, 12. In view of its derivation from patent glazing there has been an undue emphasis here on curtain walling as a predominantly vertical grid sheathing the building clear of the structure. A move away from this trend can be discerned on the second of the two new office buildings by Gollins, Melvin, Ward & Partners facing each other in New Cavendish Street.



12, *a great deal of the visual effect depends on the relation of cladding to structure. A distinction is sometimes drawn between the condition shown in (a) which is labelled curtain walling, and that in (b), (c), (d) and (e), which is described as window walling. The problems of both techniques are, however, very similar and little seems to be gained by the distinction. Within each example the visual emphasis can again be horizontal or vertical, that of a balanced grid or it may also be non-linear, and, of course, the cladding need not necessarily be in a single plane (f).*

1. *climate*

Both extremes of climate create their own problems in curtain walling. In hot areas shading devices are needed and an altogether more three dimensional approach than is at present usual in this cladding technique is required. Where curtain walls have been used in regions where shading is necessary, it has been usual to superimpose an outer layer of surfaces casting a shadow on the wall. It would also seem, however, possible to create a curtain wall which has depth which provides both shading and rigidity.

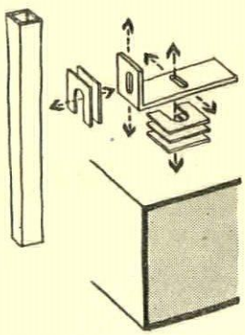
Much more serious difficulties exist in cold regions. Here, condensation, heat loss and cold radiation need to be overcome. Condensation will occur on any surface which has a temperature lower than the dew point of the air. The air inside a building usually has a dew point higher than that out of doors. If this inside air is allowed to pass through the wall, and if on its passage to the outside it finds a solid vapour barrier which is below its dew point, say an outer metal panel, it will condense on that surface. Two answers become obvious, either the inside face of the wall has to be a continuous vapour barrier or the outer face must be porous, or the cavity ventilated which amounts to the same thing, so that there is in fact no barrier.

Heat loss must be counteracted by proper insulation. Several of the infilling panels listed later include an insulating layer and have satisfactory 'U' values. If the insulation is also relied upon to give a rigid backing to a metal panel it is most important that the proper adhesives—the epoxy resins seem the most suitable at the moment—are used and that these are applied under carefully controlled conditions. Serious failures due to delamination have occurred and it has been necessary to replace large areas of panelling. Unfortunately, most walls as a whole are poor insulators due to the continuity of the metal. How serious an even small area of metal passing through from the outside to the inside may be is perhaps best demonstrated by an example. A square foot panel of two metal surfaces and an insulating layer between them has a 'U' value of 0.22. If a $\frac{1}{4}$ inch diameter rivet should link the two metal faces the 'U' value will drop to 0.33 if the rivet is in steel and to 0.70 if it is in aluminium.

Only two of the systems available in this country go some way towards recognizing this problem. The problem is, of course, a great deal more acute in climates colder than England, but should not, on that account, be ignored here. This is especially true as a number of installations have been exported to Canada and the northern areas of the States (see 18). Much the same is true of cold radiation; it is perceptible in London, it becomes unbearable in a Canadian winter. Where there is metal which passes through from the outside to the inside without a break it may, despite indoor heating, become so cold on its inner face that a person standing near it will lose heat to that area and as a result feel cold. This can quite easily happen with a box mullion, for example, which presents quite broad areas to both the inside and outside and which from the point of view of cold radiation may thus greatly reduce any benefit derived from double glazing and well insulated panels.

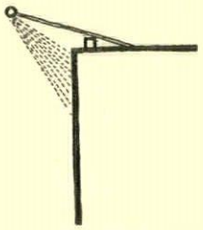
2. *erection*

A curtain wall is an engineering product with tolerances of about $\pm\frac{1}{32}$ inch. Few structures will have comparable precision. The relation between these two building elements must, therefore, be designed in such a way that adjustments can be made during erection. Most manufacturers do in fact supply brackets or shoes tying the curtain wall to the floors or framing which have slotted holes or some similar device, and these fixing devices should always be included in the tender of the curtain wall manufacturer, 13.



13, *the four degrees of freedom necessary in the attachment of the curtain walling to the structure. This diagram is taken from 'Curtain Walls of Stainless Steel,' a study prepared by the Princeton University School of Architecture, which is, despite its emphasis on one material, in many ways the most useful publication on curtain walling in general.*

The installation of a curtain wall demands skill and familiarity with the components. The responsibility for its erection must, therefore, always be with the manufacturer who is the only person likely to have a fully experienced crew, and tenders for curtain walls should include all the components of the wall as well as its complete installation and caulking. Divided responsibility should certainly be avoided. After erection it is wise, wherever possible, to demand a test of the work by spraying the elevation for a number of hours from a pipe mounted two or three feet beyond the edge of the roof, 14.



14, *curtain walls should, whenever possible, be tested after installation. Flooding the facade for a number of hours from a pipe mounted some way beyond the roof, or spraying it from a fire hose from the ground, provide useful tests.*

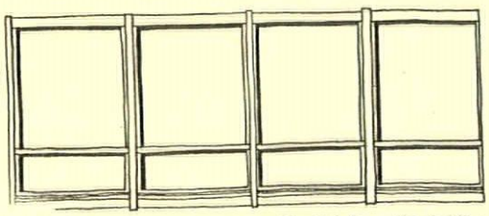
3. *maintenance*

Most so-called traditional materials need heavy maintenance—repointing, painting and replacement—at infrequent intervals; curtain walls, on the other hand, need little maintenance—cleaning—frequently. This difference means that all parts of the elevation should be accessible. In low buildings this can obviously be done from the ground, in high buildings cradles become necessary unless the wall spans between floor slabs and it can be cleaned from protected ledges. It is seldom sufficient to clean only the opening window areas or to assume that the rest of the wall can be properly reached from these openings.

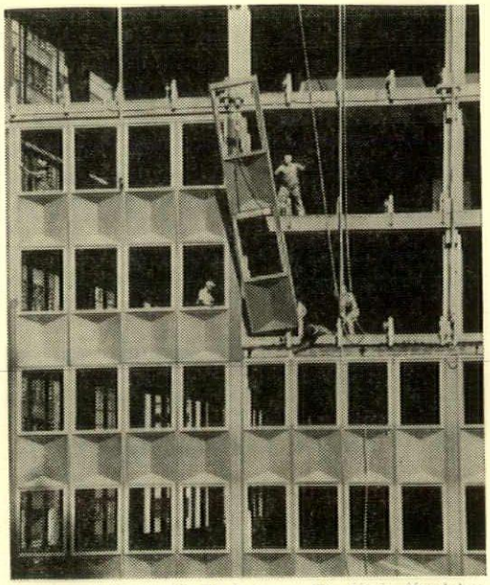
Potentials

None of the problems just discussed is by any means insoluble and all are certain to be overcome in the next few years. Yet even then only the first steps will have been taken. If the curtain wall is not to degenerate into the new cliche of the second-rate, a great deal more development work, both technical and visual, will have to be done in the immediate future, and the demand for such experimentation must come from architects aware of the potentials of the emergent technology.

The first step in the technical development of the curtain wall in this country would seem to be to cease to consider it as composed of a linear grid of metal or wood struts joined to each other on the site, and into which weatherproof flat panels are then inserted. All but one of the eighteen systems shown starts off from this assumption. It would seem logical to fabricate much larger units in the factory, in fact complete wall elements which incorporate solids and voids and which contain their own joints. Such an assembly was, of course, used as long ago as 1952 by Harrison and Abramovitz on their building for Alcoa in Pittsburgh. We have probably not seen it here because so far curtain walling has been largely confined to low buildings such as schools or factories and the great practical advantage of the larger assembly lies in the possibility of the entire cladding being done from the inside without scaffolding, 16. The cladding unit of the Alcoa building was as die stamping produced on the presses of the makers of Pullman railway cars but the use of large elements does not necessarily presuppose such an expensive process. A series of extrusions or steel sections, panels and windows can also be jointed into an assembly in the factory so that only large units are coupled up to each other on the building. A method of using pre-assembled steel units somewhat along these lines was developed by Peter and Alison Smithson in conjunction with a manufacturer and carried out on their school at Hunstanton, the most virile

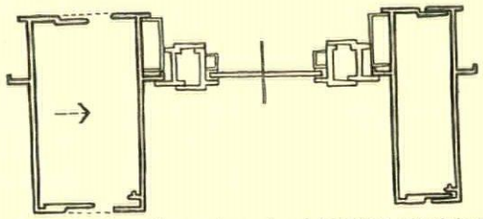


15, *the storey high 9 ft. by 21 ft. grid which forms the cladding unit on Mies van der Rohe's most recent Chicago apartment buildings. The grid is in aluminium and is anodized in its assembled form.*



16, *Davies Building, 460 Park Avenue, New York. Aluminium skin panel of 2-storey height being erected on facade. Panel anodized, grey in colour; aluminium windows centrally pivoted*

example of curtain walling so far seen in this country. These elements can become quite sizeable and pre-assembled into units 9 feet high, 21 feet long anodized in their assembled state are being erected on Mies van der Rohe's Commonwealth Promenade apartments in Chicago, 15. Such large units greatly reduce the number of joints which have to be made on the site and are much more likely to produce a weathertight wall. The smaller amount of jointing makes it also possible to use some of the more expensive and certain ways of sealing. The easiest way to achieve such a unit is to use a split mullion and join the panels and windows to a half mullion on each side, 17. Strangely enough, only three of the systems available have

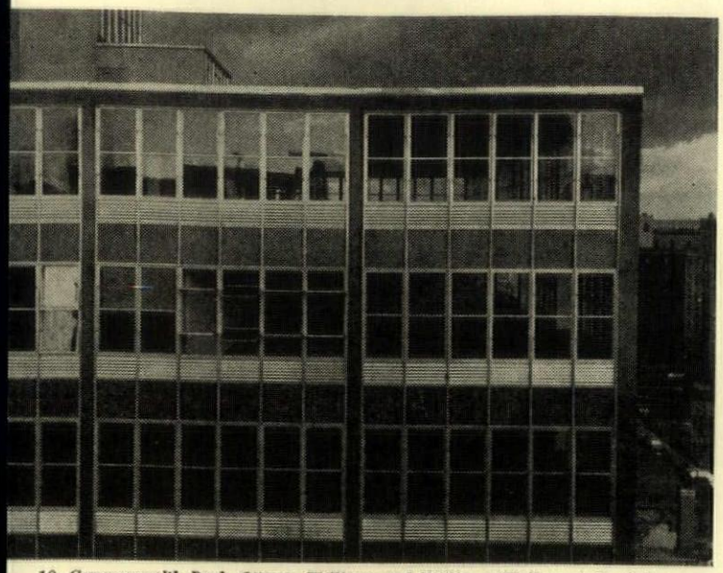


17, *a curtain walling system using interlocking aluminium mullions. Fabrication tolerances and thermal expansion are absorbed in the overlap of the two parts of the mullions. Such a system makes it also possible to install windows and panels into the grid before erection.*

such a mullion form, and in only one case is it used as part of a completely pre-assembled unit.

The production of larger units merely takes the curtain wall out of its most primitive state. It does not significantly change its function or character; it is only the logical second step in an industrial process.

The second and urgently needed next step would seem to be to enlarge the function of the wall. The curtain wall has on the whole been considered merely as the outer waterproof layer of a building. It sometimes incorporates heat insulation and it occasionally includes the inner face of the wall area below the windows. It rarely, however, considers the fact that interior partitions may join the wall, that there are junctions with floor and ceiling finishes, that there may be sunshine and glare



18, *Commonwealth Bank, Ottawa. Williams and Williams 'Wallspan.' See facing page.*

control devices inside and outside, that sound control, heating, lighting or air conditioning may have to form part of the enclosure of the building, that the spread of fire needs control. These considerations demand both technical changes and different attitudes to the problem. The spread of fire, for example, cannot be adequately controlled by any of the materials now in use for curtain walling. A different material is, therefore, needed or, alternatively, new ways of control need to be considered which are related to this type of cladding. Internally, sprinkler systems have made certain forms of construction possible; there is no reason why a system of external sprinklers flooding the wall surface should not also, as regards fire spread, satisfy a code written in terms of performance standards. Technically, it is a perfectly feasible device which might also incidentally be used for cleaning the façade. The important point in all these considerations is that the curtain wall must not be considered as an isolated and unrelated building element.

Technically the potentials of the curtain wall would seem to lie in two parallel directions: in it becoming part of an integrated system of industrially produced components and at the same time a complex and multi-purpose cladding unit. Both of these demand a further concentration on industrial production, and can thus be seen as merely part of the general technological trend. Experimental developments in both of these directions are in fact under way.

Something like this has, of course, to some extent already happened in ceiling construction. The ceiling developed by Wakefield for Saarinen's General Motors Technical Centre, probably the technically most accomplished building in the world, is a system of modular components which includes lighting, acoustic baffles, air outlets for heating or air conditioning, sprinkler heads and top fixings for internal partitions. The Wakefield ceiling is now commercially available and there seems to be no reason why curtain walls of similar versatility should not also be in the manufacturers' catalogues.

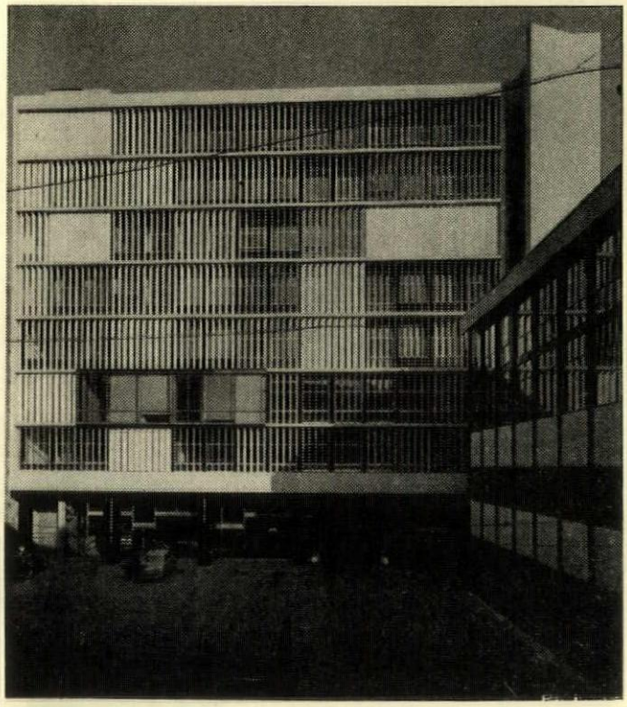
A large number of technical advances hold out considerable promise in the development of a multi-purpose curtain wall during the next ten or twenty years. Three of these—the printed circuit, thermo-electronic heating and electro-luminescent lighting—have recently been given some architectural publicity. The printed circuit embedded within the plastic sheet at the time of manufacture may become an important technique in supplying the greatly increasing number of electrical business machines coming into use. Thermo-electronic heating and cooling now being studied by RCA would appear to make it possible to produce quite thin panel-like units which would heat or cool a space depending on the direction in which the electric current is passing through a large number of small pieces of dissimilar metals joined in series. Electro-luminescence, the light glow produced by a phosphor-coated film between two electrodes, similarly opens up the opportunity of using very thin light sources in sheet form as part of a wall. The architectural implications of such research, especially the last two, are radical and must significantly affect the internal and external appearance of buildings.

additive architecture

The appearance of curtain walling even in its present form has been unnecessarily stereotyped. This is, unfortunately, especially true of buildings in this country which all have an extremely unmodelled surface with a predominantly vertical emphasis. Neither characteristic is inherent in the technique. Some of the rare pre-war examples of curtain walling, Le Corbusier's flats at Geneva or the Pavillion Suisse, do not, interestingly enough, in any way foresadow such limitations.

Certain post-war examples abroad have also avoided such a limited vocabulary. Mies van der Rohe has at 860 Lake Shore Drive shown the possibilities of developing some form of modelling through the use of a repeating dominant projecting member, in that case an 8-inch R.S.J. Bernasconi, Fiocchi and Nizzoli's Palazzo Olivetti, 19, achieves a completely different kind of depth through its double-layered wall. Glare control is needed even in London and may usefully become part of the curtain wall. Some of the expressive complexity of patterning which can be developed can be seen on I. M. Pei's Mile High Centre office building in Denver where there is a colour differentiation between the structure and the vertical and horizontal air conditioning elements exposed on the facade. Colour patterning of a different kind was used by The Architects' Collaborative on a number of their latest buildings. And that curtain walls need not be made up of identical units was beautifully demonstrated by Charles Eames on his showroom for the Herman Miller Furniture Company in Los Angeles. Nor for that matter need curtain walls always be composed of windows and panels; they can equally well be made up of doors—sliding, hinged, folding—with balustrading inside or out, of solid sliding panels, of louvred areas, or of completely solid cladding as in the industrial sheathing from which so much of the curtain walling technique is derived.

The aesthetics of curtain walling are those of additive architecture. This, unlike the carving out of space so characteristic of masonry construction, might perhaps best be described as the manipulation of space through individual and defined units which, in their multiplicity, create an architectural volume. Something like this can, of course, be felt in certain examples of Japanese architecture and something of the richness and variety possible can perhaps be deduced from the recent sculpture of Harry Bertoia. What we have not yet experienced, however, is an additive architecture of industrial elements which in any way approaches the subtlety of the Katsura Imperial Villa or the brilliance of a Bertoia gold screen. There is no reason, though, why it should not.



19, *Palazzo Olivetti, Milan. The movable sunbreakers are aluminium; the column covers behind them are black anodized aluminium and in the low block, right foreground, the infill panels are marble.*

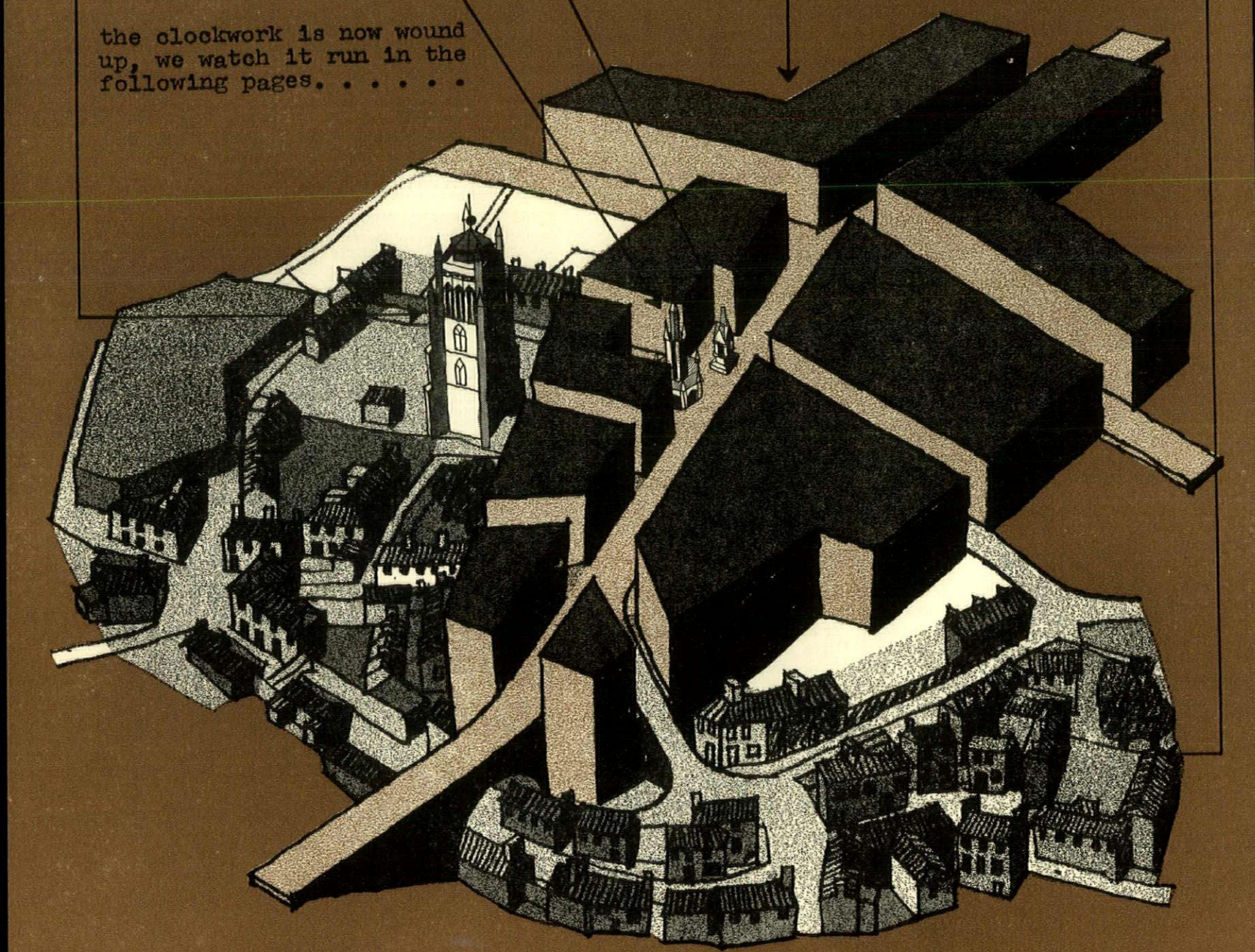
church cross fountain shops/traffic residential/pedestrian



THE ELEMENTS

PUTTING TOGETHER

the clockwork is now wound up, we watch it run in the following pages. . . . . .



This article on Shepton Mallet is the second in the REVIEW's series of townscape studies in the west of England undertaken in collaboration with the University of Bristol.

TOWNSCAPE

Gordon Cullen

SHEPTON MALLET

1, 2, 3, a unique entrance: from open fields to the centre of the town by unbroken pedestrian ways.



1



2



3

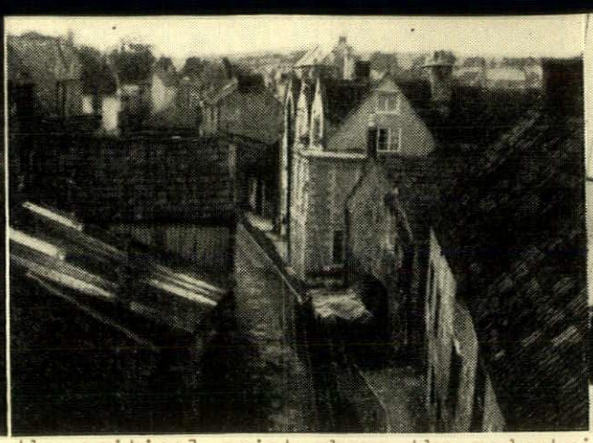
The elements of this town are simple enough. A High Street: more or less a straight line of shops, narrow and sloping uphill to widen in the middle forming a town centre containing town hall, library, etc. Also one or two monuments, a residential area and the county gaol. It is in the way the elements are put together that the true magic of townscape is released. Magic, a strange word to use in this connection, but I make no apology for using it.

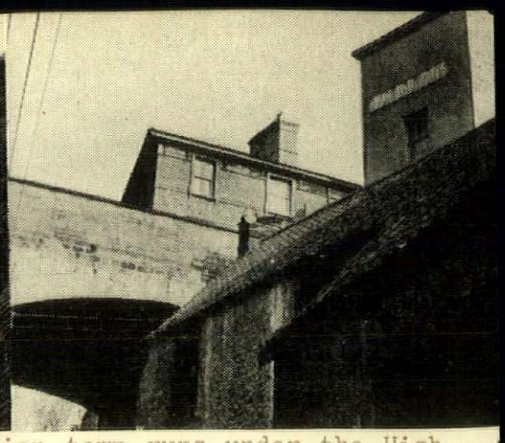
Suppose that in an idle moment one fits two pieces of cardboard behind one's glasses with a little hole in each through which to see. The first thing that happens is that by cutting out all marginal vision we find it difficult to navigate for our feet are invisible. In smoking a cigarette the hand appears suddenly and without warning into view, it is remote and could be someone else's hand. But we still have vision, a telephone is a telephone and a book can be read. Thus, for a joke we have divided vision into two things: First there is the practical or animal vision by which we are aware of all the objects that could trip us up or harm us . . . self-protective vision. Secondly, there is the sort of vision we use for looking at something with intent such as a book or a piece of machinery or a face or a view.

In town design and town appreciation, there are also two worlds, the animal world of self-preservation, of marginal sight, and the civilized, or magic, world of beholding.

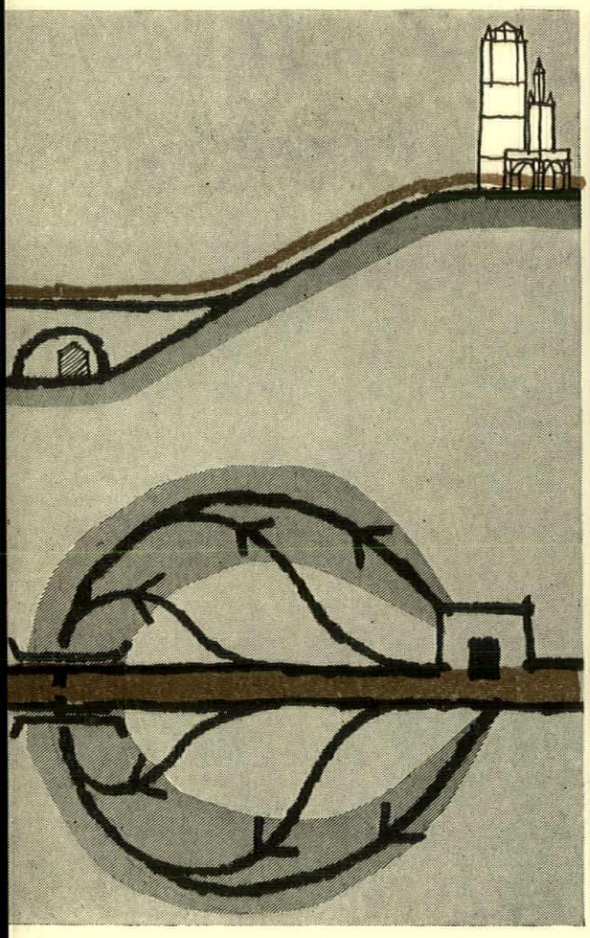
The animal world is governed by the laws of economics, of practicability, of considerations for health, convenience and comfort. By observing these rules we can assemble in a given place a whole cluster of utilities

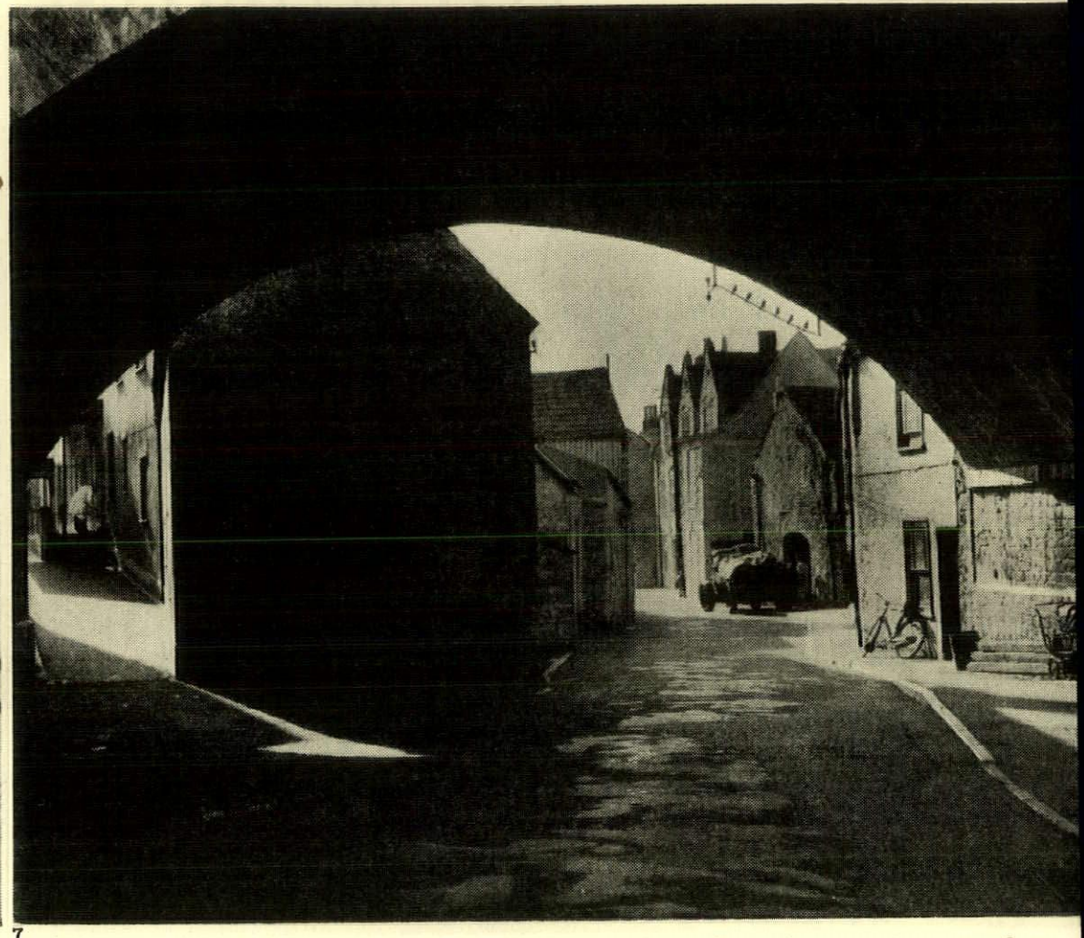






4, 5 On this page we see details of the critical point where the pedestrian town runs under the High Street as explained in the diagrams to the left (in which the High Street is shown by colour and





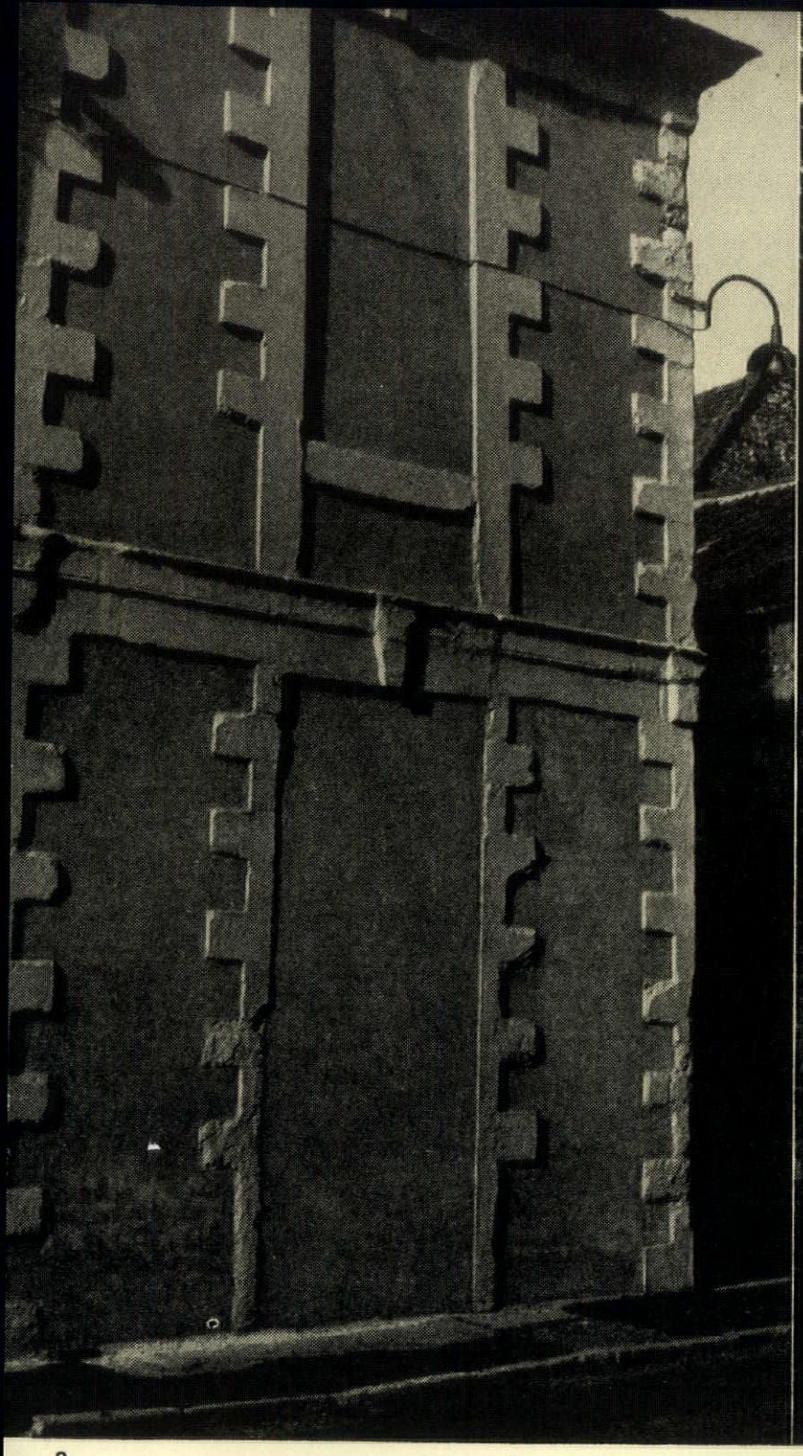
7

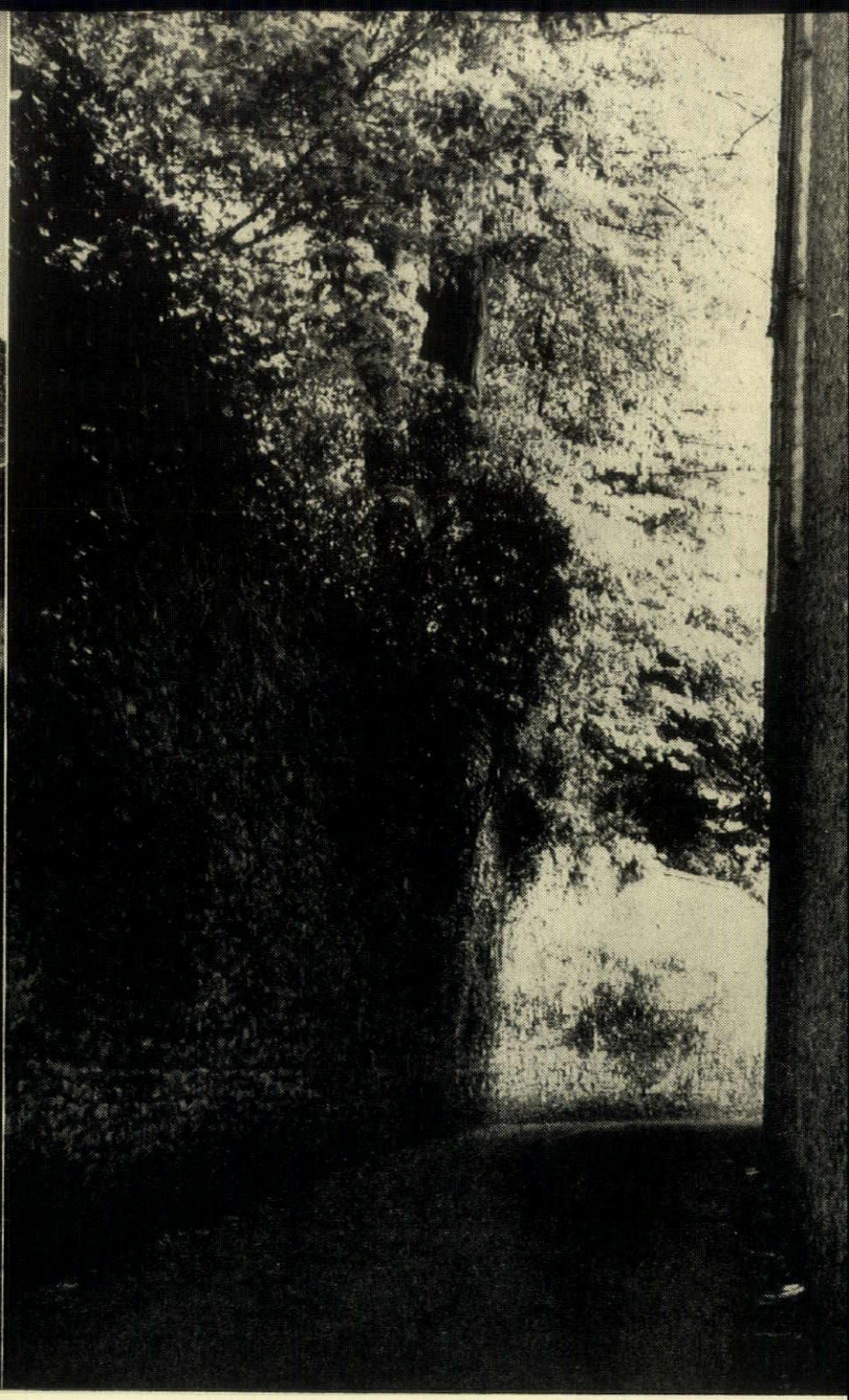
the pedestrian town as a radiating tint). 4, view looking down the High Street; no trace of pedestrian way. 5, looking down on to the pedestrian town from the bridge. 6, the twin bastions of the High Street seen from below; the town starts clean and sharp. 7, the continuity of the pedestrian town under the bridge.

which yet fails to become a town unless we simultaneously employ civilized vision which obeys its own rules obtaining to scale, colour, texture, height, width, narrowness, and the deployment of these qualities to the end of creating a sense of place.

I mention all this, obvious though it is, since there are many who deny the function of civilized vision. It is disparagingly described as stage setting, it is regarded with puritanical suspicion. ('Back to reality. Our town is not stage scenery designed to please fashion-conscious visitors. It was built and is today planned to fit the needs of its citizens who pay for it and pay the salaries of those who have to deal with its problems of housing, traffic and amenities.')

Is it stage scenery to bring into the open, that all may see, the actual truth of a given situation? For example, suppose you visit one of those precariously perched hill towns in the south of France and after ascending the winding road and finding yourself in a narrowly built-up village you decide to have a drink. You enter a cafe and your drink is served on a balcony which, to your delight (or horror), is cantilevered out over a drop of several hundred feet. The fact that this is a hill town is now dramatically made evident to you. Is this false or



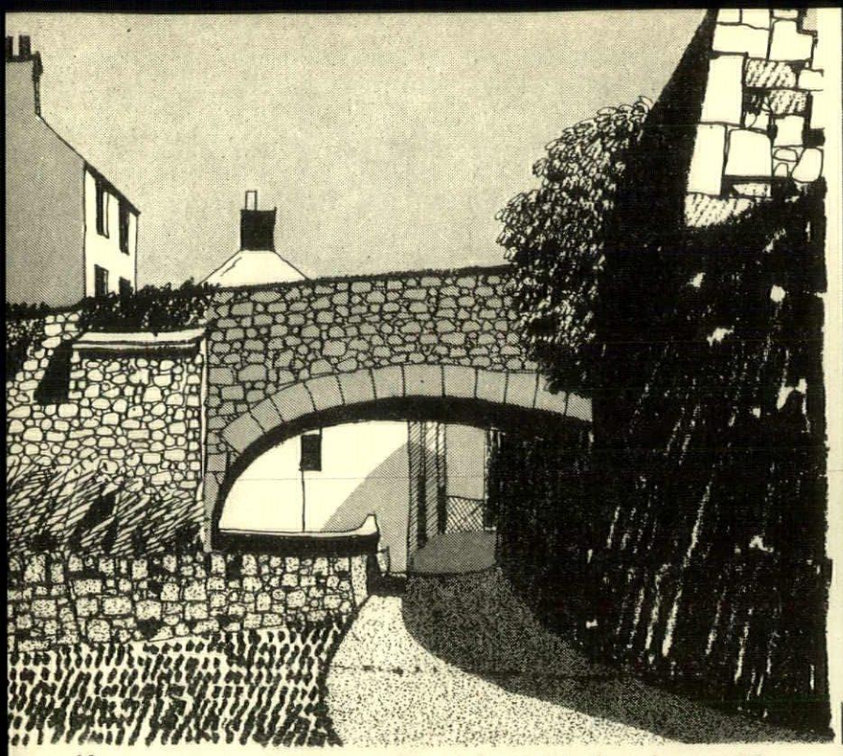


8 9

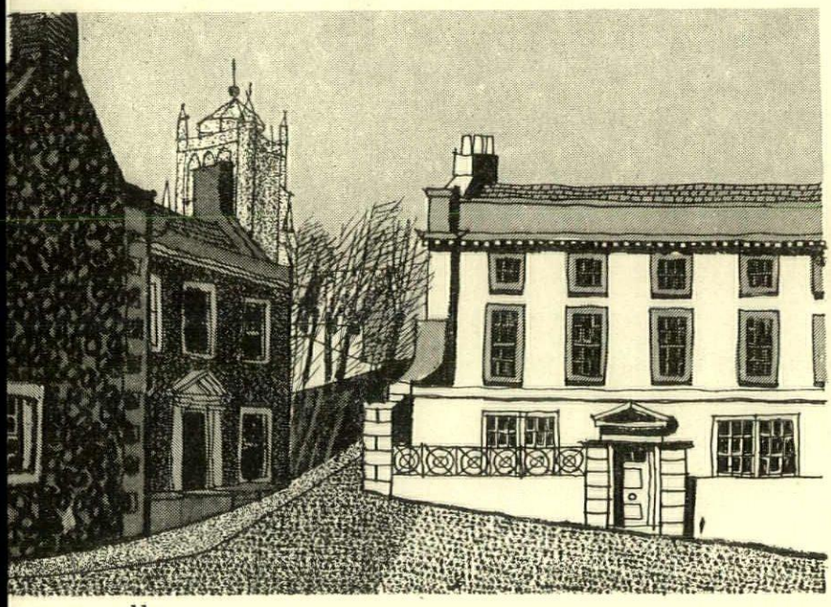
8, 9, the pedestrian town flows from the High Street, quiet and urbane, revealing variety of scene . . .

true? Is it stage setting or is it a deeper penetration into the truth of the situation.

Shepton Mallet is, at first glance, a somewhat dull little town; you can drive through it in a few minutes and only see a narrow High Street, the Market Cross and a glimpse of the church tower. But if you stay a little to explore, one or two curious things happen—branching off from the High Street are smaller roads and lanes which also slope downhill and lead to a tranquil system of pedestrian ways and rough squares composed of dignified stone houses. The contrast to the crowded High Street is complete and, as you wander along, the road turns and you discover a new shopping street. But is it? It is just like the one you left. It is the same High Street. How did you get back to it? Certainly you haven't crossed it and yet you are now on the other side of it. If we imagine a flat earth voyager sailing forever westwards and, on hearing 'Land ahoy', studying the topography of the new continent only to find it suspiciously like the port he left his surprise is similar to that experienced by the wanderer in Shepton Mallet. The illusion is created by the fact that although the High Street slopes down the pedestrian ways slope just a bit further and end up at a lower level, although this could not be guessed since it is invisible on leaving the High Street. The High Street crosses the residential town by means of a bridge and the illusion of all roads sloping uniformly down to a common level results in



10 . . . narrowness and netted view, 10, suddenly widening out to reveal the quiet but spacious square, 11, and finishing,



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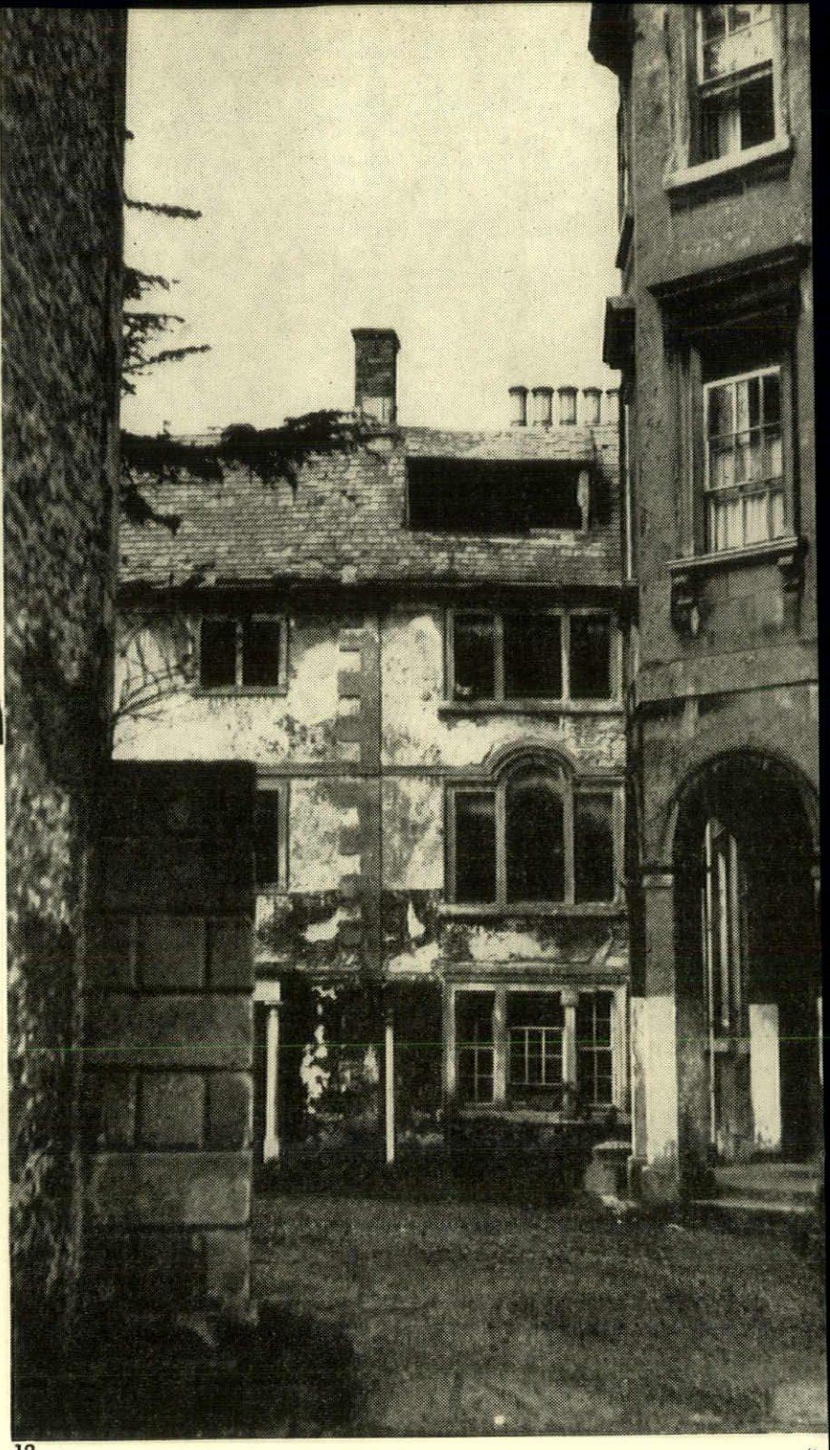


12

before the countryside, in a very good example of closure, 12. The last building, a convent, holds the eye to the last moment (see plan below).

the bridge, when it is seen, being regarded as any old bridge but certainly not the High Street.

In this way the unity of the lower town is complete. It radiates out from both sides of the High Street in a natural organic way, but the High Street does not cut it in half, thanks to a well-handled change of level. In a town so small, to have bisected the quiet, residential area would have been to destroy it. Instead of being an enveloping layer to the High Street it would have been two disconnected lobes. In reality it is a unity throwing out tentacles into the green fields and feeding into the High Street, but also uniquely and privately itself. For the High Street, too, there are benefits. One enters with a bang, from green fields to the two bastions that flank the end of the street.

And complementary to this disposition of the main parts of the town is the sense of intensification that can be observed in the town centre itself, the point where the two towns come together.

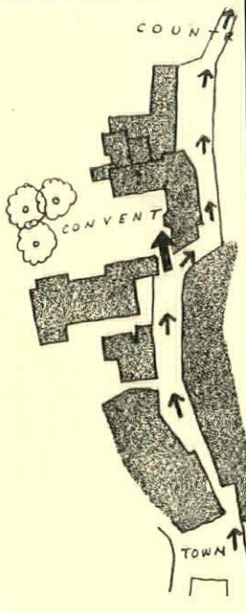
There are two things to notice in the treatment of this important place:

1, intensification of space;

2, intensification of height.

Both are produced by the disposition of the monuments, the catalysts: fountain, cross and church tower.

The first point, intensification of space, is to be seen in the same market place for whilst there is on the one hand an emphasis on height there is at the same time a



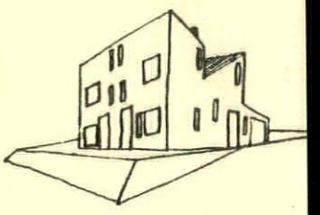
HOUSE AT WATFORD, HERTS

ARCHITECTS | ALISON AND PETER SMITHSON

The architects write:

On the whole the English still resist really large windows and are happiest with the Tudor cottage. This is probably because the Tudor cottage looks as if it would protect you from the outside and feels as if it fits you on the inside. The English post-war house is the pre-war house with the windows enlarged into the brick areas: as the windows are usually one above the other the house is divided into a multitude of vertical strips in which neither wall nor window dominates and which as a volume is neither penetrated, nor a fully realized solid (see inset below). The distribution of windows in this house allows the brickwork to flow together and coalesce with the roof to form a solid mass, with that appearance of all-round protection once the characteristic of English popular architecture.

The house is on the northern edge of a 'residential estate' in Devereux Drive, Watford; a sample estate house is shown below left. The estate put certain restrictions on the materials to be used, and it finally became obligatory that the design should be based on the external materials: second-hand London stock bricks, dark red tiles, and standard metal windows. Two schemes were prepared by the architects, both with the same aims: *a*, To make the shapes of the rooms fit the functions as closely as possible, by varying room heights and by break-out sideways. *b*, To tailor the profile of the building as closely as possible to the room shapes. *c*, To use the materials in a straightforward and therefore economical way. *d*, To use standard window components repeated or grouped together.





The first scheme, (inset right,) was rejected by the client; the second scheme was approved by both client and estate, but was rejected by the local authority after four months of fruitless discussion. On appeal, the design was allowed, ten months after application had been made to the local authority. The functions are grouped into strips of varying height, the dividing walls between holding up the roof; the house is intended to look like a blackish solid block pierced with windows in the manner of Vanbrugh Castle, Blackheath.

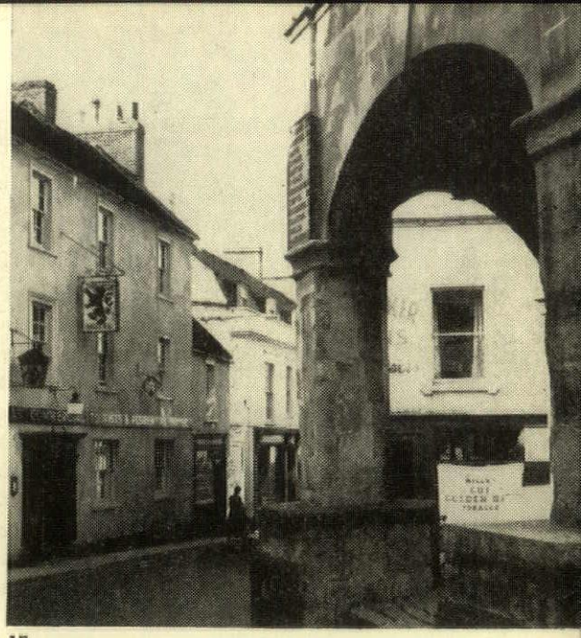
1, south-west elevation.



13

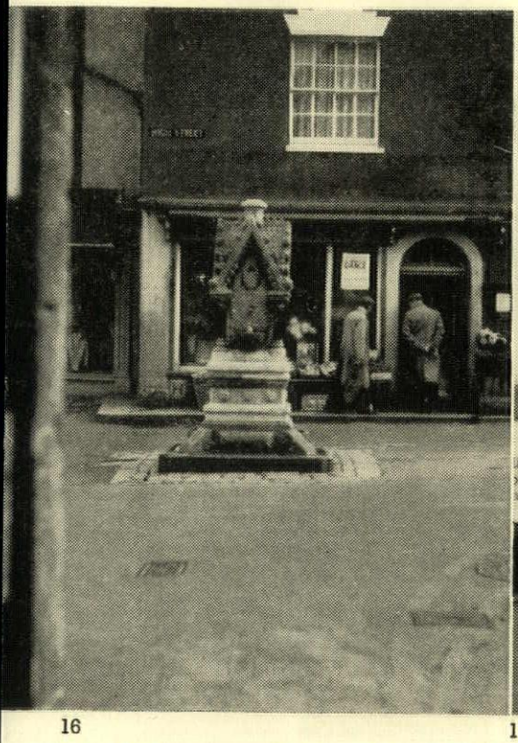


14



15

But to return to the Market Place, we see how this place is made more vivid and real by two forms of intensification. Above, the spatial intensification due to netting. 13, as it really is, 14,



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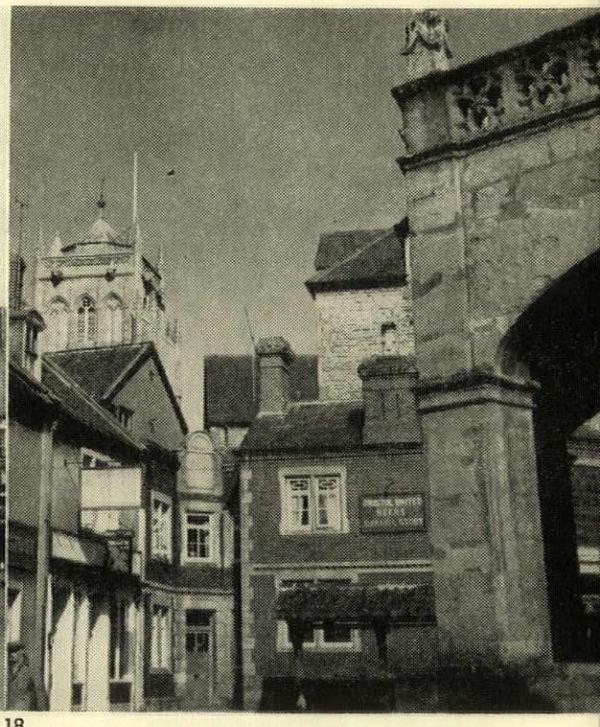
17



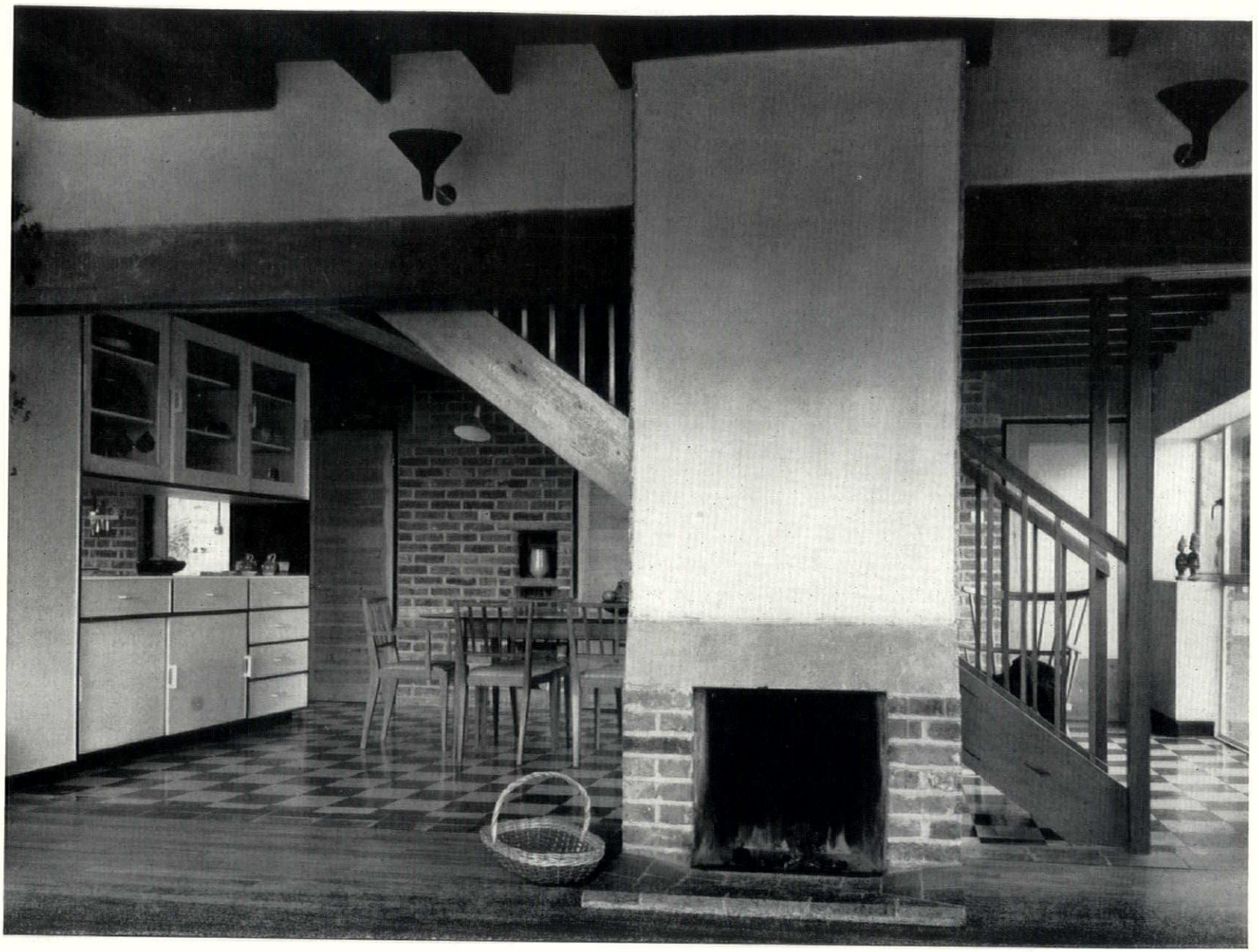
18

the illusion of crowding in (one's memory of the Market Place). 15, the general effect. Below, intensification of height; a linked sequence of pictures, 16, scale is established by the fountain which accentuates the height of the cross, 17, by contrast. Finally the ultimate height, 18, the church tower is revealed.

peculiar sense of crowding in of the walls of the enclosure giving a wholly admirable sense of presence. It really seems to be what it is, the town's outdoor room. This is doubtless due to the fact that the enclosure is seen mainly through the low arches of the cross and the effect of netting is to particularize what is seen beyond.

Secondly, we approach the market place along Great Ostry, in front is a narrow cross road (the High Street) in which is situated one of those sombre Victorian drinking fountains. It is only about 8 ft. high, but it asserts its own particular scale on the scene. On turning the corner the market cross is now seen and although it is not large the sudden change of scale makes it appear the larger by contrast. Finally the full view reveals the ultimate height, the church tower.

It was remarked earlier that Shepton Mallet is a dull little town from a purely architectural point of view. It may be thought now that, even so, it has revealed a pattern in its make-up not without interest to town builders. Out of its simple and unassuming parts a town has been created which has personality. It is not a random collection of utilities all busily saving the precious ratepayer's money. It is a town which almost nudges you and says 'Look at me. I'm here.'



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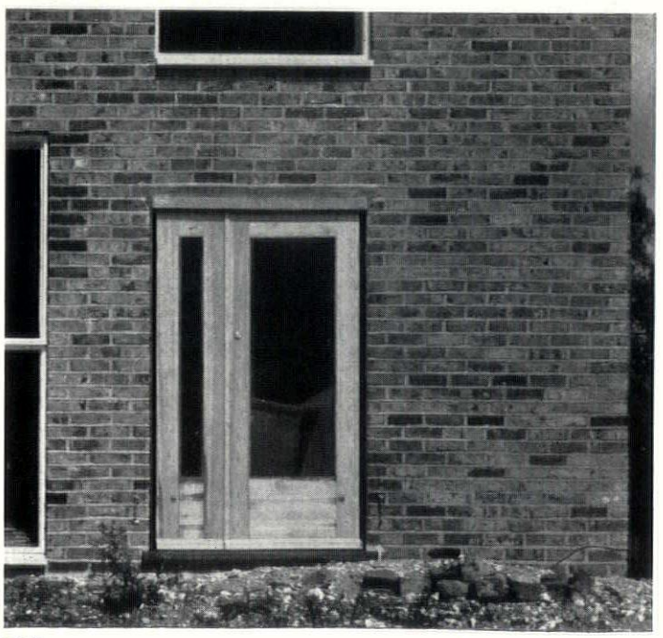
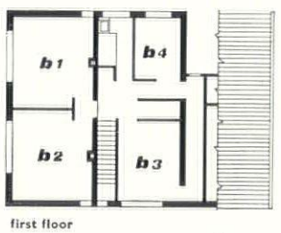


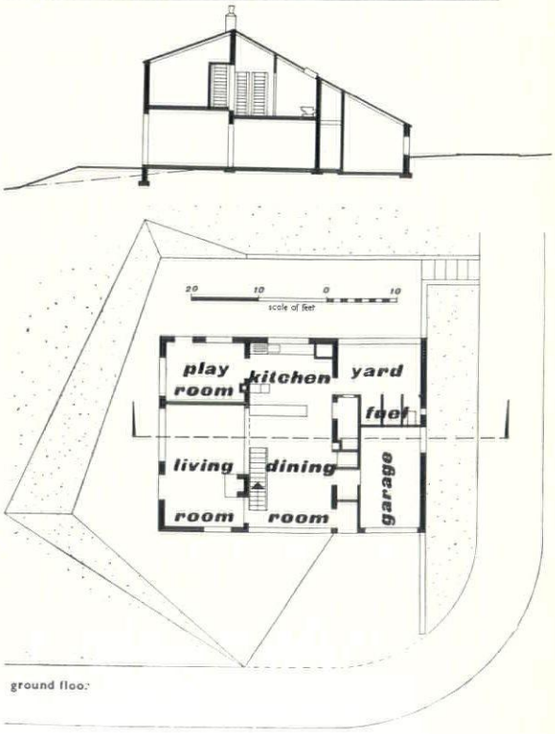
3

2, looking from living room to dining room around the central flue. Limewash plaster is about ⅛ in. thick, mitred at the edges; exposed wood ceiling joists and r.c. beam.
3. French window from living room to garden set in the 'dark zone' of the living room. The effect produced is a small scale edition of the effect of the windows in the whole façade, opposite.

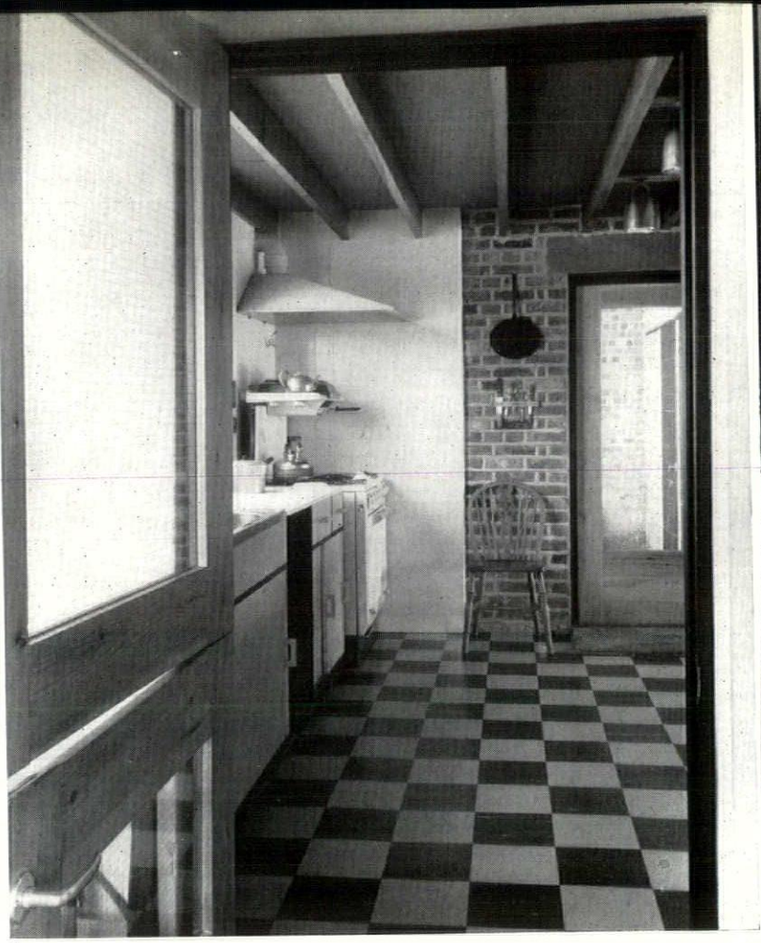


first floor





ground floor



4



5

brickwork (internal and external): second-hand stock bricks in slightly tinted grey mortar.

structural timber (joists, wallplates, stair, etc.): Columbian pine, french-polished.

roofing: dark red concrete tiles; rain-water goods asbestos.

upper floor ceiling: Columbian pine match-boarding, french polished.

lower floor ceiling: $\frac{1}{8}$-in. hardboard (rough side down) with fibre-glass quilt above; t. and g. boards on battens to first floor, laid on quilt.

floors: living-room and playroom loliondo strip; kitchen, dining-room, hall, bath and w.c., polyvinyl tiles; bedrooms, tongued and grooved boarding, finished with patent sealer.

doors: deal framing, t. and g. panels, french-polished.

garage door: 'up and over,' aluminium-faced.

door furniture: aluminium alloy levers.

windows: standard and 'Z' range windows.

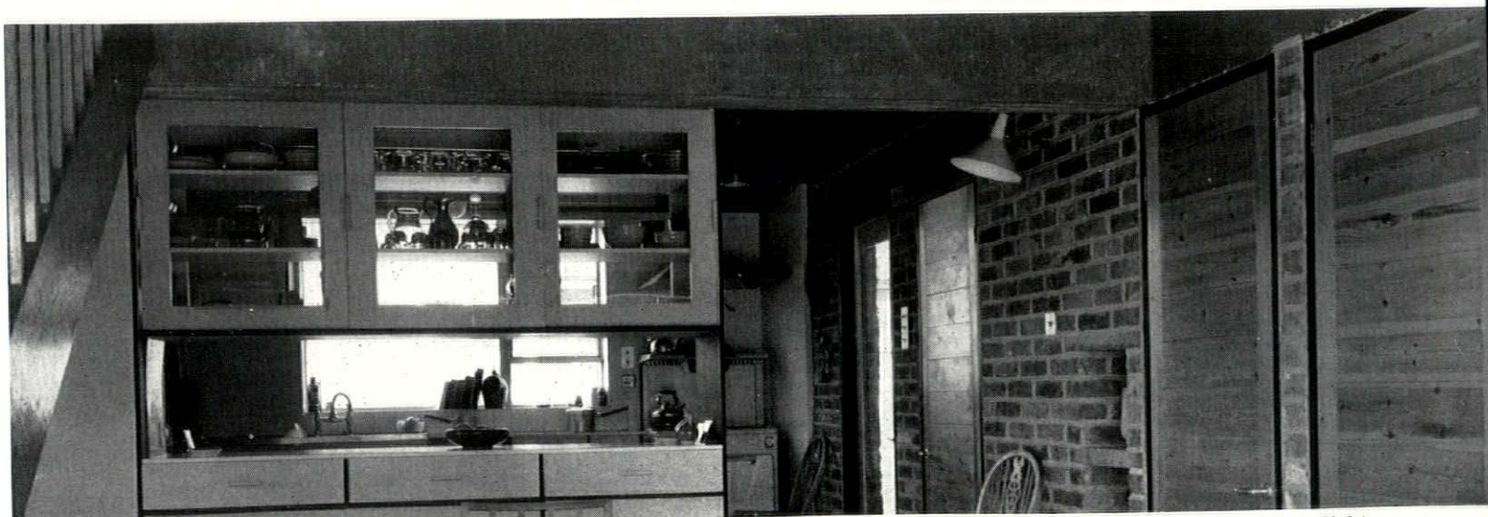
plaster: lime putty, gauged with gypsum plaster.

fittings: $\frac{3}{4}$-in. blockboard ('box frame' construction) painted eggshell-finish; grey, black and white.

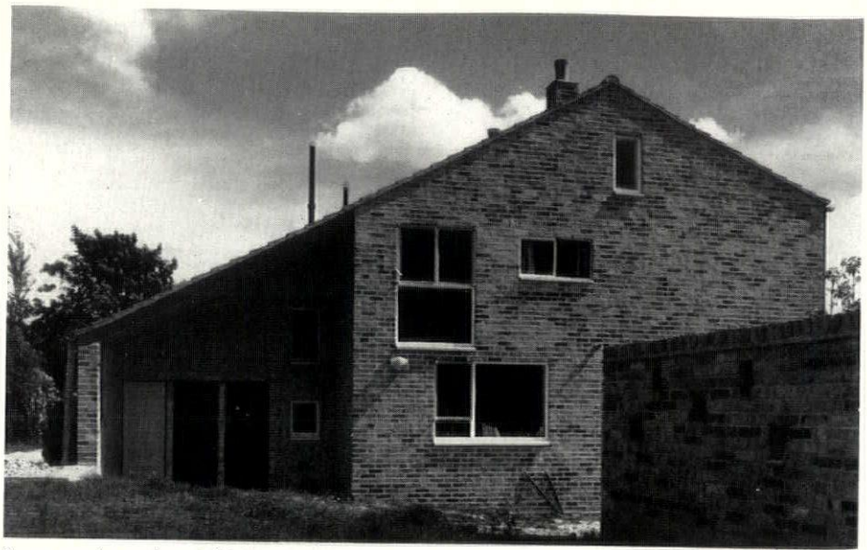
kitchen and bathroom tiles: white 4 in. by 4 in. glazed tiles, with eggshell finish.

heating: on ground floor, underfloor panels; bathroom, radiator.





4 and 5, kitchen from opposite ends looking towards yard and playroom respectively. Exposed boiler coloured mauve; the kitchen cabinet is deliberately simple to avoid the clash of glossy fittings and a homely interior; the architects were trying to create a Dutch middle-class atmosphere. 6, from the south-west. 7, looking from dining room to kitchen; doors on right to yard, larder, closet and garage respectively. All fittings were selected off-the-peg; light fittings proved the most troublesome to select, all 'contemporary' models being over-designed for the effect aimed at here.

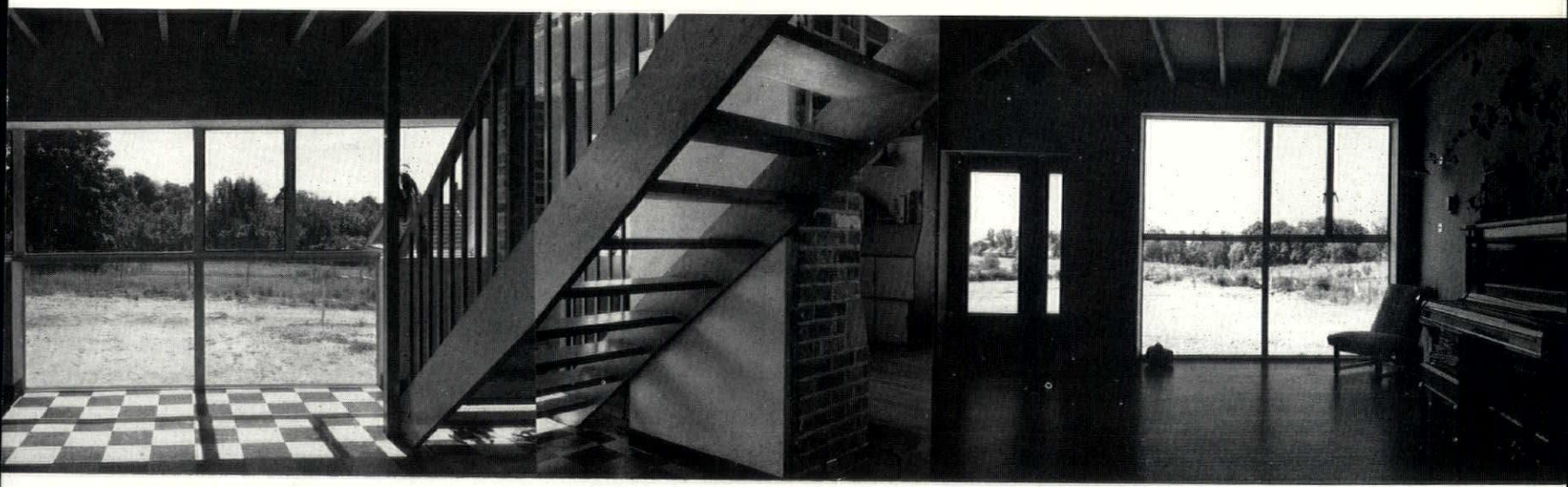


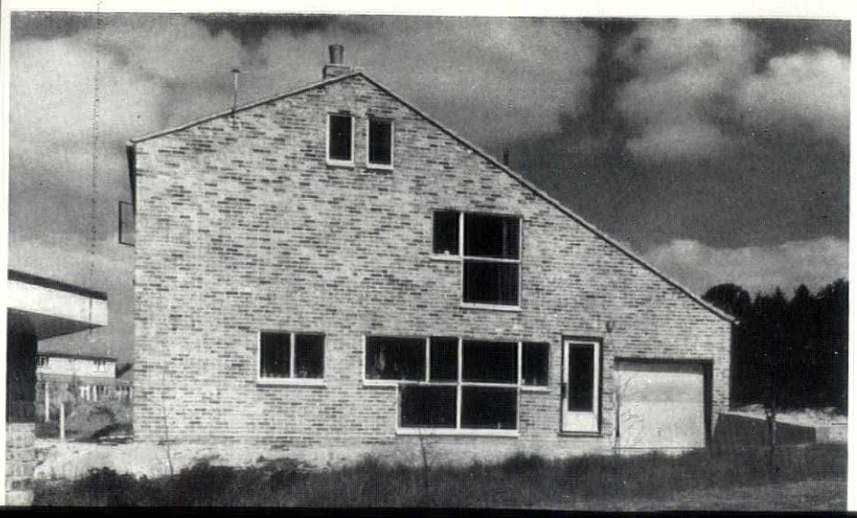
8



9

8, covered yard and kitchen from the west. 9, stairwell with plastered flue on left; an unobstructed view up to the roof pitch produces the same kind of spatial break-out in a vertical plane as the open plan achieves horizontally, as shown in 10 below, a composite photograph of dining room staircase, and flue and living room. The windows carefully frame views across gardens with solid walls concealing the houses in between.

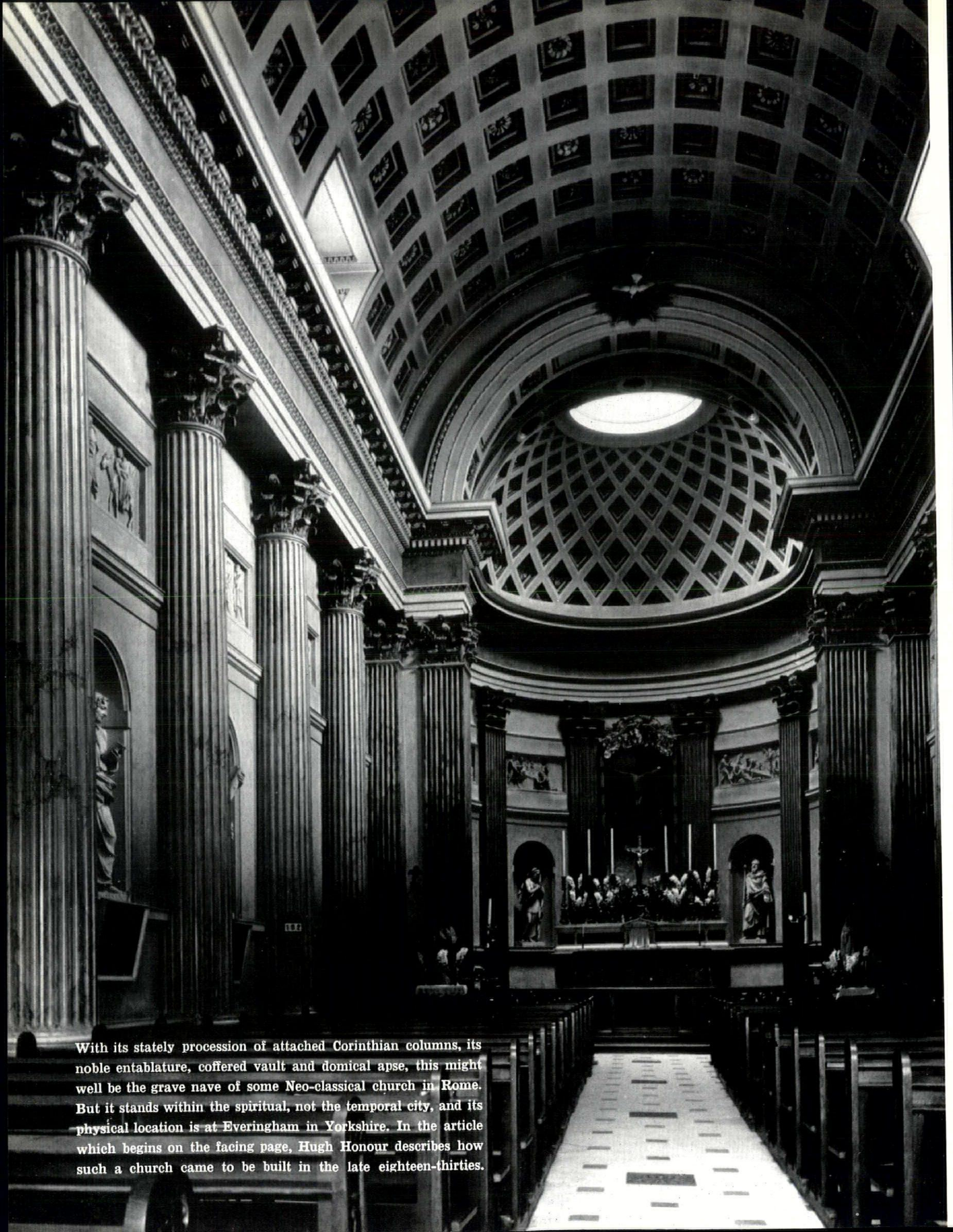






12

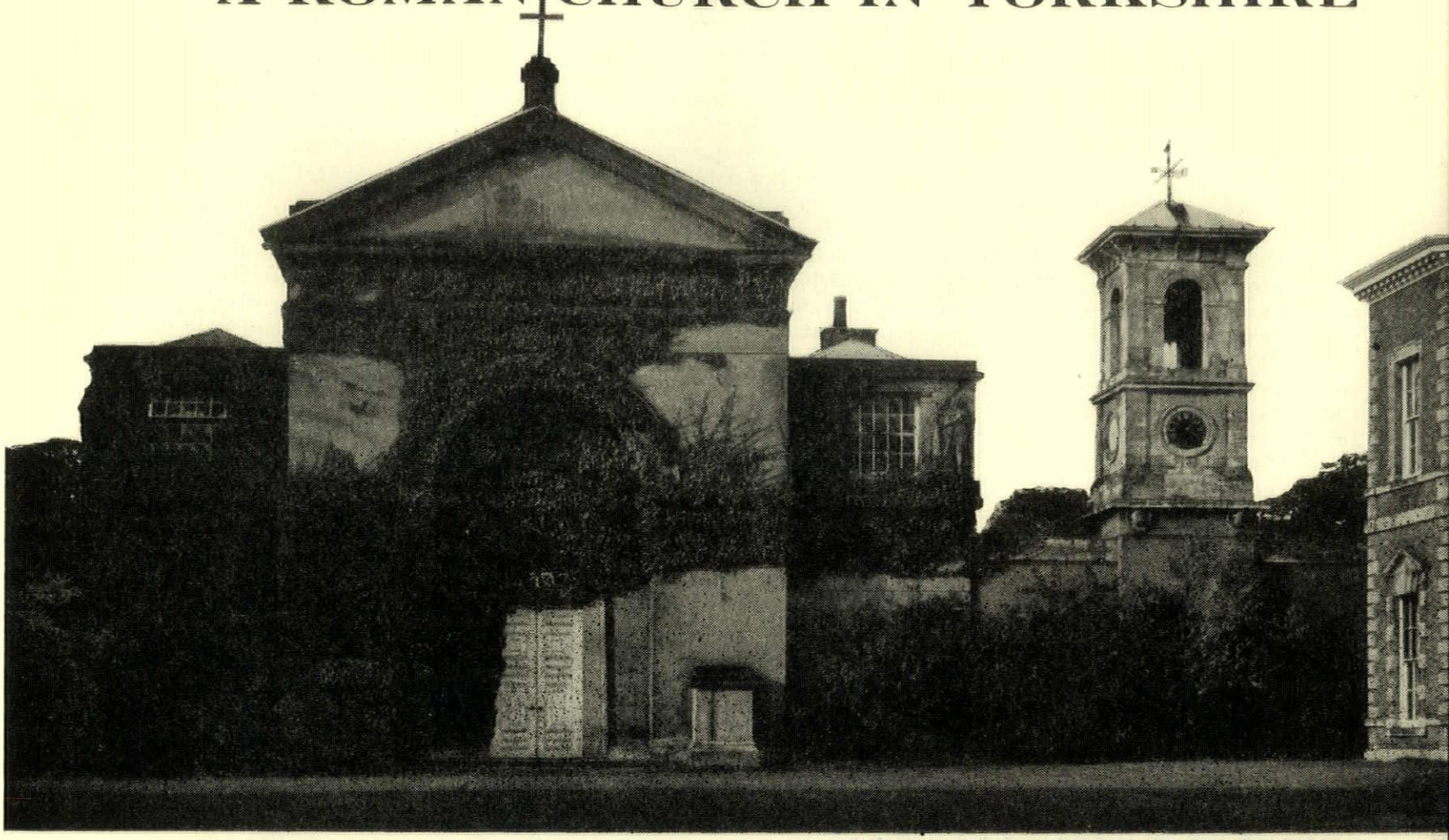
11, south-east elevation with front door and garage, the windows are the standard frames rearranged to maintain the idea of the dominant brick envelope whilst letting in the same amount of light.
12, the same elevation from the south.



With its stately procession of attached Corinthian columns, its noble entablature, coffered vault and domical apse, this might well be the grave nave of some Neo-classical church in Rome. But it stands within the spiritual, not the temporal city, and its physical location is at Everingham in Yorkshire. In the article which begins on the facing page, Hugh Honour describes how such a church came to be built in the late eighteen-thirties.

HUGH HONOUR

A ROMAN CHURCH IN YORKSHIRE



1, *the entrance to the Roman Catholic church at Everingham, Yorkshire, originally the private chapel of Everingham Hall, which stands to the right.*

It is not usual to refer to the *Album di Roma*[1] for the only full account of a Yorkshire church, and indeed, one hardly expects to find the rich Italianate church of Everingham in the flat country between York and Selby. But if the *Album di Roma* has few surprises, the Yorkshire countryside has many and this church must be one of the most delightful.

Everingham is a small straggling village with a somewhat dilapidated Anglican church. From the south end of the village street a drive leads to the plain eighteenth-century Hall, which is partly the work of John Carr of York.[2] Beside it stands the Catholic church, originally intended as a private chapel. The high, honey-coloured walls are unbroken by windows and consequently give it a somewhat severe aspect.

The richness of the interior bursts on the visitor as he enters, passing in a moment from Yorkshire to Italy. As the light comes from windows high above the frieze, the whole roof is brilliantly lit and appears to float above the building; in the apse, the light filters down from a dome. From the control of natural light the church gains much of its effectiveness and it has true Roman neo-classical feeling.

From archives formerly kept at Everingham Hall, but now at Ampleforth, it appears that the idea of the church was conceived some time before 1836. In that year John Rice wrote from St. Augustine's College, Rome, to his patron William Constable-Maxwell of Everingham saying, 'I have paid Leonardi several visits—He has the selection of the rarest and most beautiful materials now in his workshop.' Leonardi, presumably a marble cutter, is later mentioned as the author of the altar; so it appears that from the beginning Constable-Maxwell had determined to build a church of true magnificence. William Constable-Maxwell, 10th Baron Herries, came of an ancient Scottish family which had held to the Roman faith. The 5th Earl of Nithsdale and 9th Lord Herries had been involved in the Jacobite rising of 1715, taken prisoner at Preston, attainted for treason and condemned to death. He escaped while waiting for execution and died in Rome, faithful to the Pretender's cause. Had it not been for the attainder, Lord Nithsdale's granddaughter would have inherited the barony of Herries, but neither she nor her eldest son appears to have applied for a reversal of the act; her grandson, William Constable-Maxwell, the builder of the church, claimed the title successfully in 1858. Yorkshire had been a stronghold of Catholicism throughout the seventeenth and eighteenth centuries, but only in the nineteenth century did the great Catholic families build their vast chapels,[3] in celebration, one might almost say, of the act of Emancipation.

There is slight confusion over the authorship of the church. According to the *Album di Roma*, it was designed by a Roman architect, Agostino Giorgioli; but his name is not mentioned anywhere in the accounts and letters I have examined, from which it appears that John Harper

[1] Oreste Raggi: 'Nuova chiesa nella Contea di York' in the *Album di Roma*, A. VII (1840); distr. 9.

[2] There are a number of tinted drawings for the interior much in the style of Carr, one of which is inscribed *J.C.*, among the Everingham papers now at Ampleforth College.

[3] The other two large Roman Catholic chapels in Yorkshire are both Gothic, one being a copy of the York Minster Library, at Brough Hall; the other is at Rudding Park.

was the architect. It is not improbable that Giorgioli, who seems to be otherwise unknown, provided no more than the original plans which were later worked up by Harper. John Harper had been a pupil of Benjamin and Philip Wyatt for whom he had worked on Apsley House and the Duke of York's column before he settled down to practise in the north of England, but he died at the age of 33 in 1842. He would appear to have modified the Everingham plans, and the Ionic portico of which the *Album di Roma* contains an engraved view was not in fact constructed. The plasterwork, including the fine Corinthian capitals, was done by the firm of Crabtree of York whose most complete account was dated 1839, presumably the year the church was finished.

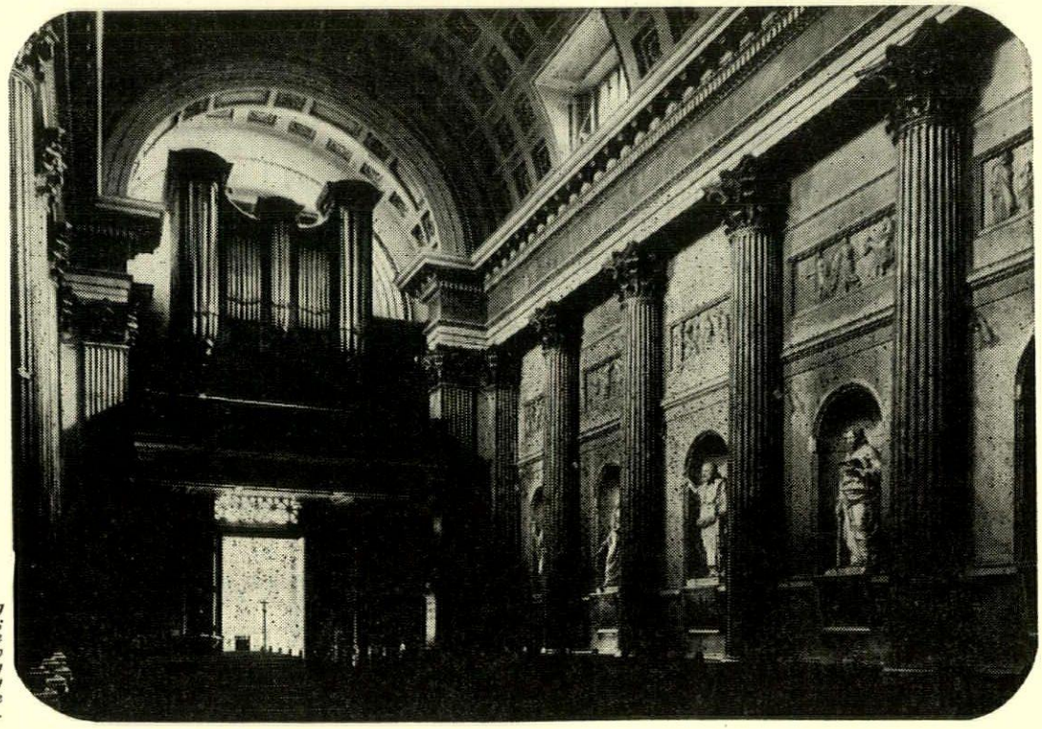
Not all the credit for the interior can go to the architect, or architects, as the statuary makes an immediate impression. In all there are sixteen full-sized figures, representing the Virgin, St. John, St. Mary Magdalene, St. Everilla and the Twelve Apostles; in the frieze there are eighteen low reliefs of the life of Christ, all the work of a young Carrarese sculptor, Leopoldo Bozzoni. It is said that the marble reliefs and statues were carved in Rome and then sent to England and that the ship bearing them sank on the way. Consequently Bozzoni had to come to England to execute another series, but as it would have been too costly to use marble, cast stone was used instead. There is no means of verifying or of denying this account which does not seem impossible. The known facts are that in 1838 the altar by Leonardi was sent to England and in the same year Bozzoni arrived in London and took part of the ground floor of the Hotel Imperial, Covent Garden,[4] as his studio. Between 1839 and 1844 Constable-Maxwell paid him £1,780 and there is a note to say that £640 was still owing in 1845. In 1844 Bozzoni exhibited the figures of St. Andrew and St. John in Westminster Hall before despatching them to Yorkshire. The critic of *The Literary Gazette* remarked of the pair that they had 'good modelling about the drapery though as much cannot be said for the figures.'

With their stiff beards and hard drapery, the figures at Everingham reflect the very strong influence of Bertel Thorwaldsen. According to Campori,[5] the biographer of Carrarese artists, Leopoldo Bozzoni obtained in 1824 the premium for low relief carving at the Carrara Academy and was sent to Rome to continue his studies under Finelli. Canova having just died, Thorwaldsen was left the undisputed champion of sculpture in Rome and it was to him that Bozzoni naturally turned for inspiration. From Rome he sent figures of Mars and Ajax to the Academy of Carrara, but like so many gifts to that institution these appear to have vanished. Campori states that Bozzoni did not meet Constable-Maxwell until he came to England and was commissioned to do the work for Everingham, and cites as his only other sculptures figures of St. Peter, St. Paul and St. John. He was able to exhibit 'a subject from the Aeneid' at the Royal Academy in 1847, and he probably died in the same year. From the Everingham papers it seems likely that the other three figures mentioned by Campori were destined for the Catholic church at Clifton, but they were of plaster and no trace of them survives.

Since it was completed in about 1839, and the niches were filled in 1844, few alterations have been made to Everingham church. The altar was enlarged a little in 1868, but this seems to have been done discreetly. It is tempting to call it the most impressive Catholic church in England; it was surely the first really fine one to be built after the seventeenth century and stands as a great monument to the spirit of Catholicism in the 1830s.

[4] See Rupert Gunnis: *A Dictionary of British Sculptors*, p. 60.

[5] Memorie Biografiche degli Scultori Architetti, Pittore ec. ... di Carrara. 1873, p. 37.



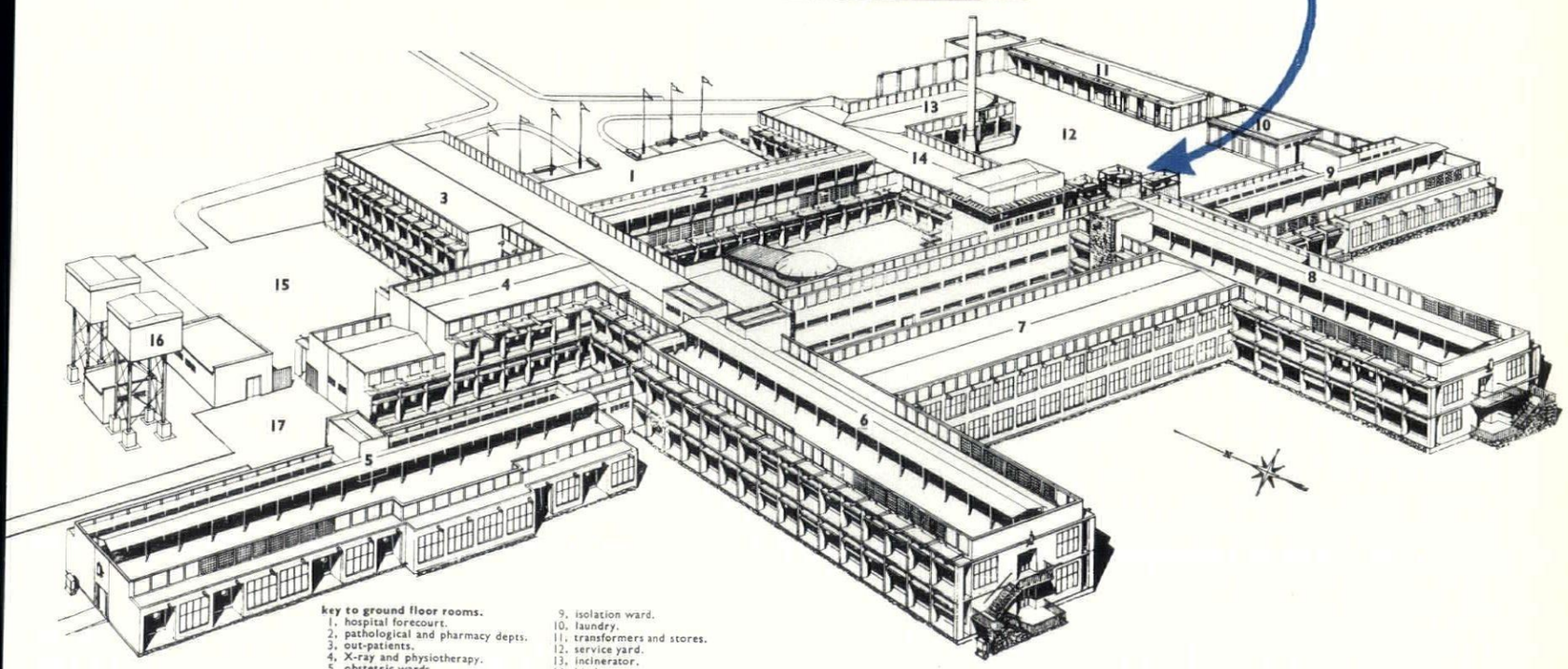
2, the interior looking towards the entrance; on the right are some of the statues and low reliefs representing the life of Christ, by the Carrarese Leopoldo Bozzoni.

STATE HOSPITAL AT DOHA

ARCHITECT: JOHN R. HARRIS

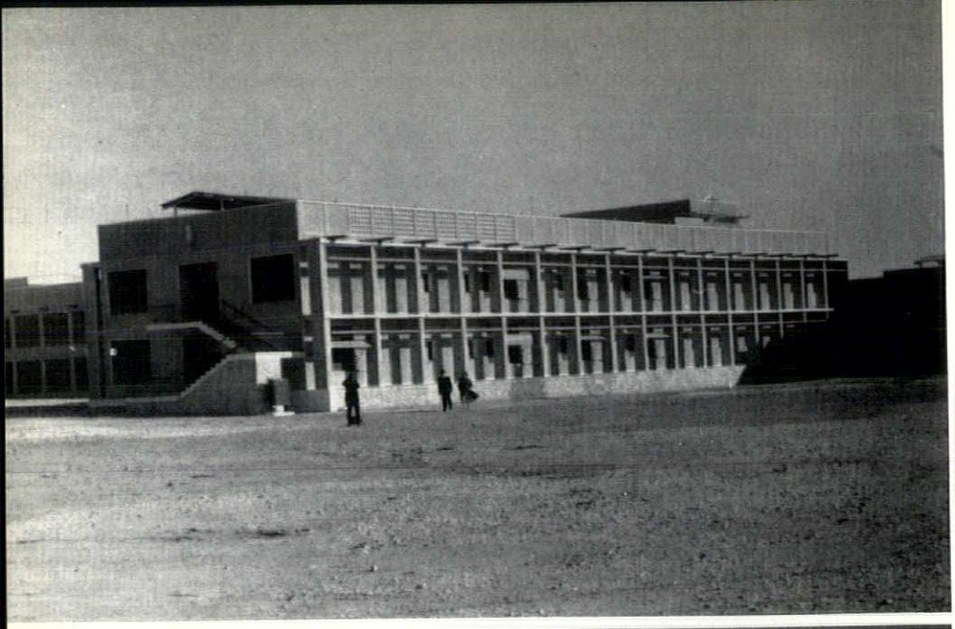


1, *junction of isolation ward and main hospital.*



key to ground floor rooms.
1. hospital forecourt.
2. pathological and pharmacy depts.
3. out-patients.
4. X-ray and physiotherapy.
5. obstetric wards.
6. male surgical wards.
7. 4-bed wards.
8. male medical wards.
9. isolation ward.
10. laundry.
11. transformers and stores.
12. service yard.
13. incinerator.
14. kitchens.
15. staff and ambulance yard.
16. water towers.
17. mortuary yard.

axonometric of hospital from north-east.



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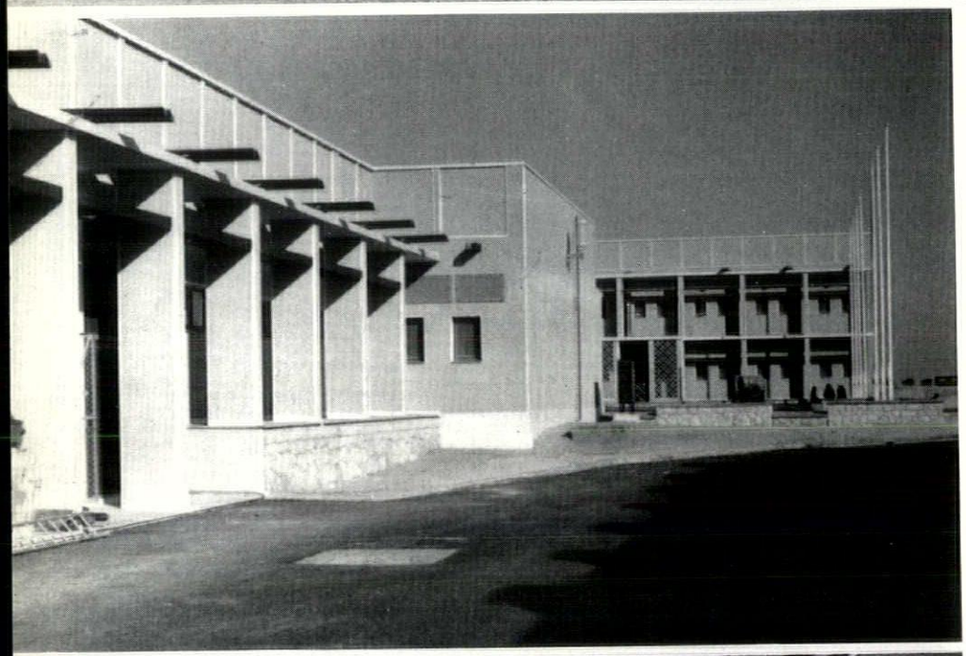
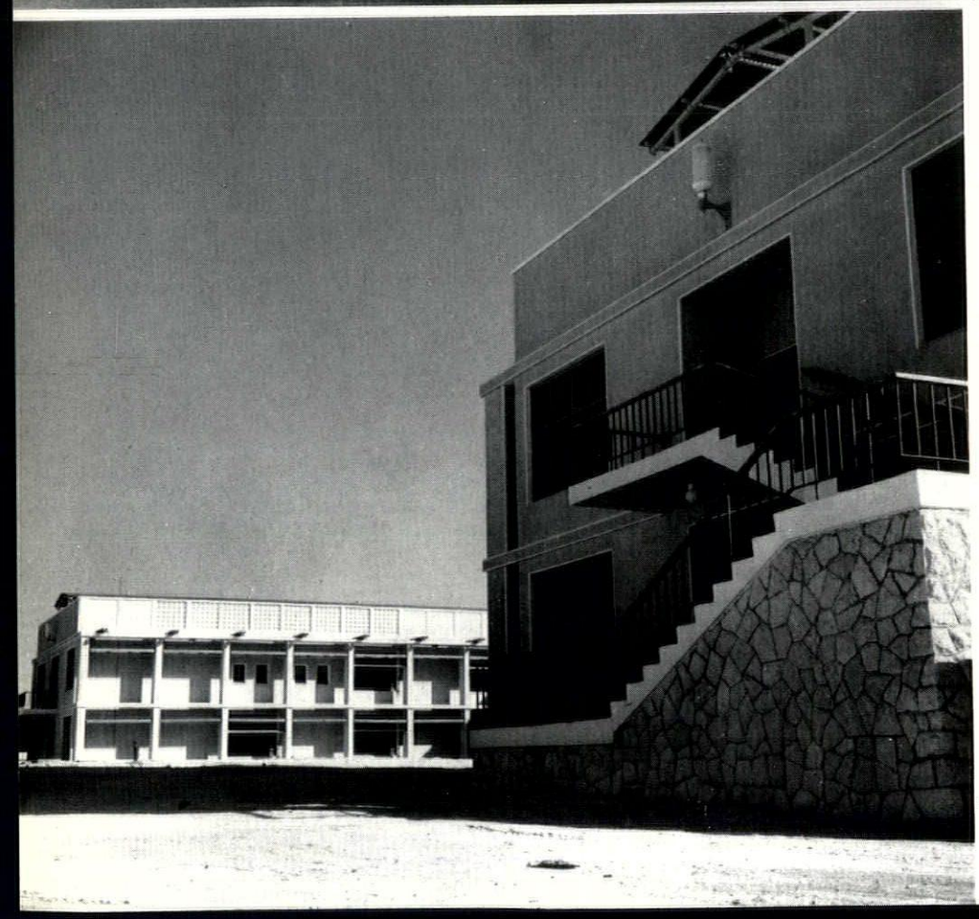


3



4

State Hospital at Doha

Doha is the capital of Qatar, an independent state on the Arabian side of the Persian Gulf; this hospital was the winning design in an open competition held in 1953. The site is on the desert escarpment half a mile to the west of Doha, and as well as the hospital buildings it contains 11 senior houses, 4 self-contained flats, 12 sisters' flats and 56 nurses' quarters. The hospital was the first large framed building to be constructed in Doha and almost all building materials, except sand, aggregate and stone, had to be imported; it was decided that by using the best aggregates and specifying the water source, *in-situ* reinforced concrete using local materials would be possible: the main framework is steel, prefabricated in the UK and shipped to Doha after a trial erection. Floors and roofs are a combination of precast prestressed tile plank with infilling hollow concrete blocks and an *in-situ* topping of concrete to remove the need for shuttering. Expansion joints were formed at approximately 100 ft. maximum intervals by using two steel frames, one on either side of the expansion joint, each supporting the building on its respective side and giving 1 in. complete separation between the blocks. The cost of importing bricks for panel walls would have been heavy; to avoid this local shell sand concrete blocks were used, made on site in machines imported for the purpose. Similarly, the hollow tile pots and trays required for the floor construction and engineering bricks required for lining the basement excavation and some structural walls, were replaced by shell sand hollow pots and trays, and solid concrete blocks. The external walls have concrete vertical fins and canopies with teak and pine subsidiary sunbreakers. Light to the medical and surgical single-bed wards is controlled by aluminium sunbreakers. The hospital services include full air conditioning for the main building, with an independent plant for the theatres. There are also independent refrigeration, ventilation and cooling plants for the animal room, chilled piped drinking water, meat room, fish store, ice cream freezer, therapy plant cooling water, and the mortuary body rack. The mechanical and sanitary services include steam and dual cold water supplies comprising brackish water for flushing and fire fighting and fresh water for all other purposes. There are three medical piped gas services, oxygen, nitrous oxide and vacuum lines. Electrical systems installed include a visual location system, a fire alarm system, slave clocks, a patient-to-nurse call indicator system, lifts, radio rediffusion and telephones.

2, north west side of the male medical block. 3, the main entrance from the west; kitchens in foreground, out-patients block beyond flagpoles. 4, the north ends of the two male ward blocks; surgical on left and medical on right.

BOOKS

ELYSIUM IN LITTLE

THE NEW SMALL GARDEN. *By Lady Allen of Hurtwood, F.I.L.A., and Susan Jellicoe. The Architectural Press, London, 15s. net.*

Circumstances beyond our control oblige the majority of us to be content today with a small garden or to seek a method of reducing to a minimum the labour of maintaining a larger one. Lady Allen and Susan Jellicoe's timely little book shows, with admirable clarity of text and well-chosen photographs and plans, how enterprising possessors of pocket-handkerchief gardens can achieve a lay-out of originality and distinction. There is something here for every taste, site and pocket: for the expert who wishes to grow rare and difficult plants; for the lover of a mere 'mass of colour'; for the business man who has interest and energy only to keep a lawn mown. There are gardens which even the wildest children could hardly damage. There are gardens to sit in, to walk in, to dream in. The difficulties of the long and narrow London garden have not been shirked, nor those of a plot so small as to seem hopeless. Who would guess from the photograph that Miss Vivienne Kernot's London garden (p. 52), for example, was no more than eighteen feet by fifteen—the size of a very ordinary sitting-room?

Not the least merit of this book is the extremely practical outlook of its authors. Materials necessary for paving, screening and the treatment of walls are carefully listed; and prices have not been considered too sordid to mention. Suitable shrubs and plants for various soils and outlooks are fully described. There is, further, an appendix, 'How to find out,' which names firms and societies which are ready to supply materials or give advice.

Perhaps the least successful gardens shown are those where sculpture has been introduced informally. In Lady Hendy's St. John's Wood garden (p. 19) the wooden female figure looks strangely ill at ease among the day-lilies, nor is a plaster horse's head from the Parthenon (p. 121) other than comic at ground level in a shrubbery. Sculpture in a garden would seem to demand formal treatment.

I can find only one real flaw in this delightful little volume. Gardens exist for twelve months in the year, and the small garden is all the more with us for being inevitably so close to the house. Now the authors show us photographs where summer ever reigns and skies are never clouded; where irises and peonies are in fullest flower; where tea is laid beneath the shade of clustering roses. But how do these gardens appear in December, in the rain? It is a problem that architects also notoriously shirk. None the less, I could wish that Lady Hurtwood and Susan Jellicoe had had the courage to give us one or two photographs at least, indicating the means by which some element of beauty can be retained in a small garden throughout the long and gloomy English winter.

It is only natural that the town garden should, in a book of this kind, receive the fullest treatment. Country gardens, however, have also been included, together with a few examples from the Continent. With the exception of the austere Danish garden (p. 56), where granite cubes have been successfully placed in the grass to form an abstract pattern, the latter would not appear to indicate that the Continent has much to teach us. Had space permitted a fuller survey, including further examples from Germany and some also from America and Japan, we might perhaps have been persuaded that the problem of the small garden is capable of a yet wider range of solutions, not a few of which are suited to the English climate and in harmony with the English scene.

Wilfrid Blunt

MEDIEVAL PELICAN

ARCHITECTURE IN BRITAIN: THE MIDDLE AGES. *By Geoffrey Webb. Pelican History of Art, 52s.*

The Pelican History of Art has been blamed by several critics for giving too much space to England. Mr. Webb's book is a vindication of the editor; for, unbelievable as it may seem, there existed, before it and Mr. Summerson's volume appeared, no scholarly history of English architecture in the English language, if one leaves out the four paper-bound pamphlets published in 1946-52 for the British Council by Longmans Green. They were written by Sir Alfred Clapham, Mr. Webb, Dr. Whinney and Mr. Summerson, were excellent throughout on their miniature scale and ought to be back in print. The volumes of the Pelican History of Art are of a different calibre. Mr. Webb's must be compared with Bond's books and is superior to them not only because it is up to date but also because its arrangement is historical and not by such categories as plan, vaults, walls, piers, windows, etc., as for instance Miss Evans's *Cluniac Architecture* still is—no doubt on the French archaeological pattern.

For English medieval architecture, Mr. Webb had been preceded mainly by Clapham's outstanding volumes on Anglo-Saxon and Norman architecture, models of clear arrangement and sparing writing, and by Prior's *Gothic Art*, a splendidly written but no longer reliable book. Mr. Webb's is perhaps more in the line of his predecessor as Cambridge Slade professor than of his predecessor as secretary of the Royal Commission on Historical Monuments. It reads easily everywhere, it is full of personal observations, it is never pedantic, and it is occasionally just a little perverse. To disregard, for instance, the division of 1066 (or 1050, if Edward's Westminster Abbey is taken as the signature building) as a chapter division and replace it by 1093 (the start at Durham) is surely wilful, and it is equally wilful to treat secular buildings up to 1240, before any Gothic churches are introduced. But Mr. Webb may well have done these things deliberately so as to lead his readers smoothly from chapter to chapter. Here also is the reason—and a good reason it is—for fitting chapters or pages on castles and houses between and into chapters on churches, instead of treating them separately at the end. Readers of THE ARCHITECTURAL REVIEW may have wished to see more than about 40 pages devoted to domestic buildings and to get a little on town-houses and farmhouses. But Mr. Webb would no doubt answer that he is an historian of architecture and not of building. No-one certainly can suspect him of being ignorant of such minor structures and their characters; for in the Royal Commission he has to deal with them more than anything else and sometimes *ad nauseam*.

On churches the book is invaluable. It is the first to draw a convincing line of development of the Gothic style in Britain. It fits the great deal of scattered evidence which we have into a picture that turns out to be at once rich and artistically impressive.

With Mr. Webb's book five out of the seven volumes of the Pelican History of Art dealing with Britain are out. So for the time being the balance of the series is unquestionably upset; for Mr. Webb's is the eleventh volume to appear. But that lack of balance is only temporary. It may well be due to the fact that the editor is in a better position to harass authors in England than abroad. Another temporary lack of balance—welcome to this journal—is the number of architectural volumes out or in hand. After Mr. Webb's, so the prospectus promises, the next volumes will be on Greek architecture (A. W. Lawrence), Romanesque architecture on the Continent (K. Conant), international nineteenth and twentieth century architecture (Henry-Russell Hitchcock) and Gothic architecture on the Continent (P. Frankl). Is the reason perhaps that architecture is a more practical art than painting and sculpture, and that therefore the architectural historian is a more practical and business-like man than the historian of painting and sculpture?

S. T. Scott

EXILE & GOTHICK SECLUSION

THE CALIPH OF FONTHILL. *By H. A. N. Brockman. Werner Laurie. 21s.*

In *The Caliph of Fonthill* H. A. N. Brockman, himself an architect, gives an agreeably readable bird's-eye view of the life of William Beckford, the author of *Vathek* and the *Excursion to the Monasteries of Alcobaça and Batalha* with particular reference to the work of Wyatt, whom he employed to build his Abbey at Fonthill, and of Henry Goodridge, who designed him the Lansdowne Tower above Bath. Nikolaus Pevsner has written a foreword in which he makes clear the angle of the author's approach. Admirers of Beckford's writings might have wished for more detail regarding his life, such as his improbable

twenty-four years' membership of Parliament, and his dispute with the Rev. S. Henley, who, in 1786, published without authority his English version of *Vathek* which purported to be an anonymous translation from the Arabic, and so led, in 1787, to Beckford's publication of his French original. Mr. Brockman none the less gives a sympathetic and sufficient account of the personal background to make intelligible those aspects of Beckford's activities which he has more particularly set out to explore.

William Beckford, son of the famous Lord Mayor of London, was born at Fonthill in 1760 and educated by tutors. His father died when he was ten, leaving him a vast fortune; as he grew up he was taken travelling abroad and acquired a romantic love of nature. On his return scandal followed his association with a youth named Courtenay and Louisa, née Pitt Rivers, the wife of his cousin Peter Beckford. It was during this disordered period of his life that he wrote the oriental tale of *Vathek* in the French language.

In 1783, in his twenty-third year, he married Lady Margaret Gordon, who bore him two daughters. He seems to have lived most happily with her in Switzerland until her death in 1786. After his widowerhood he sought distraction by a journey to Portugal where he wrote the *Excursion* and was fired at Batalha with admiration of the 'rich cluster of abbatial buildings, buttresses and pinnacles and fretted spires towering in all their pride and marking the ground with deep shadows that appeared interminable so far and wide they stretched along.'

On his return he retired to Fonthill, where he planned and planted extensively to perfect the background of the Gothic Abbey which he commissioned Wyatt to build. In spite of Beckford's impatience, Wyatt's task took nearly twenty years to complete. The central feature, a tower of timber and stucco, collapsed in 1797 during its construction. Beckford is reputed to have said he was only sorry not to have been there to see it fall. The tower, which later replaced it, was cased with stone on a timber framing, and fell in 1825 after Beckford had sold Fonthill and moved to Bath. Wyatt's Clerk of the Works sent from his deathbed for Beckford, and confessed that he had failed to build into the foundations a relieving arch designed to spread the load. Beckford duly informed the new owner, a Mr. Farquhar, of the danger. When the second tower eventually collapsed in 1825, Beckford remarked that it had made an obeisance to Mr. Farquhar which it had never done to him. When Cyrus Redding told him that Farquhar had become so much attached to him that if he had lived longer he would have left the ruin back to him, Beckford remarked that he would have been in an ecstasy to see the proverb falsified, 'You can't eat your cake and have it too.'

After moving to Bath at the age of sixty-two and adapting a part of Lansdowne Crescent both for his habitation and for the housing of his remarkable collection of pictures and *objets d'art*, he commissioned Goodridge to build him a tower for the enjoyment of the view over the countryside, and in this elegant monument to the serenity of his old age his bones were eventually laid.

There is much that is sympathetic in his curious life. The sight of Batalha seems to have prompted him to alter his original project of an ornamental ruin into the eventual plan of a full-sized abbey. Round his vast territory he flung a wall to exclude sportsmen and other intruders from disturbing the wild life that he loved and his flock of tame hares. He moulded the very landscape to his romantic conceptions with informal planting and a nine-mile ride through the solitude, on the lines recommended by Uvedale Price's *Essay on the Picturesque*.

He was a hermit who spent twenty years to perfect his own wilderness: a recluse who used up a fortune to make his own monastery. When fortune and walls had crumbled away, he seems to have found as he grew old an unexpected contentment at Bath, in his fondness for his surviving daughter, the Duchess of Hamilton, and his unfailing appreciation of the beauties of nature and art. Mr. Brockman, remembering one aspect of his life, the architectural, and all that went with it, concludes by paying tribute to his courage and his pride: as an admirer of the *Excursion* I would recall in particular the unequalled harmony he achieved between the grandeur of his sense of poetry and the gaiety of his sense of humour.

Bryan Guinness

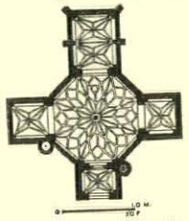
BUILT IN POLAND

THE ARCHITECTURE OF POLAND. *By Zbigniew Dmochowski. Polish Research Centre Ltd., London.*

POLISH ARCHITECTURE UP TO THE MID-19TH CENTURY. *By Jan Zachwatowicz Budownictwo i Architektura, Warsaw.*

These two books have come out neck and neck from opposite sides of the Iron Curtain to cover the same ground. The Warsaw book is enormous—500 big good-quality photographs and not much text (it has been available in Polish for some years); the London book is smaller but contains more, packed out with good plans and rather bad photographs which I won't condemn for a moment because it looks sadly as though better illustrations were unobtainable through 'force of circumstances'; many buildings in the London book have plans and descriptions only. The two Polands are not even the same: the London book covers pre-1939 Poland and includes Vilno as well, while the Warsaw book deals with today's state with its Oder-Neisse line and its shorn Eastern frontiers.

Yet in spite of all this the Polish-ness of Polish architecture shows through—muted to something like an official attitude in the Warsaw book, coming out in a firework of high spirits and gaiety in the London book, gaiety and swagger expressed even in the plans. On the evidence of these books the Poles have never invented their own style, have always performed brilliantly on the current styles around them. In the fifteenth century this meant Brandenburg brick Gothic purged of the Teutonic Knights' heaviness (Our Lady, Poznan, or Corpus Christi at Cracow); in the sixteenth century, the Sigismund chapel at Cracow (by Berecci, 1520) of which Bramante need not have been ashamed, and town houses in bubbling Plateresque. Later it meant Louis-Quatorze without the academic straight-jacket, and Neo-Classicism with some life to it. Today, if nothing else, it means a sparkling re-creation of Neo-Classic Warsaw (the London book shows the pre-war state, the Warsaw book shows the rebuilt houses and public buildings. Tomorrow, as month by month '*Architektura*' struggles away from cornices and the other trappings common to City of Moscow communism and City of London capitalism, it could be the means of transmuting the doughy modernism of Western Germany. I'd like to give two more examples: first, several late Gothic churches were built in Bohemia that were 'hall churches inside out,' i.e., two naves joined together by a single central arcade. Who but the Poles would have reduced this to one single pier in the middle of the church as though it were a chapter house, and then—at Goslawice—used this idea as the octagonal centre of a Greek cross, with single bay porch and 'transepts' and a two-bay chancel? And, second, where else would you find the Austrian baroque oval church plan adapted first into an elongated octagon, and then given 'aisles' made up of three chapels and trapezoidal spaces joining them, covered with lean-to roofs? 'The composition thus resembles a basilica, especially since the nave is covered by a barrel vault with lunette windows, skilfully adapted to the octagonal plan. . . .' This is (was?) at Tarnopol, designed about 1775 by the amateur Augustus Count Moszynski, and Tarnopol itself is now inside the Ukraine: even the simplest historical record is loaded with overtones of the last twenty years. It is really present-day Poland that is uncovered in these two books.



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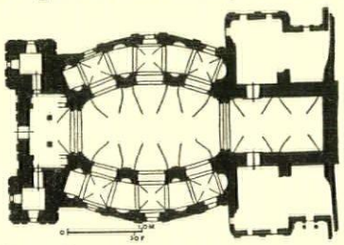
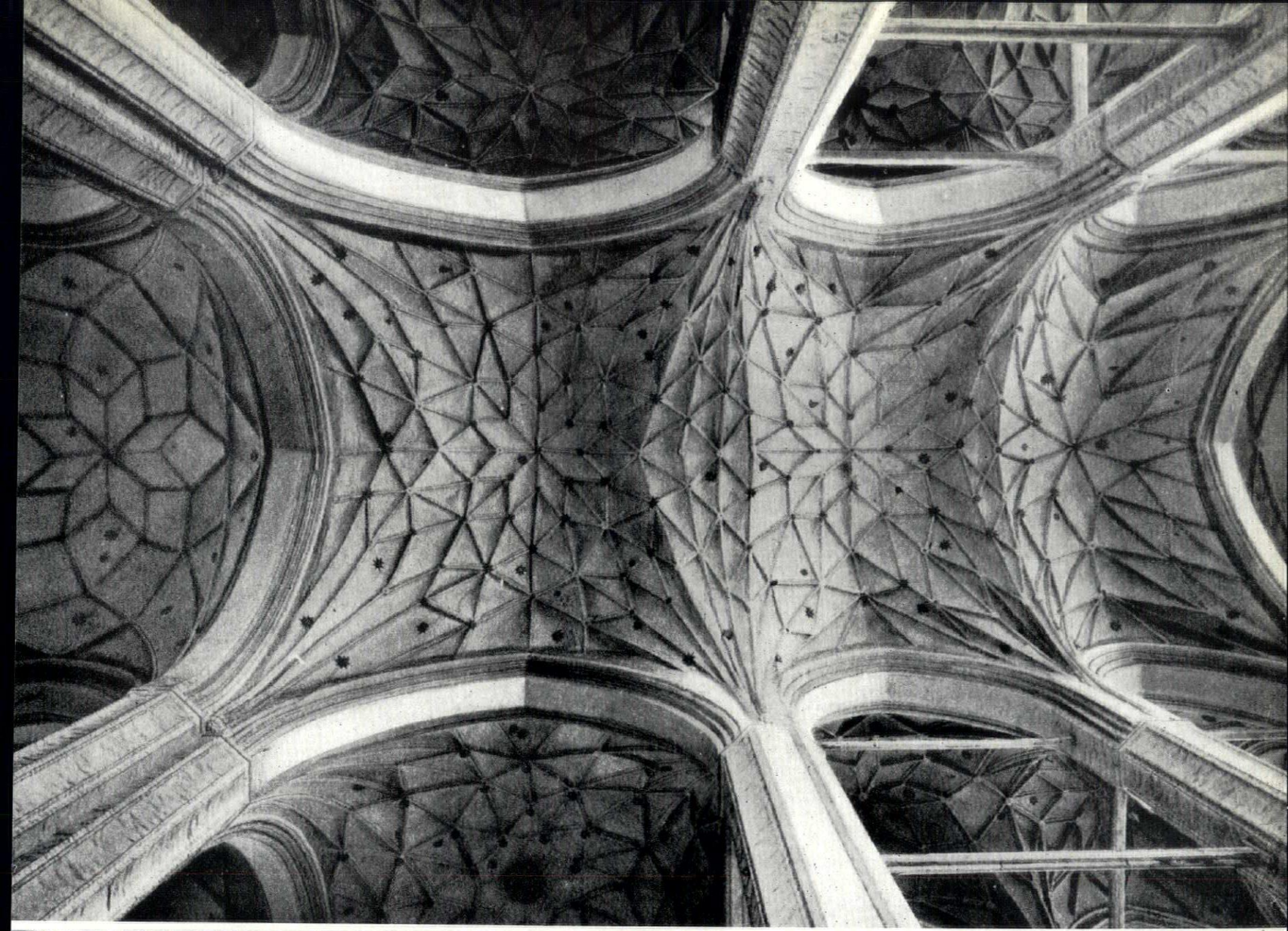


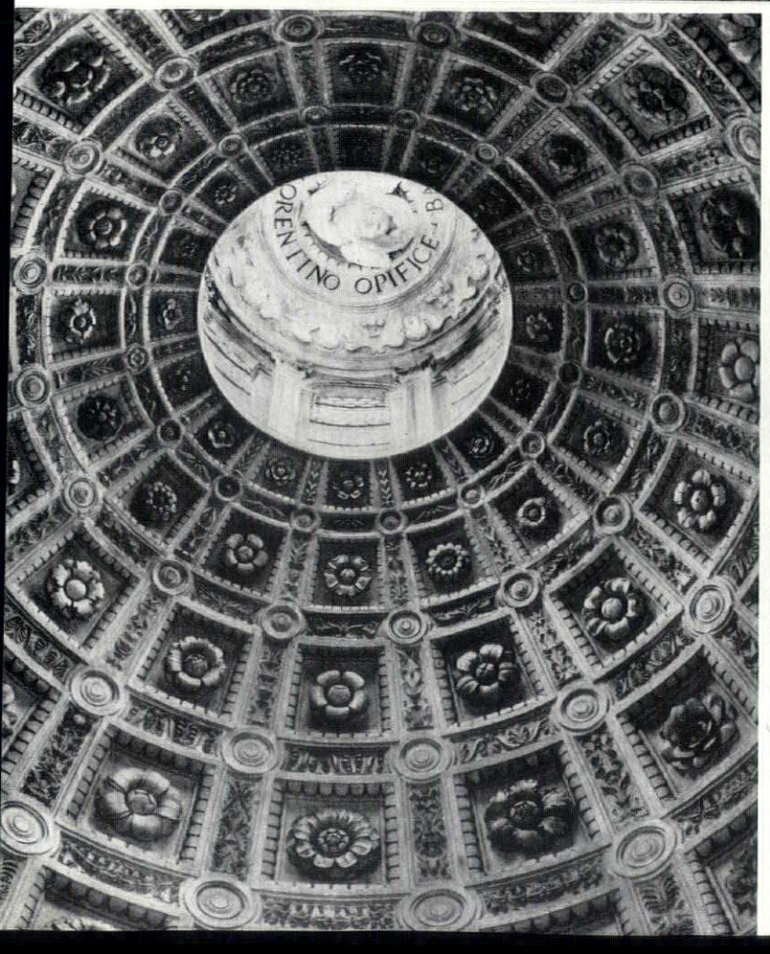
Tarnopol

If you are interested, do three things. Look at the Warsaw book in the R.I.B.A. library; buy the London book for its double record of indomitable human spirit, both in the buildings themselves and in the way it was compiled—largely from pre-war material made up by the students at the famous Polish School attached to Liverpool University. And then apply for a visa to try and see the buildings for yourself. For if ever there was a situation to which Auden's too-often quoted line applies ('we must love one another or die') this is it.

Ian Nairn

built in Poland: *two examples of the Polish temperament. Top, the star vaults of the transept of the Sondergothik church of St. Mary, Danzig. Bottom left, the Bramantesque vault of the Sigismund chapel dome, Cracow, built c. 1525 by the Italian Berecci, and bottom right, this Renaissance style translated into Polish terms: the dome of a chapel in Uchanie church, c. 1625.*

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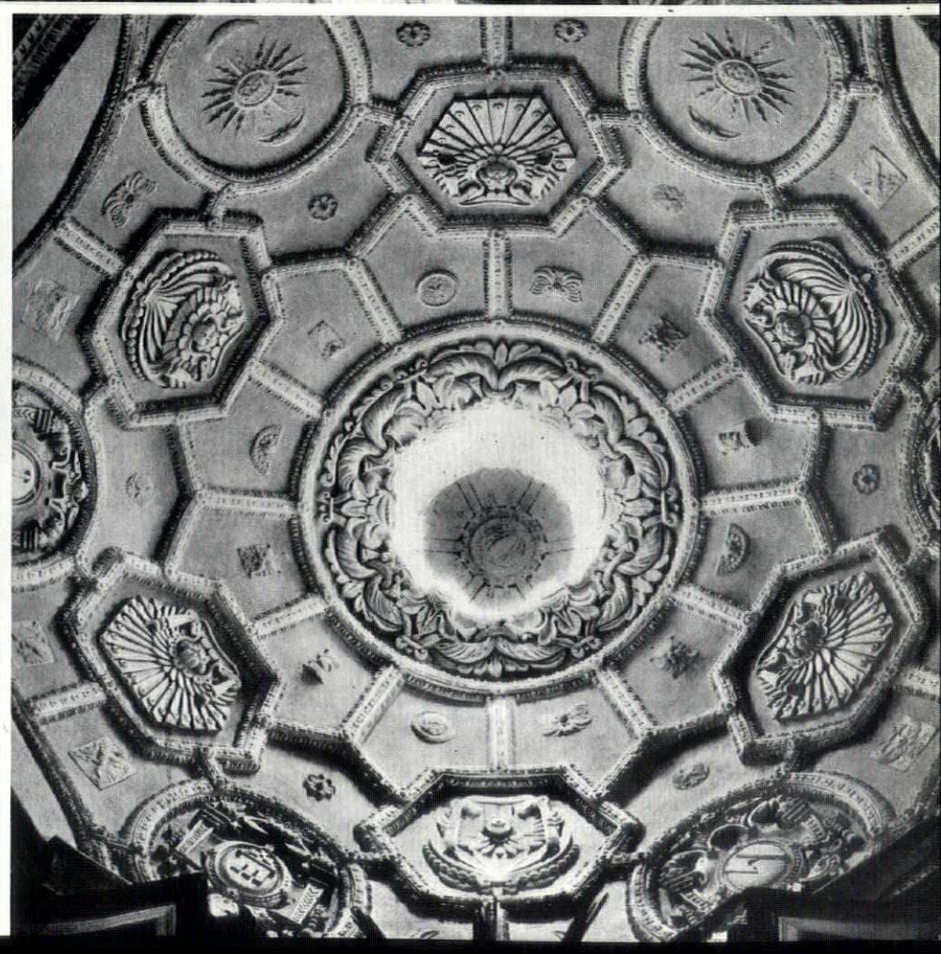


FUNCTIONAL TRADITION

SKYSCRAPER SHEDS

The functional tradition is not incapable of combining on occasion an element of fantasy with the bare geometry that comes from the directness of its response to the challenge of function and materials; witness these fishermen's storehouses on the beach at Hastings, below, with their echoes of San Gimignano and the New York waterfront. Built to contain nets and other fishing gear, they are all of timber, tarred from top to bottom, and windowless. Note the casual arrangement of the doors and small hinged openings that have been inserted as needed. Similar sheds are to be seen at Rye Harbour, Sussex. **J.M.R.**





EXHIBITIONS

PAINTING

By exhibiting paintings 'in glorious monochrome' by the Parisian artist Yves Klein, Gallery One, in D'Arblay Street, has given the public the opportunity of seeing the kind of modern art which has every appearance of confirming—as Alan Bowness of The Observer *remarked—'its deep-seated suspicion that the whole thing is a gigantic leg-pull.'* The introduction by Pierre Resnay was appropriate to the occasion: faced with the task of expounding the virtues of a number of rectangular boards covered by a single colour applied with a roller, and knowing that, whatever he wrote, the public would be bound to associate these works with a paint manufacturer's display samples, he made gigantic claims for them in sensitively nonsensical terms.

The main room displayed a wide range of colours and sizes which gave me the impression that the Gallery was specializing in the sale of natty notice boards, and incidentally supported Resnay's contention that Klein 'cannot be suspected of any attempt at mural decoration.' But in the small back room something evidently went wrong, for it was devoted to an ensemble of six dark blue boards which brought out their possibilities as mural decoration. They were identical in size and uniform in hue; they were hung round the room at the same height and at regular intervals—and the effect was quite remarkably refined, austere and mysterious. Klein hit on a particularly resonant blue for these panels, and aided by the magic of multiplication, transformed a rather dingy little interior into a rough draft for a three-dimensional poem about silence, serenity and a night without stars. They do not have much to do with the art of painting, and I think that the sophisticated amateur who adds a single example to his collection is making a mistake, but I also think that if an imaginative architect could get Klein to work with him, the collaboration might have some exhilarating results.

The extremely well-chosen pictures which, together with a smaller group of sculptures, comprised the 'Post Picasso Paris' exhibition at the Hanover Gallery, brought together some strikingly different aspects of free abstraction. The painters of these pictures would almost certainly endorse Resnay's assertion that the eye is 'terribly contaminated by the external

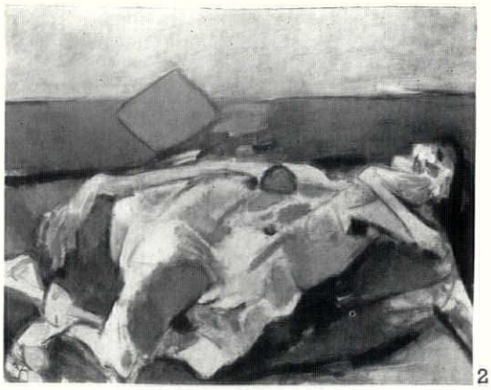
object,' and in the circumstances it was perhaps unfortunate that the only picture which showed signs of being tainted by the outward gaze—de Staël's 'Paysage du Midi'—was the finest in the exhibition Bissière, Bazaine and Manessier are the craftsmen of the movement, and their colour patterns, which were organized with passionless skill and sedate good taste, looked stilted beside the more zestful and explosive abstracts of Riopelle, but even the Riopelles looked distinctly cool and collected beside the works which represented what Lawrence Alloway calls 'the search for images powerful enough to survive the turbulence of the handling.' Appel, who is one of the leaders of this branch of the mystique of turbulence, contributed a giant head with a fine splash of moustache where the mouth would be if his vision were contaminated by the external object. The painters of this kind like to think of themselves as 'organisms' rather than human beings, and they adumbrate images which, at their best, have the look of being beneficial expulsions, as if they were doing for some other part of the organism what the voiding of wind does for the stomach. The composition by Thanos Tsingos, 1, is, I think



1

a good example of the painterly eructation. Its raging vegetation is poured straight from the tube, and has the hot and glutinous look which we have come to expect of these specimens from the visceral jungle.

Ceri Richards belongs to that small band of English figure painters—William Scott is another—who are up-to-date and highly accomplished in their handling of paint, but maintain a solemn and old fashioned belief in the necessity of 'distortion,' and feel themselves to be supported



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in their conviction by the farcical figuration of Dubuffet. In the paintings of reclining figures, 2, which composed the greater part of Richards's recent show at the Redfern, his colour and his handling of paint were more exquisite than ever, but the figures, rendered as swellings with flapping appendages, seemed to me to be misconceived: although capably drawn, they were unpleasant as nudes, unamusing as figures of farce, unconvincing as 'presences' and uninteresting as forms.

Probably the only way in which contemporary painters are likely to be able to overcome their horror of treating human figures naturally is to put them into human situations. The strength of the Australian painter Sidney Nolan lies in the fact that he has—or had—something to say about people in their environment; it made his Retrospective at the Whitechapel Art Gallery one of the most interesting exhibitions held in London since the war.

His exhibition only covered the ten years from 1947 to the present day, but it started at the moment when the naïve style which had given his first Ned Kelly series something of the comic vigour of the Mack Sennett two-reelers, ceased to be a borrowed idiom and became an intensely personal and entirely adequate means of capturing the apparitional look of lonely men in an empty land. The finest pictures of this period, such as the painting of an escaped convict, in which the broad horizontal bars of the prison garb become, in the heat haze of the desert, a kind of crazily conspicuous camouflage, lose nothing by being hung beside the technically



3

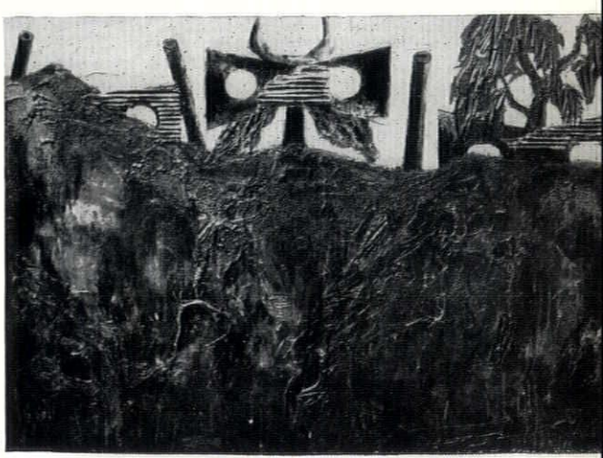
more assured and splendidly imaginative works which followed—the studies of the awe-inspiring landscapes of Central Australia, the spectral 'Drought' series and the second group of paintings devoted to the exploits of Ned Kelly and his band of bushrangers. The masterly 'Death of Constable Scanlon,' 3, painted in 1955, is in some ways a reconsideration of the naïve style of the earlier series. The 'Head,' 4, painted this year, contains reminiscences of his treatment of the bushrangers, and for virtuosity of colour and brushwork was



4

the most remarkable picture in the exhibition, but it disclosed more interest in the paintings of Appel than in the human situation, and I reckon this to be a serious loss.

Another Australian painter, Albert Tucker, included in his recent show at the Imperial Institute a group of paintings on the Ned Kelly theme which he himself says 'started with the impulse to parody Nolan.' But the idea of treating the Kellys as bogeymen has it own kind of authenticity, and the painting by Tucker called 'King Kelly and his Legions,' 5, turns the



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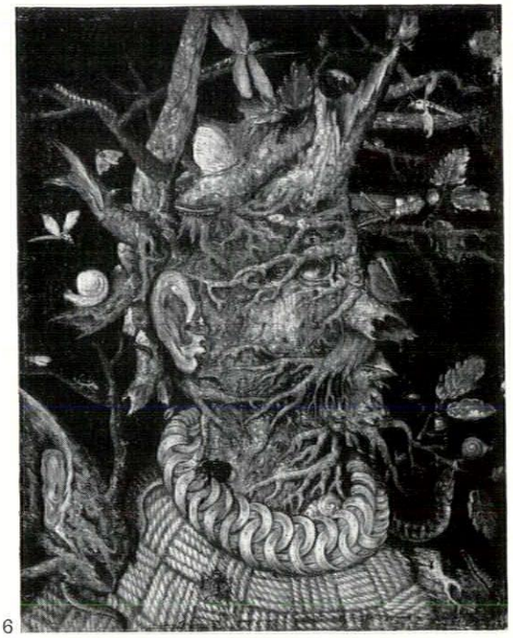
fear-engendered legend of the band's immunity to the bullets of the police into a credible imagery. Nolan's richer and

more human account of the Kellys has enabled Tucker to make an interesting contribution to surrealism.

The liveliest twentieth-century parallels to the sixteenth- and seventeenth- century Arcimboldesque paintings shown at the Arthur Jeffress gallery are to be found in collages of the kind which John McHale designed as a cover personage for the May issue of AR. The early sixteenth-century example reproduced here, 6, a conceit on the



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dissolution of the flesh, is not 'true' Arcimboldesque because the head is simply an infested tree root instead of being composed of a number of separate objects, but the fact that, like so many works by Nash, Sutherland and Moore, it can be correctly described as a 'found object interpreted' suggests that the critics were perhaps a little hasty in writing off the exhibition as a frivolity.

Robert Melville

COUNTER-ATTACK

[*The monthly list of some of the cases of bad and good planning under investigation by the Counter-Attack bureau.*]

26. Warwick—also Barford, Tiddington and Atherstone—(County Planning Office and local Councils): There used to be an unspoilt approach to Warwick Castle from the east—until bad planning got there. This is the view now, 1, with the castle arrowed. This ribbon is in the Development Plan, which has not yet even been approved. What is also shown in the Development Plan is an even worse ribbon on the south approach to Warwick along the left-hand side of the road shown in 2. This is a mockery of good planning by any definition—there is just one house along this stretch, and that looks thirty years old, and is embowered in trees. It is not too late for the Minister to strike this out of the County Plan, and we sincerely hope that he will do so. This county seems to specialize in these inchoate roadside heaps of 'superior' residences—here is another, at Barford, 3. It is a sad reflection on



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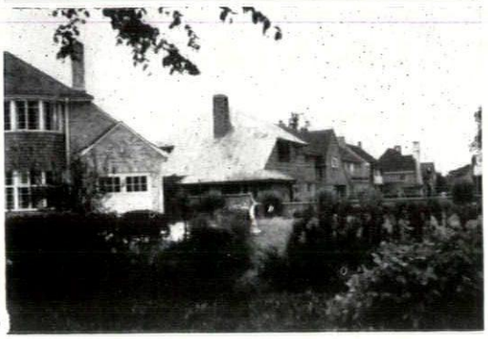

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what is reputed to be a cultured profession that most of these houses must have been designed by architects.

Other things in this Development Plan include an absurd satellite to Stratford-on-Avon (a town with only 15,000 people) created by exploding the village of Tiddington, which is, alas, inside the UDC boundary: the damage is now done, 4; and housing for Atherstone which will be on the wrong side of the proposed Watling Street bypass: again an odd bit of planning by any standard.

27. Bingham's Melcombe, Dorset (County Planning Office): The fight to prevent pylons breaking up a unique village group has now been won. The owner of Bingham's Melcombe opposed the County Planning Authority, and was supported by the REVIEW (August 1956); the Ministry has now allowed his appeal. This is a welcome victory for the principle of specific solutions for specific sites, instead of unthinking application of a rule of thumb—in this case the rule of No Pylons On Skylines.

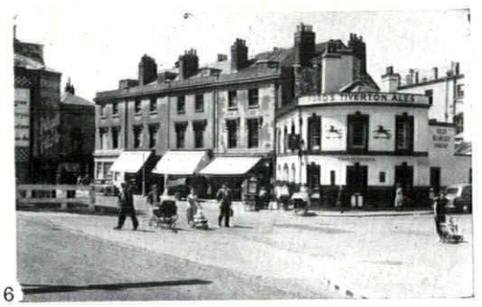
28. Jodrell Bank, Cheshire (Manchester University): The new radio telescope (see also page 153) is an object lesson in fitting something huge and startling into a rural landscape. It is mercifully free from architecture—the whole lot might have been brickclad instead—and it is sited in the middle of the Cheshire plain where there are so many big trees that it can rarely be seen from more than a couple of miles away; even close to, it plays hide-and-seek with foliage like a Picturesque folly, 5. A national landscape plan could take note that the Cheshire plain, like the Fens, can absorb interruptions like this; but until there is such an overall plan we will continue with our present proportion of one happy accident to ninety-



5

nine hideous mis-couplings of countryside and technology.

29. S O S: Plymouth, Devon (City Council): Most of England's blitzed cities have tried to preserve what remained of their old centres in rebuilding: apparently not Plymouth. The fate of the Barbican (AR, April 1957) is still in doubt; here is another threatened corner at one end of New George Street, 6; it is to be destroyed in order to extend the avenue. Something which in its quiet way is a model of urbanity will be replaced by 7—taken from the same spot by turning the camera through 180°: a model of reactionary sterility.



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7

30. S O S: St. Catherine Cree, London (Diocesan Advisory Committee): This church, the best in England of its period (1630) is actually being considered for demolition by the Diocesan Committee—an act of folly which rivals the proposals made for pulling down St. Mary Woolnoth after the First World War. This must not happen—it is incredible that any civilized body of men, however hard up, should have thought of it: the address of the Committee is 33, Bedford Square, W.C.1.

SKILL

A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design review
3 techniques
4 the industry



1, *S.S. 'Theodor Herzl.'*

1 INTERIORS

Four ships whose interiors are illustrated below, extend the range of precepts of nautical and anti-nautical design given in the ARCHITECTURAL REVIEW *for February, 1956, and while they signal the entry of Israel into the select register of leaders of nautical styling, they emphasize again the degree to which British ships still lag behind, in spite of the fact that interior design is rapidly becoming a competitive margin in the passenger trade.*

S.S. 'ISRAEL' AND S.S. 'THEODOR HERZL'

Architects: Dora and Yeheskiel Gad; Al Mansfeld and Munio Weinraub

The S.S. 'Israel' and 'Zion' are sister ships of 10,000 tons carrying 313 passengers, together with cargo; they were built by Deutsche Werft of Hamburg out of war reparation funds.

The shipping line only decided on employing architects for the interior design after the contractors had produced an old-fashioned oriental pastiche, and a team of Israeli architects was only chosen after Italian and Scandinavian names had been considered. The architects had no previous experience of marine architecture, but they looked on this as an advantage. They replaced the conventional three-armed staircase in the contractors' plan by free-standing ladders, which gave greatly increased space to the public rooms. Unframed glass doors and sliding doors were also a departure from custom. Both the owners and the architects wanted sufficient comfort for the ships to compete with the

big shipping lines, while avoiding the plushy. Loose furniture of lighter construction than is customary was made possible by improved stabilizing gear. They also wanted a Mediterranean atmosphere; to this end, light woods and Palestinian materials like bamboo and rattan were used for decorations and finishes. Loose furniture and lamps were all bought in Israel, though certain fabrics were obtained from Denmark. The maiden voyage of the 'Israel' was in February, 1956.

Above all, the architects wanted passengers to feel they were in a ship, not in a poor imitation of the Waldorf Astoria. Hence the essential nautical character in the interiors has not been disguised.

S.S. 'ISRAEL'

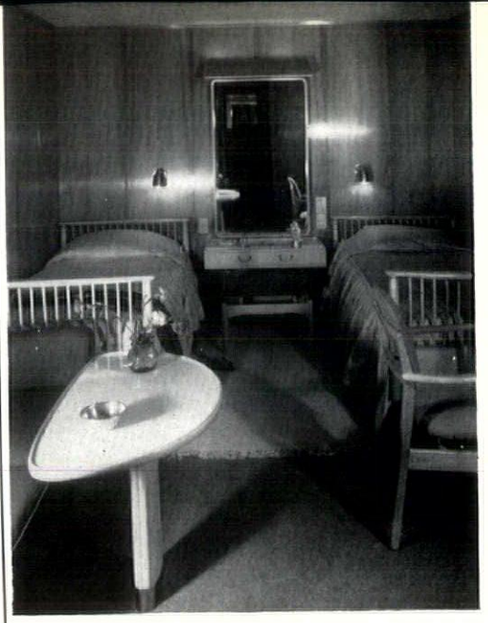


2

2, the first-class hall on the main deck: an example of the highly compact stairways in the passenger areas of these ships, which break away from a strong non-utilitarian tradition in passenger liners. The carved wood panels on the back wall are by Perli Pelzig. 3, the smoking room of the first-class lounge, on the promenade deck.

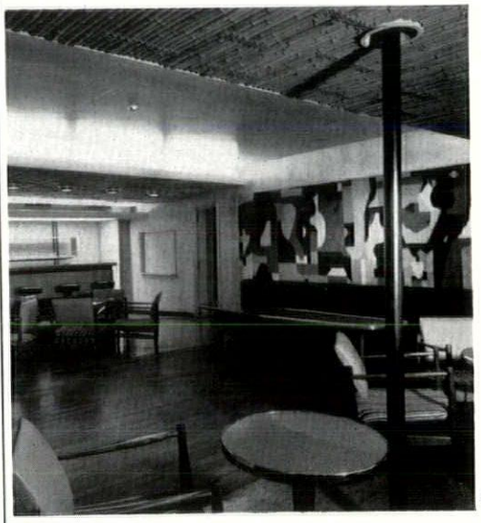


3

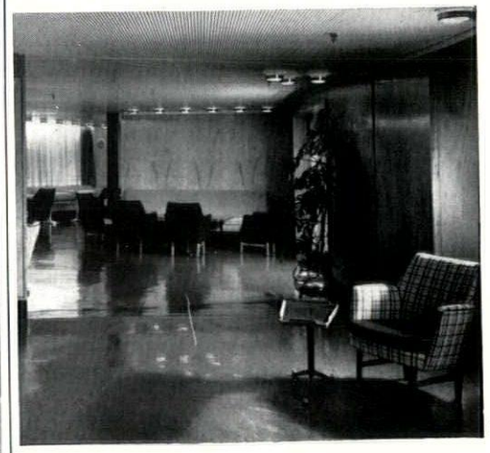


4

4, a two-passenger first-class cabin on the boat deck. 5, the tourist lounge on the promenade deck; the woven mural was designed by Jean David. 6, looking from the writing room into the smoking room, in the first-class lounge.

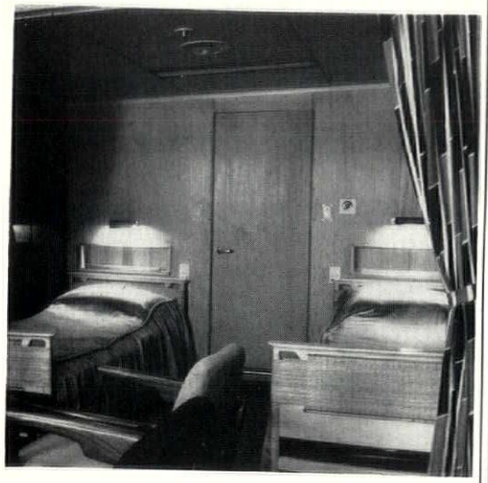


5



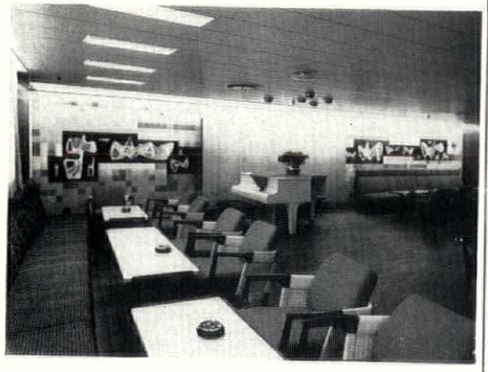
6

S.S. 'THEODOR HERZL'

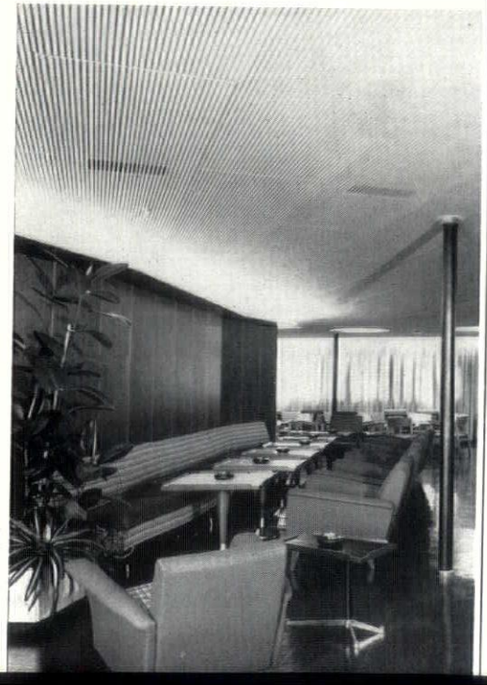


7

7, one of the forty-seven first-slass staterooms, in all of which the beds are in a recess designed to be curtained off in the daytime, turning the rest of the cabin into a sitting-room. 8, the tourist lounge with a mural of melamine plastic panels designed by Naphthali Bevem. 9, the first-class lounge.



8



9



10

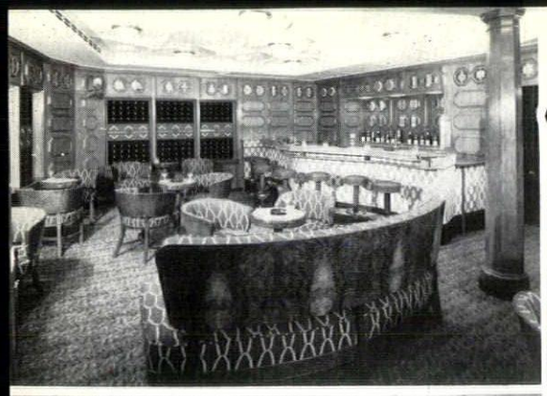
10, the bar in the 'Haifa hall' (a large lounge); the photostat map behind the bar is of Haifa Bay. 11, the dining-room for both classes, with curtains designed by Dora Gad.



11

The 'Theodor Herzl' and its sister ship the 'Jerusalem' are of 10,000 tons, and carry 540 passengers. Practically no differentiation in the standard of comfort is made between the tourist and first classes, one dining room serving both. More emphasis than in the 'Israel' is given to murals, sculptures, etc., by Israeli artists, generally with a national theme such as 'regeneration' or 'promise and fulfilment.' In the writing room is a permanent exhibition commemorating Herzl, a journalist who was one of the spiritual founders of the modern Jewish state. The maiden voyage of the 'Theodor Herzl' was on May 7th this year.

Overleaf comparison is offered with two other new liners.



12

R.M.S. 'SYLVANIA'

Left, r.m.s. 'Sylvania,' a new 22,000 ton Cunarder which made its maiden voyage in June this year, and whose décor, in the words of the Cunard Line itself, reflects 'something of the genius of the eighteenth century, is, in fact, a pastiche of several famous styles.' 12, the first-class smoking room, decorated with regimental badges and motifs of pips, crowns and chevrons. 13, the first-class lounge, 'modelled on the boudoir of Madame de Serilly.' The comparison with the Swedish 'Gripsholm,' 14, 15, also completed this year, emphasises that British Lines are now almost alone in insisting on unshiplike period-style interiors.

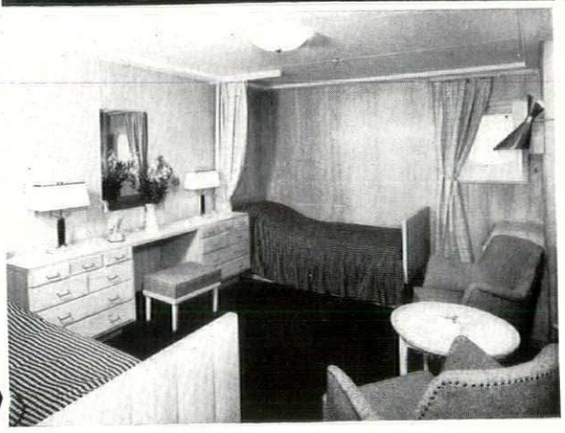


14



13

S.S. 'GRIPSHOLM'



15

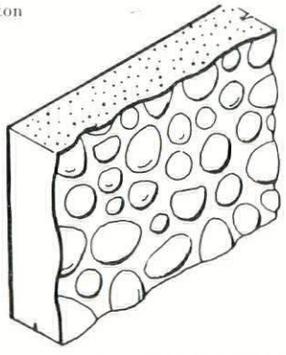
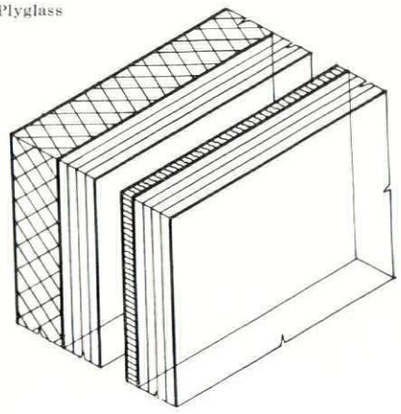
TECHNIQUES

walls off the peg

PANEL INFILLINGS

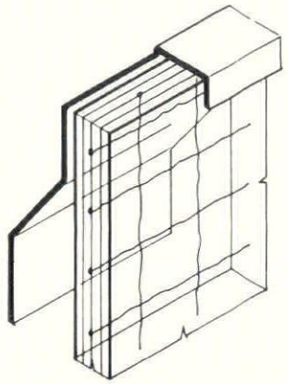
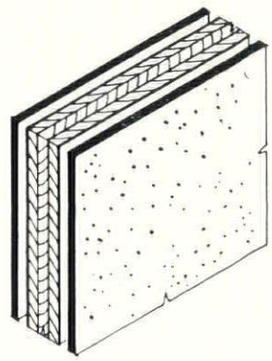
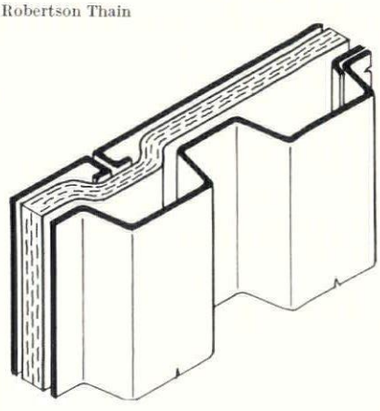
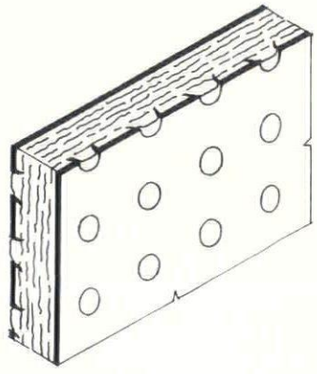
Alongside of the manufacture of the curtain wall framings discussed earlier in this issue is another sub-industry, concerned in the manufacture of panel infillings. This month, therefore, we give pride of place in Skill *to a tabular review of the standard infilling panels which are now (or which were, at the time of going to press) on the market in Great Britain. Whilst every effort has been made to provide a complete survey, development is so fast in this field that there may well be some omissions.*

Table analysing properties of proprietary panels (part I)

name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
MUROGLASS	Pilkington 	rough cast glass with a permanent colour fused to the interior surface	red, green, grey, yellow, pale blue or deep blue (further colours to be added)	¼ in.	4 ft. by 8 ft.	3.37	1.0	—
VITROSLAB	Plyglass 	laminated panel consisting of a sheet of glass backed by a veneer of flat glass fabric, a sealed cavity and a backing of glass or glass and an insulating material	colours to BS, BCC, Archrome, Munsell. Finish to glass plain, hammered, stippled, reeded, dotted, striped or rough cast	$\frac{5}{16}$ in. to 2 $\frac{11}{16}$ in.	4 ft. by 8 ft. (possibly up to 10 ft. depending on constitution of panel)	3.0 to 11.5	0.6 to 0.13	up to 2 hrs., depends on type

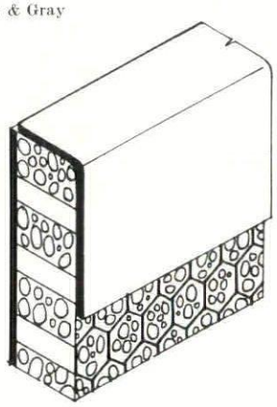
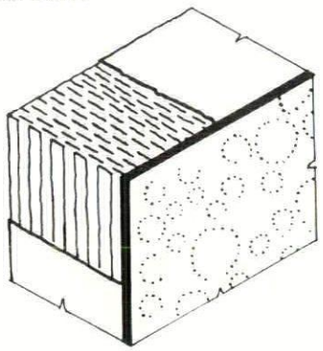
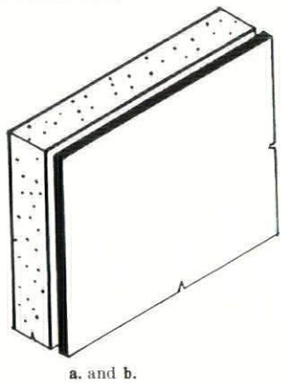
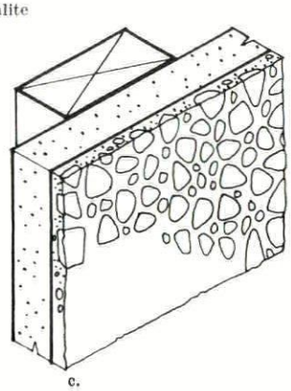
continued on page 213

Table analysing properties of proprietary panels (continued from page 212)

name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
HILSULATE	Hills (West Bromwich) 	1. Georgian wired cast glass, ½ in. air space, back panel of aluminium alloy with inside face covered with resin based stove enamel paint	any colour	$\frac{7}{8}$ in. ($\frac{3}{8}$ in. at perimeter)	6 ft. 8 in. by 3 ft. 4 in.	4.5 to 5.0	0.55	low
		2. Plywood core between 2 sheets of aluminium. External face covered with resin based stove enamel paint	any colour	$\frac{3}{8}$ in. preferable	4 ft. by 6 ft.	—	—	—
Q PANEL	Robertson Thain 	an outer box ribbed section in aluminium or 'Galbestos' protected metal (GPM) and an inner tray of metal coated steel, glass fibre insulation between	GPM either black or maroon	2½ in. or 3 in.	2 ft. by 10 ft. also 2 ft. by 12 ft.	3.0	0.18	—
3DF2 PANEL	Durasteel 	two light gauge metal sheets keyed to a compressed asbestos composition core	galvanised and chlorinated rubber paint if conditions severe. (Copper or aluminium sheets can be supplied)	¼ in., ½ in. or ¾ in.	2 ft. 5½ in. by 5 ft. 11½ in. or 2 ft. 5½ in. by 7 ft. 11½ in. (special sizes up to 2 ft. 11½ in. wide)	2½ 4.5 6.0	0.69	⅜ in. 2 hrs. (FOC)

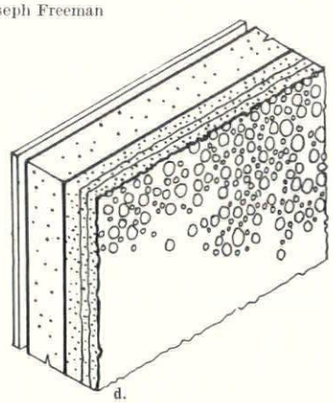
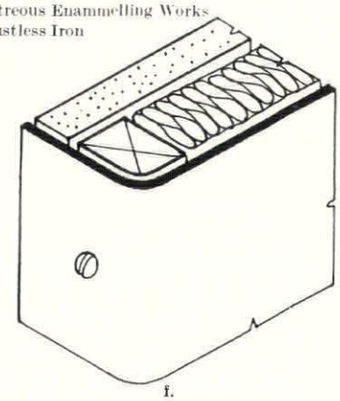
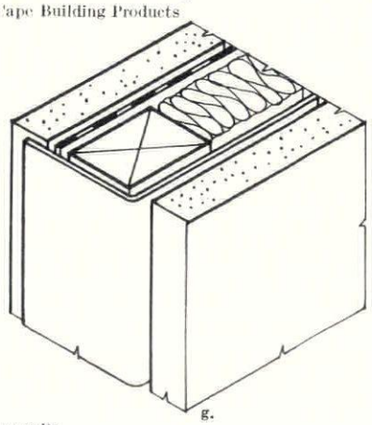
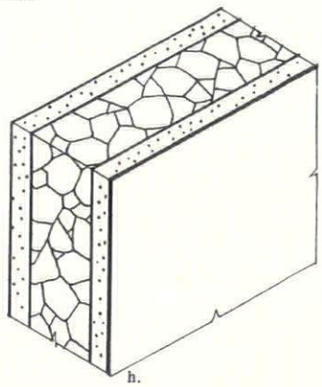
PANEL INFILLINGS

Table analysing properties of proprietary panels (continued from page 213)

name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
ESCOL	Stewart & Gray 	(5 types of panel made, only type 'C' illustrated.) 16G porcelain enamelled steel face laminated to phenolic resin impregnated paper honeycomb, 20G galvanised steel back. Paper honeycomb filled with granulated vermiculite (back sheet may be enamelled steel plate)	any colour with variety of textures, e.g. granite or stipples in full gloss, semi-matt or full matt	¾ in. 1 in. 1¼ ins. 1½ ins.	7 ft. by 4 ft. (preferable max. 3 ft. by 6 ft.)	4.0 4.1 4.2 4.4	0.3 0.28 0.24 0.20	—
STRAMIT	Stramit Boards 	compressed straw lined internally with kraft paper and externally with aluminium veneer	embossed aluminium	2 ins. +	4 ft. by 8 ft., 9 ft., 10 ft. or 12 ft.	4.1	0.3	1 hour +
ASBESTOLUX	Cape Building Products  a. and b.	an asbestos composition board which can be used as a single skin or as a composite panel	—	¼ in. ⅜ in. ½ in.	2 ft. or 4 ft. by 8ft., 9 ft. or 10 ft.	0.9 for ¼ in.	0.8	min. 2 hrs.
		a. 24G silicon alloy aluminium to special veneering grade Asbestolux	dark grey stucco embossed	⅛ in. ¾ in.	4 ft. by 6 ft. 3 ft. 6 in. by 4 ft.	2.0	—	min. 2 hrs.
		b. 16G vitreous enamelled sheet steel on special veneering grade Asbestolux	wide range of colours	⅛ in. ⅜ in.	4 ft. by 4 ft. 3 ft. 6 in. by 4 ft.	6.0	—	min. 2 hrs.
	Mineralite  c.	**c.** Special surface rendering of Mineralite on standard Asbestolux (timber battens behind larger panels)	any colour	⅜ in. + battens 1¾ ins.	4 ft. by 10 ft.	5.5	0.60	min. 2 hrs.

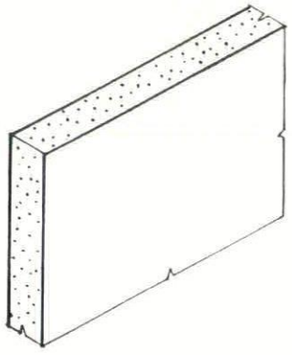
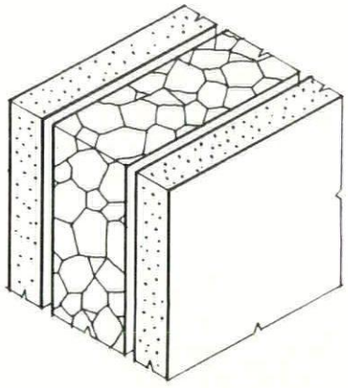
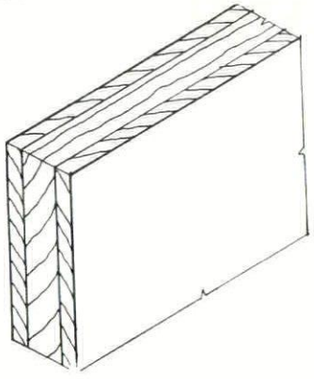
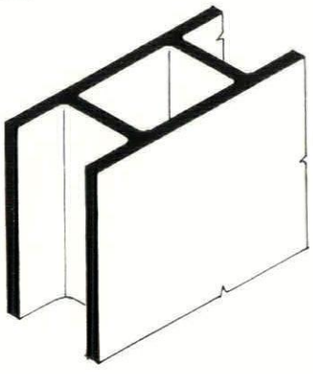
[continued on page 215

Table analysing properties of proprietary panels (continued from page 214)

name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
ASBESTOLUX *—continued*	Joseph Freeman  d.	**d.** 3 coat finish of Cementone No. 9 on standard Asbestolux. (Damp barrier to be fixed or painted on behind panel)	various pastel shades and dark grey	—	4 ft. by 10 ft.	—	0.8	min .2 hrs.
	Decraspray	**e.** Decraspray mineral chippings on standard Asbestolux		—	4 ft. by 10 ft.	—	—	—
	Stewart & Gray Vitreous Enammelling Works Rustless Iron  f.	**f.** 18G steel tray with vitreous enamel finish back and front, filled with 1 in. Rocksil and backed with Asbestolux on a vapour barrier	any colour, marble effects, some cases egg-shell and roughened surface in addition to normal gloss	1¾ ins.	4 ft. by 6 ft.	approx. 6.0	0.2	—
	Cape Building Products  g.	**g.** External skin of Asbestolux with finish as **a** to **e**, damp barrier behind, 1 in. Rocksil, vapour barrier, internal skin of Asbestolux	see **a** to **e** if required	—	see **a** to **e**	—	—	—
	Laconite  h.	**h.** Outer skin of stove enamelled Asbestolux, core of steam baked cork, inner skin of Asbestolux In Vitroslab panel; see notes on Vitroslab	wide range of colours	1¼ ins.	—	—	—	—

PANEL INFILLINGS

Table analysing properties of proprietary panels (continued from page 215)

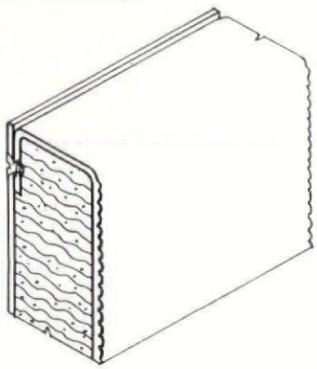
name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
ETERNIT	G. R. Speaker	steam cured compressed asbestos-cement sheets						
		Granité	hard polished surface in reds, yellows, greens, blues, greys, etc.	$\frac{3}{16}$ in.	3 ft. 11¼ in. by 8 ft. 2½ in.	2.3 approx.	—	non-combustible
		I.C.C.	hard polished surface in red, green, yellow, silver grey, blue-black	$\frac{3}{8}$ in. $\frac{5}{8}$ in. $\frac{7}{8}$ in.	4 ft. by 8 ft. 3in.	4.5 9.0	—	non-combustible
		composite panels made up with Granité or I.C.C. external face, cork or Eternit. Pical insulacore and a backing of Granité, I.C.C. or wallboard	see above	up to 2½ ins. approx.	18 ft. by 18 ft.	4.0 to 10.0	0.14 to 0.54	non-combustible
PERMAPLY	Venesta	plywood impregnated under pressure with phenolic resin	sapeleormakore, (with clear lacquer or varnish if required)	$\frac{5}{16}$ in. to 1 in.	8 ft. by 4 ft.	0.7 to 3.5	0.9	nil
								
HOLOPLAST and DECORPLAST	Holoplast	a cellular panel manufactured from wood filled synthetic resin	HOLOPLAST: chocolate brown, terra-cotta, mid brunswick green	1 in. or 1⅛ ins.	8 ft. by 4 ft.	2.0	0.49	Class II low flame spread
		1. panel with voids left unfilled	DECORPLAST: blue, buff, grey, red, green and yellow in 5 patterns with either satin or egg-shell finish	—	—	2.3	0.47	
		2. panel with voids filled with Rocksil or Fibreglass	as above	1 in. 1⅛ ins.	8 ft. by 4 ft.	2.5 3.3	0.34 0.25	Class II low flame spread

[continued on page 218


EDINBURGH
WEAVERS
102
MOUNT ST
LONDON
W 1

PANEL INFILLINGS

Table analysing properties of proprietary panels (continued from page 216)

name of panel	maker or supplier	description	finish and colour	thickness	max. panel size	lbs. per sq. ft.	'U' value	fire resistance
STONECLAD	Matthews Refractories 	outer skin 16G steel sheet to which stone chippings have been fused by a refractory process. Inner skin an 18G steel sheet with a similar process, but giving a smooth finish. Core of mineral wool	wide range of colours	1 in.	6 ft. by 3 ft. 9 in.	- -	0.25	no tests, probably 2 hrs.

The limitation of this subject to 'proprietary' panels which can be bought 'off the peg' is deliberate. For throughout our treatment of curtain walls we have been interested in the curtain wall as an *industrial* product and the characteristic production arrangement for industrial products is the turning out of standard lines, as distinct from 'specials.'

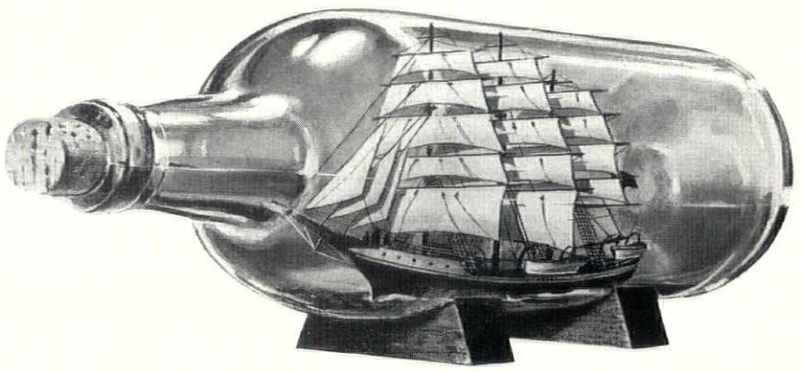
This treatment, however justified from the point of view with which we are concerned, has disadvantages from the point of view of a logical presentation of panel infillings as such. Thus it excludes one very common type of panel infilling—that with a facing of natural timber—which is very suitable for factory production, simply because (to the best of our knowledge) no-one happens to manufacture a range of standard timber panel infillings.

Again, the 'panel infilling' as at present understood is not an easy concept to define. It may comprise the whole thickness of the piece of wall it represents, from the external finish to the internal finish, or it may only comprise an external skin and may require a further panel on the inward side to make it a viable proposition. A common case of this is where fire regulations require that a combustible panel be provided with an incombustible back-up wall. The common practice in our present technological phase to provide different functional requirements with different physical entities (e.g. to provide an

[continued on page 220



By appointment to Her Majesty The Queen Manufacturers of Kitchen Equipment



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GLASGOW: 136 Renfield Street, Glasgow, C.2. Douglas 0444

continued from page 218]

external skin with one member, insulation with another, and an internal skin and vapour barrier with a third) has led to a kind of wholly legitimate commercial cannibalizing. Thus the Cape Asbestos Company have made trade agreements with a number of manufacturers of other products to manufacture a series of different 'off the peg' panels in which their product (Asbestolux) is incorporated with other proprietary materials. The practice is very common and in fact one of the most experienced panel makers, William Mallinsons, whose name is unfortunately excluded from this list, again because they do not manufacture a standard panel, undertake to fabricate panels from any reliable and suitable materials.

One point must be made concerning the table. The extreme right-hand column is headed 'fire resistance.' This is strictly a misnomer since 'fire resistance' is a property which attaches to a whole wall and the panel is, of course, only one element. When, therefore, the readings in this column are expressed as a time rating it must be assumed that the panels are capable of giving such a period of fire resistance provided the structure and the joints permit it. When, however, the reading is given with reference to flame spread or combustibility, it relates to the external finish of the panel itself. The most up-to-date reference in this country on the performance of materials used in infilling panels is contained in the two BRS Digests on *Light Cladding*, Nos. 98 and 99.

suppliers mentioned on preceding pages

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THE INDUSTRY

A Book of Timber Preservatives

The makers of timber preservatives are traditionally immodest in their claims and are often inclined to be vague when pressed to explain to what class their products belong. For this reason we are glad to see a very useful book published jointly by the British Wood Preserving Association and the Timber Development Association entitled *Timber Preservation*,* which sets down clearly the properties of the different types of preservative and of the different methods of application, and which states clearly to which class each available preservative belongs. A publication of this kind cannot go as far as the architect would wish: it cannot, for instance, say that Messrs. X's preservative is more expensive than Messrs. Y's and is not half as good, but it is of real value to know the class of each and what purposes that class can serve. An important point made by this booklet is that the method of application is at least as important as the material used. Painting and spraying is the least effective, next comes dipping, then steeping, then the 'hot and cold open tank treatment' and at the top of the scale come the various forms of pressure impregnation. Timber preservation, as the writers point out, is to be thought of as a form of insurance. The only pity is that there is no indication of the relative cost of the different treatments. It is good to know the kind of coverage you can expect from any insurance policy, but you also want to know the premiums. There are, of course, a thousand and one reasons why accurate price figures cannot be given, but it seems likely that a great many architects are discouraged from adopting a policy of systematic timber preservation simply because of uncertainty about the cost. Nevertheless, nearly all their other uncertainties are cleared up by this

*obtained free from either organization.

[continued on page 222

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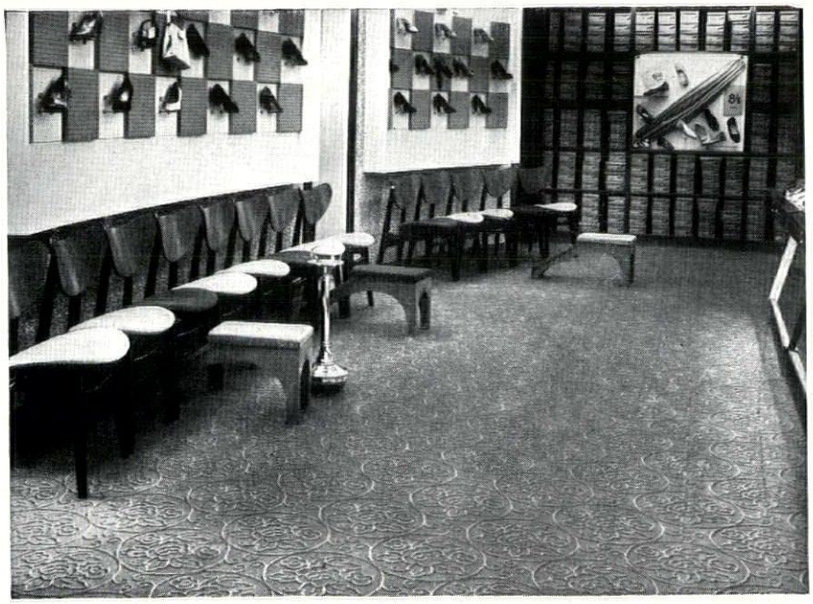

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booklet, and that is indeed something to be thankful for.

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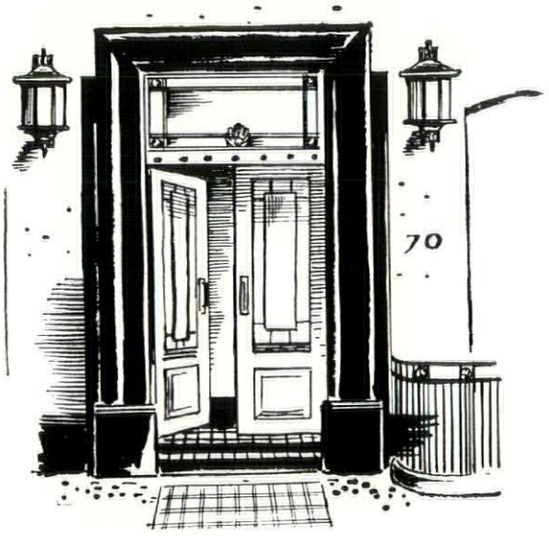

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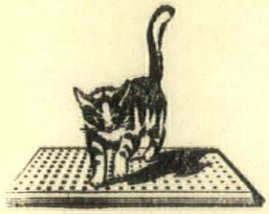

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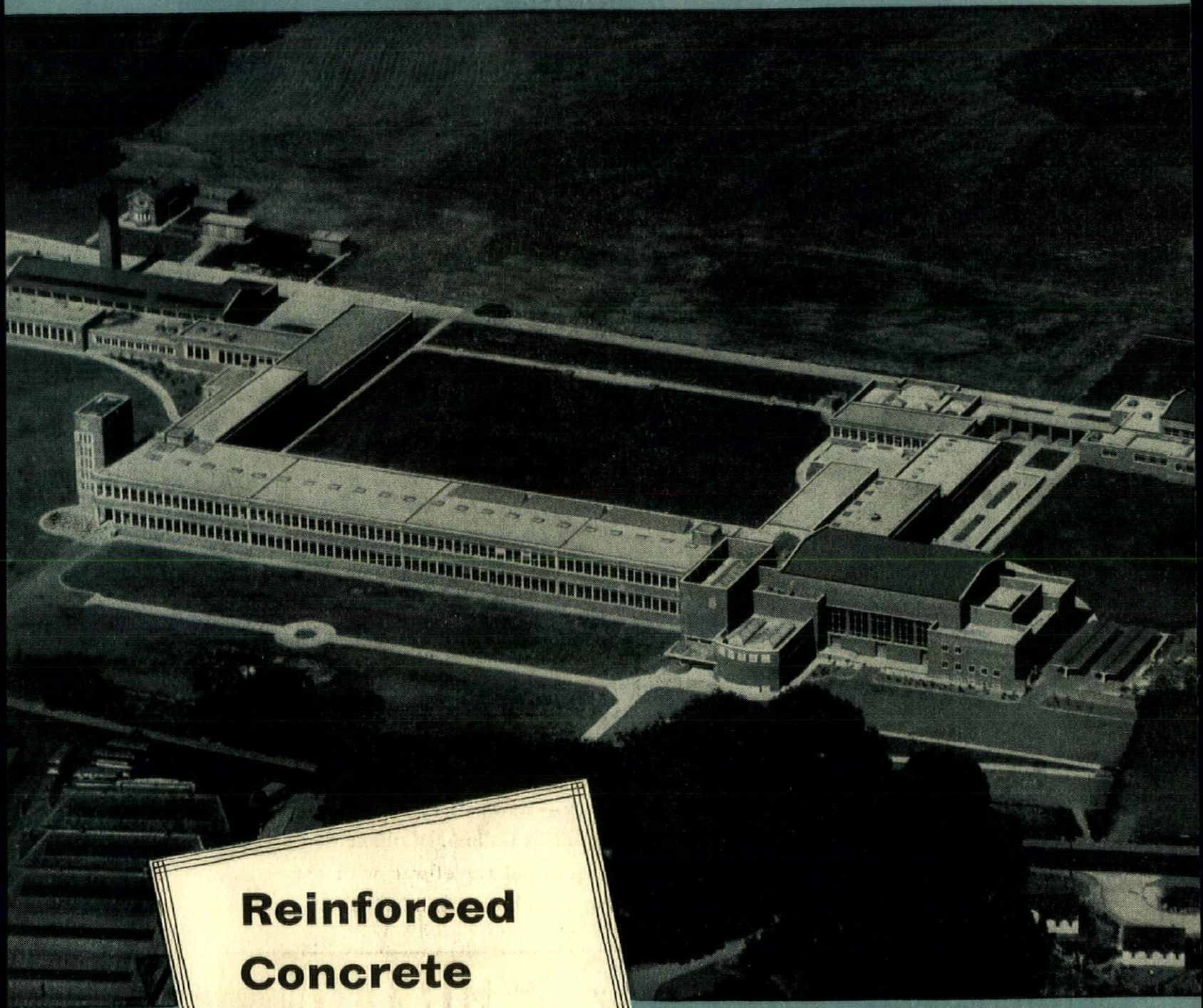

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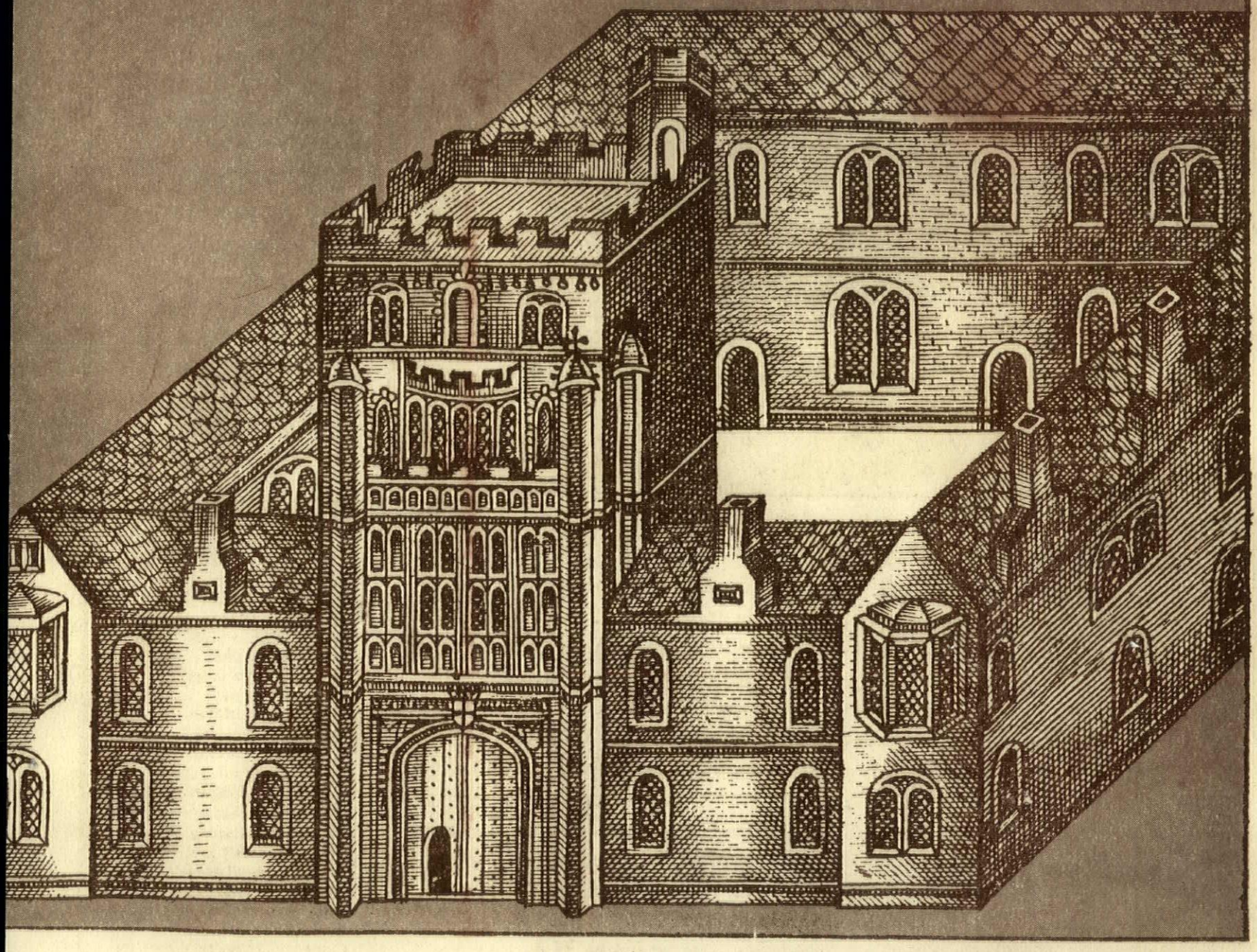

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Prominet, aut reliquo nasus in ore intet.
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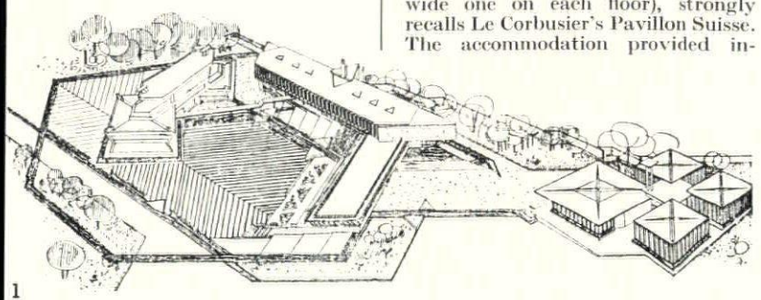
MARGINALIA

Boys' Town at Opicina

One of the few consequences of Bruno Zevi's campaign for Organic Architecture that has proven to be more than Wright-and-soda, is Marcello D'Olivo's camp-settlement for boys at Opicina outside Trieste, and even here the emergence of D'Olivo's personal style is beginning to eliminate any obviously Wrightian elements. The planning of the central area, 1, still retains some qualities of Chicagoan inspiration in its use of a complex diagonal planning grid governing the relationships of the refectory (left), dormitory (at back) and printing works (right). But as 2 shows, the canted walls and generally anti-rationalist approach of the refectory, which was designed early, has been replaced by a much more rectilinear approach in the dormitory, while the whole design of the printing works buildings has been dominated by the basic structural device of split slabs, balanced on a beam across a central upright, 3—one of the few European post-war structures that seem to rival Felix Candela's in boldness and ingenuity.



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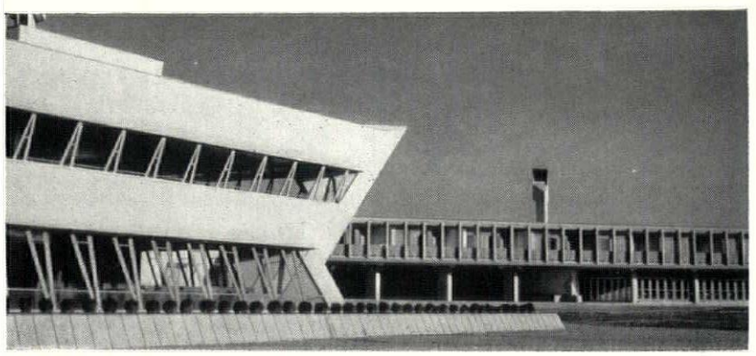
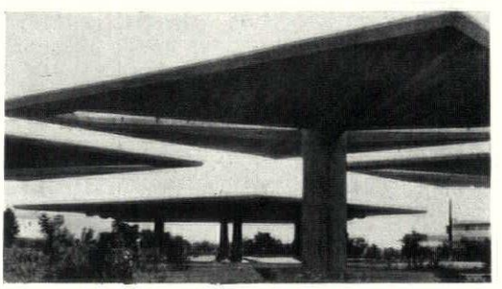




3

boys' town at Opicina

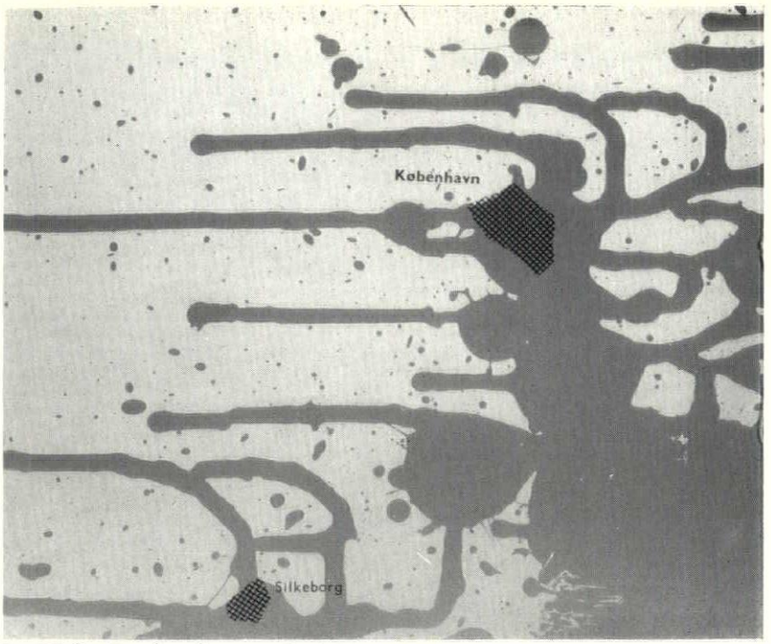
1, general view with refectory at left; 2, refectory with dormitory block beyond; 3, centre-supported roof-slabs for the printing works (extreme right of 1.) (L'architettura)

Frameless Façade in Frankfurt

Now that exposed structural frames with a strong vertical emphasis seem to be mandatory, if not actually obsessive, for large urban buildings in Federal Germany, particular interest attaches to Otto Apel's recent block of shops and flats in the Berlinerstrasse, Frankfurt-A.-M. Here, 4, the main supporting columns are set some five feet back from the cantilevered façade, which, in spite of the restless rhythm of the window mullions (beginning with a narrow bay and ending with *half* a wide one on each floor), strongly recalls Le Corbusier's Pavillon Suisse. The accommodation provided includes shops, three floors of offices and flats both on the top floor and in a mews-annexe at the back. Each of the flats on top of the main block has a minute garden court, and the annexe is crowned by a two-storey photographic studio.



4, Office block in Frankfurt-am-Main by Otto Apel; facade on the Berlinerstrasse. (Deutscher Bauzeitschrift.)



5, satirical zoning scheme from Asger Jorn's Fin de Copenhague.

Jorn's Copenhagen

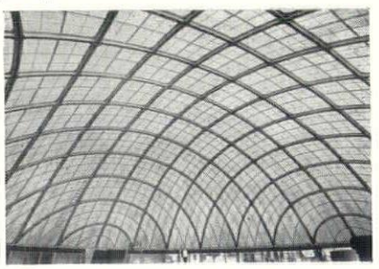
The old Futurist and dadaist techniques of insult, abuse and satire die hard, if only because the Modern Movement that grew out of them has developed almost as many pomposities, inhumanities and hypocrisies as the attitudes it has replaced. Among the most salutary recent eruptions of the grand old method is Asger Jorn's *Fin de Copenhague*, an edition-de-luxe limited to 200 copies and bound in flong, that uses the combined techniques of collage and action-painting to satirize *gemütlich* Europe in general, the author's native Copenhagen in particular, and Le Corbusier in passing. Thus, much of the 'text' has been clipped from steamy newspaper serials and confronted with clippings from the ultimate guardian of middle-class morality, the agony column of *Elle*; noisy slogans (APPELS, Votre Vie Transformée, Le Problème est Résolu) have been culled from many sources, but all recall the propaganda for *la Ville Radieuse;* and Copenhagen is satirized not only as the seat of ancestral boredoms, and in other standard terms, but also for being a 'well-planned city,' in the sense of making a pretty pattern of black and green in the planner's report—only in this case the pretty pattern is produced by applying place-names to patches of mechanical tint superimposed on (apparently) an action painting that has 'run,' 5. The result has the elegance, and the lack of meaning, of a zoning diagram, and the paper-planners pretensions are cut down to size by the accurately backhanded caption 'Un splendide paysage que Bernard Buffet a souvent peint.'

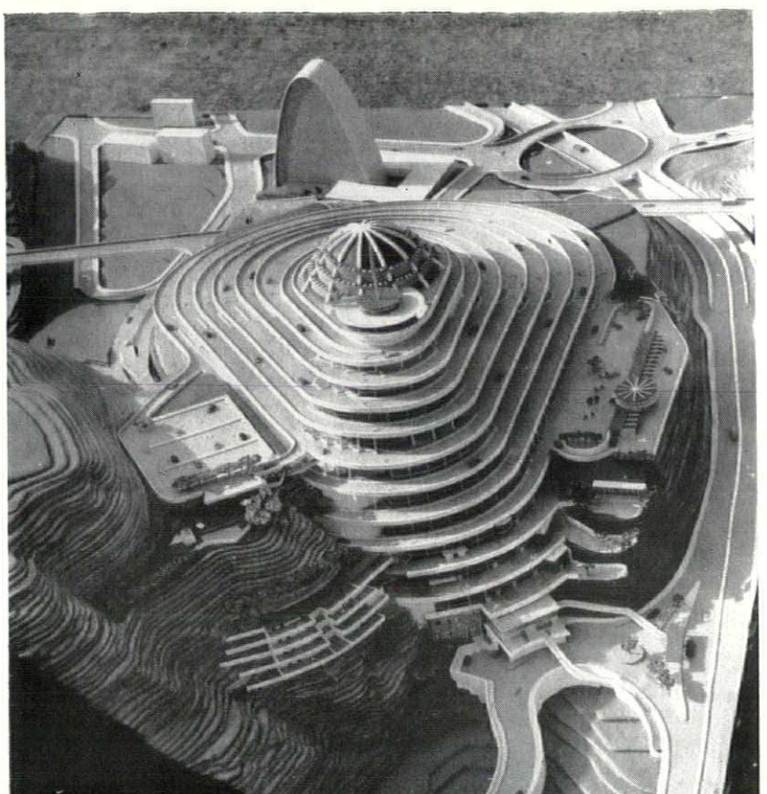
The whole of this urbanistic cold douche was realized—one understands—in a single afternoon of inspired exasperation, and is a remarkable piece of improvisation among the techniques of graphic reproduction. All the collage material for the text and pictorial illustrations was the product of a lunchtime excursion to a single news-stand and—when pasted-up—provided the plates for the second, black and white, printing on the pages. The first run through the press, for the colour-work, however, resulted in what are vitually monotypes, the colour being applied by Jorn himself, and somewhat different on every sheet. The whole cavalier attitude to the sacred rituals of printing may be taken as a fair example of the frame of mind that prompts Jorn to refer to himself and his colleagues as the *Bauhaus Imaginiste* or even the *Bauhaus Imaginaire*. The scope of the original Bauhaus ran from typography to town planning as well, and one hopes that Jorn may be inspired or exasperated enough in the near future to demolish some of the middle sections of this spectrum—the home and furniture magazines should provide a wealth of over-ripe material.

Un-geodesic dome

Departing from the pattern of straight structural elements disposed in approximate great-circle curves that the prestige of Buckminster Fuller has made into a norm for framed domes, the Krupp Pavilion at the Hanover Fair is an interlace of arches that are all segments of circles, but only two—the meridian

6, below, dome of Krupp exhibition pavilion. (Acier).





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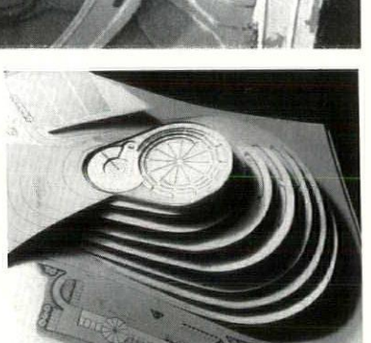


8

tarpeian helicoid

7, the complete scheme of terraces and ramps in model form; 8, the scheme as presented in the cut-out pages in Integral.

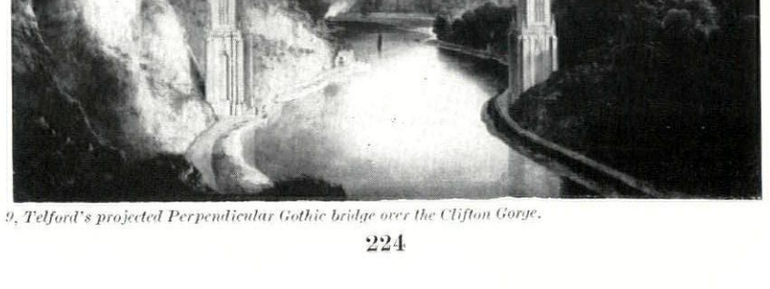
ones that intersect at the crown—can be considered as geodesic. The resulting structure, 6, is neither a true space-frame, nor statically determinate, its stability depending on the rigidity of the structural members and the resistance of their junctions to deformation, and it seems best to regard it as an example of the application of a form of Plastic Theory to a non-rectilinear structure. Aesthetically it seems equally out of step with recent developments, and to have more in common with the structures with which the German steel industry used to advertise its prowess at exhibitions before 1914.

Tarpeian Helicoid

A shopping centre project that goes well beyond the average both in originality and ingenuity has recently been advanced for a site outside Caracas, known—rather dauntingly—as the Roca Tarpeya. The roughly sugar-loaf form of the Roca has suggested the organization of the commercial accommodation, and the vehicular circulation, as a double spiral around the hill itself, 7, alternate ramps serving up and down traffic, with pedestrian traffic moving independently from level to level by escalators and lifts. The virtual impossibility of presenting the detail plans of such a scheme by normal methods has led the Venezuelan magazine *Integral*, who first published the project, to use a system of hinged overlays superimposed on a single page, 8, in order to concentrate the information into a manageable space, but even then the backs of the overlays had to be used as well to make the floor overlaps clear.

Telford Exhibition

The bicentenary of the birth of Thomas Telford, first president of the Institution of Civil Engineers, has been celebrated by an exhibition (directed by Richard Buckle, of Diaghileff exhibition fame) at the Institution's London headquarters. Telford, engineer of the Caledonian and Göta canals (AR, August, 1956), of the Menai and Conway bridges, the Chirk and Pont-y-Cysylte aqueducts (AR, December, 1953), designer of St. Katharine's Docks (AR, July, 1957) and innumerable small bridges and other works in the Severn Basin and the Highlands of Scotland, projector of a Perpendicular Gothic bridge over the Avon at Clifton, 9, and a single-span cast-iron replacement for London Bridge, adviser to the Czar on the Polish Road, poetaster and friend of Southey and Campbell, was one of the most diversified and many-sided talents that ever set hand to the English landscape, and endowed with a fine sense of the Picturesque—as witness his account of the siting of the Conway Bridge. He touched little that he did not adorn, to paraphrase Goldsmith's epitaph, and the exhibition, if too limited in scale to do full justice to the breadth of his creative ability, will at least have whetted appetites for L. T. C. Rolt's promised biographical study, a companion volume to that on Brunel which will be reviewed in these pages in the near future.



9, Telford's projected Perpendicular Gothic bridge over the Clifton Gorge.

RIBA Library Group

It is ten years now since a group of members of the RIBA and a few others interested in and using its library formed themselves into the RIBA Library Group. During that time the Group has, under the secretaryship of Mr. Kenneth S. Mills, increased over the years both in size (there are 162 members now) and in scope. Amongst its activities was a talk by Mr. John Summerson on the Bute drawings shortly after they had come to light at a Sotheby's sale.

The Mackintosh centenary was celebrated in an address by Mr. Thomas Howarth. A number of meetings was given to the identification of drawings from the very large and important collection of the Institute; much valuable work was done and one outcome was the subsequent identification (and publication in the AR of March, 1953) by Miss S. Lang of scores of drawings by A. Visentini not only in the RIBA but also in the British Museum. Several other papers, e.g. one by Dr. Rosenau on Vitruvius and another by Mrs. Phoebe Stanton on Pugin, were subsequently published, and Miss Priscilla Metcalf's article on Balmes House (AR, June, 1957) was first given as a lecture to the Group.

CORRESPONDENCE

Pleasure Gardens at Bomarzo

To the Editors,

SIRS,—The technical analysis of the Gardens which was published in AR June, 1957, has indirectly emphasized a vital characteristic of Orsini's *Bosco*. In the sculpture that was no doubt meant to *seem* to be 'Polyphemus killing one of Odysseus' companions,' the victim is actually a woman. This malicious vein is found in the attitudes or gestures of many of the human sculptures in the garden. Today, standing in what are really very ordinary fields, they create, because of this, a most intensely surrealist atmosphere, and in Orsini's day must have characterized his pleasure-garden, for he wrote at the entrance 'Chi con ciglia inarcate, Et labbre strette Non va per questo loco . . .'

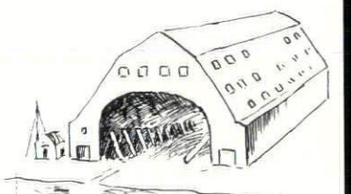
Yours, etc.,
C. H. DAVIDSON

London, S.W.1.

American Early Industrial

To the Editors,

SIRS,—The recent issue featuring Functional Building was most interesting, even if it missed many



early Manchester warehouses, breweries, etc., still standing. In an exhibition of Americana held in the City Art Galleries a few years ago, I made the above thumbnail sketch.

Yours, etc.,
RUPERT M. S. KAY

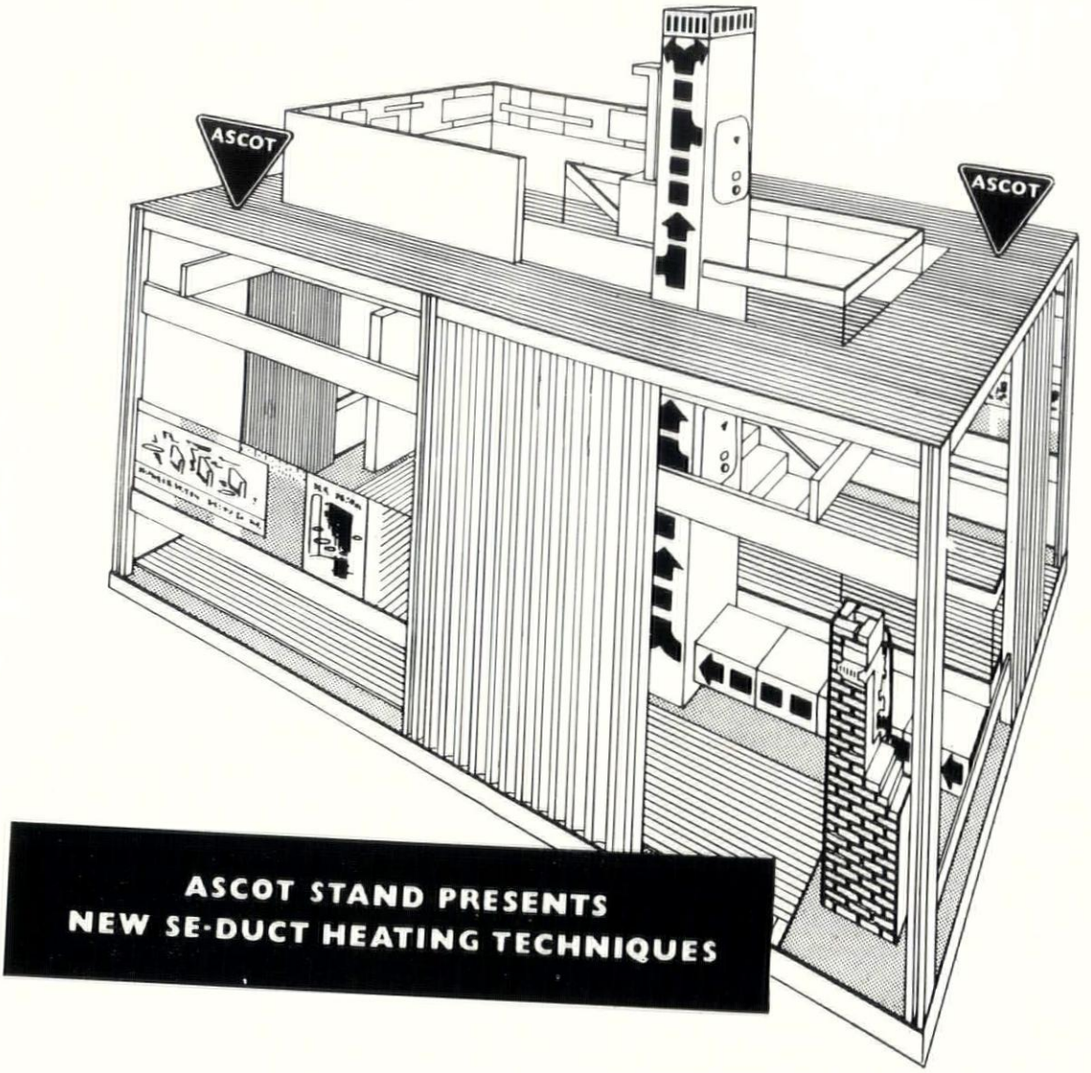
Fallowfield, Manchester, 14.

ACKNOWLEDGMENTS

The colour block on page 274 appears by courtesy of Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden.

We regret that the cover of the September issue of the Review, a photogram by Kenneth Garland, was not acknowledged.

MARGINALIA, pages 223–224: 8, Toomey, Arphot. ROOF GARDEN AT GUILDFORD, pages 230–234: Galwey, Arphot. UNIVERSITIES, pages 230–251: frontispiece, top, S. W. Newbery; Yesterday: 1, A. Barrington Brown; 2, Arkitektura Polska; 3, Archivo Más, Barcelona; 4, 5, Mansell Collection; 6, Toomey, Arphot; 7, A. F. Kersting; 8, F. D. Nichols. Today: 2, Stewart Bale; 3, 7, Photo Finishers; 5, Birmingham Post & Mail; 11, copyright University of Sheffield; 14, 15, University of Liverpool; 16, 21, Aero Pictorial; 18, Donald I. Innes; 25, H. Cooper & Son; 26, Elsam, Mann & Cooper; 27, 28, Toomey; 29, Manchester Guardian; 31, Richard Einzig; 33, John R. Pantlin; 37, Hammerschmidt; 38, Hylton Warner; 31), pages 252–254: frontispiece top, 5, 6, 7, 12, 15, 17, 18, Toomey; frontis centre, 11, Ernst Scheidegger; frontis bottom pair, 1, 8, 9, I. de Wolfe, Arphot; 2, Ministry of Works; 3, Crown Copyright; 10, Eric de Maré; 13, 14, 16, Galwey. HOUSE NEAR BEAULIEU, pages 255–258, Toomey. FIFTY YEARS OF ARCADIA, pages 259–262, Nairn, Arphot. CURRENT ARCHITECTURE, pages 263–266: Laboratories at Welwyn Garden City, Brazier. Schools at Coventry, Toomey. MISCELLANY, pages 267–276: Exhibitions, 1, John R. Freeman; 3, Sam Lambert; 6, David Farrell. Functional Tradition, 4, J. M. Richards, Arphot; rest, Eric de Maré. Counter Attack, 2, Toomey, Airphot, Arphot. SKILL: Interiors, pages 277–280: Bar at Brighton, Stewart Bale. Techniques, pages 281–286: 6, 7, 11, 12, 16, 21–23, 25, 27, 31, 32, Toomey; 9, Mayes; 10, S. W. Newbery; 18, Peter H. Jones. The Industry, pages 288–290; Built-in Designs, John Maltby.



ASCOT STAND PRESENTS NEW SE-DUCT HEATING TECHNIQUES

The first demonstration at the Building Exhibition of the new Se-Duct system of installing gas appliances of room-sealed design is to be staged on the stand of Ascot Gas Water Heaters Ltd. (Stand 227, Row P) at Olympia from 13th-27th November.

The stand will feature an actual Se-Duct installation of Ascot water heaters and Sugg "Halcyon" space heaters, together with photographs of work in progress on the first Se-Duct installation in Britain in a block of flats under construction at Gateshead.

The Se-Duct, the development of which has been sponsored by the Gas Council, is basically a vertical duct through a building, open top and bottom, which supplies air for combustion and also carries away products of combustion from gas appliances connected to it, so sealing off the appliances from the rooms in which they are fitted.

Several outstanding advantages are provided by the Se-Duct: gas appliances need no longer be vented through outside walls; the flueway for space heaters, water heaters and drying cabinets can be placed where the architect desires; high efficiency appliances can be employed to afford the greatest economy; as one small duct will supply the needs of a complete range of gas appliances on all floors of a multi-storey building, the chimney space so saved can be added to living space; the compact Se-Duct installations are cheaper to build than multiple chimneys.

A new book describing the Se-Duct will be available on the stand to architects, surveyors and builders. This is the latest addition to the Ascot series of technical publications.

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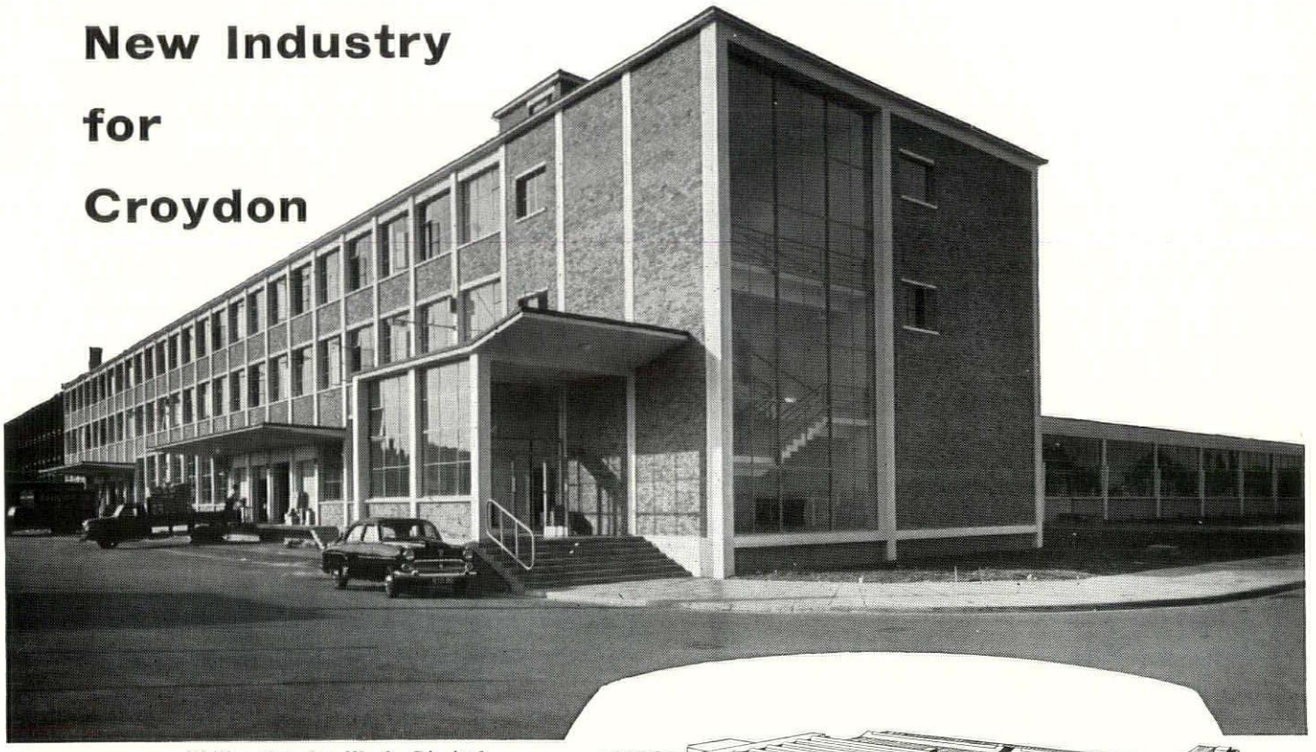
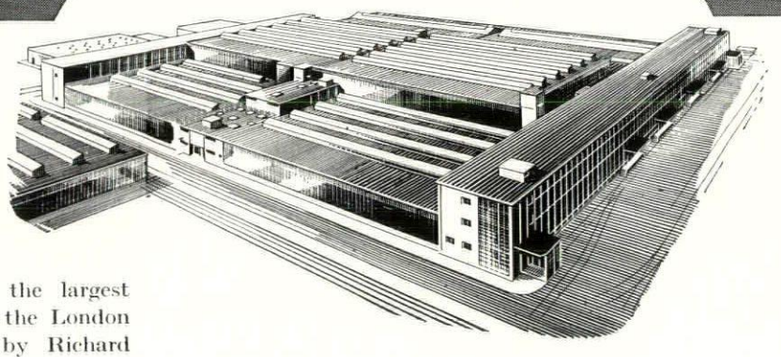
New Industry for Croydon



Philips Croydon Works Limited



THIS EXTENSIVE BUILDING—one of the largest industrial structures to be erected in the London area was constructed in 2½ years by Richard Costain Limited and recently handed over to Philips Croydon Works Limited. The contract for the main building, which measures 630 ft. by 565 ft. and covers an area of more than 8 acres, was awarded on the result of the first six months' work when 150,000 square feet of floor space was handed over. In all, the building provides more than 600,000 square feet of warehousing, administrative and production space.

A particular study was made of day lighting, using the principle of roof monitors to give a northern aspect in the main with a percentage of south light, so that an overall standard of fifty lumens at bench level is attained in manufacturing areas.

The contract also included the construction of roads and ancillary buildings.

The architects: Wallis Gilbert and Partners, F/F.R.I.B.A.; and the Quantity Surveyors are Thornton-Firkin and Partners.

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THE ARCHITECTURAL REVIEW

Volume 122 Number 729 October 1957



The cover shows Brasenose College, Oxford, as it appeared in the series of drawings of Colleges made by John Bereblock, fellow of Exeter and St. John's, on the occasion of Queen Elizabeth's visit to the university in 1566, with appended to it, Thomas Neal's somewhat macaronic apostrophe on William Smith, its founder, and his celebrated, if apocryphal nose. The rise of the Universities as seats of learning, the evolution of the College Plan, of which Brasenose is a prime example, and the other types of buildings that traditionally house them, their present situation, immediate prospects and future possibilities, are discussed by Nikolaus Pevsner and Lionel Brett in two articles which begin on page 234.

223 **Marginalia**

224 **Correspondence**

226 **Frontispiece**

227 **Mondriaan** *by Reyner Banham* It is widely felt that the work the Dutch abstract artist Piet Mondriaan has a particular relevance to architecture, and he has been made titular patron of a philosophy of design, Constructionism, which is held responsible for such buildings as those at Illinois Institute of Technology, and others that bear superficial resemblance to the composition of his paintings. On the basis of three recent publications on Mondriaan and his associates, Mr. Banham proposes, firstly, that this Constructionist philosophy neither derives from Mondriaan, nor fully expresses his theories, and secondly, that at the one point where the two philosophies overlap—Mondriaan's apparent classicism—the philosophical attitude there revealed is entirely inappropriate to modern design, and more like that of early Renaissance humanists who hoped, in architecture, to symbolize the Deity in a simple geometrical device.

230 **Roof Garden at Guildford** *Architects, G. A. Jellicoe and Partners*

234 **Universities: Yesterday** *by Nikolaus Pevsner* The origins of universities are obscure, though their appearance as an organized form of institution certainly dates from the twelfth century or a little earlier, and the word *Universitas* began to be used in the thirteenth. As Professor Pevsner points out, this word applied originally neither to the totality of the organization nor to the supposed universality of its educational programme, but simply to the teaching masters as a corporate body, resembling other mediaeval guilds. Thus the earliest university buildings tended to be designed to serve their needs first, later, those of students. For this reason, and the tendency of benefactors to endow for whatever needs happened to be most pressing at the time, there is no one building-type peculiar to universities as a whole, and in any particular town, the university buildings may be a compact block of teaching rooms, a loose aggregation of colleges or a complete and organized campus.

240 **Universities: Today** *by Lionel Brett* The absence of any one dominating architectural form makes Universities hard to recognize, harder to design. Nevertheless, each general type of university is characterized less by a mode of instruction, than by the way in which staff and students live. The failure of so much recent University design stems not only from stylistic cowardice, but equally from a failure to recognize and intensify this mode of life, to integrate its sense of community both physically and visually. But Mr. Brett finds hope for the future in some recent projects in which the collegiate theme has been recovered, or a viable campus development is possible.

252 **Lettering: 3D** *by Nicolete Gray* Architecture being an affair of solid matter arranged three-dimensionally, it is only proper that three-dimensional lettering should have a special place in the architect's esteem, Mrs. Gray examines the historical tradition of three-dimensional lettering, raised, incised, free-standing and illusionistic, and shows the considerable subtlety of a great deal of this work, particularly in the matter of choice of section. Such subtleties are often missing in current work, though the problems raised by new techniques, such as back-lighting, still produce work of interest.

255 **House near Beaulieu, Hants** *Architect, Hugh Casson*

259 **Fifty Years of Arcadia** *by Ian Nairn* Hampstead Garden Suburb has been in existence for fifty years, and although it was preceded by Letchworth, it is of far greater importance historically by reason of its visual qualities, and by reason of its unfortunate progeny. The garden suburb, at its best, is father to the council estate at its worst, and in analyzing what went wrong with the prototype, we can approach the faults of its descendants from behind. If, as Mr. Nairn suggests, the garden suburb is an aggregation of arcadian illusions, then the totality must also maintain the illusion—there must be no weak patches, no opportunity to grasp the structure of the estate as a whole. Surprise and variety must be continuous, art must everywhere conceal art, serpentinings and changes of level must be exploited to the full, tree-planting must be adequate and in the right places—in other words, Picturesque Theory is mandatory, and there can be no compromise between urbanity and arcadia. Terrace housing, chopped up and arranged in a pseudo-picturesque manner, as in the New Towns, is as wrong as the intrusion of straight, over-developed, underplanted streets in Hampstead Garden Suburb.

263 **Current Architecture**

Miscellany

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Skill

277 **Interiors: Department Store Staircase, Stockholm** *Architect: Arne Rudberger*

Bar at Brighton *Designer: John Carter*

280 **Design Review: Poster Competition**

281 **Techniques: Fascia Lettering** *by John Sharp* The types of three-dimensional lettering discussed on pages 252-254 are seen today chiefly on shop fascias and similar locations, and John Sharp backs the aesthetic problems raised by Mrs. Gray with a survey of the very wide range of letter materials and ready-cut letters, fascia materials and lighting techniques that are available at present for work of this kind, and indicates some of the experimental solutions that have not yet achieved standardisation or commercial availability.

286 **High-Fidelity equipment in the House near Beaulieu**

288 **The Industry**

290 **Contractors**

Author: *John Sharp* was born in Redditch in 1926 and educated at the local grammar school. Service in the Royal Navy 1944-47. He spent 5 years at the AA, during which his interest in workshop technique was stimulated and he started to make his own furniture; consequently he took a 2-year post-graduate course in the Department of Industrial Design (Engineering) at the RCA. Apart from working as an architect, he designs (and still makes) furniture, and teaches part-time at the Hammersmith School of Building. Married with four children, he lives in a red-gabled Victorian house in Dulwich

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THE ARCHITECTURAL REVIEW

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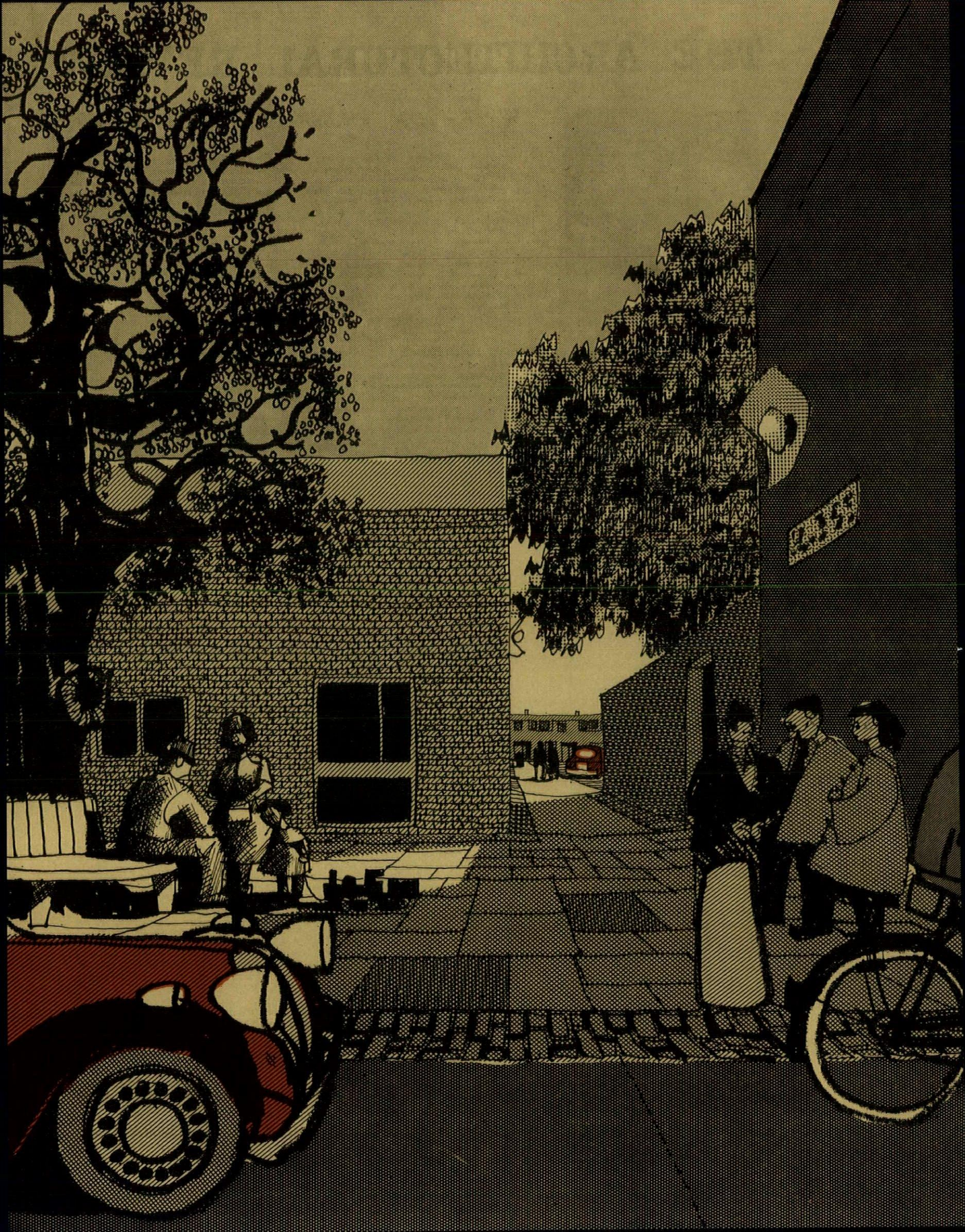
FIVE SHILLINGS



The planning of Ghyllgrove Estate, Basildon, by Lionel Brett and Kenneth Boyd, is an attempt to give greater urbanity to a new development by the radical application of townscape principles. The scheme is fully described and illustrated on pages 274–276, but Gordon Cullen's drawing opposite,  *draws particular attention to two of its salient features: the use of walls instead of fences, to maintain the sense of enclosure and ensure that private gardens are really private; and the relationship of pedestrian ways to roads—from the car in the foreground to that in the middle distance is a short, straight walk on foot, whereas by car it is a meandering way round, in order to reduce vehicle speeds and thus permit the use of sharp corners, instead of subtopian splayed angles.*

Reyner Banham

MONDRIAAN

AND THE PHILOSOPHY OF MODERN DESIGN

Mondriaan, it is widely felt, was an artist whose works, methods and mind have an urgent relevance to problems of architectural design. Professor J. L. Martin, who knew Mondriaan personally, has commended what he calls "Mondriaan's Method" to architects[1]: In a recent book[2], David Lewis, a leading aesthetician of the Cornish school who has now taken up architecture, supposes that Mondriaan would probably have been an architect himself if born into another generation; and Richard Llewelyn Davies, the leading exponent of objective functional research in England, has defended Mondriaan's reputation against imputations of irrelevancy[3], on the grounds that 'If you reject Mondriaan and Mies van der Rohe you are rejecting all classical design from the Parthenon to Palladio.'

These three examples, cited here because they have been committed to print, are evidence of a wide-spread, if largely inarticulate, desire to make of Piet Mondriaan a kind of honorary posthumous god-father to Modern Architecture. In a less widespread and more partisan frame of reference, the last two quotations are also evidence of a determination to make the art of Mondriaan the justification of a particular philosophy of design that can best be represented by a set of end-linked concepts set out thus: CONSTRUCTION of CONCRETE ELEMENTS creating SPATIAL RELATIONSHIPS of CLASSICAL ORDER. Not every bead of this Constructionist Rosary will necessarily be told by every partisan of this attitude, and some of its beads are replaceable: *concrete* by *real* or *basic*, *classical* by some such word as *modular* or *mathematical*, and *spatial* by words like *harmonious* or *proportional* which, though they completely alter the sense as perceived by the uninstructed reader, do not appear to alter the meaning intended by Constructionist theorists.

The buildings which are taken to embody this Mondriaanized architecture are, as the

[1] In a talk on BBC Third Programme in connection with the Mondriaan Exhibition at Whitechapel Art Gallery, September, 1955.
[2] *Mondrian*, Faber Gallery, London, 15s.
[3] Letter to *Architects' Journal*, November 3, 1955.

quotation from Llewelyn Davies suggests, those of Mies van der Rohe, and particularly those on the campus of the Illinois Institute of Technology. The superficial resemblance between some elevations of these buildings and some compositions by Mondriaan is immediately striking, and the design philosophy deployed by Mies may indeed bear some resemblance to the Constructionist Rosary—though it seems likely that the philosophy of the Smithsons at the time of Hunstanton School is a good deal nearer to it. But the historian of ideas must beg leave to doubt that this philosophy was ever Mondriaan's.

He did speak of architecture, from time to time, in order to adduce justifications for his ideas on painting, but these *obiter dicta* hardly make even the outline of an architectonically useful doctrine. Such doctrine, in fact, is easier to find in the writings and practice of other members of the Dutch *de Stijl* group, and it is mostly in their doctrine, not Mondriaan's wordy philosophizings, that the origins of the Constructionist Rosary are to be found.

Not only are the ideas embodied in it non-Mondriaan, they are mostly anti-Mondriaan, and came into *de Stijl's* possession around the time of the Düsseldorf Congress of Abstract Artists of 1922, when Mondriaan had already been in Paris for two years, and was already losing touch with the rest of the group. Without his presence, the minds of *de Stijl* and its leader, Theo van Doesburg, turned more and more to Germany and Eastern Europe for inspiration, and it was from these sources that van Doesburg evolved the programme of Elementarism that provoked a quarrel with Mondriaan, who subsequently left the group.

In general, the ideas of the Elementarist-Constructionist tendency owe their persuasive power both to writings of the 'twenties and to more recent work. *Construction*, for instance, owes its evocative powers in this context mostly to the non-Aristotelian aesthetician Charles Biedermann, who makes Mondriaan one of the hinges in the argument of his book *Art as the Evolution of Visual Knowledge* (1947), even while admitting that Mondriaan was anything but a non-Aristotelian, *Real* or *Concrete Elements* derives on one side from van Doesburg, Naum Gabo and Biedermann for the concepts of *real* or *concrete* (meaning non-representational, or even 'as found' in the Brutalist sense) and on Malevitsch and Lissitsky for the concept *elements* (meaning basic units of both structure and space-division) though the first *Aufruf Zur Elementaren Kunst* to appear in *de Stijl's* eponymous magazine, was signed by Hausmann, Arp, Puni and Moholy-Nagy.

Beyond this point, the ancestry of the 'good words' becomes more diffuse and more complex. The idea of creating spatial relationships involves the imaginative projection of the lines and planes of the art-work into the surrounding void. For this Mondriaan does give some support, for both in the early 'twenties, and again near the end of his life, he expressed the opinion that the lines bounding any rectangle, including the rectangles in his own paintings, could be considered as extending indefinitely, and over-running the edges of the canvas. But at the time that he first put forward this view, he was painting a series of pictures—ten of which appear in Michel Seuphor's new book[4] on Mondriaan—in which the thick black lines are often stopped off short of the edge of the canvas. So when David Lewis says of a Mondriaan painting[5] that 'its proportions relate themselves directly to us physically and to the room around us . . . setting up a wider and wider rhythm of proportions,' he is clearly building up a subjective personal mystique on very slender foundations in the artist's ascertainable intentions.

In any case, the idea of any object, art-work or whatever, having an effect on its surroundings and the enveloping space, is of Futurist extraction, traceable to Boccioni, and the concomitant idea, fundamental to the Constructionist attitude, of space as a uniform, measurable, rectilinear continuum first appears in *de Stijl* magazine over a futurist signature, when Azari apostrophizes invisible staircases and trapezes in the empty air. When van Doesburg himself first speaks of works of art as being co-spatial aesthetically with their surroundings, it is in the Manifesto of Elementarism that precipitated the quarrel with Mondriaan, though this particular tenet was not the main ground of their disagreement.

But it is with the idea of Mondriaan as Classicist that the historian of ideas find himself deepest in confusions and wishful thinking. Of course he certainly was a Classicist in the low-grade sense that all theories of geometrical abstract art can be traced back, in part at least, to the eroded classicism of the *Ecole des Beaux Arts*[6] in the eighteen-sixties. But in post-Wittkowerian English, the word *classical* as a term of praise is usually taken to mean something more gilt-edged than merely holdings in the deferred stock of Academic formulæ.

In what sense, then, can he profitably be called Classical? Hardly at all in the modular mathematical sense. The *catalogue raisonnée* given by Seuphor reproduces only nine paintings that can be called modular in composition; five of these are merely checkerboards, while four depend on the device of squares and their diagonals known in Dutch architecture as *Quadratur en Triangulatur* and employed, it is interesting to note, by Berlage in his Gothicizing,

[4] *Piet Mondriaan*, Thames and Hudson, London, 6 gns. The text of this book is mostly personal gossip, some of it very revealing, but the illustrated catalogue of Mondriaan's work is remarkably full, and destined to become as standard a work as Venturi's catalogue of Cezanne.

[5] op. cit. page 24.

[6] Summed up in Charles Blanc's authoritative *Grammaire des Arts de Dessin* of 1867.

not Classicizing, designs. And none of these nine pictures is one on which his reputation may be said to rest, most of them being unknown outside specialized circles of Mondriaan scholarship.

There are also two instances of Mondriaan pictures with apparent mathematical notations. In one case, as Seuphor pointed out some time ago, these notations are the work of another hand; in the other, recently discovered by Seuphor and reproduced in his book, the familiar notative devices ab, a'b', etc., are used by Mondriaan simply to indicate those relationships to which he is applying the somewhat unmathematical values *tragic* and *less tragic*. In fact there has been for some time abundant evidence from eye-witnesses and other sources that Mondriaan composed not mathematically, but by eye, adjusting his compositions until they 'looked right.' To this evidence Seuphor adds startling photographic documentation of alterations, scorings-out, deletions and second thoughts, that put mathematical composition right out of the question. What Meyer Schapiro has said of the product must be extended to the process, 'Mondriaan may appear classical, but, in fact, he is almost random.'

Yet, leaving all this to one side, there remains a sense in which he can still be called Classical, or at least Humanist. This is not a sense that can be counted off on the Constructionist Rosary, and it has been no more than suspected from a few odd sayings of his, until it was massively confirmed by the remarkable book[7] on *de Stijl* published in 1956 by Dr. Jaffé of the Stedelijk Museum, Amsterdam. It would be easy to regard this book, heroically written in an English that is not altogether free from misleading translations, and a little too prone to accept *de Stijl* at its own valuation—it would be easy to regard this as merely a provincial Dutch curiosity, but it contains chapters of first-rate art-historical writing that, for studies of twentieth century subjects, surpass even the standards set by the Museum of Modern Art monographs, and the chapters on Mondriaan are of prime importance. When their impact has been fully felt, when their content has been fully assimilated, our view of the man and his art will be permanently altered.

For these chapters set out in full and in detail the relationship between Mondriaan's ideas and those of M. H. J. Schoenmaekers, a former catholic priest turned theosophist (of a sort) who propagated the idea of a mystical geometry of the universe with distinct Neo-Platonic overtones. The connection between Mondriaan and Schoenmaekers has been known for some time, but Dr. Jaffé is the first writer to set it out *in extenso*, quoting chapter and verse. The body of ideas that the two men held in common was aptly summarized by van Doesburg in 1929 as 'The equations of Mondriaan,' which read:

Vertical=Male=Space=Statics=Harmony

Horizontal=Female=Time=Dynamics=Melody

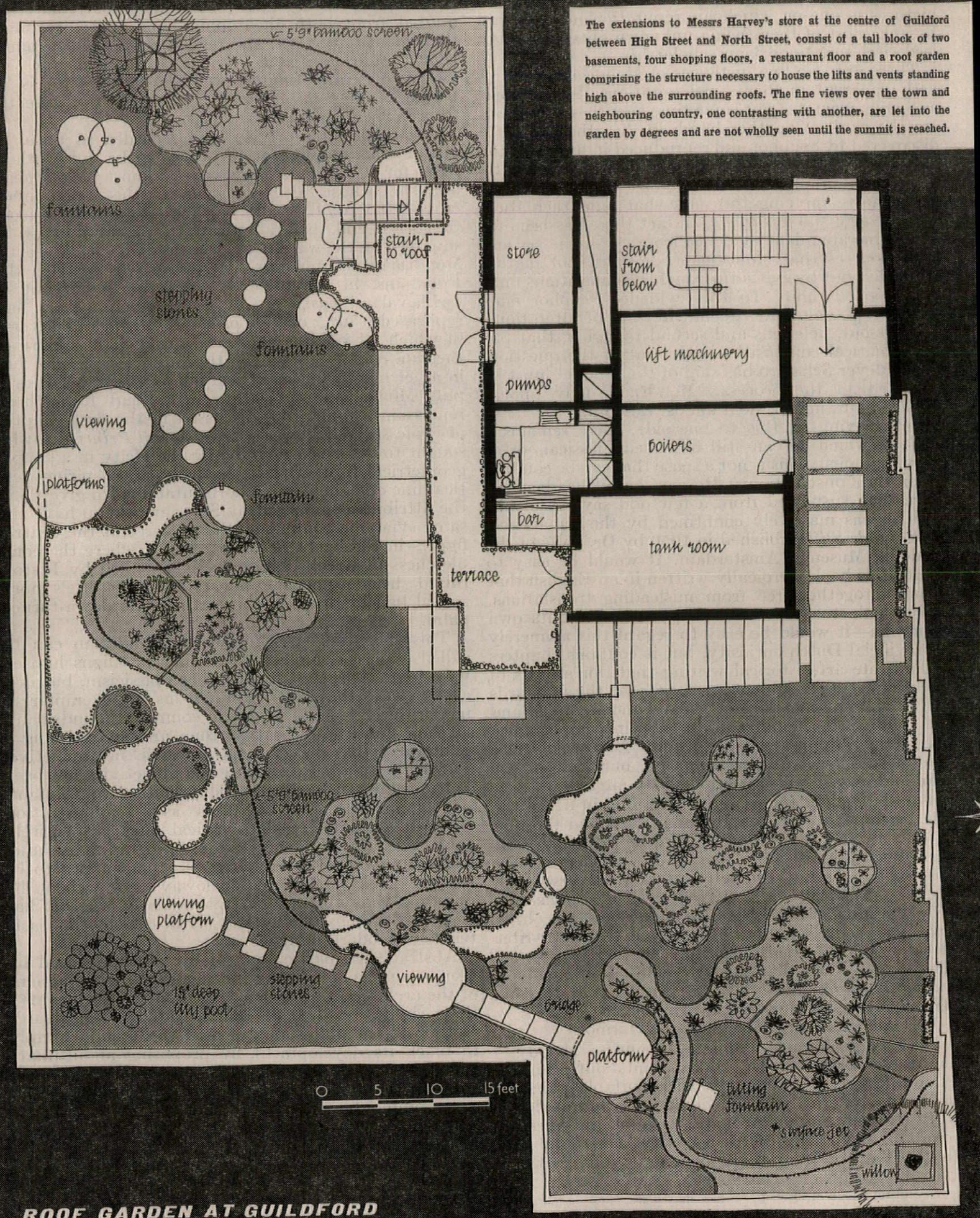
and these series, as Dr. Jaffé points out, can be extended almost indefinitely with suitable pairs of opposities, ending, in Schoenmaekers terminology, with Heaven as the ultimate term of the vertical equation, and Earth as the last of the horizontal list. Dr. Jaffé's exposition of the doctrine reinforces these equations with a mass of confirmatory material, quoted from both theosophist and artist, to show their identity of view, and reveals that even the name that Mondriaan gave his art, that translates so awkwardly into English as 'Neo-Plasticism,' is in Dutch *nieuw beelding*, a phrase taken over directly from Schoenmaekers.

So Mondriaan's art, so long regarded as pure, as abstract, as non-figurative proves to be quite otherwise, for it figures a universe of almost Manichaean dualism, whose ultimate term is the male-female cross—that Adolf Loos, approaching Freudianly from the other end, had identified as the first art-work smudged on the wall of the primitive cave. But clearly, Mondriaan is not to be numbered among the Freudians, his approach is from the standpoint of mediæval scholasticism, even if Schoenmaekers had rephrased it in terms of a pseudo-Copernican Universe in which all vertical lines pass through the centre of the sun. And acceptance of that universe, summed up in an elementary geometrical figure, the cross, clearly puts Mondriaan in the line of descent from those renaissance humanists, discussed in the first chapter of Professor Wittkower's *Architectural Principles*, who sought to describe or symbolize the Deity in a simple geometrical form. Or alternatively, the aspiring vertical line and the passive horizontal line (to give them the attributes envisaged by Schoenmaekers) have the same symbolic content as the gestures of the central figures in Raphael's *School of Athens*, where the completeness of Greek philosophy is signalled by Plato's raised, heaven-pointing finger, and Aristotle's horizontal hand indicating the earth by its down-turned palm.

This then is a sense in which Mondriaan can be called a Classicist of sorts, in that he aligns himself with some aspects of Renaissance Classicism, but it is also a sense that rules him out as an exemplar to modern architects. Those who commend Mondriaan's Method must now see that they are commending a philosophy that may be logical, but is not objective. The distinction between logic and objectivity has been sadly lacking in recent English architectural thought, but Mondriaan may well serve as a demonstration that an aesthetic may be logical, and yet entirely subjective. An architecture whose programme is functional, and rooted in technology, cannot afford to be subjective—as Lawrence Alloway saw when he observed that abstract art, particularly when it has classical leanings of any sort, is hostile to the basic tenets of modern design.

Abstract art, particularly of the kind produced by Mondriaan, has played a vital role in the development of the architectural forms of the modern movement—that cannot be denied—but to admit Mondriaan's Method to the philosophy of modern design is simply to block its development by proposing an ultimate term, the cross, beyond which it cannot pass. There are very good reasons why floors are horizontal and walls commonly vertical, and these underly the equally good reasons why most structural systems and prefabrication methods also have a rectangular format, but to promote these practical considerations to the level of absolutes is to abdicate the freedoms that are the prerequisites of progress.

[7] *De Stijl* 1917–1931, Meulenhoff, Amsterdam. 2 gns.



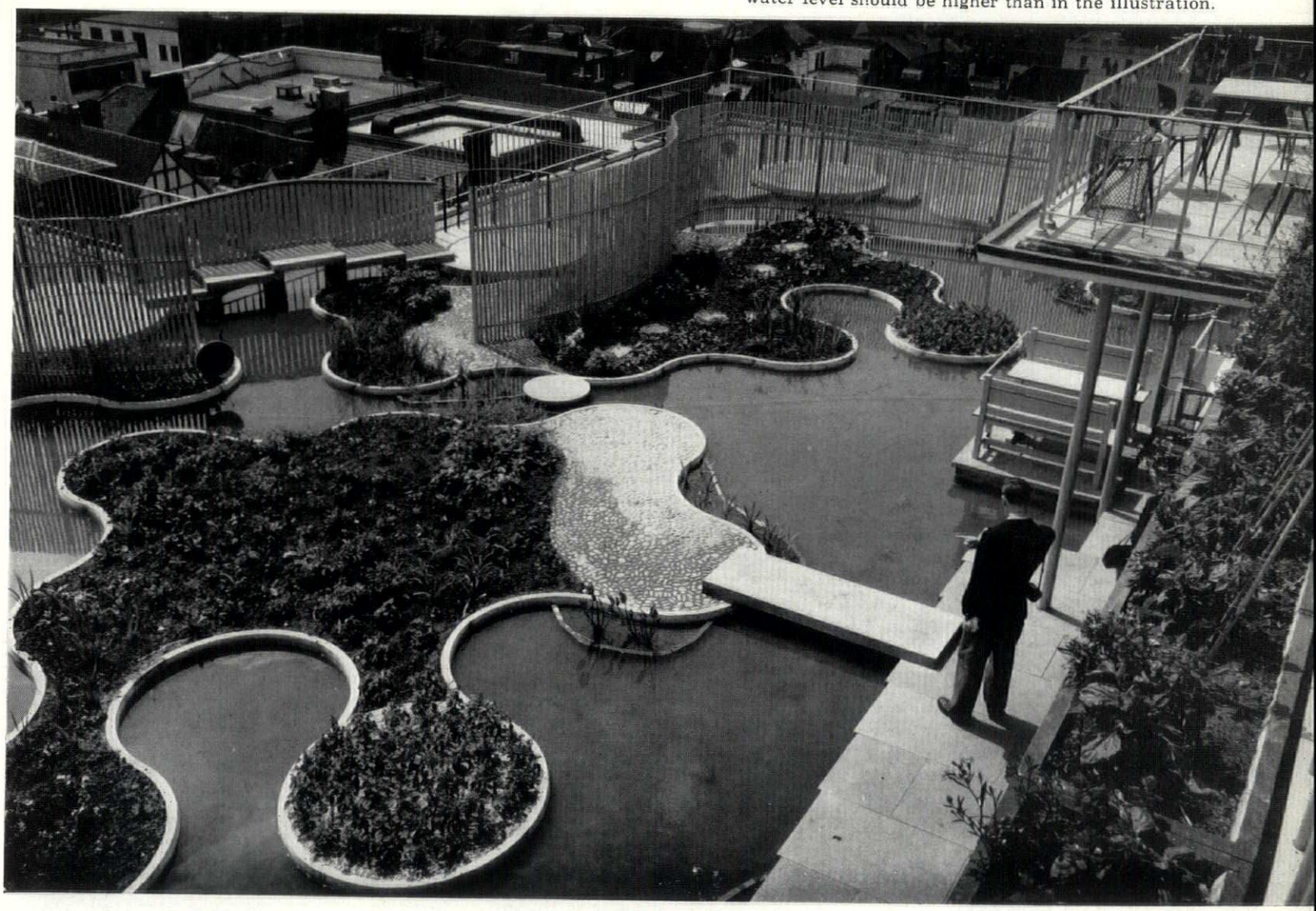
The extensions to Messrs Harvey's store at the centre of Guildford between High Street and North Street, consist of a tall block of two basements, four shopping floors, a restaurant floor and a roof garden comprising the structure necessary to house the lifts and vents standing high above the surrounding roofs. The fine views over the town and neighbouring country, one contrasting with another, are let into the garden by degrees and are not wholly seen until the summit is reached.

ROOF GARDEN AT GUILDFORD

ROOF GARDEN AT GUILDFORD, SURREY

ARCHITECTS | **G. A. JELLICOE AND PARTNERS**

1, the coastline seen from the higher level. The curb is made of a standard quadrant on a standard pattern. The complete circles (left centre foreground and right back) are dry and contain bedding out plants in pots ; the remaining land supports moisture-loving perennials in soil automatically kept moist by the adjoining water. The plants are not yet fully grown, and the water level should be higher than in the illustration.



Harvey's Store, where the roof garden is situated, is off the west side of Guildford High Street.

Roof gardens in general suffer from two main handicaps: shallowness of soil and excessive exposure to winds. Unless the structure of the building is specially strengthened, the soil has to be shallow, and tends to dry out and become exhausted very quickly. The general depth of soil in this garden is only 6 inches, building up to 18 inches in two or three places where there is a structural pier underneath. To prevent it from drying out, weep-holes in the curbs containing the flower beds allow water from the pool to seep through and keep the soil permanently moist. In addition, in two places where the soil is deeper, there are sprinklers connected with the pumping plant. The soil used was ordinary topspit, with peat moss and leaf mould for some of the plants.

Plants dislike being blown about, and cold winds dehydrate the leaves. On the other hand, the view is an integral part of a roof garden, and those which are surrounded by walls, with a few look-out holes, evade the issue. Here the garden—in most cases the water—runs out on two sides to the parapet, which is topped by a handrail made as slight as is compatible with safety. Some protection from the north-east is given by



2 2, stepping stones designed to float on the surface of the water, seen from the higher level ; these echo the water lilies that have not yet matured. (See 5.)

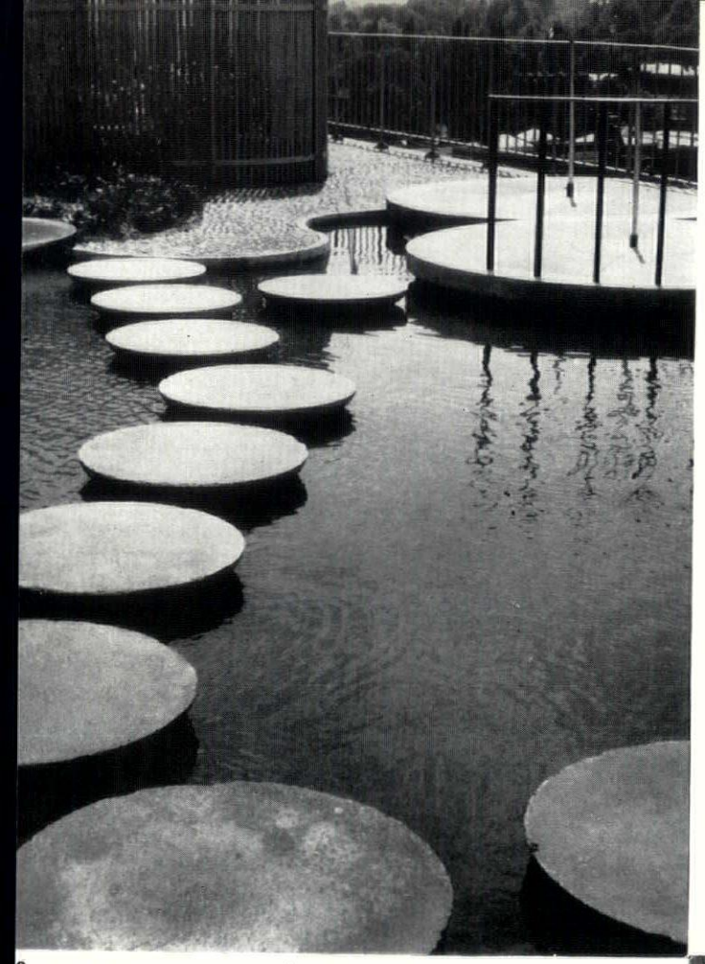
the structure housing the lift machinery and water tank. On the east side is a 6-ft.-high screen of diagonally placed wooden slats (originally intended to be armoured glass, but this proved too expensive). To give some protection from south and west, curving screens of bamboo canes 5 ft. high enclose the flower beds.

The permanent planting in the main beds was controlled by two factors, the moisture and the shallowness of the soil. Few shrubs could be used and of the three trees (all willows), two are planted in large tubs placed behind the screens. All the planting is such as is found in water gardens: *Iris sibirica* and *Kaempferi* ; various primulas, particularly of the candelabra type ; astilbes and spiræas ; mimulus ; hemerocallis ; hosta ; trollius ; calthas ; ferns, etc., plus a few larger plants such as *Gunnera manicata*, *Peltiphyllum peltatum*, *Lysichitum americanum*, planted more in hope than faith. Linked to the beds containing the permanent planting are four large round waterproofed containers, designed to hold a succession of plants in pots. These ensure that there are at least four large patches of colour all through the season. To break the line of the curb retaining the flowerbeds, certain aquatics (*Iris lævigata*, *Pontederia lanceolata*, water musk and forget-me-not, etc.) are planted in small pockets of earth projecting from the curb, but below the surface of the water.

The depth of the water in the pool is 6 inches. The floor is covered with different coloured gravels, to give an impression of varying depths. Shallow pans containing water lilies and various aquatics (*Scirpus zebrinus*, *Aponogeton distachyum*, *Calla palustris*, etc.) are scattered in different parts of the pool. The water is kept clear by establishing a balanced ecology with fishes, snails and submerged oxygenating aquatics.

The fountains are made of ¼-in-thick moulded fibreglass, 4 ft. 6 in. in diameter. Estimates were obtained for similar sized bowls in hardwood and precast concrete and the fibreglass showed a considerable saving. The tilting fountain is of copper with galvanised tubular supports: this was designed to ensure a spasmodic flow over the small weirs of the cascade also to help prevent the water from being too static. A secondary circulating pipe is located at the entrance for the same reason.

ROOF GARDEN AT GUILDFORD



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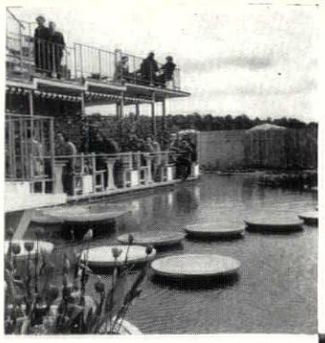

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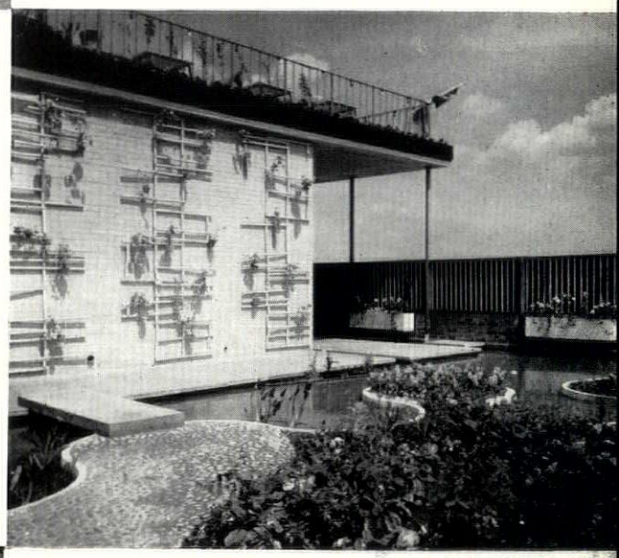
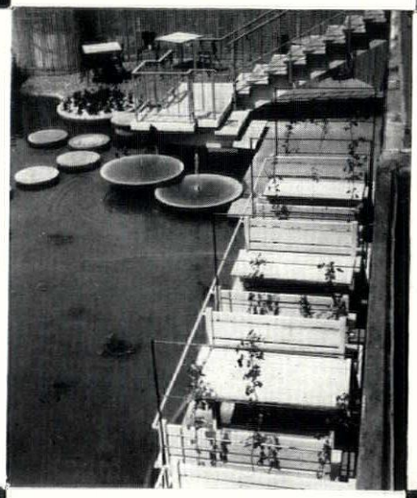


5

3, the stepping stones from the foot of the stairway leading from the upper café.
4, lower café and balcony over, the one associated with the immediate water, the other with the view.
5, the south wall, of which the decoration can be changed at will, and is designed by Messrs. Harvey.
6, steps from lower to upper café. The total height is about 15 ft., and to avoid monotony and disinclination to ascend, the height is gained by a varied progression of steps and ramps. The seats and tables beside the water are in compartments separated by ivy grown in boxes one foot deep, and trained over light metal frames.
7, although the design is intended to link with the landscape on all sides, the principal link is the reflection of the sky in the water.
8, looking down on the circles: the fountains are of fibre-glass; while the water is intended to mirror the sky, the circles embody the idea of the planets spinning through space.



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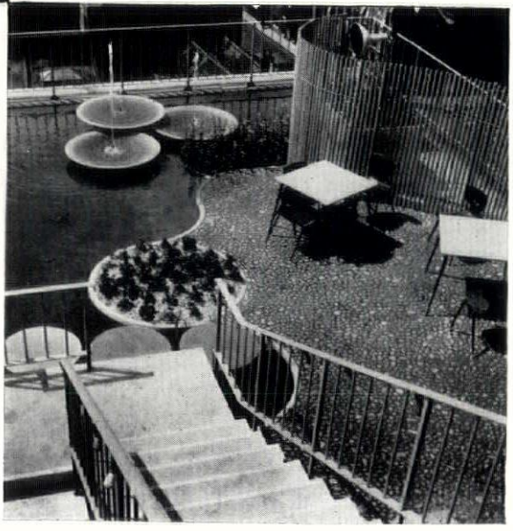

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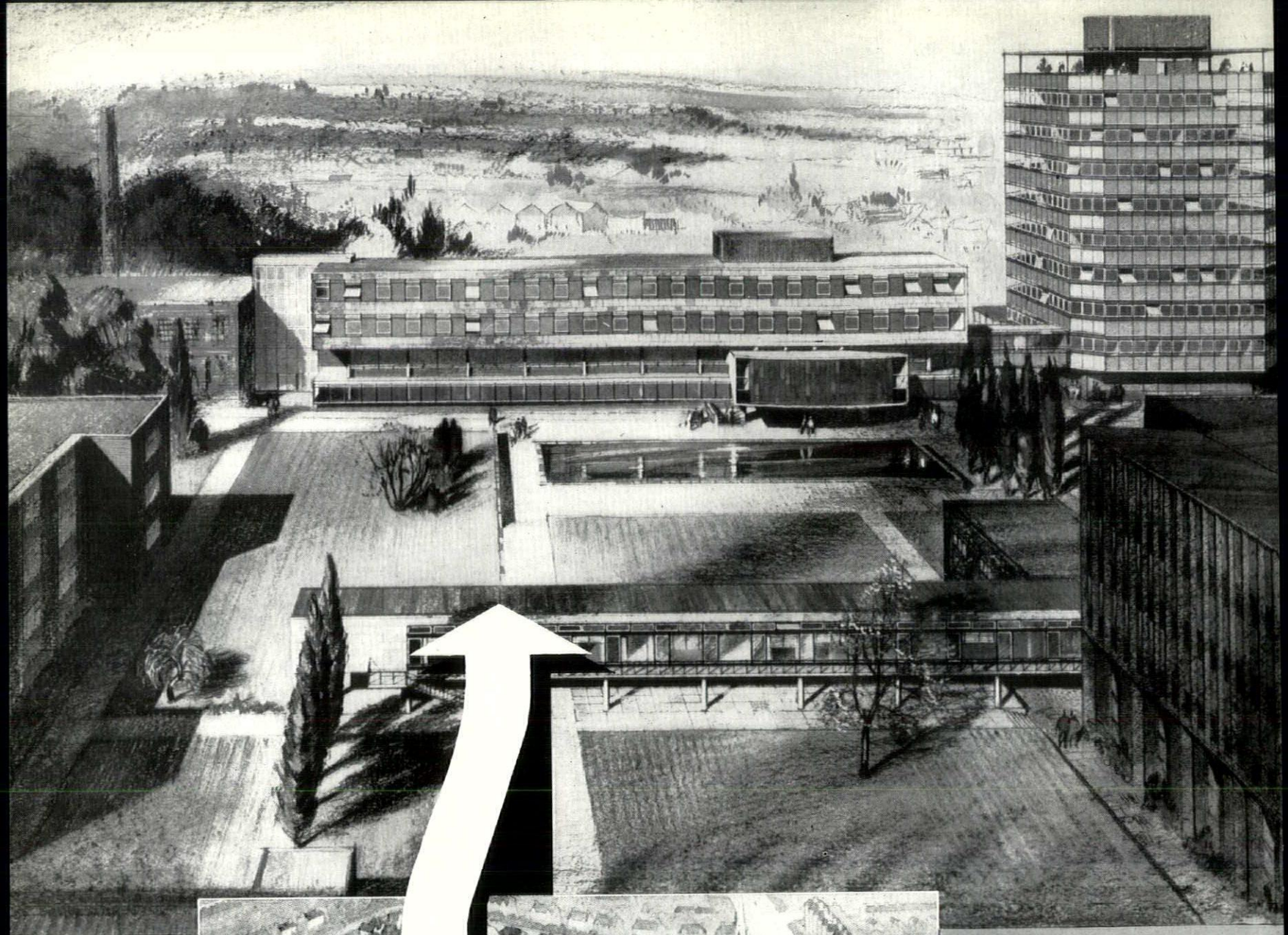
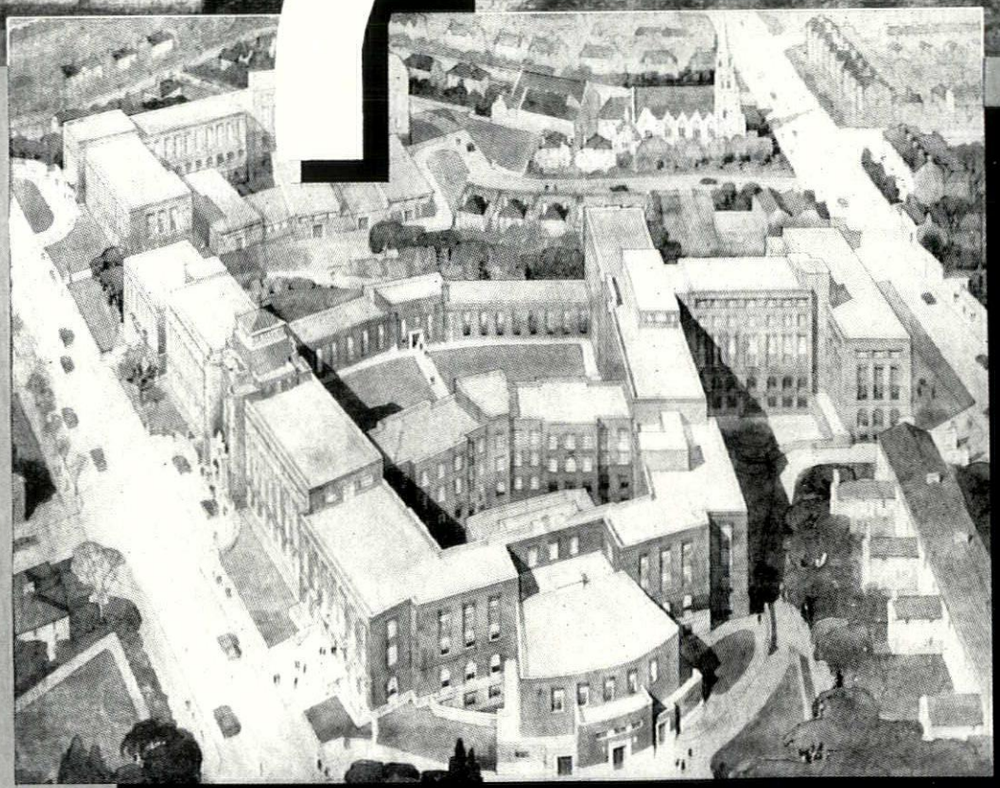




Once a label for the Collegiate Gothic of the provincial universities, the term *Redbrick* may well become a faintly opprobrious label for the dim, stodgy and inappropriate accretions acquired by British universities all over the country in the last quarter century—accretions that range from mere academic subtopia, to gratuitously monumental developments like that at Queen's University, Belfast, left. But there are signs that academic patronage is awakening at last to the possibilities of a more adventurous architecture and more sympathetic planning—Basil Spence's proposals for Southampton are seen above, and equally promising schemes are in hand for Cambridge, Sheffield, Leicester and Exeter.

UNIVERSITIES

The idea of a University is one of the greatest inventions of Western culture, and one of the most diffuse—a community of learned men and a body of scholarly aspirations, linked to society at large by bonds that are valued, but rarely defined, ever-present but changeable. Because of this mutability and lack of definition —themselves a vital part of the university idea—the architectonic form of the university is equally variable, as Dr. Pevsner points out in his historical study, which begins below. But because both form and social relationship are undefined, their importance is often overlooked, with the disastrous consequences discussed by Lionel Brett on pages 240-251.

yesterday

by Nikolaus Pevsner

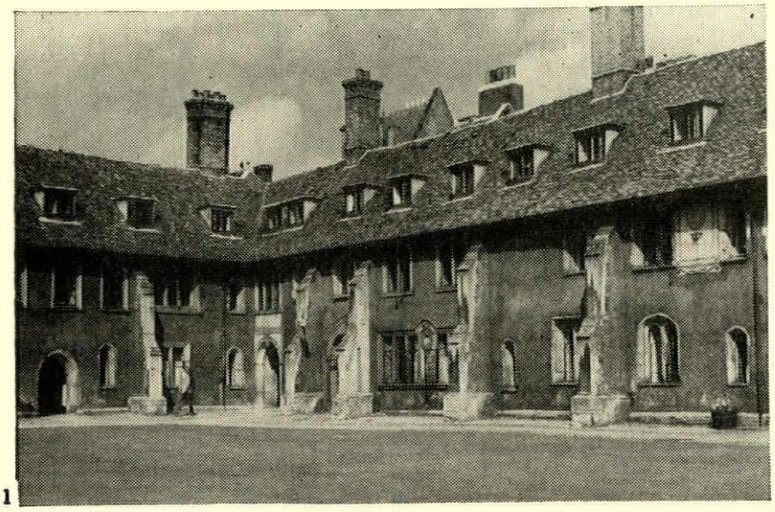
The origin of universities is dark. All that can be said for certain is that they started in Italy in the eleventh and early twelfth centuries and that they served specialized purposes. The earliest seem to be Salerno in the south and Bologna in the north, the one famous for medicine, the other for law. Up to that time and still throughout the twelfth century, higher education was the prerogative of monasteries and cathedrals. The syllabus covered the seven liberal arts, consisting of the trivium and the quadrivium. The trivium was grammar, rhetoric and logic, that is, the Latin language, an acceptable Latin style and the technique of argumentation. The quadrivium was arithmetic, geometry, music (that is the theory and practice of mathematical harmonies and proportion) and astronomy. After seven years the study of theology began over and above the liberal arts. This syllabus shows at once what needs the new universities were to serve. They were not directly under ecclesiastical control and so could concentrate on secular subjects. Bologna was made great by Irnerius, the jurist who died in 1130 and whose most famous book is a textbook for notaries. Universities were indeed the outcome of a civilization which by the twelfth century had grown too complex to be administered by properly trained people only at the highest levels. Plenty of trained clerks were necessary. Correspondence grew, even in private business. Moreover, scholasticism in the purely scholarly field is connected with a rediscovery of Aristotle's refined technique and wide range of research. Here also the cathedral and the cloister were no longer enough to satisfy demands. The fame of the university of Paris, about as old as Bologna, was indeed in the field of scholastic philosophy. What Irnerius was for Bologna, Abelard was for Paris. He died in 1142.

A university was originally called a *Studium* or *Studium Generale*. The word *Universitas* began to replace it in the course of the thirteenth century (at Oxford first used in 1240, in Paris in 1261), but never replaced it entirely until after the end of the Middle Ages. *Universitas* does not refer to universality of teaching but to the sum total of the teachers. The university of Paris meant the group of people who were able and soon—on the strength of their degrees—licensed to teach. The universitas was thus a guild like other guilds. As such what would it have needed in the way of accommodation? Very little. Hardly more, indeed, than a private room large enough for pupils to assemble in and be taught. But as communal living came so much more naturally to the Middle Ages than to our age, it was clearly only a matter of time for teachers to move together and for students to move together. There was in addition to the general liking for a communal life also the argument of protection against extortionate rents which would become topical especially in smaller towns than Paris, say, at Bologna or Pisa or Padua, as they gradually became

university towns first and foremost. But common accommodation needed finance and it was only when universities had proved their usefulness that money came forth. If universities in the course of the thirteenth century all but replaced cathedral and monastic schools an additional reason is, of course, also the general trend of the High Middle Ages—the term used in the sense in which we speak of the High Renaissance not in that which the French mean by their confusing *haut moyen-age*—towards the town and the town-life and secular achievements.

So a special university architecture starts not with teaching quarters but with living quarters. We now speak of the Sorbonne, meaning Paris University, and forget that the Sorbonne was originally no more than a college for students to live in, established in 1256 by Robert de Sorbon, chaplain of Louis IX. By the end of the fourteenth century Paris had more than fifty such colleges, most of them reserved for students from one particular region or nation (Bayeux, Navarre, Lombardy, Scotland, etc.). The first statute of the university of Oxford dates from three years before the establishment of Dr. Sorbon's college. Priority among Oxford colleges is controversial between University College, Merton and Balliol. William of Durham, who died in 1249, left money in his will for the maintenance of ten or more masters of art studying divinity. This is the origin of University College. John de Baliol seems to have paid for poor clerks about 1260, but the college was not incorporated until 1282. Walter de Merton founded his college in 1264 and moved it to Oxford in 1274. It received its statute of incorporation in that year. Peterhouse, the first Cambridge College, was founded by a bishop of Ely in 1281. However, these English colleges were not created to house students, but to house teachers. They were, in fact, colleges exactly as one speaks of a college of priests serving in a collegiate church, or, say, of the College of the Vicars Choral at Wells. And just as these vicars were given by Bishop Ralph of Shrewsbury in 1348 a little street of their own with dwellings for each of them and in addition a communal hall and a chapel, so the accommodation which is familiar for colleges in English universities became usual in the fourteenth century. Old Court, Corpus Christi College, Cambridge, 1, is the best surviving example. It dates from *c.* 1352. Oxford has no quad as old, though fragments at Merton date back to about 1300. But Oxford made another contribution before the fourteenth century was over, the contribution which finally settled the character of the English college. At William of Wykeham's New College, founded in 1379 and opened in 1386, students and staff lived together and tuition was given inside the college. The college was also the first aiming at a unified monumental architecture. There is no equally monumental academic building of that date remaining anywhere else in Europe. Meanwhile, English students had also taken to living in hostels, but none of them survive. What does survive in England, however, and is of great European interest, is some of the buildings erected specially for lecturing in the fourteenth and fifteenth centuries. For by then the universities had outgrown the stage where private rooms of teachers were large enough for the whole of the activities of the university which, after all, included disputations and degree ceremonies. Still, university buildings needed not much space. Cambridge built its divinity school between *c.* 1350 and *c.* 1400. It forms part of the Old Schools quadrangle, between King's Chapel and the Senate House. The other ranges went up in *c.* 1430–60 (West; for Canon Law), 1457–70 (South, for civil law and philosophy and for the library) and 1470–4 (East; this is now replaced by the pretty Palladian building of 1754–8). Oxford also built a quadrangle, but took longer over it. It also started with the divinity school. Duke Humphrey's Library lay over it. The building is of 1426–*c.* 1480 and far statelier than its opposite number at Cambridge.

Neither the accommodation nor its arrangement was specifically English. The Grandes Ecoles, that is the university, at Caen, founded in 1436, had a façade about 250 feet long, with a *salle des arts* and *école du droit* on the ground floor, the *salle de théologie* and *classe de médecine* on the first floor, and the library on part of the second floor. And at Cracow a rebuilding was begun in 1494 and this extended round a courtyard with a cloister walk all along the ground floor, 2. It survives, though much restored in the nineteenth century. It had the lectoria on the ground floor, and



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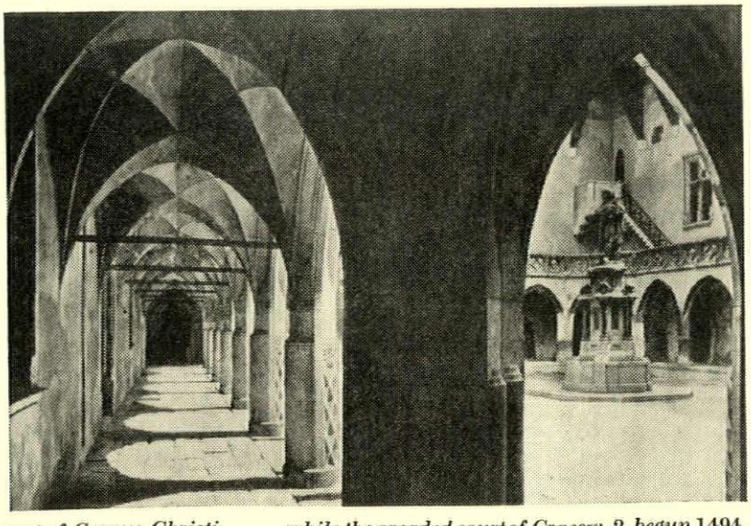
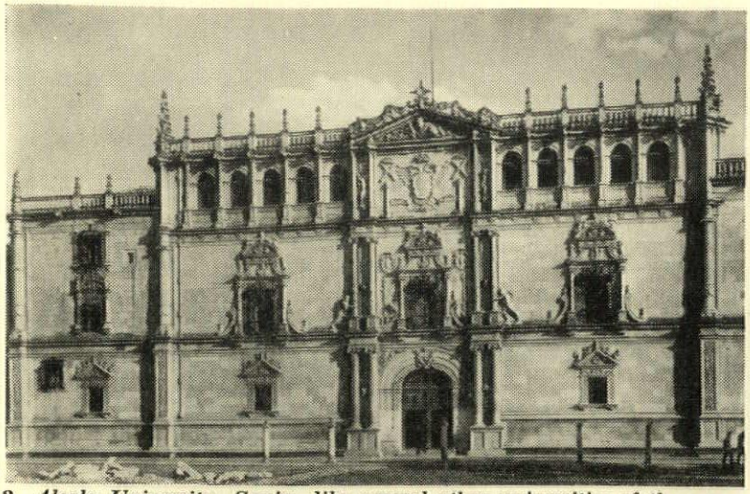


2

Courtyard planning gave the medieval university something of the quiet and community life of the cloister. The old court of Corpus Christi, Cambridge, exemplifies the English tradition, 1, *while the arcaded court of Cracow,* 2, *begun* 1494, *was flanked by lecture halls and living quarters.*



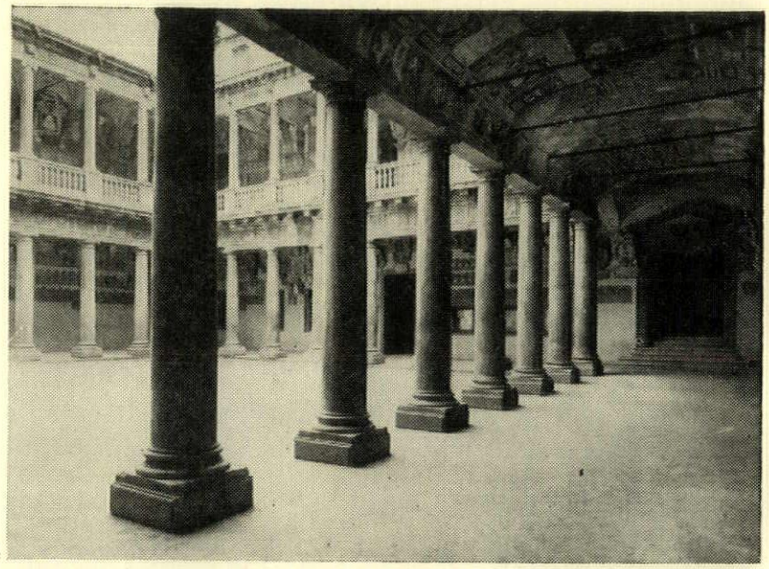
3, *Alcala University, Spain, like several other universities of the same period (it was built in* 1508) *has its main organs grouped in a large single block presenting a monumental façade to the outside world.*

larger halls and living quarters for masters on the first.

Cracow University had been established in 1364. The later fourteenth and fifteenth centuries were the great university-founding centuries. Of the twelfth and thirteenth there are only the Italian universities (eight of them) and Paris, Toulouse and Montpellier in France, Palencia and Salamanca in Spain, and Oxford and Cambridge. In the Holy Roman Empire Prague came first—in 1347. Then Cracow followed in 1364, then Vienna in 1365, Heidelberg in 1386, Cologne in 1388, Erfurt in 1389, Würzburg in 1402 and Leipzig in 1409. Seven more universities were founded in Germany before the time of the Reformation, five in Spain, six more in France in the fourteenth and six more in the fifteenth century. Three Scottish universities date from the fifteenth century (St. Andrews, Glasgow and Aberdeen). Louvain dates from 1425, Basle from 1460, Uppsala from 1477, Copenhagen from 1479, Hungary had one fourteenth and one fifteenth century university and so on.

It is hard to visualize now what all these universities looked like. They certainly did not dominate their towns anything like those of Oxford and Cambridge. They all seem to have had colleges called *collegia*, or a number of other names. But the purpose of, and accommodation in, these colleges differed widely and, until specialized research has gone through the whole of the available material, not only in books but also in original documents, no generalizations can be made. The Collegium Carolinum founded by the Emperor Charles IV at Prague in 1366 was for *magistri* only; so was that added by his successor Wenceslas in 1380. At Heidelberg, in 1393, the Collegium in der Bursch of 1393 had teaching rooms for philosophy and theology and rooms for students. At Leipzig two colleges were established at the foundation of the university in 1409. They were for masters and students together. A third college of 1504 to 1515 had rooms for the Faculties, the lectures and thirteen rooms to let. The College of St. John Evangelist at St. Andrews of 1419 was for teachers under a rector, but the Pedagogy of 1430 was for the Faculty of Arts and residences for students. The Pedagogy of Glasgow of 1453 had teaching and meeting rooms, a library and rooms for teachers and for students. King's College at Aberdeen (1505) housed the staff and thirteen students. At Cracow there were living quarters for teachers only and not for students. At Pavia, on the other hand, even as late as 1564 and 1567, Cardinal Ghislieri and Cardinal Charles Borromeo built big special hostels for about 90 students each.

The scale and monumentality of university buildings in Italy had by that time increased enormously. The architectural type for the university as against the college is a square large block with a square courtyard with cloister galleries on one or two floors. Thus Jacopo Sansovino built at Padua, the university of the Venetian domains, beginning in 1542. The courtyard, 4, was completed in 1547, the façade in 1552. Thus Bologna received as the permanent residence for the old university its Archiginnasio in 1562–6. Thus Pavia, founded by the Viscontis of Milan in 1361, was rebuilt as late as *c.* 1770 by Piermarini and Pollak. Identical in type are the Archiepiscopal Seminary at Milan of 1570 and the Brera 5, also in



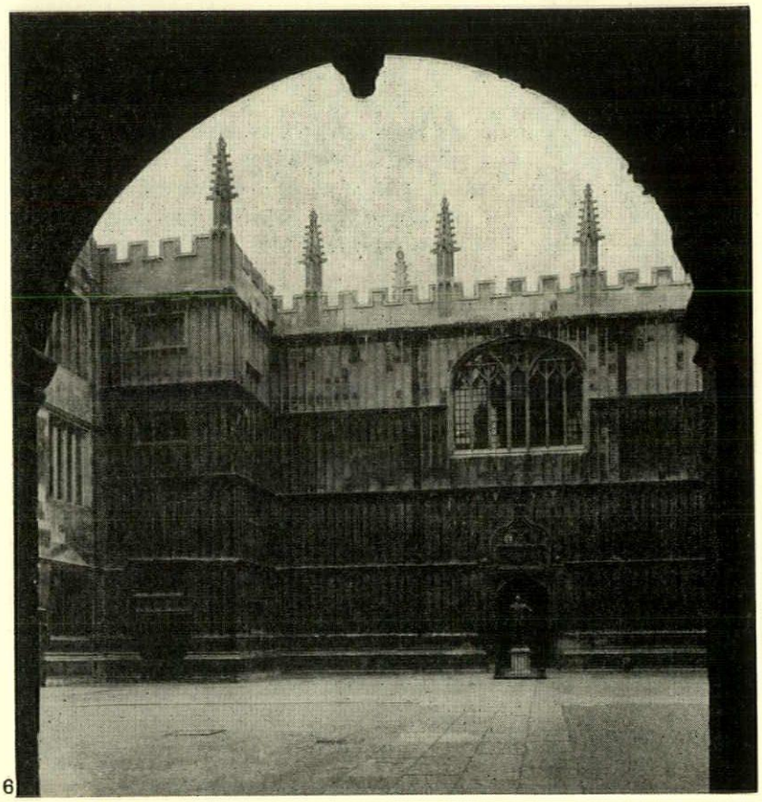


4, *The large unified University-blocks of the sixteenth century often had imposing interior courts grander in scale and different in intention to earlier courtyard types;* 4 *is Sansovino's at Padua, of* 1542, *and* 5 *is the Brera Milan, built by Ricchini in the last years of the same century.*

Milan, begun in 1591. The Brera was built as a Jesuit college. So was the present university of Genoa with its fine courtyard (by Bianco, 1623, etc.). The architectural distinction between university and religious college would in fact not always be easy at this time

in Catholic countries, if it were not for the fact that Jesuit colleges and other seminaries were residential, and universities are not. The type in any case, architecturally speaking, was simply that of the Renaissance palace, used for instance with the same two-storeyed colonnades in the Palazzo Venezia in Rome as early as 1458, the Cancellaria in Rome at the end of the fifteenth century, and in the later sixteenth by Pellegrino Tibaldi in the Archbishop's Palaces of Milan (1570) and Bologna (1575). Whether this new Italian type of university building is derived from such secular sources or rather from the monastic cloister cannot be decided. In any case it is doubtful whether it ought to be called the Italian type; for such square palaces with cloister courts were designed in Spain earlier than in Italy. Alcalá, 3, dates from 1508 and in its present form, given it by R. Gil de Hontañon, from 1543, and Oñate from 1545.

In England large, monumental and unified premises for universities were still unknown at that time and remained unknown until University College, London,



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6, ***The Old Schools Quad at Oxford, the first of the distinguished series of seventeenth century additions to the University, and the last—it was begun in 1610—Gothic-Survival structure there of consequence.***



7

was built in 1827–9. To the fifteenth century buildings of Oxford and Cambridge little was added—nothing at Cambridge, and at Oxford only the ranges which, with the divinity schools, form the Old Schools quadrangle, 6. They date from 1610–*c.*1630 and house meeting rooms, rooms for examinations, etc. After that came Wren's Sheldonian Theatre in 1663–6, the museum for Elias Ashmole's collections in 1679–83, the building for the Clarendon Press in 1711–24, and the building for the overflow of books of the library in 1739–49, which is known as the Radcliffe Camera. Cambridge remained satisfied with the old quadrangle, until Gibbs's Senate House went up in 1722–30.

In the intellectual development of Europe the seventeenth and early eighteenth centuries are the centuries in which experimental science succeeded in establishing itself, as the fifteenth and sixteenth had been the centuries of humanism step by step defeating scholasticism. The architecture of the universities reflects little of these changes, except for the arrival and modification of Italian and Roman forms. Nor did the structure of the universities as such change as one might expect. They remained professional schools, while humanism preached the ideal of universal man, of Count Castiglione's perfect *cortegiano*, or Rabelais's . . . Francis Bacon indeed in his *Of the Proficience and Advancement of Learning* says that the 'dedication of colleges to the use only of professory learning has been prejudicial to states and governments. For hence it proceeds that princes when they have to choose men



Oslo University's Domus Media, 9, completed in 1853 by C. H. Grosch, is one of the purest examples of a neo-classic university (Schinkel corrected the design) but the neo-Classical period's main contribution to University design was picturesque landscaping, applied to a single college, by Wilkins at Downing College, Cambridge, 7, in 1807, and by Thomas Jefferson to a whole university campus, 8, at Charlottesville, Virginia.



9

for business of state find a wonderful dearth of able men around them; because there is no collegiate education designed to the end that men naturally so disposed might give themselves especially to histories, modern languages, books of policy and civil discourse, whereby they might come better prepared and instructed of offices of state.' This 'universality' for which Bacon, himself James I's Lord Chancellor, pleaded became indeed the principle governing the education imparted by Oxford and Cambridge, and 'civil discourse' has ever since played a part in these universities, envied but never seriously emulated by those on the Continent.

'Ever since' ought perhaps to be confined to the time from the seventeenth to the nineteenth century. For although natural science had entered the university in the seventeenth century it did not become a serious competitor of the arts before the nineteenth century. In its various branches of physics, chemistry, engineering and so on, it began to establish its own universities. The Ecole Polytechnique in Paris dates from 1794 as an immediate result of the French Revolution; the Vienna Technische Hochschule followed in 1815, Karlsruhe in 1825, Dresden in 1828, Stuttgart in 1829, Darmstadt in 1836, etc. In other countries, such as Italy, the new needs were satisfied by the universities themselves. England was exceptionally slow, and Oxford and Cambridge slowest. Cambridge whose international reputation is now so closely linked with achievement in science, did not really seriously start building for these new purposes until after 1860. The Cavendish Laboratory was founded in 1874, and between then and now the sites north and south of Downing Street have been filled far too closely and without any consistent plan by buildings for the sciences. An adequate scale was reached only after the Second World War with the Engineering and Chemistry Laboratories, both twentieth century also in their forms, but both sited too closely to the historic core of Cambridge.

The collegiate scale had in fact become so ingrained in any English university planning that congestion was instinctively felt as a virtue—with total neglect of the figures of users of colleges as they had been before the later nineteenth century. Yet as early as 1807 William Wilkins at Cambridge had shown the possibility of a new type of college quadrangle in which the discoveries of English landscape layout of the eighteenth century would be incorporated. Downing College, 7, is the pattern for the American university campus, and what Wilkins had shown for one college, Thomas Jefferson in his University of Virginia at Charlottesville, 8, transferred to the whole university. He called his ideal 'architectural democracy' and the 'academical village.'

The campus has become one element of university planning in the twentieth century, the collegiate precinct for a variety of uses is another, the large block for a single purpose yet another. Their advantages and disadvantages, their interaction, their application with or without architectural sense or refinement is the subject of the pages to follow.

Between 1938 *and* 1956 *the number of full-time students in British Universities rose from* 50,000 *to* 84,000 *and in the next decade it is expected to increase to at least* 106,000. *The accommodation of this increasing student population, and the teaching facilities it will require, represents a building programme running at a rate in excess of* £12,000,000 *a year, and it is essential not only that this bulk of building should be achieved, but also that it should be the right kind of building—the kind of building that makes a university and not just another teaching institution. In the article below, Lionel Brett examines what has gone wrong with our University architecture, and what needs to be done to redress its upset balance.*

2 *today*

'Redbrick is in many ways riddled by pretence. At every level there is a strong temptation to fraud and Lucky Jimmery. The student is tempted to learn his lectures by heart; the lecturer to dish out the text-book; the professor to fiddle the syllabus; the Senate to impress the Mayor and Corporation by putting up vast and pointless buildings; the Mayor and Corporation to be impressed, and the Vice-Chancellor to talk nonsense. In fact, though the response to temptation is not yet so highly organized, the temptation itself is probably stronger than at the older universities. And most of it is caused by a single doubt: is the place a university at all?'

MARY SCRUTTON

At once it becomes necessary to postulate standards, to decide, in other words, what a university ought to look like. And at once we run into the central difficulty that there is no single tradition of university architecture. The Church traditionally gathers the Christian community about its skirts and points its finger to Heaven; the school has its equally magnetic place in the township; the hospital, functional, austere, lies aloof with its back to normal life and its face to the sun. But the University has no conventional visual relationship with town, city or region. In the Western world as a whole, as Dr. Pevsner has shown, it may, as in Italy, be a great block of lecture rooms or laboratories, cliff-like on a narrow street. It may model itself on Oxford and Cambridge, cellular, inward-looking, with bright velvet lawn momentarily glimpsed through the porter's lodge. Or it may lie at ease in the landscape, a true 'cité universitaire' like Charlottesville or Aarhus—adaptations of the English landscape aesthetic to the layout of buildings. For simplicity we shall call these alternatives the great block, the collegiate and the campus traditions.

Notice that what distinguishes these three traditions is not how and where the students are taught, but how and where they live. Thus, in the case of the great block, they all live out, as best they can; the university itself provides teaching and research space, administrative offices, possibly social facilities, but no more. In the collegiate tradition, ideally they all live in, withdrawn and medieval, monks in cells. And around the campus they live in a loose, unfortified academic village, outward-looking rather than inward.

This country has its own variants of these alternatives, each variant having an entirely different relationship with its local community.

The first is the pure university town (as Oxford first and formerly, as Cambridge still, as St. Andrew's, purest of all, as Durham until lately). It is a short list, and if there is a British university tradition, this is it. But like so many British institutions, it hardly exists.

The second is what we may now call the 'Planners' Precinct,' and one could sub-divide these academic enclaves into the urban (Edinburgh, Glasgow, Aberdeen, Dundee, Newcastle, Leeds, Sheffield, Liverpool, Manchester, Cardiff, Bristol) and the suburban (Birmingham, Leicester, Hull, Swansea, Southampton). Here is the great mass, and here the typical Redbrick situation.

The third British type is our version of the campus tradition, something quite new for us, the 'university in a garden' (Nottingham, Exeter, Keele, the new Aberystwyth, the new Reading). These rural pioneers, starting from nothing, have the easiest job in one sense, the hardest in another.

In 1945, faced with their first big expansion problem, universities had to choose between the second and the third of these solutions. Wherever possible they stayed in town, anchored there sometimes by enormous and unsaleable Victorian buildings, sometimes by a great teaching hospital, sometimes by convictions of the moral and social value of being at the centre of things. But some surrendered and moved out, persuaded by physical constriction or by economic arguments of the value of a fresh and verdant start.

To all these categories London is the sole exception. With one-fifth of the national university population, eighteen schools (some as large as provincial universities) and twenty-eight medical schools scattered about the London region, it feels in many of its limbs and extremities the growing pains of its emancipated children, and has at its centre in Bloomsbury an urban redevelopment problem of special difficulty and importance. What we shall say of them applies *a fortiori* to it.

The first thing to say is that there is no unique virtue in any particular relationship of a university with its city or township. Each of our British categories has its value, and the more diversity the better. Here, as in the subtopian jungle, the lifeline is: 'Know what you are and be it.' But we must, at this stage, make one generalization for them all, which is that we have grown in this country to think of a university not as vocational but as a place designed to produce (as far as possible) the Universal Man. This may be etymologically wrong, and it may be increasingly

by Lionel Brett

difficult, but it sticks obstinately at the back of the mind of most dons, however deep and narrow their speciality. It follows that university life cannot and must not be a life of studious isolation. For most students it will be their first, and for some their only, experience of a diverse world remote from family and childhood friends. It must be designed to enhance that experience.

In other words, it matters very much how and where staff and students live.

Of life in a 'university town' most people have a cosy Trollopian picture, embracing peaceful quadrangles, coffee between lectures, comfortable landladies who have lodged generations of students and themselves become a university institution, cheerful camaraderie in ancient pubs, small-hour discussions by dying fires—the background a cobbled town where every other house is a lodging and gowns are as common as raincoats. But in 1955, there were about 15,000 undergraduates at Oxford and Cambridge, less than 5,000 in other ancient universities.

How did the other 62,000 spend their lives?

Three-quarters, we know, slept at home or in digs, a quarter in students' hostels pompously called Halls of Residence. Either way, they were likely to be scattered over acres or square miles of urban or suburban streets. And so, like any other workers, they caught the 8.30, heavily loaded with books and notes, distinguished from other commuters only by tired look and hideous muffler. After a morning of lectures, a queue lunch in a clattering canteen, more lectures or lab. or library work, they were due back in their digs for high tea (more rush-hour travel). On such a day, the long journey back for the film society meeting, the lecture on Henry Moore, the jive session in the Union, hardly seems worth while. Much better read by the fire (bob for the meter?) or when that palls there's always the landlady's telly.

The Hall of Residence is, of course, the only possible answer, and with lodgings saturated and student numbers for ever increasing, the number living in Halls must quickly grow, both relatively and absolutely. But these too tend, for obvious reasons, to be scattered in deepest suburbia. Their most likely setting is the leafy ex-prosperous late Victorian or Edwardian suburb. Here in quiet roads of formerly rich detached houses you will find that one of the gravel drives has a neat notice at the entrance. This informs you that it is the property of the university, is called Atkinson Hall, and is a Hall of Residence for Men (or Women). If you explore further you may come upon a whole covey of them, and then if you refer to a town development plan you find that what almost amounts to a residential precinct is developing —perhaps 3–5 miles from the university precinct. Why? Because in rosier days Sir Percival Atkinson, prominent citizen and generous benefactor, gave this house to the university for this purpose. The university, genuinely grateful, accepted it, built a wing of study bedrooms and installed some plumbing, a couple of wardens and as many students as could reasonably be housed (often about 100). Then an astute bursar, keeping an eye on the surrounding property and realizing that its days were numbered, was able to acquire other similar houses at a reasonable price and repeat the process. He then found that he owned several acres of garden which apart from being a liability to maintain would make an excellent site for a brand new 3-storey, red brick, vaguely Georgian hall.

The result is a university as effectively dispersed and concealed as a wartime corps headquarters. This has every kind of disadvantage: visual obviously; social in that there is no magnet like an Oxford or Cambridge college where small groups (whether living in or out) can meet and talk yet avoid the chill of an out-of-hours lecture room; economic in that kitchens and refectories are extravagant to build and staff if they are too remote to be used for lunch as well as breakfast and supper. Less tangible than these drawbacks is the wrong atmosphere of these lonely suburban mansions. The Oxbridge college is a city building; its walls reflect 'the busy hum of men,' yet exclude it from the green interior where a man working by his window sees other men reading or writing or talking or drinking. Unconsciously as he works he is only partly alone, for all around is a small community and right outside is a large one. No Victorian shrubbery or new-Elizabethan parkland will teach him that lesson.

Compactness is all. This still seems the key lesson for English planners—forever over-compensating for past slums. And if this means building high we must do it. A dozen rooms on each of twenty floors and a JCR on the roof—that is the atmosphere for a country-

born student of engineering or medicine with a scholarship to Liverpool or Glasgow. If cost is the obstacle, let money be saved on common rooms, reading rooms, ping-pong rooms, music rooms, quiet rooms—'amenities' British students may have grown to expect from the superfluity of public rooms in Edwardian halls of residence, but which are certainly over-plugged in the Murray Report (1948). The great privilege of university life is a room of one's own. However tiny, it can hold half-a-dozen talkers. For the minority who depend on the 'amenities' the Students' Union is surely the place, and the more compact the university precinct the closer-at-hand it can be.

For this digression into domesticity we make no apology. Administrative buildings are offices, faculty buildings are lecture halls, labs and libraries, students' union and common room buildings are of all shades (depending on their wealth) between club and canteen. These building types, each with its own typical expression, are familiar ground to the architect. But what makes a set of them into a University (and not a technical institute) is the way they are lived in day and night. And the way they are lived in depends on the way they are arranged.

This is the crux. Whatever kind of university one thinks of—whether the continental great block, the collegiate or the campus, whether urban, suburban or isolated in the landscape, whether ivory tower or town-within-a-town—the vital common factor is a sense of community. It can be done in a dozen ways. Aarhus does it in a quiet pastoral setting, Mexico in a vividly urban one. Aix-en-Provence, Durham, Virginia, Cambridge, St. Andrews, are the focus of small towns, Oxford, Harvard, Bologna are the heart of considerable cities. There is no difficulty about it. Universities don't need industry or marshalling yards, back gardens or allotments; universities don't generate their own motor traffic or have to accommodate masses of other people's. None of these disintegrators of civilized urban living have to be grappled with. Universities have the priceless advantage, for the planner, of pedestrian circulation, self-containment, strictly limited size, and buildings of high quality and varied function and outline. Yet of our universities only the four we have mentioned can honestly be said to have made or retained anything, so far, of these advantages.

It is not difficult to list the snags, the excuses, the lost opportunities. Oxford has its industrial elephantiasis and consequent traffic problem; London has its dispersion and formidable site costs; Liverpool, slum-ridden, has to house a large displaced population before it can rebuild; Edinburgh has the George Square problem, Glasgow a chaotic existing layout; Aberdeen, Durham and Cardiff are split in two; Leeds, Hull, Leicester and others are committed to halls of residence miles away from their faculty buildings. Some, like Birmingham, Glasgow, Liverpool, Manchester, have formidably immutable and functionally unsuitable Victorian nuclei. Others, like Keele and Southampton, are still making do with huts and sheds. All presumably have less money than they would like and a very much faster expansion programme than they would have chosen. In circumstances like these it is not surprising that lip-service (one can hardly expect more in a nation dedicated to 'natural' growth) is paid to planning. And for this, on the principle Better Late than Never, we must be grateful. If we exclude Oxford and Cambridge, all but four or five British universities now possess (though some will not reveal) a Master Plan. But often these plans are two-dimensional, at any rate in presentation (Newcastle, Glasgow, Manchester). Often they cover the university precinct only, or part of it (Edinburgh, Leeds, Southampton) and do not picture the university as a living whole. Many are 'under revision' to cope with new expansion targets (Newcastle, Sheffield, Reading). Many are severely axial and inflexible and are already regretting it, or soon will (Manchester, Hull, Swansea, Aberystwyth). Saddest of all are the 'fresh start' universities like Nottingham, Swansea, Aberystwyth, Exeter and Keele, any one of which, within its limitations, could have been an English (or Welsh) Aarhus. But each, for one reason or another, got off on the wrong foot. Exeter and Keele may yet bring order out of chaos, and great things will be expected of Reading, freshest starter of all. But the planning achievement to date is unspeakably dim and dreary.

We have already indicated by what criteria we make this criticism. But in fairness to bursars and building committees we must add that we are not surprised at their dislike of Master Plans. Who, having loved Oxford and Cambridge, would not pursue the mirage of organic growth rather than the boredom and pomposity of the sort of planning you could expect between the wars? Nobody in those days, or nobody who laid out university buildings, seems to have realized that in creating a town (of which universities are a kind) what matters a great deal more than the buildings themselves are the spaces between them. Neither the dull axiality of fag-end classicism nor the post-war loose scatter of buildings in parkland are likely to produce spaces of any interest. The former, moreover, is hopelessly inflexible in face of technical changes. The astonishing thing about these aberrations is that they were pursued in the full knowledge of the uniquely lovely growth of the Oxford and Cambridge Colleges, where space has been added to space with the logic yet the freedom of a game of dominoes. What relief to see collegiate planning principles reborn in the latest projects for Edinburgh, Southampton and Cambridge.

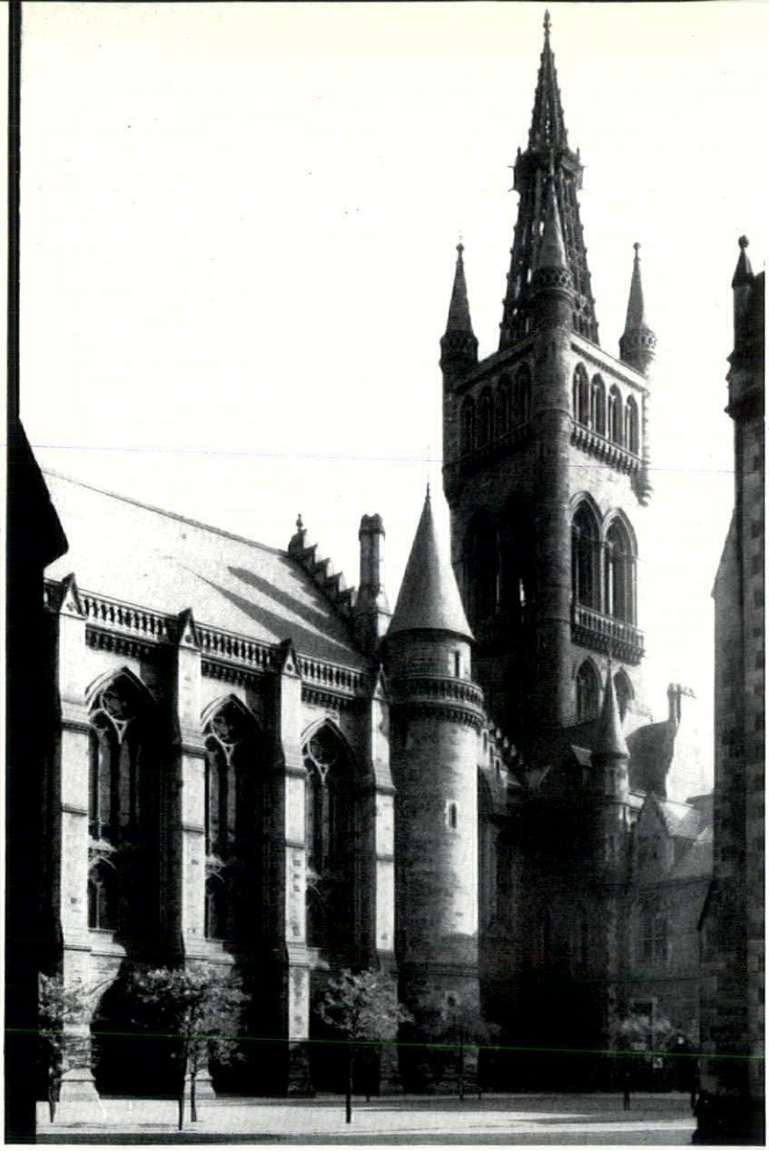
To say that buildings matter less than the spaces between them is not, we hope, to say that they do not matter at all. Look at Berkeley Square. A university which has taken the pains to commission a sensitive and imaginative 3-dimensional plan for its development will not wish it realized in second rate architecture. Yet here, too, the record is dismal. Making every allowance for the sour view each generation takes of the one before, it seems impossible to believe that anybody will claim that the period 1900 to 1935, when all but our most senior provincial universities made their first essays in building, was not one of the most mean and vulgar (if one can be both) in British architecture. If we list the stylistic sequence (with typical but never unique examples) we can cover a sad story quickly and avoid the embarrassment of comment.

[*continued on page* 251

The post-war university buildings that appear below are the monumental record of the failure of nerve in academic patronage, envelopes of red brick and stone, enwrapping an entirely vacuous concept of who, what and where a university is. On the pages that follow is an analysis of the main types of university planning—the empty diagrams in which this vacuous concept will be perpetuated unless radical action is taken soon, and the more humane and adaptable approaches that promise an integrated concept of a university and its buildings.

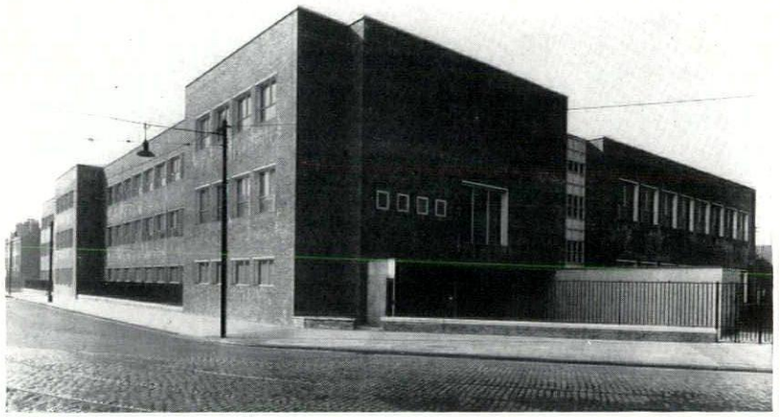
KEY 1, new Unions Building, Manchester. 2, Men's hall of residence, Bangor. 3, Men's hall of residence Stephenson Hall, University of Sheffield. 4, Arts building extension Manchester University. 5, Conference Hall, University College of North Staffordshire. 6, Electrical Engineering building, Manchester University. 7, Engineering building, University of Sheffield. 8, Teaching building, University College of North Staffordshire. 9, Man Made Fibres building, Leeds. 10, School of Architecture, Manchester. 11, Chemistry building, Sheffield. 12, University House, Leeds.





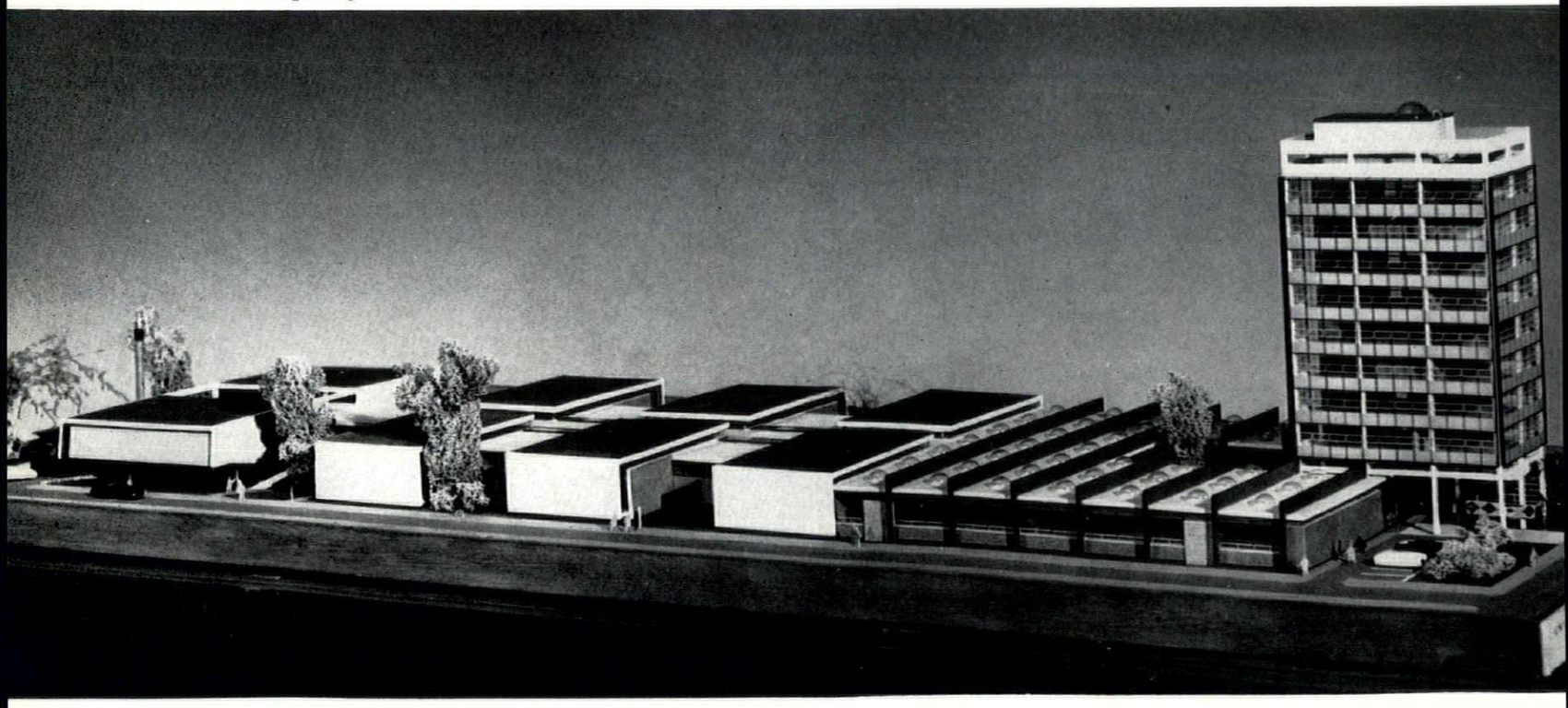
13 *convinced victorian*

The architectural setting in which most of the growing student population will pursue their studies, outside the ancient foundations of the Middle Ages, will consist of two—or, with luck, three—of the ingredients set out on this page: Convinced Victorian, like Gilbert Scott's Bute Hall at Glasgow, 13, which did at least have convictions about what a University should look like; Academic Barracks, like the Inorganic Chemistry Building at Liverpool, which lacks any ascertainable convictions at all, 14, and—with luck—Sane Contemporary, like Basil Spence's proposed Physics Group, also at Liverpool, 15, which once again reveals convictions about the shape and aspect of a University.

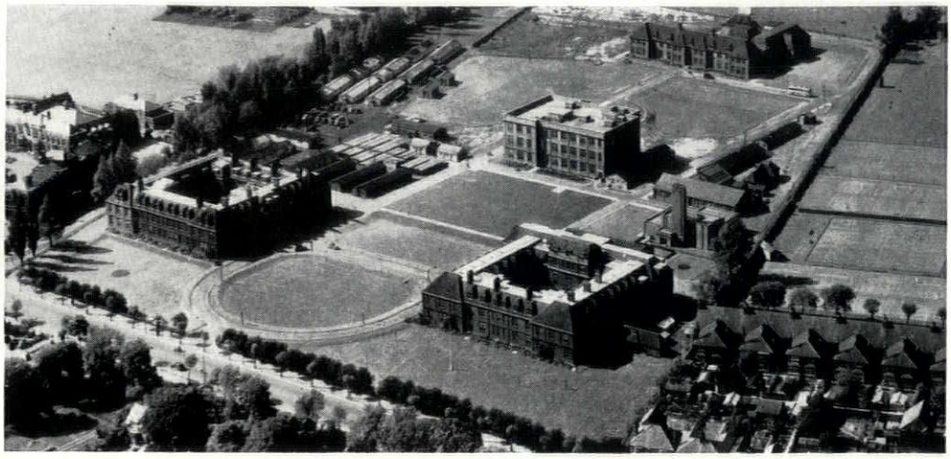


14 *academic barracks*

15 *sane contemporary*



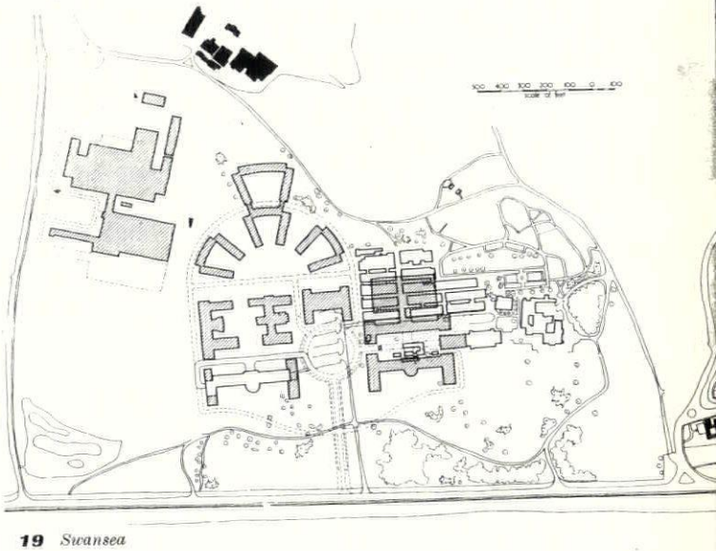
University plans fall into recognisable types, some of which make possible the development of a true university community, while others do not. The five main types—axial, isolationist, vertebrate, cellular and reintegrated—are examined on the pages that follow, together with a note on the use and abuse of the landscape.



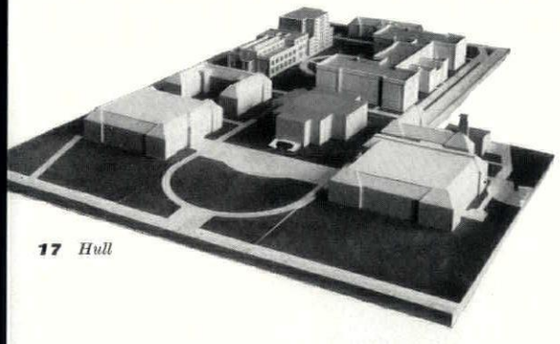
16 *Hull*

axial

Axial planning, which is fairly typical of the smaller universities, may offer paper elegancies of plan, but restricts organic growth, and imposes ridiculous disciplines. At Hull, 16, the spaces in the plan are apparently to be blocked in axially, as the model shows, 17, but when all the spaces have been taken up, further expansion can only wreck the paper pattern, while in the meantime, partial taking-up of spaces only results in visual solecisms like 18, lopsided across the main axis. The axial planning of Swansea, 19, ignores and spoils a fine natural landscape, and imposes gratuitous extensions to the buildings (on these and other plans, black indicates existing structures; white, structures at present building, and cross-hatched stands for future proposals), while at Manchester, 20, axial planning will introduce excessive open spaces into a plan already burst wide open by traffic arteries.

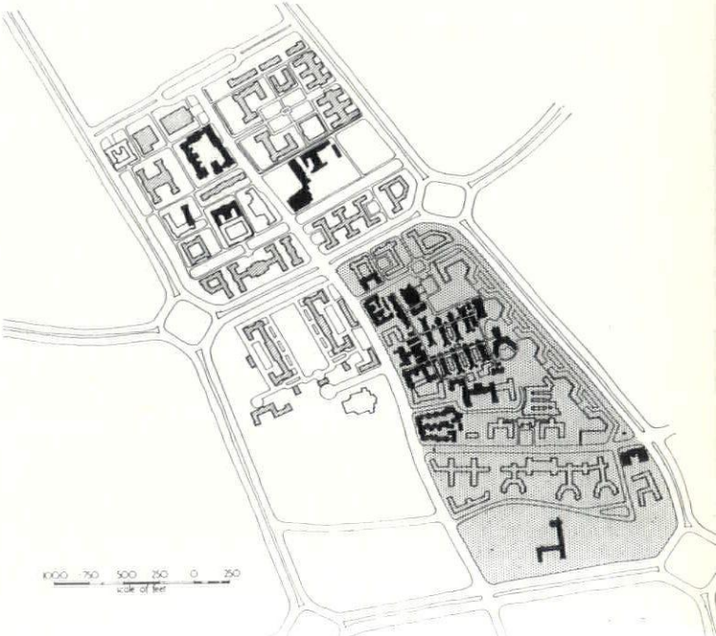


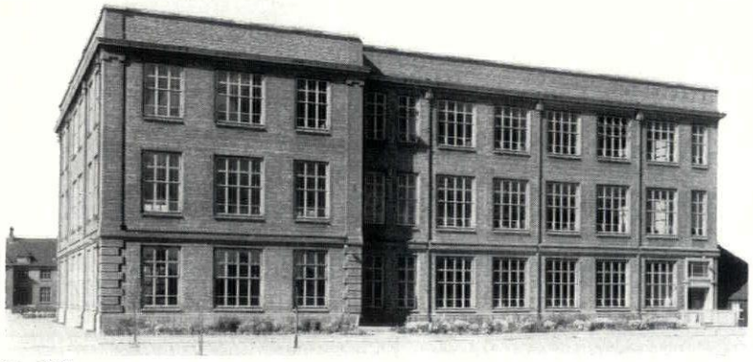
19 *Swansea*



17 *Hull*

20 *Manchester*

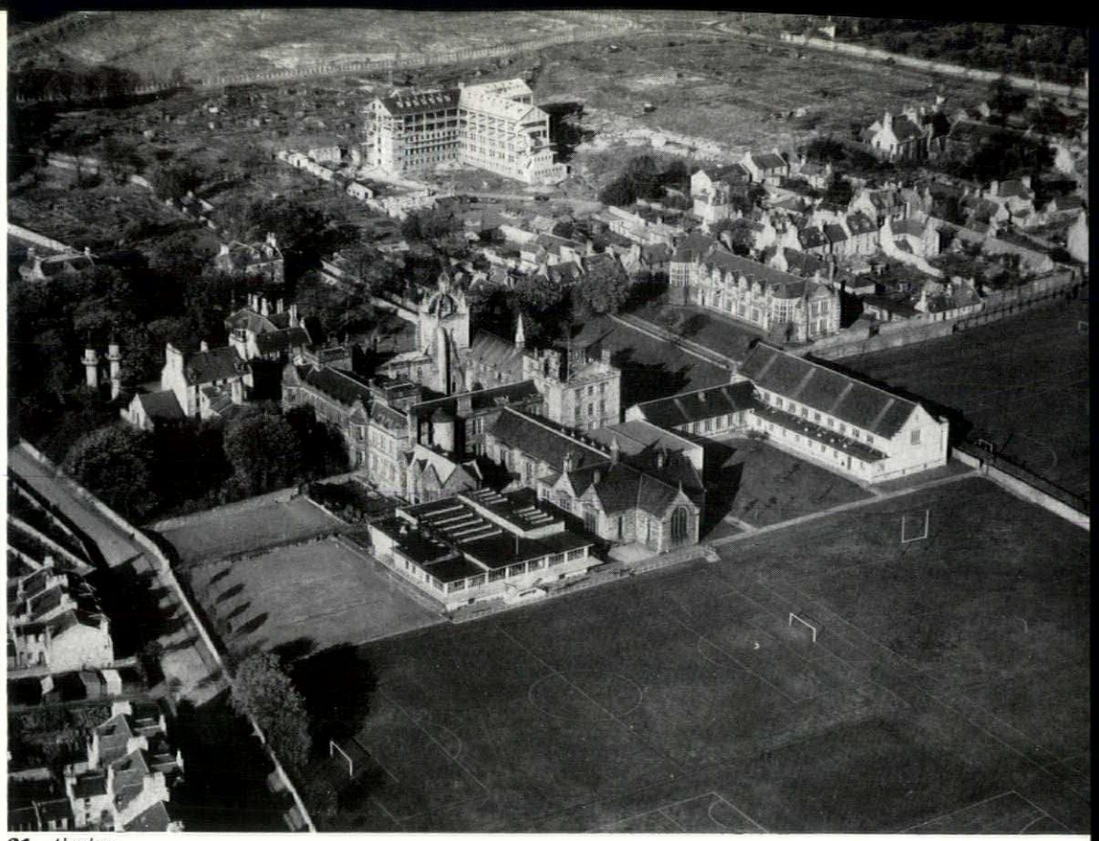




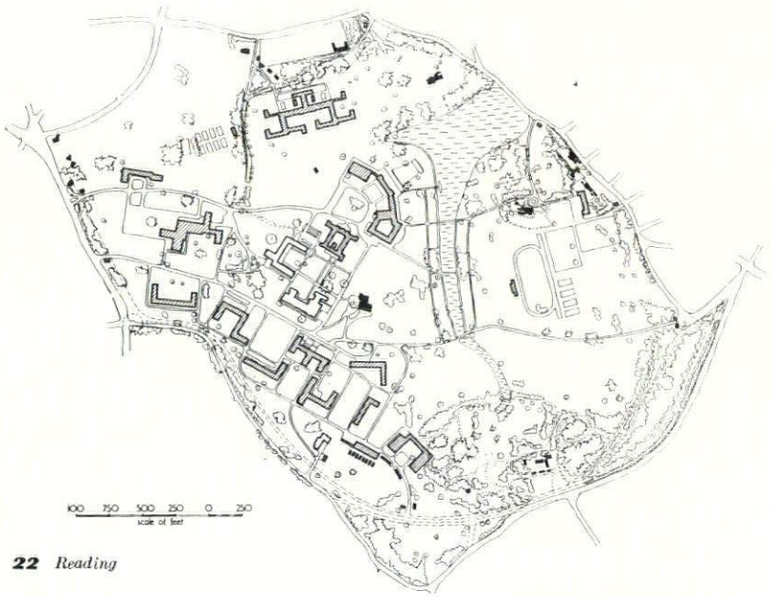
18 *Hull*

isolationist

At the opposite pole to the axial approach to university design, is that which considers and sites each building in isolation, without reference to its effect on the whole, or—in some cases—the landscape setting. At King's College, Aberdeen, 21, one ill-considered addition crushes against older buildings in the foreground, while the new Chemistry building is lost in the allotments beyond. Reading, 22, is also a scatter-plan scheme, with built and proposed buildings spread across a landscape park in disorder that is not redeemed by sporadic axiality. Keele (the University College of North Staffordshire) is the worst offender on this score, however, with its buildings distributed seemingly at random, 24, and dons' semi-dets. flung out into the surrounding countryside at barely New Town densities, 23. Fortunately there is hope of a new policy aimed to redress some of these wrongs.



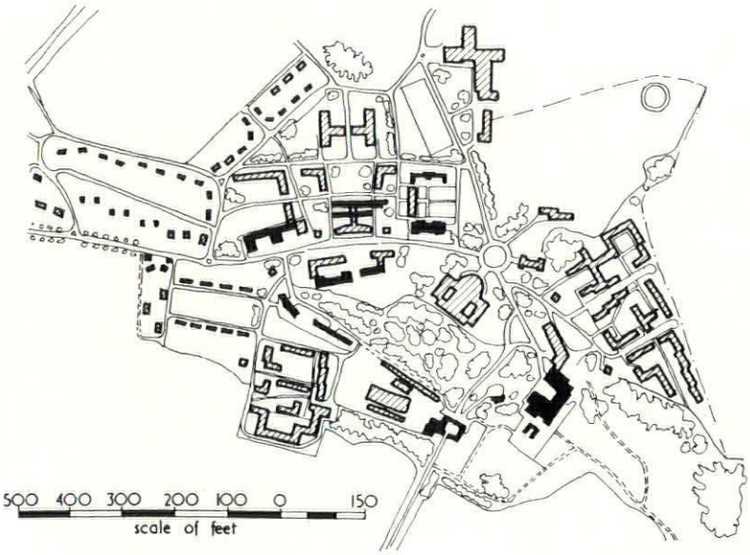
21 *Aberdeen*



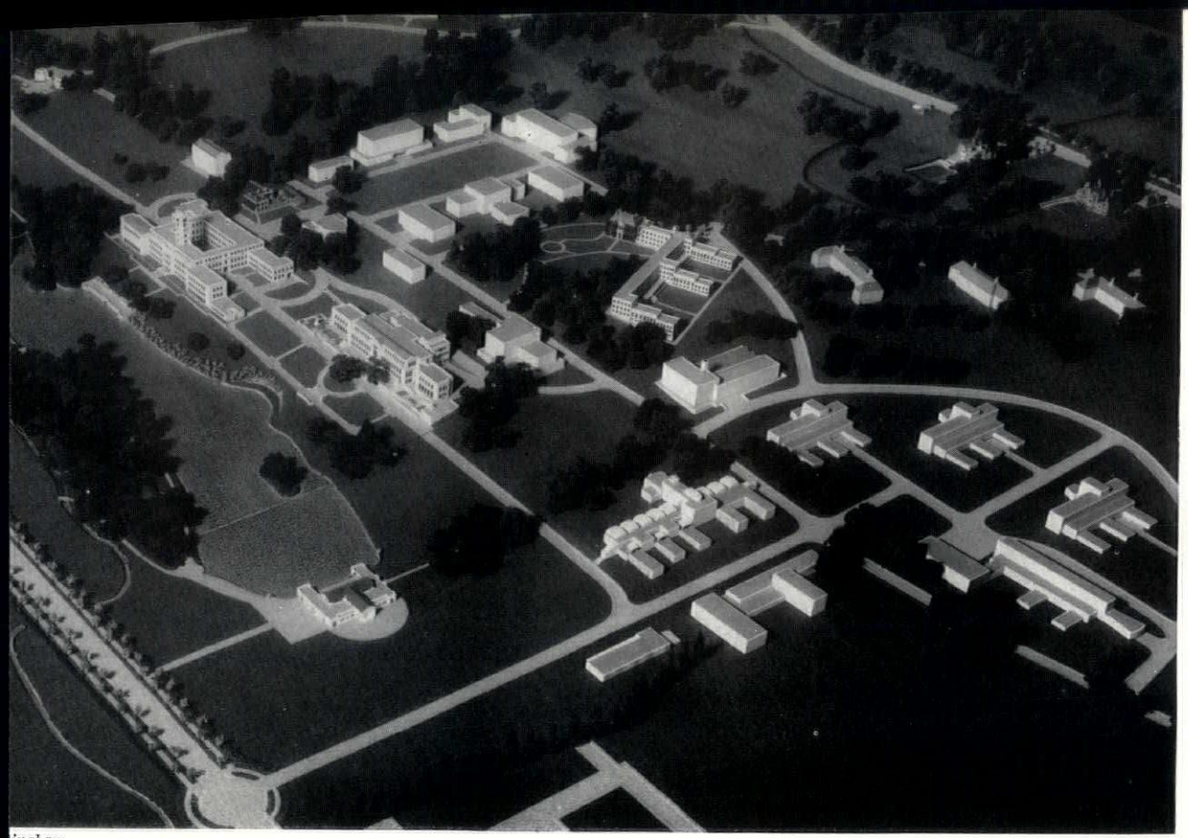
22 *Reading*



23 *Keele (North Staffordshire*



24 *Keele*



ingham

Nottingham is a campus-plan university, the type always most prone to become isolationist, as the scattered extensions in 25 reveal. However, the central area, behind the existing buildings, is to be drastically tightened up and re-landscaped, to the designs of G. A. Jellicoe, 26, though, unfortunately, the rest of the scheme seems likely to be left in its present scattered state.



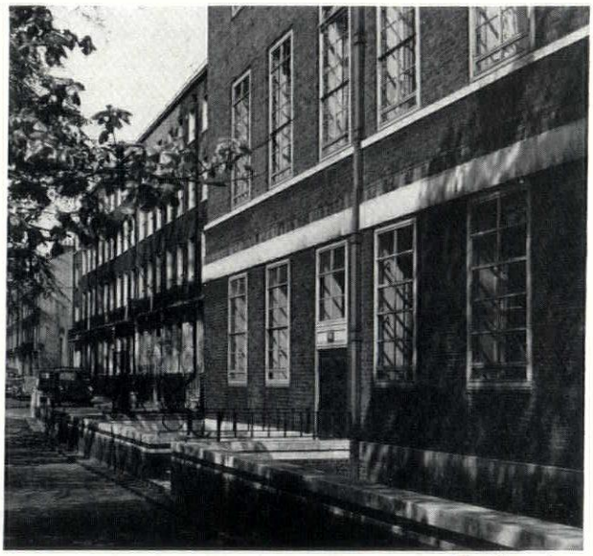
26 *Nottingham*

vertebrate

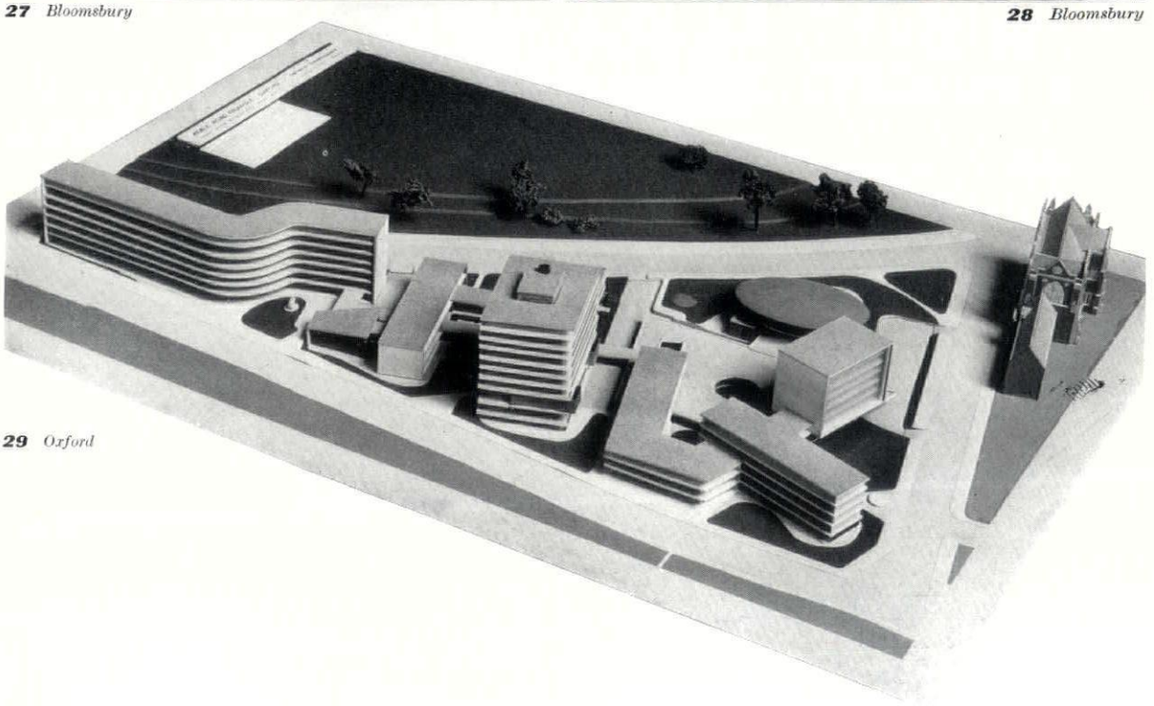
Buildings distributed along, or connected to, a continuous spine, like beads on a string, may be a suitable plan-form for some types of institution, but not for a university. London's red brick superblocks, 27, 28, underline this basic unsuitability by their manifest impropriety of scale in so delicately adjusted a district as Bloomsbury—they destroy a masterpiece of town-planning without creating a university in its stead. Basil Ward's proposals for the Keble Triangle, Oxford, 29, though praiseworthily bold in idiom for Oxford, extend impending sprawl by the vertebrate layout, whereas what is urgently needed is for the University to be folded back on itself more.



27 *Bloomsbury*



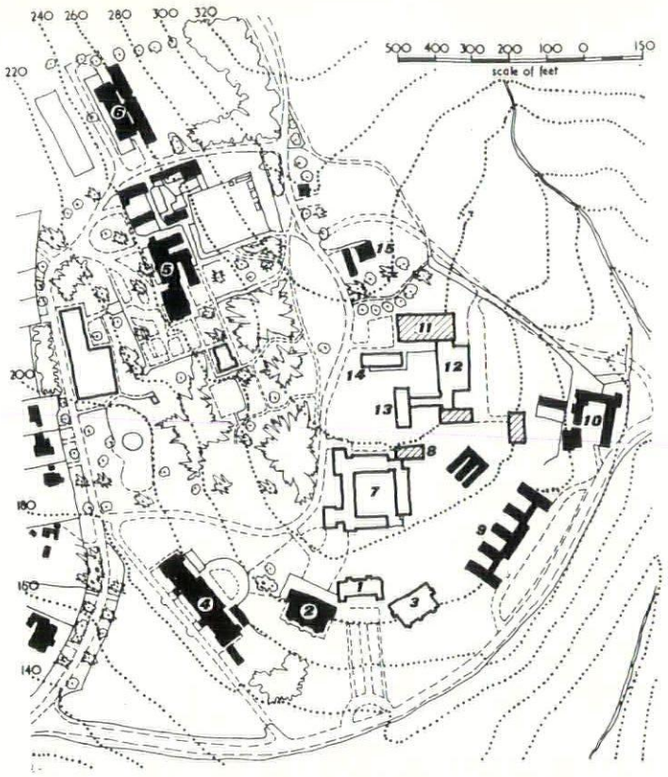
28 *Bloomsbury*



29 *Oxford*

cellular

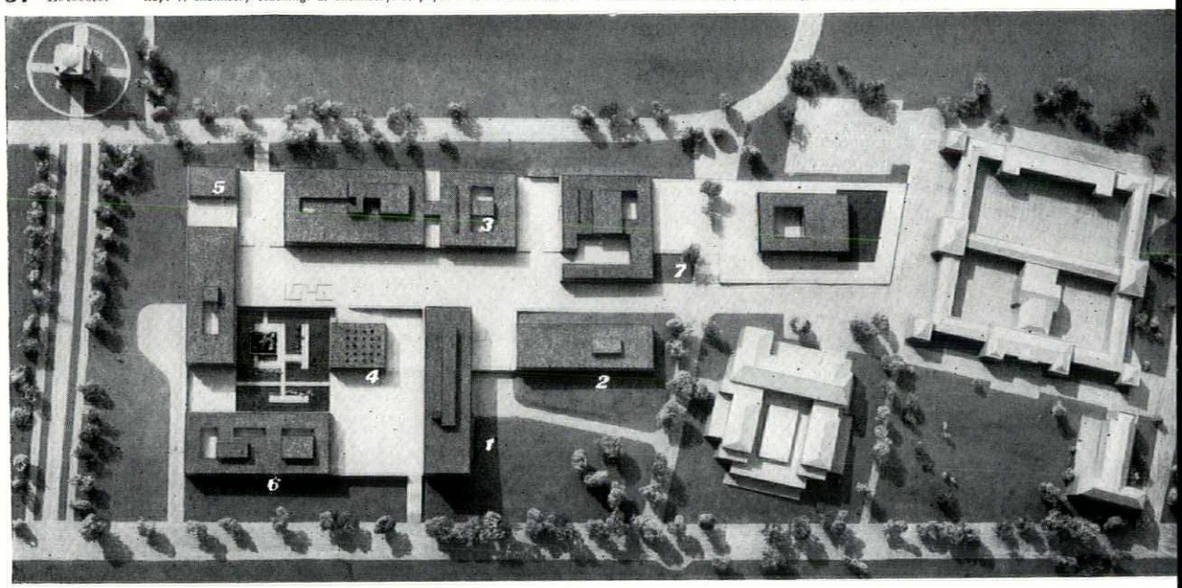
Cellular planning, around quadrangles and courts, is firmly established in the English collegiate tradition and offers, in addition, a technique of piecemeal extension that does not involve a collapse of University scale or the sense of enclosure, nor the commission of solecisms such as 18 (p. 245). Sir William Holford's infill proposals for Exeter, 30, create a university townscape without destroying the qualities of the existing landscape. At Leicester, Sir Leslie Martin's scheme combines an overall Miesian formality, 31, (without the restrictions imposed by axial symmetry) with a cellular feeling created partly by the actual courtyards, and partly by the interrelationships of the blocks themselves. Sir Hugh Casson's layout of the Arts buildings at Cambridge, though different in detail and planning-discipline, 32 and 33, also creates a kind of continuous inner courtyard, with a strong sense of enclosure and sympathetic scale, enlivened by carefully controlled views outwards.



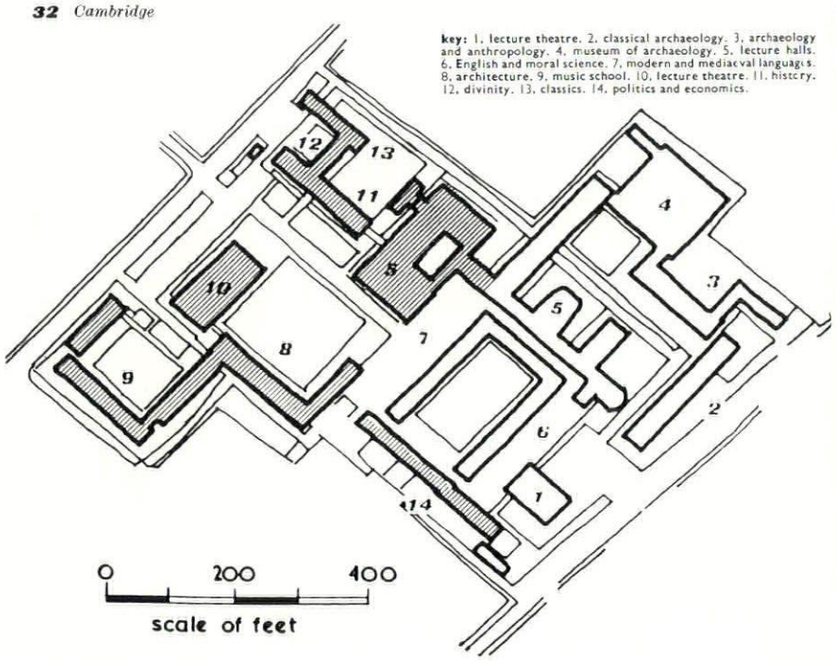
30 *Exeter*

key: 1, chapel. 2, Roborough library. 3, library extension. 4, Washington Singer building. 5, Reed Hall. 6, Mardon Hall. 7, arts building. 8, arts building extension. 9, Hatherly laboratories. 10, Streatham Hall farm. 11, hall. 12, refectory. 13, union building. 14, administration. 15, squash court.

31 *Leicester* **key:** 1, chemistry teaching. 2, chemistry. 3, physics. 4, lecture theatre. 5, mathematics. 6, botany and zoology. 7, tutorial and research.

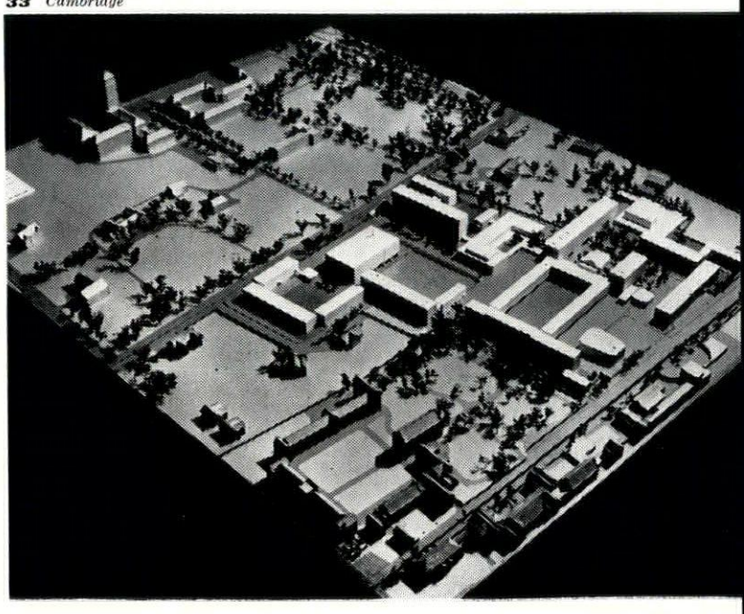


32 *Cambridge*



key: 1, lecture theatre. 2, classical archaeology. 3, archaeology and anthropology. 4, museum of archaeology. 5, lecture halls. 6, English and moral science. 7, modern and mediaeval languages. 8, architecture. 9, music school. 10, lecture theatre. 11, history. 12, divinity. 13, classics. 14, politics and economics.

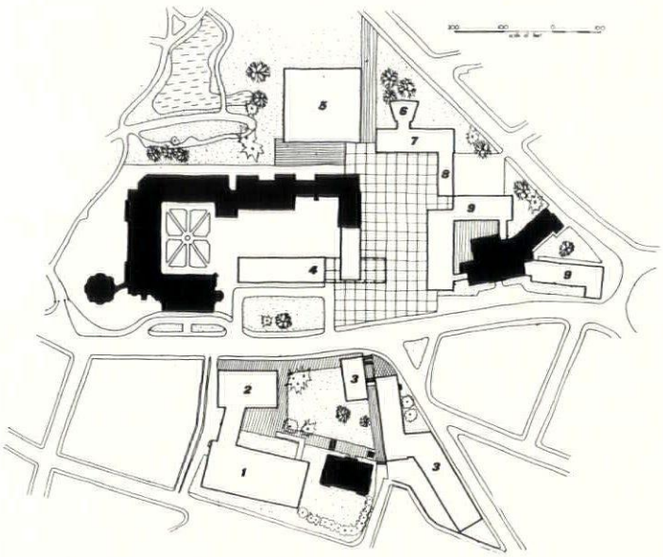
33 *Cambridge*



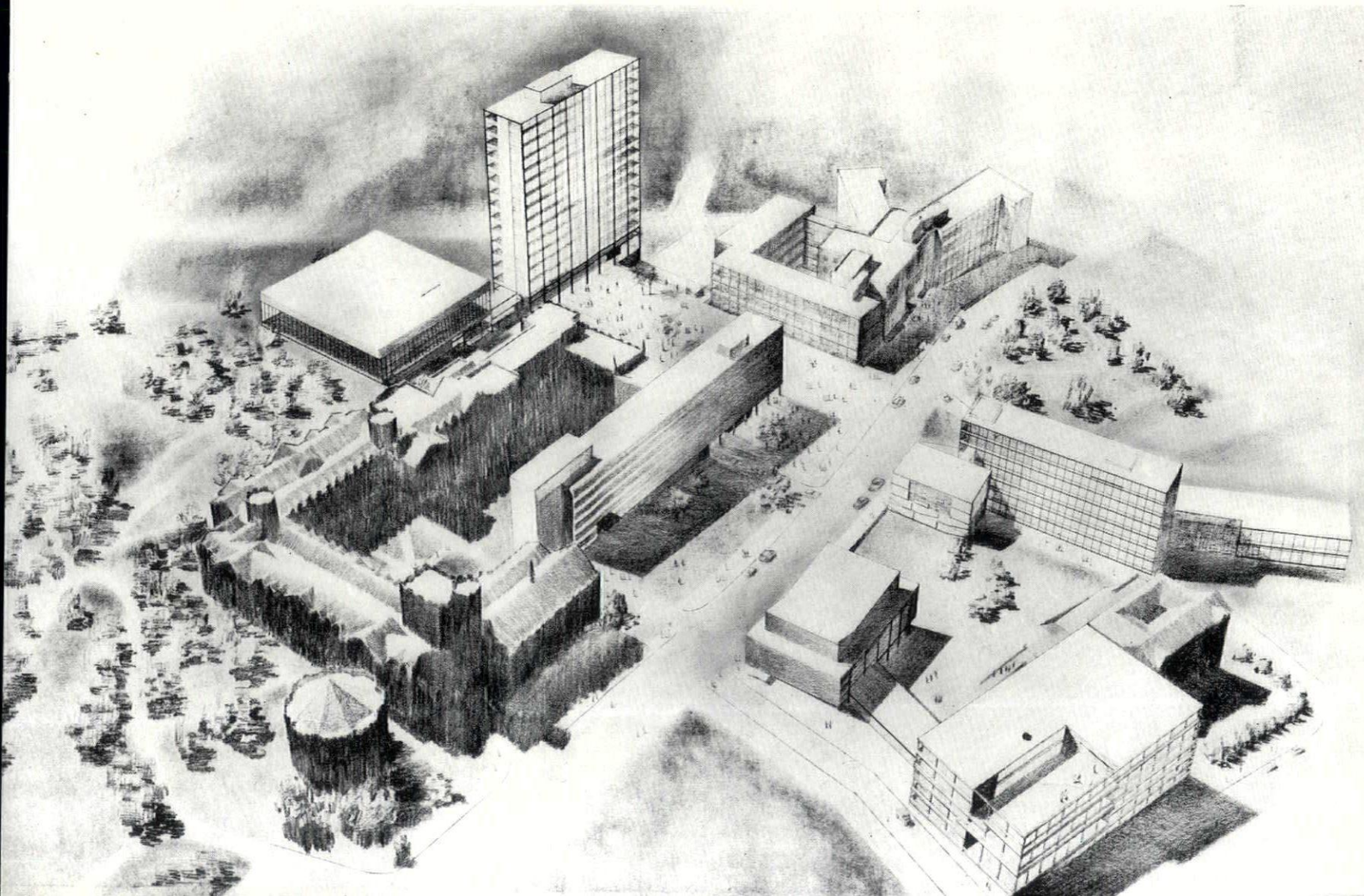
reintegrated

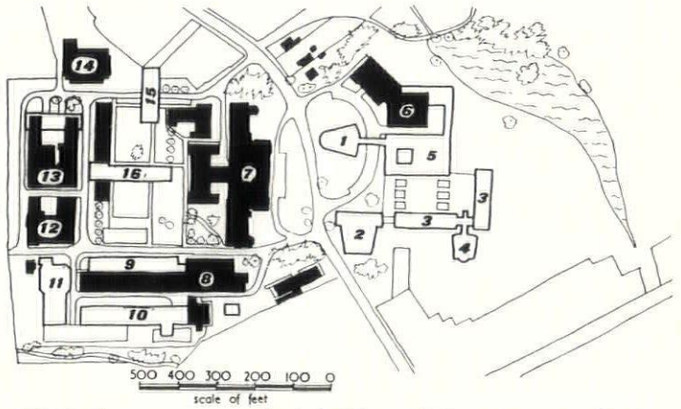
35 *Sheffield*

key: 1, union and refectories. 2, theatre. 3, physics and mathematics. 4, botany, zoology and genetics. 5, library. 5, lecture theatre. 7, arts and architecture. 8, boiler room. 9, chemistry.



36 *Sheffield*





34 *Southampton*

key: 1, chapel. 2, great hall. 3, arts. 4, amphitheatre. 5, senior common room. 6, refectory and kitchen. 7, main building and library. 8, workshops. 9, engineering. 10, aeronautics. 11, tower. 12, geology. 13, chemistry. 14, physics. 15, physics extension. 16, economics.

Extension by cellular or courtyard plans, though it contains all the basic qualities needed in university building, may still load the balance of a university so far away from its original fulcrum that equilibrium may need to be consciously re-established. At Southampton, 34, and see also p. 234, Basil Spence has provided a strong vertical accent with the tower at the end of the engineering blocks, which packs the visual space back onto itself at a point where it might have fallen open; and at Sheffield, 35, the tall block, answering the red-brick Gothic towers of the older buildings, enables Gollins, Melvin and Ward to reintegrate a development that might otherwise have been in danger of spilling away down the very steep slope in the background of 36.

landscape

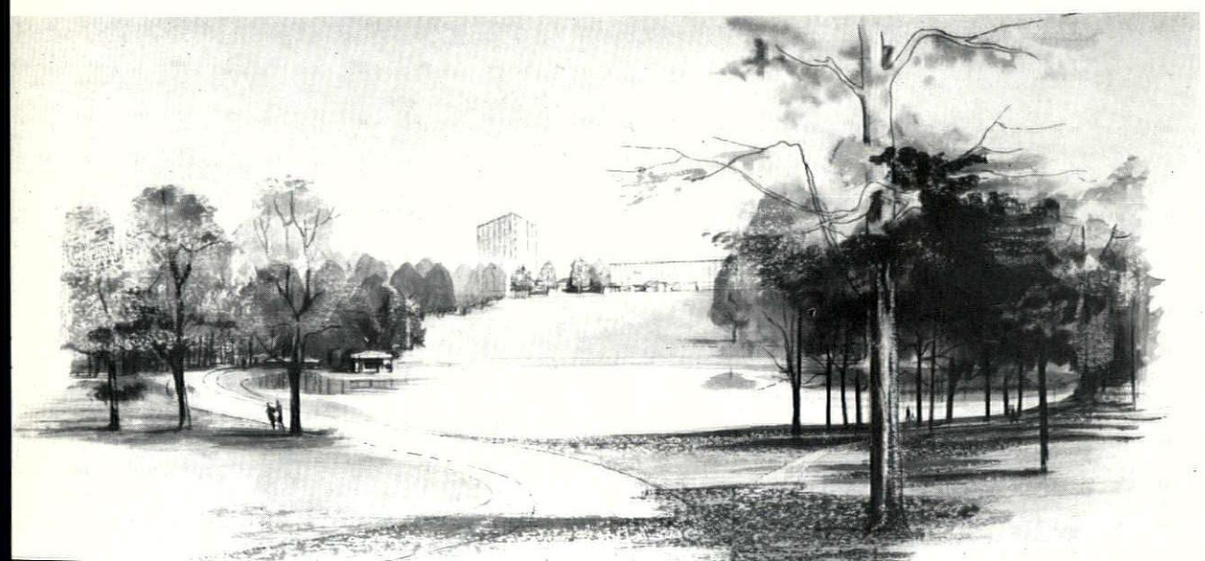


37 *Aarhus, Denmark*



38 *Swansea*

In any university-building programme involving more than alterations to existing buildings, landscaping will be a major feature of the design, and in campus plans it is the dominant feature — its use or misuse can make or mar the whole design. At its best, as at Aarhus, 37, the imaginative relationship of buildings, land-form and planting can produce results of breath-taking drama. At its worst, as at Swansea, 38, where someone seems to have hoped that nature would cover up the weak spots in an uncompleted axial plan (cf. 19, p. 245), there is merely an academic subtopia of sprawling buildings amid the ruination of a handsome landscape. At its best the relationship of landscape to buildings should not be as a disguise but a foil, as at Aarhus, or as it appears in Sir Hugh Casson's tentative proposals for residential development for Birmingham University, 39, where the traditional picturesque relationship of a low building, a lawn, a lake, and trees, is augmented and strengthened by the newer accent of a tall block rising dramatically clear of the planting.



39 *Birmingham*

continued from page 242]

Convinced Victorian	Glasgow, Manchester
Edwardian eclectic	Birmingham
Neo-Cotswold	Oxford, Cambridge, Bristol
Banker's Georgian	Nottingham, Leeds
Deflowered Georgian	*passim*
Bullnosed modernistic (horizontal bars)	Glasgow
Bullnosed Cotswold	Oxford*
Odeon	Bangor, Swansea
Scientific barracks	Manchester
Sane contemporary scholarly	Liverpool
new town	Keele, Wye College
Miesian	Sheffield

When performance is disappointing one can blame, if one wishes, either the person who did the job or the person who gave it to him. But at a deeper level one will be wrong either way, for what is really to blame is the culture they both represent. University building committees of the last fifty years, looking out on an architectural world in chaos, with insignificant little parties emerging into momentary limelight as they do in revolutionary times, generally did one of two things. They plumped for 'the devil they knew,' or they played for 'safety' by appointing one of the leading lights of the profession. The results are plain for all to see. For there is no safety, and there is no short cut to success, in the arduous business of patronage, which in every age has on'y been effective'y discharged by people who were prepared to devote a great deal of time to the study of the art they served.

That this never even occurred to dons and governors we must attribute, not to some peculiar blindness in them, but to the Victorian aesthetic they inherited. The Achilles' heel of the Victorian artist was his total inability to comprehend the industrial civilization around him. Isolated on his pedestal or in his garret, dressed in his peculiar uniform, he soon acquired the craftsman's myopic eyesight and complete obliviousness of the total scene. The utter indifference, sometimes masterly, more often boorish, of the Victorian building to its Georgian setting is well-known, but it is not always realized how deeply this indifference cut into British culture. All the Redbrick (or Oxbridge) solecisms, the fiddling stylism of individual buildings and their irrational siting, the dreary mediocrity of such 'formal' layouts as were produced, the meaninglessness of the intervening spaces, the neglect of the all-embracing role of the landscapist and his abuse as a kind of confectioner—all can be traced to what had become a national inability to see the wood for the trees.

What had to be done, and what was done by the great pioneers of the nineteen hundreds, Lethaby, Geddes, Gropius, Le Corbusier, Mumford, was to restore to the designer his synoptic vision and thus re-equip him for his old role at the centre of civilization. Now that we have in Britain a new generation of architects and planners trained in their tradition, cultural alibis no longer apply, and the ball is in the court of patronage. And now that the old patrons are gone, it is impossible to exaggerate the responsibilities and opportunities of the new ones.

We can end on a note of hope. Achievement in the sense of completed buildings of first-rate quality is meagre almost to vanishing point. But there are better things on the drawing-boards of better architects, evidence that in some universities at any rate hard thinking has issued in brave and wise decisions. May their number increase!

* Subject for further research: Oxford's terror of a sharp arris.

acknowledgement

We have been generously and often courageously helped by vice-chancellors, university officials, planning officers, architects and others connected with every university in England, Scotland and Wales. We cannot name them all, but we hope that they will feel that their kindness, even if they disagree with our conclusions, has contributed to the search for a better environment.


DETUR DIGNIORI
BOULANGERIE
31
BOULANGERIE PAT
GUNMAKERS
COLE & SON
ORIENTALE

Nicolete Gray

3D

Architecture being an art of volumes and spaces, lettering applied to it should have volume, creating real or illusionistic space. Nicolete Gray here considers the principles and problems of three-dimensional lettering, and the photomontage opposite illustrates some of its possibilities: top, square-cut and incised; upper centre, raised and perspectived; lower centre, incised, radiused and gilt; lower left, painted perspective shaded; lower right, free-standing with depth equal to thickness of strokes. Letter and fascia materials and techniques on the market are surveyed by John Sharp on pages 281-6.

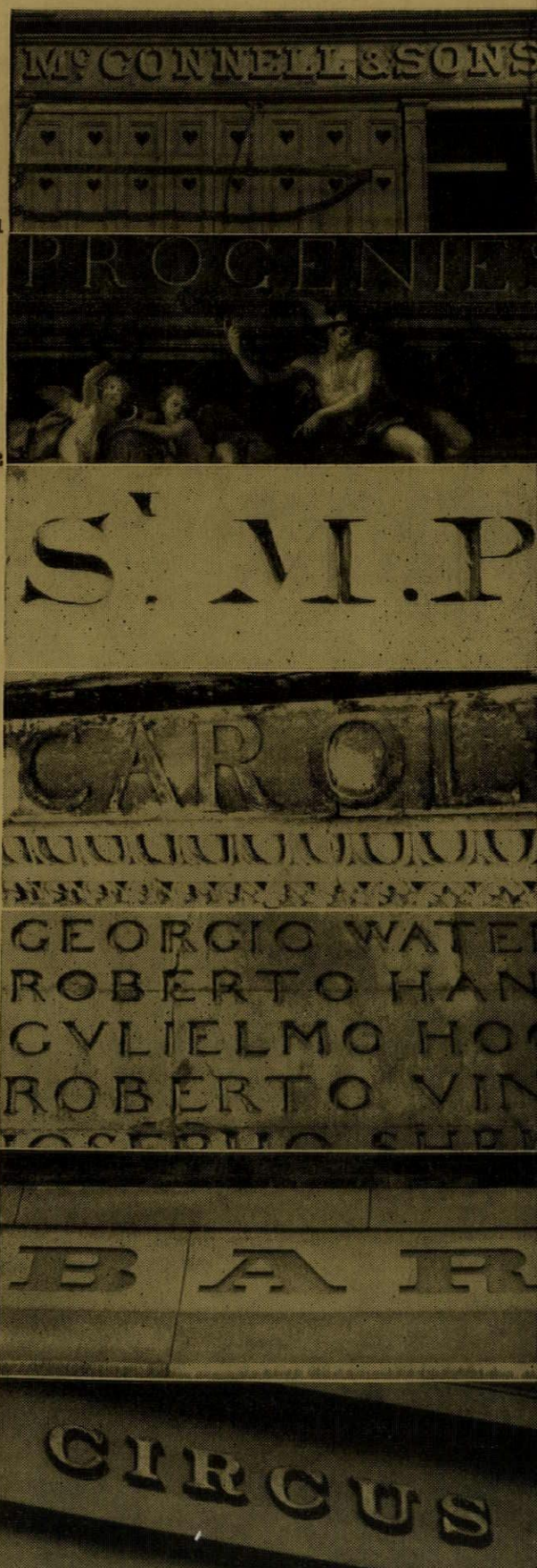
ARCHITECTURAL LETTERING IN RELIEF

If architecture is concerned with solid materials and design in three dimensions, so is architectural lettering. And it needs to be designed in these terms. Much of the best new lettering which is going up is two dimensional in conception to which a third dimension is an extraneous afterthought. The results are frequently passable, often stylish, but never really good; never worked out in all relationships as type design has been worked-out, so that it is sometimes superlatively good. And, indeed, that is what is to be expected. If architectural lettering is to be really good it needs its own designers starting from its own problems.

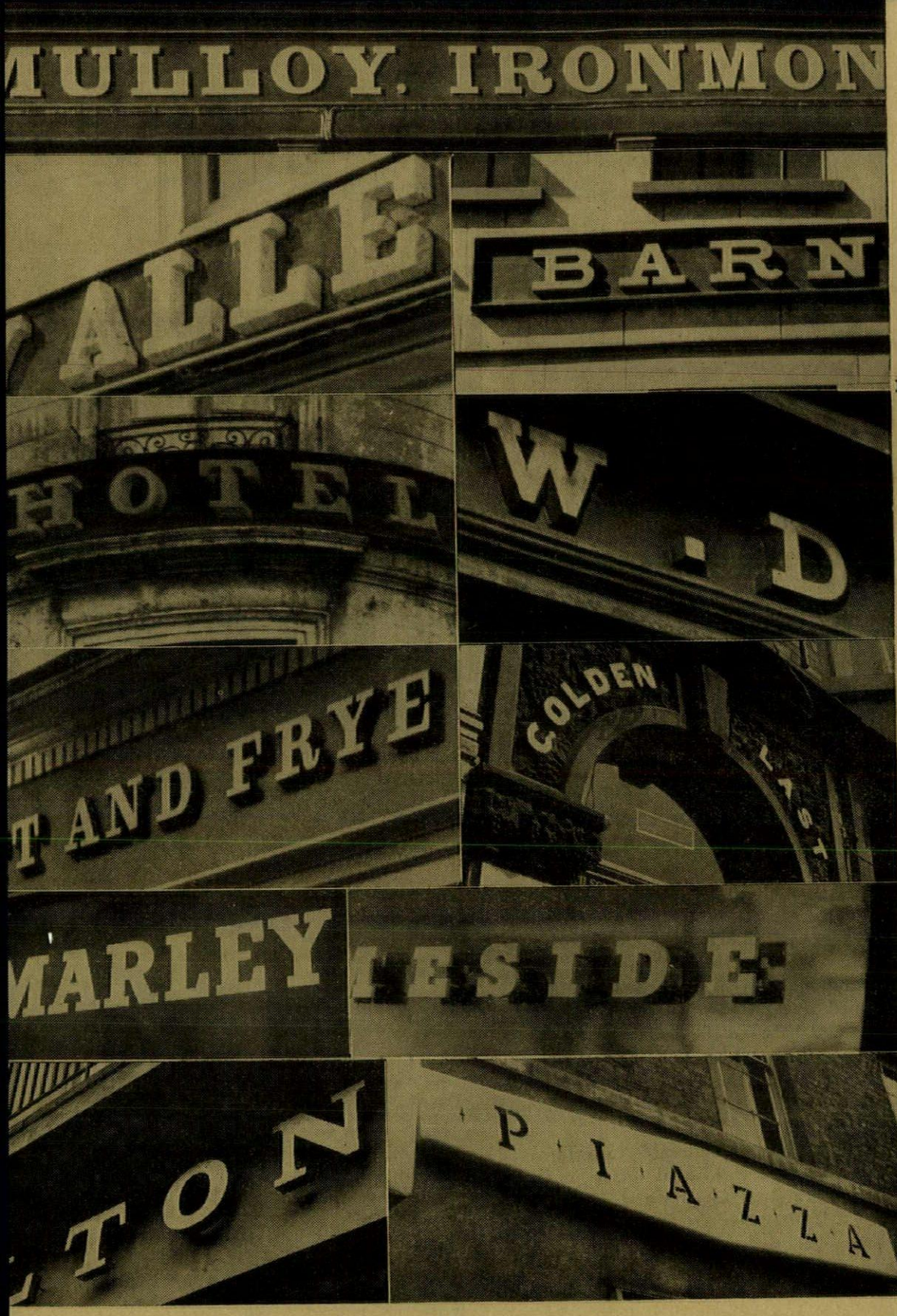
What are those problems? It is not simply a question of choosing the measurement of an extra dimension; indeed there need not be an extra dimension at all. The sign-painter, who is normally as a matter of course an architectural letterer, has a very strong tradition of illusionist shaded lettering, surely based not only on pleasure in the complication of its execution, but on a sound instinct that to throw his forms into relief is to put them into relation with their setting, 1. One has only to imagine 'Cole and Son', facing page, without its shadow to realize how important that shadow is; it has also been thought of in terms of colour and paint-texture.

When the third dimension is actually there the question of section immediately arises. Then there is that of the interrelation of depth, height and weight. The last factor is not, of course, normally a constant (though here one sees a reason for preferring the simplicity of an even-line sans or Egyptian) traditionally line-width is shaded thick and thin. Thirdly, there is the relation between the letter and its background, shall it protrude or recede? How far is it to be differentiated from surrounding detail? If it is free-standing or detached there is the space between the letters and between them and their background to be considered. Finally, since it is three-dimensional, it is shadow-casting, and there is this variable also to be taken into account.

There has been considerable experiment with the three-dimensional letter in the past; yet we seem to ignore it. We have turned for guidance either to type or to the Romans, without noticing that their grand architectural formula was a two-dimensional leaded letter, actually I suppose a design in colour and texture, now destroyed: while we fail to notice our own remarkable native tradition. It is often assumed that the normal section of the monumental letter is triangular, it is obvious that today this is not a norm but only an alternative. The triangular experiments in proportion of post-Renaissance English designers are, however, still relevant. 2 is a detail of the great painted relief



1, illusionist shaded, on a shopfront at New Ross, Eire. 2, detail of painted relief, Painted Hall, Greenwich. 3, incised triangular in Bath. 4, square-section relief, Sheldonian Theatre, Oxford. 5, square-section, recessed, the Monument, London, E.C. 3. 6, modern square-section, recessed, Barrington House, Gresham St., London, E.C.4, 7, applied Roman with angled return, Cheltenham.



8, square-section Egyptians in low relief at Westport, Eire, and in high relief at Needham Market, Suffolk, 9, and at Ross, Herefordshire, 10. 11, a French example of perspective Egyptian. 12, uniformly splayed example at Worcester to compare with a square-section modern Egyptian in Dublin, 13. 14, relief Sans contrasting with background Scarborough, Yorks. 15, lettering on glass in London, and freestanding at the South Bank Exhibition, 16, and in Fleet Street, 17. 18, pierced sheet lettering, Percy St., W.1.

inscription in Greenwich Painted Hall, 3 an incised letter of a century later. As one studies monumental inscriptions one realizes, however, that a great many, possibly the majority are square section. 4 is from the Sheldonian Theatre at Oxford, unfortunately obscured as a rule by the lead flange above it. 5 is from the Monument, recessed instead of relief, and beautifully spaced. 6 is a modern variation of the square-section stone-cut letter; on the right lines, essentially a pattern on two planes.

Applied lettering clearly offers much greater scope for variety in design and depth of section than is possible in stone. This is the most common technique of today, but we do not approach nineteenth-century standards of sophistication. One has the impression that their cast metal letters are shapes which have been conceived in three dimensions. For instance, in the ordinary French sans (bottom right, frontispiece), the equality (or apparent equality) between the depth and the width of the letter-stroke is a definite and important feature of a satisfying letter. But experiment went much further. 7 is a rare English example of the return of a Roman letter meeting the background at obtuse angles of varying sizes. The more common Egyptian is shown in 8, 9, 10, 'Boulangerie' (frontispiece) and 11 show French examples in Romans and Egyptians of this perspective letter; designed, of course, to be seen from the side and from below, they retain a grand monumental quality, the angles are modulated to enhance their solidity. 12 is a simpler letter with uniformly splayed sides. It is enlightening to compare this letter with a modern example of similar proportions. 13 but with straight sides. Given such high relief does the splaying improve the relation between letter and background? The nineteenth-century straight-sided letter is normally shallower than its modern equivalent; it is a question which needs exploring.

Curves or planes in the letter can accentuate or contrast with the curves or planes of its background, and 14 is a successful example. A modern, more subtle version of the same sort of relation is that between a two-dimensional letter on glass designed against space—another idea full of possibilities with plenty of prototypes in cubist painting, 15.

The problem of the cast shadow is very much a problem of today. There are practical advantages in fixing away from the wall, but one seldom sees this taken into account in design, the effect is usually accidental and in particular thin letters lose all solidity. 16 is an example where all three elements, the letter-face, the curved reflecting background and the space between, are thought out in relation to one another. Another technique which is being worked out with interesting results is that of the letter containing hidden lighting, which is reflected by the background, and illuminates the space between. 17 is an example which is also successful by day. The substantial depth is balanced by the bold design and the free surrounding space. Finally there are those insubstantial letters which are merely holes in their background, 18. One notices that it is the new techniques, which demand new thought, that are producing architectural letters of real interest.

HOUSE NEAR BEAULIEU, HANTS

ARCHITECT	***HUGH CASSON***
associate architects	***R. A. Green and Margaret Casson***



1

1, the house seen from the southward end of the jetty, within a few feet of the foreshore. The loudspeaker horn, seen left, together with the high-fidelity equipment installed at the house, is described in SKILL, pages 286-288.

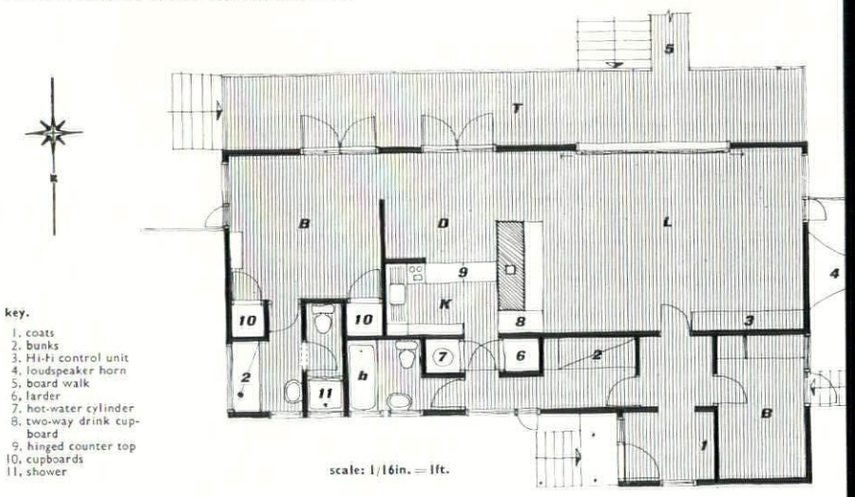
The site of Warren House faces south, with a direct view over the Solent to the Isle of Wight. The house is set slightly back from the shingle shore behind a tide bank on ground approximately 7 ft. above water level ; the floor platform of the house is level with the top of the tide bank, which allows a jetty 56 ft. long to stretch from the open deck in front of the house to the tide bank and down on to the shore.

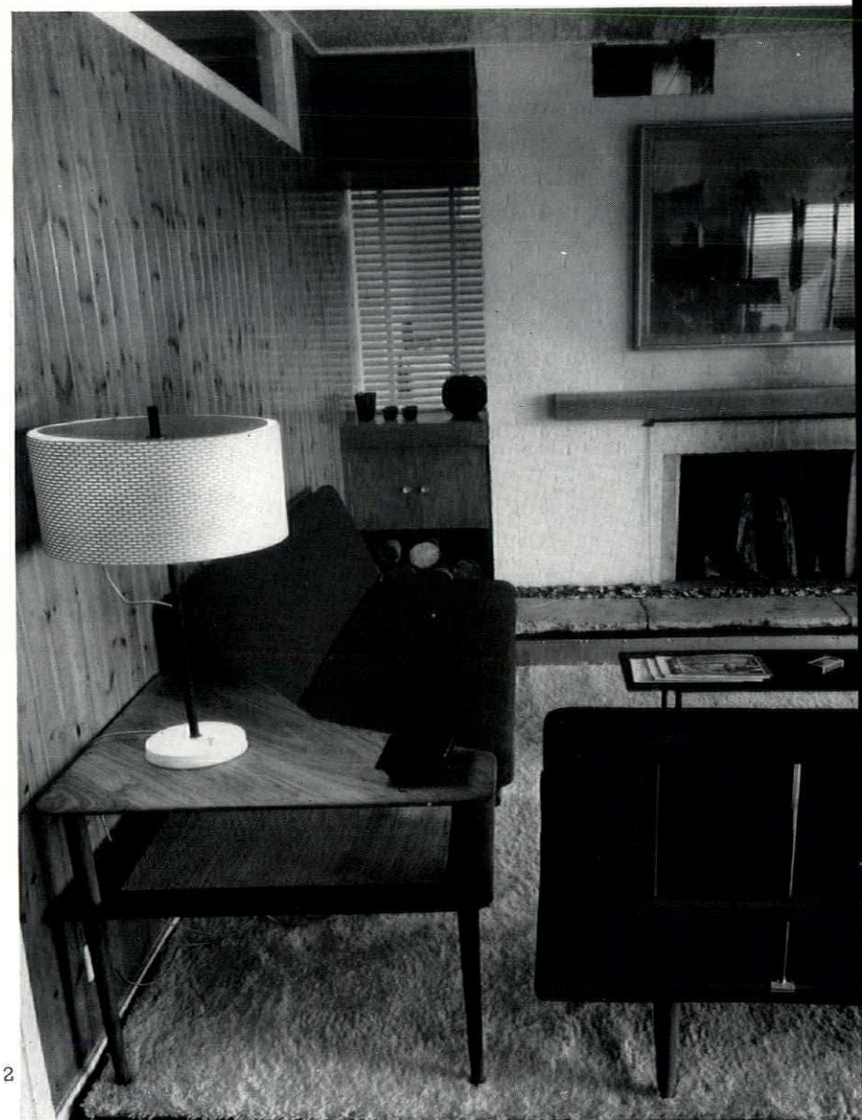
The house was designed in two parts ; first, drainage, pier foundation and timber platform with mains services and plumbing connections terminating at platform level, and secondly, the superstructure in timber construction, vertically boarded internally and externally throughout, with flat roof. This was done to allow competitive tender for the foundations in the first instance, and comparative tenders for prefabrication and traditional construction in the second. The house was set on piers about 3 ft. 6 in. above ground to give a better view ; the piers consist of mass concrete pyramid shaped blocks, tapering from 4 ft. square at the base to 15 in. square at the apex. They are set at an average of 18 in. below the surface to keep clear of the wet shingle existing about 4 ft. below ; the finish of the exposed aggregate follows the character of the shore. On top of the piers, in situ carrier beams were cast in reinforced concrete, and across these, running the length of the building, was constructed a platform of timber joists with tongue and groove boarding which forms both the floor of the house and an outside area of decking. The whole platform is surrounded by a deep softwood trimmer, coach-bolted to the platform and painted with pitch defining the floor of the house. The platform is insulated and a soffit constructed of roofing felt and asbestos.

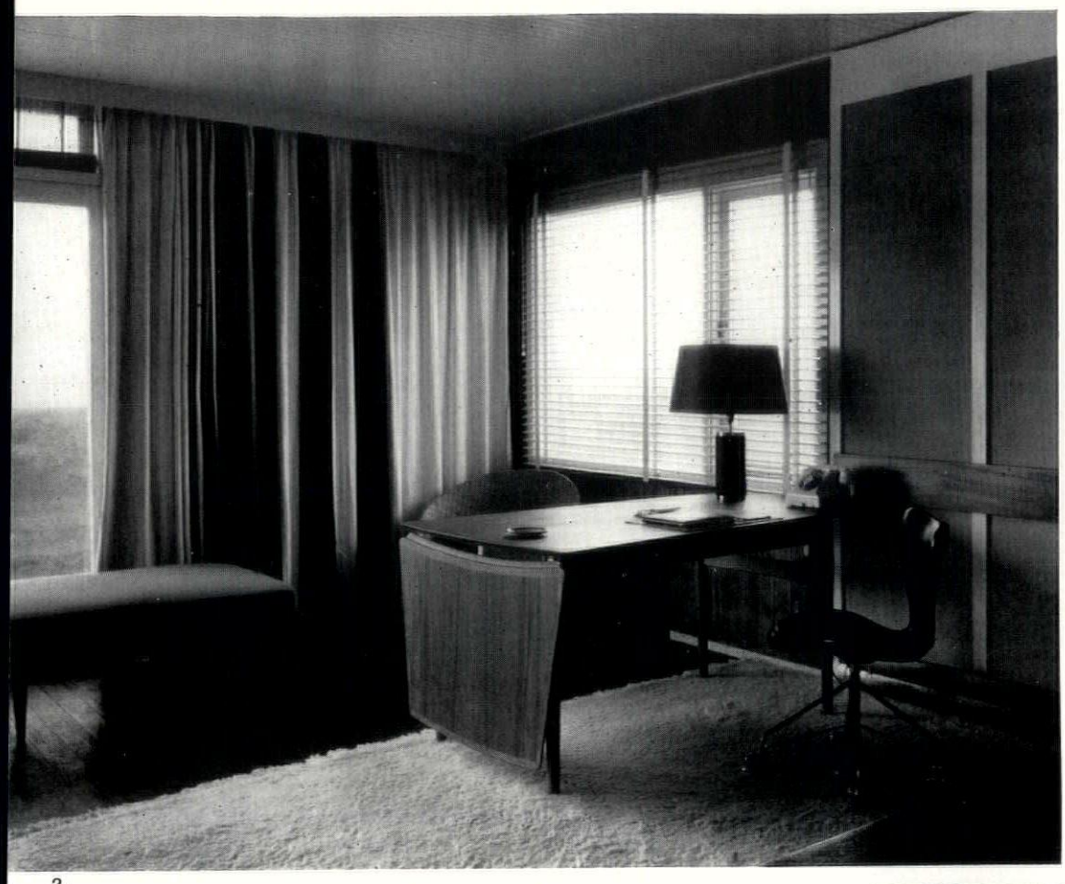
The house superstructure was designed round a 3 ft. 4 in. module to allow for either prefabricated or traditional construction at the tendering stage, and was built on a site construction basis with softwood studs at 1 ft. 8 in. centres, lined internally with asbestos fibre board and vertically V-jointed softwood boarding, and externally is clad with bituminous felt and vertically V-jointed cedar boarding. The general policy for windows was that the south front leading on to the open deck should be fully opening doors, either sliding or opening out, and that other windows should either be view windows, as on the east and west elevations, or high level fanlights on the more exposed sides of the building.

The accommodation is based on a large living-dining area served by a cabin type of kitchen ; the bedroom, dressing room, w.c. and shower is one self-contained unit, with guest's accommodation in a small bedroom and annexe leading into the guest bathroom. A central brick fireplace forms the main division between living area and kitchen, with counters dividing the kitchen from dining room. Venetian blinds are set at high level over the counters to mask the kitchen. An extract fan above the cooker and a dome light in the roof give light and ventilation.

The walls internally are either clear varnished or painted. The ceiling throughout is close boarding V-jointed at 2 in. centres running the length of the building painted gloss white. The boarding externally is untreated cedar ; the fascia is white painted blockboard forming an upstand all round (with internal rainwater pipes) and the fascia is topped with aluminium angle painted white as protection against the sea atmosphere. The house has all main services, except for septic tank sewerage, but as the water supply is weak, a 400-gallon storage tank is set below ground with a pump system to a 100-gallon storage tank on the roof, so that the smaller storage tank is constantly maintained on the build-up of off-peak supply to the larger tank below ground. The shower is also worked by pump. The radio installation is of a specialized nature and a purpose-made loudspeaker horn and radio cabinet were designed as part of the building operation but carried out by a subcontractor. The internal fittings were also purpose-made and constructed by the general contractor. The furnishing was carried out by the client in consultation with the architect.







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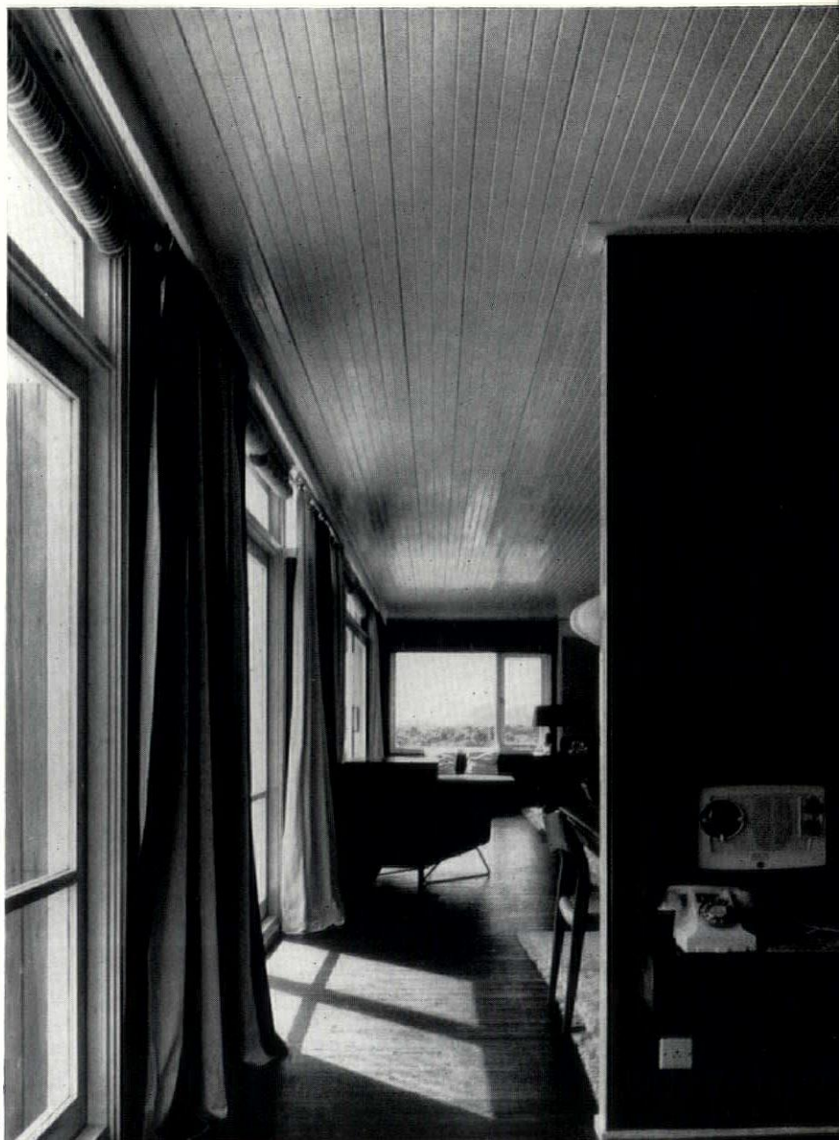
4



5



6

HOUSE NEAR BEAULIEU, HANTS

2, the living-room looking towards the hatch-way into the kitchen. The sofas and angle table are Danish, by Peter Hvidt and Molgaard Nielsen and are of Bangkok teak. The lamp in perforated metal is by John and Sylvia Reid and the low slate on metal table by Terence Conran. 3, the south-west corner of the living-room, with the loudspeaker horn concealed behind the screen on the extreme right. The Danish desk, of Bangkok teak, is designed by Arne Vodder; the black leather upholstered chair, which has a polished steel frame, is by Arne Jacobsen and the banquette is by the designers of the sofas in 2. 4, looking from the hall through the living room towards the jetty. 5, view along the south wall of the house, through the dining-room to a bedroom at the far end. The arm-chair is by Robin Day. 6, the view in 5 reversed. The bedroom partition is dark green; the curtain is of black and white stripes of differing widths.



7



7. the kitchen from the dining-room; the counter and fitting below it is partly painted white and partly waxed mahogany, with a grey plastic top; above it a venetian blind, which usually masks the kitchen, is pulled out of sight. The blue and white cotton curtains in the background are by Laura Ashley. 8, from the kitchen looking into the dining-room; the Danish dining chairs are Bangkok teak, designed by Möller; the wicker chair was hand-woven in Hong Kong, and the lamp, which is spun plastic, is by John and Sylvia Reid.

8

Ian Nairn

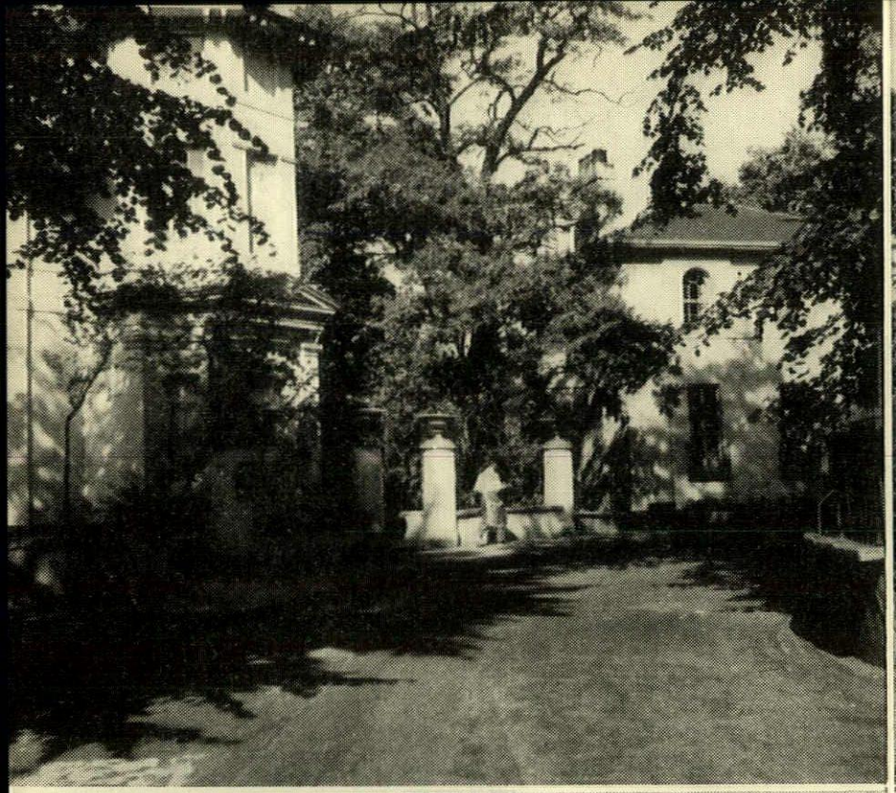
FIFTY YEARS OF ARCADIA

THE GOLDEN JUBILEE OF HAMPSTEAD GARDEN SUBURB

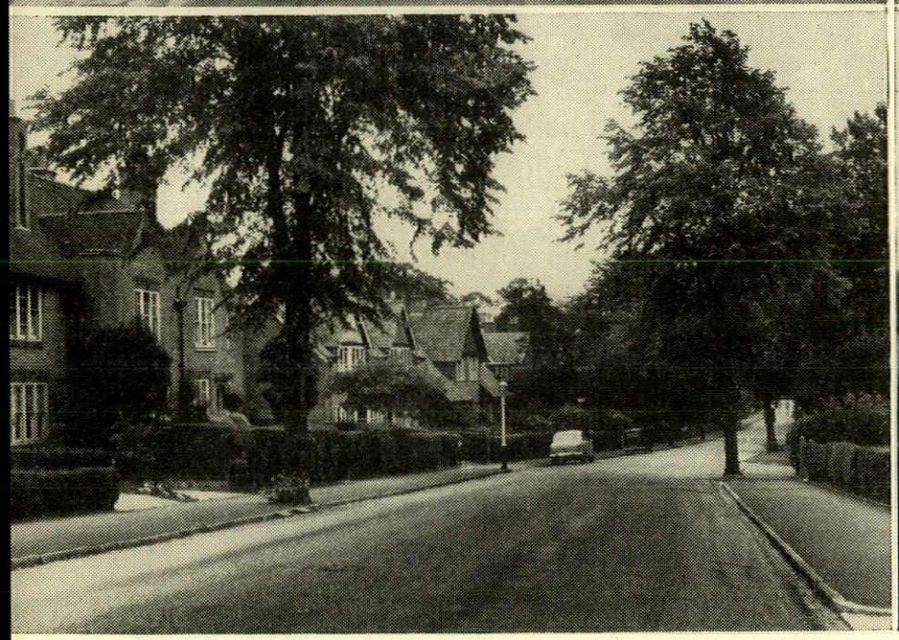
Hampstead Garden Suburb is fifty years old this year, the first of the pioneer schemes to mean business visually as well as socially. And at fifty years distance the eye can seek out a bitterly equivocal set of its visual consequences in almost any town in the country. On the one hand there is the rediscovery of arcadia, the leafy fairyland for which the Suburb was directly responsible; on the other there is the sterility of the average council estate neighbourhood which is equally a direct result of the attempt to translate the Suburb into a large scale remedy for the urban housing problem. This modest commemoration is simply a restatement of the obvious: something which will have to be said over and over again until the mistakes* stop being built.

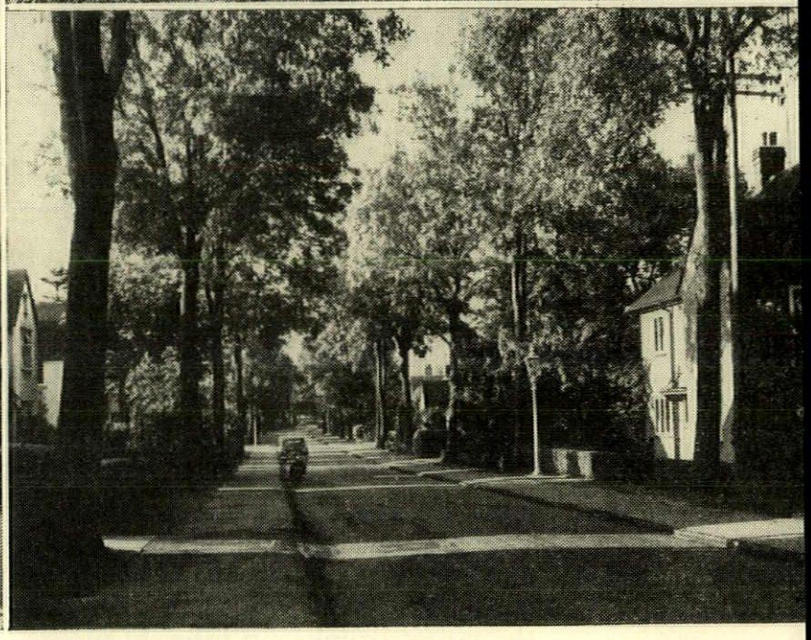
The Garden Suburb is a pattern book, but you have to turn the pages yourself: the arcadian rhythm is kept up for a few yards, or around one corner, but it never lasts the length of a whole street. There is always, sooner or later, a long straight street, fairly leafy, with rather too many houses in it—something not radically different from the normal council estate. And this is a fundamental criticism; to put the question starkly, if arcadia is fairyland, the sum of hundreds of individual illusions, to be successful as a whole it must itself be an illusion: like the famous limerick, it must be 'never all there at a time'. Ideally you should be able to go from one end to the other without ever having had an impression of the estate as a whole. This demands rapid change and informality: it also demands a continuous melting together of buildings and landscape because the moment the street breaks up into set pieces, however pretty, the visual rhythm breaks down into the rhythm of individual houses, and once the experience is anything like adding individual houses together the illusion has gone for good. Short vistas are almost a necessity, with constantly changing views so that the house unit can never be seen as such but always as part of a bigger composition; a continuous and continuously changing streetscape. That is to say, planting has got to act as the glue, binding the individual units together. If the plots are large enough (the very high class estates—Wentworth or Camberley) or the houses are small enough (the estates at the other end of the scale—the shack colonies) the buildings are lost among trees altogether and landscaping is easy. But in the ordinary residential estate this can't be done: there must inevitably be fairly big buildings in fairly small plots somewhere near the street line. The planting then has to carry off a sophisticated conjuring trick or fan dance, and this is where the contribution of the Garden Suburb is so important. It is easy to take the ideas for granted now; in fact a look at Hornsey to the east of the Suburb and at Cricklewood to the west of it will quickly show just how much of a contribution it was.

* the largest and best known results of this confusion are called New Towns.









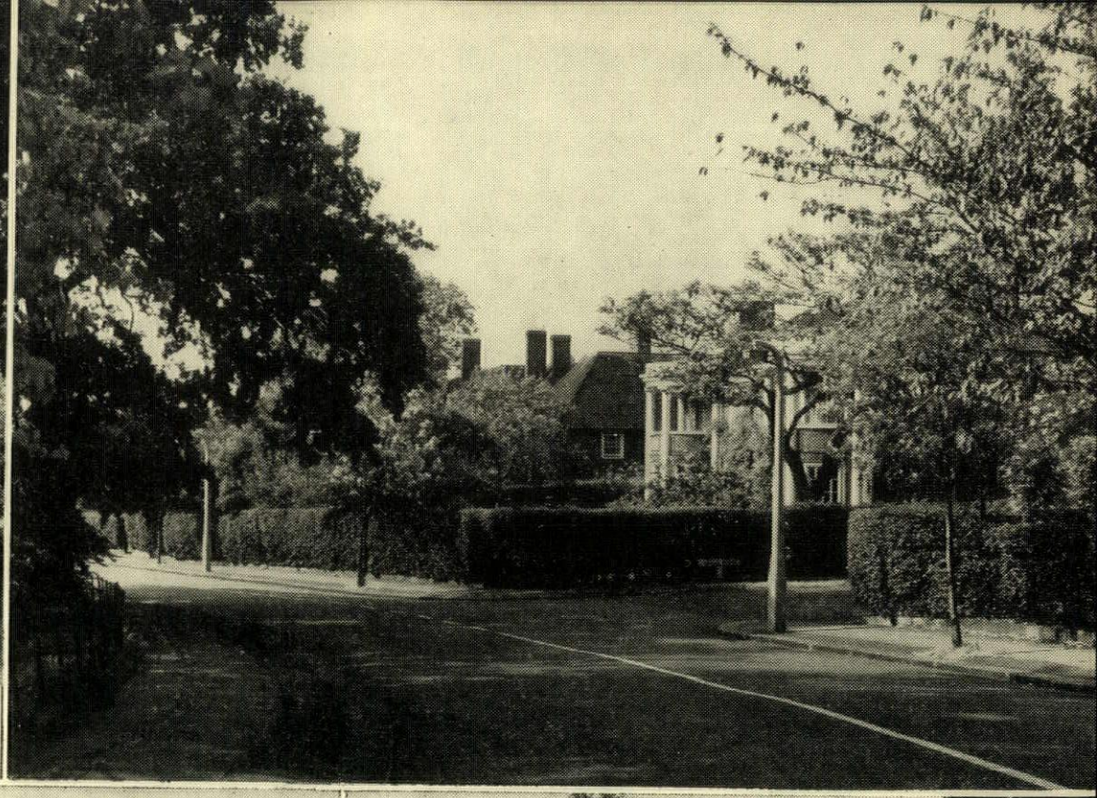
Nash to Unwin: *the original arcadia, in Nash's Park Village West,* 1, *and Loudun's Great Tew, Oxon,* 2. *Simplified and straightened out, this type of landscape became the small change of the good Victorian estates and was then taken over for the new suburbs, using much smaller housing units: Bournville,* 3, *in the* 1870's *and Unwin's own layout at Letchworth,* 4, *in the early* 1900's. 1|3

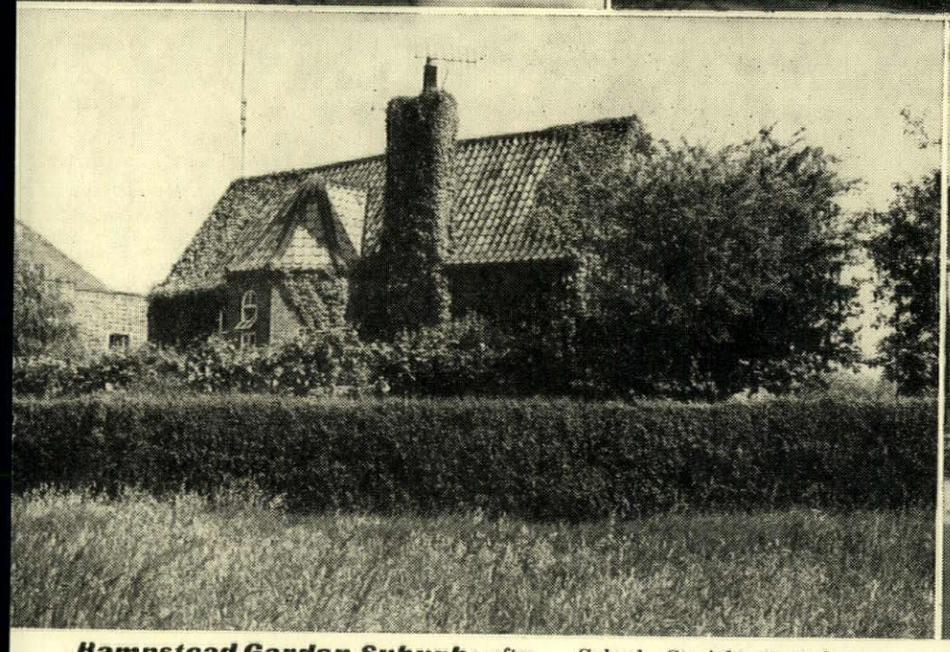
This type of design had, of course, been done before; there is a perfect suburb in a loop of eight houses off Albany Street, N.W.1, built a hundred years before the Garden Suburb: Nash's Park Village West, 1. It has a serpentine road, irregular outlines and planting and buildings completely fused; and so has Loudun's village at Great Tew, Oxon, 2: in fact the rules for arcadia are simply those of Picturesque Theory. But whereas Picturesque Theory in a town is *au choix* to be used along with formal axes and regular layouts, Picturesque Theory in the suburb is mandatory: it can't be done any other way.

To judge from his book* Unwin's work at Hampstead was a genuine rediscovery, for his only reference to Regent's Park was to call it 'an example of the Renaissance School of town planning' and he arrived at the same result from looking at medieval towns. The circle from Nash to Unwin starts with the simplifications of the big Victorian estates—with the streets gradually becoming straighter and the landscaping becoming simpler. The houses were so big and far apart and the trees so many that this hardly mattered. Then for the first time Bournville took over the pattern of the high-class Victorian suburb estate and equipped it with small workers' houses set close together, 3; Letchworth did the same thing, 4. Naturally, it didn't work, for there were too many building units and not enough trees, and the street lines looked like an ordinary *rue corridor* inexplicably chopped up and with a bit more foliage than usual. Take away the foliage and straightway the result is the Hounslow By-pass. After planning Letchworth, Unwin read Camillo Sitte and the result is apparent immediately in Hampstead Garden Suburb; it is sad that there are today so many leafless Letchworths

* Town Planning in Practice, 1909









6
8

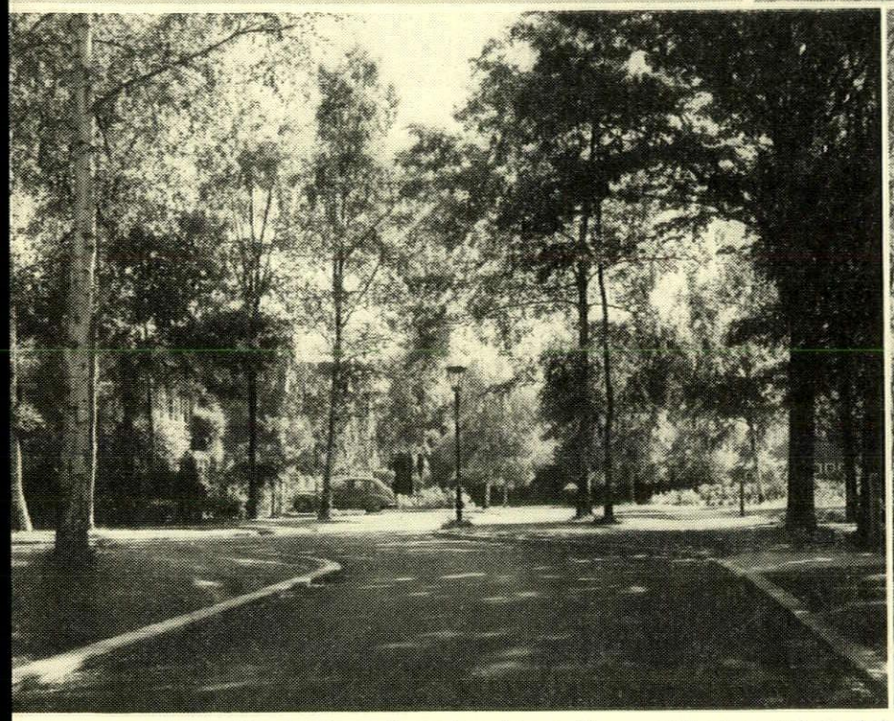
Hampstead Garden Suburb: *after planning Letchworth, Unwin read Camillo Sitte and applied the results in designing the Garden Suburb. Straight streets become curved,* 6, *and the corners are inflected by houses,* 5; *individual houses become fused into the landscape,* 7. *However, the typical long street view is more like* 8, *which is no real advance on the design of Lecthworth.*

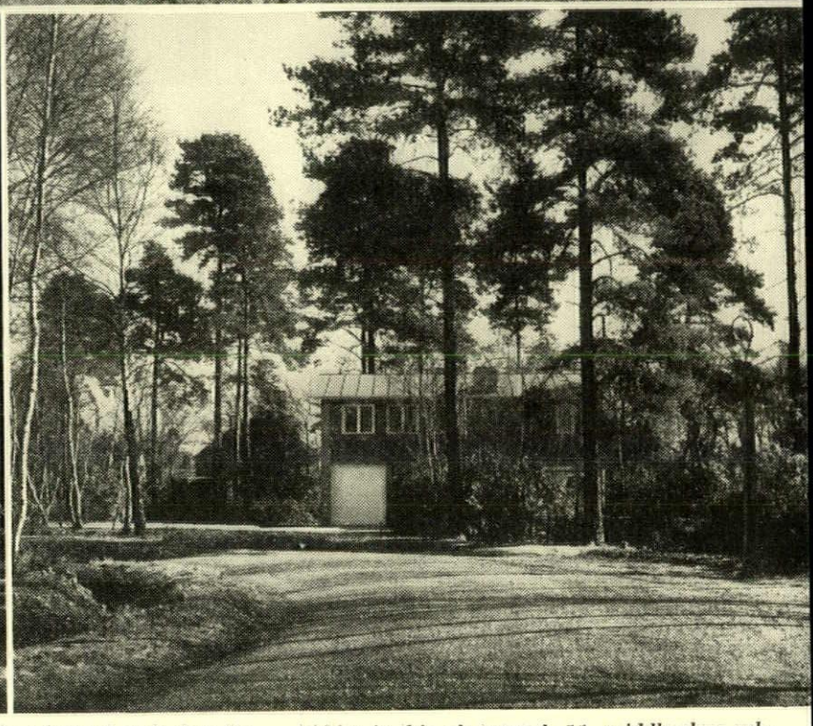
and so few copies of the Garden Suburb.

The other lesson of the Garden Suburb is one we are still working out, and the solution, easy enough to formulate in words, is nowhere in sight on the land surface itself. The fatal confusion that Hampstead made was that it didn't know whether to be a town or a suburb. It called itself a suburb and set out to design in a suburban way. But as a suburb it should have been a quarter of its present size at most; visually, it should never have attempted the formal centre, for which one can fairly blame Lutyens: socially, it should never have attempted to build a co-operative society with units which emphasize differentiation. In spite of the name, what the founders were really trying to create, socially, was a leafy small town; in fact the co-ownership idea collapsed after the first World War and the rest of the Suburb was built up with desirable modern residences, nearly all Neo-Georgian with far too much architecture about them. It is now an upper middle-class dormitory of 16,000 people with an arty slant, bigger than Stamford or Lewes, which is about as far from the original planners' ideals as it could be. It is silly to blame the creators of the Garden Suburb for the confusion—they were feeling their way with a new social unit: but one can legitimately blame all the planners who, with the mistakes of Letchworth and Hampstead Garden Suburb in front of them, perpetuated this confusion. The New Towns have all tried to be urban using a Garden Suburb plan with all the space left for trees and close planting that a Garden Suburb needs. To make matters worse, architects had in the meanwhile re-learnt how to design urban terrace housing, and did so—only to have it chopped up and spread out by the planning regulations forming something which in the strict sense of the phrase is a proper bastard.



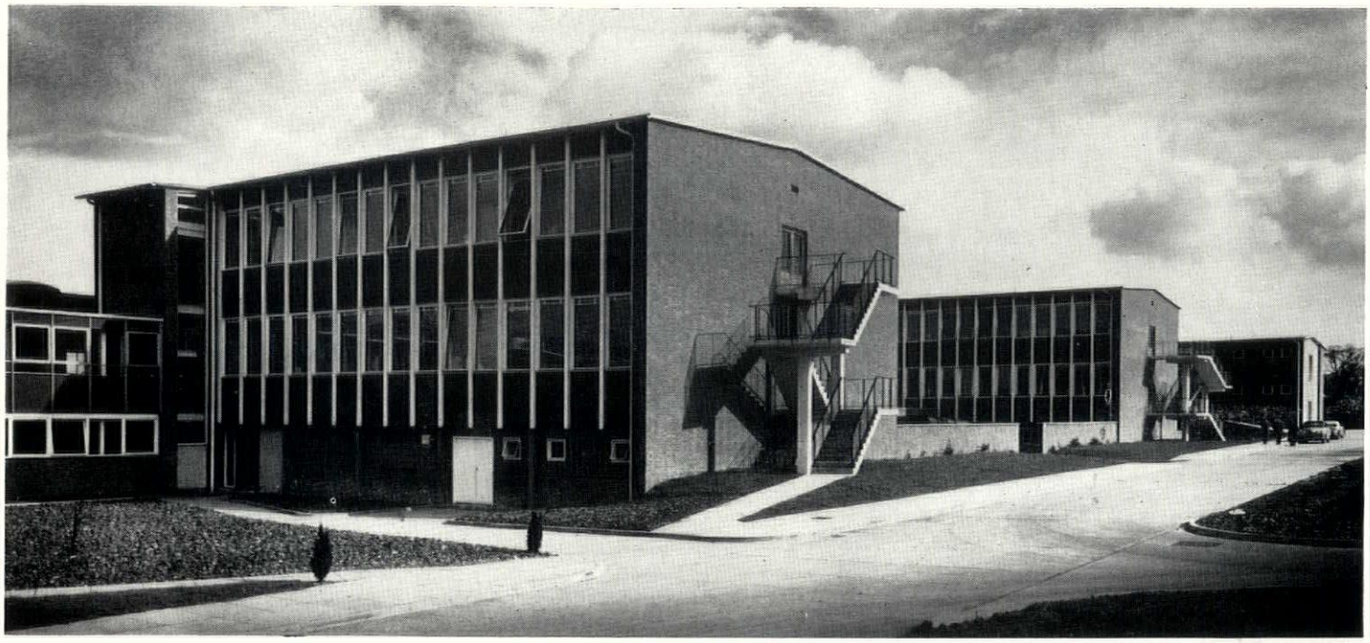






Arcadia at four levels: *the arcadian design suburb is sometimes thought of as a high-class and high income prerogative. That is not so, and here are four examples for very different income groups.* 9 *is part of the LCC estate at Old Oak Common, with Picturesque Theory learnt so well that hardly any trees are needed—the single obtrusive vertical of the telegraph pole does far more damage than it would in any other environment.* 10 *is 'Happy Valley'—Biggin Hill, Kent, a 'shack colony' but an admirable suburb all the same. Tiny unselfconscious houses are simply swallowed up in the trees—there are about a dozen hidden in this photograph.* 11, *middle-class suburban at Welwyn Garden City, a dream of filtered light and serpentine roads, with all the lessons of the Garden Suburb correctly applied to a whole area.* 12, *high-class suburban on the Wentworth Estate at Sunningdale.*

If we are not to have another fifty years of bastards there must be a rapid relief from muddled thinking among the makers of development plans. Any bit of housing can be either urban or arcadian: it is folly to mix the two and the planner must decide which he is going to use. The arcadian estate needs Picturesque Theory, a lot of planting, all other uses separate, camouflage from the outside landscape, and a maximum density—the figure above which proper landscaping becomes a difficult job. The urban estate needs continuous street lines and building lines, a complex pattern of streets, with shops and pubs mixed in and probably a minimum density to give enough building bulk. The aggregate of a lot of arcadian estates, however perfect, will never make a town: arcadia is an alternative way of living, not a replacement for urban housing. Which way of living the people want is up to them; the aloof may like arcadia (or, at the other extreme, flats), the gregarious may like urban family houses. There will always be both types of people in the world, so that the New Town will always have its urban nucleus, as long as the planners are prepared to build two distinct things instead of an amorphous conglomerate. The best commemoration we could give to the jubilee of Hampstead Garden Suburb is simultaneously to apply its design principles and learn from its planning mistakes. The alternative—to coin a phrase—is subtopia.

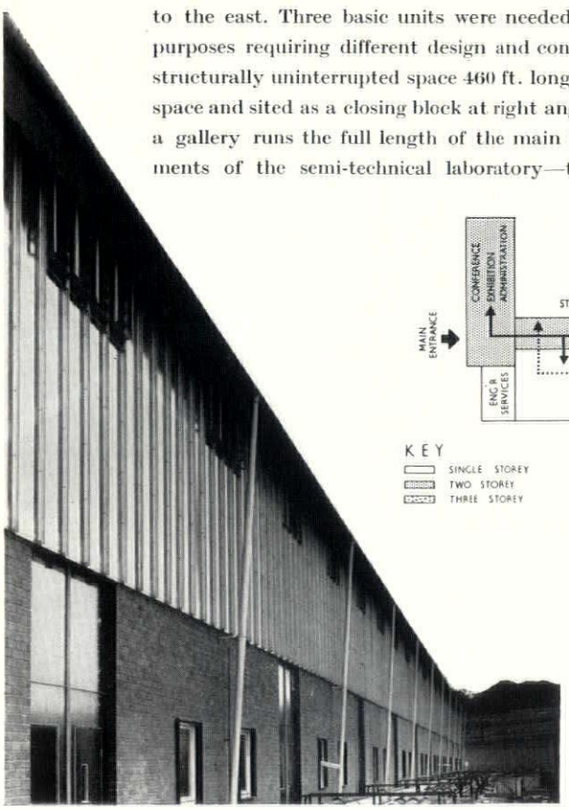


1, *the two service lab. wings from the south-west with administration block beyond.*

LABORATORIES AT WELWYN GARDEN CITY

ARCHITECT: E. D. JEFFERISS MATHEWS
PARTNER-IN-CHARGE: R. S. POOLE

This Technical Services and Development building for Plastics Division, ICI is a continuation of the buildings illustrated in AR, June, 1954, page 408. It provides technical services for customers who buy bases for the manufacture of plastic articles and carries out production development work in the use of plastics. The labs have an open site, sloping slightly downhill to the east. Three basic units were needed—administration, development plant and service laboratories—each with distinct purposes requiring different design and construction techniques. The result can briefly be stated as follows: a one-storeyed, structurally uninterrupted space 460 ft. long with a 60 ft. span, and 20 ft. clear height, forming the semi-technical laboratory space and sited as a closing block at right angles to the axis of the other blocks of the research area. Above this accommodation a gallery runs the full length of the main block off which are sited the offices directly related to the work of the departments of the semi-technical laboratory—this gallery is connected to the main entrance and administrative block and provides a general view for visitors and customers of lab activities. At right angles to this block are three wings built on the major axis of the other blocks already built, providing office accommodation, a conference and exhibition room and two service laboratories. A steel frame was used generally, but in combination with some load bearing brickwork. A co-ordinating 4 ft. module was used, stanchions being placed at 20 ft. centres in the semi-technical laboratory and at 12 ft. centres elsewhere. The curtain walling is outside the structural grid to avoid interruption by columns.



2, *part of the north elevation of the main lab. block. All main services except electricity are run externally in lagged pipes painted in code colours, seen at bottom of picture.*

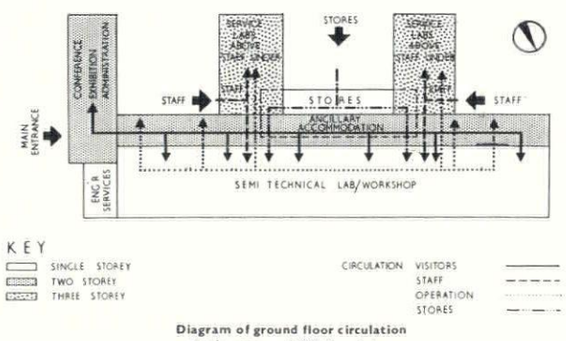


Diagram of ground floor circulation
Scale approx. 1/200 ft. = 1 in.

TWO COMPREHENSIVE SCHOOLS AT COVENTRY

Both of these schools were designed for the same client as comprehensive schools with almost the same requirements. They were prototypes for the Bristol Aeroplane Company's Mark 2 system of steel framed construction.



3

3, from the south; teaching block on right and administration block beyond, prestressed bridge over fishpond in foreground.

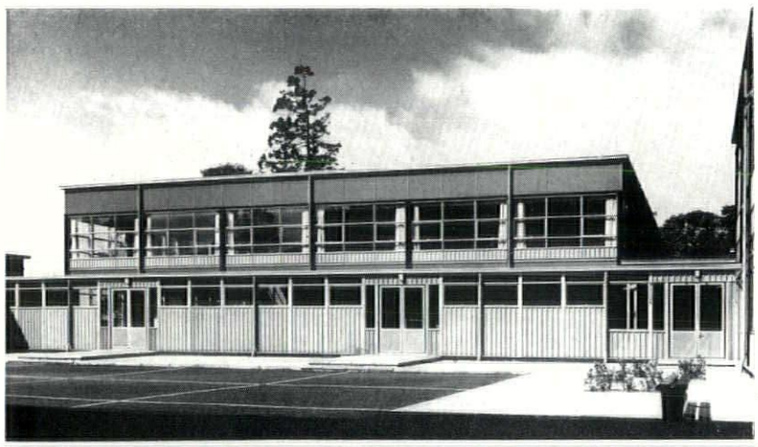
4, assembly hall seen across central court.

5, close up of the cladding. Opening window lights, stanchion cases and fascia are white, remainder is grey.

1. SCHOOL AT WHITLEY

COVENTRY CITY ARCHITECT: ARTHUR LING
ARCHITECT-IN-CHARGE: W. A. JAMES

This is a mixed school with 1,650 places on the site of the former Whitley Abbey, south-east of Coventry. It will consist eventually of ten houses paired in five house blocks with teaching rooms separate; the first three blocks have been built so far. The constructional system uses a steel frame with aluminium wall panels for multi-storey and some single-storey blocks; the smaller single-storey blocks consist of load bearing aluminium panels. The floors have precast r.c. floor beams on fibre board pads, the roofs are galvanized steel decking laid flat on top of steel roof beams. The hall has a small stage for day-to-day use; when a big stage is needed the adjacent gymnasium becomes part of the stage with a movable cyclorama used to define the stage area.



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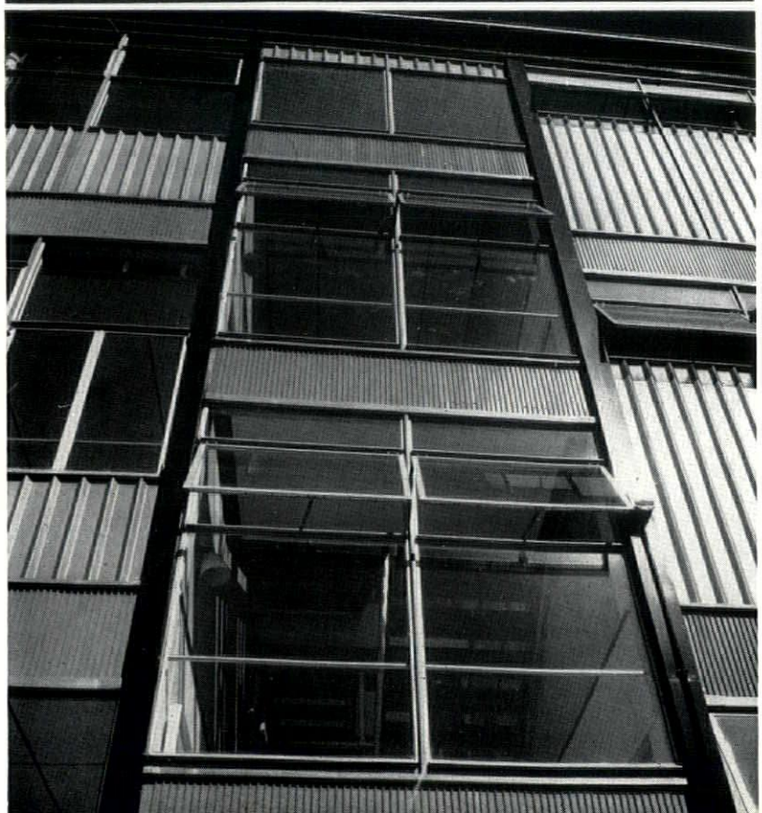

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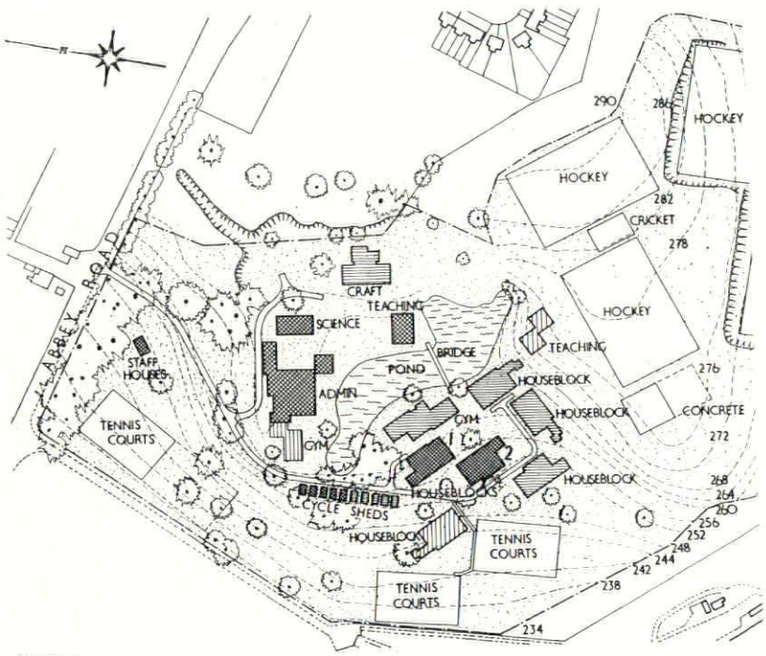
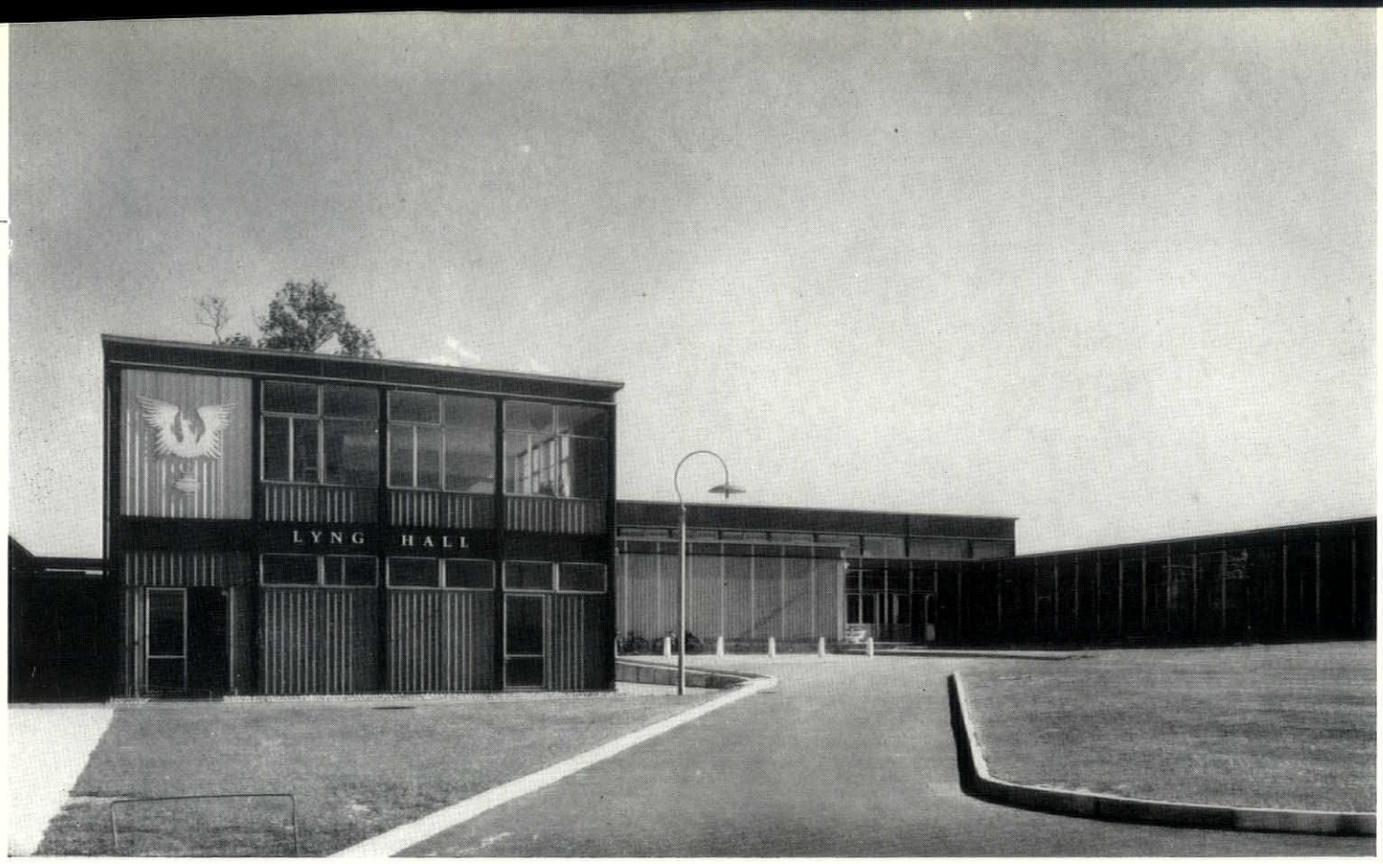


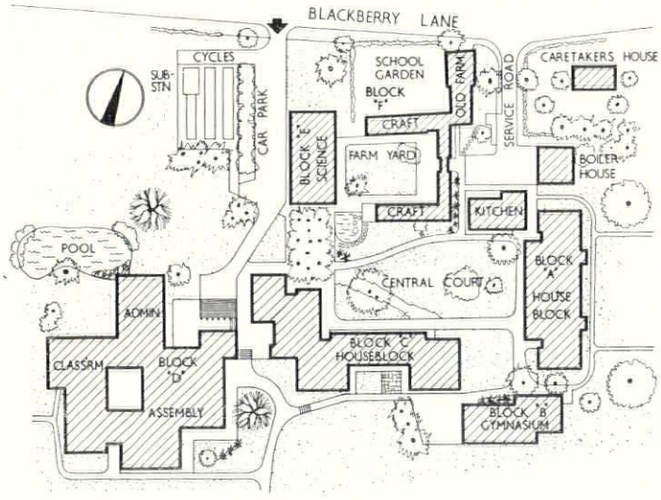
Site Plan.



6, *main entrance from north with two-storey house blocks on left.*

2. SCHOOL AT WYKEN

ARCHITECTS: MINISTRY OF EDUCATION
ARCHITECTS-IN-CHARGE: PETER NEWNHAM AND DARGAN BULLIVANT



Site plan.

Lyng Hall is a girls' comprehensive school of 1,650 places in ten houses, of which five have so far been built. The houses have been kept self-contained as far as possible, and include a room for the housemistress. The site is a farm at Wyken, north-east of Coventry, and the existing farm buildings were kept and re-used as practical rooms. The construction is exactly the same as at Whitley Abbey school, see opposite; there are two assembly halls which can be thrown into one when necessary. The landscaping and planting contract was run concurrently with the building construction, as a nominated sub-contract.



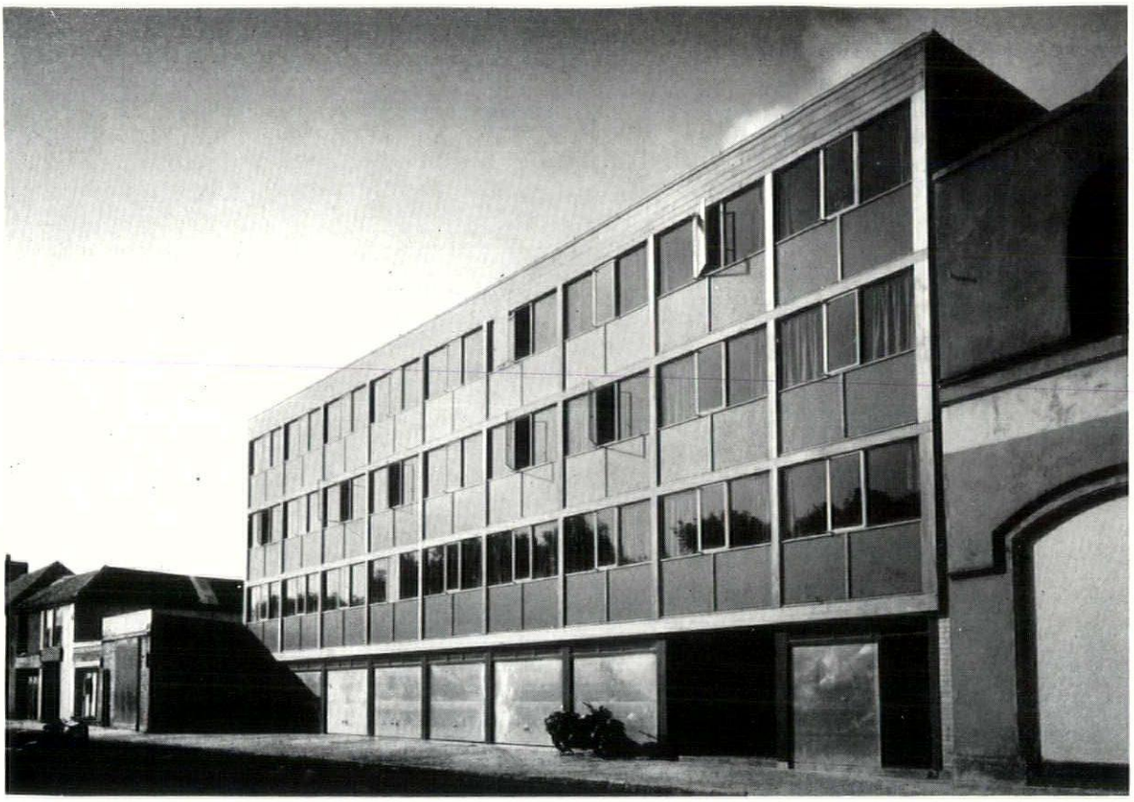
7, *house block 'A' from the south-west.*

8, *assembly hall; light fittings by Schottlander, curtains designed by David Holt on theme of characters from the Coventry plays.*

9, *part of the landscaping beside the assembly hall, looking towards gymnasium.*





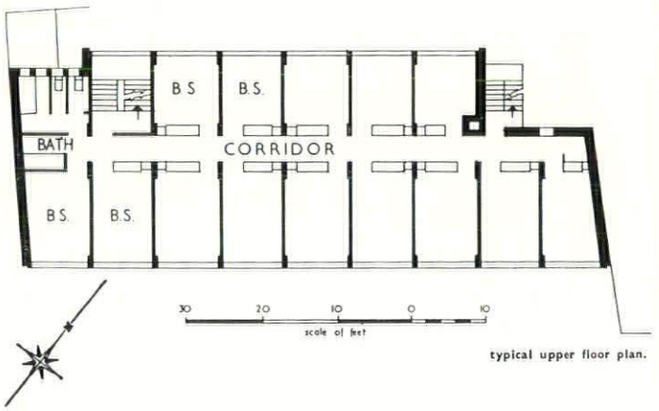


10, *street front from the east; the ground floor is used as garage space.*

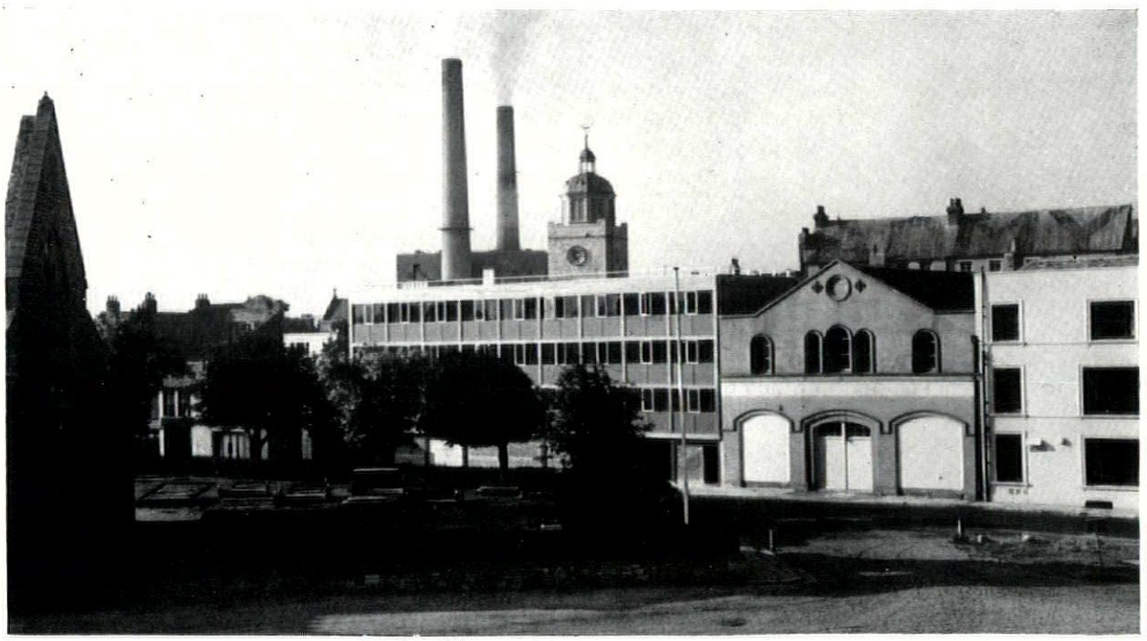
Y.M.C.A. HOSTEL AT PORTSMOUTH

ARCHITECT: F. J. GUY

This hostel is a replacement of obsolete buildings in Penny Street near the Garrison church in Old Portsmouth. The road frontage faces south-east, looking across a small grass area called Governor's Green with large views of Spithead from about 20 ft. above pavement level. On the north-west side, a matured garden separates the Penny Street frontage from the main Y.M.C.A. building; the size of the rooms was based on one in the existing building. The construction is a frame of thin concrete stanchions, monolithic with solid concrete floor slabs; load bearing brick walls appeared to be slightly cheaper, but would have taken up more floor area and thus made the room sizes smaller. The front façade is clad with window units of western red cedar with steel opening lights, and spandrels of 3-in. wood wool faced with cast glass, vitreous-enamelled light blue on the back. The exposed edges of the concrete frame are covered in with flats of western red cedar. The rear filling consists of identical window units and spandrels of 11-in. cavity brickwork.



typical upper floor plan.



11, *distant view from the east, with wall of the Garrison church on left and the towers of Portsmouth cathedral and power station beyond.*

BOOKS

NOVEL GUIDE-BOOK

OLD LONDON CHURCHES. *By Elizabeth and Wayland Young. Faber and Faber.* 63s.

It is rather hard to write the wrong book in architectural history. When I say that this pair of authors have done it I mean nothing derogatory, because what they have achieved is something much harder than what they ostensibly set out to do. What title and blurb indicate is an architectural-historical account of every London church built before 1830, whether burnt or not; what has actually come out is a picturesque poetic novel on the topography and history of London. The description of history runs the whole gamut of wit, from farce at St. George in the East to what is really a fine-spun metaphysical essay called up by, of all places, Old St. Pancras. As for the topography—well, here is the entry for that little shocker by Blore, St. George's, Nine Elms Lane:—

> 'This church is an epitome and concentrate of London at its worst. Nine Elms Lane is a great highroad from nowhere to nowhere: the giant power-station of Battersea towers and belches smoke over a blasted desert. Here in what used to be called Battersea Fields the young Edward Blore, Sir Walter Scott's protégé, built for less than £3,000 a brick chapel with lancet windows. It had a gimcrack pinnacle which Carlos censured in the "Gentleman's Magazine"; it was beyond Blore's capacities, he said. Even this tiny deviation from the line of greatest ugliness was abandoned in 1913 for a yet simpler arrangement of as few bricks as will hold a bell up. In Victorian times the plaster vaulting was replaced by village-hall open timbers, a chancel was added, roughly in keeping (sad keeping), and two transeptal chapels entirely out of keeping. One of these was bombed and the stump is cauterised with lavatory tiles; the other is disused. The churchyard, still almost empty of graves, is deep under waste paper and waste cardboard, the church is locked, the churchyard is locked; all is filth and desolation added to hideousness. Those who seek a yet remoter charm in nineteenth-century churches than Mr. John Betjeman has taught them might try a visit to this one. . . .'

There's a price to pay for this, of course: the churches themselves have disappeared. There's hardly a phrase one can hang on to—as one can again and again in 'Georgian London'—because it represents as near the truth about a building as the human mind will get. The authors are in a Georgian impasse, and have left out the only classical church (Pennethorne's Christ Church, Albany Street, alas, built in 1837) which might lift them forwards out of it*. This means also that the only praise the Temple Church gets is for the skill of its restoration. The photographs are unhackneyed, and one—Basevi's St. Mary, Greenwich, when half demolished—is a collector's piece which makes one ungenerously want more (St. Peter-le-Poer, St. Olave Tooley Street?—perhaps nobody cared enough to take any photographs).

All this may sound like damning with faint praise: it's not. Anyone can write guide books—this reviewer hoards up fragments for dozens, squirrel-like, in his spare time: but very few can make poetry out of topography, still less out of historical small change. The freshness of their writing suggests that the authors may be young in years as well as in surname. I hope that in that case they can find the time to write a portrait of London as a living city that would transfigure all the thumbed-over anecdotes, and supplant the ninety-nine pot boilers that, unread, cram the public library shelves today. It would be a best-seller.

Ian Nairn

* Into what? the traveller round the county of London might ask. Touché. One Congregational chapel at Lansbury and a twenty-five year old church at Eltham, in sum. But one can still hope.

GRECIAN SUBTLETIES

THE IDEA OF SPACE IN GREEK ARCHITECTURE. *By R. D. Martienssen. Published by Witwatersrand University Press,* 1956.

Rex Martienssen, who died in 1942 at the age of thirty-seven, was the most promising architect of his generation in South Africa. The numbers of the *South African Architectural Record* of the last pre-war years brought him to the notice of architects and also of scholars abroad as well as at home; for he belonged to that exceedingly unusual type, the modern architect who is at the same time a serious historical scholar.

What his architecture stands for is demonstrated by what he built at Johannesburg and by what his friends, such as Hanson, Fassler and a few others, built. His scholarship had to wait for recognition until at last in 1956 the Witwatersrand University Press brought out his book. It is an architect's book and it considers Greek buildings and Greek planning in a remarkably fresh manner, more unusual even when it was written fifteen years ago than it is now. He emphasizes the sensitivity and subtlety of the Greeks as visual planners in a very intelligent and convincing way. The book bears witness at the same time to an uncommonly attractive character.

N.P.

THE CABINET TRADE

CONTEMPORARY CABINET DESIGN AND CONSTRUCTION. *Edited by Denise Bonnett. B. T. Batsford Ltd.,* 1956, 50*s*.

Too often, these days, a book claiming to be a serious contribution to a complicated subject havers indecisively between a work of reference and an informative entertainment. This would seem to result from an attempt to make the subject appear easy by means of smart page layouts and facile simplifications of technical difficulties. The furniture industry today is in urgent need of dedicated men in all its departments who will be concerned to restore some of the dignity and lasting qualities absent from the products of many manufacturers of contemporary furniture. For these people the easy approach is inadequate.

At first glance this book would seem to fall into the 'making life easy' category; a closer study reveals that it contains much that is of value to the serious student. It comprises fourteen chapters each dealing with some aspect of the furniture industry and written by one of the small group of people who are able to write with authority in the field which they cover. Inconsistencies result from a work by so many hands. For instance, whilst chapter eight is concerned with the 'Design and Construction of Cabinet Furniture' it is not until chapter twelve on 'Factory Organization and Production Methods' that the simple and essential cabinet timber joints are illustrated and described. This does not invalidate the usefulness of the book as a whole. The reviewers found chapter eleven on the 'Decoration of Furniture by Machine Tools' a most reasoned and distinguished statement; others will find pleasure and profit elsewhere.

N. W. and C.

BRAZIL TO DATE

MODERN ARCHITECTURE IN BRAZIL. *By Henrique E. Mindlin. Architectural Press,* 84*s*.

We are a number of years past the time when Brazil was echoing in architectural idiom the first romantic discoveries of the New World. The excitement of the early post-war days, when, thanks to good journalism and better photography, the impact of an intriguing contribution to modern architecture from an unexpected source achieved its maximum intensity, has slowly given way to a clearer and more balanced understanding. The Brazilian achievement can now be soberly appraised in relation to the progress of modern architecture as a whole.

Inevitably, it has the limitations of the present stage of its country's economic, social and technical development. So far little has been done in the way of prefabrication: in fact, only recently have building components begun to be manufactured locally. Similarly, little has been done to tackle the problems of low cost housing, or to provide for universal education. It is still basically a rich man's architecture, with all the limitations which that implies (except that an unusual number of rich Brazilians seem to be highly discerning patrons too).

On the other hand, there is the high degree

of plastic imagination shown by the Brazilian architects, particularly in terms of a building industry which is still only beginning to emerge from the craft stage. Incidentally, in situ concrete is very much a craft material, as used in Brazil. Then there is the unquestioned leadership which the Brazilians have attained in the solution of climatic problems in the humid tropics, and since most tropical countries are not yet industrially developed this is most valuable as an exemplar. Add also an astonishing ability to use traditional materials and techniques, such as *azuleijo*, mosaic, trellis, clay and ceramic pierced screens, and *cangicado*, together with a happy knack of getting the best out of architect/painter/landscape designer collaboration, and altogether it is a formidable list.

So far the documentation of Brazilian architecture has been somewhat fragmentary. Since the excellent but long out of date *Brazil Builds* by Philip Goodwin and Kidder Smith, progress has only been recorded for non-Brazilian architects by occasional articles and special numbers in THE ARCHITECTURAL REVIEW, and other periodicals. A comprehensive record was urgently required, and this need Mr. Henrique Mindlin has set out to meet. His book can be strongly recommended. Here are most of the familiar buildings, and not a few that are less familiar, but equally interesting. Limitations imposed by cost have, however, resulted in the photographs being mostly too small and sometimes of surprisingly poor quality, and the drawings are scarcely adequate for any but a superficial examination. But in spite of these faults, Mr. Mindlin has given us one more invaluable work of reference.

Percy Johnson-Marshall

RATIONALIST ARCADIA

THE MAKING OF DUTCH TOWNS: A STUDY OF URBAN DEVELOPMENT FROM THE TENTH TO THE SEVENTEENTH CENTURIES. *By Gerald L. Burke. Cleaver-Hume Press Limited*, 35*s*.

While the student still awaits the arrival of a comprehensive history of town planning in English, comparable with Lavedan's *Histoire de l'Urbanisme*, he must make do with separate studies of a limited nature. Mr. Burke has provided a valuable addition to this latter store. In a country as flat as a drawing-board, planning becomes an exercise in plane geometry. From the air the Netherlands appear, indeed, as the rationalist's Arcadia. The fields are exact rectangles, measuring five kilometres by three. The dykes and the ditches seem to be drawn with the precision of a gargantuan graphical exercise. Amsterdam is an expression of radials and concentric semi-circles—a spider's web; while Willemstad, Naarden, Coeworden and the rest of the towns which grew up in the Renaissance appear as complex as crystals, or as diagrams in higher mathematics. The towns illustrated in this work are all orderly, functional and compact, laid out neatly and exactly. They are urbane and delightful, but never pretentious or luxurious. Domesticity prevails everywhere.

Cecil Stewart

SPACE-MEN

GUSTAVE EIFFEL. *By Maurice Besset*; GUARINO GUARINI. *By Paolo Portoghesi: both in* Astra-Arengarium *series, Electa Editrice, Milan,* 1.750 *lire and* 1.400 *lire respectively.*

With the current wave of interest in non-orthogonal structures, fanned by the work of Candela, Le Ricolais and others, there is inevitably a parallel wave of interest in the irregular structuralists of the past. It is for Guarini's brilliant pierced domes of San Lorenzo and the *Sindone*, rather than his theoretical writings (or Vittone's) that so many students now take in Torinese Baroque when they are in Italy, and, for them, Portoghesi's new volume in the Astra series of pocket monographs is probably the handiest introduction to the master that there is.

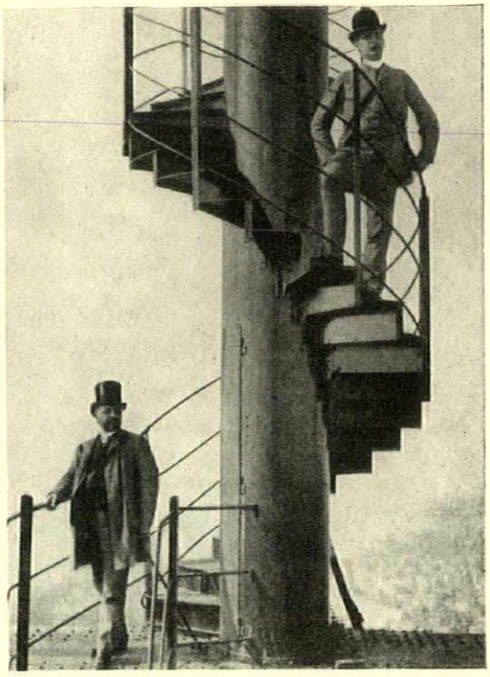
Yet very few of the same students, when in France, will make an effort to work over the Eiffel Tower with equal thoroughness, and Besset's double-volume Astra describes what is virtually the unknown œuvre of an unknown designer. This cannot fail to strike one as odd—Eiffel is an accepted pioneer of the modern movement, his work still stands and is easily visitable (unlike that of Paxton or Cottamin) and his design is well in advance of any of his contemporaries, yet the last two books on him were published in 1939 and 1929.

Conceivably, except as a kind of Freudian father-image, he is more than most of us can take. Anyone who has worked over the Tower at all thoroughly, by stairway, and not by elevator, will know the numbing fits of spatial uncertainty that periodically overcome the visitor, caused—not by mere height alone—but by finding himself in a space-cage entirely devoid of horizontals, verticals or right-angles, so that the eye and the eustachian tubes begin to contradict one another in a manner that changes unpredictably with every turn of the stair. Such an experience is unique on earth at present, though it might become common experience on space-satellites in due course.

But it is also unprecedented, in a double sense. Our experience of contemporary architecture does not prepare us for it because, as Besset points out, 'the Tower, as much as the other structures of Eiffel, does not coincide with the static criteria that serve to define modern space-frames,' and our experience of the past does not prepare us either. A comparison of upward views inside Guarini's *Sindone* and Eiffel's tower will make this clear. The *Sindone*, dizzy and organic as it may at first appear, reveals traditional methods of piling stone on stone in arch, vault and buttress, 2, opposite, even if these familiar syllables are combined in hitherto unspoken words, and, in the end, it frames a familiar and limited space.

The Tower, on the other hand, is not held together by gravity, and Eiffel is therefore free to create a space where the gravity-conditioned human organism is out of tune with everything it can see, where feathery trellises sag towards the doubtfully-horizontal horizon, not the centre of the earth, and staircases lurch through the void without visually convincing means of support, 3. Yet it has a logic of its own, the logic of tensile strength and aerodynamics which Eiffel knew was not the

space-men *Gustave Eiffel, seen below with his collaborator Adolphe Salles (on stair), is one of the least appreciated of the Pioneers, possibly because even the most adventurous of earlier structures, such as Guarini's* Capella della Sindone, *Turin,* 2, *opposite, continued to depend on gravity for their stability, whereas the Eiffel Tower, depending on tensile strength, creates spatial effects,* 3, *that are still unfamiliar today*



logic of aesthetics—and didn't care if it wasn't. 'Perhaps the authentic laws of energy are not always conformable to the secret laws of harmony? . . . Well, I submit that . . . they give a great impression of beauty and strength.'

Eiffel was the first, and perhaps the last, man ever to be allowed to put up a public building with complete disregard for any restraint of any architectural aesthetic whatsoever, and architects may never forgive him for it (J. J. P. Oud didn't, for certain). It is therefore entirely in character that he should have spent the last two decades of his life (he survived into the 'Twenties), when the machine aesthetes were trying to cram the laws of energy back into the strait-jacket of the laws of harmony, in building up the first large body of wind-tunnel experience on the aerodynamics of aircraft in flight.

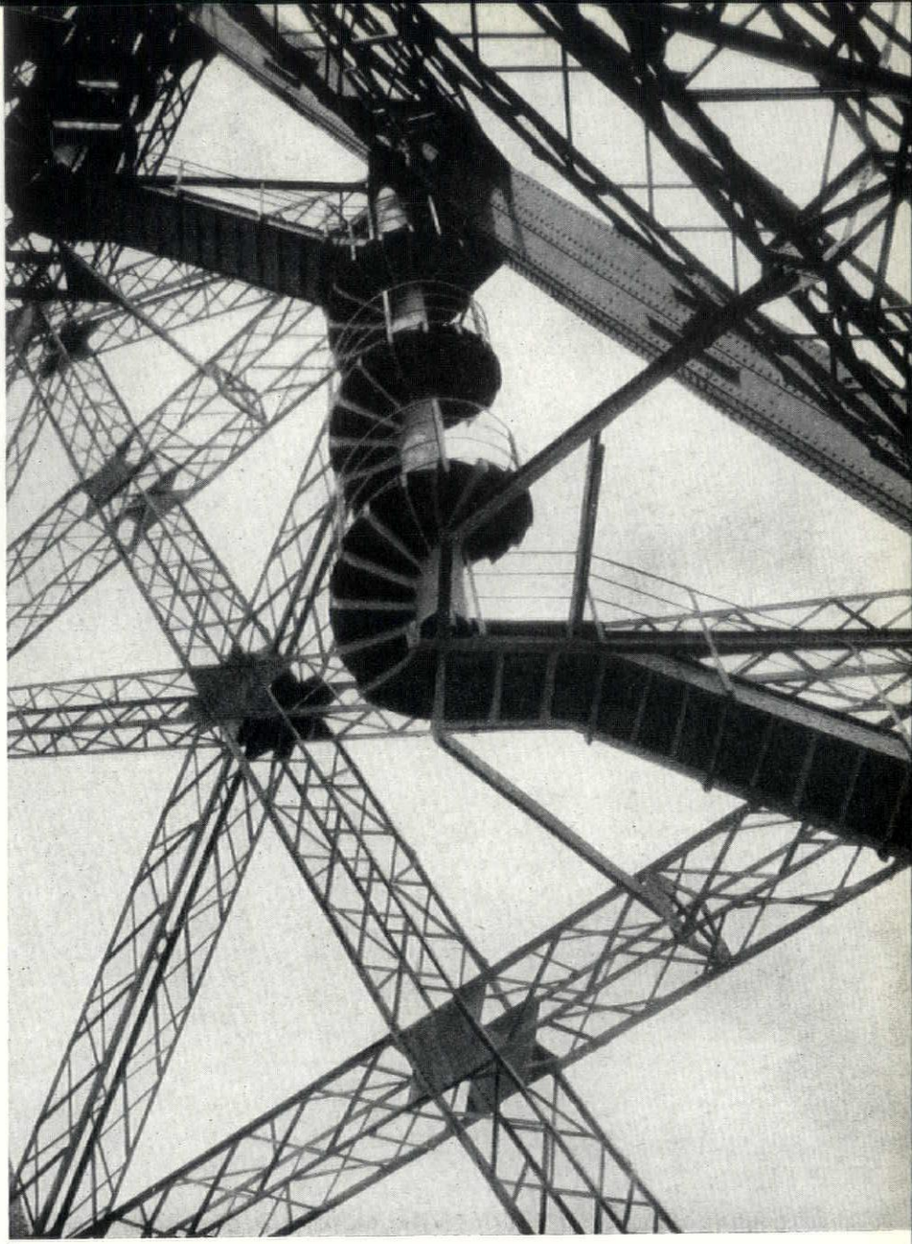
P.R.B.

Books Received

STORY OF LINDSEY HOUSE, CHELSEA. By Peter Kroyer. Country Life. 42s.
WOOD BLOCK AND STRIP FLOORING CALCULATOR. By F. J. Hinz. Ernest Benn.
60 POST-WAR CHURCHES. Incorporated Church Building Society. 10s. 6d.
DRY STONE WALLING. By F. Rainsford-Hannay. Faber & Faber. 21s.
COSTING FOR BUILDINGS. By W. & L. Townsend. E. & F. N. Spon. 12s. 6d.
THE RHINE AND ITS CASTLES. By Monk Gibbon. Putnam. 25s.
ART AND INDUSTRY. By Herbert Read. Faber. 30s.
STYLE IN THE VISUAL ARTS. By Bruce Allsopp. Pitman. 18s.
FORM IN CIVILIZATION. By W. R. Lethaby. O.U.P. 12s. 6d.
DAS BUCH VOM RECHTECK. By Wolfgang von Wersin. Ravensburg. DM. 50.
ANCIENT MONUMENTS SOCIETY. New series. Vol. 4.
NEW HOUSES FOR MODEST MEANS. By H. Dalton Clifford. Country Life. 21s.
DARTMOOR NATIONAL PARK. HMSO. 5s.
MNESICLES. By J. A. Bundgaard. Gyldendal. Kr. 38.50.
DECORATIVE WROUGHT IRONWORK IN GREAT BRITAIN. By R. Lister. Bell. 35s.



2



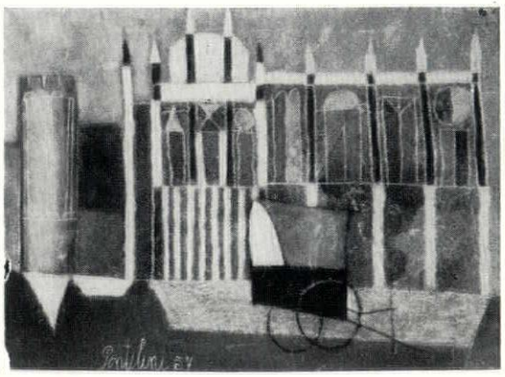
3

EXHIBITIONS

PAINTING AND SCULPTURE

As you probably know, the central office of the Zeitgeist *regularly supplies authenticated art critics with up-to-date lists of geniuses.* These lists are not, of course, available to the general public, and it is for this reason that amateur critics like myself sometimes make awful mistakes of timing. I have found, for instance, that Derain and Vlaminck, being for the most part brilliant painters of bad pictures, are very tricky cases indeed, and one can make oneself an absolute laughing stock by showing interest in them during one of those periods when they are not on the list. I liked one of the pictures in the Derain retrospective held at Wildenstein's a few months ago: it was a thoroughly retrograde bit of low-toned illusionism which made the bright colours of his Fauvist pictures look tawdry. I didn't write about the show, however, because the Gallery did not possess a photograph of the picture I liked and I suppose I had a lucky escape, for it became obvious from what the professional critics were saying that Derain's name was on the current list but only for his Fauve period. As for Vlaminck, whose work provided the opening exhibition of the new and elegant Crane-Kalman Gallery in Brompton Road, the vigour of his brush-strokes brings so unnervingly to mind those big, coarse, carefree geniuses in novels who can splash down a masterpiece with one hand whilst slapping a woman's behind with the other that by the time I got around to thinking that this was a proper occasion for drawing attention to a forerunner of some of the big, coarse, carefree geniuses of 'art autre,' the Crane-Kalman Gallery was showing a group of paintings by the Italian artist Franco Gentilini.

Gentilini's work is light, refined and influenced by Klee. Sometimes the paint is mixed with sand, as in *Cathedral and pushcart*, 1, to give a matt and crumbly finish, which looks effective on white-washed walls. He has the kind of wit that could be kept pointed and up-to-date if he were working for a humorous magazine or an advertising agency, but the paintings

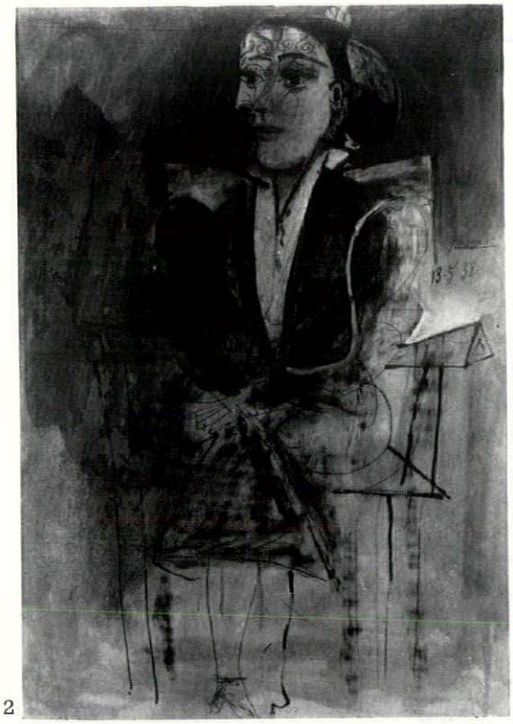


1

draw too much attention to his *mala fide* use of the innocent eye.

When Arthur Tooth and Sons announced an exhibition called 'Corot to Picasso' I expected the Picasso to make itself conspicuous in the company of Corot and

the gentle Boudin, but it was a 1916 Modigliani head that looked rather outrageously twentieth century, with its eyes crawling like beetles and a profile of a tip-tilted nose lying as flat as a pancake on a frontal view of the face. The Picasso turned out to be a portrait of Dora Maar, executed in pen and gouache and dated April 13, 1938, 2; quiet in colour, and too subtly intimate with its subject to be brazenly conspicuous. The game that Modigliani was



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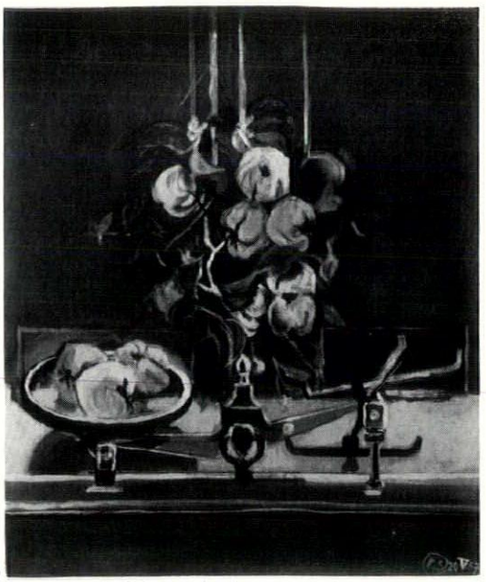
playing tentatively and eccentrically with the human features has become a wonderfully elaborate convention in the Picasso, and several aspects of the same face have come together in an augmented profile. It belongs to a superb series of drawings which occupied Picasso for about three months. In the present drawing the wisps of hair on the model's forehead lead to a hint of linear tracery round the nostrils and on the cheek, but in other drawings in the series it becomes an intricate, web-like all-over pattern, and the effect is at once sensual and hieratic and so profoundly enhancing that I am a little surprised that professional beauties have not tried to incorporate it in their make-up.

It is several years since Graham Sutherland held a one-man show at a dealer's gallery. From time to time a group of works appears in a mixed exhibition, but it is always tantalisingly small, and one doesn't obtain a clear sense of the way he is going. The Coventry tapestry and the portraits must have taken up a good deal of his time, but I have an idea that if one could see a really representative collection of the work done in the last three years it would reveal that the lyrical aspect of his art has been uppermost. The most



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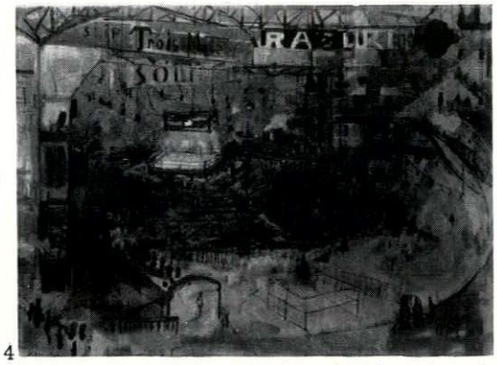
recent of his paintings to be seen in a London gallery is a green and brown still life of apples and scales, painted in May of this year, 3, which was included in the Arthur Jeffress exhibition of work by five English painters. The way in which the apples are painted reminds one a little of Braque, but in the process of changing them into aesthetic counters the artist has not entirely closed his mind to the idea that apples grow on trees, and it gives this little painting a rougher, less secure but more flavoursome poetry than a Braque would have.

A few months ago, the Lefevre Gallery held the first London exhibition of a young French painter named Jean Commère, and sold every picture. I thought he used a rather obvious formula very seductively, but in his numerous oils of wheatfields, where the corn was written on an expanse of golden yellow paint, he did not succeed in avoiding monotony. In a large new work called *Velodrome d'hiver*, 4, included in a



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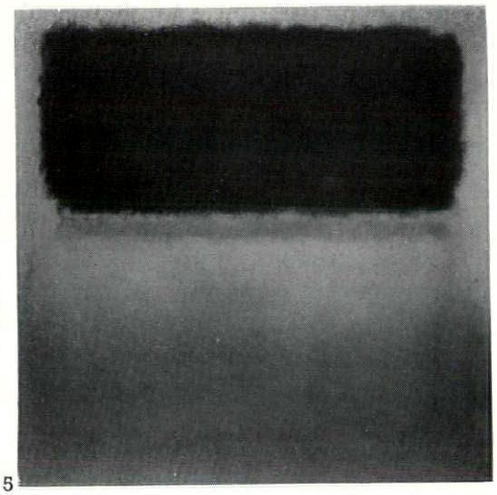
mixed exhibition at Lefevre's, the formula is the same. Commère has even retained his wheatfield yellow as the predominant colour, but the marks on its surface define a vast and busy scene and turn it into a brilliant effect of artificial light mingling at the edges with the fading daylight of a winter's afternoon. His line picks its way into the far corners of a cavernous interior as effectively as a relay of loudspeakers.

A large picture by Mark Rothko, *Blue Cloud* 1956, 5, dominated an exhibition at Gimpel Fils which included notable examples of the art of Dubuffet, Soulages, de Staël and Riopelle. It depends entirely upon the persuasiveness of a platonic relationship between four featureless oblongs of colour. The area of blue has the look of being in front of the others because a strip of light brown which divides it off from an oblong of orange-red functions as a shadow. These three colours are painted on a colder red which emerges as a broad edge to the canvas. I should say



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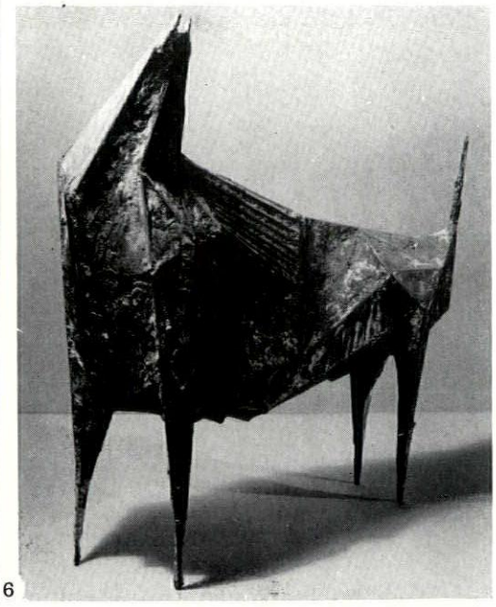
that Miro was the point of departure for Rothko, and that he was an influence in the sense that certain aspects of his art probably represented for Rothko the last layers of perturbation veiling a world of pure contemplation. The art of Rothko seems to me to be the most valid of all the cleansing operations undertaken by twentieth century painters. It is baffling and mysterious in its simplicity, and I know that many people only find it an insult to their intelligence; but if by some miracle Rothko's attitude to painting were to prevail we should all be on the way to



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becoming converts to Zen Buddhism.

Lynn Chadwick's exhibition at the Arts Council Gallery included the works which gained him the sculpture prize at last year's Venice Biennale, and disclosed an adept of the sculptural object. Like the work of Kenneth Armitage (who will, I understand, represent British sculpture at the next Biennale), his sculpture tends to arouse associations with building and cabinet-making. If an Armitage sometimes looks like the barbed fortification walls of a tropical village or an upturned table, Chadwick's 'Teddy Boy and Girl' reminds one of English Perpendicular, and his elegant *Beast*, 6, is a kind of organic sideboard. The fundamental difference between them is that Armitage has a warm and rounded sense of humour and Chadwick a cool, angular feeling for the macabre. This gives Chadwick the advantage of appearing to be more serious.

The award to Chadwick annoyed several English critics because for some reason best known to themselves they are convinced that the big international prizes usually go to geniuses. Chadwick is in fact well-placed, as a sound academic modernist, to be in the running for many more prizes, and may well prove to be as valuable to our prestige abroad as Ben Nicholson.

Robert Melville

FUNCTIONAL TRADITION

OCCASIONAL BRIDGES

The footbridge presents such a simple problem (to throw a pathway that need carry only the weight of a pedestrian over a river, road, canal or railway and furnish it with a handrail for safety), and invites such a straightforward answer, that it is not surprising that we can often observe in footbridges that direct relationship of means to ends which is the basis of the functional tradition. Moreover the modest role played by a footbridge does not encourage the designer or builder to confuse its structural simplicity by applying the kind of self-conscious architectural treatment often thought necessary in more ambitious edifices.

But this does not mean that the simple footbridge is without subtlety. Nothing could be more elementary in conception than this timber footbridge over Shiplake lock on the Thames, 1, yet the line of its gentle rise towards the centre and the way the handrail is canted outwards (logically responding to the fact that the body needs wider passage-room than the feet) gives it liveliness and expressiveness.

The trestle, braced-girder and true arch traditions in footbridges are represented respectively by these examples from Shiplake, 1; the Stroudwater Canal, 2; and Boston, 3.



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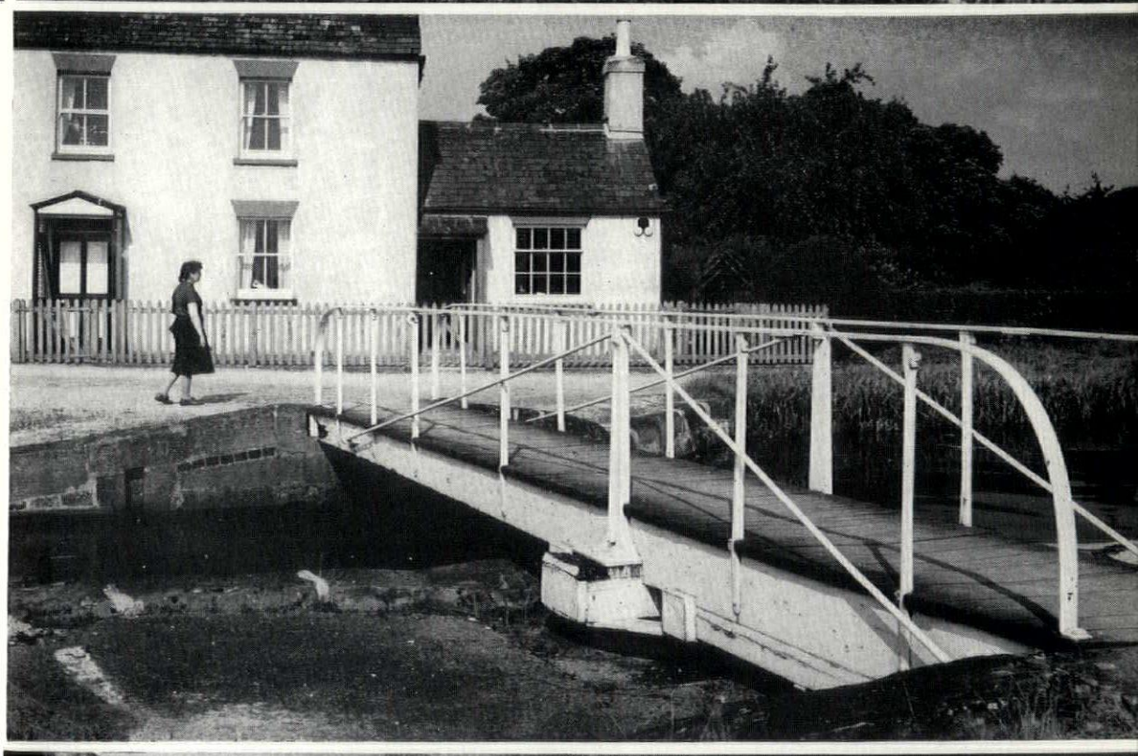

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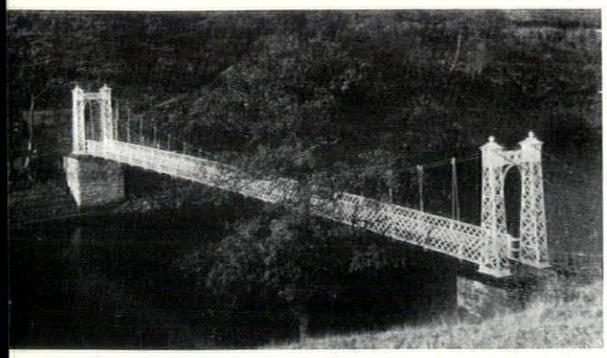
3

Another canal footbridge, 2 (at the junction of the Stroudwater canal with the Gloucester and Sharpness ship-canal), shows the same thing done simply and elegantly in iron. The relative heaviness of the platform is due to this being a swing bridge. 3, on the other hand, is a fixed bridge of far larger span, and is typical of the beautifully economical engineer's cast-iron bridges of the early nineteenth century. It crosses the West Fen Drain near Boston, Lincs, and is marked 'cast at Butterley 1811.'

The suspension bridge is an even more elegant type because elegance is inherent



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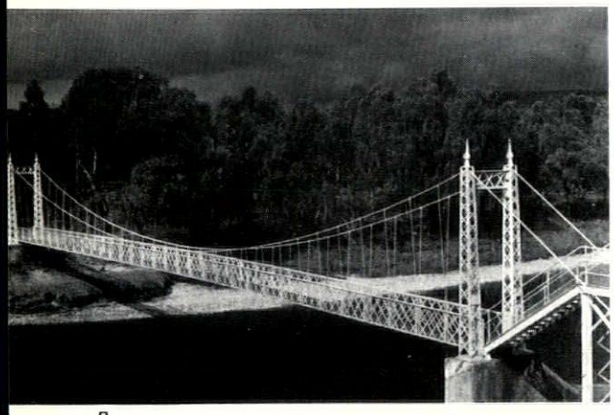
in the form of construction instead of being dependent on refined detailing. The examples illustrated here possess both: 6, a white-painted iron footbridge across a stream just north of Lewes, Sussex—it leads from a public footpath into the grounds of a private house; 4, a more ambitious example, with lattice-work towers and handrails, across the Goyt valley near Buxton, Derbyshire; 5 and 7, a similar bridge, of even greater delicacy, at Cambus-O'-May, near Ballater, Aberdeenshire, built as recently as 1905.

A separate category of iron footbridges, with its own traditions, is provided by the bridges 'except by which passengers may not cross the line,' that are part of the traditional furniture of railway stations.



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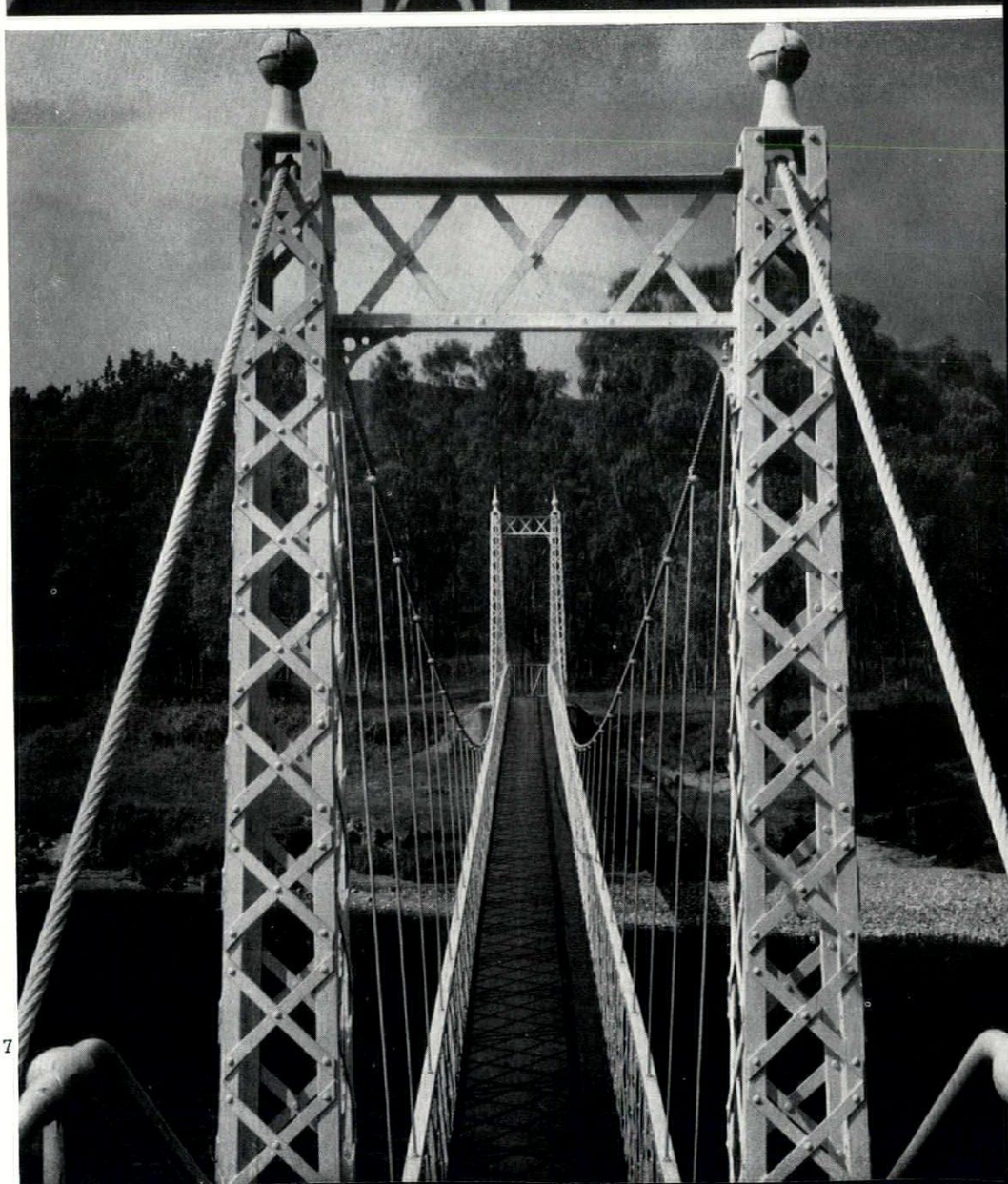

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occasional bridges

Suspension bridges are the queens among footbridges: these graceful and aptly detailed examples are from Lewes, 6; Buxton, 4; and 5 and 7, almost diagrammatic in its reduction to essentials, is at Cambus-O'-May, near Ballater.

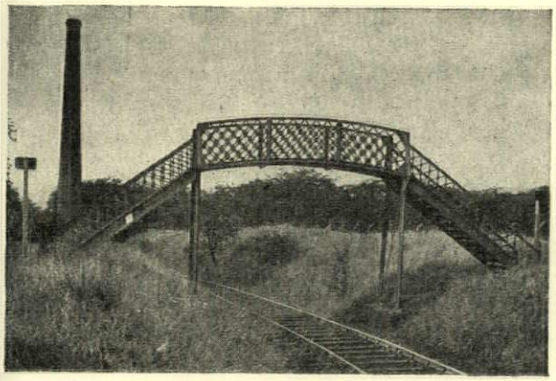
They take many forms*—straight or arched, roofed or open—but most of them have sides of strap-iron lattice-work that give them the lightness and transparency possessed by this typical specimen, 8 and 9, which spans a siding at Charlesworth, between Hyde and Glossop. J.M.R.

*Some of these have already been illustrated in the REVIEW: e.g. in June, 1942.

occasional bridges

Most familiar of all types of footbridge, and to most of us also the most familiar exemplar of lattice trusses, is the sort by which notices throughout the land exhort us to cross the railway line. This copy-book example of Functional Tradition elegance and straightforwardness crosses a siding near Glossop.

8



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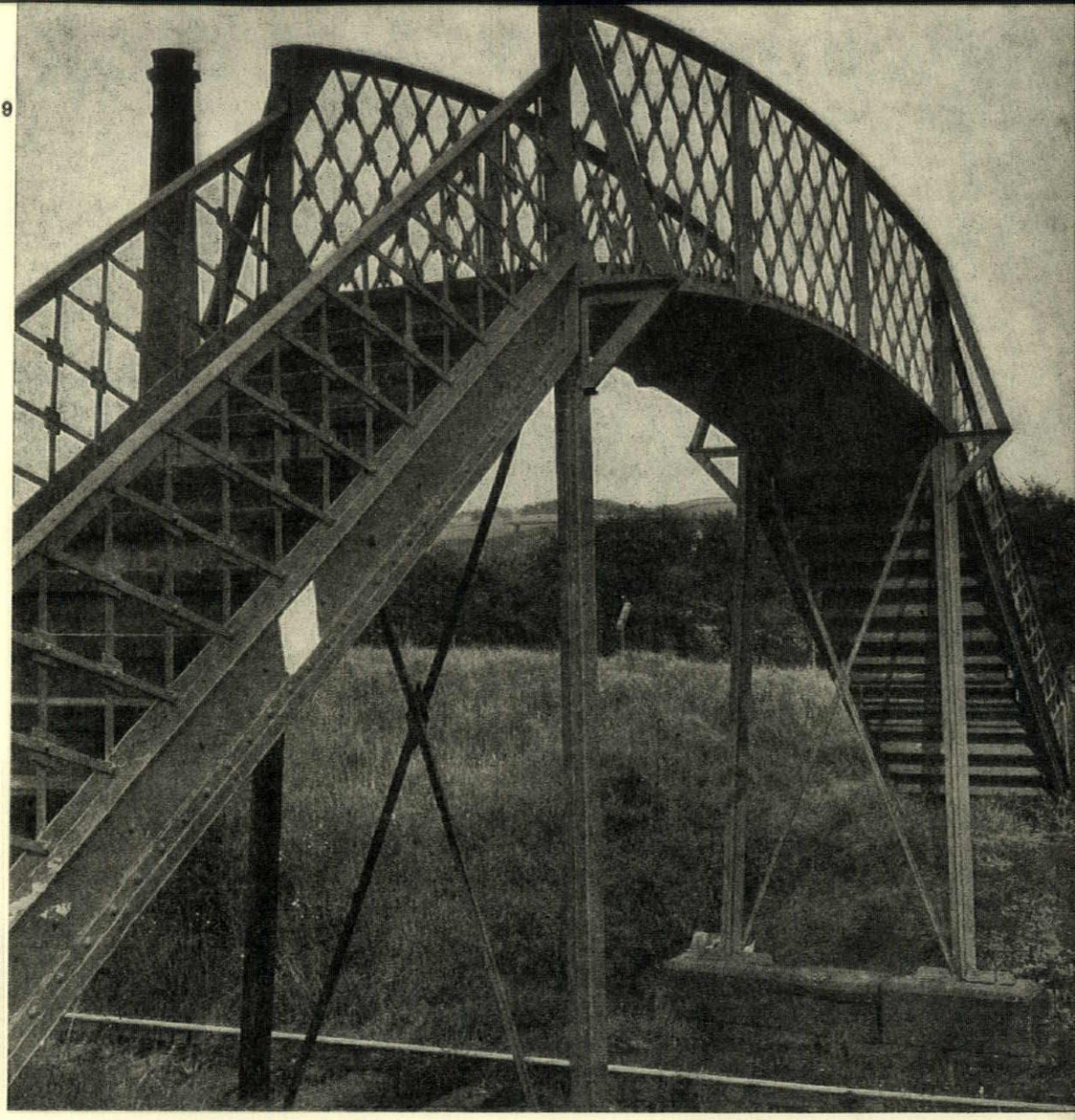


COLOUR

FALU RED: Sweden's Landscape Colour

We see so many examples of Sweden's modern buildings in the architectural magazines that we tend to forget her many old and beautiful buildings—especially the vernacular timber architecture of the countryside. 56 per cent. of Sweden is covered with forest. It is natural enough, therefore, that even today most of her rural buildings should be of wood.

Softwood buildings need protection, especially in a rigorous northern climate. The traditional protection of wood buildings in Sweden is of a remarkable kind, remarkable for three reasons—its excellent preservative qualities, its cheapness and, above all, its colour. There is no lovelier building colour in the world than the traditional Swedish preservative paint called Falu Red—a rich, warm, winey red which is hard to describe in words.

The paint is almost exclusive to Sweden, though it can be seen across the borders in Norway or Finland, and even far away 'out West,' where it may sometimes be found gladdening the nostalgic heart of some Minnesotan settler from Scandinavia.* It is so typically Swedish, indeed, that Strindberg once declared that the national colours should be not blue and yellow, but green and red—the green of the pine woods and the red of the houses. The colour harmonizes in a magical way with the landscape as a perfect contrast to the green forests and the grey outcrops of granite, creating vivid focal points to enliven a landscape which, with its eternal pine, birch, lake and rock, tends to become monotonous. Strangely enough, the red paint itself never grows wearisome, perhaps because it varies subtly in tone from place to place and according to the time of day and season of the year. Moreover, its bouquet, like that of wine, is enhanced by age. Reflecting the evening sunlight on the barren skerries of the west coast in the dream-like clarity of the northern summer, the colour, though never garish, is fantastic in its brilliance. Among the whites and greys of winter it is more quietly gay. It is a lyrical colour and has been an obvious inspiration for a host of Swedish painters, especially of nationalists like Carl Larsson, Carl Wilhelmsson and Anders Zorn. As the Swedes would say, the colour creates

* Red paint is often used on farm buildings both in Canada and the USA and the author has tried to discover if there is any connection between Swedish red paint and that used in Canada and the States. Was it brought to the West, for instance, by Scandinavian immigrants? The answer seems to be an inconclusive no. The largest manufacturers of red ochre paint in Sweden, the Stora Kopparbergs A.B. write: 'The use of red ochre in USA and Canada hardly could derive from Sweden as, but for our factory in Falun, there are only a few smaller manufacturers who—on a very limited scale—produce red ochre out of iron pyrites. None of us exports to the above-mentioned countries. Whether the red ochre, used over there, is based on the same origin as the Falu red, may also be questionable. Red ochre for buildings is, as you know, also produced at certain ironworks by glowing of basic iron-sulphate. May be that the idea of using red ochre on buildings in USA and Canada derives from Swedish immigrants. We have ourselves during the last few years found a special interest in particular from Swedish-Americans in obtaining importation of red ochre from Sweden to USA. However, our production just covers the use of this colour in Sweden and the export to the Scandinavian neighbour countries, Norway, Finland and Denmark and to Balticum and Belgium. At times this export has amounted to nearly a quarter of the whole production. The total production amounts during normal years to about 2,300 tons.'

Information has also been received from the National Research Council of Canada, who write: 'We have contacted Dr. C. Y. Hopkins of the Protective Coatings Division of the National Research Council, and he advises that red ochre used for Canadian farm paints is from bog iron ore deposits. It is essentially a hydrated iron oxide, very finely subdivided, and can be mixed directly with the vehicle with no further milling being necessary. This type of paint has served its purpose very well. It is gradually losing favour for the gloss milled paint that can be supplied by manufacturers in a variety of colours. He thinks that the availability of a cheap pigment has had more to do with their use rather than their adoption by Swedish immigrants. We believe this to be also true for United States farm buildings.'



falu red *wooden buildings in Karlbo, Sweden, painted the distinctive Falu Red (from* En Bok om Rodfarg, *by Romdahl, Erixon, Johansson and Lundberg).*

stämning (*Stimmung* in German; Atmosphere is perhaps our nearest English word).

The sentimentalist will claim that the colour is just right in the Swedish landscape because it comes from a natural, indigenous material, and is no sort of soulless, modern import. Certainly the attempts to produce the same effect by synthetic means have so far not been successful.

Right back to the Stone Age red paint has had an appeal, especially among those who live in direct contact with nature, not only for its decorative quality but because, in its likeness to blood, mystic associations with the power of life itself have been attributed to it. In small ways it was used in Sweden right back in the days of the Vikings, on wooden chalices for instance. Later it was used on small areas in building work such as doors, but it was not applied to buildings to any great extent until the late sixteenth century and then mainly to preserve the more sensitive parts such as outside angles, roofs and doorways. The first use of red paint on the whole exterior walling occurred in the middle of the seventeenth century, but a hundred years passed before red paint came into its own when production of the paint began in the Falun copper mine. It then became cheap enough to use on the houses and barns of the peasants. Hitherto it had been applied only on the more important buildings—manor houses, churches and vicarages. Today it has lost its early snob prestige and, to distinguish them from the common herd, the more important buildings in the country and smaller towns are now usually painted in white, grey or buff—that is, where ardent nationalist architects like Cyrillus Johansson have not had their way.

Though the red colour was, no doubt, adopted for its appearance, and perhaps, as has been suggested, for mystic reasons, its real purpose was to preserve the thinner sawn timbers of the framed buildings which superseded the solid, more durable and untreated axed work in the seventeenth century. Preservation also became more necessary as the cost of timber rose.

What exactly is this Falu Red, this ochre paint of Sweden? The foreign visitor will have some difficulty in finding out. He will be told with a shrug: '*Jo, det är vanlig rödfärg*'—it's just ordinary red paint—as though the question were foolish. There is, however, one certain source of information—the *Stora Kopparbergs Bergslags Aktiebolag*, 'the oldest trading company in the world,' founded in the thirteenth century and still going strong as one of the largest industrial concerns in the country, and as owners of the ancient copper mine at Falun in Dalecarlia.

Before about 1750 the raw material for red paint came as a by-product in the processing of sulphur and vitriol carried out in various parts of the country. Then large scale mining of *Rödmull*, or Red Earth, began at Falun, and to a lesser extent in other places. The Falun mine still produces some copper ores but mainly other minerals and also Red Earth, which contains hydrated iron oxide, mica and other minerals combined through the centuries by natural physical and chemical processes. The earth is crushed, sieved and washed to separate the natural fine-grained pigment from coarse material. To bring out the colour it is then carefully burned. According to the amount of burning, the colour will vary from yellow, through browns and red to deep violet and even black. The product receives a final grinding and sifting before it is packed into paper bags or barrels.

Though the composition of the powder varies, the red pigment is always uncombined iron oxide which amounts to about 33 per cent. Some iron oxide is also combined with other minerals. The following is a typical recipe:

Iron Oxide, 40%; Aluminium Oxide, 6%; Magnesium Oxide, 5%; Calcium Oxide, 2%; Sulphur Trioxide, 1%; Silicon Dioxide, 42%.

Two kgs. of ferrous sulphate are mixed into 50 litres of boiling water into which is stirred 2 to 2½ kgs. of finely ground rye flour. After 15 minutes of boiling 10 to 12 kgs. of the red powder is added with vigorous stirring. The paint is ready after another 15 minutes of boiling.

The paint continues to be widely used on Sweden's timber buildings, usually in conjunction with off-white door and window architraves. It is even applied sometimes on concrete work, though for purely decorative reasons. It is so characteristic of the Swedish landscape that if it should ever be replaced, some virtue would seem to have left the land, a virtue not purely aesthetic, but also one of association, connected with the country's pride and independence. Red in Sweden means *Falu* Red. Its significance is purely national.

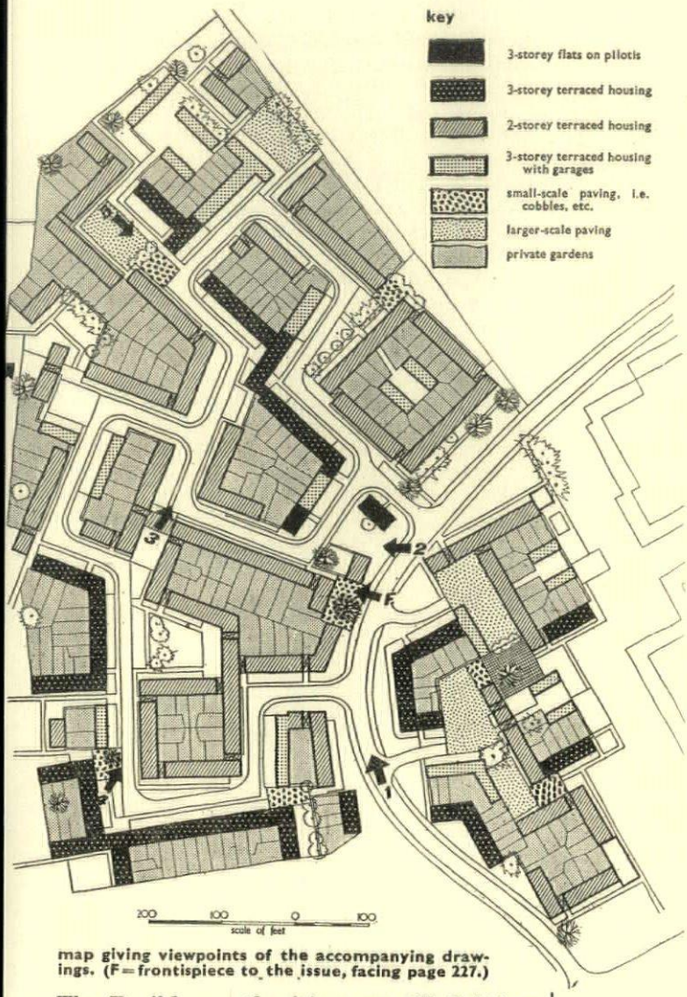
Eric de Maré

TOWNSCAPE

GHYLLGROVE BASILDON

The elements of this housing scheme (architects, Lionel Brett and Kenneth Boyd), like those of many other estates, consist of dwellings, footpaths, roads, trees, gardens and so on.

But it differs from most layouts in the way these parts are put together. The layout is not orthodox. Nor, according to the New Town authorities, is the density: at 22·4 dwellings per acre it is twice that normally used in the New Towns and is approximately that of the London squares illustrated in Counter-Attack, page 424.

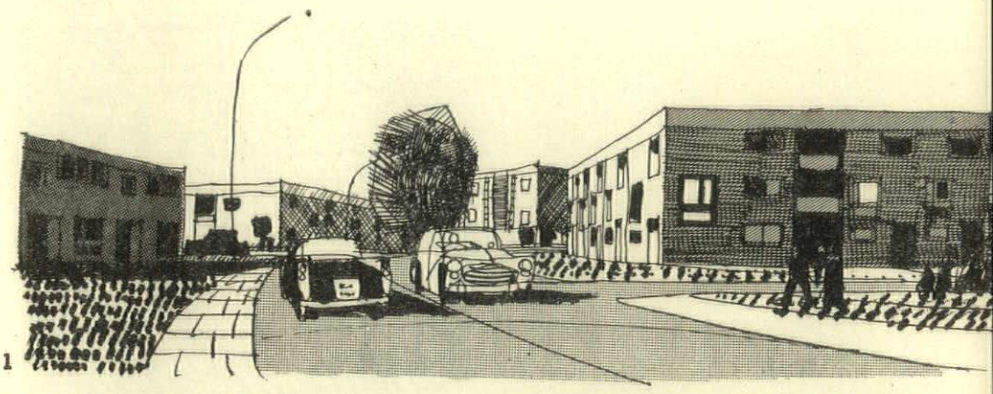


map giving viewpoints of the accompanying drawings. (F = frontispiece to the issue, facing page 227.)

The Basildon authorities are still fighting this, but have only been able to put forward the suggestion that the poorer migrants should go to the less dense areas and the richer migrants should occupy the denser estates, which is in its way a back-handed compliment.

The first thing one notices about the plan, I suppose, is the marked contrast between the major and minor roads, not only are they different in width but in *character*. For whereas the through road is designed to help the motorist, the sight lines are good, the curve easy; the roads inside the estate consist of a rectangular meander of short travels. In the first case ease of traffic motion is paramount, in the second case, inside the estate, it is important to keep speed down for the safety of pedestrians and also for the concealed benefit that, by reducing speed, sight lines at corners can be sharper and consequently the streets can be built up as individual places and not left an amorphous jelly of splayed corners.

In striking contrast to the circuitous route of the motor car in the layout is the direct access arranged for the pedestrian, for the person who is standing up and not sitting down. Pedestrian ways intersect the whole layout in the most economic and direct fashion possible; under buildings, by the sides of roads as orthodox pavements, becoming paved



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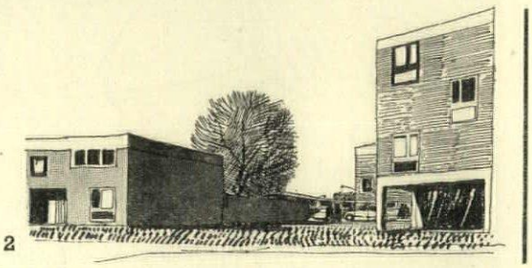
1, the traffic road sweeps through the site and the ground is frankly given up to the interests of traffic. . . 2, but from the road the internal structure of the plan is glimpsed . . . 3, built up streets which have a sense of locality and exploit light and shade . . . 4, pedestrian map and pedestrian



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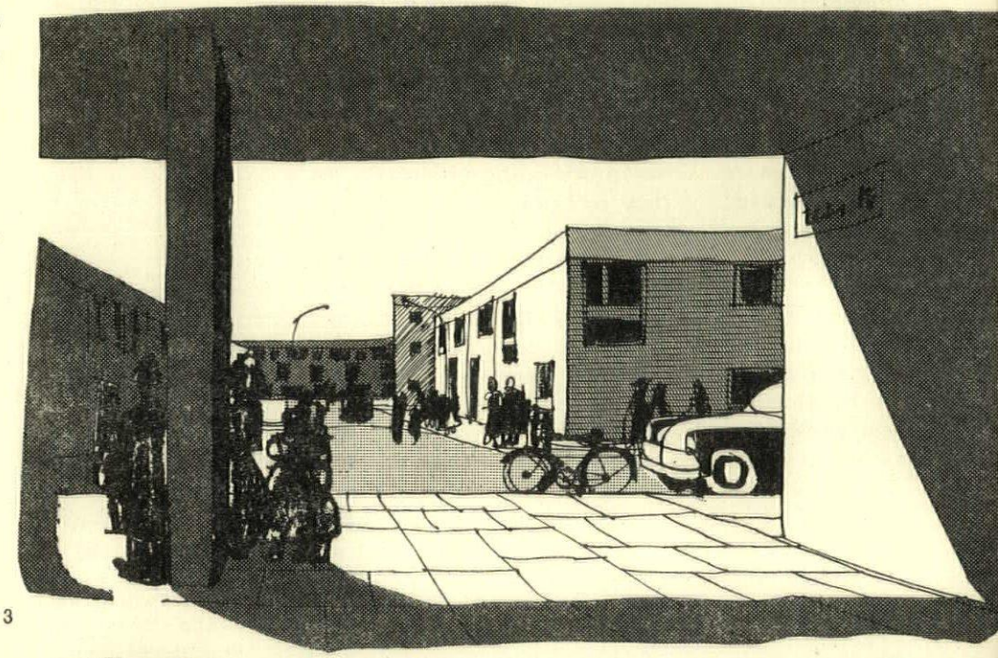

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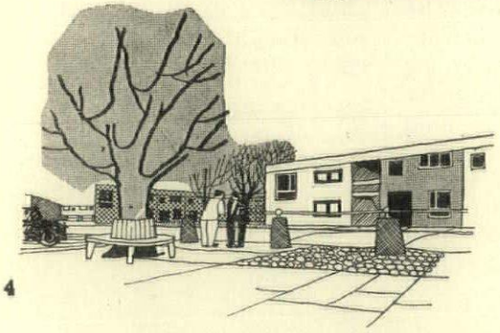

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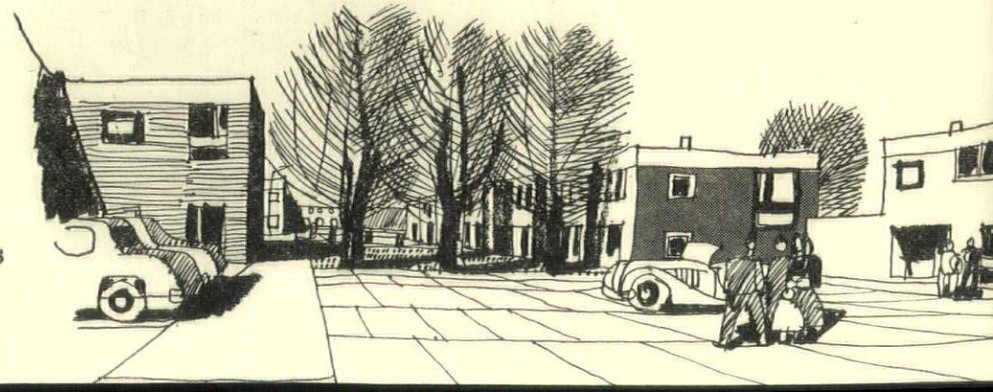
areas . . . 5, mingling with areas of multiple use where the car and pedestrian has equal right, but the safe place for children playing is underneath trees . . . 6 (overleaf), the perimeter is considered. Housing does not turn its back (or back gardens) on open space but sucks it into the scheme.



5



6

areas under trees: they give the pedestrian a real command of the layout.

One of the devices of this layout is the insistence on front and back, that is to say public space and private space. In so many cases the public space is devitalized and the private space frittered away by trying to hide the services, the milk, the dustcart, etc. Here the back gardens are free from the concrete paths of decorous services and are thus able to build up to a *real* area of seclusion while the public roads are used for their real purpose.

Walls, instead of transparent fences, are employed in the layout to preserve this sense of enclosure. The public space is organized, as we have seen, into traffic roads and pedestrian ways, and to cater for all occasions these separate systems expand from time to time into nodes—there are car parks, there are pedestrian enclosures, sometimes the two overlap in the form of a square with pedestrian priority. In this way vitality and variety of space use is introduced whilst trees are used strategically to enclose or to punctuate.

The continuity of street frontage, which is remarkable and to many people unorthodox, captures sunshine and shadow. The direct pedestrian routes which penetrate under buildings mean that you change, dramatically, from one urban climate to another. The semi-detacheds know nothing of this.

What will be the outcome when it is built? Will the devices of Townscape produce a sense of locality and vitality? We shall see.

Gordon Cullen

COUNTER-ATTACK

WESTGATE FIELDS, CHICHESTER

The Westgate Fields are in danger.* Two schools and a ring road are proposed on them and a ten-year-old decision to allow factories along the whole strip beyond the railway is about to be implemented. We think that all of this is wrong: that the proposals (due for Public Inquiry on October 8) should be turned down, that the outline permission for industry should be revoked, that there should be no tampering whatsoever with the Fields as they are and with the continuous segment of countryside beyond them extending to Chichester Harbour: a dyed-in-the-wool, preserve-it-at-all-costs attitude. Why?

The reason, quite simply, is that the Fields are more valuable than any alternative that could be named. This is the one cathredral city where it is possible to walk from intensely urban—market-cross, shops, public buildings—to in-



1

tensely rural—real cows and real cow-dung—in a few yards, and then, to see, on turning around, the image of the cathedral city in a form which almost knocks the viewer over, 1. Beyond that, the viewer can then walk from the Fields over the railway out to Chichester Harbour and Appledram without any break. It is a permanent pick-me-up, a release, a free dose of psycho-analysis for a muddled world, and the population of this island is slowly coming to realize it. The question of the fate of one or two preserved views of the cathedral is the least of it: the true issue is something much wider and universal, hardly visual at all, something as basic as salt spray at the seaside, or the moment of sanctuary under a tree from a heavy storm, or the shock of going from a crowded room at night into the dark street outside.

And there is nothing else like this in the country: the Westgate Fields are the last of their kind. Our attitude is what it would be to preserving say the last unspoilt beach in the country: whatever the claims were, the real 'national interest,' the power to enrich the individual life of each citizen, is preservation, at any cost. This is not only *a* clean joint between Cathedral City and Country, it is *the last* clean joint between Cathedral City and Country.

This isn't hysteria: it happens to be quite literally true. If you add up English cathedral cities in this way you will come out with, at most, two others—Salisbury and Wells—with anything like countryside near the centre. In both of these the approach is mediated via the close—and in Wells the centre is barely a town anyway; nowhere but Chichester is there the sudden shock Town/Country, Enclosure/Open Space, Crowds/Emptiness, Complexity/Simplicity. The countryside laps the walls of the city, 2, as vividly as the lagoons lap the city walls in the northern approach to Mantua. And no half measures with a lot of open space left, no good design of buildings, no new views from fly-over bridges will *ever* compensate for this: it must be all or nothing.**

Ian Nairn

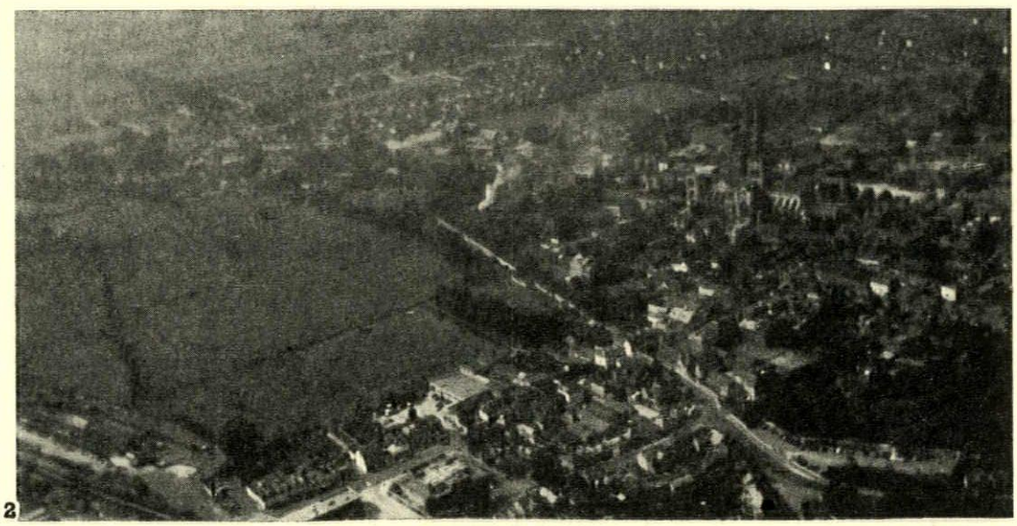
[** The Bureau's proposals are in fact as follows:

(*a*) for the Fields, one school could be sited at the extreme west end, beyond the River Lavant. This can be tested on site. A screen of poplars should be grown on the north side of the railway to hide the existing creeping industry; the rest ought to stay just as it is.

(*b*) The other school should find another site in Chichester, for example, the open space on New Park Street which could be exchanged for the disused quarries at Rumboldswhyke, which could make an admirable public park.

(*c*) The ring road would improve traffic a little (so would a road through Salisbury Close or Norwich Close—or almost anywhere) but not much. Buses would still want to go through the centre and there would still need to be traffic control at the Butter Cross. The gain (chiefly the illusory prestige value of having a completed ring road) isn't worth the loss.

(*d*) The industrial development should be revoked and sites allocated south-east of the town where more development will at worst link up with Bognor and the litter which stretches along the Sussex coast as far as Brighton.]



2

* See Counter Attack, A.R. Dec. 1956, page 364, and also A.R. June, 1957 page 451.

SKILL

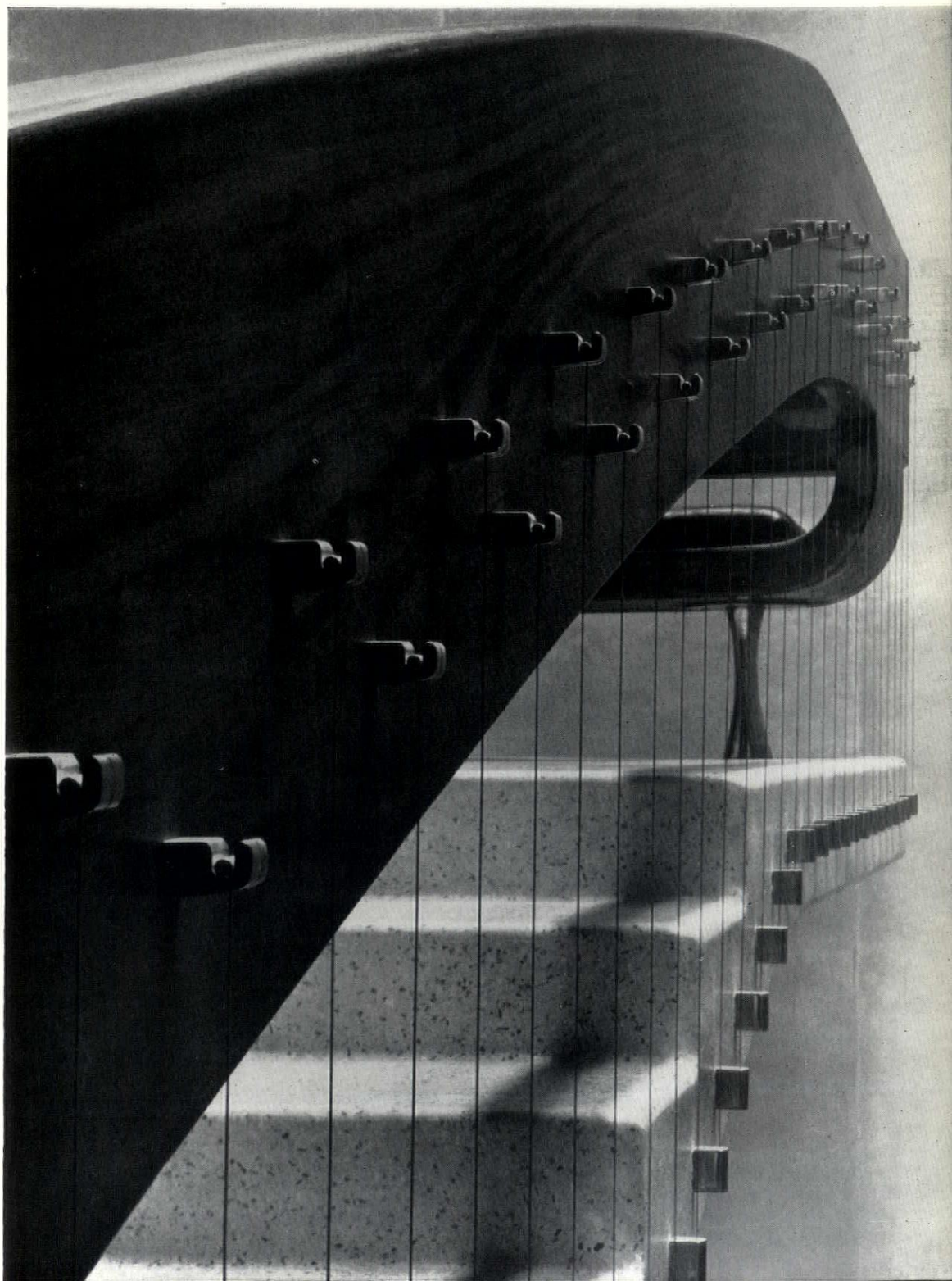
A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design review
3 techniques
4 the industry

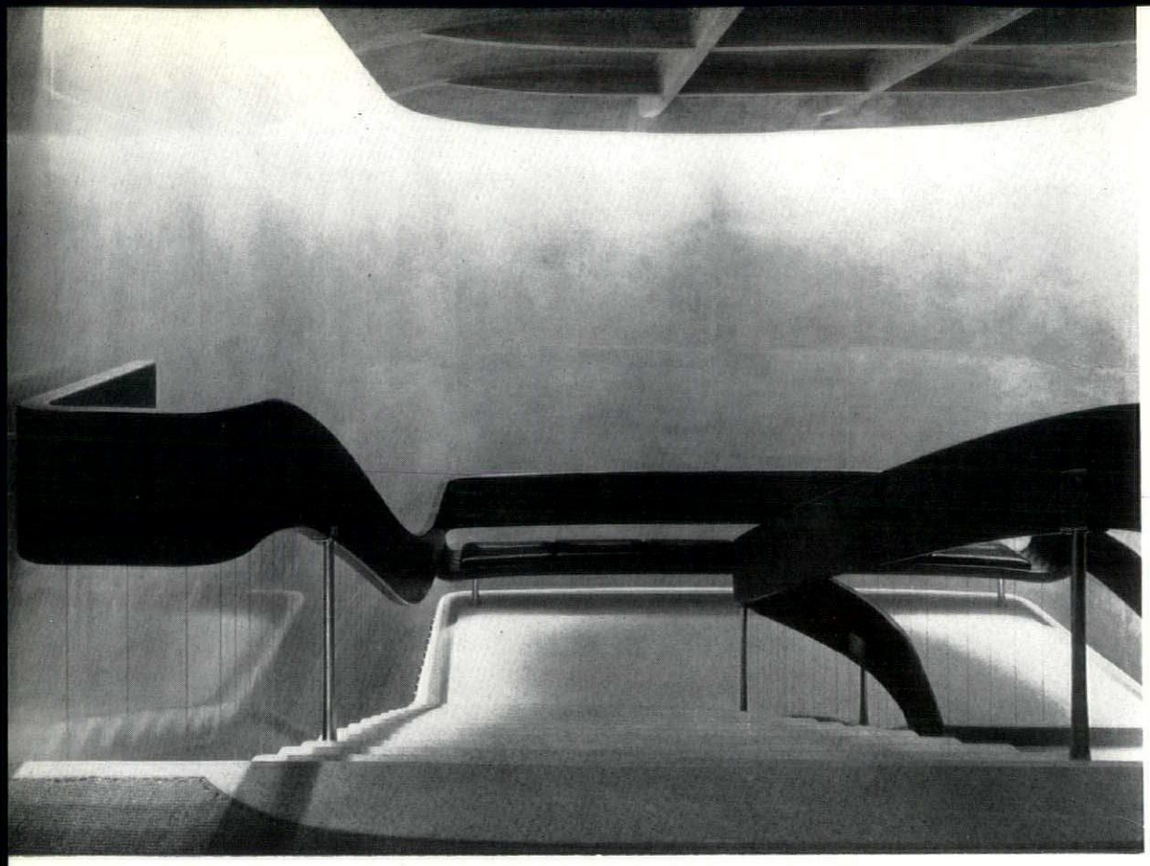
1 INTERIORS

DEPARTMENT STORE STAIRWAY, STOCKHOLM

Architect: Arne Rudberger; assistant architect: Stig Lönngren



1, *the mahogany banisters. The protective wires are in sprung casings.*



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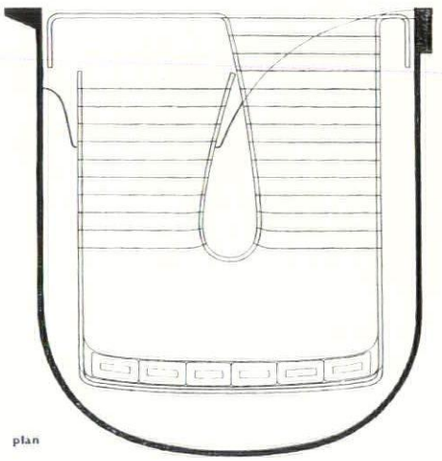
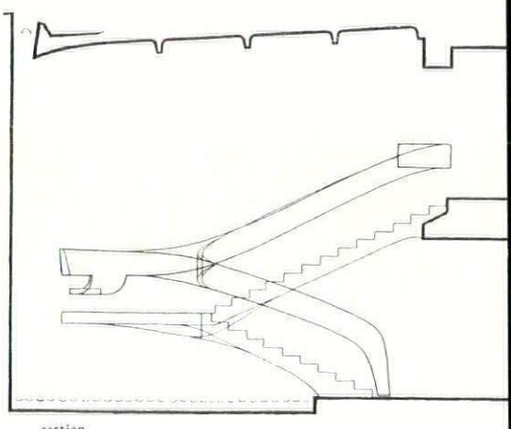
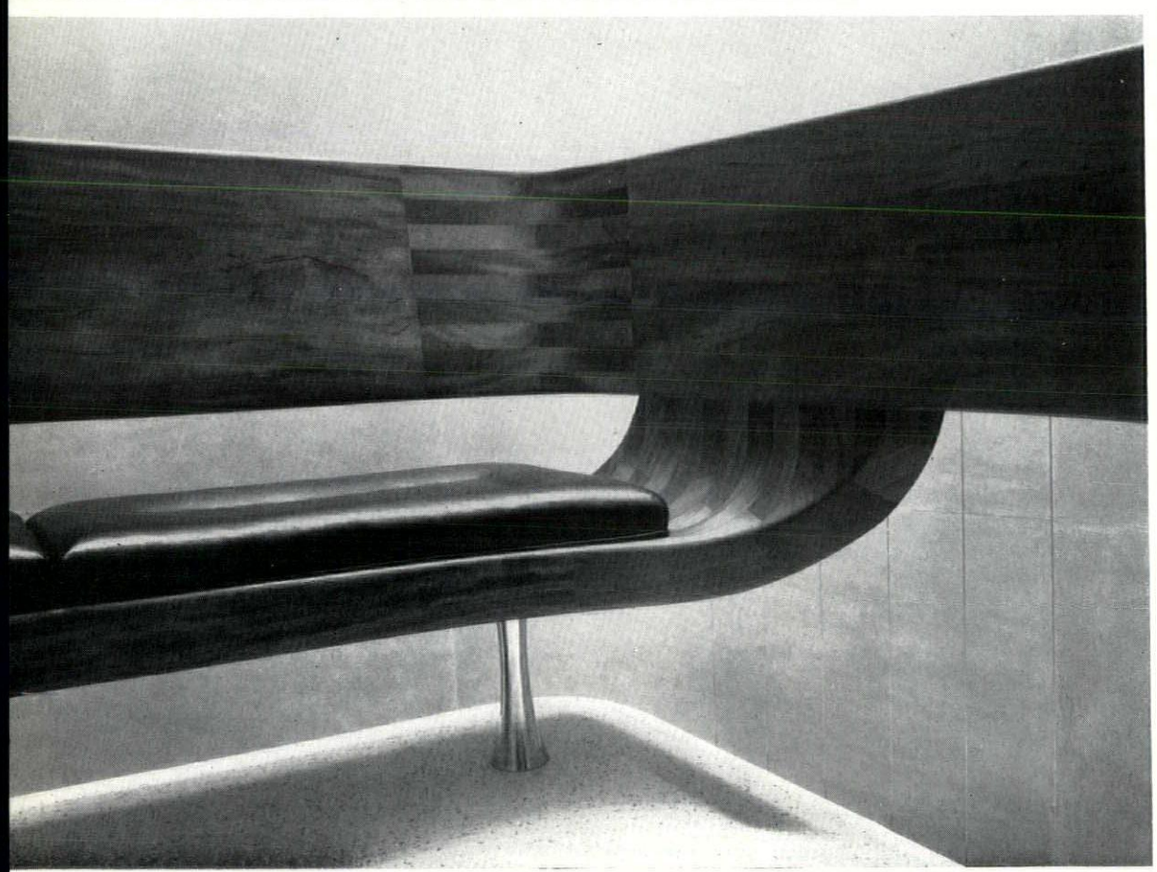


plan



section

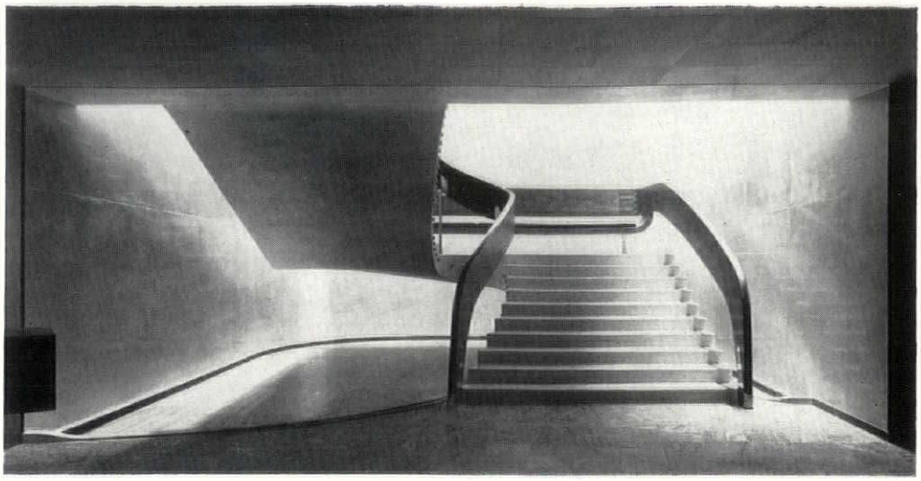


3

2, the top of the staircase, with the special concrete shell ceiling over it; the stair surface is finished with an aggregate of green marble and dolomite. 3, the half-way landing; the leather seat covers are black.

The MEA store is in Norrmalmstorg, in the centre of Stockholm. The main stairway between the ground floor and basement of the store is cantilevered and pre-stressed in both flights. The reinforced concrete consists of standard and white cement, which is ground down about $\frac{1}{4}$ in. after casting, with graded aggregate of dolomite and green marble. The banisters are of solid Honduras mahogany, and the fittings are chromium-plated steel; the lower ends of the protective wires are in sprung casings. The ceiling consists of crossed concrete beams supporting a concrete shell approximately $2\frac{3}{8}$ in. thick.

DEPARTMENT STORE STAIRCASE, STOCKHOLM



4, general view at the bottom. The surrounding walls are faced in stucco lustro, and the pool is marble-lined.

BAR IN BRIGHTON

Designer: John Carter

The Metropole Hotel, in which the bar is situated, faces the West Pier. A partition wall at the south end of the bar was removed, and the sea front elevation opened up with a large window. The existing revolving doors were screened, partly as a draught protection, by glass panels set in satin brass frames, with their surfaces etched with motifs taken from diatomic marine forms. The bar is entered through armour plate doors. Over the entrance is a pergola of wooden beams, either ebonized or painted white, from which an illuminated false ceiling is suspended. An existing travertine floor in this section was retained; the ceiling over the whole bar, with a pattern of 4-in. squares in relief, is new.

The bar is set in a rosewood surround, and framed in an ebonized

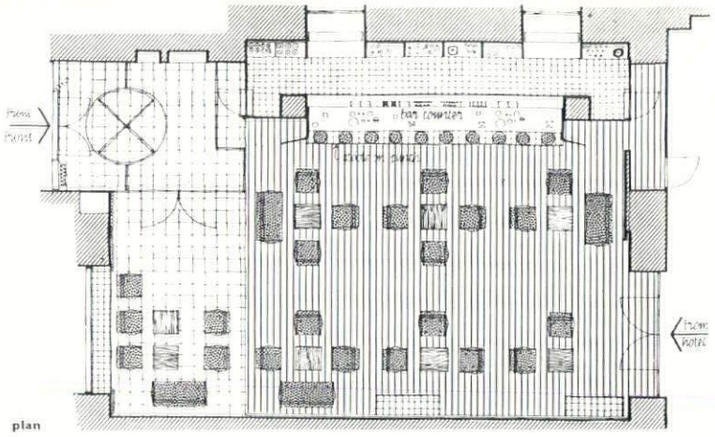


6



5

5, the bar looking towards the sea front entrance. 6, view from behind the bar.



plan

BAR IN BRIGHTON

moulding; the flying wings at either end screen the service openings. The rectangular panels on the facing walls are also rosewood, and inset amongst them are light fittings of brass and transparent plastic, backed with panels of various colours. The wall and ceiling paintwork is white; the cupboards behind the bar are pale blue. With the exception of the wall lights, the carpet and all the furniture and fittings were specially designed for the scheme.

2 DESIGN REVIEW

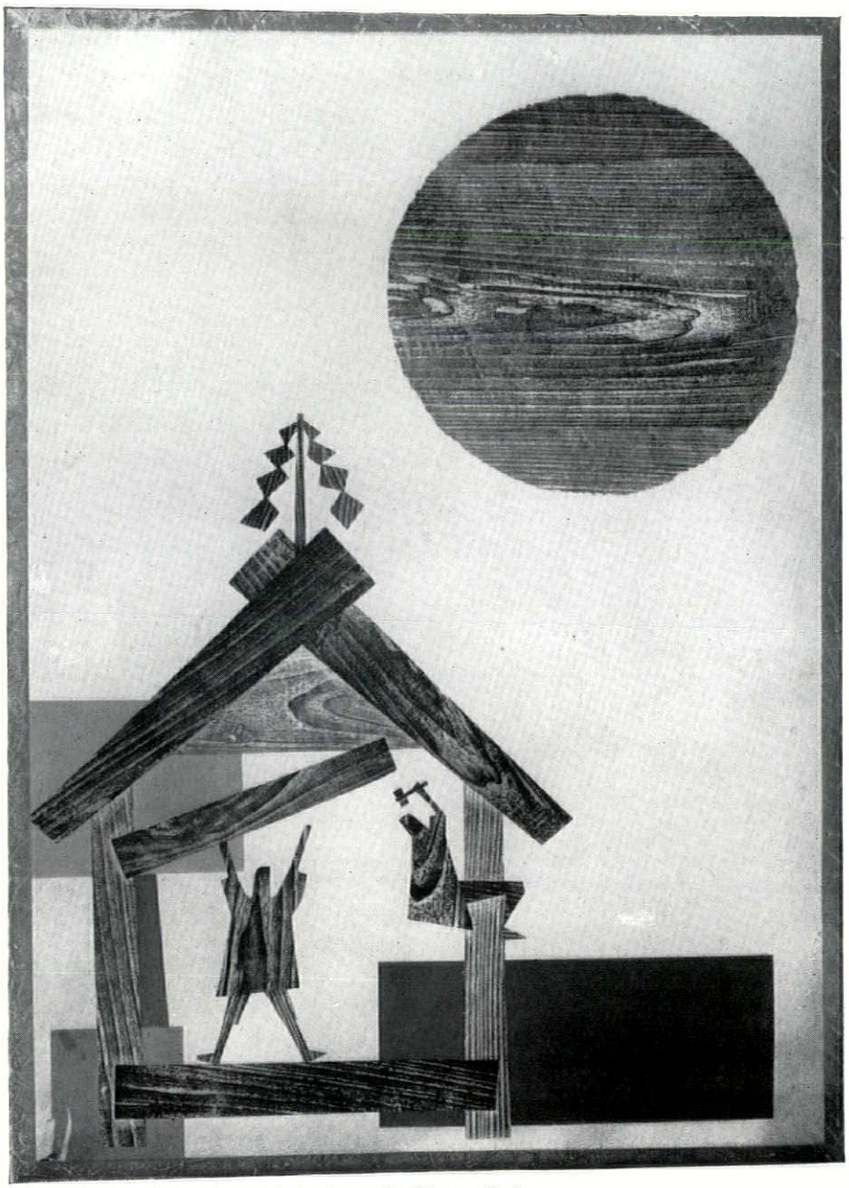
POSTER COMPETITION: VARIATIONS ON A NATIONAL THEME

National characteristics are always easily recognizable by those who come from other parts in the world; but seldom are those characteristics understood in more than their superficial trappings. An Englishman imitating an American accent, for example, will hardly fail to convey his intentions to another Englishman, though to an American the exaggerated inflexions will certainly lack conviction. In the world of film creations such misunderstandings are common, and it is only too easy to deride the spuriousness of a Hollywood setting intended to convey the East End of London, while remaining happily convinced of the authenticity of a set portraying the Kasbah. The failure in global terms of this easy contentment with popular interpretations of national themes was clearly demonstrated in a recent international poster competition for the MGM film 'The Tea House of the August Moon.'

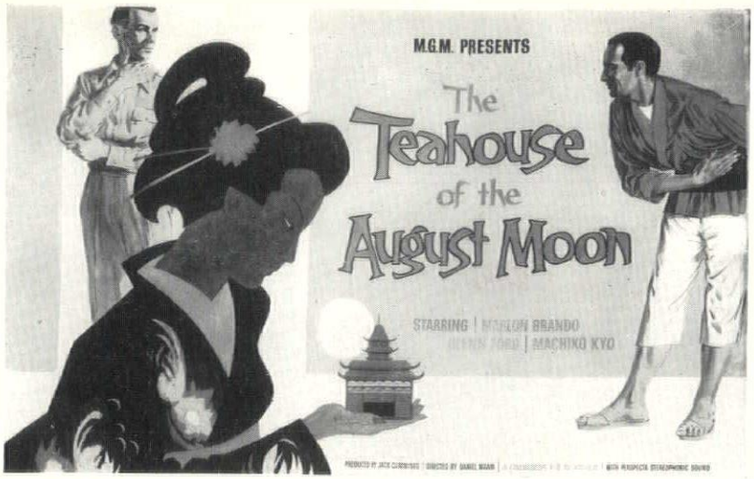
Seventeen countries submitted posters which had already been selected by their own judging panels in a series of qualifying contests, the final selection being made in the USA by William Lieberman, Curator of Prints at the Museum of Modern Art, A. Hyatt Mayor, Curator of Prints for the Metropolitan Museum of Art, and Theodore J. H. Gusten, Executive Director of the International Graphic Arts Society. It is perhaps significant that the winning poster was by a Japanese artist Kaora Ueda, who conveys in his simple abstractions a symbolism infinitely more expressive than the conventional Japanese motifs that govern the designs of the two posters chosen as the best of the British entries.

In Ueda's design, the suggestion in the teahouse itself of simple post and beam con-

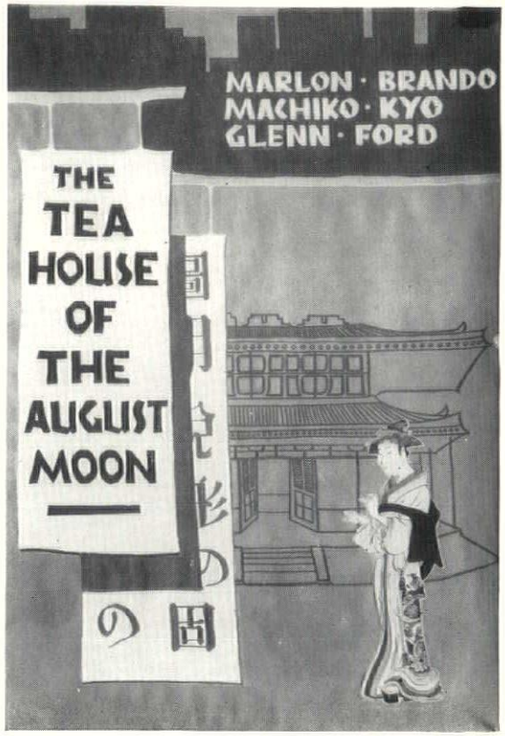
[continued on page 281



1, *the winning design by the Japanese artist Kaora Ueda.*



2, the poster by Michael Margolis which won first prize in the British qualifying contest.



3, the second prize-winning design from among the British entries by R. G. Warner, Sir Gerald Kelly, Edward Le Bas and W. A. Cathless judged the British entries.

continued from page 280]

struction typical of traditional and modern Japanese architecture, the clever use of the wood grain both as a linking theme and more particularly to express form in the smocks of the two figures, and the juxtaposition of dynamic angular shapes and the great disc of the moon, combine to produce a powerful and dramatic image that benefits from the lack of lettering which, though necessary, is often obtrusive.

Having secured by means of this elaborate and far-reaching competition a film poster of unusual merit, the film company ignored the result in favour of the conventional and uninspired designs which finally adorned the hoardings: it is hard to understand why.

3 TECHNIQUES

FASCIA LETTERING

by John Sharp

The problem of lettering on buildings is a vexed one, and with many architects engaged in designing factories, shops, and offices, one would hope to find plenty of good examples about; in fact good examples are few. This month John Sharp recounts the different kinds of letters marketed in this country, in the hope of helping architects to think more conscientiously about this problem.

It is surely legitimate to display the name of a company using a commercial premises in a way that is in scale with the architecture. Certainly many clients ask for it and a few are satisfied, but others have to wait until the architect is safely out of the way before they call in a sign contractor to give them what they want; the result of course is most unsatisfactory—in some cases disastrous—and only confirms the architect in his original opinion.

Surely it is time for this to end, for it is only when architects are willing to consider the lettering as an integral part of the building that the temporary and added nature of many signs and symbols will be overcome.

The most familiar use of lettering is for shop fascias, and one of the basic requirements is that the lettering should be distinctive and easily recognizable from that of their competitors. This has led to the reproduction of many trade symbols, some of which have been designed for other applications and are not suitable for fascia work, and here there is scope for the use of bold faces and lower-case letters in keeping with the revived interest in lettering in other fields.

As many of the shops open after dark, they have a legitimate demand for illuminated signs and fascias, and such has been the technical development of illuminated forms in recent years, that the typography and layout could be of as high an order as any solid letter, if architects were to take a hand in the design. This increased demand in illuminated signs is typified by the recent installations at several bank premises.

faces

The Victorians used many wonderful faces for their shopfronts, playbills and so forth, and some are still to be seen in incised gold leaf lettering behind the glass fascias of older shops. Between the Wars there were two opposing trends. One was a general debasement of letter forms by ill-considered geometrical discipline and exaggeration, until they became virtually illegible, and the other was the over refinement and play-safe attitude that would allow of none other than Trajan—the only true Roman—and Gill Sans Serif.

Happily most of the former have died a natural death, but the latter are still with us, and dominate the general run of applied lettering. However, since the Festival of Britain revived some Egyptian faces there has been an increasing awareness of the value of the bolder forms of capitals, and also of the advantages that lower-case letters have in legibility, and it is to be hoped that these trends will continue.

A sample letter E has been chosen to illustrate throughout this article both some of the more interesting faces and some of the different material forms. It is important to bear in mind that lettering is a specialist art, and the snags and pitfalls for those who try to make up a face of their own are many and terrible. It is worth while consulting a reputable lettering manufacturer, most of whom issue sample alphabet sheets as part of their literature, before proceeding too far.

At the moment the majority of manufacturers put a tax on the bolder letters. There is a price differential in favour of the 'standard' Gills Sans and Trajan, followed by other Roman types, with the Bold and Broad serif types much higher, in the approximate ratio of Gill Sans and Trajan 21, other Roman types 23, Bold and Broad serif 35. This is generally attributed to the lack of operator familiarity with the bolder faces, and to the use of more material. However, one firm producing perspex lettering is offering a wide selection of standard faces of equal price, with extra cost only for special faces.

non-illuminated lettering

Most of the larger producers of applied lettering offer quite a wide range of materials and finishes. They vary greatly in their durability, price, and appearance, and the choice between them is not always easy. It is not possible to give comparative price figures between different materials over the whole range of letter sizes, as some are not physically suitable for the larger sizes, and others become uneconomic. Again, it is the custom of the trade to give quotations for each sign, and there are therefore no firm prices for the separate elements which make a sign. However, sufficient typical prices have been obtained for an average letter of 12 in. high, to enable the different materials and methods to be described below in order of descending price.

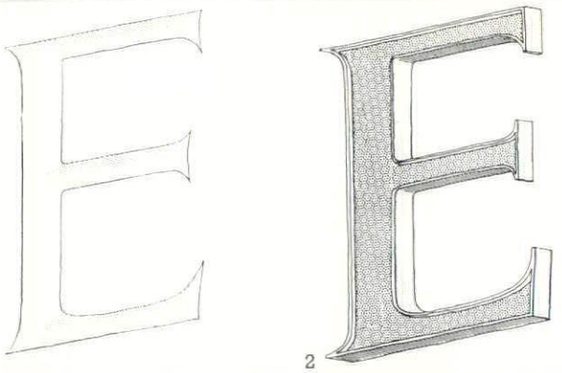
bronze. Bronze is undoubtedly the most durable material for applied lettering, and has long been used the letters being sand cast from prepared wooden forms. The majority of manufacturers present a choice between Roman or Gill Sans, in sizes varying from 2 in. to 2 ft. as their standard range. One or two will cast any face required, but as special wooden forms have to be prepared for each letter, it is obvious that outside the two standard faces there is a considerable increase in price.

There are three sections available flat, V, or filled.

Flat, as the name implies, has a flat face, and is rather dull in all but the smaller sizes.

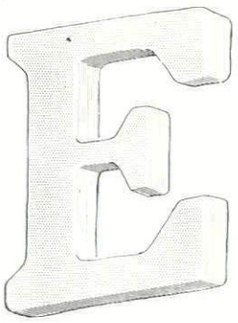
V is cast in the reverse of the

bronze



1, *basic Roman: V-section cast bronze.*
2, *basic Roman: transparent ceramic enamel filling over textured background on cast bronze letter.*

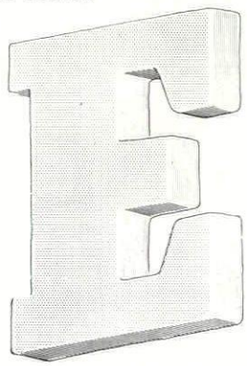
ceramic

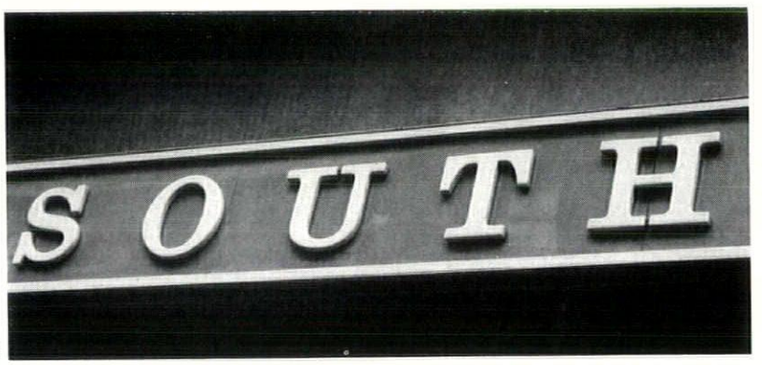




3, *Swedish face approximating to Clarendon: freestanding ceramic letter.*
4, *Swedish ceramic letters.*

plastic coated

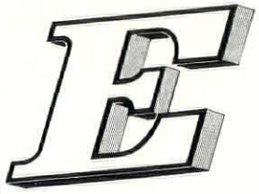


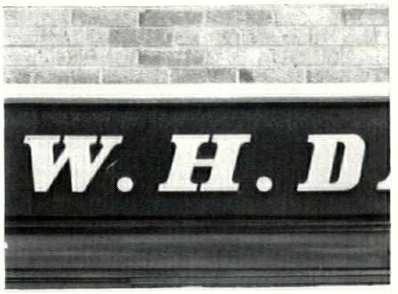


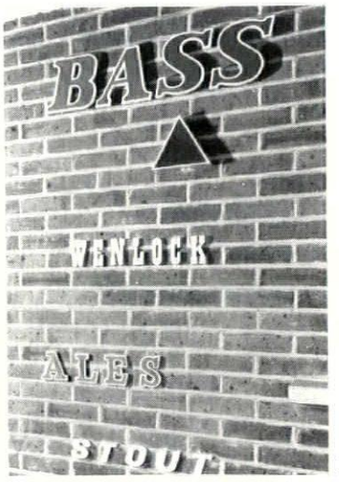
5, *Beton Extra Bold Condensed: plastic covered cut-out medium hardboard core.*
6, *handcut wood fibre letters with plastic covering, South Africa Travel Office, Piccadilly, W.1.*

plastic









7, *built-up Perspex letters, Brompton Road, S.W.3.*
8, *Profil: two-colour solid Perspex.*
9, *cut-out Perspex letters, Bedford.*
10, *two-colour Perspex inlay letters.*

original incised Roman, preserving many of its refinements, 1.

Filled letters are cast with an edge beading to a recessed flat face. This is filled with a fired ceramic enamel. The enamels are available in a limited range of colours, in which blues and greens predominate. Though ivory is used more often than any other colour, several interesting effects are obtainable by the use of transparent enamels over a rough background, giving a permanent glitter, 2; graduated colours are also possible. Naturally, as a further process is involved, enamelled bronze costs more than plain bronze. The bronze is usually finished in a self-oxidizing process, which gives the familiar sepia brown colour.

cast aluminium alloy. This is fabricated in the same way as bronze, and obtained in the same sections, which may be anodized to give a natural aluminium finish. As the metal is cheaper than bronze, it is often used as a base for stove enamelling where a durable coloured letter is required. It is also possible to use the ceramic enamel filling as in the bronze letter, and contrast it with a stove enamel colour on the beading.

ceramic lettering. A frost proof ceramic letter is imported from Sweden. This is made in limited sizes from 6 in. to 18 in. in a number of colours, and in a Swedish face which approximates to Clarendon, 3, 4. A special stand-off mounting is provided which has a rubber bush to protect the letters against traffic vibration.

Glazed faience letters can be made up to 8 ft. high for building into brickwork, the sections being up to 5 in. thick, giving a projection of 3 in. The same form can be cramped on to the face of a wall, the thickness depending on the projection required. The sections are up to 18 in. long, and the joints are clearly visible.

plastic coated lettering. Next in durability to the cast metal letters are those produced by a deposition of a thick layer of plastic over hand-cut wood fibre cores. A wide range of colours is produced and the material keeps its colour well, 5, 6.

As they are hand cut there is no limit to the faces that are available, and the sizes range from about 6 in. to 3 ft.; also thicknesses can be built up as required. The only drawback is a visual one, and springs from the fact that the plastic is applied by a slow deposition which accumulates more on the flat faces than on the corners, producing a standard radius on all edges. This does not detract from the larger letters, but on the smaller ones produces a sloppy appearance. They can be left in an exposed position for long periods without any form of maintenance.

plastic lettering. Cut plastic letters are available from many sources and there are several different materials used. Roman and Gill Sans are cut by all manufacturers, and most of them will also cut any face required. Sheet thicknesses are usually $\frac{1}{8}$ in., $\frac{1}{4}$ in., or $\frac{3}{8}$ in., depending on the letter size. It is possible to have thicker letters by lamination, but it becomes rather expensive, and if very deep lettering is required it is best to use a built-up section, 7.

A very stable letter is cut from phenolic sheet, the same material as Holoplast panels. This is brown and has to be finished with stove enamel to give colour, and its life obviously depends on the life of the enamel.

With its wide range of standard

[continued on page 283

continued from page 282]

colours, Perspex is used by many manufacturers for cut-out letters, and additional colours are available for long runs of house symbols, 8, 9.

The material has only been used for about ten years, but in that time colour changes that have taken place in test samples have been only very slight, and the quality has in no way deteriorated.

One manufacturer specializing in Perspex lettering produces a two-colour letter by inlaying one letter within an outer edging, sticking both on to another cut out which is the same colour as the edging, 10. Its price, however, is above that of the bronze inlaid letter.

Another Perspex letter is moulded in half-round section in a Sans Serif type of face. It is available in several sizes, and the whole Perspex colour range. When made in clear Perspex it can be lined with gold leaf, which, due to the protection afforded by the letter form, has a long life and does not lose its lustre.

wooden lettering. This category includes cut-out and built-up hardwood, wood laminates, and hardboards. They are generally available in a variety of sections; flat, bevelled, half-round or V, and can vary considerably in thickness. They can be finished in a variety of media from stove enamel for the more stable fibre cores, to gilding and painting. The prices vary considerably but it is probably the cheapest basic natural material. Styles are limitless, its life depending on the maintenance it is given, 11, 12.

built-up lettering. The liveliest lettering forms are available by the use of built-up metal sheets, soldered together, making possible any required variation in face, profile, texture, and depth, 13, 14. There is also no limit to the size.

The commonest material in use is lead-coated sheet steel, but any suitable material can be used, from stainless steel to copper. With ordinary steel a surface etching is used as a rust deterrent, after which it is finished with stove enamel to any required colour.

Except for the smallest letters, the stove enamelled steel version is the cheapest method that is available, but it is essential to ensure that lead-coated steel is used, or the inside will soon be attacked by rust.

cork lettering. For a cheap, short-term letter there is the well-known range of stamped cork letters. These can be used externally for a short time, but as the cork is not sealed in any way it relies on the properties of the applied paint for protection.

fixing

Several methods of fixing are available, some peculiar to the material of the letter and its background, 15.

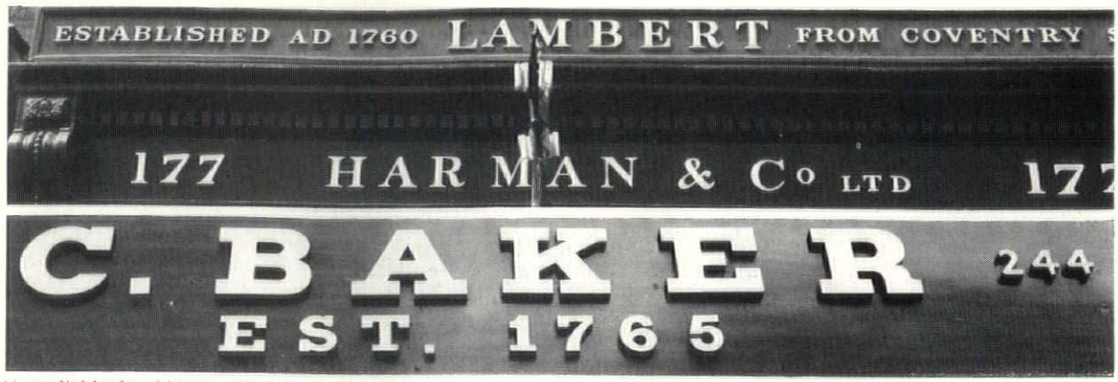
Taking the letter first: the solid letters are drilled and tapped to take a metal threaded screw; smaller letters of the Perspex type of plastic can have the head of a pin or screw embedded in the back simply by pushing it in when it is hot; built-up letters, being hollow, are provided with bridging pieces to which bolts may be fixed, or which may be provided with a keyhole slot. Fixing to stone, tile, or other solid fascias is by means of a metal lug grouted into a prepared hole; for sheet fascias such as glass or metal, a through screw and nut may be used. These fixings may be permanent, that is, the lug is screwed directly into the back of the letter, or they may be provided with some means of detachment for cleaning and maintenance purposes. There are several detachable fixings, the most positive of which is a bolt with a fine and a coarse thread at either end, the fine thread being screwed into the back of the letter, and then partially unscrewed into the nut on the fascia (A). A less positive fixing for smaller letters has a split pin and socket (B). A similar fixing for larger letters has a plain pin with a grub screw (C). There are two keyhole fixings, one for any letter, which entails a plate being fixed to the fascia (D), the other for built-up letters (E). Lastly the letters may be screwed direct to a metal lug grouted to the facing (F).

fascias

Often, when the fact that lettering on a building is accepted as inevitable, some very unsatisfactory things are done. Many buildings are for letting, which entails periodic changing of the displayed name, and yet fascias are built in of materials that are damaged when letters are removed. Such are the Portland stone bands on many office buildings, to which bronze lettering is applied; the resultant staining from cleaning and repairs after removal are all too frequent. A worse approach on the same type of fascia is that which only allows occasional fixings, the resultant battens completely destroying the letter forms.

Probably the best approach is one which allows for the whole fascia to be replaced when a change of lettering is required; in other words, a sheet material than can be removed and replaced with ease.

wooden

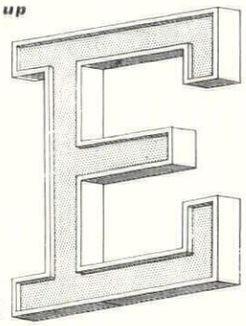


11

12

11, *applied hardwood lettering, Bond Street, W.1.*
12, *store-enamelled wood lettering, High Holborn, W.C.1.*

built-up



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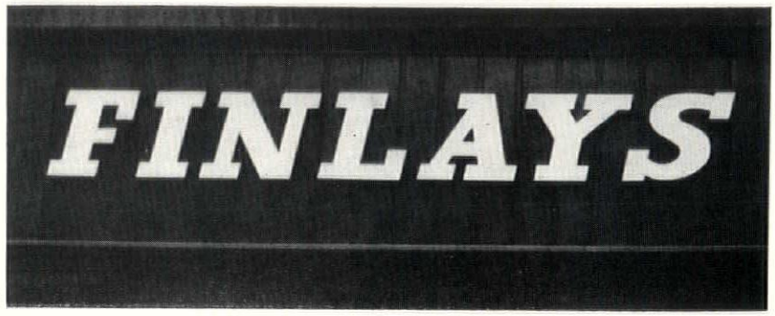
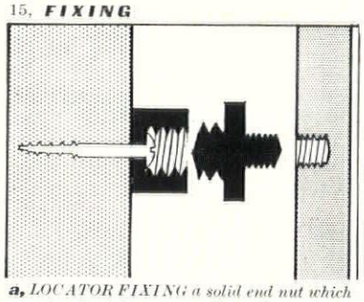


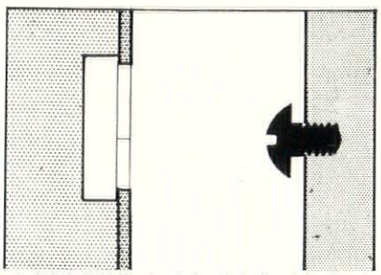
14

13, *Rockwell: built-up metal letter with recessed face and square beading.*
14, *built-up letters in enamelled lead-coated sheet steel, Fenchurch Street, E.C.3.*

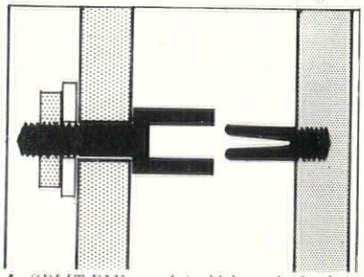
15, **FIXING**



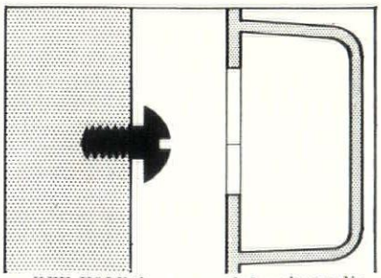
a, *LOCATOR FIXING a solid end nut which can be fixed to any surface (here shown screwed to a wood fascia) with a two screw connector which is first screwed into the back of the letter and then partially unscrewed into the nut; it inevitably gives a stand-off effect.*



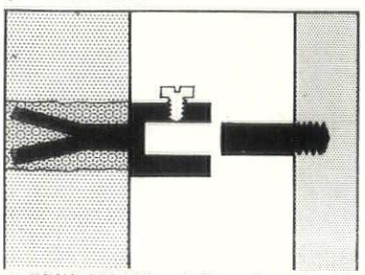
d, *KEY HOLE a keyhole plate fixed in front of a hole in the fascia, into which fixes a screw head on the back of the letter.*



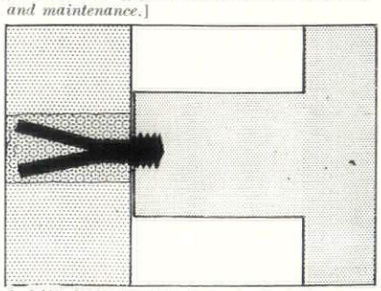
b, *SPLIT PIN a socket which can be fixed to any surface (here shown with through fixing to sheet fascia) into which fits a split pin fixed to the letter.*



e, *KEY HOLE the reverse of* ***d****; only applicable to moulded perspex or built-up metal forms. [N.B.—****a-e*** *are detachable for cleaning and maintenance.]*

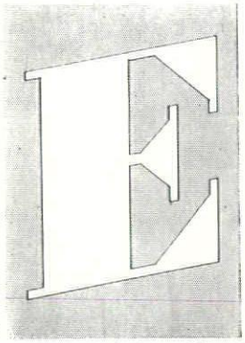


c, *GRUB SCREW a similar socket to* ***b*** *with a small grub screw (here shown with a grouting lug to stone fascia) into which fits a plain pin screwed to the letter.*



f, *LUG FIXING this is typical of the permanent fixings.*

glass



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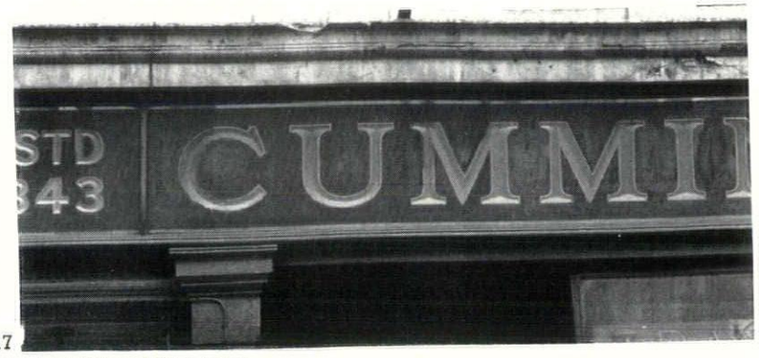


17

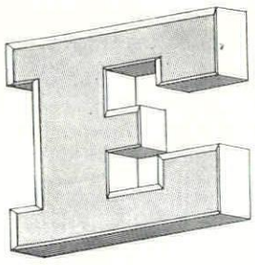
16, *Ultra Bodoni: sand blasted marble inlaid with sand-blasted glass.*
17, *incised gold leaf letters behind a painted sheet of glass, Cannon Street, E.C.4.*

faience



18, *faience tile lettering.*

illuminated face



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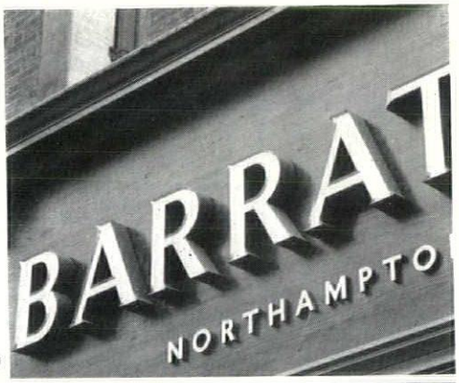

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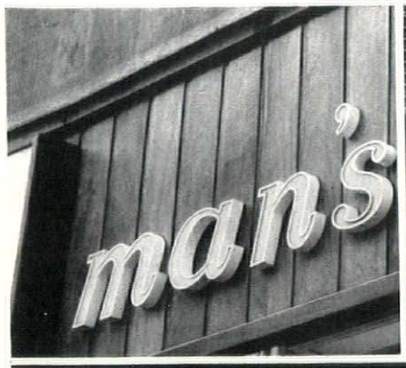
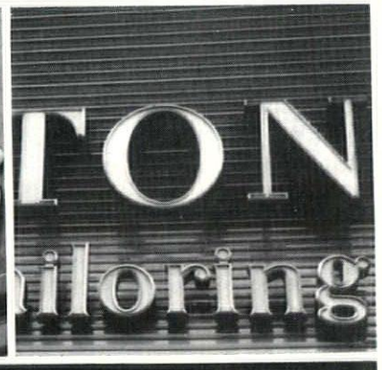






21 22 23

19, *Egyptian: illuminated letter of built-up metal, with enamelled sides, stainless steel inward sloping bevel and coloured Perspex face.* 20-23, *'Embassy' signs:* 21, *Oxford Street, W.1:* 22, *Strand, W.C.2:* 23, *Pall Mall East, S.W.1.*

For illuminated lettering at least 6 in. is required at the back of the surface material to allow for the electric connections.

Great care should be taken when choosing a background for illuminated lettering of the silhouette type. The material should have an easily cleaned surface which should not be too dark or the reflective effect will be lost; however, if the surface is too smooth the line of the tube will be clearly reflected. Possible solutions are shown in the decorative tile, or the ribbed background in the Burton sign.

There are some lettering forms which are integral with the fascia, and though it can be argued that they are not applied lettering, they are included here since unlike painted signs, they involve work on the actual fascia material, and therefore design consideration has to be given to them.

incised. The first is the incised letter on stone, of which there are too few recent examples.

glass. Glass has long been used for fascias, and there are still many examples of incised gold leaf letters behind a blacked out sheet of glass, 16. It is still used with fired enamel on the reverse side of clear glass, with a limited amount of sandblasting to give depth.

It may seem odd that with the long tradition of stained glass, and the development of plate glass, it is only with the advent of Perspex that the great steps forward in illuminated signs have taken place.

Glass is cheaper, has a proved long life, and is easier to clean and maintain than Perspex, but it is much harder to fabricate, the cheap transparent colours are limited, and the basic green of common glass has a detrimental effect on the quality of the colours.

One interesting process involves the shop sandblasting of a letter into a marble fascia, and the cementing of a slightly smaller glass letter into the recess, 17. The result is a maintenance free fascia of a high order of finish; the cost is rather high.

faience blocks and tiles. A permanent form of lettering where faience facing is being used is to raise the letter in relief on the blocks. In many of the examples of this form the layout of the letters pays no attention to the joins of the blocks, which are somewhat distracting, 18.

Letters may also be raised or inset into tiles and finished with a contrasting colour. In these too there is a disregard for the joins in the tiles, except where standard letters —one per tile—are inset, as in the name plates for blocks of flats, in which case the spacing is poor.

stamped aluminium sheet. Another process that may have a limited application is one used for street name-plates in which lettering is stamped on aluminium sheet. The letter is forward of the sheet face and is finished in stoved enamel. Two faces are available, Gill Sans Serif, and Kinersley, a modified Roman face that was designed to meet the requirements of the stamping press.

illuminated lettering

As has been stated earlier, the demand for illuminated lettering is legitimate, and one that will increase. It is important, therefore, that all those concerned in fascia design and specification should give the matter serious consideration.

In the last three or four years there has been a revolution in the types of signs available, and new forms are constantly being added. This has come about largely by the exploitation of the possibilities offered by coloured perspex, a stable plastic material that has a very high light conductivity, is available in a wide range of colours, and is relatively easy to cut, bend, and join together.

There are three main groups of illuminated letter, though the dividing line between each is by no means precise and combinations occur.

The first group consists of those letters where the neon tube is exposed somewhere on the face. In the second group the face is in perspex and the light source is behind, and in the third group the letter is in silhouette.

exposed tube lettering. This is the most common form of illuminated lettering, but as it is to be the subject of a future article it will not be considered in any detail here. This summary treatment of neon lettering may be justified on other grounds: namely that it is not in fact well adapted for use on shop fascias. The coloured neon tube, fixed either in front of, or recessed within, the built-up letter, creates an almost insoluble problem: either the tube spoils the appearance of the letter by day or the letter obstructs the tube by night. Apart from this the scale of the tubing and the limitations imposed by the accommodation of the electrodes make it inapt for reproducing traditional lettering forms, the one exception being the flowing script letter, which owes its use in shop signs to the fact that it permits the long lengths of tube which are technically desirable. The neon sign, when at its best, is of another order to the kinds of sign which are being considered here and should be sharply differentiated from them.

illuminated face lettering. There are several forms in this section and it is with them that illuminated lettering for fascias has come into its own.

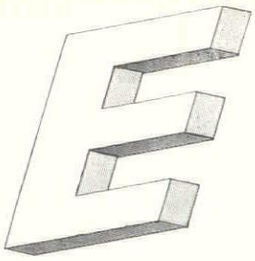
Some manufacturers use type names and these will be used here. The important feature about all of them is that practically any letter face or trade symbol may be reproduced and the faces have an equal value at night as during the day.

There are two ways of achieving colour—white light shining through coloured perspex, and coloured light shining through white or coloured perspex. It will be appreciated that these give a wholly different effect from one another when seen by day.

One very popular version of this type goes by the trade name 'Embassy.' This has built-up lead-coated steel sides (the cheaper uncoated steel quickly suffers from rust attack). The sides are stove enamelled

[continued on page 285

illuminated fascia lettering



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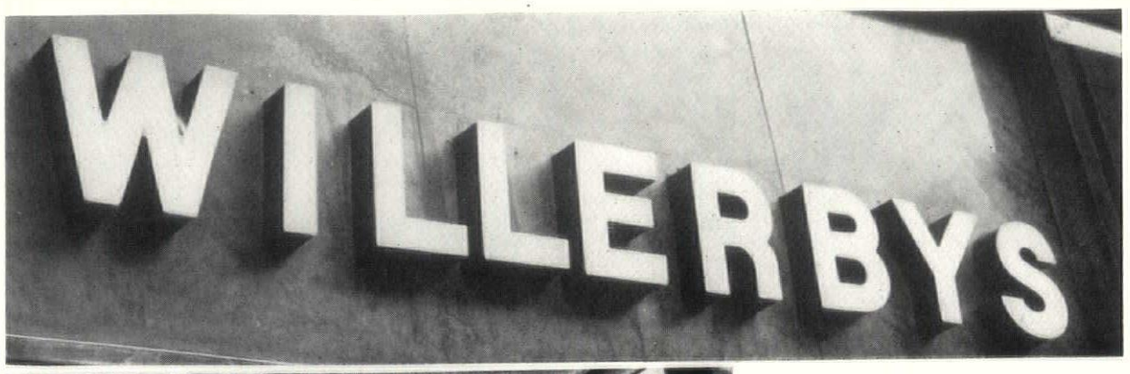

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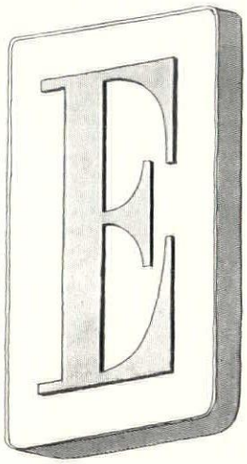

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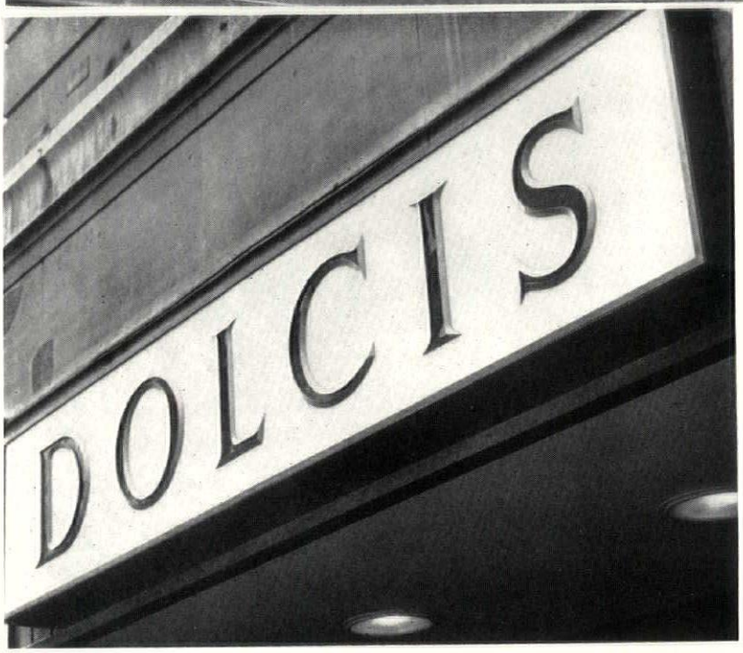
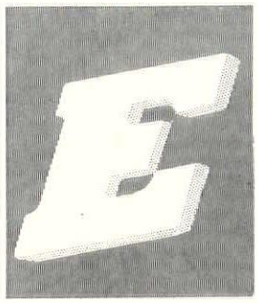


27



28

24, *Doric Italic: illuminated letter with opaque Perspex sides and flush Perspex face.* 25, *'Lumor' all-Perspex built-up lettering, Fleet Street, E.C.4.* 26, *Elongated Roman: illuminated letter with Perspex-faced metal box and coloured Perspex letter.* 27, *'Ambassador' sign, Oxford Street, W.1.* 28, *Egyptian Italic: illuminated letter, with moulded Perspex single colour letter stuck on to coloured Perspex background.*

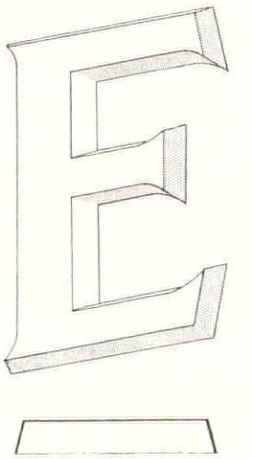
continued from page 284]

to any required colour. The front beading may be flat, half-round, inward splay, or outward splay and finished in stove enamel, gold leaf or stainless steel. The most satisfactory is an inward sloping stainless steel, which gives a very crisp letter, 19, 20, 21, 22, 23. The perspex is restricted to the most transparent colours since the night effect depends on the maximum light being transmitted, whilst the form of the light tube is obscured by the opal effect in the perspex. A variation, sold under the trade name 'Zodiac,' has a ¾-in. square beading, which has the effect of recessing the perspex face, but it suffers from cut-out of the face at oblique angles of viewing.

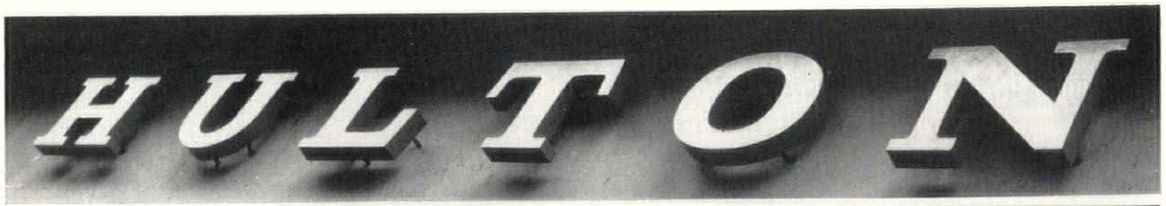
A third variety in this class which is marketed under the trade name 'Lumore' is an all-perspex built-up letter which, due to the method of butt jointing perspex with transparent adhesive, makes possible very clean letter forms. The most effective are those that have opaque returns, with a flush perspex face, the illumination reaching to the whole face with no beading effect, 24, 25. A variation with translucent perspex on the returns as well as the face lacks definition, there being no difference between the two, though this is overcome by the use of a different colour for the return.

A fourth type is sold under the trade name 'Ambassador.' In this type a metal box is faced with a sheet of perspex on to which is stuck a perspex letter, 26, 27. The possibilities here are infinite and as yet have not been fully explored.

relief lettering



29



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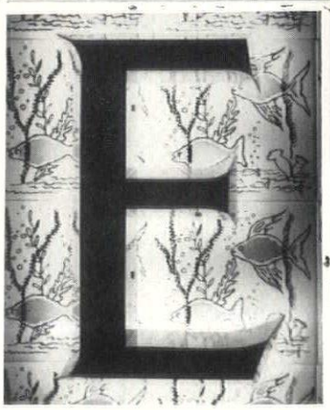
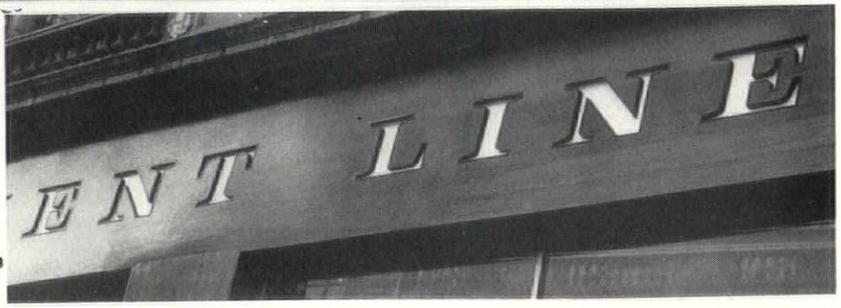


31



32

29, *Block Serif: illuminated letter, stove-enamelled built-up metal letter, fixed away from fascia with neon tube behind.*

30, 31, *built-up silhouette letters:* 31 *is in Fleet Street, E.C.4.* 32, *wooden fascia with inset illuminated lettering, Orient Line Offices, Cockspur Street, S.W.1.*

One of the technical features is the uniform quality of the background light: this is achieved by the use of cold cathode lights and a system of baffles.

Variations are possible in the applied letter, which of course could be of any type face or script symbol. The letter can be a simple cut-out applied on the surface, or inlaid. The edges can be blacked out or beaded and gilded.

Variety in the background can be of colour or pattern. A second layer of perspex can be stuck inside a clear panel, and can be of any desired pattern – holes, stripes, colours, or mosaics. Further variations occur in the lighting, with graded effects in colour and intensity.

A very recent innovation is a moulded perspex letter, about 1 in. thick, glued over a cut-out in a perspex sheet, 28. By using a white letter and a dark coloured background a very crisp effect can be obtained in daylight. The letter section is very similar to that obtained in plastic coated hardboard. The only example I have yet seen is of a broad serif letter. By the use of lights of the Ambassador type behind the box, a fascia of bold and pleasing appearance is possible.

relief lettering. The other group of illuminated letters are the several forms of silhouetted letters. These are a built-up letter, held away from the background, with a light behind shining out on to the fascia, 29, 30, 31. This is a subtle use of light and considerable care has to be taken with the fascia. As many variations are possible with these letters as with built-up lettering. The face can be recessed or flush, flat, domed, textured, or perforated.

conclusion. Apart from these three main groups there are undoubtedly many possibilities open to those willing to give the matter a little thought, and as a tail-piece we show the New Orient Line fascia in Trafalgar Square, 32. This is a deep wooden fascia with cut-out letters of a specially designed face, trimmed with a black plastic beading and with an illuminated sheet behind.

acknowledgments

The following manufacturers of illuminated lettering supplied information: Chase Metal Products; Claudgen; Franco Signs (users of the trade name Lumore); Pearce Signs (users of trade names Embassy, Zodiac and Ambassador); Ward & Co. Information was also supplied by the manufacturers of applied lettering listed in table a.

table a *manufacturers of applied lettering who supplied information and their products. (The list is not exhaustive.)*

name	cast metal (aluminium or bronze)	Perspex	other plastic	wood	built-up metal	special forms
Butler Jones	*	*				
Carter Tiles						raised faience letters and tile letters
Chase Metal Products	*	*			*	
Dragard & Humble		*				two-colour inlaid Perspex one price for all faces
Dryad	*	*		*	*	
Franco Signs	*	*			*	
Gowshall						stamped aluminium sheet
Harry Heath	*			*	*	
IFO (Dennis Williams)						freestanding ceramic letters
James Gibbons	*					
G. P. Kershaw	*	*	*	*	*	built-up plastic
Lettering Centre	*	*	*	*	*	plastic-coated hardboard (Arborite)
London Industrial Art						Graforel cork lettering
London Sand Blast Co.						glass fascia work; sand blasted marble inlaid with glass
Reed Millican						glass fascia work
Parker Winder and Achurch	*					
Thermoplastics						moulded Perspex
Ward & Co.	*	*		*	*	

table b *materials and sizes generally available. In order to give a guide to cost, a price has been obtained for a standard 12-inch letter, but it should be remembered that the cost-to-size ratio varies for each material.*

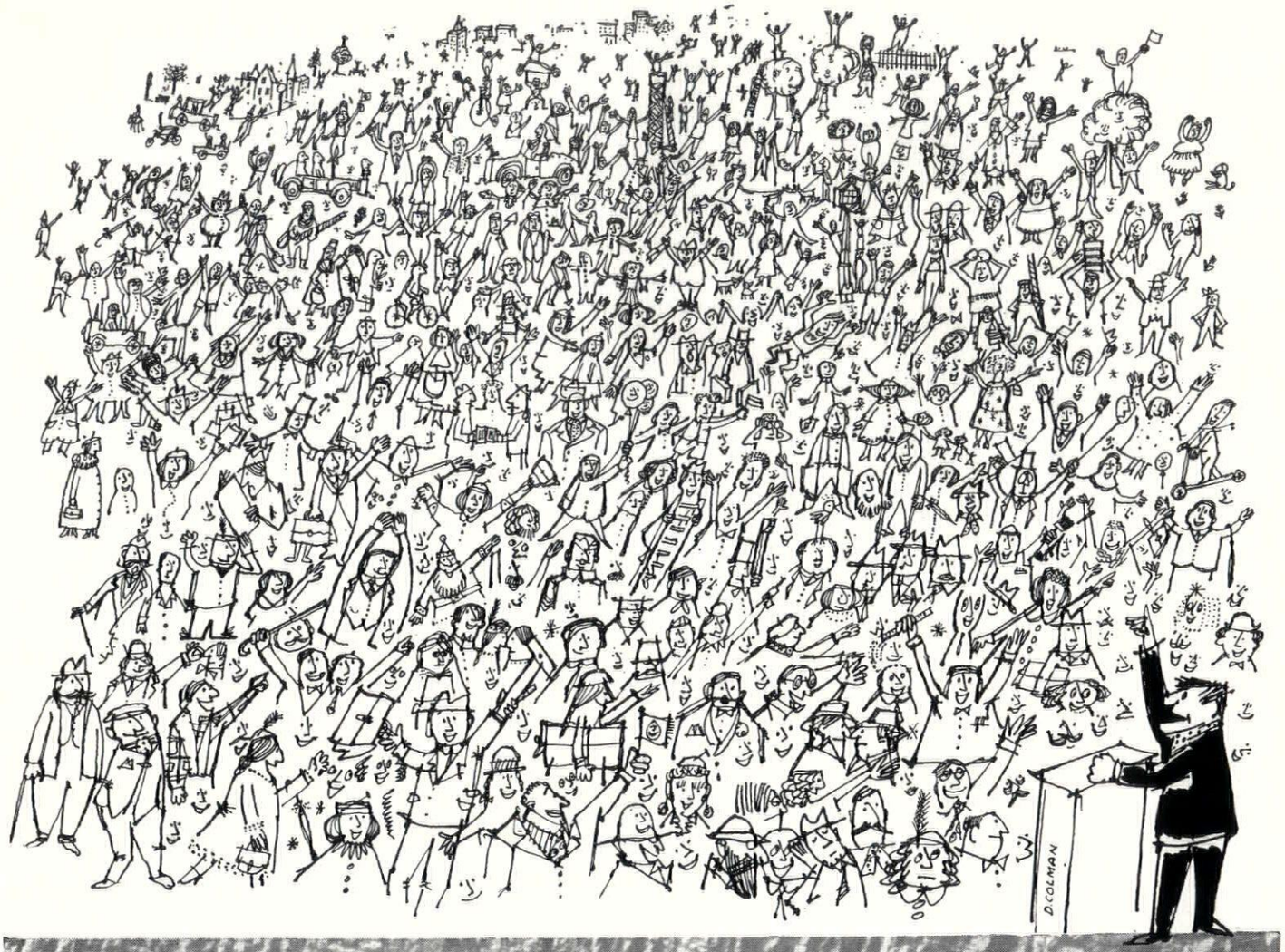
materials	sizes	thickness	price	remarks
cork	Up to 12 ins.	—	6/6—10s.	range of faces
wood plain flat	2 ins.—30 ins.	¼ in.—2 ins.	6/6	any face
wood plain half round	2 ins.—30 ins.	¼ in.—2 ins.	12s.	faces with equal thicknesses of strokes
wood flat enamelled	2 ins.—30 ins.	¼ in.—2 ins.	13s.	
moulded Perspex	2 ins.—24 ins.		16s.	one half-round face only
lead-coated sheet steel	4 ins.—36 ins. upwards	—	17s.—25s.	any face and limitless variations
enamelled hardboard	3 ins.—24 ins.	⅜ in.—2 ins.	24s.	any face
enamelled plastic sheet	1 in.—24 ins.	3/16 in.—⅜ in.	25s.	any face
plastic covered hardboard	6 ins.—36 ins.	½ in. 2 ins.	33s.	any face. All the corners have a slight radius
cut-out Perspex	2 ins.—24 ins.	¼ in. ⅜ in.	34s.	any face
cast aluminium	2 ins. 24 ins.		24s.	flat face or V section Trajan Gill Sans and two or three poor 'modern faces'
cast bronze	2 ins.—24 ins.		26s.—37s.	
filled bronze (enamelled)	2 ins.—24 ins.	—	36s.—50s.	
freestanding ceramic	6 ins.—18 ins.	—	40s.	available in Clarendon only
built-up Perspex	2 ins.—24 ins.	variable	45s.	any face
inlaid Perspex	3 ins.—12 ins.	¼ in.—⅜ in.	62s.	any suitable face
gold leaf inside moulded Perspex	8 ins.—24 ins.	—	95s.	½ round sans serif face only
sand-blasted marble inlaid with glass	2 ins.—24 ins.	flush	80s.—100s.	any face
faience: skeleton	12 ins.—96 ins.	up to 6 ins.	80s.	
relief	1½ ins.—18 ins.	3/16 in. ⅞ in.	84s.	
slip outline	1 in.—18 ins.	—	22/6	

HIGH FIDELITY EQUIPMENT: HOUSE NEAR BEAULIEU

Readers who have noticed the Hi-fi equipment on the house at Beaulieu by Sir Hugh Casson on pages 257-260 may want to know more about it. The equipment comprises an amplifier and control unit and two gramophone turntables, all of which are standard equipment; also a purpose-made loudspeaker. This last is of unique design, being 82 in. long, with a mouth of 72 in. dia.

The loudspeaker is of non-resonant plaster and is totally encased in a wooden casing. The whole of the horn is out of doors and the mouth is fitted against one side of the bungalow, while the sound comes through a plastic grill in front of the opening. This loudspeaker horn is fitted with a Goodman's 15-in. loudspeaker unit, model 1502 of the Audiom 80 series and one medium frequency and two high frequency loudspeaker units fitted on a baffle which is suspended in the mouth of the horn. These units are a model Wharfedale Super 8/CS 8-in. loudspeaker unit for the middle frequencies and two Wharfedale Super 3, 3-in. high frequency units. A special three-way crossover network is also supplied and the overall frequency response from this, with 'The Monster' horn, is substantially *flat* from 40 cycles up to approximately 18,000 cycles. In practice the response extends well below 40 cycles and a really substantial output is obtained even as low as 16 cycles. The whole loudspeaker assembly gives an astounding feeling of presence and spaciousness whether the sound is being reproduced at low levels or at full output. It is probably true to say that there are very few loud-

[continued on page 288



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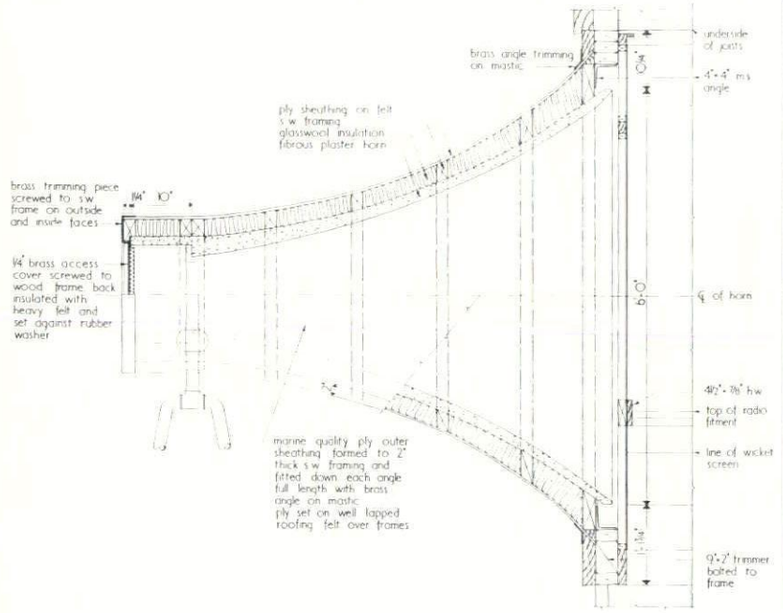
High Fidelity equipment: house near Beaulieu



Section through loud-speaker horn.

continued from page 286]

speaker assemblies in domestic use in this country, or even in the United States, which have such an extended frequency range, such an even frequency response and such an absence of peaks. The horn was designed by W. P. Hickson, who is a Director of the John Lewis Organization.

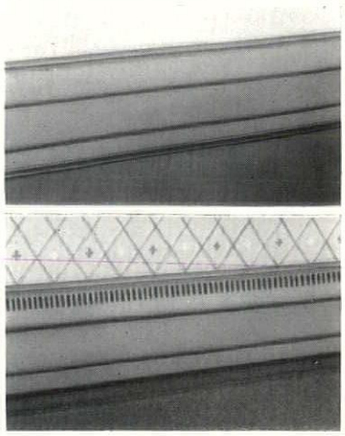
4 THE INDUSTRY

Skirting Heating

Inevitably the widescale adoption of glazed walls and the desire, in many cases, to carry glazing down to within inches of the floor have had profound repercussions on the problem of heating. Unfortunately the evidence on the effectiveness of glazed walls in producing comfort conditions and of their influence on heating are far from complete, and we cannot yet be sure of the correct equipment to be used. Underfloor heating is, of course, one alternative, but it may not always be desired to use a form of heating with so high a thermal capacity. An alternative is skirting heating, which has the obvious advantage of giving a linear heat source to counteract down-draughts along the full length of the external wall. A new range of skirting heaters has now been put on the market by Copperad Ltd. under the trade name 'Wallstrip.' There are three distinct products in the range. There are two convector type heaters: a general purpose model (type C) and a heavy grade model (type RC) for use where rough treatment is to be expected; and there is one radiant type heater (type R) for use in hospitals where dust is taboo and easy cleaning essential. All can be used with low temperature hot water, and type C is also available for steam and high temperature hot water.

Copperad Ltd., Colnbrook, Slough, Bucks.

Type R, top, and type RC, below, of the Copperad 'Wallstrip' skirting heating.



Built-in Designs

The fact that there are several different types of infill panel on the market which lend themselves to the incorporation of designs does not seem to have triggered off the orgy that might have been feared. One point is clear, however. Namely an outlet for expression which is so obvious should be quickly exploited by architects, for otherwise its exploitation (like that of neon signs) will remain in the hands of others less scrupulous and less gifted. There are two points of

[continued on page 290

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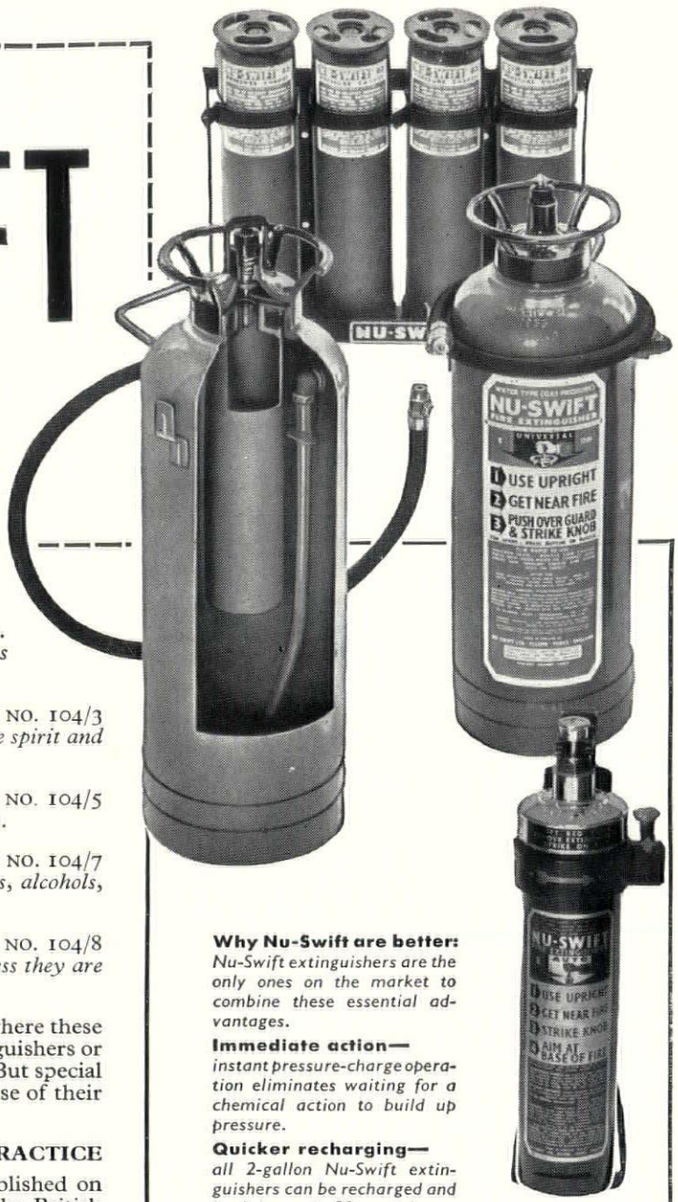

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Model 1301 Universal (Royal Navy) Extinguisher. . FOC Ref. NO. 104/6 for Class A fire risks (*fires involving wood, paper, textiles and other carbonaceous substances*).

Model 1400 Air Foam Extinguisher..... FOC Ref. NO. 104/3 for Class B fire risks (*fires on petrol, greases, oils, paraffin, white spirit and diesel oil*).

Model 1003 Auto (CTC) Extinguisher.....FOC Ref. NO. 104/5 for Class C fire risks (*minor electrical risks and small petrol fires*).

Model 2003 Auto (Chloro-Flash) Extinguisher.....FOC Ref. NO. 104/7 for Class B & C fire risks (*extra-hazardous fires involving spirits, alcohols, organic solvents and electrical equipment*).

Model 1604 Dry Powder Extinguisher.....FOC Ref. NO. 104/8 for class B & C fire risks (*inflammable liquids of every type—unless they are shielded—and all electrical risks*).

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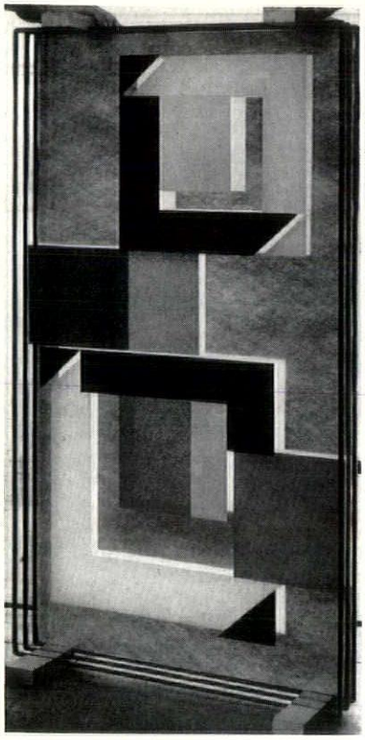

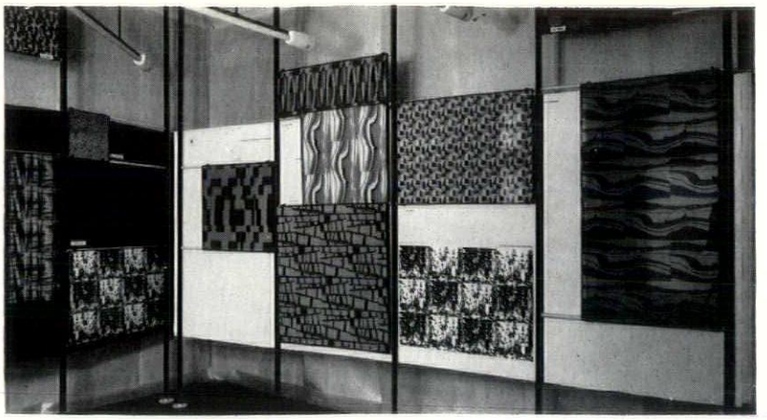

built-in designs

Left above, a mural translucent panel entitled 'Cubes,' by Cecil Stephenson. Right above, panels for opaque application, spandrel panels, wall panels, etc.; designs by Cecil Stephenson. Screen printed designs are black or black and grey, with standard range colours used as backing. The scale of the design can be increased or reduced as necessary.

continued from page 288]

departure. One is the incorporation in the panel of lettering and other signs which would otherwise be applied. The other is the use of panel designs to provide a texture. The recent exhibition of Abstraform designs executed in Plyglass by Cecil Stephenson and Edward Curtis serves to remind us that Plyglass Vitroslab can be used in either way. The panels illustrated top right are opaque and have been designed to give textural effect at certain distances. The panel illustrated below is translucent and is formed of four thicknesses of Plyglass with three 1-in. cavities between. This last shows that panels can be formed into illuminated signs with great ease and doubtless with considerable saving in maintenance.

Plyglass Limited, Sandhurst Close, South Croydon, Surrey.

CONTRACTORS etc

Roof Garden at Guildford. *Architects:* G. A. Jellicoe & Partners. *Main contractor:* James Carmichael (Contractors), Ltd. *Sub-contractors: Shopfitting:* Harris & Sheldon. *Heating and ventilation and kitchen equipment:* Troughton & Young, Ltd. *Metal windows:* Ideal Casements (Reading), Ltd. *Tiling and terrazzo floor:* B. Finch & Co. *In situ terrazzo:* Diespeker & Co. *Electric clocks:* Gent & Co. *Restaurant upholstery:* Aerofoam. *Woodblock flooring:* Decorative Floors, Ltd. *Photo-mural:* The Autotype Co. *Roof garden contractors:* William Wood & Son. *Blinds and umbrellas:* J. Avery & Co.

House near Beaulieu, Hants. *Architect:* Hugh Casson. *Associate architects:* R. A. Green and Margaret Casson. *Consulting engineer:* Sefton Jenkins. *Quantity surveyor:* A. S. Roberts. *General contractors:* George Shears & Sons. *Sub-contractors: Electrical installation:* Electrical Services (Shears), Ltd. *Sanitary fittings:* Messrs. Shires & Co. (London). *Bunks, seat fittings, internal joinery and dressing fitting in guest bedroom:* George Shears & Sons. *Bedhead fittings, dressing table fitting in main bedroom, radio fittings and modified TV fitting, loud speaker construction:* F. E. Ward (Hammersmith), Ltd. *Light fittings:* Merchant Adventurers; Troughton & Young. *Sliding doors:* George King & Co. *Sink unit:* Leisure Kitchen Equipment. *Furniture:* Woolland Bros. *Ironmongery:* Alfred G. Roberts, Ltd. *Dome light:* T. & W. Ide, Ltd. *Paints:* Mander Bros., Ltd. *Western red cedar, red deal boarding:* J. T. Sydenham & Co. *Iroko:* W. W. Howard Bros. & Co. *Built-up roof:* Ragusa Asphalte Co.

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[continued on page 292

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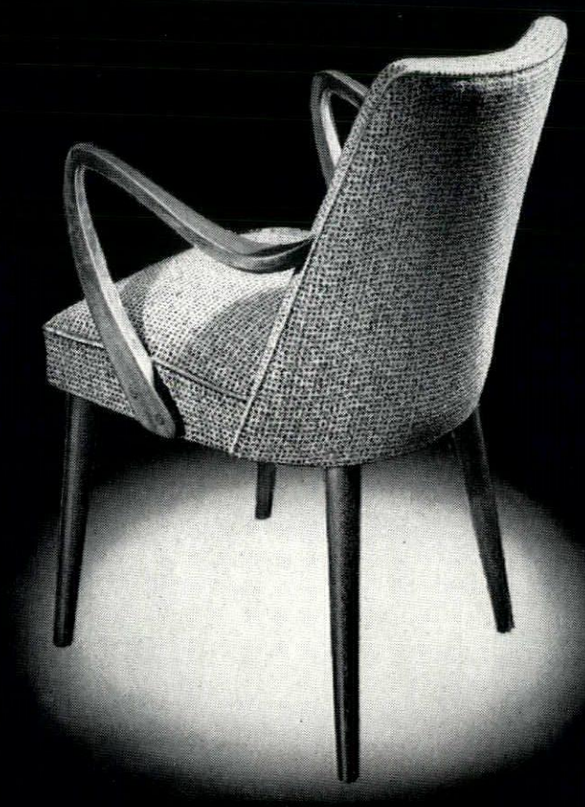

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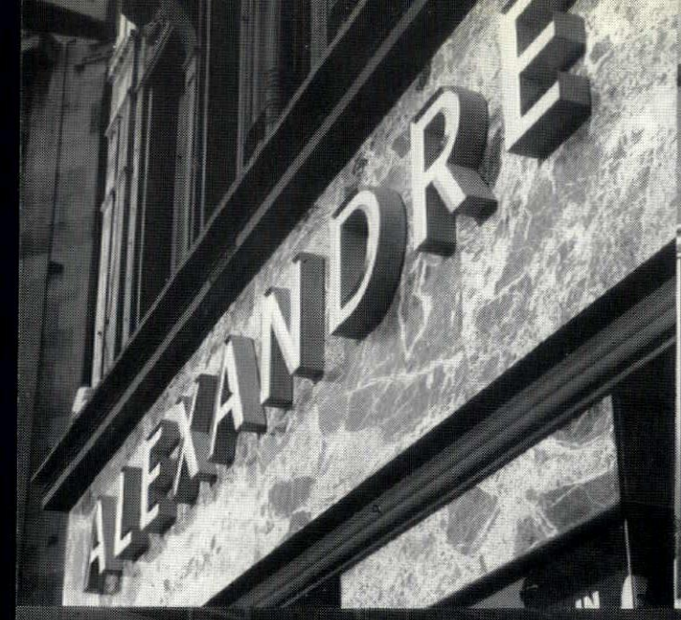







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continued from page 290]

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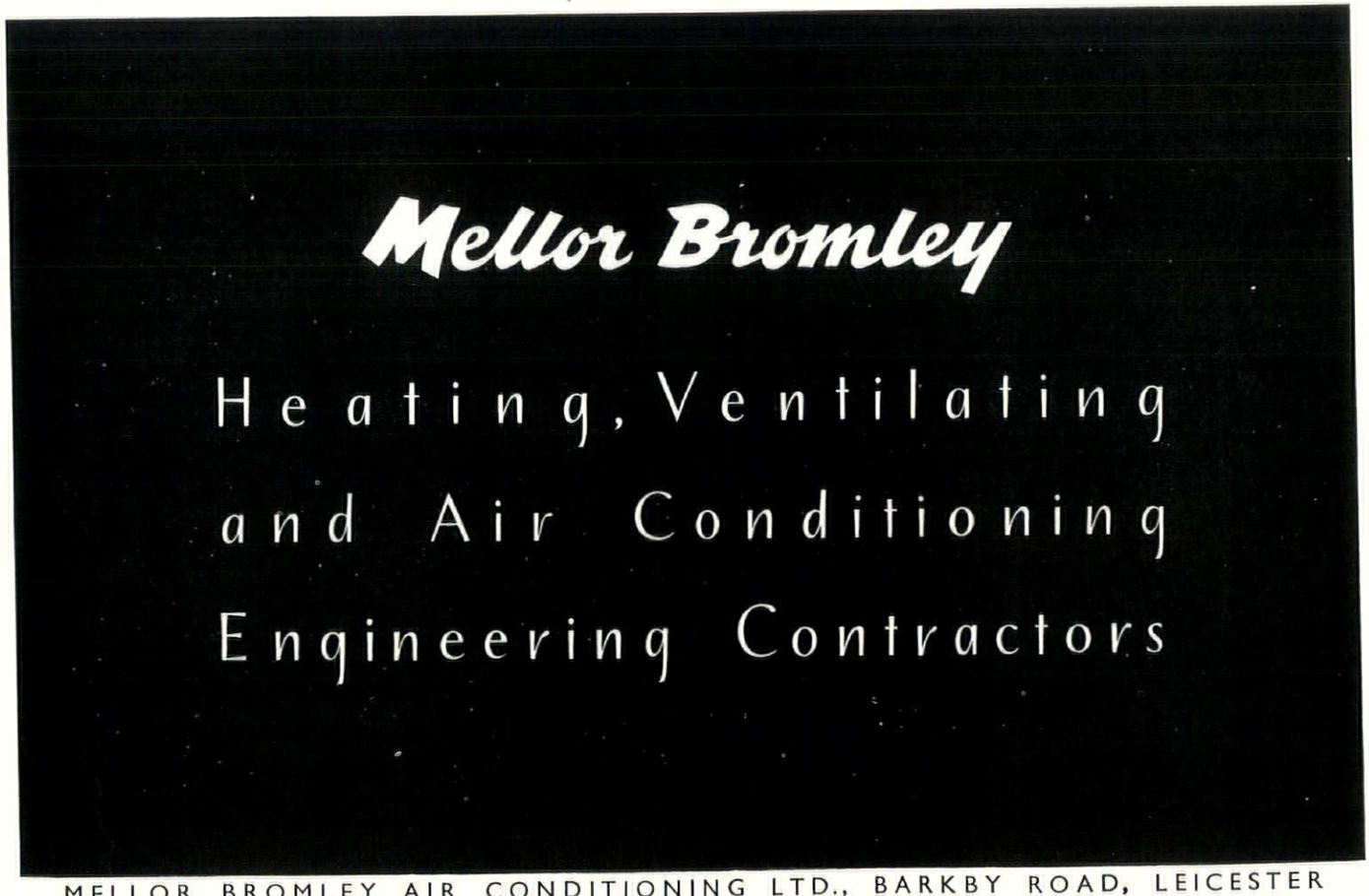

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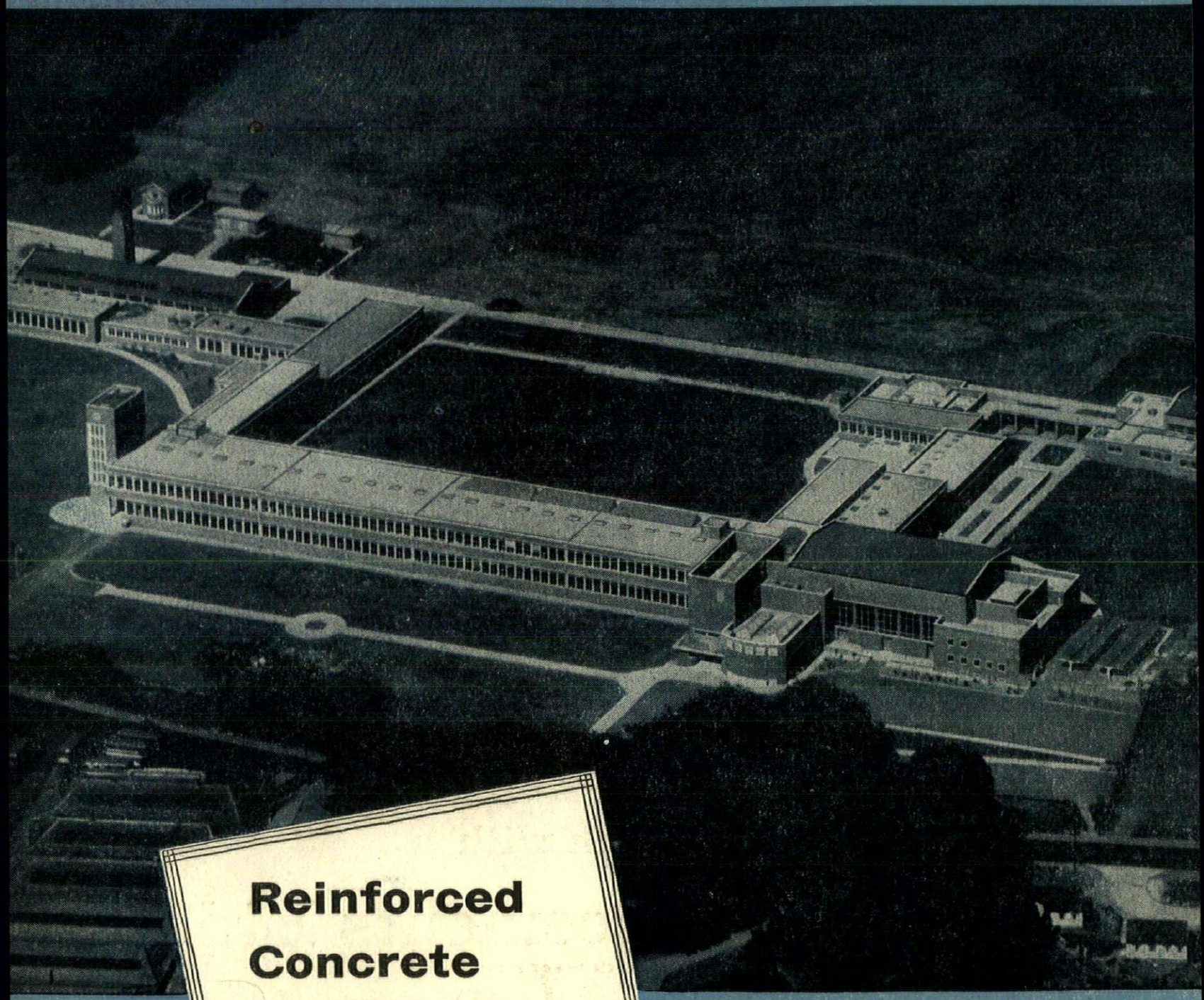

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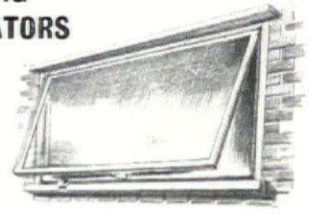

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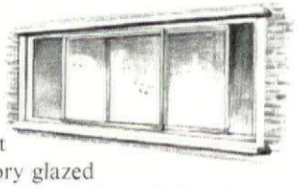

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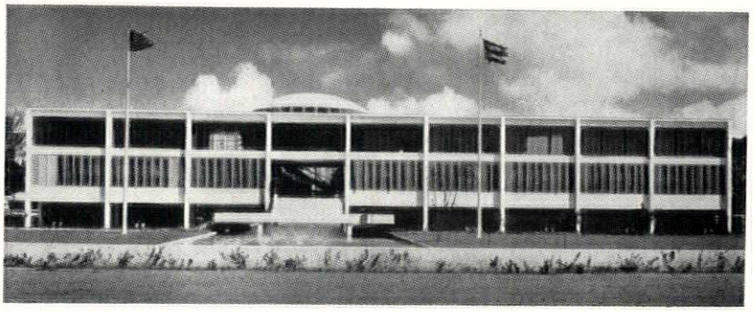
MARGINALIA

The New Classicism in Puerto Rico

Clearly Johnsonian in its inspiration, the new Supreme Court building in San Juan, Puerto Rico, 1, is also a most distinguished new-comer to the ranks of well-designed government buildings in the tropics. The planning of the block is bi-axially symmetrical in sense, if not in every minute particular, and the domical court-room occurs on the upper floor at the point where the two axes intersect. The cross-axis not only passes through the centres of the entrance on one side of the block, and the stairs on the other, but also gives the line of the formal pool that passes clean under the block, and over which the staircase is cantilevered, 2. Since the pool and the entrance are co-axial, it is impossible to approach the entrance directly, and the visitor's route enters the building along



1



2

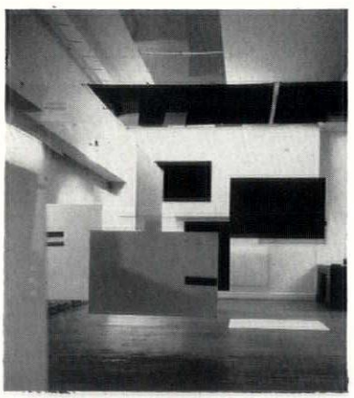
the side, mounting to a bridge-platform over the pool, and thence up a flight of steps on the entrance axis. The architects, Toro-Ferrer and Charles H. Warner, Jnr., are to be congratulated on the way that they have employed classical disciplines to give a formality proper to the building's function without becoming the slaves of their axes.

the new Classicism in Puerto Rico

an exhibit

An Exhibit

An instructive exercise in two-level aesthetic effect and three-level aesthetic intention was provided by *An Exhibit*, a demountable complex of planes in space, shown at the Hatton Gallery in Newcastle in July, and at the Institute of Contemporary Arts, London, in August. The basic construction of suspended Perspex sheets could be regarded, under ideal circumstances, 3, as simply a gratifyingly large Constructivist art-work of a routine rectilinear kind. But the devisors of *An Exhibit*, Richard Hamilton, Victor Pasmore and Lawrence Alloway, intended at least two further levels of significance beyond this. Viewed under non-ideal conditions by a visitor circulating among the panels, it became a kind of visual maze of reflections, varying degrees of transparency, and other visitors seen partly obscured or unexpectedly revealed, 4. The visitor could thus 'play' *An Exhibit* for accidental effects that had never been within the devisors' control. But in the third level of aesthetic intention, the devisors had played a private game of their own, the finite number of standard panels on a standard grid providing the limiting terms within which the 'antagonistic co-operation' of deciding the layout could, at any stage, have been evaluated by the Theory of Games. Yet the final form of *An Exhibit* was so neutral that this particular game was lost to the visitor, to whom it gave far less information than might be deduced, for instance, by picking up the cards after a hand at whist.



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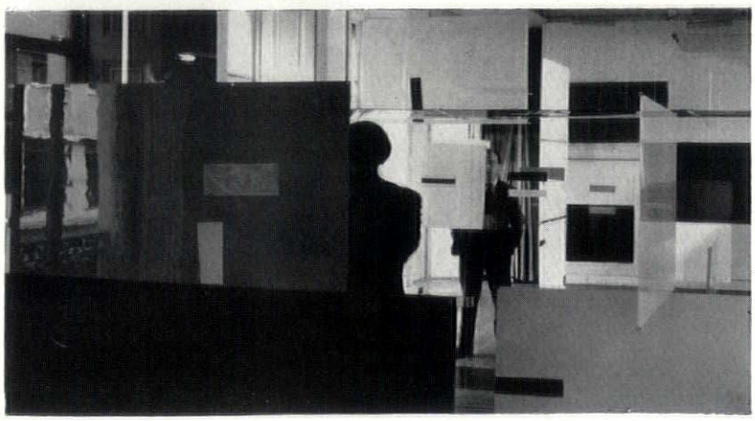


4

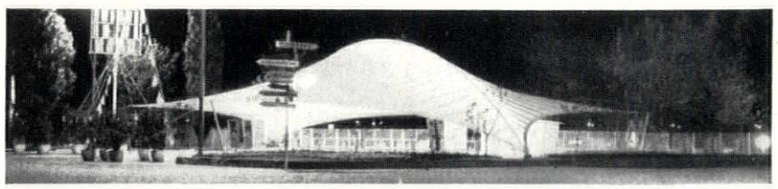
Germany Under Canvas

Roof-structures in tension being the 'latest thing,' there is a fine historical irony in the fact that the most interesting recent experiments on this theme should be concerned with the oldest tension structure known to man—the tent. No exhibition nowadays in Federal Germany is complete—it would seem—without its quota of *Zeltkonstruktionen*, and the results are a live contribution to the architecture of pleasure and display. The Zelt-Café at the Berlin *Interbau* exhibition—a sort of paradise garden under demountable hyperbolic paraboloids—will doubtless be seen and admired by many visitors this year, 5, but the same



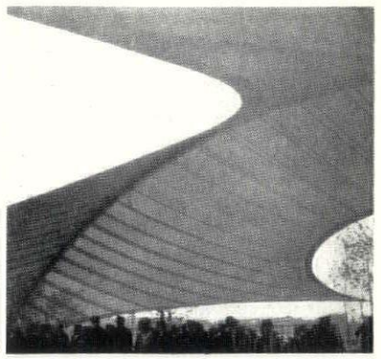
5

design team of Frei Otto, Ewald Bubner, Dieter Frank and Siegfried Lohs, have achieved even more remarkable results at Cologne, for the garden exhibition. The main entrance is canopied by a large single spread tensioned at four points over a steel arch that forms the ridge, 6 and



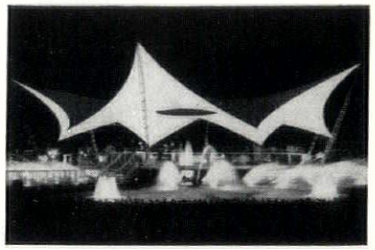
6

7—a feat of engineering that required the technical assistance of the engineer Fritz Leonhardt, designer of the Stuttgart TV tower (AR, September, 1957)—and, as will be seen, its translucency has been fully capitalised for night-time effects. Of the three other tents contributed by this team to the same exhibition,



7

the gayest is undoubtedly the star-form one over the dance floor, seen again by night in 8, which is indeed, as *Bauwelt* observed (issue of July 29, 1957), a *Provokateur festlicher Stimmung*.



8

Tea-House on Route Seventeen

Designed in part by Junzo Yoshimura, the architect of the Japanese house exhibited at the Museum of Modern Art, New York, some three years ago, the restaurant of the *Motel On the Mountain* at Suffern, NY, is one of the largest testimonies of US interest in Japanese architecture to appear so far. Japanese in idiom and detailing, rather than in planning conception, the restaurant and its balconies, 9, command views of wooded mountain scenery and, more remotely, of the New York Thruway and the subtopia of New Jersey Route 17, being connected to the latter by a winding road down the hill-side. The whole scheme, motel and restaurant together, has aroused wider-than-professional interest, and *Life* magazine supported a description of it with a brief note on the history of the Japanese influence on US architecture, illustrated by examples of the work of Greene and Greene, Frank Lloyd Wright, Richard Neutra, Harwell Harris and Gordon Drake.

[Note: *illustration* 9 *appears overleaf*.]

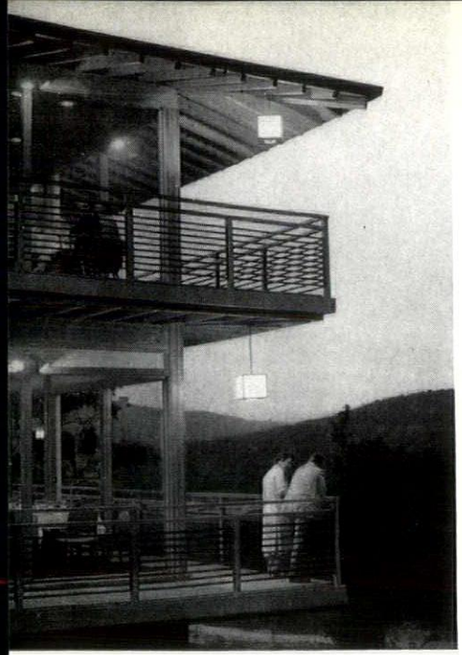
CORRESPONDENCE

Crystal Palace Garden

To the Editors,

SIRS,—I would like to appeal for support to prevent the destruction of the Paxton garden at the Crystal Palace. As I see it there are four good reasons for keeping the garden and none at all for breaking it up.

1. It is a *living* monument to a great man, Paxton, who designed it,



tea house on route seventeen

9, the Japanese-inspired restaurant of the Motel on the Mountain, at Suffern, New York. (See note on previous page.)

and to a tremendous period in our history. These huge terraces and their extraordinary sculpture are as significant of their time as Stonehenge, and equally worthy of preservation.

2. It is an open space on a superb steep hilltop site, accessible by bus from all parts of London.

3. It is a formal garden, unique in Europe, extravagantly laid out in the grand manner of previous centuries.

4. Lastly, but most important, it has been closed for 20 years and has become a lush jungle; it could become a magnificent wilderness garden for the children of London.

The site of the Crystal Palace—said to cover 200 acres—was bought by public subscription in 1914 to save it from being built on. This included the Palace, these gardens, and a lot of the hillside below them. In 1954 the LCC commissioned Sir Gerald Barry to produce a plan for 'developing' the site, the Council having taken it over. This scheme includes an exhibition centre on the top of the hill where the Crystal Palace stood, a National Youth and Sports Centre at the bottom of the hill, and excavation of what looks like the whole of the terraced part for garages, car parks and administration buildings. The £7,000,000 required for this enterprise is admittedly nowhere in sight, nor is there a guarantor for the estimated annual deficit of £70,000 and at a press conference in 1955 the Parks Department announced that it would welcome suggestions for interim uses of the terrain.

Recently, however, the LCC started to auction off the sculpture, to dismantle and 'improve' the gardens. At this stage I started action to prevent this piece of vandalism. Although it was the end of July and many people and public bodies were out of action for the month of August, I had favourable and sympathetic replies to letters and to a couple of articles published by South London papers, and it seems that destruction has been postponed.

It is now urgently necessary to form a committee to treat with the LCC in the matter of taking over the gardens and preserving them for use by children with as few restrictions as possible. One of the terraces might be used exclusively for very small children, accompanied by a parent; and perhaps one or two of the present fountains overgrown with water lilies and bulrushes could be reconditioned, so that a child could set them off. Many other ideas would doubtless occur to committee members.

London children have all too little experience of wide open spaces to work off growing energy, and very little scope for using their imagination or for exercising their creative—as well as destructive—urges. This garden provides all this with its dramatic stairways, colonnades, fanciful statues peeping out of thickets, high jungle grass, pickable unsmart flowers, and hilltop fresh air, and I submit that it would be an act of vandalism to 'improve' or remove it. If the garden, covering I suppose about 16 acres, were used for this purpose it would need less expense on reconditioning than any other scheme now being considered. I very much hope it can be saved.

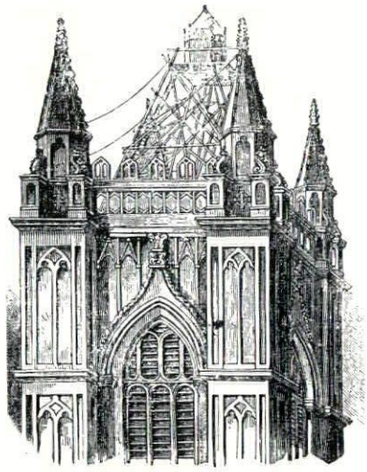
Yours, etc.,
JOAN HIGGINS.

London, W.1.

"Crow's Nest" on the Abbey

To the Editors,

SIRS,—When the Ordnance Survey of London was in progress one of the towers of Westminster Abbey had a surveyor's 'crow's nest,' or signal and theodolite station erected under the direction of Colour-Sergeant Smith, of the Sappers and Miners, which towered above its pinnacles. The old engraving dated April 22, 1848, depicts this curious structure on which the red-coated gentry perched like crows in their surveying operations. Captain Yolland, R.E., designed the structure and the actual work of sparring and bolting and lashing was done by sappers working under Corporal Beaton. In the instrument tent on top the great theodolite, which weighed 2 cwt., was used in the triangulation. During a thunderstorm the officer in charge of the instrument witnessed a blinding flash, as if the structure had been



struck by lightning but no damage was observed. Similar 'crow's nests' were erected on the cross of St. Paul's Cathedral, St. Luke's and other church towers of London in the great chain of trigonomical points which meshed the lines of far-flung bricks and mortar. So, the Abbey had its new look away back in 1848.

Yours, etc.,
COLIN JOHNSTON ROBB.

Ballynahinch, Co. Down, Ireland.

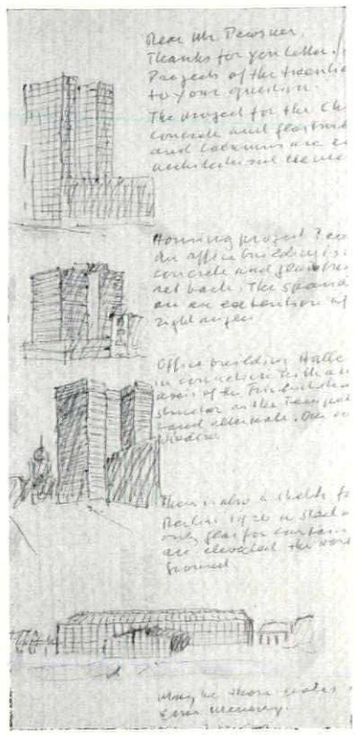
Glass Skyscrapers

To the Editors,

SIRS,—In THE ARCHITECTURAL REVIEW, Volume 121, 1957, page 305, a project by Mies van der Rohe for a glass skyscraper is illustrated as an early example of curtain walling. The date printed with it was 1926. This may well be a misprint for 1920; for Mies van der Rohe's thoughts on point blocks and glass walls go back to 1920 or even 1919, as witnessed by the illustrations in Philip Johnson's book (New York 1953), page 25. Another German pioneer of the glass skyscraper was Ludwig Hilberseimer and as his early designs are so much less familiar I wrote to him for some precise information. I received an answer which I think deserves quoting in full. This is what he says:

'Some sketches to different projects of the 'twenties to my mind in relation to your question.

'The project for the Chicago Tribune, 1922. A concrete and glass building 25 floors high. Beams and



Part of Professor Hilberseimer's letter referred to in the letter 'Glass Skyscrapers'. The sketches represent, from top to bottom, the Chicago Tribune; the Tempelhofer Feld housing projects, Berlin; Hallesches Tor office building, Berlin; and the Central Station, Berlin.

columns are exposed and an equal architectural element.

'Housing projects Tempelhofer Feld Berlin, 1924. An office building is included ten floors high, a concrete and glass building. The columns are set back, the spandrel walls under the windows are an extension of the floor slabs turned at right angles.

'Office building Hallesches Tor Berlin, 1927, also in connection with a housing project. In the axis of the Friedrichstrasse. Concrete and glass, same structure(?) as the Tempelhof building. Horizontal bands alternate. One contains span arches the other windows. There is also a sketch for the Central Station in Berlin, 1926, a steel and glass building with only glass for curtain walls. The east-west lines are elevated and the north-south lines are below ground.'

The design for the Chicago Tribune was illustrated in various places, e.g., I think, Hilberseimer *Grosstadtbauten*, Hanover, 1925. The scheme for the Tempelhofer Feld appears in B. Taut, *Die Neue Baukunst*, Stuttgart, 1929, page 151, the office building near the Hallisches Tor in *Moderne Bauformen*, 1928, page 347, the Central Station for Berlin in Hilberseimer, *Grossstadtarchitektur*, Stuttgart, 1927, page 82.

Yours, etc.,
NIKOLAUS PEVSNER.

CORRECTIONS

We regret that in the second part of the article on *Universities* in last month's AR (pages 240–251) no mention was made of Miss Elizabeth Beasley's co-authorship with Lionel Brett. Development plans for Cambridge and Birmingham Universities illustrated in the October issue were the work of Sir Hugh M. Casson and Mr. Neville Condor and not of Sir Hugh M. Casson alone.

INTELLIGENCE

There will be an international competition in two stages for a new city hall and square for Toronto. At the end of the first stage, eight competitors will be selected to compete in the second stage, at the end of which each will be paid $7,500. The winner will be the architect for the building and will receive $25,000 in advance of fees. Competition conditions can be obtained from Professor Eric Arthur c/o City Hall, Toronto, Canada, for a fee of $5 or its equivalent.

ACKNOWLEDGMENTS

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COVER: William Whitfield. MARGINALIA, pages 293–294: 3, 4, Sam Lambert. BEAUTIFUL AND IF NEED BE USEFUL, pages 295–297: 2, Foto Mas, Barcelona; 3, William Morris Gallery; 4, from John Szarkowski's *The Ideas of Louis Sullivan*, University of Minnesota Press, USA, and OUP, England; 5, William Morris Gallery; 6, Eric de Maré. PAPER MILL AT NORTHFLEET, pages 300–309: 19, Holland, Hannen and Cubitts; rest, Galwey, Arphot. THE GEORGIAN BREWERY, pages 310–321: 1, 9, 10, Watney, Combe Reid and Co.; 2, Bristol Brewery Georges and Co.; 3–6, 8, 45, Whitbread and Co.; 7, Birmingham Public Libraries; 11, British Museum; 12, 54, Guildhall Library; 13, 14, Sir John Soane's Museum; 15, 32, Richards, Arphot; 16, 17, Eric de Maré; 18, 19, 25, London County Council; 20–22, Burton-on-Trent Public Library; 23, 24, 46, Arthur Guinness, Son and Co.; 26, 27, Truman Hanbury Buxton and Co.; 28, 31, 33–43, 48, Courage and Barclay Ltd. (photographs 33–43 by Herbert K. Nolan); 29, 44, Whitwell Mark and Co.; 30, N.B.R.; 47, Bass Ratcliff and Gretton; 49, 53, Benskin's Watford Brewery Ltd.; 50, *A Monthly Bulletin*; 51, H. and G. Simonds Ltd.; 52, Ind Coope and Allsopp Ltd. UNIVERSITY AND POLYTECHNIC, RANGOON, pages 323–332: Ray Lancaster, Hugh Powell Thomas, David Charnley and others. CURRENT ARCHITECTURE, pages 337–340: School at Sheffield, Colin Westwood; Administration Building at Shell Haven, Sydney W. Newbery; Pub at Peckham Rye, Colin Westwood. MISCELLANY, pages 341–348: Architecture, St. John's (after) J. R. Pantlin; Magpie House (before) Christopher Gotch; (after) Colin Westwood. Exhibitions, 1, 2, Scottish Tourist Board; 3, Millar & Harris. Counter-Attack, Andor Gomme and Nairn, Arphot. SKILL, pages 349–end: Interiors, 1, 7, Millar & Harris; rest, Galwey. Design Review, light fittings, Peter Pitt. Techniques, 12, Philip Turner; 13, Colliers Ltd.



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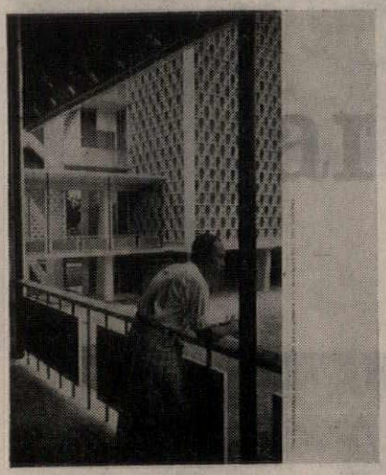
THE ARCHITECTURAL REVIEW

Volume 122 Number 730 November 1957



This Month's Cover is a view from the first-floor gallery of the Engineering Block of the new Rangoon university buildings, toward the geometrically patterned screen wall of the Library. Throughout this scheme the architects, Raglan Squire and Partners, have made the most enterprising use of colour, in opposition to the received opinion that only white and shadow will succeed in strong tropical sunlight, and the measure of their success can be seen in the coloured illustrations that accompany the description of the buildings on pages 323–332.

293 **Marginalia**

293 **Correspondence**

296 **Frontispiece**

297 **Beautiful and if need be Useful** *by Nikolaus Pevsner* Only recently delivered from contempt and oblivion, after almost thirty years of exploratory and pioneering studies, Art Nouveau can now be regarded as an established historical style. Yet Dr. Tschudi Madsen, whose new book on the *Sources of Art Nouveau* marks its establishment, doubts that it really merits the appellation of a style because, he claims, it never achieved any hegemony over architecture, but remained primarily a fashion in decoration. Since this implies a re-appraisal of the work of Gaudi, Horta and Sullivan, among other architects of the late nineteenth century, Professor Pevsner examines the limitations on the use of the term Art Nouveau as Dr. Madsen employs it; limitations in extent, and also limitations in time, since Dr. Madsen also raises the problem of Mackmurdo—is he a source or a pioneer of the style? Attempts to set limits to Art Nouveau also involve attempts to define its central characteristics, and this last is rendered more than usually difficult by the contradictions between theory and practice, and between the ideas of one theorist and the next; contradictions whose depth and extent are made more evident than ever by the mass of material that Dr. Madsen has brought together.

300 **Paper Mill Extensions, Northfleet** *Architects, Farmer and Dark*

310 **The Georgian Brewery** *by Brian Spiller* Georgian Breweries are one of the largest classes of Functional Tradition buildings to be found in Britain, but they are still perishable, and their numbers are dwindling. Yet they were once one of the wonders of Europe, early masterpieces of planning for flow-production, early among industries to be mechanized and steam-powered. Mr. Spiller's study relates the buildings to the sudden expansion of business of the leading London brewers in the mid-eighteenth century, the organizational changes involved in conversion from domestic to factory operation, and the new techniques such as gravity feed and steam power that followed one another toward the century's end. Although, toward the end of this phase, there were architects who might be called brewery-specialists, and men of the status of the elder Gwilt were retained by Thrale as surveyors, the designers of the buildings—Mylne alone excepted—were less conspicuous in their profession than were the engineering consultants—Smeaton, Wedgwood, Boulton and Watt, Rennie—who were involved not only in the installation of power-plant, but also in the rationalization of storage, as exemplified in the change-over from barrels to rectangular cisterns. It was a phase of industrial transition when function was more to be considered than architectural show, but also a phase when purely functional equipment could excite an aesthetic admiration, as when a visitor to the Anchor Brewery, Southwark, found even a kind of elegance in the cooper's work on the vats there—an elegance that can still be admired in the surviving buildings of the period, even when their interior appurtenances have been altered out of all recognition.

323 **University and Polytechnic, Rangoon** *Architects, Raglan Squire and Partners*

333 **Cluster City** *by Alison and Peter Smithson* Modern architects can scarcely fail to be aware that every building they design has its consequences for the community and the culture in which it is situated, and the pioneers of functionalist architecture saw the precepts of their building practice as extensible into functionalist cities and even functionalist regional planning. But nowadays it is widely felt that their functional-mechanical concept of town planning is no longer relevant, and the cartesian geometry of Le Corbusier's Ville Radieuse of the Twenties, though it once supported a vital image of how a city should be, now appears as a crushingly banal exercise in pattern-making. The authors suggest that our main concern now is with flow, rather than measure; flow, in the case of motor-traffic, into, out of, around, between areas of maximum population pressure, clusters of buildings whose varying homogeneities and contrasts will create a new image of a city, a new hierarchy of forms. But, unlike the classical formal hierarchies, which are finite and closed, the new one should be capable of growth, yet capable of being understood at every stage of its growth; unlike the classical pyramid of densities, tapering from central excess to peripheral vagueness, the new one should consist of a number of peaks of population pressure, not density statistics, disposed according to the nature and growth of the place.

337 **Current Architecture**

Miscellany

341 **Books**

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Skill

349 **Interiors: Store at Guildford** *Architects, G. A. Jellicoe and Partners*

351 **Design Review: Prototype Railway Carriage** *Architects, Farmer and Dark*

352 **Design Review: Light Fittings**

353 **Techniques: the Building Exhibition** *by John and Ann Voelcker* The biennial Building Exhibition this month brings new and improved materials, techniques and equipment to the notice of the architectural profession. Mr. Voelcker's pre-view draws attention to some of the outstanding innovations and improvements, and describes and illustrates them.

The Industry

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THE ARCHITECTURAL REVIEW

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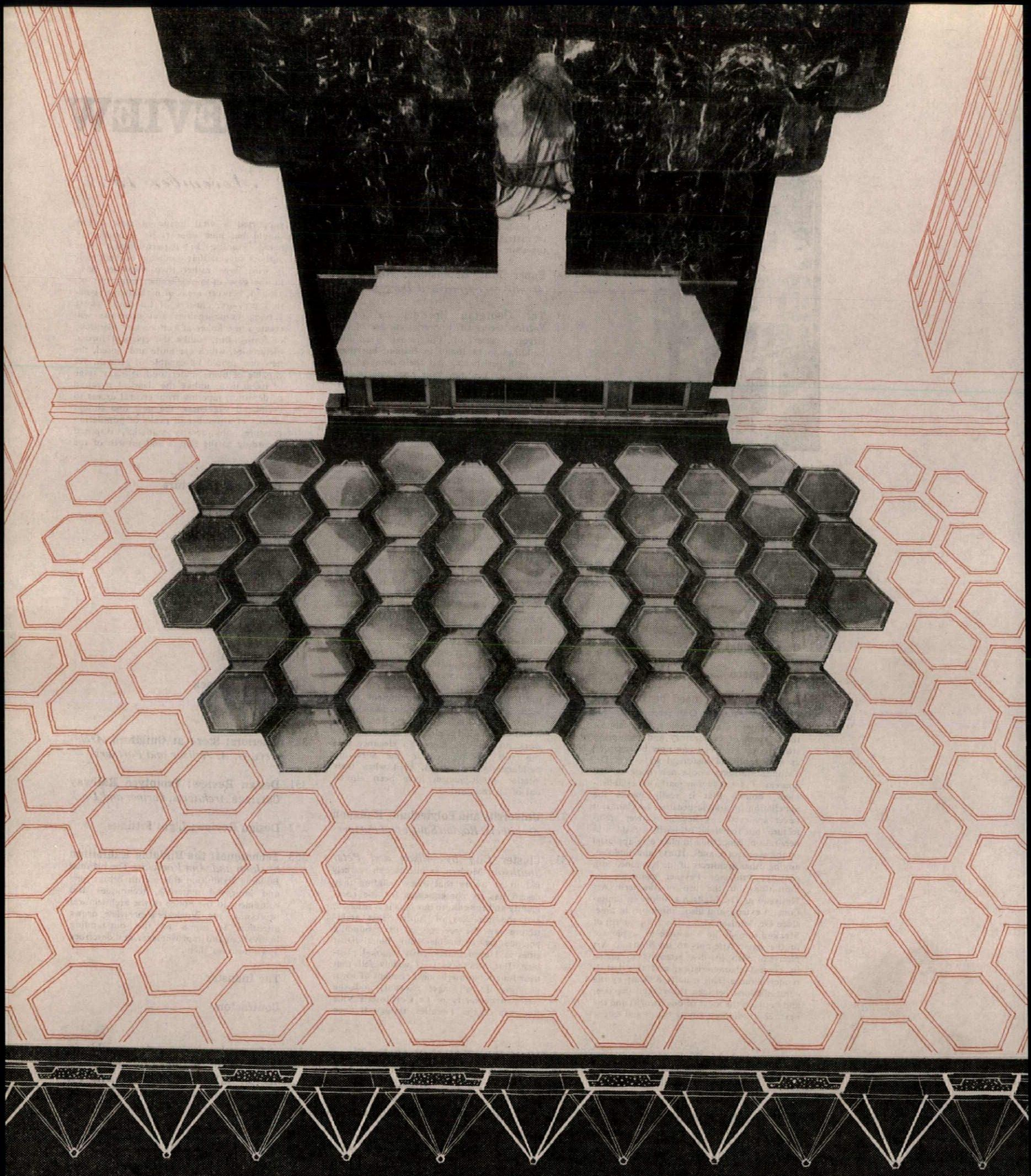
FIVE SHILLINGS



The Trades Union Congress Memorial Building, Great Russell Street, is only the second major public building erected in London since the War. Unlike the first—the Royal Festival Hall—the site cannot show its exterior to great advantage; hence visual interest is concentrated on its inner court. Kenneth Browne's montage above looks along the main axis towards the screen wall and the shrouded Epstein sculpture. The honeycomb pattern is given by the hexagonal roof-lights that illuminate the Congress Hall, which are supported on the complex trusses shown in section. Next month's AR will give further illustrations of these features and the first full description of the completed building.

NIKOLAUS PEVSNER

BEAUTIFUL AND IF NEED BE USEFUL

'I believe in everything being beautiful, pleasant, and if need be, useful.'

Jessie Newbery, 1898.

When does a style or a fashion become history? Not, of course, as long as it is operative. Nor immediately after it has been superseded. This is the moment when it becomes out of date or outmoded. Something between one and two generations, thirty and sixty years, seems to be needed. In the case of Art Nouveau which is the case to be considered in this essay, the first to look at it as a historian was Ernst Michalski in a paper published in 1925. This was followed by a lecture given by the painter Ahlers-Hestermann in 1932 and an article by Dolf Sternberger in 1934.[1] After that came Fritz Schmalenbach's book on *Jugendstil* of 1935 and my *Pioneers* of 1936. All these were themselves pioneer efforts with some of the shortcomings of such efforts. Dr. Tschudi Madsen's new book[2] has well over 480 pages. It contains more material than has ever before been got together, plenty of illustrations of which many are nearly unknown and a bibliography of about 600 items.

That seems proof that Art Nouveau has now made the grade and is accepted as a full-dress style. Curiously enough Mr. Madsen does not think so. So the case must be investigated. What constitutes a style as against a fashion? I would say that we speak of a style as against a fashion, where an essential new statement is made, where all (or most) fields of aesthetic creation are concerned, and where duration is more than a couple of years. In the case of Art Nouveau duration is no more than a maximum of ten or twelve years and in some cases indeed only four or five. So this criterium is of doubtful application. And as regards all fields of aesthetic creation, parallels with painting are obvious, with literature and music they are also unquestionable—symbolism being the connecting link—but architecture? Here Mr. Madsen is explicit. 'Art Nouveau is essentially a European style of decoration . . . never really extending its hegemony to architecture' (pages 430–431). Therefore it 'constituted an interlude and was not a style' (page 443). The validity of this interpretation hinges on Gaudí. Mr. Madsen banishes him into a few paragraphs at the end of two of his chapters on the sources of Art Nouveau: the Gothic Revival and Neo-Baroque. But what if not Art Nouveau are such decorative details as those of the Palau Güell of 1885–1889, 2? And if that is admitted, can the architecture of the Colonia Güell begun in 1898 and the Parque Güell begun in 1900 be called anything other than Art Nouveau? Mr. Madsen defines the characteristics of Art Nouveau exceedingly well: 'Its main feature is an unusual emphasis upon the ornamental value of the line, a line of undulating movement and rhythmic force, often enhanced by a counter movement filled with tension. Art Nouveau is asymmetrical in nature, as is evident in the tiniest movement of a single line as well as in the composition of an actual ornament.'

Surely all this fits Gaudí to perfection. What singles him out is his bold working in depth and in addition a robustness and sometimes savagery alien to the fin de siècle languor of the other leaders. If Gaudí is accepted within the totality of Art Nouveau, the style does not only increase in stature, it also gains in time. For to Mr. Madsen as indeed to most others it begins with Horta's house in the former rue de Turin, now rue Paul-Ernest Janson, designed in 1892. He treats Mackmurdo's work of the years 1883–1886 under the heading 'English Proto-Art Nouveau' which, on the pattern of the Tuscan Proto-Renaissance in the eleventh and twelfth centuries surely means something *not* Art Nouveau, though heralding it. But Mackmurdo *is* Art Nouveau, 1. I hoped to have established that, and, if I have not, Mr. Schmutzler surely has. To Mackmurdo's immediate sources Mr. Madsen incidentally makes a very convincing contribution in illustrating a Burne-Jones pastel of 1881, 5. To this I may perhaps add a detail from William Burges's house in Melbury Road, that is of *c.* 1875–1880, 3. To Mackmurdo we must add Sullivan of whom Mr. Madsen says that he does 'not fall within the framework of what we might call Art Nouveau' (page 442). His ornament again can be analyzed in exactly the terms of Mr. Madsen's analysis of Art Nouveau, and so the *incunabula* of Art Nouveau date from 1883, 1885–1889, 1888. The date of the Auditorium is 1888, 4.

But with Sullivan we are up against an added complication. His structural expression appears to contradict his ornament. That seems to justify Mr. Madsen in his exclusion. Yet, is one entitled to split up a personality into an Art Nouveau and a Modern Movement part? The temptation is great. In a comparable though somewhat different way Mr. Howarth has fallen into it in his assessment of Mackintosh, and Mr. Madsen follows Mr. Howarth. He calls Mackintosh's style—'a highly sophisticated version of international Art Nouveau' (page 437) but explicitly denies that he introduced that style into his architecture (page 37), thereby again splitting up a personality of embracing one-ness. No—the asymmetrical blocks of Mackintosh, the placing of the windows and oriels, the contrasts of rigid verticals and delicate curves belong together. Once that is admitted, then Art Nouveau architecture can without effort be extended to include Scholkopf's crazy house for Yvette Guilbert and much of the (later) Italian *Stile Liberty* or *Floreale* on the one hand, Endell's combination of large flowing ornament and precise rectangularity in architectural design on the other.

An ambiguity remains, but it is the ambiguity of the moment of transition. Mr. Madsen whose chief concern is the sources of the style sees its links with the nineteenth century more strongly than its perspectives into the twentieth. He says very well: 'All of a sudden a new style was there—like a new shining Sunday suit, newly arrived from Brussels or Paris. But it was a suit that proved impossible to work in on a weekday . . . It failed to solve the common problems which new materials and social tasks posed.' Moreover it remained 'to a large extent the style of the individual artist, demanding manual skill. . . . Nothing, in fact, produced in the Art Nouveau style, could be manufactured. Art Nouveau represents . . . the nineteenth century's final reaction against the machine and its aesthetic norms' (pages 443–445). Against this he sets with perfect fairness the new feeling for unity in interior decoration, indeed a crucial innovation—even if anticipated by William Morris—the replacement of darkness by light, the total break with period motifs—this alone an achievement which establishes Art Nouveau as a style and not a fashion—and finally 'the interest in structure as expression.'

Here Mr. Madsen touches on something of the utmost importance. But when one tries to track it down in Art Nouveau theory one is faced with a confusion which even Mr. Madsen can only register and not solve. If there is ambiguity in Art Nouveau architecture, there is outright contradiction in Art Nouveau theory. Mr. Madsen starts with Gallé and the School of Nancy. Above the entrance to Gallé's studio one read: 'Nos racines sont au fond des bois,' and, indeed, his faith in natural forms comes close to that of many of the designers and craftsmen of 1851. But others meant something quite different when they praised and recommended nature. The muddle goes back through centuries. Natural can mean harmony with the rational rules of the universe or it can mean the elementary (this is the familiar contradiction in Alexander Pope's and Kent's semi-rationalist, semi-picturesque theories and works), it can mean true (*The Germ*, the pre-Raphaelite journal, called itself *Thoughts towards Nature in . . . Art*) or in praise of God (Ruskin: 'all noble ornamentation is the expression of man's delight in God's work. . . . All most lovely forms and thoughts are directly taken from natural objects.') So, while Gallé voted for the copying of forms from nature, Jean Dampt of the Nancy school recommends a 'nature épurée, affinée, synthétisée,' and Voysey wrote that nature must not be imitated but that 'the natural forms have to be reduced to symbols . . . through an elaborate process of selection.' That is based on Mackmurdo, who in an article called *Nature in Ornament*, said that by such treatment of the raw materials of nature ornament would be produced

[1] These two facts come from Ahlers-Hestermann's book *Stilwende* which was first published in 1941 and of which a second revised edition has just appeared. It contains a new introduction to bring it up to date and revisions of several chapters as well. Ahlers-Hestermann among recent events refers to two exhibitions held in Germany and apparently not commented on in this country, one at Hamburg in 1950 and one at Frankfurt in 1955.

[2] *Sources of Art Nouveau*, Aschehous, Oslo, 1956.

which is in 'strict conformity with all organic structure.' Van de Velde, of course, was more radical: 'La moindre faiblesse sentimentale, la moindre association naturalistique menacent l'éternité de cet ornement.' So nature has become the principle of all organic growth—that is fitness, and we stand insecurely between Pugin and Frank Lloyd Wright. Christopher Dresser wrote in 1862 that 'in vegetable nature the utmost regard to fitness is manifested.' Indeed the contact between naturalism as the imitation of vegetable form and the exploitation of the principles of natural growth is as typical of the theory of 1850–1860 (Cole, Owen Jones, M. D. Wyatt) as of 1890. The emphasis on fitness in the theoretical sayings of so many of Mr. Madsen's artists innocent of fitness in their art is startling: Gallé decrees that furniture must be 'fait pour servir' and have a 'saine construction . . . bien évidente,' Grasset recommends to 'consulter l'usage présent, l'utilité des objets' and 'la matière employée,' Gaillard does the same (page 372); so does the manifesto of *L'Art dans Tout*. Thus the contradiction between van de Velde's preaching and doing which has baffled many is no longer a solitary case. He may well say—and says well—that ornament should 'structurer' (page 187), but it does not in his finest pieces. Mr. Madsen sees this contradiction clearly (page 325).

There is, indeed, little he does not see. Even in English affairs, he sees sometimes what we in England had not seen before. Thus his analysis of Alfred Gilbert is much to the point. Gilbert's treatment of metal is the direct link from Victorian neo-Baroque to Art Nouveau, 6. Of the *épergne* which Gilbert made for Queen Victoria's Jubilee in 1887, Mr. Madsen writes: 'The figures stand heroically unmoved in the midst of serpents, hissing lizards, snorting monsters, and sprawling fish, symbolizing the unity of the British Empire.'

No English writer could improve on this, and it remains altogether admirable how easily Mr. Madsen's English flows. What there is of occasional impurities of style or linguistic mistakes is of no importance. And while in the case of Gilbert what is new is a matter of interpretation, there is in another place a completely new English story, both significant and entertaining. On June 28, 1900, Mr. George Donaldson offered the Victoria and Albert Museum a gift of several thousand pounds to purchase some of 'the best models of the style called New Art' and place them before the public, 'however much this New Art may conflict with our Classical standards.' The gifts were accepted and made accessible early in 1901. No sooner had this happened than a letter appeared in *The Times* as follows:—

'Sir,—It is much to be regretted that the authorities of South Kensington have introduced into the Museum specimens of the work styled "l'Art Nouveau."

'This work is neither right in principle nor does it evince a proper regard for the material employed. As cabinet maker's work it is badly executed. It represents only a trick of design which, developed from debased forms, has prejudicially affected the design of furniture and buildings in neighbouring countries.

'In its present position, it is in danger of being looked upon as a recognized model which has received the approval of the authorities for study by students and designers, and the harm it may thus produce on our national art cannot be easily gauged.

'We, the undersigned, desire publicly to protest against its importation at South Kensington, and most strongly against its recommendation by the authorities to the notice of furniture makers and others.

'We are, Sir, Yours faithfully,
John Belcher, A.R.A.
Reginald Blomfield.
Mervyn Macartney.
Edward S. Prior.'

The letter is wonderfully telling. Three of the four signatories, Belcher, Blomfield and Macartney, were on the classical side and hence automatically hostile to Art Nouveau, but the fourth, Prior, had certainly designed enough fantastical details to be credited with more sympathy. Moreover, Blomfield, Macartney and Prior came from the Morris-Shaw circle and so had plenty of ties with the group from which Art Nouveau arose. Their condemnation is thus a voice of the future as well as the past. The Board of Education followed with an internal memorandum warning against 'a style not consistent with the teaching at Art Schools of the United Kingdom.' In that there was nothing of the future. We know the tone from the 1930's.

Yet—and this is equally telling—how well-mannered it all is, even Sir Reginald Blomfield who lived long enough to combat the next *Modernismus;* even Sir Albert Richardson today, if we compare his attacks with another outbreak of hostility against Art Nouveau, a French one, Arsène Alexandre's article in *Le Figaro* of 1895: 'Tout cela sent l'Anglais vicieux, la Juive morphinomane ou le Belge roublard, ou une agréable salade de ces trois poisons.' If by now the salad has indeed become agreeable, if Mr. Madsen's turns out to be an enjoyable as well as a scholarly book, is that perhaps due to the fact that his choice of subject is not so entirely a matter of historical detachment at last having been reached, but rather a matter of a new involvement? The rationalists of 1930 were bound to be disgusted with a style or a fashion in which beauty was placed so shamelessly before use. Ronchamp and the roof-scape of the Unité and all the structural acrobatics of today in which concrete is used as fancifully as iron was by Art Nouveau may well lead to a more sympathetic evaluation of the events of the ending nineteenth century. If that is so, then Mr. Madsen finds himself in illustrious even if somewhat dubious company.



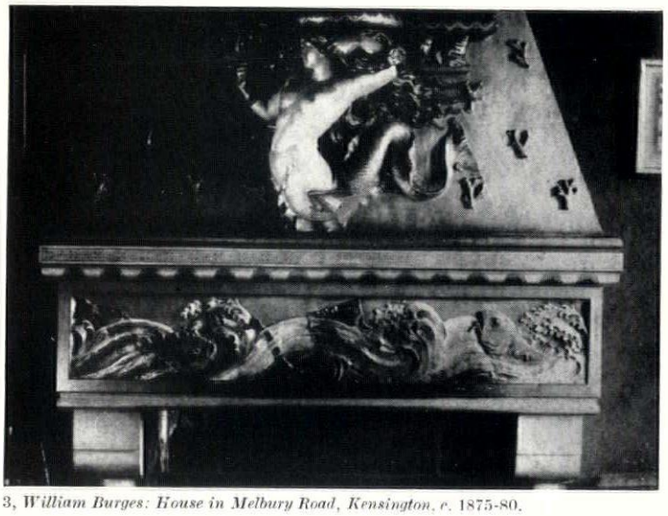
1, *A. H. Mackmurdo: Title-page of* 1883.

The Sources of Art Nouveau:

Tschudi Madsen's new book Sources of Art Nouveau *raises an important problem that is the necessary concomitant to any enquiry into origins—what are the limits of the style, in time, in intention, and in the type of art-work to be considered? Professor Pevsner raises this question in connexion with Mackmurdo: does his work,* 1, *stand within the canon of Art Nouveau, or does it belong to the preliminary half-world, called 'proto-Art Nouveau' by Madsen, between the style proper and Mackmurdo's own sources in Burne-Jones,* 5, *and Burges,* 3. *This is a problem of where to draw the line in time, but since Madsen is unwilling to accept Art Nouveau as any more than a fashion in decoration, rather than a style of building, then problems of architecture, as well as time, intrude. If Antoni Gaudi's Palau Güell,* 2, *can be accepted—against the Madsen thesis—as Art Nouveau, then the birth of the style can be pinned back to* 1885, *and if Sullivan's Auditorium building,* 4, *can be accepted too, then that gives another birth-date in the eighties, but it also raises the problem of the apparent contradiction between Sullivan's ornament and the structure it clad, one being Art Nouveau, the other seemingly 'proto-Modern-Movement.' But no problem surrounds the case of Albert Gilbert, whose writhing metallic decoration,* 6 *(from the base of Eros in Piccadilly Circus), is very properly indicated by Mr. Madsen as the link backwards from Art Nouveau to Victorian revivals of the Baroque.*



ni Gaudi: Palau Güell, Barcelona, 1885-89.



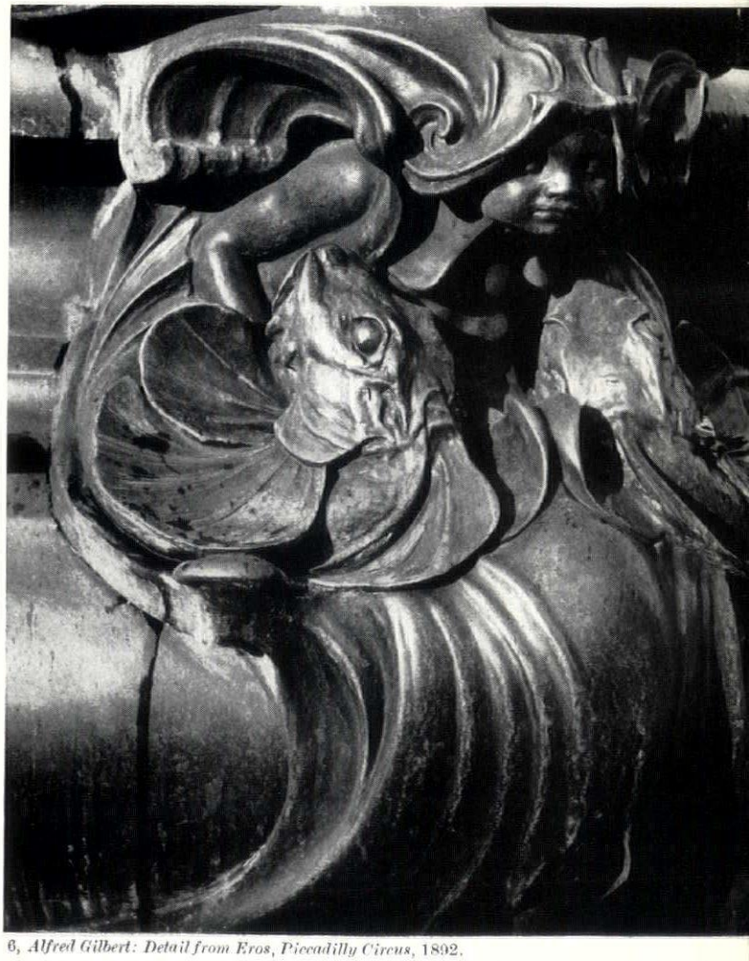
3, *William Burges: House in Melbury Road, Kensington, c.* 1875-80.



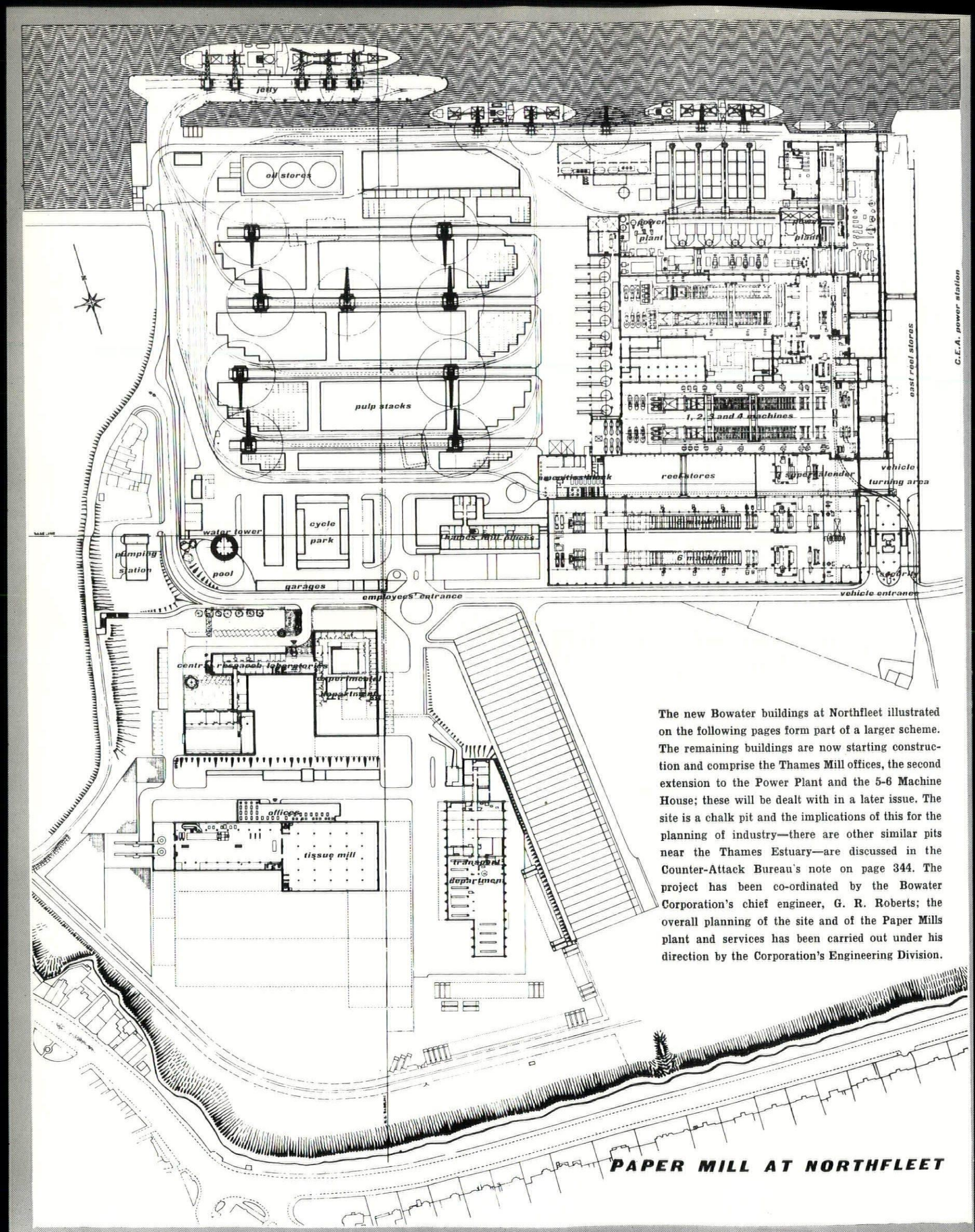
4, *Louis Sullivan: Auditorium, Chicago,* 1888.



5, *Edward Burne-Jones: Pelican. Panel at the William Morris Gallery, Walthamstow,* 1881.



6, *Alfred Gilbert: Detail from Eros, Piccadilly Circus,* 1892.



The new Bowater buildings at Northfleet illustrated on the following pages form part of a larger scheme. The remaining buildings are now starting construction and comprise the Thames Mill offices, the second extension to the Power Plant and the 5-6 Machine House; these will be dealt with in a later issue. The site is a chalk pit and the implications of this for the planning of industry—there are other similar pits near the Thames Estuary—are discussed in the Counter-Attack Bureau's note on page 344. The project has been co-ordinated by the Bowater Corporation's chief engineer, G. R. Roberts; the overall planning of the site and of the Paper Mills plant and services has been carried out under his direction by the Corporation's Engineering Division.

PAPER MILL AT NORTHFLEET

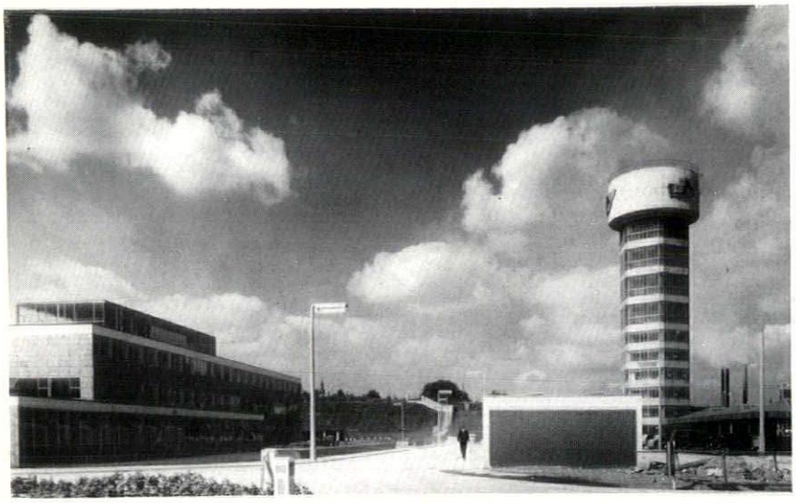
PAPER MILL AT NORTHFLEET

ENGINEERING DIVISION AND CENTRAL RESEARCH LABORATORY, TISSUE MILL, TRANSPORT BUILDING, POWER PLANT, WATER TOWER

ARCHITECTS	FARMER AND DARK
controlling partners	Frankland Dark, Thomas A. Eaton, W. A. Henderson, J. T. Pinion
chief civil engineer	S. Jampel
consultants	lighting, John Bickerdike; landscape, Brenda Colvin; furniture, Robin Day

1, the water tower from Crete Hall Road, with a concrete-framed flint wall backing the Thames Mill garages.





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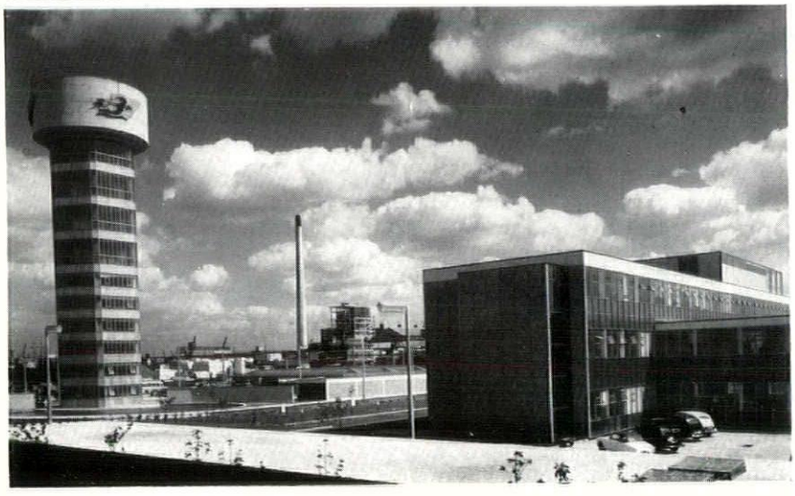
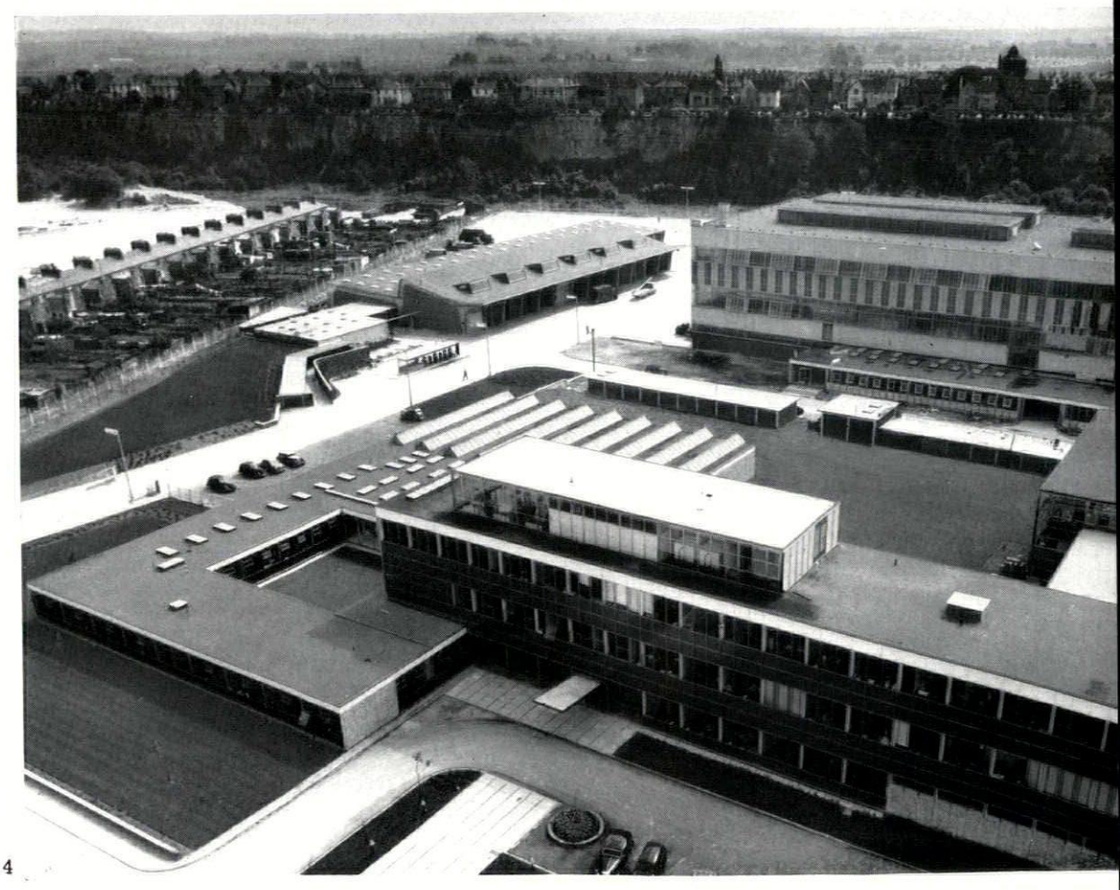


3

Tissue Mill Because of shortage of time and somewhat extended deliveries of constructional steelwork, a prestressed concrete structure was adopted, although a steel frame would have been more flexible for machine fixings and extensions. The main structural elements in all three sections—Pulp Preparation House, Machine House and Conversion (Jumbo Roll House)—are precast, either normal reinforced concrete or pretensioned prestressed concrete on the Hoyer system. The decision to precast the main parts of the structure meant that early decisions had to be made on details of many items which would not normally have been necessary so early: for example, all cladding details were required so that fixings for the cladding rails and their supports could be made in the pre-cast columns and beams. The framing of the Conversion building is of normal layout on a 30′ by 24′ or 20′ grid; that for the Machine House consists of pairs of columns on each side of the Machine Hall which itself is 62′ wide and 200′ long and accommodates a 20T travelling crane. The annexes are 15′ wide and have floors at three levels, which are served by small travelling cranes. The roof construction consists of precast cantilever beams carried in the forks of the inner main columns and held down by the external columns, the inner ends separated by a 22′-wide monitor light in the form of pre-cast portal frames.

All columns throughout are reinforced concrete, precast in one length at Iver and transported by road to the site: the longest are approximately 71′ long and weigh about 18 tons. Beams in the Jumbo Roll House are all prestressed, secondary floor beams being carried in special metal brackets which are bolted to the main beams with special high tensile bolts. The heaviest pre-

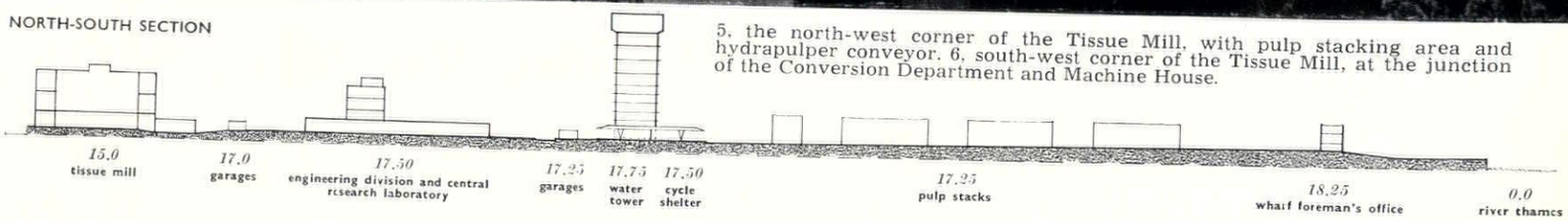


4

2, the Engineering Division and Central Research Laboratories, and the water tower, from the roundabout. 3, the same buildings, with the Power Plant in the background. 4, Engineering Division and Laboratories in the foreground, with the Tissue Mill and offices beyond right, and the Transport Department left centre. The main Gravesend-Dartford road is at the top of the cliff in the background.



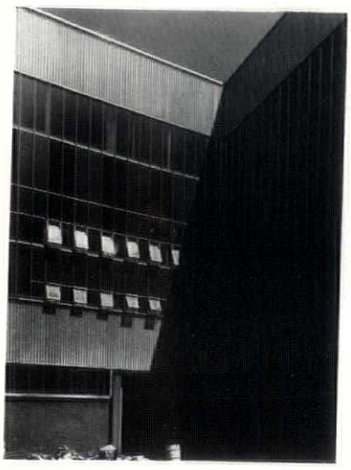
5



5, the north-west corner of the Tissue Mill, with pulp stacking area and hydrapulper conveyor. 6, south-west corner of the Tissue Mill, at the junction of the Conversion Department and Machine House.

cast beams are prestressed and occur at the + 41·00 level in the Pulp Preparation House, and are 41′ long and weigh about 13 tons.

Both floors in the Jumbo Roll House are of precast palette construction with an in situ topping, saving dead-weight and shuttering. Elsewhere all floors are in situ because of the number and variety of fixings, holes, etc., required for plant. All purlins throughout are 14″ deep and prestressed. All floors are designed for a superload of 3 cwt. sq. ft. except the + 41.00 floor in the Pulp Preparation House which is designed to carry tanks weighing about 60T each. The roof comprises bitumen-covered corrugated aluminium decking units with 1″ cork vapour barrier insulation and with three layers of roofing felt in bitumen. The final roof finish has granite chippings.



6

The reinforced structural frame is clad with patent glazing incorporating opaque coloured glass spandrel panels to cover upper inner cill level walls and floor depths. The glazing bars are at 2′ 0½″ centres to allow a standard 2′ 0″ width of glass to be used. The height of the patent glazing is 32′ 0″. This envelope of patent glazing is surrounded at a higher level by a 9′ 0″ band of anodized aluminium corrugated sheeting and similarly by a band 9′ 0″ deep beneath the patent glazing. This cladding covers all the floors from + 16.00 level to the roof. The ground floor is walled entirely in 11″ cavity brick walling in purple Uxbridge flints with black pointing.

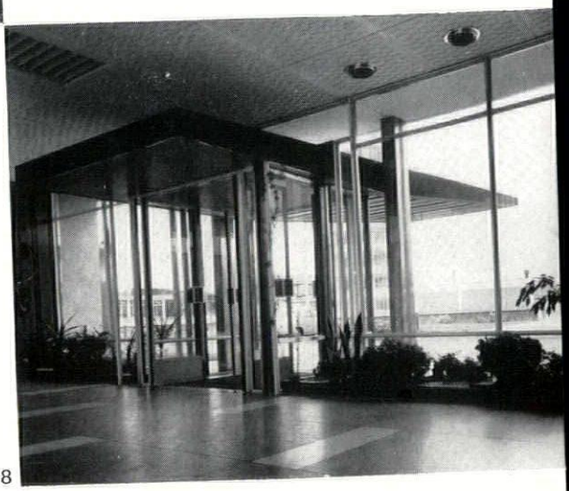
Internally the concrete frame is exposed. In the Pulp Preparation House the columns are fair-face. The Main Machine House has an acoustic suspended ceiling, and both end walls are lined with acoustic tiling. The floor finishes generally in the pulp preparation area and the machine house are of in situ granometallic and in the conversion end non-slip flooring strip is to be laid.

On the north side of the Tissue Mill there is a single-storey office block which houses the Mill Manager and his staff. The main Mill entrance, flanked by the time



7

7, the main entrance to the combined Engineering Division and Central Research Laboratories block. 8, the entrance lobby of the same. 9, south elevation of Central Research Laboratories.



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office and ablution and locker rooms, is also in this block. The Office Block is attached to the main north wall of the Mill and consists of a precast concrete frame with a curtain wall based on a 3′ 4″ modular grid, formed of $3\frac{1}{2}$″ by $\frac{1}{4}$″ steel transoms and mullions with external spandrel panels in opaque coloured glass.

The fascia of the Office Block takes the form of lightweight cladding blocks, faced with white Italian glass mosaic, and the east and west ends of the block are formed of lightweight blocks with a granite and marble aggregate finish. Internally, partitions are either 3″ nailable building blocks or $4\frac{1}{2}$″ brick and floor finishes are cork, wood block and in situ terrazzo in the office entrance hall and lavatories.

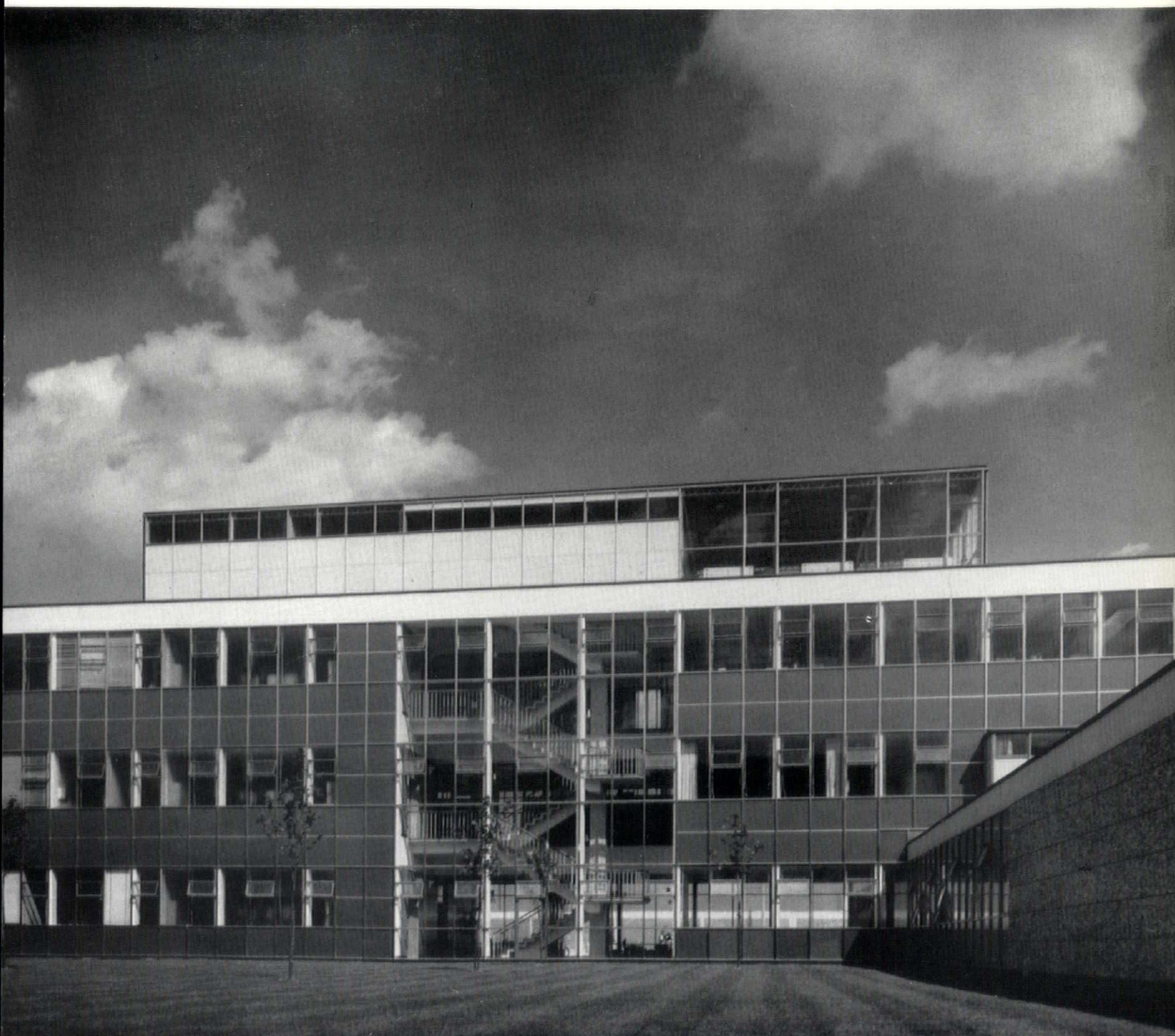
Architects-in-charge, V. H. Lee and I. T. M. Davis; assistant architects, A. J. Potts, D. E. Heath and A. J. Jowsey ; the assistant civil engineer was T. Salter.

Central Research Laboratory The planning is to a module of 3′ 4″. The structure is a light steel frame consisting of box stanchions and open lattice beams. The main client requirement was the housing of services between ceilings and floors with full accessibility. Services in this block include plenum trunking, all the usual services for laboratories, and a fume extract system ; this required a floor depth of some 3′. Another important requirement was complete flexibility of partitioning with as few columns in the main floor area as possible. This resulted in a clear span of 40′ of beams at 3′ 4″ centres. Floors consist of pre-cast concrete units 3′ 4″ by 10″ by 2″, topped with a structural screed and a wood block finish. The ceiling panels consist of acoustic perforated metal trays backed up with absorbent material and top cover plates. The removeable laboratory partitions are Holoplast.

Lighting is generally fully recessed in the ceiling space, and fluorescent tubes are fixed in fibrous plaster coffer units 10′ long ; metal louvre units are fixed coffers flush with the ceiling. A special requirement was arrived at for the drawing office where steel triangular trusses 60′ long were used with beaten glazing over a laylight of corrugated plaster between. The trusses contained the plenum trunking and conduit runs, the whole encased in fibrous plaster. Heating is by a medium pressure hot-water system ; 75 per cent. is from three main plenum plants ; and 25 per cent. from perimeter vectare units.

The window wall consists of steel flat droppers at 3′ 4″ centres with faced frames fixed, the whole being clad externally in stainless steel. Fine steel was used for future ease in maintenance, and because of cement dust in the atmosphere.

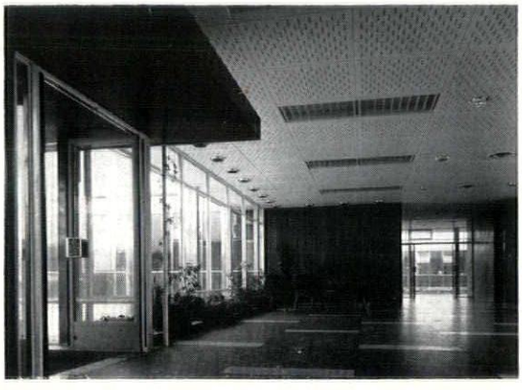
The architect-in-charge was R. L. Brewerton, assistant architects A. J. Tait, A. J. Potts, D. E. Heath, V. H. Lee, I. T. M. Davis; assistant engineer W. Smyth.





10

Interior views of the combined Engineering Division and Central Research Laboratories; 10, entrance hall; 11, the same looking towards the Engineering Division; 12, Laboratories conference and projection room; and 13, looking from the staircase down to the entrance hall.



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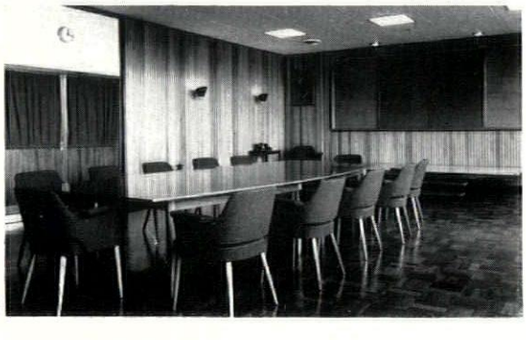


12



13

Transport Department This is a reinforced concrete building with a main garage area of 24,325 sq. ft. which includes service bays, coach building, paint shops and ancillary stores with in addition four washing bays, totalling 4,000 sq. ft. It is intended to service the southern fleet of Bowater vehicles. The shape of the building was determined by the high bays being allocated to servicing and the low ones to stores and workshops. The garage is designed on a bay spacing of 17′ 6″ which allows for the largest size lorry with a satisfactory circulation around it. The outside wall of each bay is taken up by horizontal folding sliding doors giving a clear opening, again for the largest size lorry, of at least 13′ 6″ in width with 15′ head room or an infill panel where a stores bay goes behind ; these panels are interchangeable with the doors to allow reorganization of the bays if required. The stores are formed by demountable steel and mesh partitioning.

The roof of the garage is 5″ reinforced concrete slab with ¾″ Bowater Board insulation topped with felt. Internally the frames of the garage will be left natural concrete, although for cleanliness they have been painted up to head height. The floors are monolithic granolithic.

Attached to the garage are welfare amenities, including a mess room, locker rooms, toilets, showers and drying rooms. The administrative offices are on the mezzanine level within the garage. Lighting throughout is fluorescent except in the amenities block which is tungsten. The architect-in-charge was G. C. Bodker, assistant architect P. P. Craymer, assistant engineer, R. Farnborough.

Power Plant, First Extension There is one pulverized fuel boiler producing 220,000 lb. of steam per hour at 900 lb. per square inch and 915° Fahrenheit. The boiler and bunkers are enclosed by patent glazing, sheeting, and brickwork at low level under a concrete roof at + 80′ 3″ over the bunkers, and + 65′ 0″ over the boiler, leaving the main part of the boiler exposed from this height up to + 120′, where there is a large flat lightweight roof overhanging all round. The free standing concrete chimney to the north-west of the power plant is 300′ high, and the flue gases are led into it by a duct across the roadway on the river side of plant at a height of 43′. The civil engineer-in-charge, K. A. Owens; and the assistant architects were S. Finkle and E. J. Bee.



14

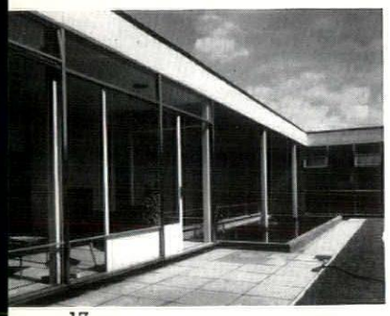
14, north-west corner of the first extension to the Power Plant. 15, below, the east end of the Tissue Mill, seen from the south-west corner of the Transport Department.



Views of the Engineering Division: 16, from the north-east; the fascia units are precast concrete faced with rough marble aggregate. 17, courtyard and pool from the west, and 18, from the south-west. 19, conference room. 20, tile mural by Hans Tisdall of trees, confirming by its rhythm its position in a corridor, and its depth as a drop cloth as seen across the courtyard.



16



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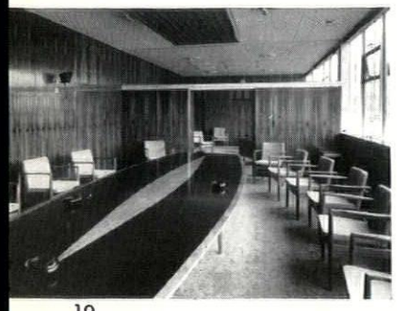

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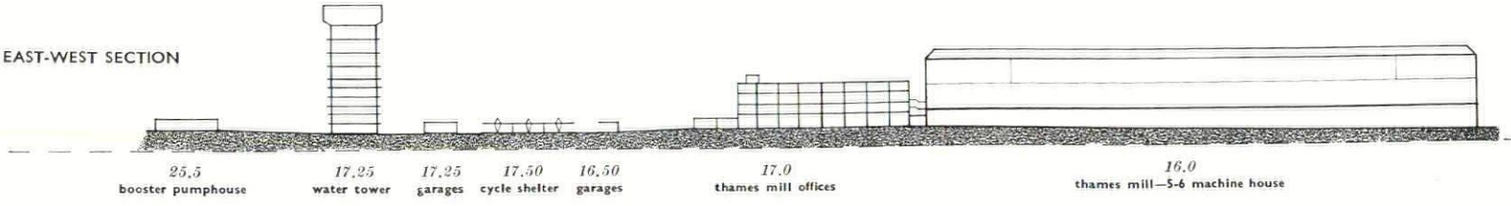
EAST-WEST SECTION



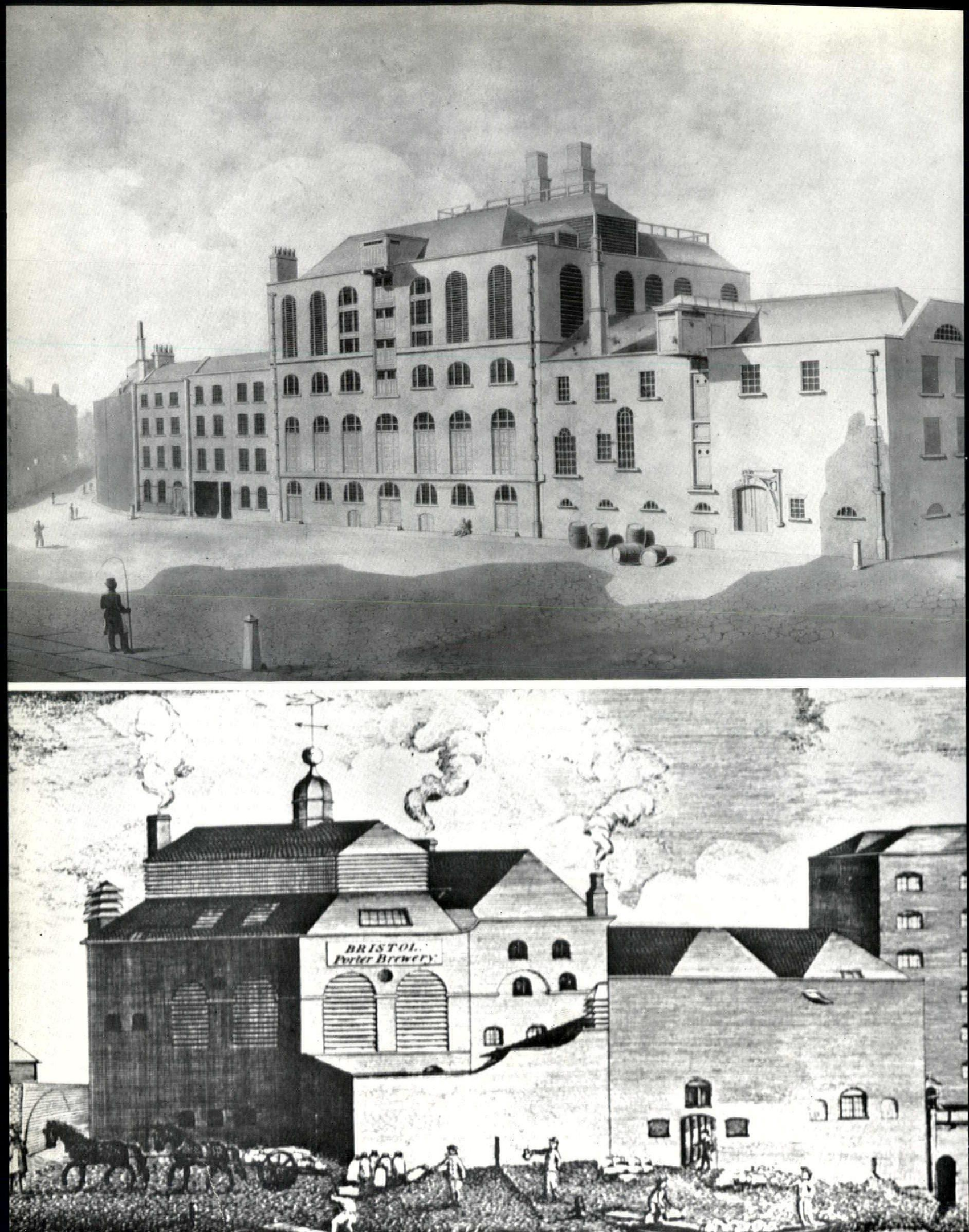
Engineering Division This is a single-storey block adjoining and sharing a courtyard with the Central Research Laboratory; the description of the latter, on page 305, applies in most points of construction and services to the Engineering Division also. Ceilings, however, are 3′ 4″-square fibrous plaster panels; and partitions are fixed and consist of 4¼″ clinker.



21, the water tower.

Water Tower The tower is 143′ high rising out of a pool which forms part of the landscaping of the site. Its capacity is 200,000 gallons (being the main mill supply in the manufacture of paper) including a reserve for the mill sprinkler protection. It was found cheaper to eliminate the usual bracing and provide a floor construction instead. Floors were in any case required to the lower part of the Tower. These have been clad in anodized aluminium patent glazing with asbestos fibreboard anodized fluted aluminium faced spandrel panels. The tank is colour-washed, with a silver sand add-mix. Mounted on it are three Bowater neon house marks in red and blue, joined by two white wavy lines, which may be read up and down the river and across from the main Gravesend-Dartford road. The tank is lined with asphalt. The offices accommodate the Civil Defence Officer, lecture room, lavatories and lockers, and on the fifth floor the Chief Paper Maker to the whole organization: Access is by a cast iron spiral staircase. A lift from ground to sixth floor will shortly be installed.

Architect-in-charge was G. C. Bodker, assistant architect E. Jobling, and assistant engineer W. Smyth.


BRISTOL
Porter Brewery

Brian Spiller

THE GEORGIAN BREWERY

While breweries are one of the largest surviving classes of Functional Tradition buildings—as was pointed out in the special issue of the Review for July, 1957—many notable examples have been rebuilt or destroyed. Two from the late eighteenth century are shown opposite ☚, the Griffin Brewery, Clerkenwell, above, with its symmetrical centre-piece set off by less formal additions, and George's Porter Brewery, Bristol, below, a text-book example of the use of louvred windows and ventilators in bold, simple silhouettes. In the article below, Brian Spiller discusses the Georgian period of English brewery-building, whose unaffected architectural qualities are admirably summed up by these two examples.

In 1760, when London's 'capital brewhouses' were still a recent phenomenon, a contributor to the *Gentleman's Magazine* tried to account for their emergence.[1] 'At the beginning of King William's reign,' he wrote, 'beer was mostly fetched from the brewhouse by the customers themselves, and paid for in ready money: so that the brewer entertained but few servants, few horses, and had no stock of ales by him, but a trifling quantity of casks, and his money returned before he paid either his duty or his malt.' Industrialization was accelerated in about 1722 by the invention of porter, the result of a more efficient method of brewing. Its mounting popularity enabled the more enterprising brewers to take over an increasing share of the London market.[2] By the end of the century, Pennant declared that 'the sight of a great *London* brewhouse exhibits a magnificence unspeakable'[3]—an opinion echoed by numerous foreign visitors; while two loyal citizens of Southwark claimed that Thrale's Entire extended the reputation of British produce 'from the frozen regions of Russia to the burning sands of Sumatra. . . . It refreshes the brave soldiers who are fighting the battles of their country in Germany, and animates with new ardour and activity the colonists of *Sierra Leone* and Botany Bay.'[4]

The brewing trade, according to its economic historian,[5] was 'technologically very suited to large scale production within the single plant. . . . In essence, the problem was simple. To take advantage of the larger market, the scale of manufacture had to be increased. This was most conveniently done by increasing the size of the utensils, for this itself gave economies of scale in costs of construction and materials, and the number of workers did not increase proportionately with the size of vat, copper and "back." Moreover, because the handling of a liquid in manufacture was simpler than processing a solid such as cloth or iron, planning the brewery led directly to major economies.' These are specified in the *London and Country Brewer* of 1742. 'It is truely necessary in the first place,' the author emphasizes, 'to be Master of a convenient Brewhouse; for, without this, it is but a lost Attempt to get right Malt-Liquors.'

> For this Purpose [he adds] where it is to be erected independently of any other Building, in my humble Opinion, three Sides in four of its upper Part, or second Floor, should be built with wooden Battons about three Inches broad, and two thick, according to the present *London* Mode; which by its many vacant square Holes admits sufficient Air, and seldom too much Sun; so that the Backs or Coolers by this means have a quick Opportunity to cool a thin laid Wort;[6] especially if the Wall's further Side stands to the *South-west*, where the Copper is to be fix'd with an Arm near the Bottom of the same, and a large Brass-cock at its End, to discharge with Expedition hot Water into the Mash-tun, and Wort into the Coolers. For this Purpose, its Bottom should stand about ten Feet above the common Level of the Street-ground, whereby is prevented in some Degree the cooling of the Water, and wasting of the Wort; for now the tedious ascending Motion of the Pump is avoided, and the Charge of that and Man's Labour saved.

Three more 'Improvements of late Years' had cut the labour force by half. First, malt was now ground on the floor above the mash-tun into which it descended by gravitation down 'a long descending wooden close square Spout or Gutter,' instead of being carried in baskets. A horse-mill ground the malt and pumped water from the 'Receivoir and Well': both jobs had formerly been done manually. Third, the spaciousness of a 'Great Common Brewhouse' allowed wort to run by gravitation into a series of wide and shallow cooling vessels placed on the same level, so that cooling was expedited by 'a due Freedom of Air, which in a single Stage seldom ever wants.' 'This better Management,' he concludes, 'saves the Loss of a great deal of Time, Waste and Labour.' It did more than that. Apparently before they had begun to consult engineers or architects, the brewers themselves introduced the functional principle of brewery design. The 'gravitational' system permits all raw materials to be pumped or hoisted at the outset to the highest point of the building, whence they descend by the force of gravity to various stages of processing.

A later manual continues the theme. 'In erecting a large work of this kind, every thing is to be considered, that can save the labour of the people employed; for as every thing is done in quantities, the difficulty of moving the ingredients would be very great, but for the help of such early care.'[7] The leading porter brewers had another problem on their hands. Their production rose steadily throughout the century; Ralph Thrale, for example, was brewing 32,000 barrels in 1758; his son Henry, 80,000 by 1781; the successor firm, Barclay Perkins, 205,000 by 1809. What was said of Thrale's in 1795 was true of its main competitors: 'The brewery has risen by degrees to its present eminence of character and spaciousness of accommodations.' As barrellage mounted, so did the need for greater storage capacity. Malt had to be stored in advance of brewing, and its arrival, down the Lea from Ware or round the coast from Norfolk, was subject to delays; while porter took as much as nine months to mature. The leading breweries, long established on narrow sites in the rookeries of inner London, had to expand as best they could. Whenever possible, adjoining property was taken in; and new buildings were often multi-storey. Thus Sir William Calvert's twelve buildings in Thames Street included by 1760 '4 Stories of Malt Lofts with Millplace and Cooperidge under.'[8] In 1766 a warehouse '6 Storeys, strong built' was added. Only the medium-sized breweries on London's outskirts had plenty of room. William Greene—builder of the charming Blue Coat School in 1709—owned a large ornamental park at Pimlico, where he erected 'the finest Brewhouse in Europe' not long before 1722.[9] Under his grandson, Edward Burnaby Greene, an inexpert poet and a calamitous man of business, the Stag Brewery's output fell far short of its capacity. In 1760 it consisted of nine main buildings: the 'Great Brewhouse with Lofts and Millplace' (111 ft. by 93 ft.), the 'Pale Ale Brewhouse and Long Malt Lofts' (110 ft. by 40 ft.), the 'Great Stable,' the 'Ten Storie House' (107 ft. by 33 ft.: purpose unspecified), the dwelling house (Pimlico Lodge) and a dower house, the 'Dray Horse Stable,' the 'Mill Horse Stable,' and the 'office belonging to the Cooperidge for Hoops and Washing Casks.'[10] These disappeared after 1797 under a new owner, John Elliot, whose new brewhouse was in turn submerged by the mid-Victorian additions of Watney & Co.

One brewery was completely rebuilt according to a preconceived plan, but it took a lifetime. Samuel Whitbread, moving to the King's Head, Chiswell Street, in 1750, expanded it in stages until, at his death in 1796, it was the greatest in England. 'The Brewhouse, as the possession of an individual is & will be when finished still more so, the wonder of everybody,' one of his lieutenants wrote in 1786, 'by which means our pride is become very troublesome, being almost daily resorted to by Visitors, either Friends or Strangers, to see the Plan.'[11] No brewer exercised greater ingenuity in working out schemes for the most efficient use of space. Not content with adding fresh storeys to existing buildings, he had vaults sunk underneath for storage. On building the

1 'History of the London Brewery': xxx, 527-9.

2 There is an early reference by César de Saussure in a letter from London, dated October 29, 1726. 'The greater quantity of this beer is consumed by the working classes. It is a thick and strong beverage, and the effect it produces, if drunk to excess, is the same as that of wine; this porter costs threepence a pot. In London there are a number of alehouses where nothing but this sort of beer is drunk.' [Hence 'porterhouse steak.'] *A Foreign View of England*, 1902, p. 158.

3 *Some Account of London*, 1790, p. 279.

4 M. Concannon and A. Morgan, *History of the Parish of St. Saviour's, Southwark*, 1795, pp. 226-34.

5 Peter Mathias: *The Industrial Revolution in Brewing* (*Explorations in Entrepreneurial History*; V, No. 4, Harvard University, 1953). The present article is heavily indebted to his researches.

6 Wort: an extract of ground malt mashed (or thoroughly mixed) with water. After boiling with hops, it is cooled down before fermentation with yeast converts it into beer.

7 E. Watkins, *The Complete English Brewer*, 1768, p. 134.

8 Guildhall Library, MS 8674; ledgers of the Hand in Hand Fire Office, 150 vols, 1696-1865.

9 W. Stow, *Remarks on London*, 1722, p. 3.

10 Guildhall MS 8674.

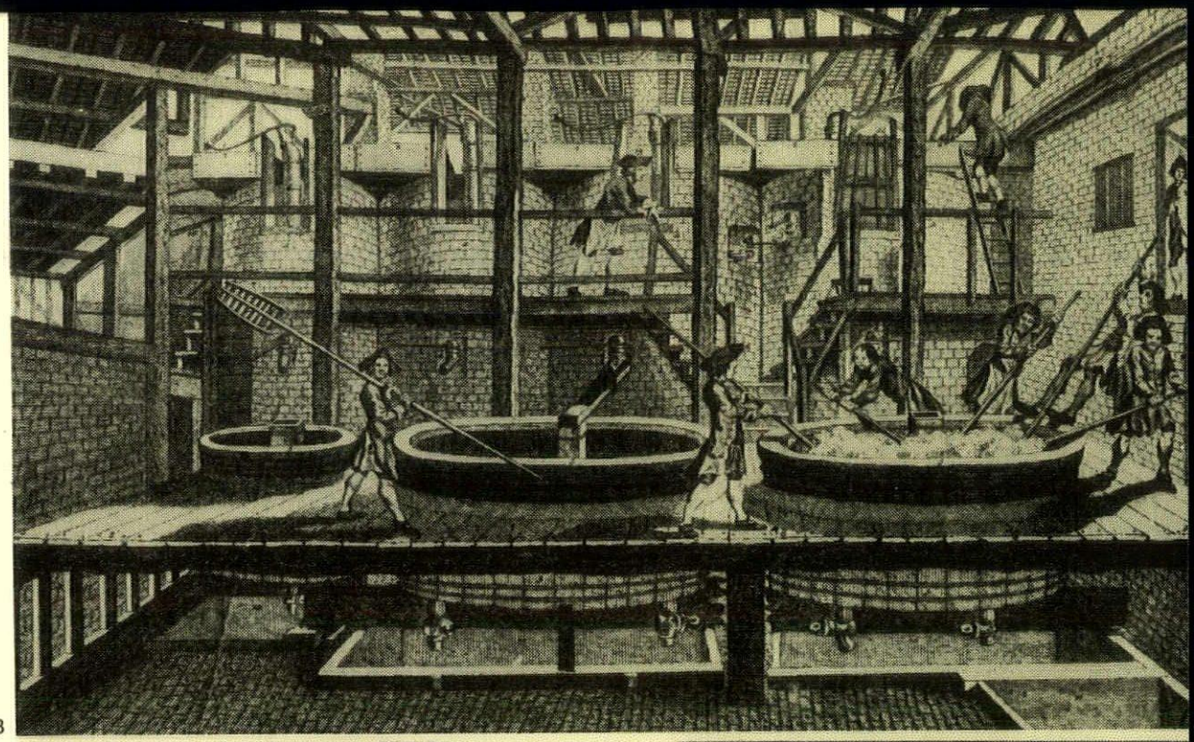
11 MS letter by Joseph Delafield held by Whitbread & Co.

Great Storehouse[12] in 1774, it occurred to him that its vaults would hold more if occupied by cisterns instead of barrels. 'This being an entire New Idea, I was determined to pursue it and consulted Mr. Milne.' Robert Mylne advised sealing off sections with 'Bricks thick worked with Pozzolam Tarris and Strong Lime'; and 'had no doubt of its success and said he would stand under when it was full.' Luckily he did not, because when 'filled only with water, the force was so great that it ran through the walls as through a Sieve.'[13] Other experts were then called in to advise on a suitable lining: John Smeaton, then Josiah Wedgwood in 1778 and Matthew Boulton in 1781. Smeaton's designs for the two largest cisterns, holding the equivalent of 3,600 barrels each, are preserved in the library of the Royal Society.[14] In 1787 Whitbread calculated that his seven cisterns held as much as 12,350 barrels, though 'the same Room the Cisterns stand in would contain only 1,000 Barrels'; in addition, other vaults held 18,900 barrels, and his vats 8,550, but 'the same Room the vats stand in would contain only 1,700 Barrels.'[15] His last building, insured in 1796, was a 'Stack of New Vat Warehouses, part one lofty Storey 45 feet high and part 2 Storeys, 133′ × 170′.'[16]

The Anchor Brewery, Southwark, was greatly expanded by Henry Thrale, amateur of the arts and the first brewer known to have employed a regular surveyor. This was Richard Summersell, who was active about 1755 and who made a will in 1772.[17] 'The immensity of the Brewery astonished me,' an Irish clergyman exclaimed in 1773, 'one large house contains and cannot contain more only four store vessels; each of which contains 1,500 barrels & in one of which 100 persons have dined with ease.' [17A] B. Faujas de Saint-Fond, author of the pioneer work on aerostation, supplied a more scientific description in 1784—'the great year of a hundred thousand barrels,' forecast by Thrale's adviser, Dr. Samuel Johnson:

> 'The buildings and yards, which are of a vast extent, have no other object than utility; every thing is solid, every thing is adapted to its purpose, but every thing is an absolute stranger to ostentation. . . . The beer is fermented in huge square vessels, raised to the height of the first floor; and pumps, disposed with much art, facilitate the supply of water. When the beer is made, it descends through conduits, and is distributed, by means of pipes, into a number of casks, placed in an immense cellar. The beer becomes of a more perfect quality in those casks, where it remains, however, but a short time; from them it is drawn off by long spouts, raised, by pumps, into vats of an astonishing size, which are

continued on page 321



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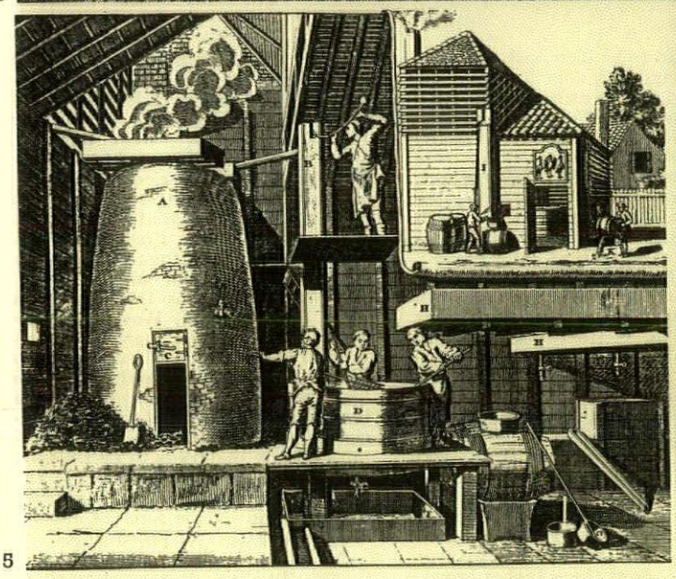

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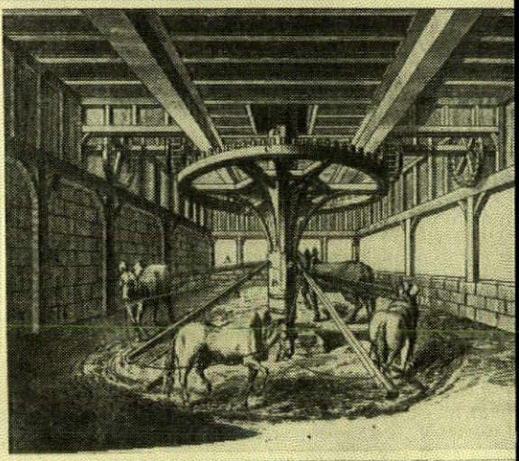
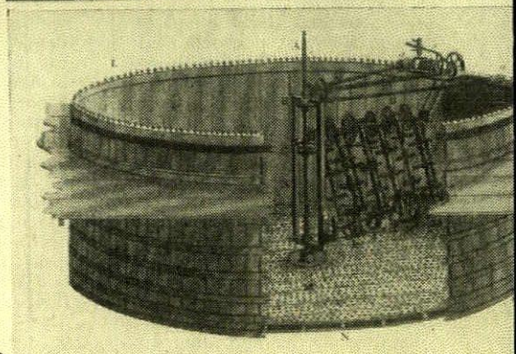
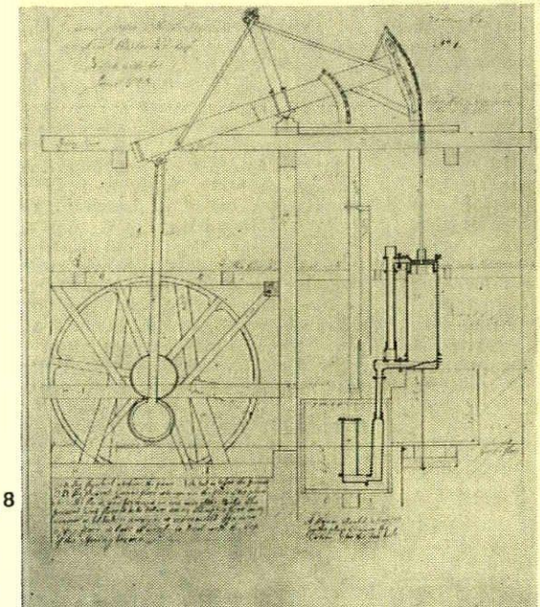




6

Brewery machinery : 3, a big brewhouse in 1756, *and 4, a small one, still entirely hand-driven, in* 1748. *5, the horse wheel of a French brewery,* 1763. *6, a steam driven mashing machine from Whitbread's,* 1813. *7, Boulton and Watt rotary steam engine for operating pumps and malt mills, first installed* 1784. *8, sections of Whitbread's brewery,* 1819 : *malt loft, hoppers etc. above and porter tun room below.*



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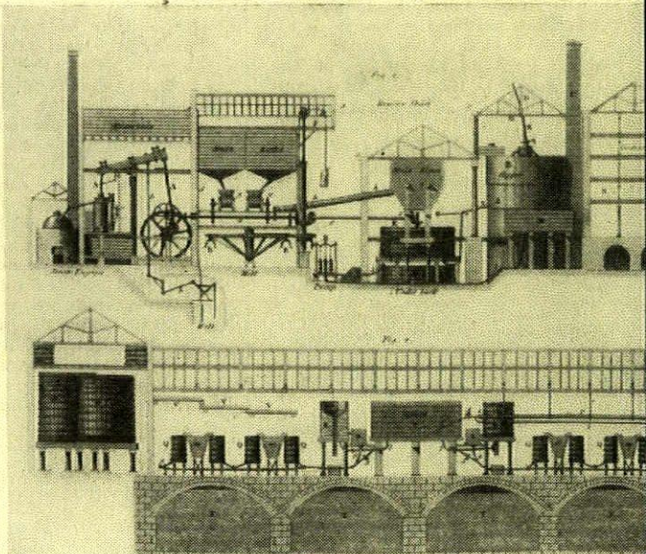


12 The Great Storehouse, as extended in 1782, had 'two lofty stories' and measured 169 ft. by 70 ft. It survives as the Porter Tun Room. 'The open timber roof is quite spectacular,' Dr. Pevsner wrote in the London volume of the Penguin Buildings of England series.

13 Whitbread's own record, quoted by P. Mathias, 'The Great Cisterns of Chiswell Street,' *House of Whitbread*, Summer, 1952.

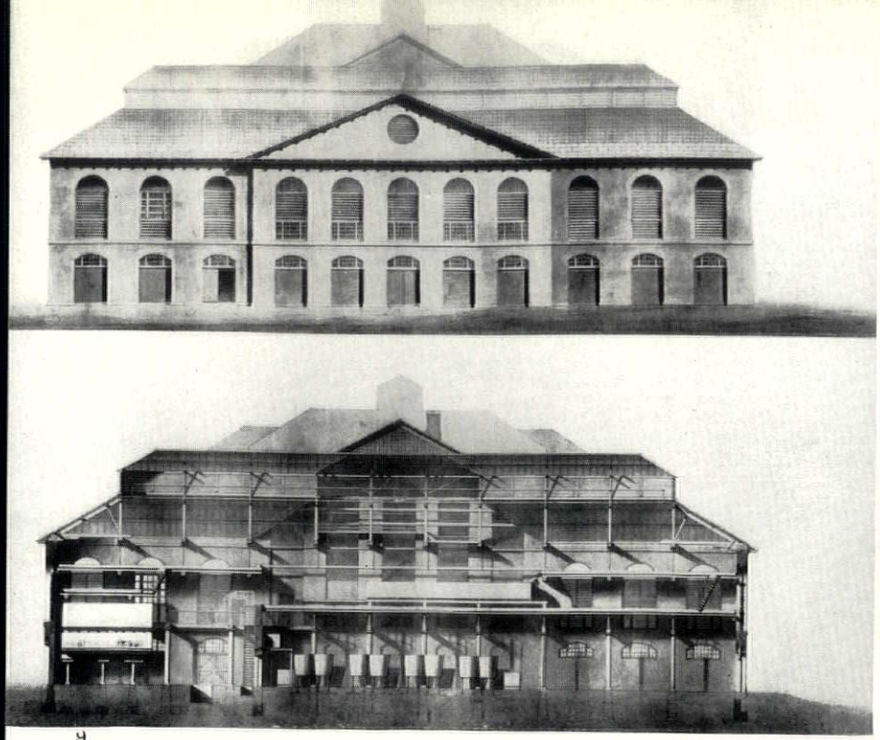
14 *Designs by John Smeaton, FRS*: vol. 4.

15 Whitbread Property Book at Southill Park.

16 Guildhall Library: MS 8674. The building, though damaged in the second world war, survives as the cooperage.

17 *Survey of London*, Vol. 23, pp. 126 and 134.

17A *Dr. Campbell's Diary*, ed. J. L. Clifford, Cambridge, 1947, p. 51.



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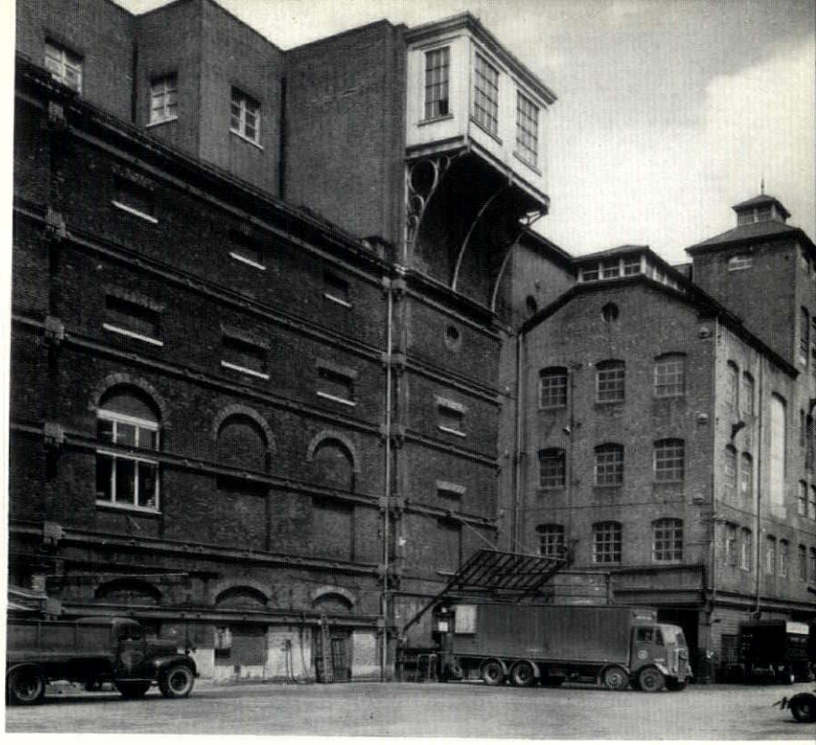

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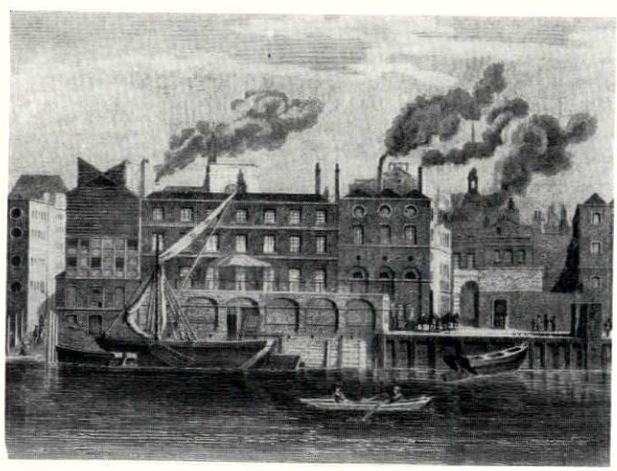
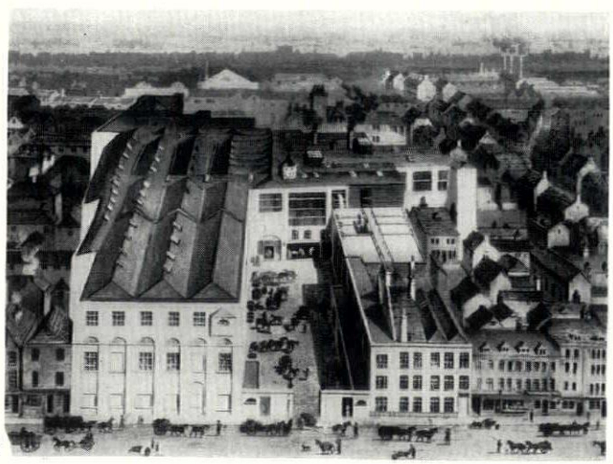


11

THE GEORGIAN BREWERY



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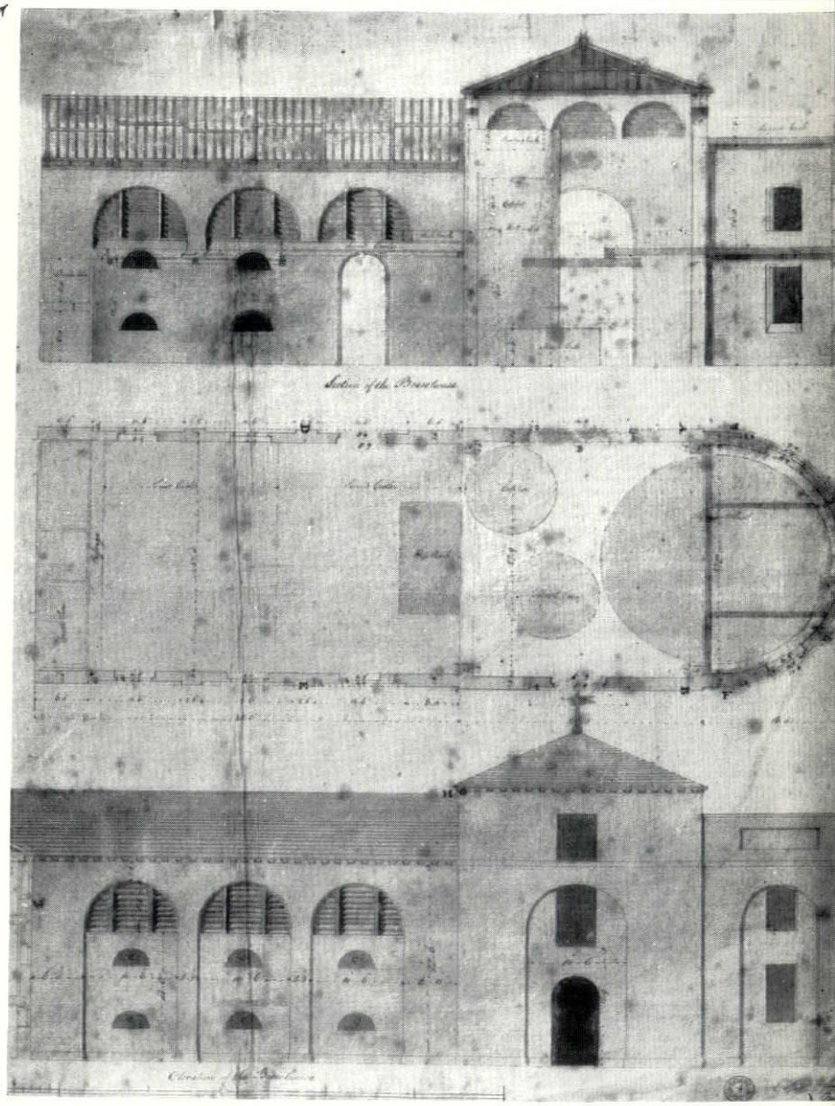

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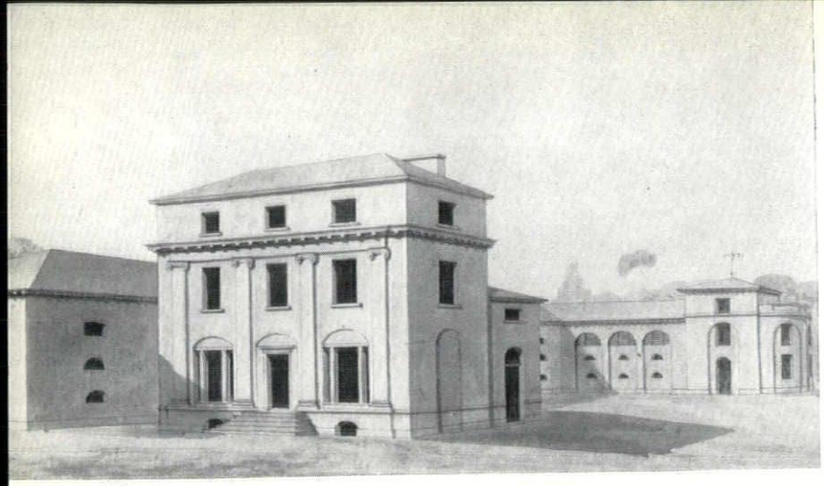
9, *elevation and section of tun room and running storehouse of the Stag Brewery, Pimlico, designed by George Saunders,* 1796–1802. 10, *the brewery today, now part of Watney's, Victoria.* 11, *Calvert's brewery and dwelling house, Upper Thames Street, London, mostly rebuilt in* 1772–90 *and destroyed in* 1940; *the remains are immediately east of Cannon Street station.* 12, *Brown and Parry's brewery, Golden Lane, London, in* 1802, *now demolished.* 13, *Working drawings of Simonds's brewery at Reading, designed by Soane,* 1790.



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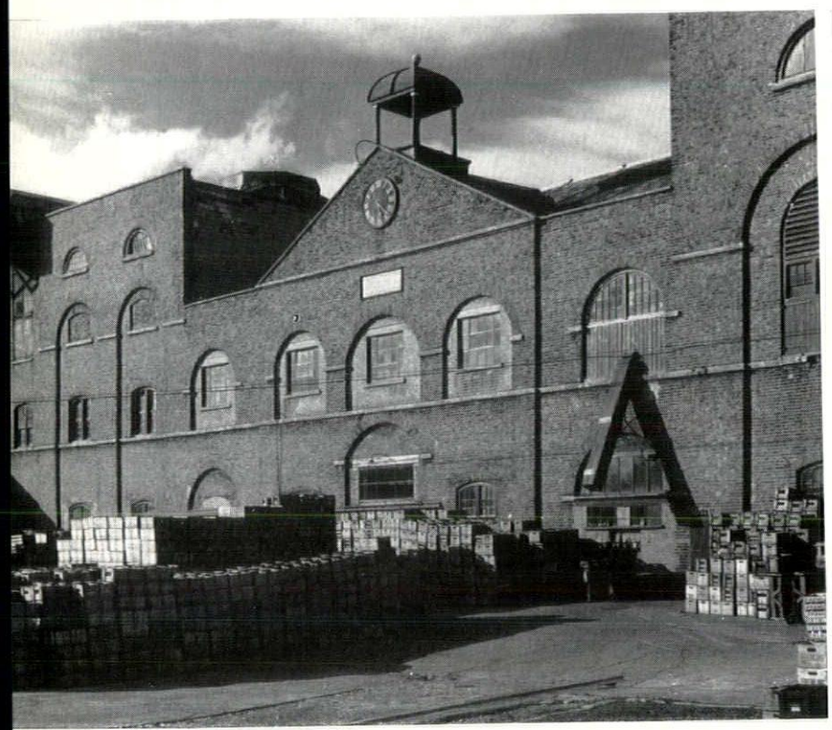

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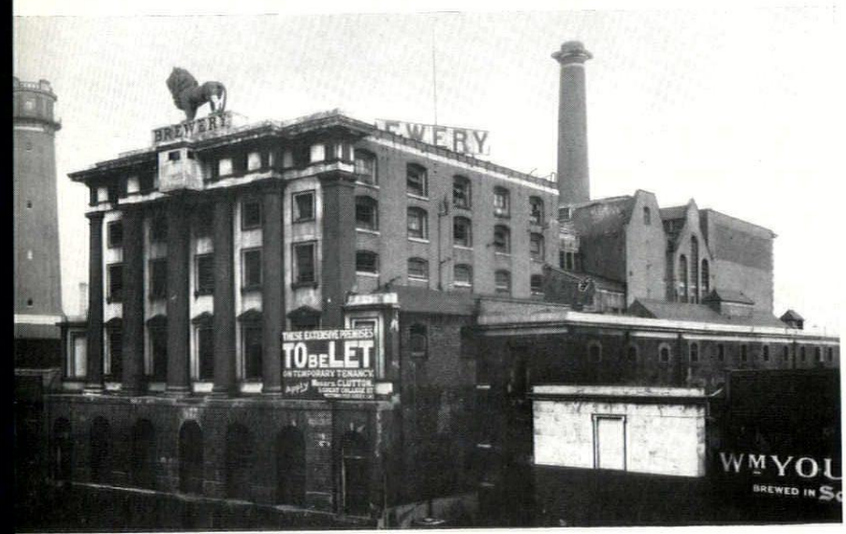

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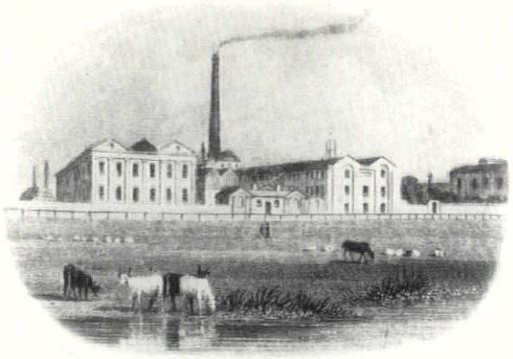
14, *perspective drawing of Soane's brewery for Simonds's at Reading. It includes the brewer's house, also shown on page* 320. 15, *Elgood's North Brink Brewery, Wisbech, c.* 1796. 16, *Cobb's Brewery, Margate, by W. Teanby,* 1807–8. 17, *Simpson's Brewery, Baldock.* 18 *and* 19, *the Lion Brewery, Lambeth, by Francis Edwards. built* 1836, *badly bombed in the war and demolished* 1949. 18 *shows the Thames frontage,* 19 *the Belvedere Road entrance. The lion is now outside Waterloo Station at the York Road entrance.*



Allsopps & Co^s Brewery Burton on Trent

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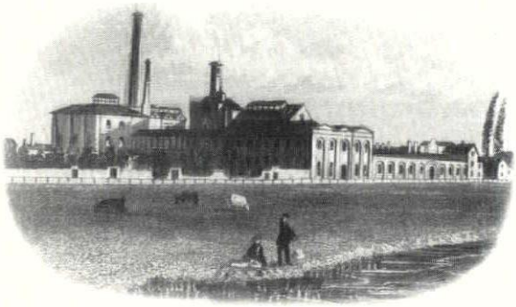

Salt & Co^s Brewery Burton on Trent

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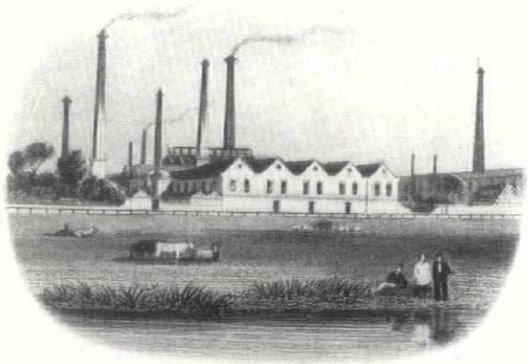

Bass & Co^s Brewery Burton on Trent

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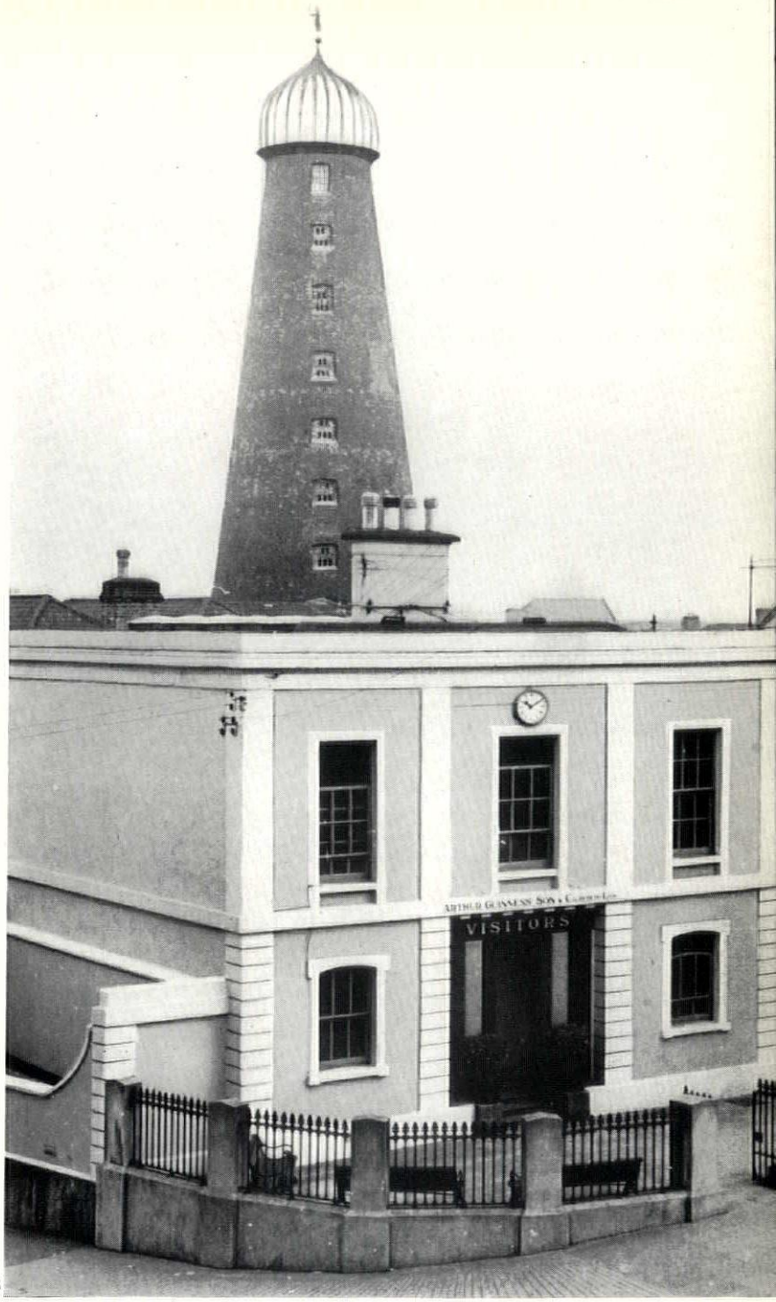

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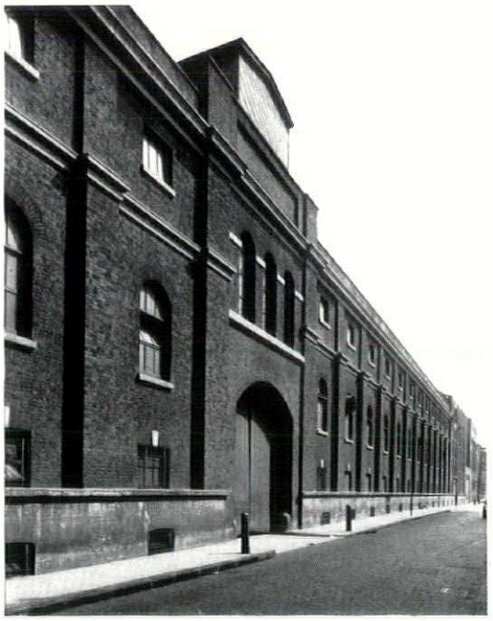
24

20–22, *the three leading Burton breweries in lithographs of the* 1850's*—in the early nineteenth century they stood side by side between the High Street and the Trent:* 20, *Samuel Allsopp's (demolished);* 21, *Salt's (now derelict);* 22, *Bass's (demolished and rebuilt on the same site,* 1876). 23 *and* 24, *Guinness's St. James's Gate Brewery in Dublin.* 23 *is the visitors' room, originally a Catholic church and then a bank.* 24, *the main entrance which was there when Arthur Guinness bought the brewery in* 1759.



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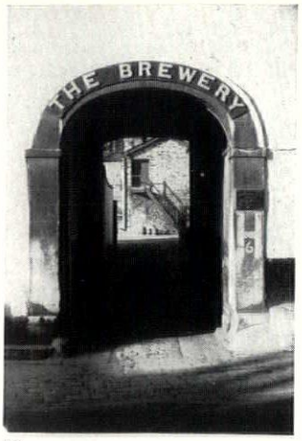
25–27, *Truman's Brewery, Brick Lane, Spitalfields.* 25, *the Wilkes Street frontage, insured as a new building in* 1856 (*reproduced from the forthcoming Spitalfields and Mile End volume of the Survey of London*). 26, *the former stables for* 200 *horses, built before* 1842. 27, *the vat house, possibly once a chapel; the bells in the clock are dated* 1806. 28, *the present lager office of Barclay Perkins's Anchor Brewery, Southwark,* 1835; *most of the brewery was destroyed by fire in* 1832 *and rebuilt soon afterwards. See also* 31, *opposite.*



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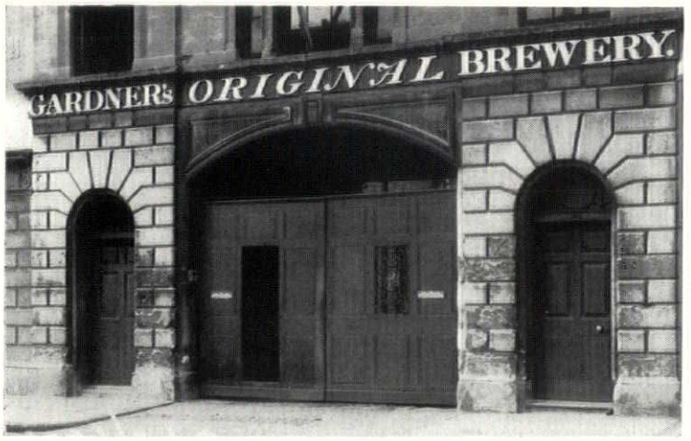

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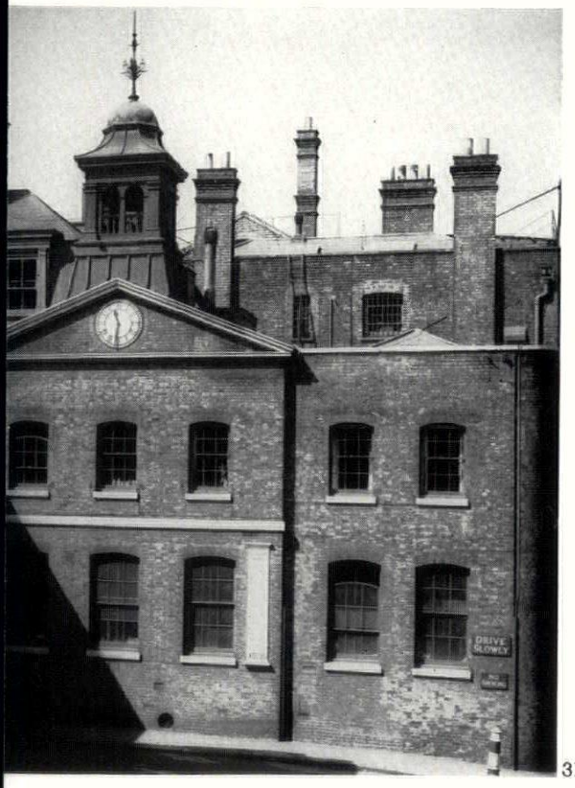
THE GEORGIAN BREWERY



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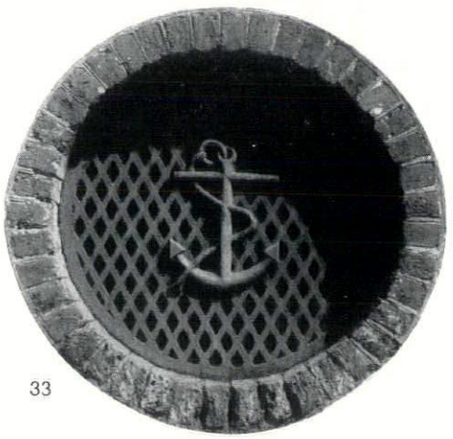
29, *the entrance to Whitwell Mark's tiny and unaltered brewery in Highgate, Kendal, founded* 1757 *and possibly the only survivor of the pre-industrial breweries built as an adjunct to the dwelling house.* 30, *the entrance to Gardner's Original Brewery, High Street, Cheltenham, date unknown.* 31, *the Counting House, dated* 1830, *of Barclay Perkins's Anchor Brewery* (*see* 28, *opposite*). 32, *the Union Brewery, Nene Parade, Wisbech, regretably demolished about* 1952 *and replaced by a self-complacent neo-Georgian police headquarters.*



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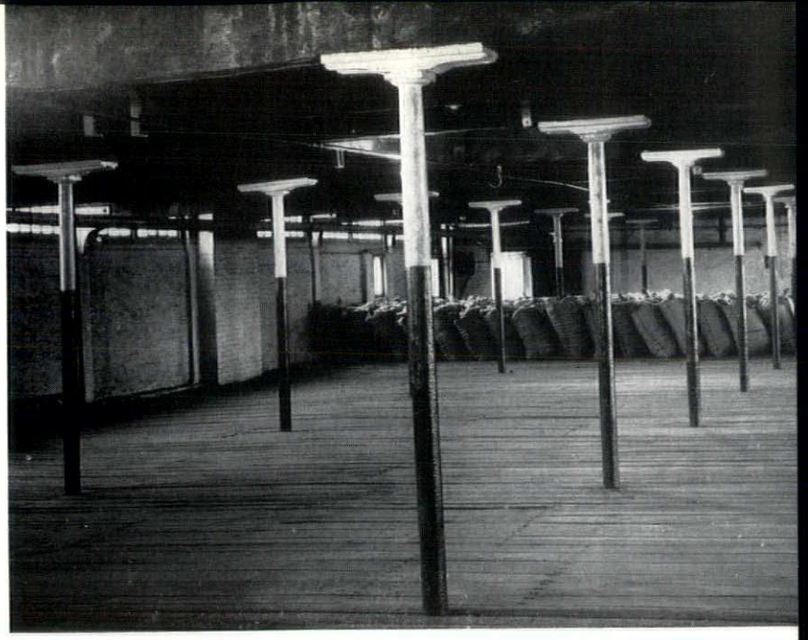

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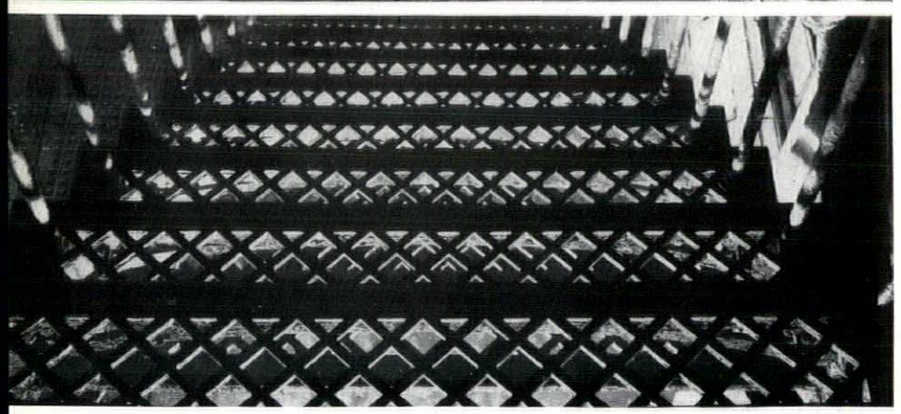

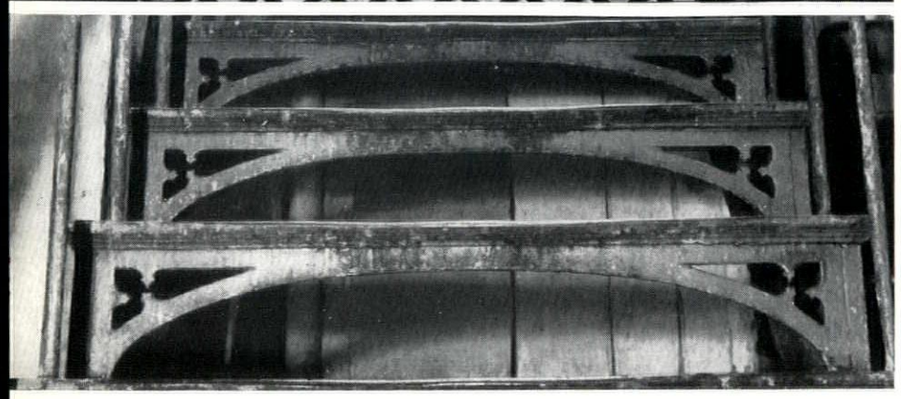

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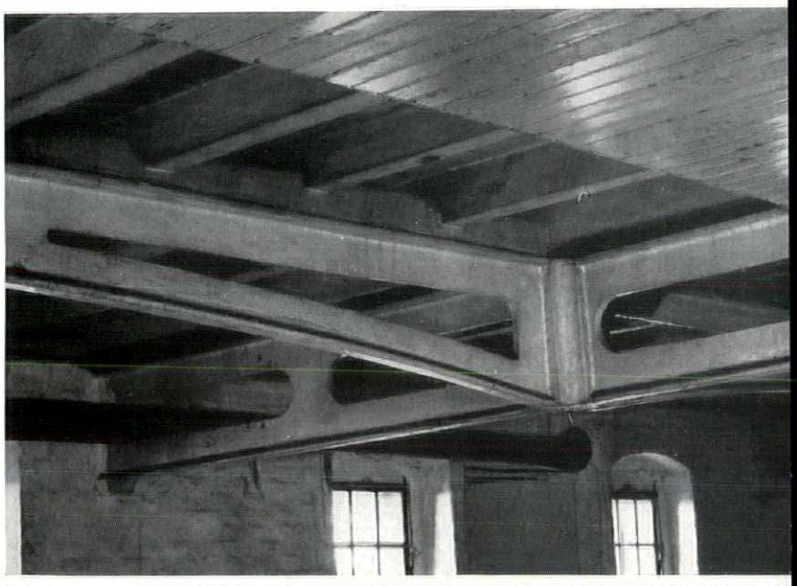
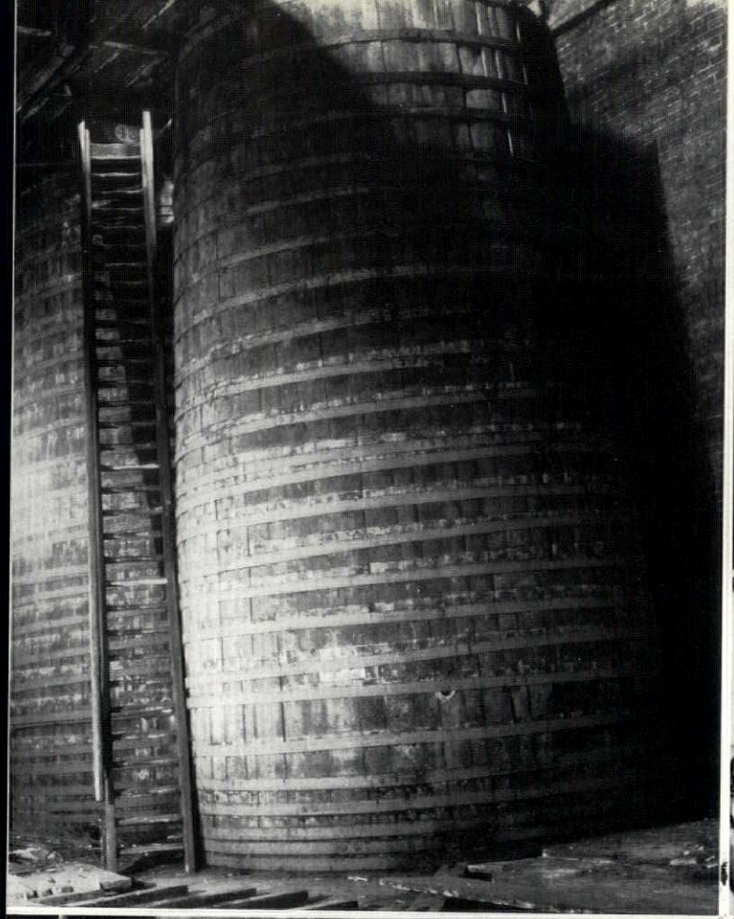
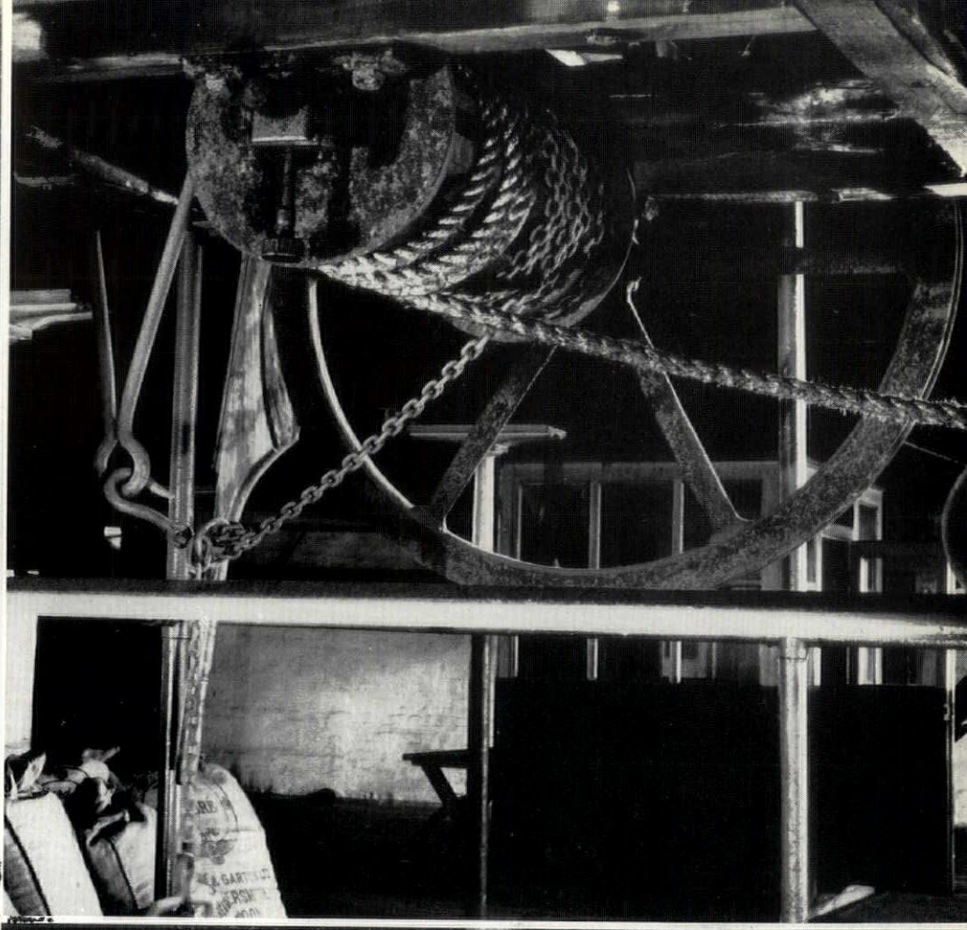
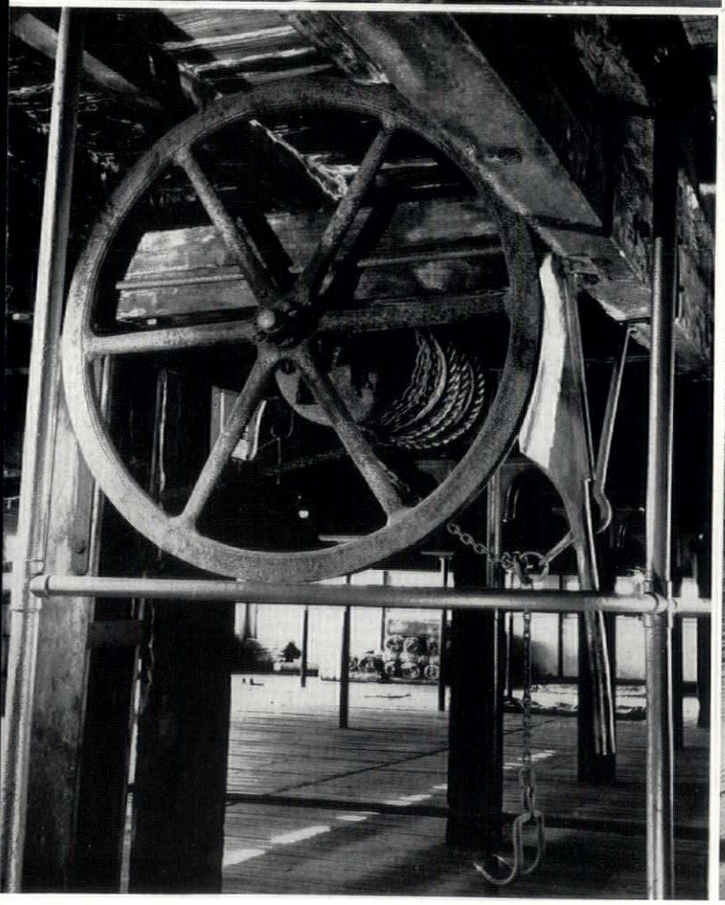


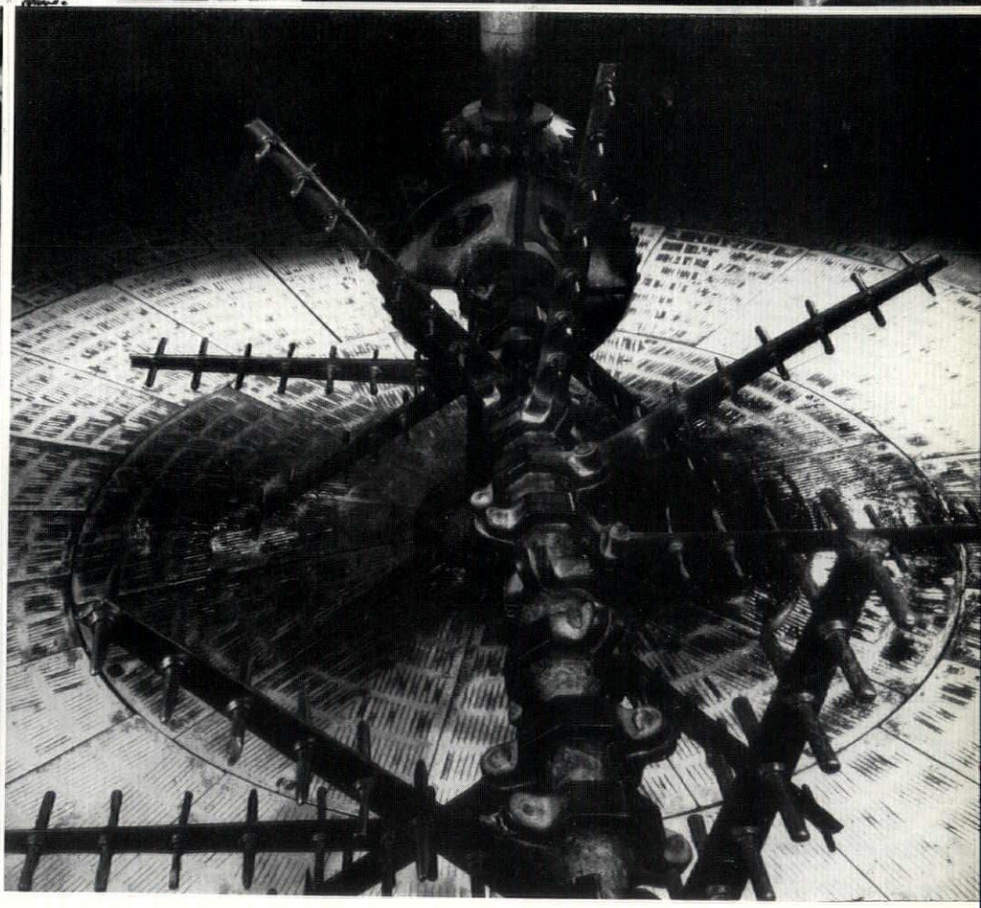


Brewery details from Barclay Perkins's Anchor Brewery, Southwark: 33, *trade mark.* 34, *cast iron columns on the second floor of the porter tun building,* 1820. *They support and are supported by* 40 *foot long pitch-pine beams—the total span is* 80 *feet.* 35, *the original wort cooler of riveted copper sheet in the ale side brewery,* 1832. *The cast iron staircase from the same building: treads,* 36, *and risers,* 37. 38, *the interlocking cast iron beams used throughout the building.* 39, *the manufacturer's nameplate in cast gun-metal on the last of the*









original barrel coppers, in the brewhouse. On this page are more details from the Anchor Brewery. 40, *top left, two of the surviving vats of English oak in the storehouse,* 1820. *There were once* 150 *of them; this pair held three hundred barrels apiece.* 41, *top right, and* 42, *bottom left, a balanced hoist, in the porter tun building, for lifting pockets of hops to the upper floors, probably as originally installed.* 43, *bottom right, mash tun rake gear in the brewhouse, used to stir the 'mash' of hot water and crushed malt, converted by fermentation into beer.*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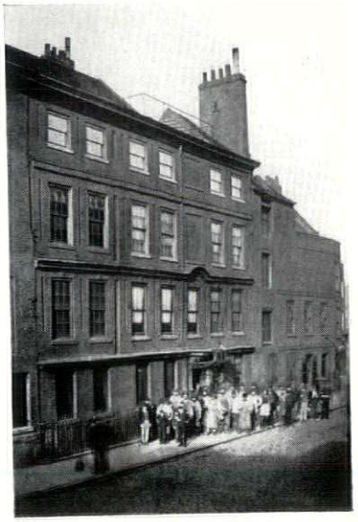
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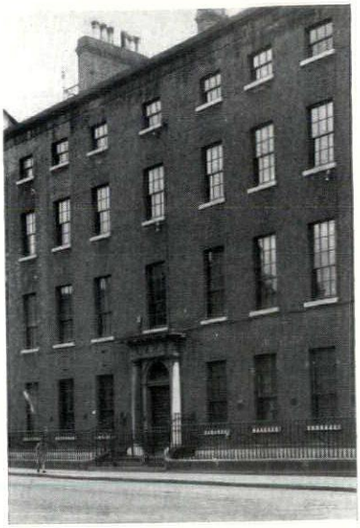
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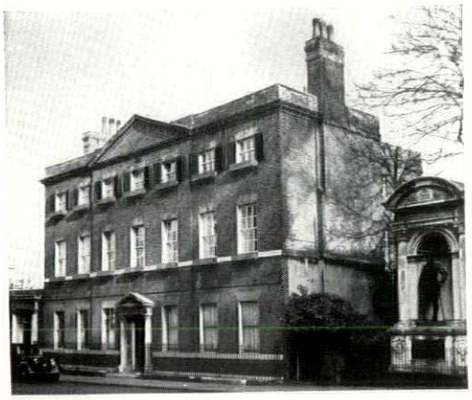
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Brewery houses: 44, *the original layout with the brewery as an outbuilding to the house, Whitwell Mark's, Kendal. Later, one big house was provided for a partner or responsible senior clerk to live on the premises.* 45, *Chiswell Street, E.C. (Whitbread).* 46, *Dublin (Guinness).* 47, *Burton on Trent (Musgrave).* 48, *Windsor (now Courage's district offices).* 49, *Watford (Benskin).* 50, *Baldock (Simpson's).* 51, *Reading (Simonds's, designed by Soane, demolished* 1900). 52, *Burton on Trent (Allsopp).* 53, *Ivinghoe, Herts. (Roberts and Wilson, now a youth hostel).* 54, *the Thrales' house at the Brewery, Southwark, burnt in* 1832, *famous for its Johnson connections.*


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continued from page 312

placed vertically, and the top of which cannot be reached without a ladder: a gallery goes round the places which contain these vats:

Four store-rooms, on a level with the ground floor, and of different sizes, are appropriated to receive them. In the first, which is the smallest, there are 6 vats, containing each 300 hogsheads; a hogshead contains about 240 bottles; in the second, there are 28 vats, of 400 hogsheads; in the third, 14 of 900 hogsheads; and in the fourth, 4 of 500 hogsheads each. Thus their united contents amount to 31,600 hogsheads. . . .

These vats, made from wood of the choicest quality, are constructed with an admirable solidity, accuracy, and precision, and even with a kind of elegance: some have as many as 18 hoops of iron: and several were pointed out to me, which had cost 10,000 French livres a-piece. I have already said, that they were all placed on end around the walls; but, on asking what they stood upon, my conductor showed me, that they rested on brick arches of great solidity, strengthened by a number of thick upright pillars of wood. Their bottom was thus protected from the humidity of the ground, and it was more easily seen whether the beer escaped. The top of each vat is carefully covered with thick planks, joined together in the most perfect manner, and these again were covered with 6 inches of fine sand.'[18]

An 'intelligent correspondent'[19] supplied a general description in 1795:

'The buildings are remarkably ample and convenient. . . . The cooperage, the carpenter's, the wheelers' and the farrier's shops are particularly large. . . . The stables nearly compleat the form of a large quadrangle and are capable of containing . . . no less than four-score horses. The inside of the brewhouse strikes the eye of the curious spectator with surprise, by the vast space it contains, as it is 80 feet in width, and 250 in length. Among the numerous storehouses there is . . . *Number Nine*, which for its wide space and elegant proportions, is scarcely to be equalled by any room of its kind; the malt-lofts are so large as to be capable of containing nearly 30,000 quarters.'

By this time the brewery surveyor had long been George Gwilt the Elder. 'At his first entrance in business'—he was born in 1746—'he had the good fortune to meet with the patronage of Mr. Thrale the brewer.'[20] It was to be a long association. After Thrale's death in 1781, Gwilt applied for the post of surveyor to the Merchant Taylors' Company, when Mrs. Thrale exerted herself strenuously on his behalf. 'I will add that this Gwilt,' she wrote to Sophy Streatfield, 'was dear Mr. Thrale's principal Favourite, that he served him with unwearied Fidelity, and that this Post, had it been vacant during his Patrons Life time, would have been his without our Assistance.'[21] While Thrale lived, Gwilt must have been kept busy enough. 'Dear Mr. Thrale had a Building Fever always lurking in his Constitution,' the widow confided to her diary, '. . . accordingly, when he died, Plans and Elevations for New Buildings both Pleasurable and Commercial were found, of which I myself had not the smallest Idea or Expectation.'[22] In 1779, when Thrale was laid low by a fit of apoplexy, she made a bold attempt to stop the latest improvements. 'In the midst of publick and private Distress, here is my mad Master going to build at the boro' house again—new Store Cellars, Casks and God knows what. I have however exerted myself & driven off his workmen with a high Hand . . . nothing but *frenzy* can at this Time excuse Expence to the amount of ten or twelve Thousand Pounds sure.'[23]

Gwilt was certainly responsible for the alterations to Thrale's country house, Streatham Place, in 1780,[24] and probably for the additions in 1773 which had transformed it into the 'elegant Villa' admired by Boswell and the 'little Paradise' of Fanny Burney's *Diary*. In spite of an exigent temperament, he retained his situation at the brewery after the sale to Barclay Perkins. In 1783 the new owners asked Boulton & Watt to calculate the cost of installing a steam engine, adding that 'the inclosed Plan was drawn by our own Surveyor, who says it is the *only* one he can undertake to send.'[25] In 1798 Gwilt supplied the firm with 'a Plan of the intended New Storehouse' and 'an Estimate of said Building, which may be compleated for £1,350 and the Timbers and Stonework to support the Vats for £860.'[26] A plan of the whole brewery dated 1792–1800, was signed by George Gwilt, junior. Nothing of Gwilt's work for Thrale or Barclay seems to have survived. No buildings at the brewery earlier than 1820 escaped the fire of 1832, and Streatham Place was pulled down in 1863.

Barclay Perkins were the first brewers to make enquiries about the Boulton & Watt steam-engine, but not the first to place a firm order. Others were more easily convinced that their heavy machinery for grinding malt and pumping could be more quickly and cheaply powered by the engine than by relays of horses circling around a mill-wheel. The Boulton & Watt engine had not been capable of turning machinery until 1781, when a number of devices, including the Sun and Planet, turned its to-and-fro action into a rotary movement. Early in 1784, Henry Goodwyn, of the Red Lion Brewery, went to see the new model at Soho, and made his order on April 17. It was the first engine installed by anyone in London and that was just what Goodwyn had intended. 'It will be a great disappointment to me if the Engine is not fixed by you before any other for the Brewery Trade,' he wrote, 'should it not I acknowledge my Pride & Vanity will be much hurt.'[27] Fortunately, he continued to receive 'very genteel treatment'; Boulton & Watt sent detailed plans for the construction of the engine-house; and soon Goodwyn announced, 'I have parted from one half of my Mill Horses already, & in full hopes that you my Engineer will render them all needless, I am deliberating on the sale of the remainder.'[28] The two mechanics sent to assemble the engine and connect it to the horse-wheel did their work so well that 'even on the first tryal of the Engine, the powers of it have exceeded my expectation';[29] and the engine was so much admired that it 'bids fair to obtain you many applications from the Brewery.'[30] So it did: though Whitbread, who installed the next engine in 1785, employed John Rennie to assemble it. Whitbread seems to have been the first man to perceive that the engine was capable of powering a machine for mixing hot water and malt in the mash tun, a task hitherto laboriously performed by sturdy Irishmen working with oars. In 1784, having heard that Watt or Boulton was coming to London, he invited them to watch the operation 'and form a perfect Idea of what is necessary if it can be accomplished.'[31]

By the turn of the century, the movement and processing of raw materials had been fully mechanized at the leading London breweries. At Whitbread's, in 1802, visitors saw 'a machine to stir up the malt, that constantly turns round, and is very ingeniously managed by means of a screw as to rise and fall alternately, so as to move alternately at the top, the middle and the bottom.'[32] A Swiss scientist who had seen Whitbread's in 1786, and did not believe that any manufactory could be operated on a vaster scale, was invited by the American physicist, Count von Rumford, to visit Meux's brewery, Clerkenwell, in 1801. 'Je suis encore stupéfait,' he wrote next year, 'des choses que j'y ai vues. Ce n'est pas une maison, mais un quartier confinant à quatre rues, qu'elle occupe.'[33] A steam engine of 28 h.p. pumped water to a vast reservoir at the top of a lofty building, and moved malt to where it was needed. This must have been by means of the Archimedean screw, first applied to the transportation of solids by Oliver Evans at his Delaware mill in 1784–5. Louis Simond observed it working at Barclay Perkins in 1811: 'elevators which nobody touches carry up to the summit of the building 2,500 bushels of malt a day, thence distributed through wooden channels to the different places where the process is carried on.' (They had been installed, with mashing machines, in 1802.) He also noted that 'the building is incombustible: walls of brick and floors of iron.'[34] Two years later, an encyclopaedia described how, at the leading porter breweries, the steam engine was 'applied to perform all the laborious operations without the exertions of the workmen, who are very few in number, considering the magnitude of the works.'[35] The brewery had acquired its economic and technical characteristic: the small amount of labour employed in proportion to the capital invested.

Outside London, industrialization had to wait upon the growth of a concentrated market, as in seaports and manufacturing towns. The first provincial brewers to order Boulton & Watt engines were Castle and Ames (Bristol), John Green (Rotherham) and Alexander Green (Nottingham)—all in 1793.[36] Mechanization by itself did not mean that a brewery was producing on an industrial scale, though Guinness reached the level of the middling London porter brewers in the Napoleonic Wars. Steam engines were originally installed with the intention of cutting costs, rather than of increasing output. Sometimes the horse engine, engine house and pumping machinery were on a fairly elaborate scale, as at the Royal Navy's brewery at Gosport. These had been designed and installed by John Smeaton in 1780. A smaller version followed at the Hexham Brewery, 1783.[36a] John Patteson consulted Robert Mylne about a horse-engine for the Pockthorpe Brewery, Norwich, in 1798.[37] Sibbitt, Dickson & Co., at Tweedmouth, had 'an excellent set of machinery, drove by water,' for grinding malt, raising water and pumping work, in 1799.[37a] To the present day, a 'gigantic water-wheel,' turned by the waters of the River Brit, supplies power to Palmer's Old Brewery at Bridport.[37b]

Some brewers in the provinces—active in other forms of commerce besides brewing—employed architects at a fairly early date. Robert Mylne designed John Patteson's house in Surrey Street, Norwich, enlarged by Soane after 1783: and Soane was engaged by W. B. Simonds, of Reading, to design a new brewhouse, store-house and dwelling-house in 1790. The working

18 *A Journey through England and Scotland*: Glasgow, 1917, I, pp. 100-3.

19 Quoted by Concannon and Morgan, *op. cit.*

20 Parentalia of George Gwilt: Surrey Records Office, Acc. 390: via Mr. L. W. Cook, ARIBA.

21 Do: Letter of December 2, 1781.

22 *Thraliana*, I, 517.

23 *Ibid*, I, 391.

24 cf. *The Queeney Letters*, ed. Lord Lansdowne, 1934, pp. 130 and 135.

25 Birmingham Public Libraries: Boulton & Watt Collection, letter of May 3.

26 Memo. of March 26, held by Barclay Perkins.

27 Boulton & Watt Collection: letter of June 21, 1784.

28 Boulton & Watt Collection: letter of July 7, 1784.

29 do. letter of August 9, 1784.

30 do. letter of August 17. Orders from London brewers followed in close succession: 1784, Samuel Whitbread; 1785, Felix Calvert; 1786, Barclay Perkins; 1787, John Calvert and Combe Delafield; 1792, Gideon Combrune; 1793, Cox, Curtis & Payne; 1796, Charles Clowes; 1797, John Charrington. Truman, Hanbury held out until 1807.

Some brewers ordered engines from other makers. Thus John Elliot built an engine house and boiler room at the Stag Brewery, Pimlico, in 1797, but does not appear on the Boulton & Watt order list until 1819. Arthur Woolf was appointed engineer to Meux in 1797, when he set up a Hornblower & Maberley engine. In 1800 he installed plant for heating water by waste steam and several of his cast-iron tubular boilers. 'Next it seems that he added a cylinder to, i.e. compounded, a small engine made by Fenton, Murray & Wood, already at the brewery, and then proceeded to build an entirely new compound engine.' (See Rhys Jenkins' article, *Trans. Newcomen Soc.*, XIII, 1934.) Unfortunately his calculations went wrong and in 1808 Meux consulted Rennie, who advised in favour of a Boulton & Watt engine, whereupon Woolf resigned.

31 do. letter of December 4.

32 *The Union Magazine and Imperial Register* for 1802, quoted in *Whitbread's Brewery*, 1947.

33 Marc-Auguste Pictet, FRS: *Voyage de Trois Mois en Angleterre*, Geneva, 1802, pp. 304-7. This brewery was famous for the size of its 58 storage vats. Pictet describes the largest, built in 1795 at a cost of £10,000. It was 65 feet in diameter, 25 feet high, and held the equivalent of 20,000 barrels. As Pictet observed, this was fourteen times as much as the Great Tun of Heidelberg. A single iron hoop weighed 2 tons and 40 lb.

34 *Journal of a Tour in Great Britain*, 1817, II, pp. 182-4.

35 *Pantalogia*: article on porter. Yet even as late as 1817, the Hand in Hand Fire Office must have thought the steam engine a sort of infernal machine. In that year it added a memorandum to Whitbread's policy: 'The Process by Steam being now carried on in the Buildings insured by this Policy, the same is hereby allowed—but it is expressly declared that this office will not be answerable for any loss or damage that may happen by any Explosion occasioned therefrom.' The fact is that the Boulton & Watt engines, working slowly, almost noiselessly, and under low pressure, lasted for many years. Two had a working life of more than a century. Whitbread's engine was dismantled and shipped to Sydney, NSW, in 1887, where it is preserved at the Museum of Applied Sciences. Henry Meux's engine (1810) was described, in the *Morning Advertiser* for December 22, 1913, as 'a beam engine that has been in its present position for close on a century, and that is as well able to-day to do the work which is needed as ever it was. It works all the year round, day in and day out, and is a perfect example of sound British workmanship standing the test of years.'

36 Followed by J. Taylor, Liverpool, 1795; Ramsbottom & Baverstock, Windsor, and Langmead, Plymouth, 1797; Struthers, Glasgow, and Elliott, Nottingham, 1800; Guinness Dublin, 1808. (Boulton & Watt papers, Birmingham, via Mr. P. Mathias).

36a See note 14

37 A. E. Richardson, *Robert Mylne*, 1955, p. 175.

37a J. Fuller, *History of Berwick*, 1799, pp. 382-3.

37b *Dorset Daily Echo* ,February 21 ,1957.

drawings, preserved in Sir John Soane's Museum,[38] show that the timber beams of the brewhouse were supported by very slender columns —too slender, probably, to be anything but iron. This would seem to be a very early example of their use in an industrial building[39]. Two years later William & Samuel Stretton built Evans, Storer & Green's Brewery at Nottingham, and in 1794–5 William Stretton designed Alexander Green's brewery at Butcher's Close, in the suburbs of the same city.[40] Many of these country breweries must have vanished without trace, by rebuilding, demolition or conversion to other uses. Three only seem to have survived from the period in almost mint condition, and of one the architect's name is known, since he had the prescience to inscribe it on a date stone. Cobb's Brewery, Margate, 1807–8, was designed for Francis Cobb, Jun., by William Teanby:

> This magnificent structure, which is said to have cost the sum of 60,000*l*., is 179 ft. long, and 43 ft. broad; the height of the centre of the brewhouse 43 ft., and that of the wings 51. A turret, 11 ft. in diameter, and 10 ft. 6 in. high, arises from each of the wings surmounted by a vane 7 ft. above the roof of the turret, making the whole height, from the pavement to the roof, 75 ft.[41]

Simpson's Brewery, Baldock, has a façade of five bays with lower detached side buildings, together with a five-bay, three-storey chequer brick dwelling-house.[42] Elgood's North Brink Brewery, Wisbech, 'a fine example of that industrial functionalism of the early nineteenth century which yet paid tribute to the decencies of architectural taste in its controlled proportions, its pedimented roof-lines and its key-stoned entrance archway'[43]—is almost a copybook Georgian brewery, with its brewhouse, brewery house, head brewer's house, servants' house, stables and paddock, covering six acres.[44]

The London brewers were 'handsome patrons of architecture'[45] and even as early as the first decade of the nineteenth century. Some architects had already begun to specialize as industrial consultants: George Saunders, for example, who rebuilt the Stag Brewery, Pimlico, for John Elliott, 1796–1807.[46] The building had five storeys and occupied a site 165 ft. square. (In 1860 it was converted into a malt store and internally rebuilt, though the shell and much of the original timber roof remain.) Some contemporaries of Saunders exhibited elevations of breweries at the Royal Academy: W. R. Laxton, 'Meux & Co.'s Brewery, Liquorpond Street,' 1800; George Byfield (a specialist in building gaols), 'A Brewery now building at Knightsbridge' (possibly the Cannon, for Goding & Co.), 1804; T. Hatton, the Public Subscription Brewery, Weston Street, Southwark, 1809; Laxton again, 'The Mary Brewery, Mary Street, built for Mr. J. Raymond' and the 'Union Brewery, Wapping, as rebuilt for Mr. R. Bowman,' both 1810.[47] Thus Laxton, if he was responsible for the designs, had three breweries to his credit. This suggests a specialist: and indeed J. C. Loudon's *Cyclopaedia* of 1833 mentions a Mr. Laxton 'who has had great experience in fitting up public houses.' One of Soane's pupils was certainly a brewer's architect at a later date. Francis Edwards, who was also architect to the Imperial Gas Company, built additions to the Cannon Brewery, Knightsbridge, for T. Goding, c. 1835; additions to the Lion Brewery, Broad Street, Golden Square, for Goding & Broadwood, date unknown; and his most ambitious venture, the Lion Brewery, Lambeth, designed for Goding & Co., 1836. This had a riverside frontage of five storeys, with Roman Doric columns supporting an entablature, topped by the figure of a lion in Coade stone.[48] It was a forerunner of the Ornamental Brewery of the Victorian period.

It was also the last of the early architect-designed breweries of London to survive intact. After the first big brewery amalgamation—Watney Combe Reid in 1898—Combe's was converted into warehouses, and Reid's (the original Meux brewery) was replaced by the L.C.C.'s Bourne Estate. The second Meux brewery followed in 1922[49] and the Golden Square brewery c. 1928. The Red Lion Brewery in St. Katharine's Way, reputedly founded in 1492, went in 1933, when Hoare & Co. amalgamated with Charrington's. An LCC termitary, Matilda House, stands on its site. The City of London Brewery in Upper Thames Street, formerly Calvert's and possibly founded in 1580, ceased production in 1923 and was obliterated in the air raids of 1941–2. The Lion Brewery in Lambeth stood derelict from 1924 until 1949, when it was demolished to make way for the Royal Festival Hall.[50] Only at Barclay's and at Truman's (where the double frontage on Brick Lane still looks very much like John Moore's aquatint of 1842) does much from the early nineteenth century survive. The Georgian brewery is going the way of the quagga and the great auk.

The brewery houses have fared better. In their case, the sentimental attachment was greater, for here the founder's family had lived for generations; and even when the brewery passed into other hands, the dwelling-house could be adapted as offices or sold for private occupation. At Chiswell Street and at St. James's Gate the houses taken over by Samuel Whitbread[51] and Arthur Guinness are still intact after two centuries; and at Truman's, in Brick Lane, Gainsborough's[52] powerful portrait of Sir Benjamin Truman hangs in a house that the sitter would still recognize.[53] Barclay Perkins replaced the Thrale dwelling-house, burned down in 1832, by Anchor Terrace in Southwark Bridge Road, 1834. Of the houses outside London, some are more stately and spacious than the brewery's trade could have warranted in the eighteenth century. Usually the explanation is that the owners were versatile capitalists. Some thirty families had one foot in brewing and one in banking, like the Lacons of Yarmouth, the Cobbs of Margate, the Simonds of Reading, the Worthingtons of Burton.[54] The Cobbolds of Ipswich, also bankers, had 'in addition to the brewery a most extensive trade in corn,' with their own wharves, granaries, warehouses, ship-building yards and a fleet sailing regularly to China and India.[55] The Palmers, besides brewing and tallow-chandling, ran theatres at Bath and Bristol. John Palmer invented the mail-coach service and built Bath's Theatre Royal to the designs of the younger Dance. Thanks to their multiple business activities, a fair number of country brewers were able to live in the manner Horace Walpole prescribed as befitting a gentleman: 'handsomely but without ostentation.' Hence such large and graceful brewery houses as Benskin's in Watford, Ramsbottom's in Thames Street, Windsor (now Courage's district offices), Simpson's at Baldock. There are many smaller versions: at the Lockwood Brewery, Huddersfield; Rigden's, in Court Street, Faversham, used as Fremlins' district office; the Wilson and Allsopp house in Horninglow Street, Burton, still used by the successor firm, Ind, Coope & Allsopp; Brakspear's at Henley; Whitwell Mark's at Kendal, and the charming Roberts & Wilson house at Ivinghoe, now adapted to the Spartan purposes of a youth hostel. Enough remain to serve as illustrations 'of that culture that enabled the successful farmers, merchants, brewers and provincial gentlemen to build on a fundamentally commercial framework a community with mature sophisticated taste. It would take a history of eighteenth-century civilization . . . to explain it fully, but some indication may be found in the unity . . . that allowed each element in the local life its due proportion of emphasis and expression, producing a microcosm of the balanced community.'[56]

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38 I am grateful to Miss Dorothy Stroud for bringing them to my attention. She also supplied the information about Patteson's house.

39 I thank Professor A. W. Skempton for this suggestion. The plans are dated March 17, 1790.

40 H. M. Colvin, *Biographical Dictionary of English Architects; Records of the Borough of Nottingham, VIII*, p. 283.

41 W. C. Oulton, *Picture of Margate*, 1820, pp. 68-9. The dates, which conflict with Mr. Colvin's, are quoted from Francis Cobb's diary in an article by G. E. Clarke, *Isle of Thanet Gazette*, April 18, 1957. They are confirmed by the architect's date-stone on the building.

42 N. Pevsner, *The Buildings of England*: Hertfordshire, p. 49.

43 J. M. Richards, *Wisbech*, AR December, 1939. Ledgers in the company's possession show that the brewery was there in 1795, as Watson & Usill's.

44 Information from Mr. W. S. Elgood.

45 John Summerson, *Georgian London*, p. 253.

46 This is a new attribution. The source is the album of thirty plans and elevations prepared for Saunders by his clients, held by Watney, Combe, Reid. The signed introduction is concerned mostly with the difficulties of building a foundation on the marshy soil.

47 Colvin, *op. cit.*; A Graves, *Catalogues of the Royal Academy*; checked against the original RA catalogues; Broadley-Bullock Collection at Whitbread's Brewery.

48 There is an early account in Bell's *Life in London and Sporting Chronicle*, November 13, 1836, and a detailed architectural description in the South Bank volume of the *Survey of London*.

49 To be replaced by the Dominion Cinema and the premises of Messrs. Montagu Burton. 'The dirty brick buildings are frankly hideous,' the *Daily Telegraph* wrote on April 13, 'architecturally London loses nothing.'

50 The lion on the roof, modelled by W. F. Woodington, 1837, and long a Thames-side landmark, was preserved at the suggestion of King George VI (*The Times*, November 17, 1948). It stands at the York Road entrance to Waterloo Station.

51 No account of the brewers' patronage of architecture would be complete without a reference to Samual Whitbread II. He engaged Henry Holland to rebuild Southill in Bedfordshire, bought by his father from Lord Torrington, and gave Benjamin Wyatt his first big commission, Drury Lane Theatre.

52 Gainsborough also painted Samuel Whitbread II. Reynolds painted both Whitbreads, and executed twelve portraits of Henry Thrale and his eminent friends, including Dr. Johnson, for the library at Streatham. Lawrence painted James Curtis; Romney, Whitbread's three chief clerks.

53 'Inside, the upper floor has ceilings and fittings of admirable quality, especially in the Board Room and the passage leading to it; they are in the style of 1750, with curling leafy patterns in white plaster, and detail that is still opulently Roman. There is furniture contemporary with this interior and in many cases specially made to fit its recesses: in short, the eighteenth century character of the house has been preserved with unusual completeness.' (Millicent Rose, *The East End of London*, 1950, pp. 46-48.)

54 Information from Mr. P. Mathias.

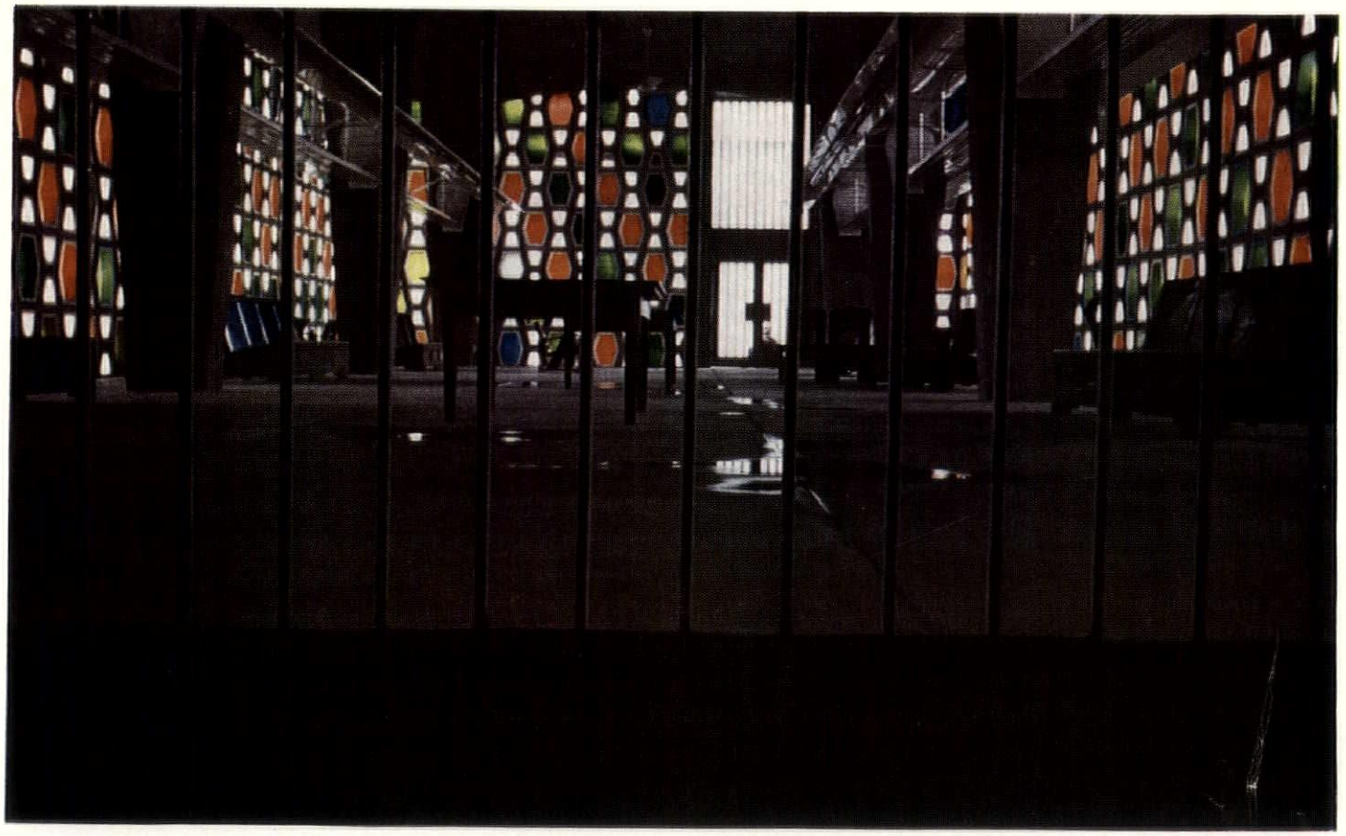
55 G. R. Clarke, *History of Ipswich*, 1830, pp. 367-8.

56 J. M. Richards, article cited.

UNIVERSITY & POLYTECHNIC, RANGOON

ARCHITECTS	**RAGLAN SQUIRE & PARTNERS**
project manager, Rangoon	**F. R. G. Pitcher**
resident structural engineer	**John Gurney**

1, students' common room on the first floor of the library and administration building, seen from the main staircase. On either side are space-framed metal lighting troughs, containing fluorescent tubes.



1

planning Strong sun, heavy rainfall and high humidity were the three determining factors in basic planning. Protection from the sun was found to be an inherent part of over-all site planning in order to provide the maximum of shaded areas and surfaces as the starting point of successful sun control. Hence the detailed requirements were broken down into a series of cellular strips, each being one room deep, and served by open circulation galleries on one side. These planning strips were in effect a development of the traditional tropical bungalow, a plan-form which provides maximum cross-ventilation and protection from sun and monsoon rains. Staircases are at frequent intervals along the galleries.

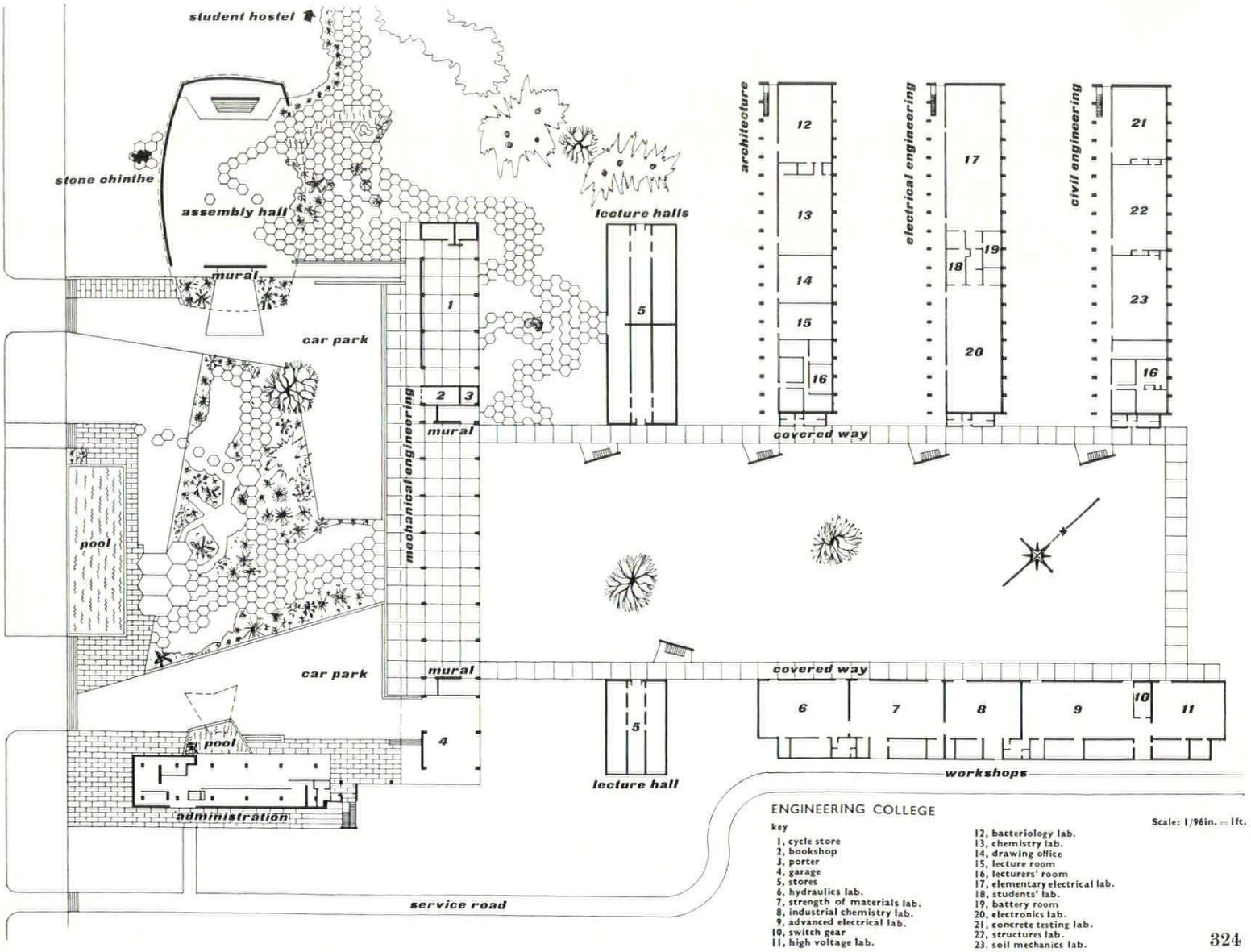
space and scale A climate as hot and humid as Burma demands that the spaces composing a building, or separating one building from another, shall in fact be larger than for similar buildings in Europe ; and that such spaces shall appear to be even greater than they are. The grand scale of the tropical background demands a proportionate scale in architecture: at the same time, this must be related to the human being.



2

2, entrance to the library and administration. A coloured glass screen is set back from the columns on the ground floor, and administration rooms are inside. 3, entrance side of the assembly hall, in model form. 4, the interior of the hall, looking towards the stage. The hexagonal paving stones are concrete; some are finished in black and dark red hardening. Behind the stage is a plastered and painted brick screen wall, with a low random stone wall to the rear of that; the roof support is a welded tubular metal portal frame.

Engineering College *The conception of the Engineering College was basically that of two interlocked courtyards, separated only at high level by the largest single teaching element—a three-storey building carried on pilotis and spanning across the site. The outer courtyard comprises an entrance complex of three elements: the Mechanical Engineering block (spanning across the site), the Assembly Hall and the Library and Administration building—a dome and its foil, a tall rectangular block, linked together by a long low building. A long pool, designed to catch the reflections of the Library building, forms the main frontal boundary of the site, and is surrounded by random hexagonal slabs and areas of planting. The teaching elements of the College are grouped round the inner courtyard.*

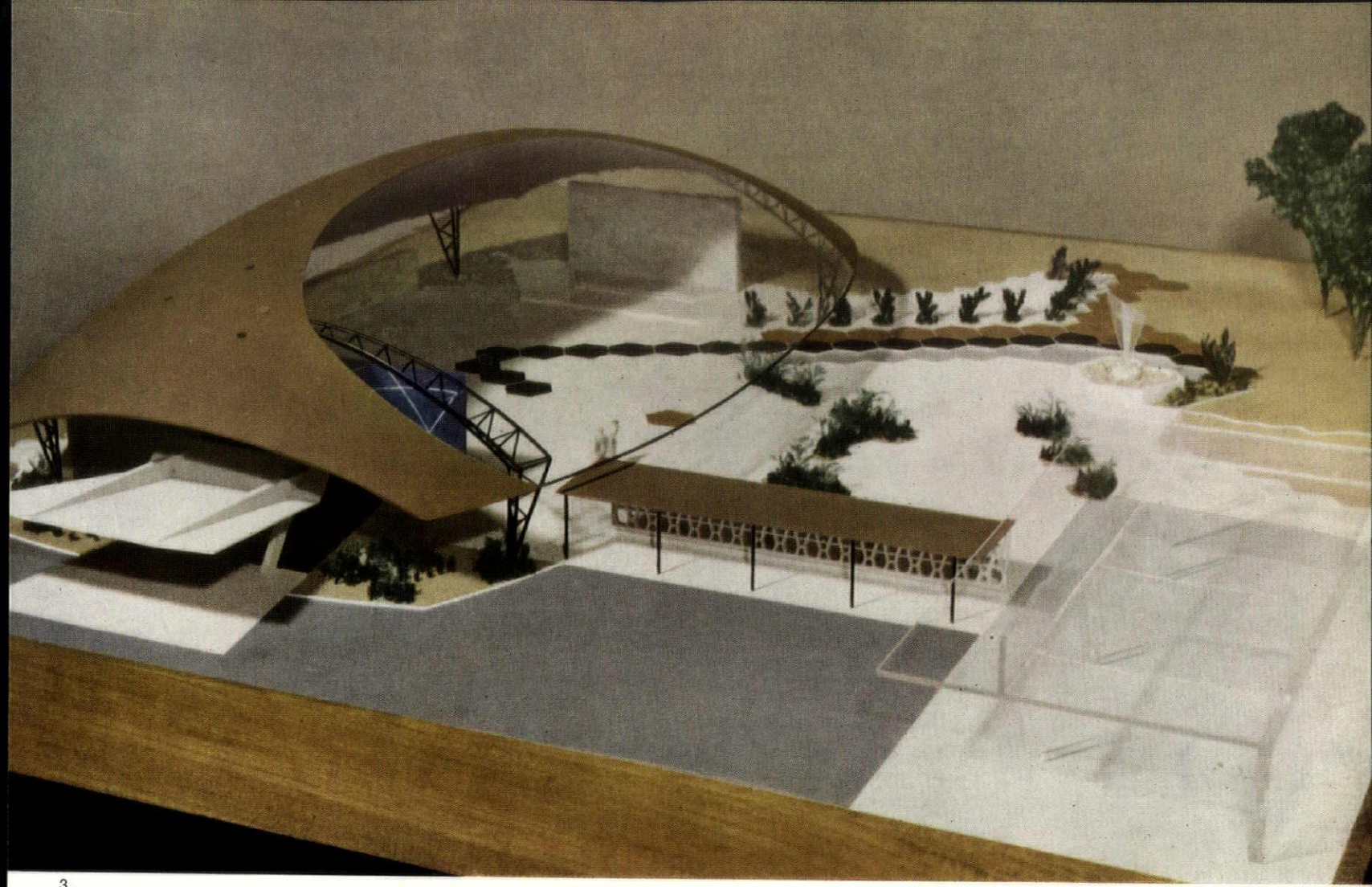


ENGINEERING COLLEGE

Scale: 1/96in. = 1ft.

key

1, cycle store
2, bookshop
3, porter
4, garage
5, stores
6, hydraulics lab.
7, strength of materials lab.
8, industrial chemistry lab.
9, advanced electrical lab.
10, switch gear
11, high voltage lab.
12, bacteriology lab.
13, chemistry lab.
14, drawing office
15, lecture room
16, lecturers' room
17, elementary electrical lab.
18, students' lab.
19, battery room
20, electronics lab.
21, concrete testing lab.
22, structures lab.
23, soil mechanics lab.



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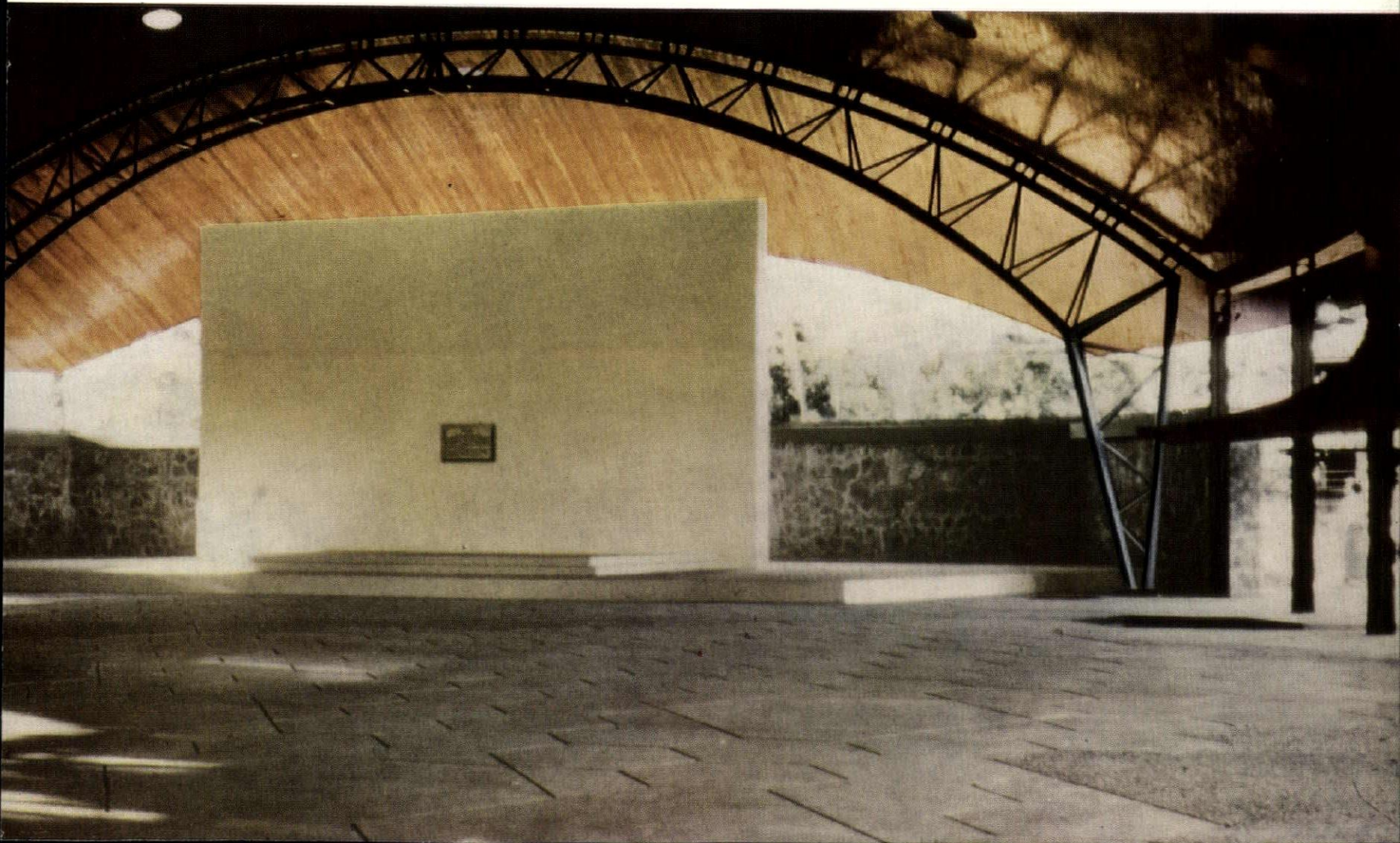
4

UNIVERSITY & POLYTECHNIC, RANGOON





5

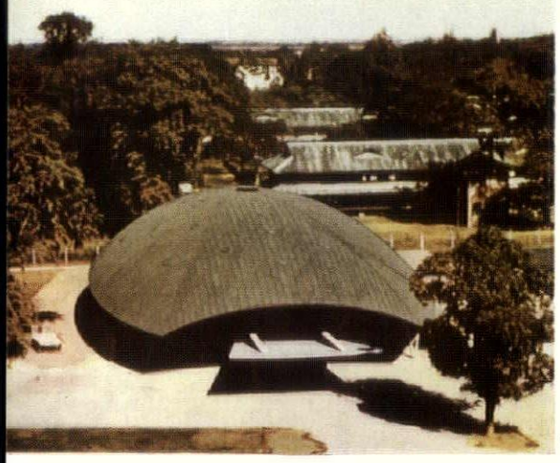
sun control Designing in the tropics is to a very large degree influenced by giving protection from the sun. Several methods of sun control were adopted. The traditional method of the open unglazed grille for unenclosed areas and the deep glazed grille for enclosed areas which was adopted for the Library and Administration building: the larger openings are filled with coloured sun-diffusing plyglass, and the smaller openings with plain glass louvres to permit cross ventilation. Slatted and louvred screens were another method; also, placing a solid in the middle of a large opening, the surrounding areas being filled with fixed glass and glass louvres. All these methods cast shadows on the floor within, thus cooling the interiors.

materials Local materials available were brick, timber (teak, padauk and bamboo), stone (taurgyi granite), laterite and sand. To these were added a minimum of



6

5, library and administration building from the first floor balcony of the mechanical engineering block, showing the car canopy. 6, interior of the students' common room; columns are naked shuttered concrete.

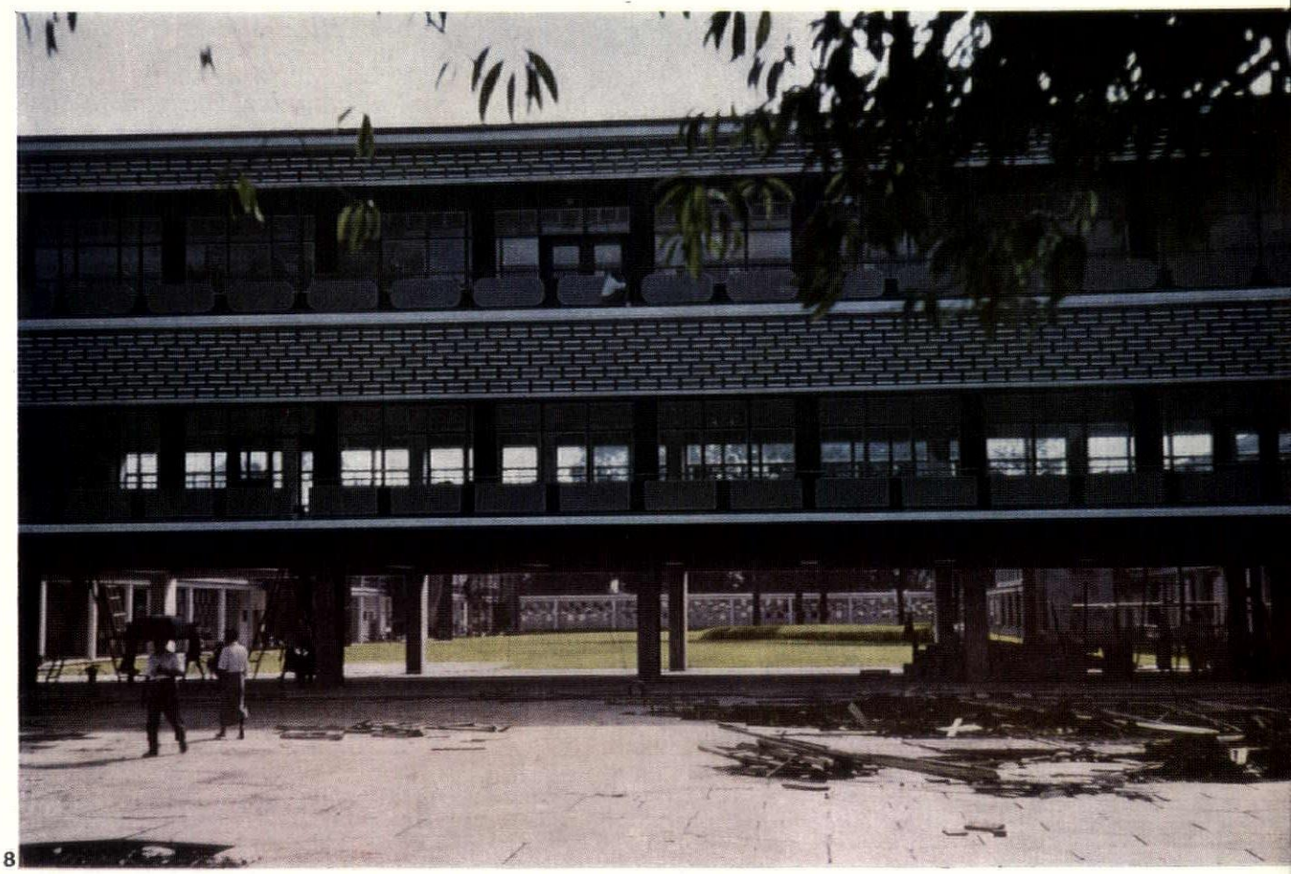


7

7, the assembly hall from the roof of the library building; in the background is an existing students' hostel. 8, the mechanical engineering building, looking from the south-west towards the main courtyard that joins all the main teaching elements of the college. A sun screen of vertical steel rods is suspended from the canopy of the balcony, threaded with short lengths of horizontal timber slats.

imported materials, including cement, steel, marble, glass, synthetic boards, roofing felts, copper, adhesives and paints. The policy governing the use of materials was controlled by economy in sterling expenditure; speed in erection of a large part of the five projects: and need to provide a wide variety of techniques as experience to local labour and examples to students. Local materials were mainly used in a strictly traditional way—laterite for hardcore and bricks and stone for walls and piers. The exception was the Engineering College Assembly Hall where modern laminating techniques were applied to teak. Imported materials were used partly to complement local materials used traditionally, floor beams, slabs, etc., and partly in their own right, using the full range of advanced techniques, precast elements, shells and large cantilevers, etc.

Assistant designer for the Library and Administration Building and the Assembly Hall was R. B. Roberts; engineer designer, F. Lefevre. Assistant site architect for the rest of the Engineering College, Brian C. Adams; consulting engineer (Assembly Hall only), Ove Arup and Partners.



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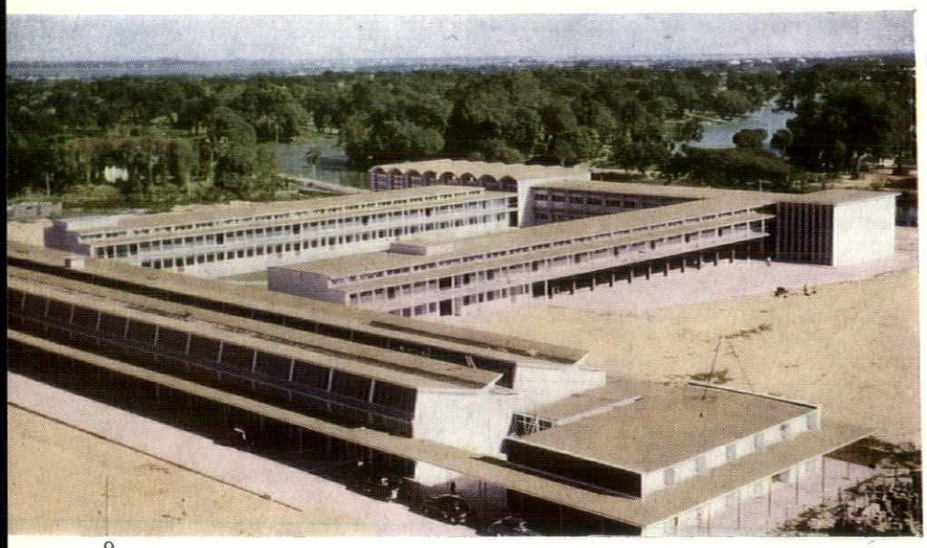


9

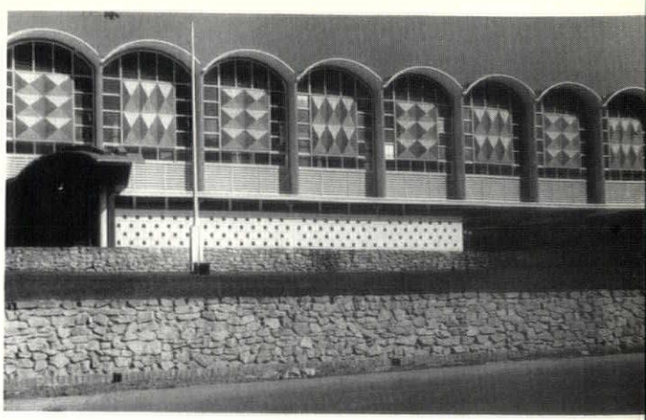
UNIVERSITY & POLYTECHNIC, RANGOON

9, general north-west view of the Polytechnic from the students' hostel which is on higher ground; the courtyard principle of planning can be seen. In the far corner is the main assembly hall. 10, students' hostel block: under the canopy is an open-air dining porch where tables can be laid; the main dining area with collapsible screens being just behind it. Above are the access galleries to the living quarters.

Polytechnic Institute *A further group consists of a Polytechnic Institute, hostels for students and an eight-storey block of flats, with a possible future extension to the scheme of a State High School. Only four isolated islands of ground on the site proved suitable for this project. The large central island was selected for the Polytechnic, two smaller ones for the hostel block and flats, while the fourth was reserved for the future High School. Both the Polytechnic and High School were composed of strip blocks placed parallel to the sides of rectangular courtyards. The hostel block was a simple strip plan, with deep overhanging access balconies. The flats were contained in a group of three tower blocks linked together by galleries, staircases and lifts. Assistant architect for the hostels and flats was Peter Winther; site architect, D. H. Thorne.*



10



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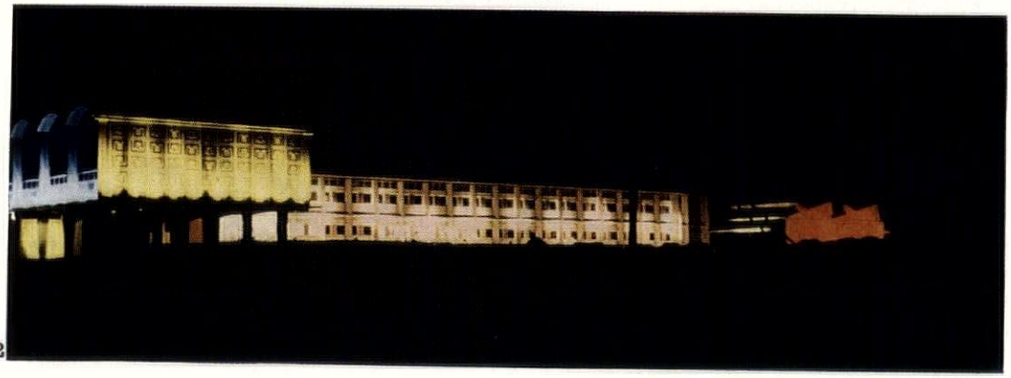
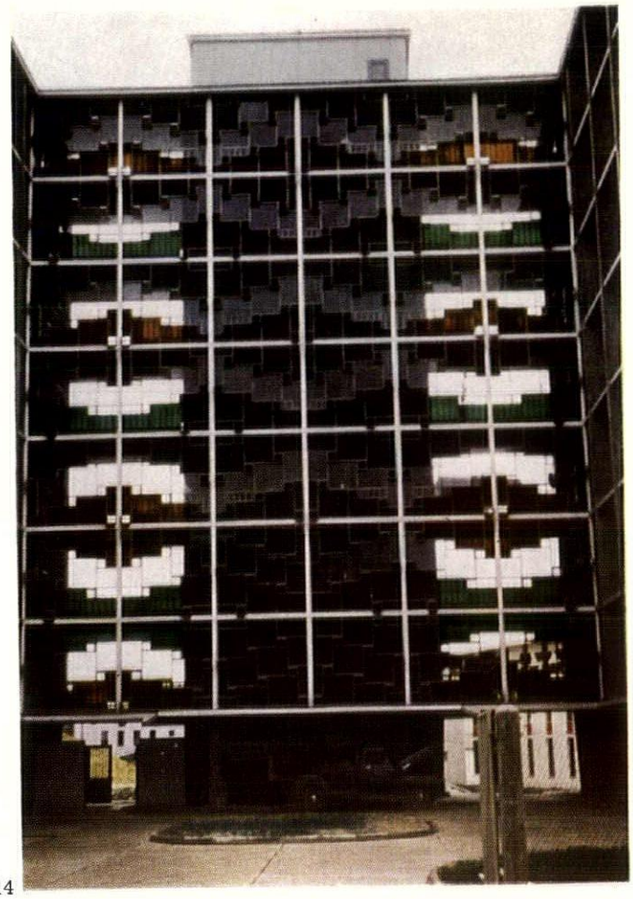
11



12

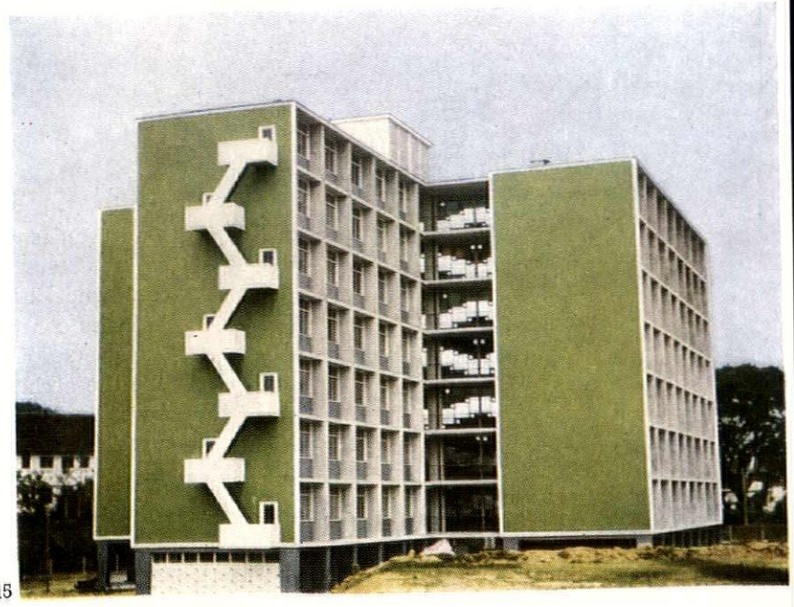
11, night shot of the assembly hall, and 12, the same with the classroom block in the background. 13, the barrel-vaulted assembly hall seen from a public road; in the centre of the glazing are flat mosaic panels, intended to eliminate sun glare. Under are glass louvres and on the ground floor level the pierced wall of the canteen.

sculpture and murals The fundamental belief behind the designs of both the Polytechnic and the Engineering College was that valid architecture in Burma could not be achieved by introducing preconceived æsthetic concepts appropriate to the climatic and social background of Europe. Hence the murals and sculpture, like the architecture, grow from the native background. Accordingly, Burmese artists designed murals and sculpture for both projects.



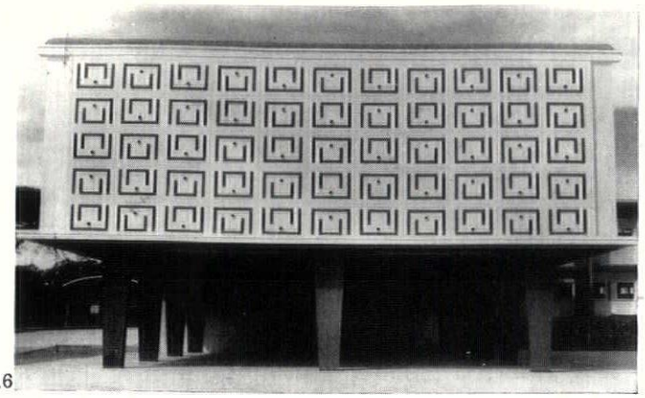
14

colour and texture An attempt has been made in both the Engineering College and the Polytechnic to produce a synthesis of texture and colour within the context of sun and shadow. The diagonal concrete grille to the Library and Administration building provides a three-dimensional textured pattern to contain pieces of coloured glass. The coloured glass is set back from the face of the grille, partly for protection, and partly to create depth, emphasized by the deep shadows. Internally, the effect of sunlight striking the grille and coloured glass produces a soft translucent light with a constantly changing shadow pattern on the floors.



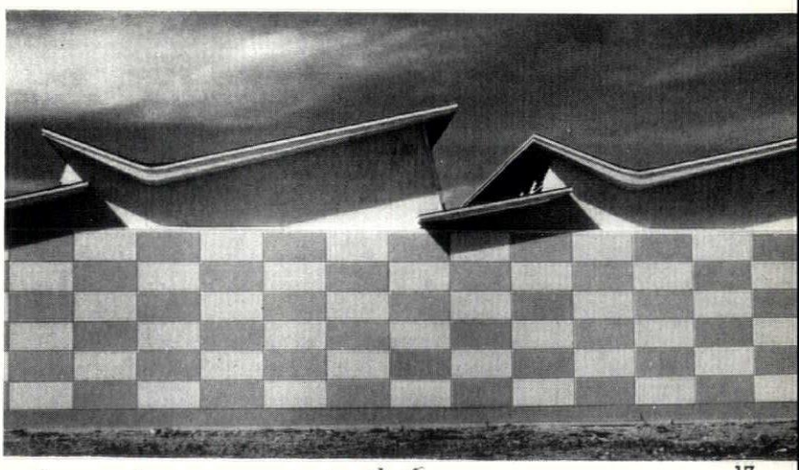
15

14, teachers' flats, a three-wing point block: a coloured glass screen covers the vertical and horizontal circulation; 15, the same building seen from the north-west. The solid walls are painted concrete; on the near end wall is a fire escape.



16

16, the white rendered end wall of the Polytechnic assembly hall; the pattern is partly formed by light blue mosaic tiles, with small piercings formed by 6-inch asbestos pipes. 17, workshop block, showing structural bays defined by north-light roofs; the cladding is of grey and white rough rendered panels with recessed joints.



17

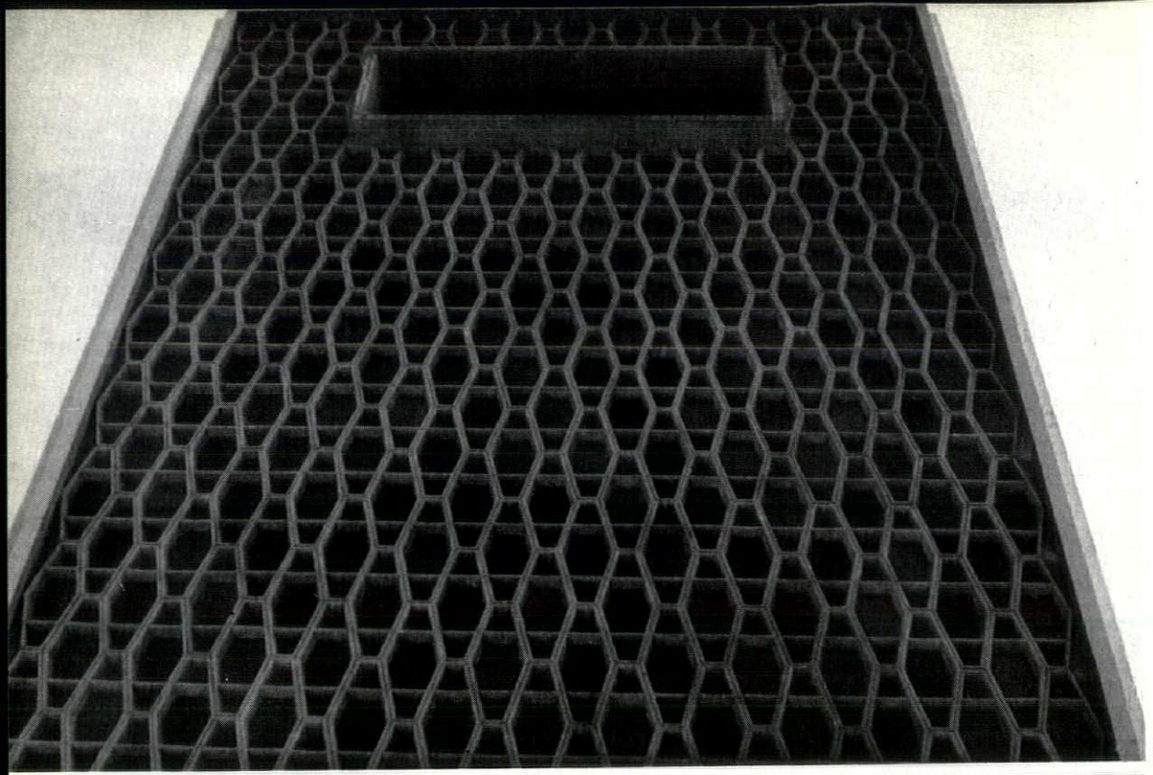
POLYTECHNIC

key

1, radio workshop
2, main materials store
3, electrical workshop
4, automechanics
5, diesel and gas engineers
6, machine shop
7, welding
8, blacksmith
9, foundry
10, sheet metal
11, carpentry
12, bricklaying
13, changing room
14, students' common room
15, elementary electrical lab.
16, chemistry lab.
17, physics lab.
18, staff common room
19, night school office
20, principals' room
21, reception
22, clerks
23, canteen

Diagonal shading indicates projected Union High School.

scale: 1/96in. = 1ft.



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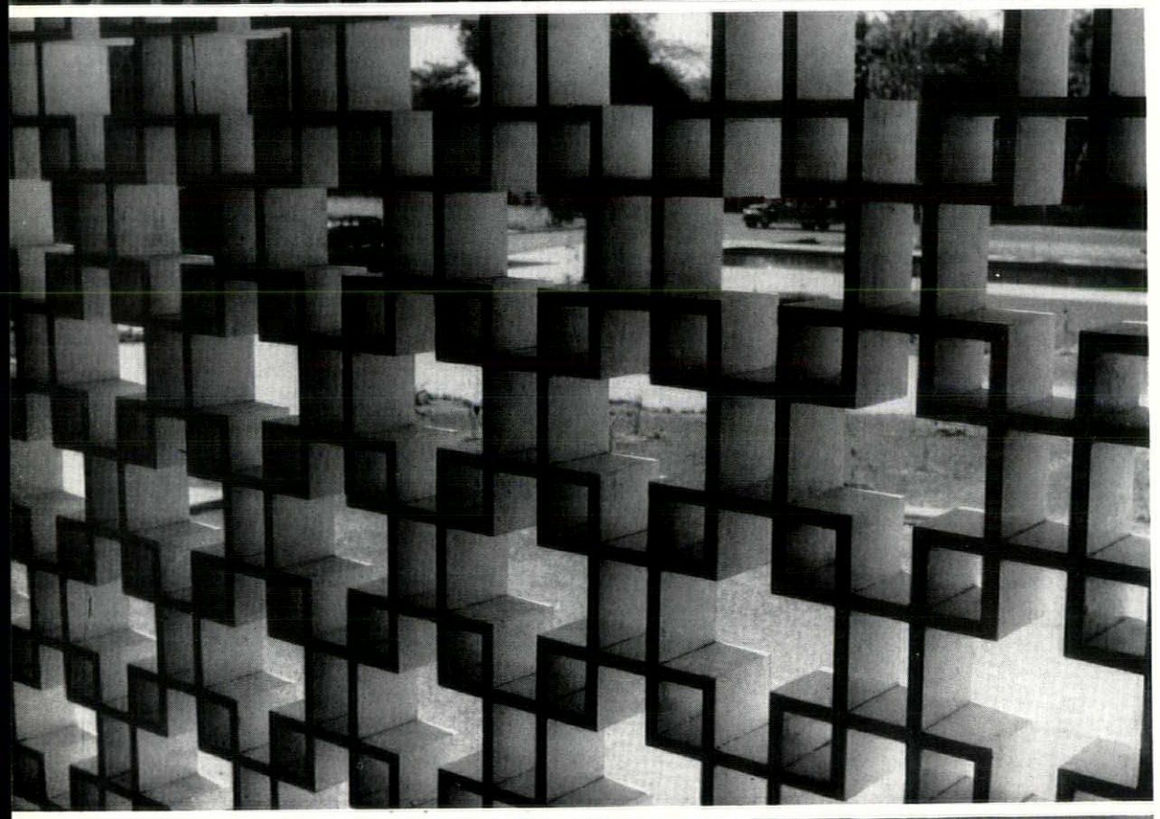

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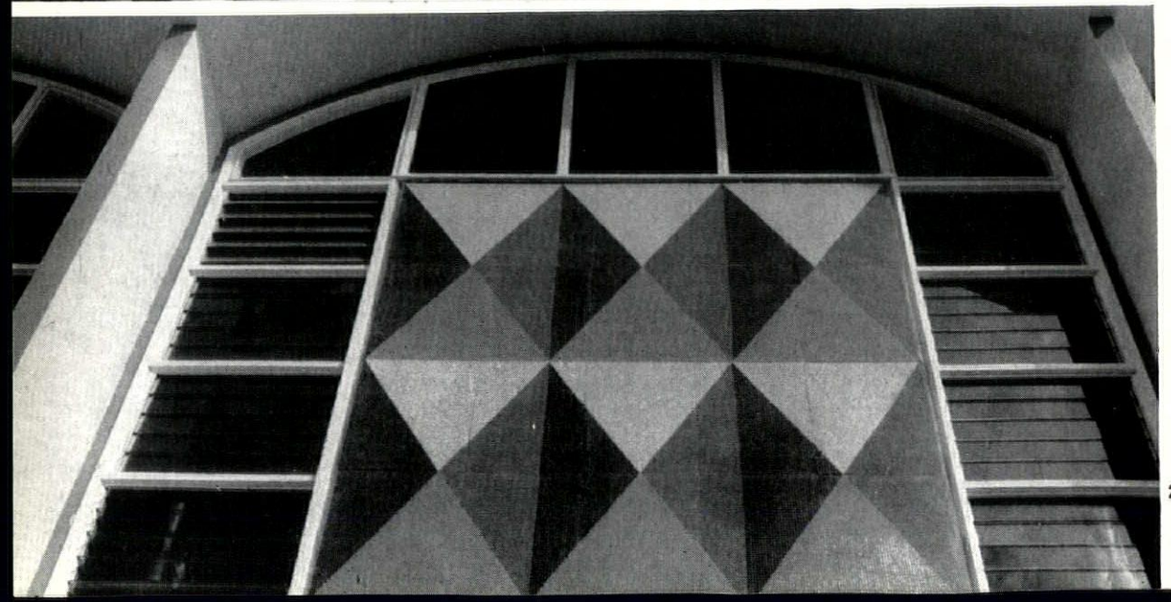


20

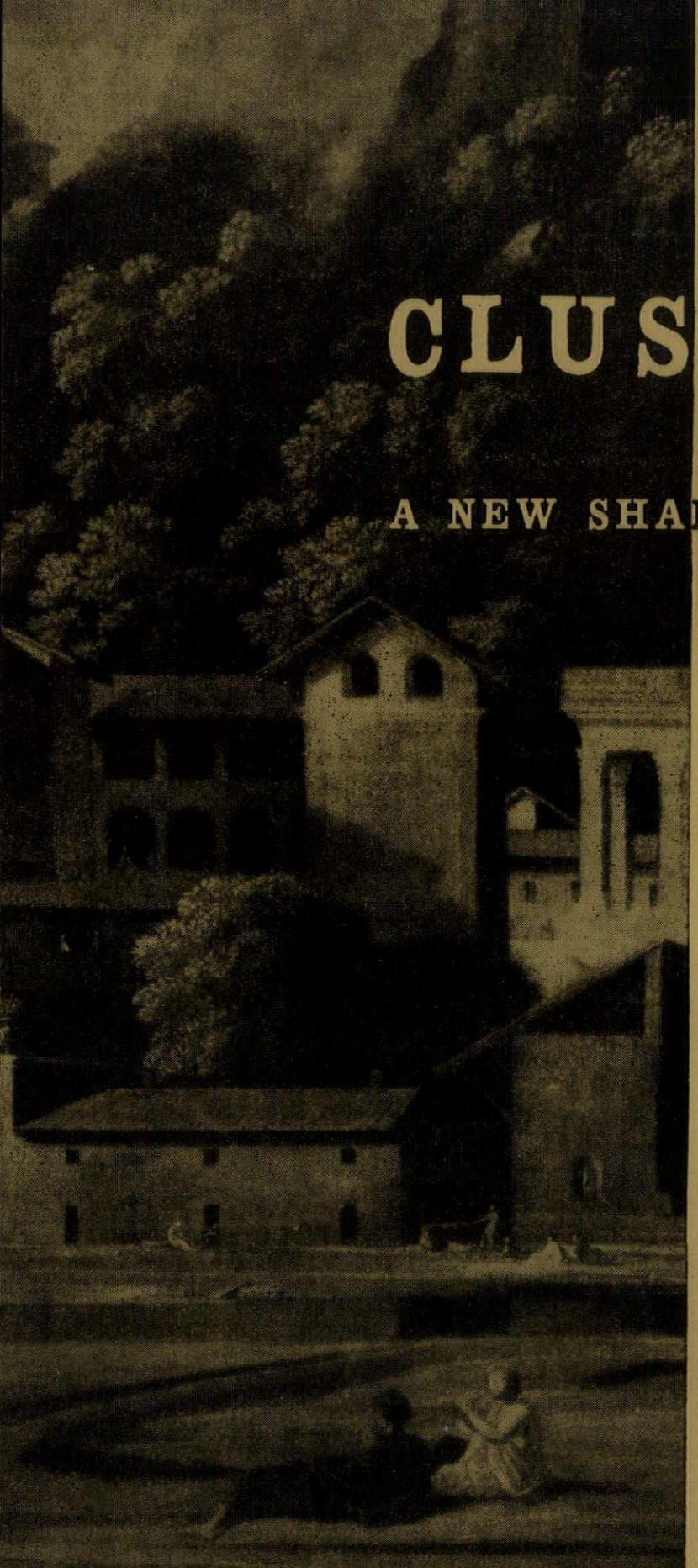
18, end wall of the library and administration block of the Engineering College: a concrete-framed viewing slit is formed on the terrace to the board room, on the top floor. The grille consists of coffin-shaped precast units, 10″ deep and 5′ high, with splayed aides; the large hexagons are filled with fixed coloured ply-glass, the small openings with glass louvres, for cross ventilation. 19, open teak grille, of boxes notched and glued together, over the balcony of the mechanical engineering building. 20, mosaic panel in the glazing of the Polytechnic assembly hall.

Alison and Peter Smithson

CLUSTER CITY

A NEW SHAPE FOR THE COMMUNITY

Throughout the last quarter of the present century, from its first congress at La Sarraz in 1928 to its virtual dissolution last year, the Congrès Internationaux d'Architecture Moderne (CIAM) has brought together the masters of Functionalist Architecture—Le Corbusier, Gropius, van Eesteren and many others—in discussions on the problems of their art, and of city planning in particular. Their findings, formulated in methodically drawn up documents, the most notable being the Athens Charter of 1933, now begin to appear too diagrammatic, formalistic and legalistic, and here, Alison and Peter Smithson, who have participated in much of CIAM's post-war activity, set out a case for rephrasing CIAM's functionalist tenets on a more humane and pragmatic basis.



Poussin's vision of the classical city is an image of a consistent hierarchy of building forms, that runs from the high temple on the hill to the local temple and the profane buildings around it. Can modern architects create an equally convincing image of a city, without being caught in some similar closed hierarchy?

The modern architect is interested in the implications of his building in the community and in the culture as a whole. His first concern is with the general problem, from which the specific solution in the particular situation is evolved. The Declaration of the first Congress for Modern Architecture (CIAM) in 1928, was concerned not only with the throwing over of outmoded formulas and the Academies, but with the actual functional basis of the new architecture with economics, with the rationalization of building, and also with town planning, for the Functional City was the natural extension of a Functional Architecture.

The situation for the modern architect today is fundamentally the same, we are still functionalists and we still accept the responsibility for the community as a whole, but today the word functional does not merely mean mechanical, as it did thirty years ago. Our functionalism means accepting the realities of the situation, with all their contradictions and confusions, and trying to do something with them. In consequence we have to create an architecture and a town planning which—through built form—can make meaningful the change, the growth, the flow, the *vitality* of the community.

There must be inherent in the organization of every building the renewal of the whole community struc-

ture. Take, for example, the problem of rebuilding three houses in an existing street; the houses on each side of the street form with the street itself a distinct urban idea; the three new houses should not just live-off this old idea, but should give an indication, a sign, of a new sort of community structure. But this cannot be done unless the architect has a more or less completely conceived general idea or ideal towards which all his work is aimed.

It is now obvious that the functional-mechanical concept of town planning and the Cartesian aesthetics of the old Modern Architecture are no longer relevant. Le Corbusier's dream of a Ville Radieuse was supported by a geometry of crushing banality. For that is how we see it now—the plans move us as little as the pattern on the table cloth at the Vieux Paris, 2, which is indeed where it may have originated. (How different are our reactions to the same image! His sparking point, excitement; ours, art-historical curiosity.)

Yet the dream was real enough and is still relevant.

'Here we have a promenade for pedestrians rising on a gentle ramp to first floor level which stretches before us as a kilometre flight of terrace. It is flanked by cafés embowered in tree tops that overlook the ground beneath. Another ramp takes us to a second promenade two storeys above the first. On one side of it is a Rue de la Paix of the smartest shops; the other commands an uninterrupted view of the city's limits. Yet a third ramp leads to the esplanade along which the clubs and restaurants are grouped. We are sheer above the expanse of parks with a tossing sea of verdure plumb beneath us. And to the right and left, over there, and further away still, those gigantic and majestic prisms of purest transparency rear their heads one upon another in a dazzling spectacle of grandeur, serenity, and gladness. . . .

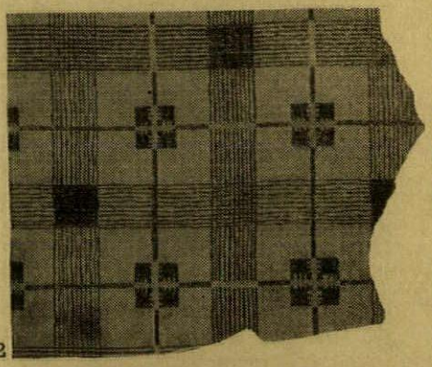
'Those hanging gardens of Semirramis, the triple tiers of terraces, are "streets of quietitude." Their delicate horizontal lines span the intervals between the huge vertical towers of glass, binding them together with an attenuated web. . . . That stupendous colonnade which disappears into the horizon as a vanishing thread is an elevated one-way *autostrada* on which cars cross Paris at lightning speed. . . . When night intervened the passage of cars along the *autostrada* traces luminous tracks that are like the trails of meteors flashing across the summer heavens.'

This quotation is from a piece called 'The Street' which originally appeared in *L'Intransigeant* in May, 1929. It is a description of the Plan Voisin, a project of 1925 which applied the principles and building types of Le Corbusier's earlier project Une Ville Contemporaine (1922) to Paris.

We still respond to this dream but we no longer believe in the means by which he imagined it could be achieved. His city is a colossal, axially organized, chess board.

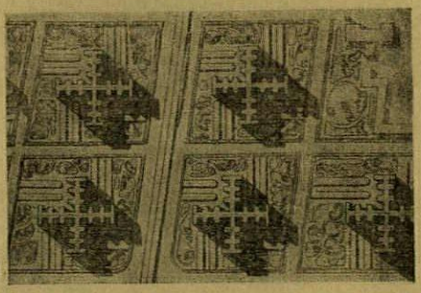
What *we* are after is something more complex, and less geometric. We are more concerned with 'flow' than with 'measure.'

The general idea which fulfils these requirements is the concept of the Cluster. The Cluster—a close knit, complicated, often moving aggregation, but an aggrega-



2

The geometry on which the plans of Le Corbusier's early urban visions were based, proves to have been as banal as that of the pattern of a paper tablecloth, 2, from which it may well have been derived, 3. Though this is of interest to us today as a point in art-history, to Le Corbusier it was the germ of an urban vision that created a convincing image of a city, 4.



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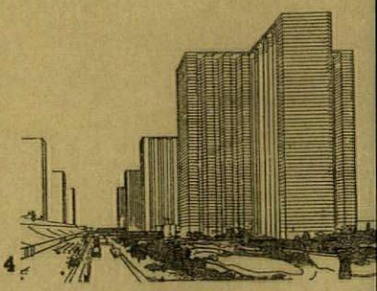

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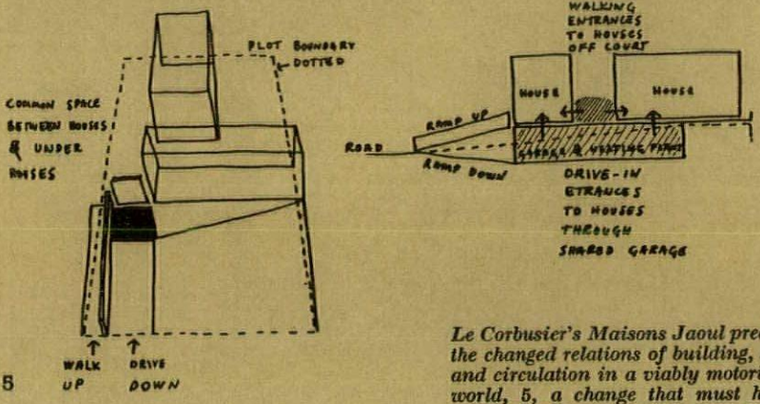
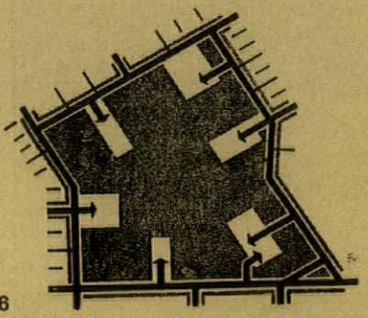


5

Le Corbusier's Maisons Jaoul predict the changed relations of building, site and circulation in a viably motorized world, 5, a change that must have architectural consequences on a civic scale in a project like Victor Gruen's pedestrian core for Fort Worth, 6, or the authors' idea for a city of population clusters, 7, each working or living in types of buildings that have their own appropriate relation to motor traffic, and are described on the next two pages.



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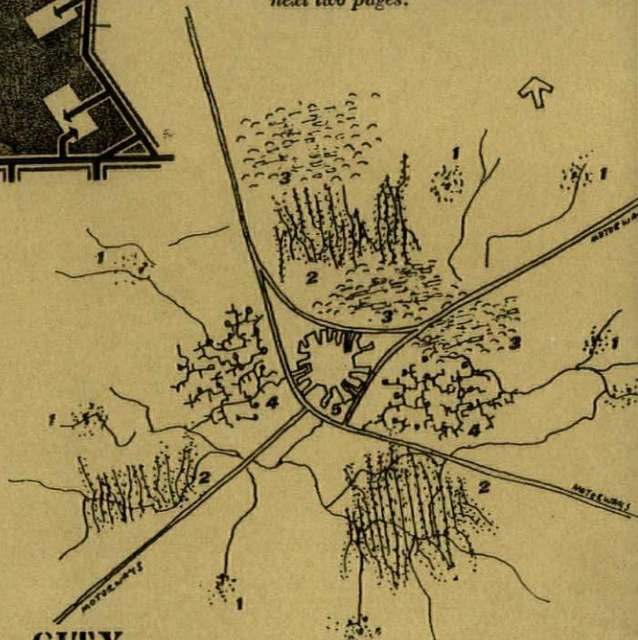
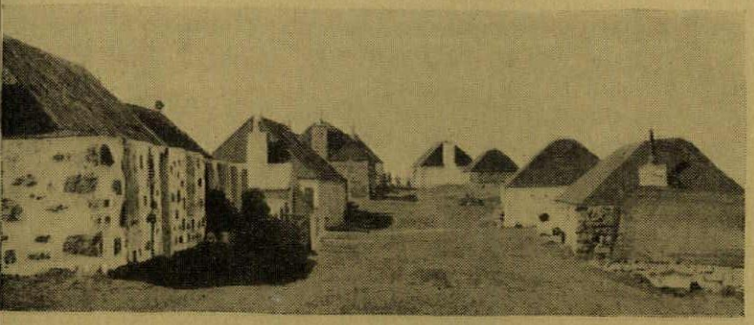
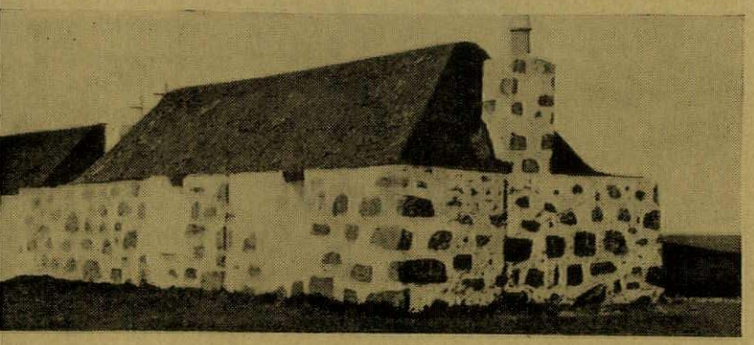
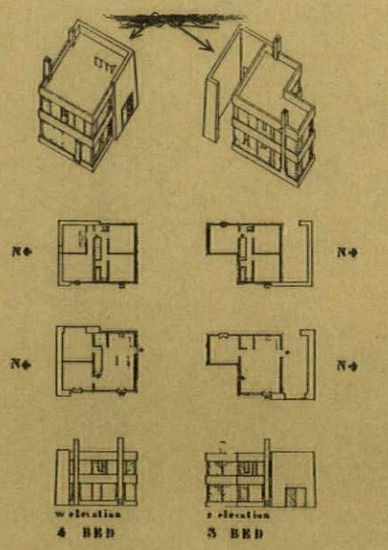


7

CLUSTER CITY

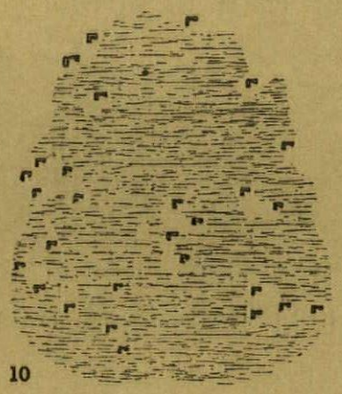






9 **VILLAGE INFILL** 1/8"

Fold-houses for village infill and extension, 10, though they vary within reasonable village limits in size and accommodation, bring order into diversity by their reliance not only on standard details, but also on a standard major structural unit, the folded slab of walling, 9, that gives the same diffused unity as the walling of crofter houses in Tiree, 8.



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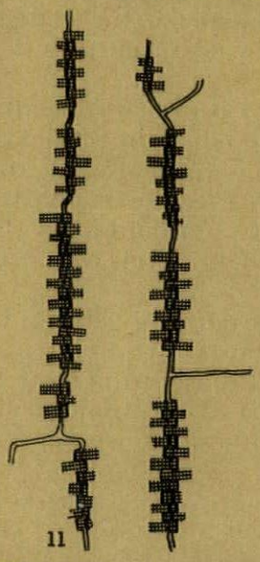

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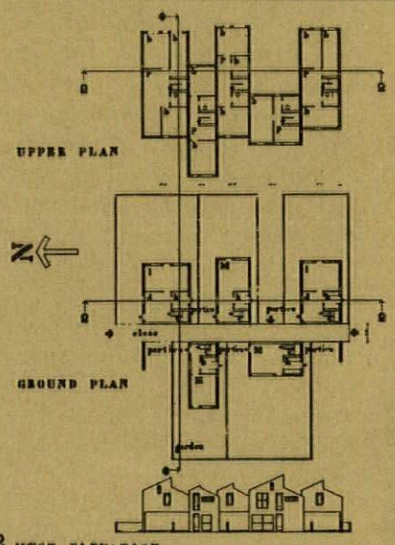
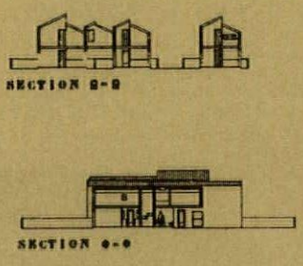
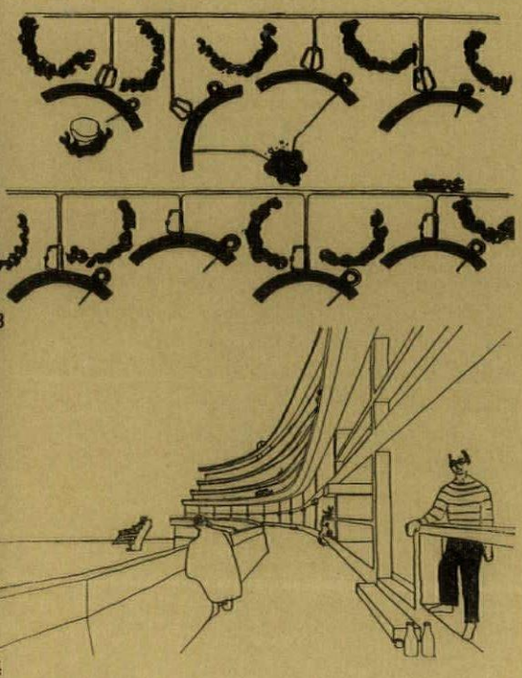


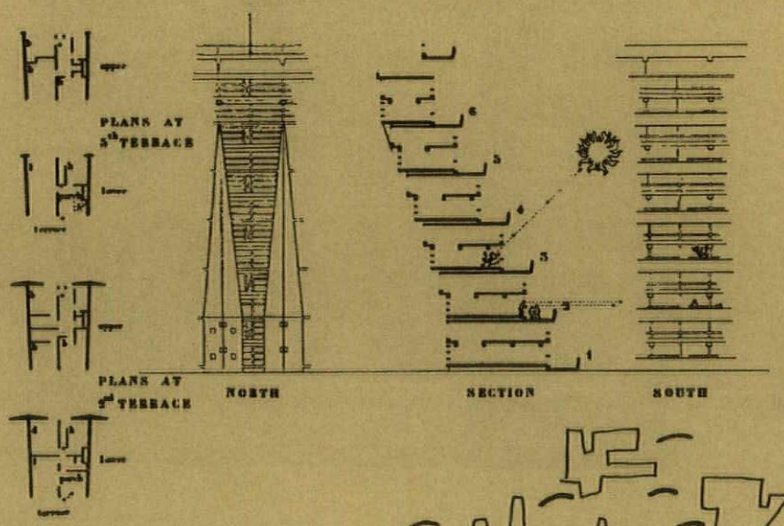
12 WEST ELEVATION



CLOSE HOUSES 1/8"
TOWN

Close houses, for genuinely suburban developments, are related to the house at Watford illustrated in AR, *September, 1957, but are distributed along pedestrian ways that they enclose and partly cover, 12, giving an orderly and urban public aspect even to areas of fairly low density where the houses have large private gardens. Motor-traffic enters this vertebrate system at the interruptions in the runs of buildings, 11, and parks there without penetrating further. In the terraced housing below, parking is treated as one of the group of communal facilities at the base of each curved slab, the slabs being oriented for view and light and to give a varying sense of (never total) enclosure, 13. Pedestrian circulation is by superimposed street-decks arranged to avoid dizzying vertical views, 14 and 15, and the building type has sufficiently strong a character to make its own visual order even when distributed as high-density infill, 16, among industrial developments.*





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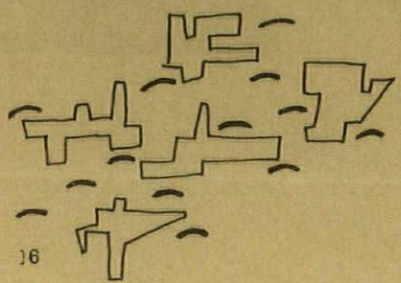
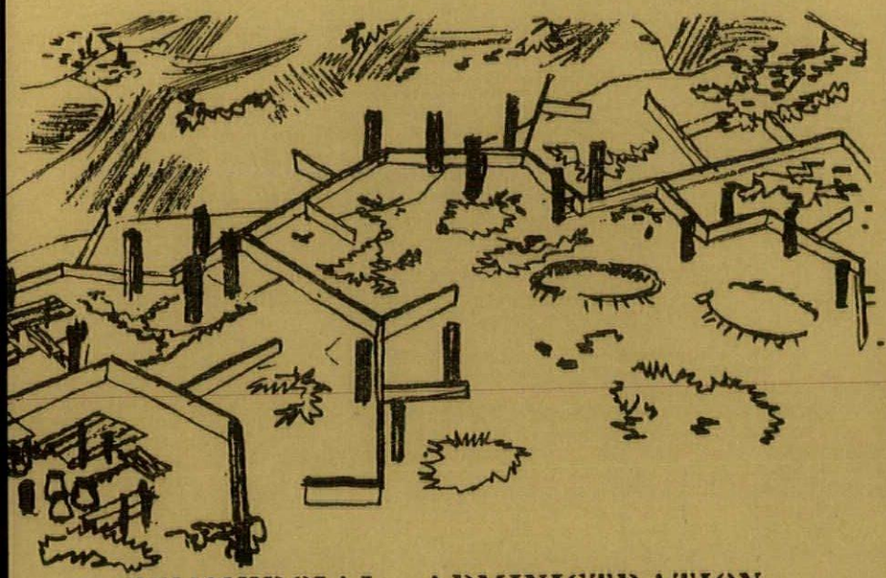
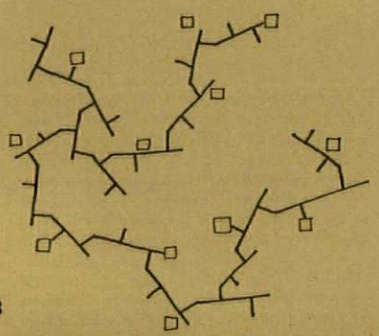


16

TERRACED HOUSES 1/8"
CITY

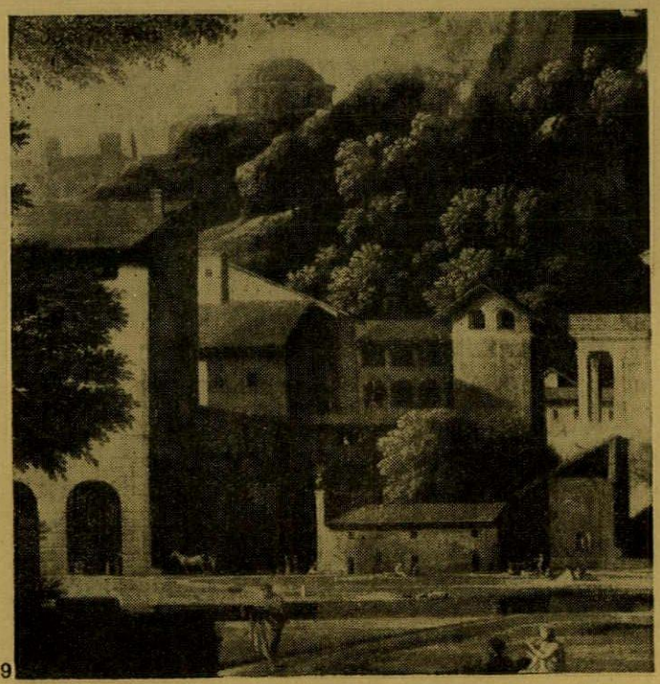


17 COMMERCIAL ADMINISTRATION



18

The authors' proposals for commercial and administrative areas resume the theme of their Golden Lane project (AR, *December*, 1955), *but couple it with the use of tower blocks, in an attempt to fuse and relate the many different kinds of multi-level building already in existence (offices, department stores, parking garages) but with the multi-level circulation now so sadly lacking,* 17. *This produces another type of plan pattern,* 18, *distinctive to this particular function and circulation. When it is put together with the other types suggested previously, to make a city conceived as a cluster of population pressure points, not as an abstract pyramid of density-figures, they offer the germ of an image of the city as convincingly urban in its own way as Poussin's,* 19, *but many-valued and growing, not one-valued, fixed and closed in a single hierarchy of forms.* (Note—1 *and* 19 *are details of Poussin's* Les Cendres de Phocion, *at Knowsley Hall.*)



19

tion with a distinct structure. This is perhaps as close as one can get to a description of the new ideal in architecture and town planning.

Given this description the problem of building the three houses in an existing street is one of finding a way (whilst still responding to the street idea) to chop through the old building face and build up a complex in depth, of providing a suggestion, a sign, of the new community structure.

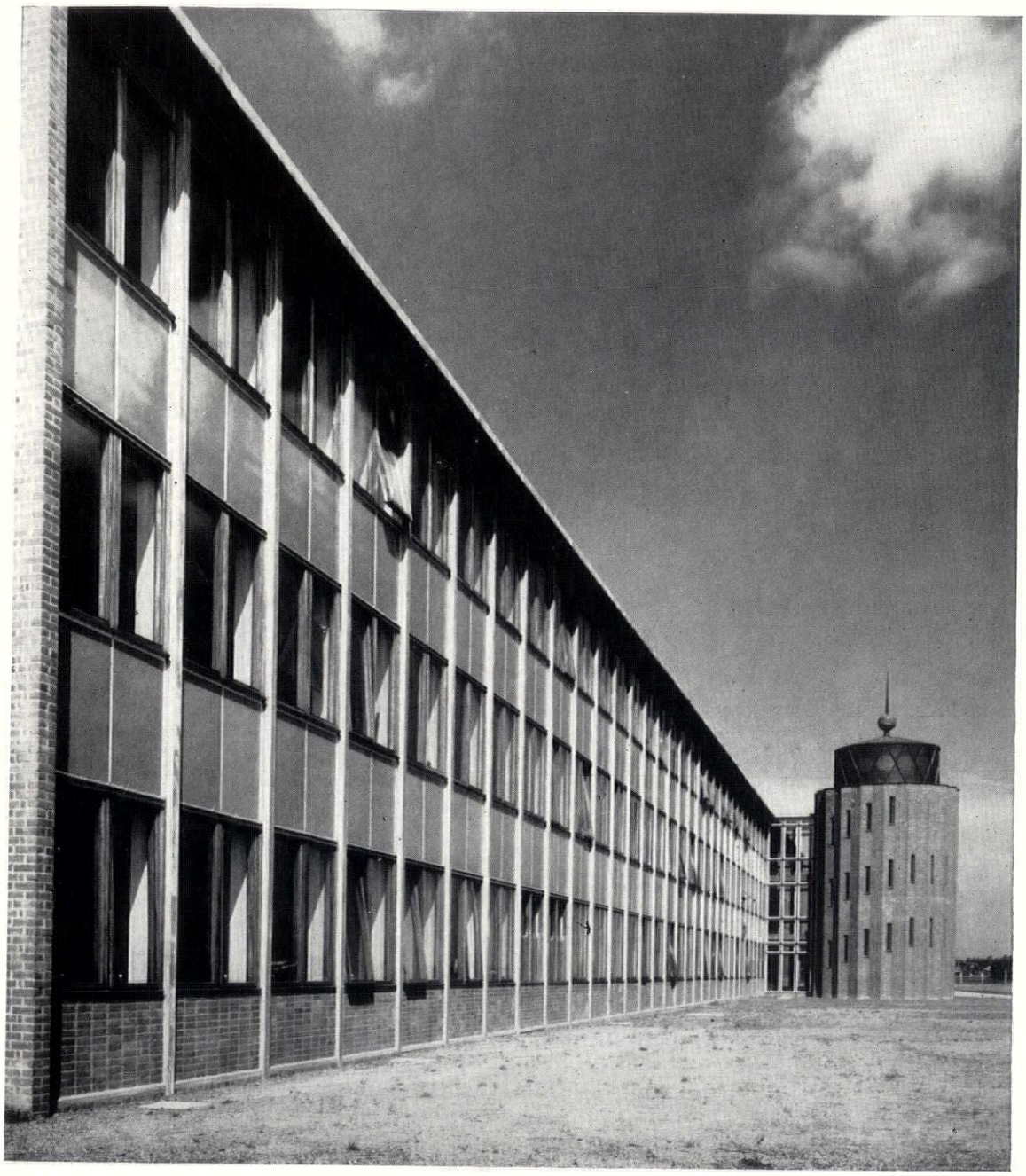
It is traditionally the architect's job to create the signs or images which represent the functions, aspirations, and beliefs of the community and create them in such a way that they add up to a comprehensible whole. The Cluster concept provides us with a way of creating new images, using the techniques which have been developed to deal with the problem of a mass production society, the techniques for example of road and communication engineering. Many solutions have been put forward to deal with the problems of traffic—motorways joining population centres, urban motorways within communities, peripheral controlled parking round the old centre, out-of-town shopping centres, off-motorway factories, and residential dormitories; solutions which either disperse the energies of communities or integrate them in an entirely new way.

The accepted concept of the city is one of concentric rings, gradually decreasing to the edges in residential density and ground coverage, with a radial road pattern from the historic nodal point. To this pattern has lately been added concentric 'self-contained' low density satellites (isolated around London, connected at Stockholm).

In the Cluster concept there is not one 'centre' but many. Population pressure points are related to industry and to commerce and these would be the natural points for the vitality of the community to find expression—the bright lights and the moving crowds.

These commercial and industrial pressure points are connected by motorways to frankly residential dormitories and dormitory-used villages. It is useless to pretend that our lives are so simple that we can all 'live where we work'—we have to accept population mobility and be one step ahead of it controlling the form it takes. Creating new images, both for the new elements themselves and for the old elements which they have transformed.

We must think out for each place the sort of structure which can grow and yet be clear, and easily understood at each stage of development. The word Cluster gives the spirit of such a structure, and existing planning techniques such as the control of residential densities and floor space indices, comprehensive redevelopment, and compulsory purchase, give the power (at least in England). There seems no reason why more freely flowing, more varied, more useful communities cannot be constructed.

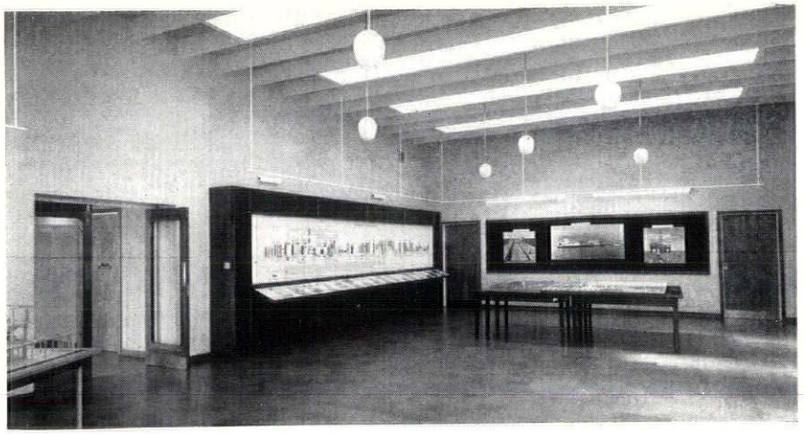


1, *the entrance front with office wing in the foreground, looking towards the brick-clad lift and staircase tower and the main entrance.*

ADMINISTRATION BUILDING AT SHELL HAVEN, ESSEX

ARCHITECTS: H. V. LOBB AND PARTNERS
ARCHITECT-IN-CHARGE: G. LAVINGTON

This office building is designed to house all administration departments at Shell Haven, on the north side of the Thames estuary, including the refinery manager and his senior administration and technical staff, the drawing office, the accountancy sections and the training wing. The site is completely flat and treeless alongside the approach road to the West Site Refinery, and the building consists of a long narrow three-storey block with demountable partitions and all components designed to a 40-inch grid. The non-modular portions are the staircases and



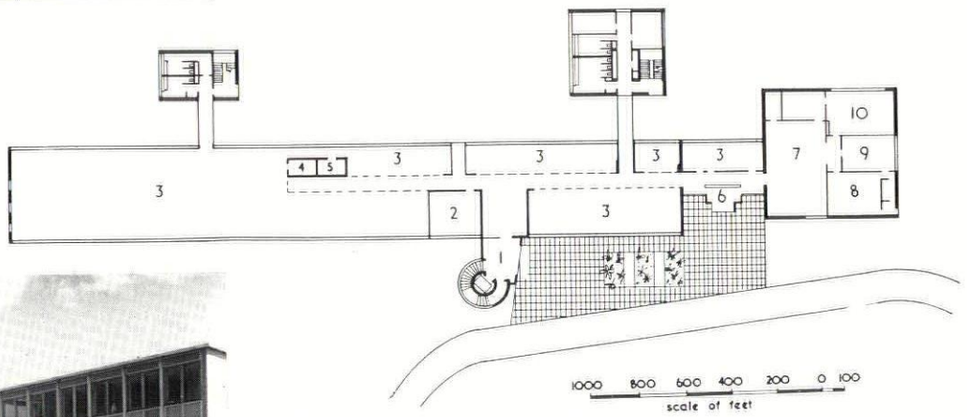
2

Administration Building at Shell Haven, Essex

lavatories and the training wing, which had special planning requirements. The large circular staircase tower incorporates a lift, and is of r.c. construction with cherry red facing bricks and purple and amber glazing; the office block uses an r.c. frame consisting of prefabricated vertical H-beams and inverted T floor beams and *in situ* r.c. floors. The infill is double glazing in hardwood frames with blue grey vitreous enamel panels on the upper floors and red brick panels on the ground floor.

2, *reception room in the training wing.*

3, *the rear elevation of the office wing showing the two staircase and cloakroom blocks.*



key.
1, main entrance.
2, conference room.
3, offices.
4, book room.
5, strong room.
6, visitors and training entrance.
7, display room.
8, cinema.
9, discussion room.
10, lecture room.



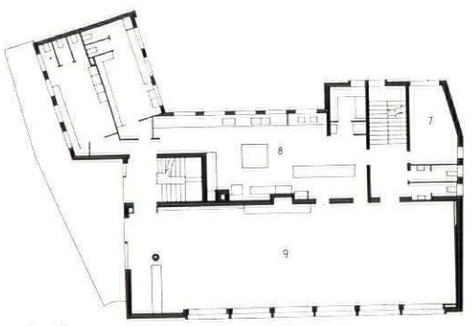
3

4 | 5
6 | 7
8 | 9

PUB AT PECKHAM RYE, S.E.15

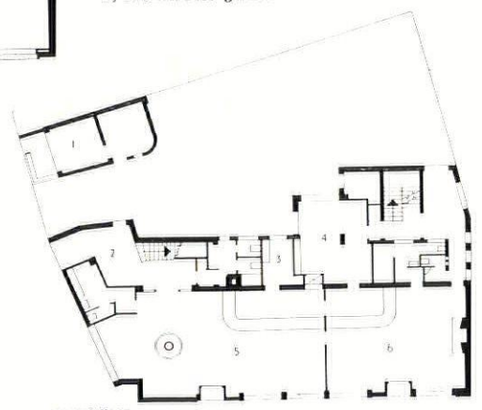
ARCHITECTS: WESTWOOD, SONS AND PARTNERS
PARTNER-IN-CHARGE: GILBERT CHAPMAN
ASSISTANT-IN-CHARGE: HUGH SMART

This pub faces east across Peckham Rye and contains bars below and restaurant and terrace above; the landlord's flat and sleeping accommodation for two employees are on the second floor. The pub is faced with yellow stock bricks generally, with dark red bricks on the front wall of the manager's flat and blue engineering bricks at ground-floor level. Panels beneath the ground-floor windows are granite setts, previously used as road surfacing and purchased from the Camberwell Borough Council. There is a grille to the verandah of the manager's flat in blue ceramic tiles and wood boarding is in Western red cedar. In the Public Bar the ceiling is faced with grooved plywood and painted white, with slatted portion over window seats in Gurjun; the walls are panelled in striped Sapele and wax polished. The Saloon bar has a similar ceiling and walls, with blue grey wallpaper in the window recess. There is an island fireplace with a hood of lacquered copper and gas coke fire in a wrought iron grate, which allows at least 20 people to sit round it; the copper hood radiates heat without itself being too hot to touch.



first floor.

scale: 28 ft. = 1 in.

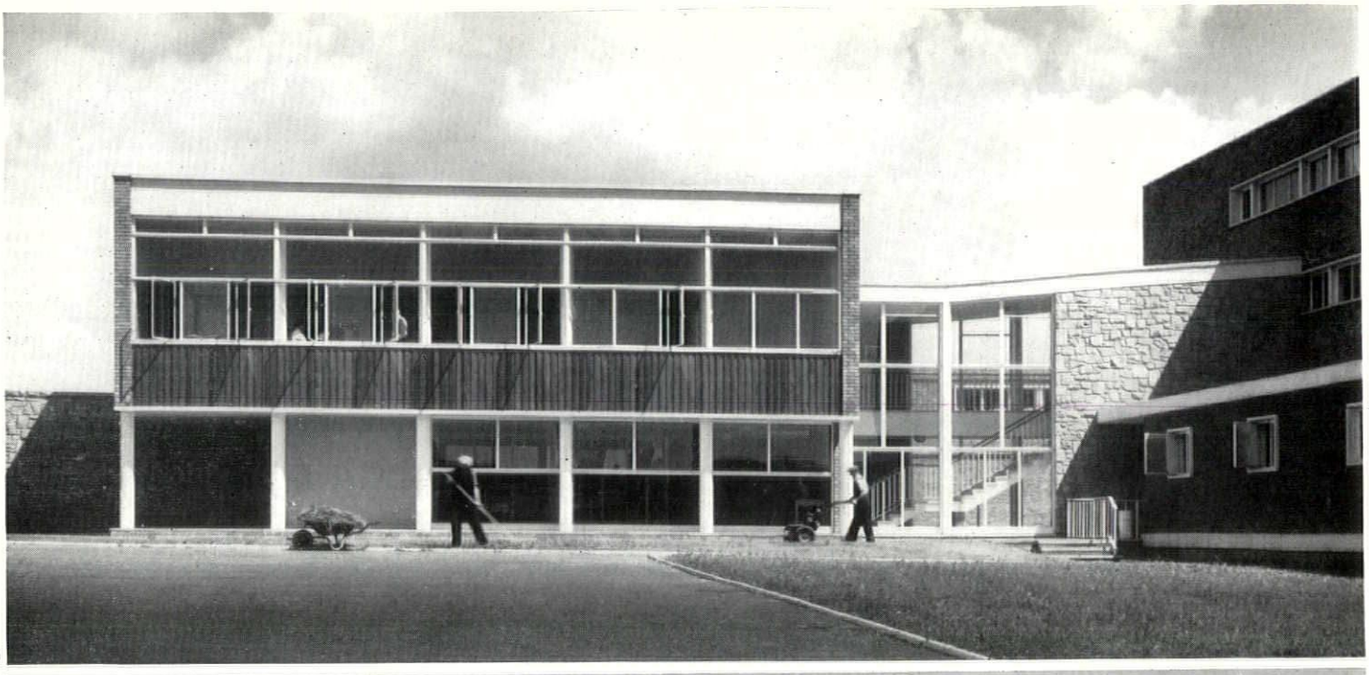


ground floor.

key.
1, off licence.
2, foyer.
3, manager's office.
4, crate store.
5, saloon bar.
6, public bar.
7, staff room.
8, kitchen.
9, restaurant.

4, *the south elevation; saloon bar on ground floor, manager's flat on second floor.*
5, *the freestanding copper fireplace in the saloon bar.*
6, *part of the east wall of the saloon bar, with coloured glass set in concrete slabs behind the wall seating.*
7, *the east elevation from Peckham Rye. The panels beneath the ground-floor windows are re-used road setts.*
8, *small bar in one corner of the first-floor restaurant.*
9, *the service yard.*


THE KINGS ARMS
COURAGE AND BARCLAY



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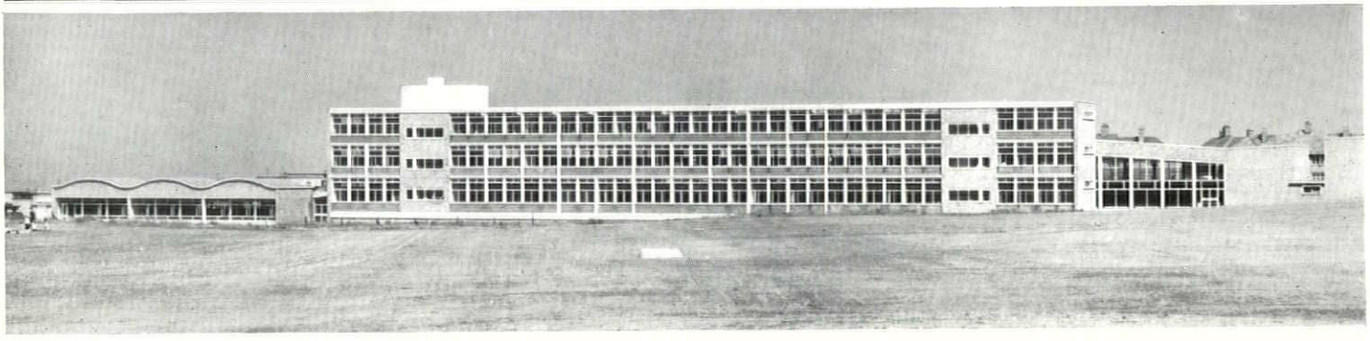


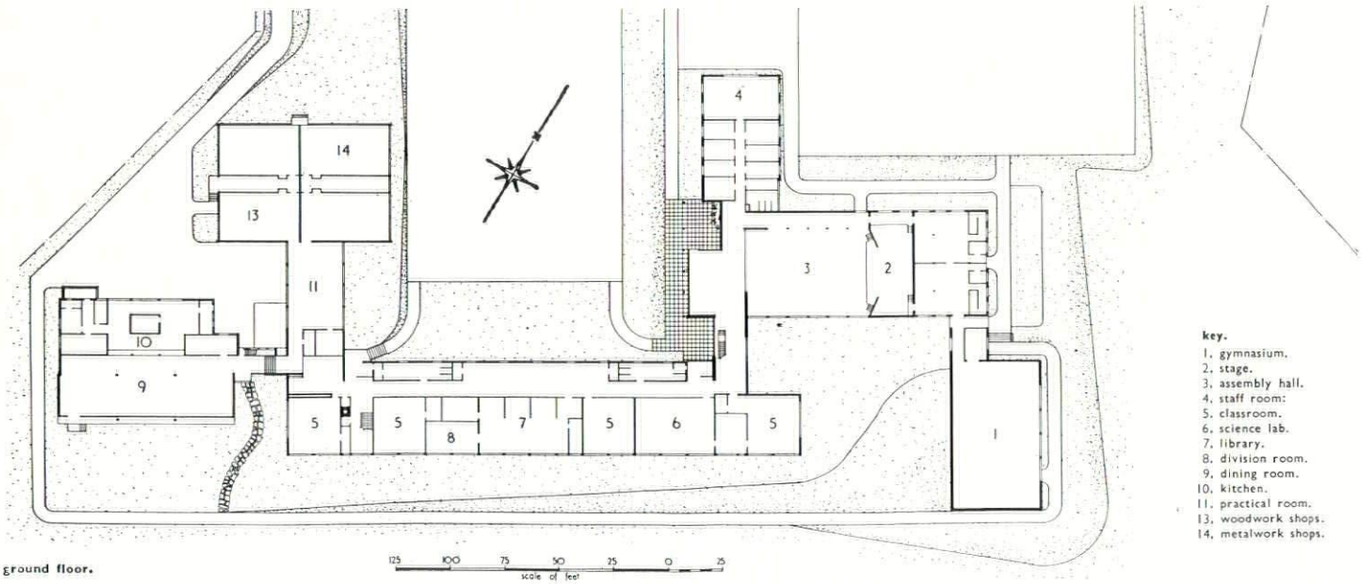
11

10, *west end of assembly hall with entrance hall below.* 11, *south front of classroom block.*

SCHOOL AT HURLFIELD, SHEFFIELD

ARCHITECTS: GOLLINS, MELVIN, WARD AND PARTNERS, in association with the Sheffield City Architect

Hurlfield Secondary Modern School for 600 boys, south east of Sheffield, is a companion to the girls' school by Architects Co-Partnership (AR, July 1955) on a level site on high ground and with extensive views south west. The teaching rooms all face south in one three-storey block served by staircases at either end; being only one room thick, all classrooms have clerestory lighting and cross ventilation. The Assembly block contains the gymnasium and two halls: the smaller is placed over the main entrance hall and can also serve as a gallery to the main hall when required. The building is of steel frame construction; the workshop block has an r.c. barrel roof, and the Assembly Hall a roof which slopes down from the gallery to the proscenium. The facing materials are principally brick, the pattern of the south elevation of the three-storey block being formed by accentuating various members of the structural frame and brick panels. Heating is generally by radiators with high level panels in the workshop, and floor panel heating in the main entrance hall. As the school is in the Sheffield smokeless zone overhead stokers are installed



ground floor.

key.
1. gymnasium.
2. stage.
3. assembly hall.
4. staff room:
5. classroom.
6. science lab.
7. library.
8. division room.
9. dining room.
10. kitchen.
11. practical room.
13. woodwork shops.
14. metalwork shops.

BOOKS

TOWNS IN HISTORY

TOWN BUILDING IN HISTORY. *By F. R. Hiorns.* 443 *pp.; over* 500 *plans and illustrations. Harrap,* 65*s.*

The purpose of Mr. Hiorns's book is to demonstrate that the cure for present ills in the building of our towns lies in the study and application of past teaching. This is an undeniable truth as a general statement, but there is a number of ways of reaching that truth. The way advocated by Mr. Hiorns will neither satisfy the new brutalist nor the old humanist; it is a middle way which, although it has its adherents, has not the impact needed for the student of today. It is, however, advocated with all the integrity associated with its author and with all the authority born of his life-long experience in the affairs of town-building.

The place this book fills is of great importance and is not supplied by any other: that of a book of reference on the subject, having much of the quality which Banister-Fletcher has in the field of architecture. Like that work it calls for continued publication and amplification so as to become an ever-increasing wealth of factual information on the subject of town-building.

The critical assessments of the great town creations of the past are learned and written in readable unwasteful prose. The illustrations are fascinating and the section on the grim towns of medieval tower-houses in Italy, standing in groups of mutual hostility like the foreshadowing of a fiercely competitive sky-scraper city, is but one example of the imagination which has been brought to the making of this permanently valuable work.

The production is efficient but very dull.

H. A. N. Brockman

BRAZILIAN MASTER

OSCAR NIEMEYER: WORKS IN PROGRESS. *Stamo Papadaki. Chapman & Hall and Reinhold Inc.* 1956, 80*s.*

This is Papadaki's second book on Oscar Niemeyer, Brazil's most dynamic exponent of the sculptural in reinforced concrete architecture. Many of the projects illustrated, developed during the past six years, have already appeared in international publications: none other of Brazil's fine contemporary architects has achieved such full recognition.

Of the seventy projects Niemeyer admitted were on his drawing-boards two years ago (from a tent-shaped mountain cabin to the Governor Kubitschek 5,000-unit double-block with a shopping and entertainment centre), Papadaki has grouped roughly one third under three headings: monumental schemes ' In the Shape of a Sub-continent'; projects notable for their attention to form, including the 2,000-ft. octopus marquee of the IVth centenary São Paulo (why always mis-spelt Paolo?) exhibition; and Tasks (schools, shops, offices) which, Papadaki asserts, prove Niemeyer's genius by the ways in which he overcame the limitations his clients imposed on him.

The author's method is expository rather than critical. Photographs, plans and models are clarified by the architect's own drawings showing progression from discarded solutions to the final choice, and by short texts of unequal literary merit. These, nevertheless, provide a fine basis for the study of an architect whose lyrical quality is best judged against its topographical background. A further service could be rendered by some discussion of the aptness and durability of his completed buildings. Perhaps Papadaki is reserving such a valuable assessment for a further volume of Works in Progress.

Claude Vincent

WINDMILL LORE

WINDMILLS AND MILLWRIGHTING. *By Stanley Freese. Cambridge University Press,* 25*s.*

This is an attractively produced book, which handles well, is beautifully printed and has thirty-five plates of which the author's exterior photographs are much the best. The subject is one that he has studied at first hand for over three decades; touring the country with bicycle, camera and sketchbook; making friends with millers, millwrights and mill smashers; absorbing their lore and finally turning his hand to the practical preservation of certain selected mills as a real labour of love. As a result of all these activities he has amassed a vast amount of information of which the essence is given in this book. In it he deals with the historical and structural aspects of windmills, their equipment, working, removals, preservation and their millers.

On the historical side he is often inaccurately speculative and it is hardly fair of him to refer to the famous engineer-architect, Sir William Cubitt, as 'William Cubitt, a millwright.' There is an excellent folding plate with perspective and cross sections of Brill post mill, Bucks, having all the parts numbered and named except, oddly, the 'sheers.' These are defined in the glossary as 'the main longitudinal timbers of a post mill,' which they are not, and this description should actually be applied to the 'side girts' or 'bressummers.' The plate is so excellent that it is a pity that a similar plate of a smock mill was not included, even if the cost of the book had thereby been increased; while the ten pages of text devoted to smock and tower mills as such could well have been extended. The author's six diagrams—not indexed by the way—are so good that one wishes for many more, for his pencil excels his camera in interior views. But some of the information quoted makes one wonder if it was gathered from the millwright sarcastically known as Truthy. On the subject of preservation the author describes graphically and in detail his own considerable achievements at Brill Mill in 1948 and elsewhere; but, he dislikes 'windmill committees,' and omits to mention the good work done by the Society for the Protection of Ancient Buildings since 1931, especially at Outwood post mill, Surrey; by the Ministry of Works at Saxtead Green post mill, Suffolk, and by the Kesteven County Council at Heckington tower mill, Lincs, although he refers to all these three mills.

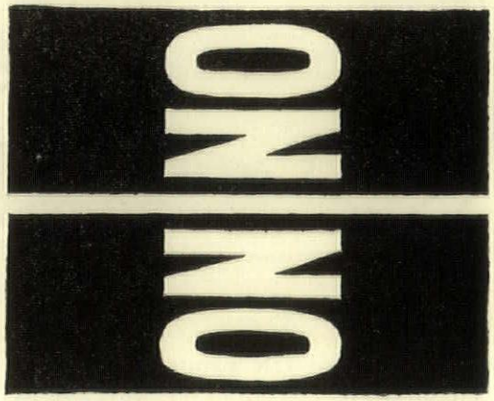
Unfortunately this is also a frustrating book, for a number of interesting details are instanced without mentioning the names of the mills in which they were to be found or the people concerned, thus giving the effect of unsupported statements. In addition, although there is a very complete indexed glossary of the millwrighting terms used in the book there is no map, no bibliography and above all, although more than 120 are mentioned, no index of windmills.

Rex Wailes

HIGHWAY CODE

ONNO

The Ministry of Transport has announced its intention to go ahead with a scheme to break the traffic stranglehold at Hyde Park Corner and Marble Arch by means of an underpass at the former and a one-way traffic system between them. This seems a first rate opportunity to scrap the use of vertical signposting, which confuses the driver and his surroundings, and try out a full scale use of the road itself as a blackboard on which all instructions to the driver are written. Ideally these should take the form of symbols, but in densely crowded areas such as this where commands rather than warnings have to be given the Ministry will probably insist that words are



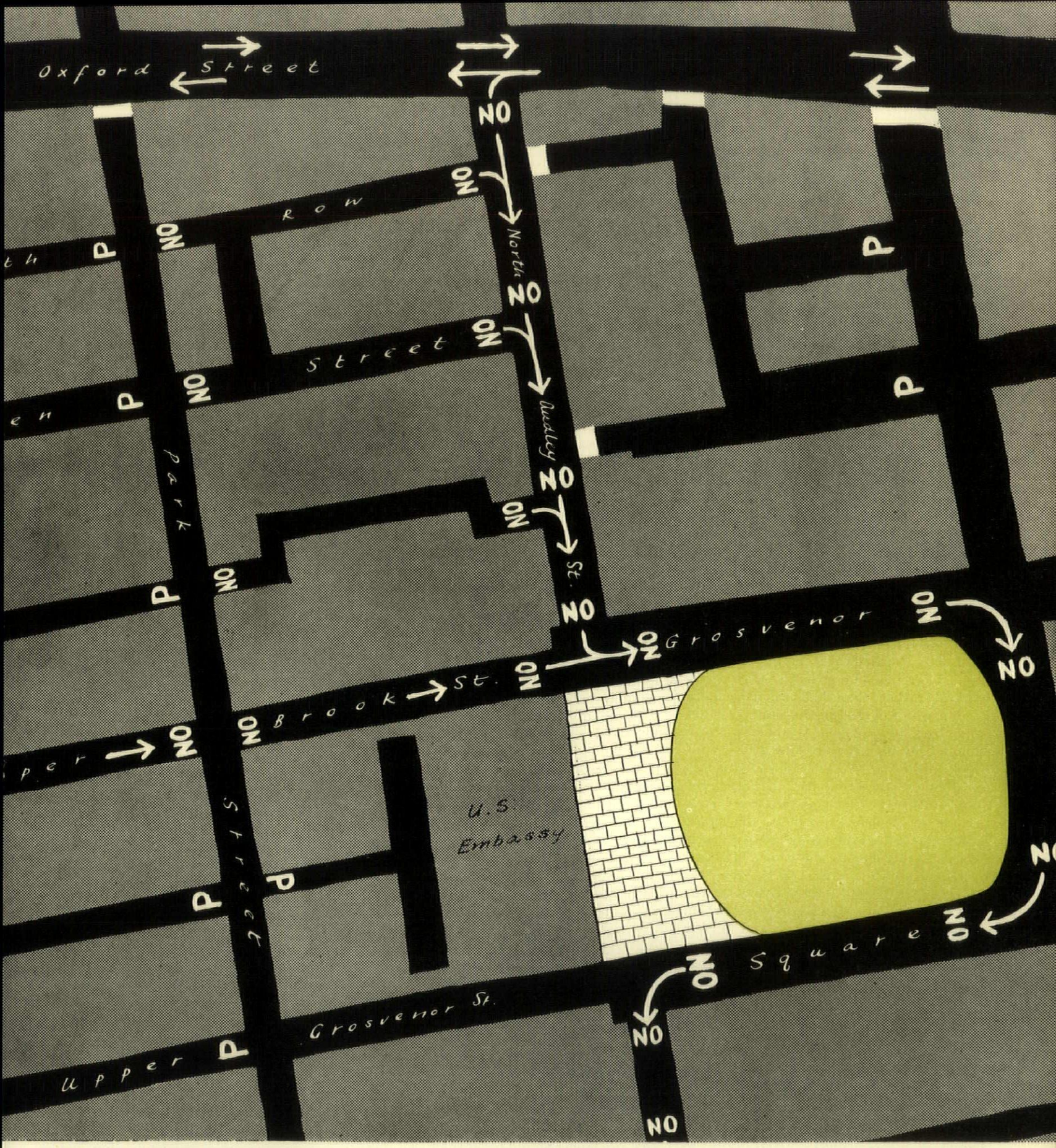
essential. This might be the time to try out the ONNO system put forward in 'Switch On' (AR March 1957 by Gordon Cullen and Michael Regan)—the system



where the word ON painted across the road surface is read from one direction as an instruction to proceed whilst from the other it reads as NO.

In the map above, and in two typical windscreen views, Kenneth Browne demonstrates how this system of priorities could be applied to the Marble Arch sector of the Ministry's scheme. Without altering it in any way he shows how a dramatically simple system of ONNO directions could at one blow articulate the traffic flow and make it possible to scrap the forest of vertical signs which will inevitably spring up, making hideous the street, in the absence of a road surface policy.

The right hand page shows how the same ONNO system could be used in the West End parking scheme advocated by Ian Nairn (AR July 1957). Nairn's main object was to limit drastically the number of



intersections on main throughfares such as Oxford Street and Park Lane in order that the traffic flow should not be impeded by frequent traffic lights and the infiltration every few yards of traffic from side roads. The blocked streets would then become car parks, the junction with the main thoroughfares being closed (shown on plan above by a thick white line which would in fact be amplified by a No Entry sign). At the other end the driver would be warned that such streets led nowhere by a large P (for parking) on the road surface at the entry to the street. He picks up the ONNO system again when he breaks back into the main traffic stream.

A further suggestion that Saarinen's new US Embassy building should be joined to the gardens in Grosvenor Square by a piazza is also shown on the plan, with ONNO controlling the one-way traffic.

HISTORY

ENGLISH ARCHITECTS AND DILETTANTI IN PADUA

For centuries Englishmen have gone to Italy studying and sight-seeing. Amongst them were many architects, but except where they kept diaries and wrote letters we have little exact information about their journeys. We know that Burlington paid an extensive visit to Vicenza in 1719 and have some idea of his itinerary; recently Mr. Bryan Little has discovered that James Gibbs had been on the register as a student at the Scots College in Rome. There must be many more untapped Italian sources, which could be of great help; however, a document published nearly thirty years ago is of some value to the architectural historian.* It is a list of Englishmen who signed their names in the books of Padua University between the years 1618 and 1765. The editor, Horatio F. Brown, has pointed out, that in the earlier part of the seventeenth century the names were those of students who had come to Padua to attend lectures or courses. However, on January 13, 1645, one Rogerus Prat signed; he was obviously Roger Pratt who is known to have travelled on the continent between 1643 and 1649, but whose itinerary was uncertain. His business at Padua and his interest on his tour generally was architectural rather than 'educational.' John Evelyn who followed in the same year did come to study as well as to look. Note should also be taken of one Giles Vanbrook, who signed as Anglo-Londinensis on January 22, 1654–55, obviously Sir John's father. Later on, as the Grand Tour became *de rigueur*, travellers, dilettanti, architects and artists came to pay their respect to this famous university, favoured by Englishmen because of its religious tolerance, and signed their names in the book reserved for 'British Nation' which includes Englishmen, Scots and a few Irish. Amongst the visitors were also a fair number of ladies, another proof that visitors signed, e.g. 31.8.1712 Miss Catherine Tafts, the famous singer, later the wife of Consul Smith, who is familiar as a collector and dealer, and appears in the book as early as 1709, long before he became British Consul in Venice.

Perhaps the most exciting name on the list is that of one Colinus Campbell identifying himself as Scottish, who visited Padua in 1697. Unfortunately, however, he is not the mysterious architect who, as it happens, travelled in Italy at this very moment. We are on safer ground with Thomas Hewitt, from Nottinghamshire, who signed on Feb. 12 1688 and is certainly identical with the later surveyor. On Dec. 13 1691 follows Thomas Archer Anglus from Warwickshire. Although it was known that Archer went abroad 1691 (cf. P. Murray's letter in AR July, 1957), no details were so far known. It is hardly surprising to find John Talman's name, as he spent so many years in Italy. Yet again a few interesting details emerge: he signs his name as Giovanni Talman once on Feb. 12 1713 and again a second time with the remark 'per la quinta volta.' That proves, of course, that he did not sign at each visit and so one must assume that other visitors also did not always sign. That would explain, for instance, the absence of James Gibbs's name.

Unfortunately the second entry of Talman is not dated, but it seems to occur between two dates in 1716, Aug. 31st and Sept. 25th; this is interesting because Talman until now was thought to have returned to England in 1715. Between these two visits of Talman, William Kent signed on Sept. 1st 1714 and Burlington on Feb. 29 1715. Thomas Coke, of Holkham, the future Earl of Leicester, with whom Kent had travelled in North Italy signed a month after Kent which might mean that both stayed there for that period.

Neither Kent's nor Burlington's name appears a second time. Another intriguing name is one J. James on Dec. 4 1717. Is he John James, the architect? On May 30 1730 Thomas Robinson signed together with Lady Lechmere and Mrs. Robinson. It would be tempting to think that this was Sir Thomas Robinson, the son-in-law of Lord Carlisle, a dabbler in architecture and a strict follower of the Burlington school.

The Carlisles themselves visited Padua in successive generations, the third earl in 1690 and the fourth earl in 1714 as Lord Morpeth. But many other dilettanti and patrons of architecture went and signed—the Duke of Manchester on 23 Feb. 1697-8, and Sir John Percival, the friend of Gibbs, Oct. 9 1706: Horatio Mann, Horace Walpole's friend, signed on June 22nd 1733.

Joseph Addison's visit in 1700 must finally be mentioned. The list finishes in 1765 but after 1746 the flow practically stops; there is one visitor in 1751, then only one or two a year—or none at all. Did visitors not sign the books of the University any longer, or did fewer come that way? Venice certainly was still an attraction, but Padua probably no longer. The Palladian movement had come to an end and the new excavations and discoveries round Naples might well have deflected the majority of the tourists to the South.

S. Lang

* Horatio F. Brown, 'Inglesi e Scozzesi all' Università di Padova dall' anno 1618 sino al 1765' in *Monografie Storiche sullo Studio di Padova*. Venice, 1922.

ARCHITECTURE

PUTTING NEW WITH OLD

No general slogan or abstract charter applies to the problem of adding new parts to old buildings; even the most convinced modernist must be prepared to temporize with what he might otherwise reject, especially in England where the chance will rarely be offered to execute the Gordian solution of wrapping patent glazing round a Biedermeyer pediment, or clapping two storeys of *Architettura Organica* on top of four of *Heredita' dell'Ottocento*.

The new wing to St. John's College, Oxford, 1, is a fair sample of the kind of problem that arises in England—a small adjustment to an existing schedule of accommodation, partial replacement of an existing building. The new work, for which the architects were Booth and Ledeboer, includes muniment and common rooms, fellows lodgings, etc., but lies, both planwise and in elevation, entirely within the limits of the old. In section, however, it fills out these limits more fully, and creates a vertical back-drop to the courtyard, instead of the weak backward slope of the old, 2, which terminated in an undesigned vertical feature competing with the chapel. Formally, the composition has been tightened up, the sense of enclosure made more positive, and the gable end of the chapel given fresh prominence.

Christopher Gotch's conversion of Magpie House at Honington, Warwicks, has a related case-history. The new work, 3, makes a tidied-up and unified block where originally there was only an unconsidered accumulation of lean-to's and sundries, 4. But if this had been expressed on the garden front as a single block with a unified façade, it might well have unbalanced the long façade irretrievably, for the gable at the other end is not powerful enough to stand much competition. But by expressing the fact that it contains two parallel but different runs of rooms, 5, and making its garden aspect into two separate gables, different in materials, fenestration, projection and pitch of roofs, the new work is kept within the general scale and idiom of the old, without pretending to be anything but new. It is this, the true picturesque appreciation of the situation, rather than merely using gables because there were gables there already (keeping in keeping) that gives a live homogeneity of disparate parts in amicable agreement, rather than the dead homogeneity of repeated carbon copies.

Miles Coslany



2

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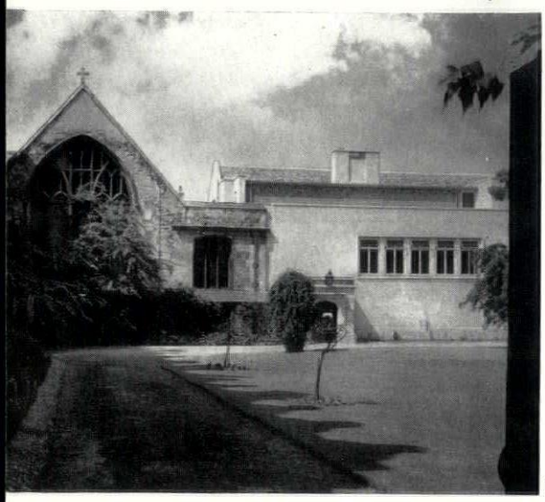

1

putting new with old. *Above, St. John's College, Oxford: addition by Booth and Ledeboer. Below, Magpie House, Honington, Warwickshire: conversion by Christopher Gotch.*



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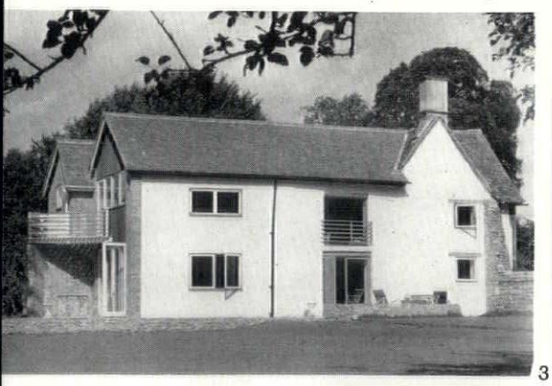


3



5

EXHIBITIONS

PAINTING

The series of retrospectives sponsored by the Edinburgh Festival comes under the heading of polite entertainment. The names—Renoir, Degas, Cézanne, Gauguin, Braque and now Monet—are beyond reproach, the works usually include some of the nobler stand-bys of the picture postcard trade, the catalogues always deserve to be called scholarly, and although the box-office appeal of Braque was, I understand, disappointing, there is no doubt that every exhibition has given a great many people a great deal of pleasure. But there is something rather horrible about the way these exhibitions can draw the sting of a man's work and reduce his daring and desperation to a defence of the moderation and delicate sensibility of the aesthete who makes the selection.

The task of reducing the impact of Monet's daring and presenting an explanation of his desperation that uses facts against the truth, has been entrusted to Professor Douglas Cooper and Mr. John Richardson. They have not hesitated to belittle Monet's great contribution to twentieth-century painting, but it must be admitted that they have executed their task with skill and a fine show of research.

Better still, they have brought together a number of incredibly beautiful works painted by Monet in the nineteenth century, of which two examples are reproduced here: *La Grenouillère*, 1, painted in 1869 when he was twenty-nine years old, and *The Train in The Snow*, 2, painted in



1



2

1875. Such pictures lead a double life, for the *motif* is so blandly ensconced in the paint that if one keeps one's distance it is possible to admire the view and the illusion of light and air without taking notice of the facture, and if one goes nearer, the illusionism dissolves into a vibrating surface of inventive brushstrokes. Monet was always seizing the opportunity presented by amorphous aspects of nature—water, cloud, smoke—to turn them into playgrounds for the creative accident, and it now seems natural enough that his delight in paint for its own sake should have led him as time went on to dwell on *motifs* that would give him greater rein for improvisation and a free play of linear paint marks.

By the time that the cubist reaction against impressionism was at its height, Monet, who died in 1926 at the age of 86, was pushing the inconstancy of the impressionist image towards a new concept of painting as environment, and in the same huge panels intended as the total decoration of a salon, used the theme of the *Nymphéas* to produce, as he himself said, 'the illusion of an endless whole, a wave without horizon and without shore.' The outcome of this conception of painting is to be seen in the panels installed at the Orangerie and in the panels of equal importance recently acquired by Walter P. Chrysler, Jr., and the Museum of Modern Art in New York, and it is their quite startling anticipation of the series of enormous 'dripped paint' pictures executed by Jackson Pollock twenty years or so later that has led to a reassessment of Monet's achievements.

Professor Cooper, however, will have none of this. He will not concede that there is a significant relationship between the last work of Monet and the American action painters, does not find any tendency towards 'abstract impressionism' in the late *Water-Lilies* series, and refuses, in any case, to take them seriously. 'For we must not overlook the essential fact,' he writes, 'that Monet painted the late *Nymphéas*, of which we now hear so much, at a time when his sight was not merely clouded by cataract but rapidly failing . . . by these he would not have wished his intentions to be judged. The few unfinished works which figure in the present exhibition have, therefore, been included to point a contrast.'

No one, of course, would deny Professor Cooper's right to express what must be presumed to be a genuine dislike of the late work, and probably there would have been little harm done if one of the very large panels mentioned above had been included in the exhibition. As it is, Professor Cooper does not even refer to the gravity of the omission, and one can only assume that he has deliberately withheld the pictorial evidence that would be most likely to cast doubt on his judgment.

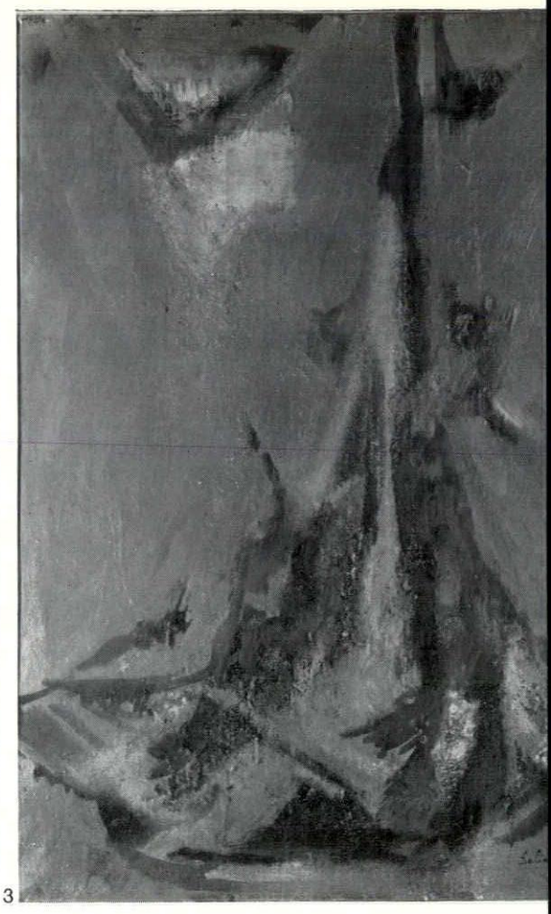
Curiously enough, a small picture has crept into the show which goes a long way towards demolishing his argument. I cannot reproduce it here because the Royal Scottish Academy did not provide photographs of any of the twentieth-century work, but it is called *Leicester Square by Night*, it was painted in 1904, before there was any talk of failing sight, and the subject has disappeared under a downpour of fiery, expressionistic brushstrokes. It is already clear in the *Cathedral* series, painted in the nineties, that the *motif* is becoming a pretext for the creation of focusless oblongs of richly worked paint, and in *Leicester Square by Night* the process has been completed. Professor Cooper deals with this intrusive little picture by claiming that because it is unsigned it is unfinished, although he does not claim that unsigned pictures painted in earlier periods are unfinished. As it happens, *The Pink Boat*, an unsigned picture painted in the eighties, could have provided him with strong grounds for such a claim, because Monet would appear to have been so preoccupied by the great swirling arabesques of paint provoked by the sight of underwater weeds that he omitted the water altogether.

Professor Cooper's failure to find an explanation of Monet's development that does not point towards abstract impression has led him to the view, if it can be called a view, that Monet's true greatness 'still remains to be discovered.'

Meanwhile, the Festival authorities could make amends for their unsatisfactory presentation of Monet by putting on a comprehensive exhibition of Kandinsky's great period of free abstraction, since it was Monet's *Haystacks* which gave him his first inkling of the 'all surpassing power of the palette.'

The Scottish Arts Council's main contribution to the Festival was an exhibition of Contemporary Turkish Painting. The attempt on the part of some of the exhibitors to do something specifically Turkish was not very happy, and consisted in the main of figures in traditional costume painted in a style remarkably similar to John Craxton's modified version of physical cubism. The paintings of Fahr-el-Nissa Zeid, Nejad Melih and Selim Turan, whose *Composition* is reproduced here, 3, frankly derive from more up-to-date aspects of the School of Paris, and may lay better foundations for a modern Turkish School than the work of self-conscious nationalists.

Before the Festival opened, the Scottish Arts Council put on an exhibition of George Chinnery (1774–1852), which has since come to St. James's Square. The



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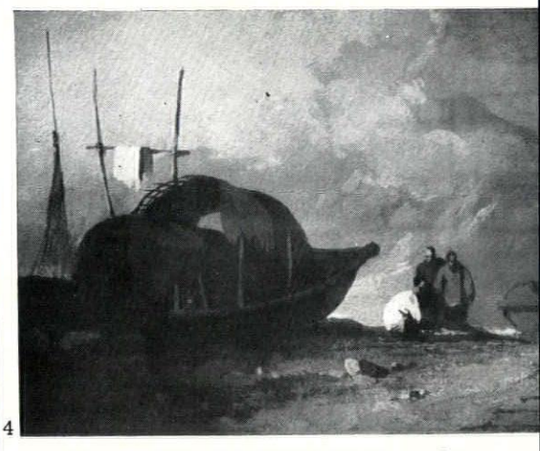
selection was made by Allan Carr, and his interesting preface to the catalogue gives the impression that Chinnery, who made a fortune as a portrait painter in India and suddenly departed to China, leaving £40,000 of debts, would be a better subject for a biography than an exhibition. His portraits are uniformly bad, and his trick of giving all his sitters bright, rose-bud lips is farcical, but some of his smaller



4

studies of Chinese themes, such as 4, have a grave and stilted charm.

The only serious contemporary exhibition held in Edinburgh during the Festival was a retrospective of the paintings of Aleksander Zyw, who went to Scotland during the war, has made his home in Edinburgh and is probably the best abstract impressionist working in Britain at the present time. The term 'abstract impressionism' fits his work precisely, for



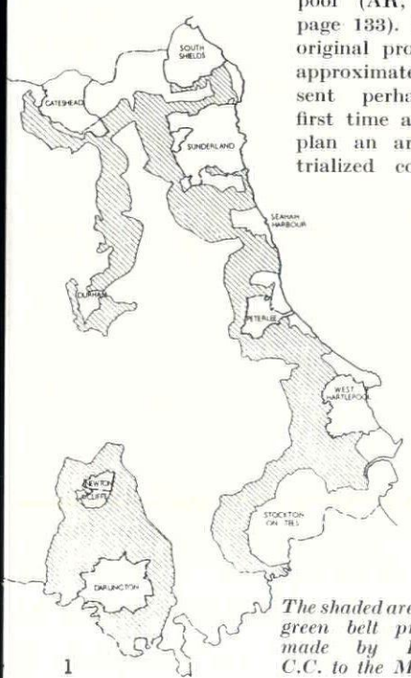
5

he is concerned with the changeableness of light and a sense of expanding space, and as exemplified in the picture reproduced here, 5, his brushstrokes persistently make spontaneous references to landscape.

Robert Melville

COUNTER-ATTACK

31 Provincial Green Belts (*Durham County Council and the Ministry of Housing*). The scheme launched by Mr. Sandys two years ago for a system of provincial green belts may well end with more of a whimper than a bang, if the experience of Co. Durham is any indication. The county has both conurbations and isolated industrial towns, and applied the green belt idea to both in the spirit of the original announcement and against a lot of local thick-headedness: something which is especially necessary in Durham because the whole of the eastern half of the county is in danger of running together as a result of attitudes such as that expressed by West Hartlepool (AR, Feb., 1957, page 133). The County's original proposals shown approximately, 1, represent perhaps for the first time an attempt to plan an area of industrialized countryside as a whole and not fight a set of piecemeal rearguard actions against voracious urban councils. The Ministry has whittled the proposals down to a strip beside Tyneside, to be extended west of Sunderland 'when other land use problems in the area are settled'—by the time they are settled there may be no green belt left—a strip between old sprawl at Easington and new sprawl at Peterlee and some sort of belt around Durham City as National Heritage, etc. In other areas the Ministry appear to feel that 'the pressure for development is not sufficient, nor is there enough danger of settlements linking up to justify the establishment of formal green belts.' The Ministry should go and have a look.



1 *The shaded areas show green belt proposals made by Durham C.C. to the Ministry.*

32 Northfleet, Kent (*Bowater Paper Corp.*). The paper mills by Farmer and Dark (see page 300) are noteworthy in land use as well as architecture, in that they re-use one of the biggest of the chalk pits at Northfleet and are almost invisible from the village above. Between here and Dartford there are over a dozen pits, nearly all dry, and all close to the Thames Estuary in a semi-industrial strip. There is an opportunity here to plan a two-level town, housing or countryside above and an industrial area below which nobody sees until they look over the quarry edge. In particular the type of light industry which would cost a fortune to landscape and which is already depressingly visible around the Crays and Sideup might well be canalized here.

33 Etwall, Derbyshire (*County Education Committee*). Etwall House was a Georgian house demolished in 1954; the landscaped grounds remain and were re-used when a secondary school was built on the site. The result, 2, is delightful, a real exchange of the c 20 for the c 18, boldly put in the middle of the village and left open for anyone to admire. There are now dozens of landscaped parks lying around the countryside minus their original houses: it would not take much ingenuity to channel into them all sorts of buildings at present put up on the nearest bit of spare ground—government offices, research establishments, as well as schools. The school was designed by J. S. Spurr and the County Architect's department; the landscape consultant was J. W. Dudding.

34 Street lights, Roehampton (*Borough of Wandsworth*). In its effects, the swan-neck was one of the worst of the 25-foot lamp-standards. It was taken over unwillingly from the old RFAC list and has in fact only just been discontinued by the COID. They still go marching on and nowhere more offensively than in Roehampton Lane. One side carries the old steel standards with new fittings, and remains a street, 3; the other uses the swan necks and has become an abstract pattern looking for a canvas, 4, without relevance to Roehampton or anywhere else. One would have



3

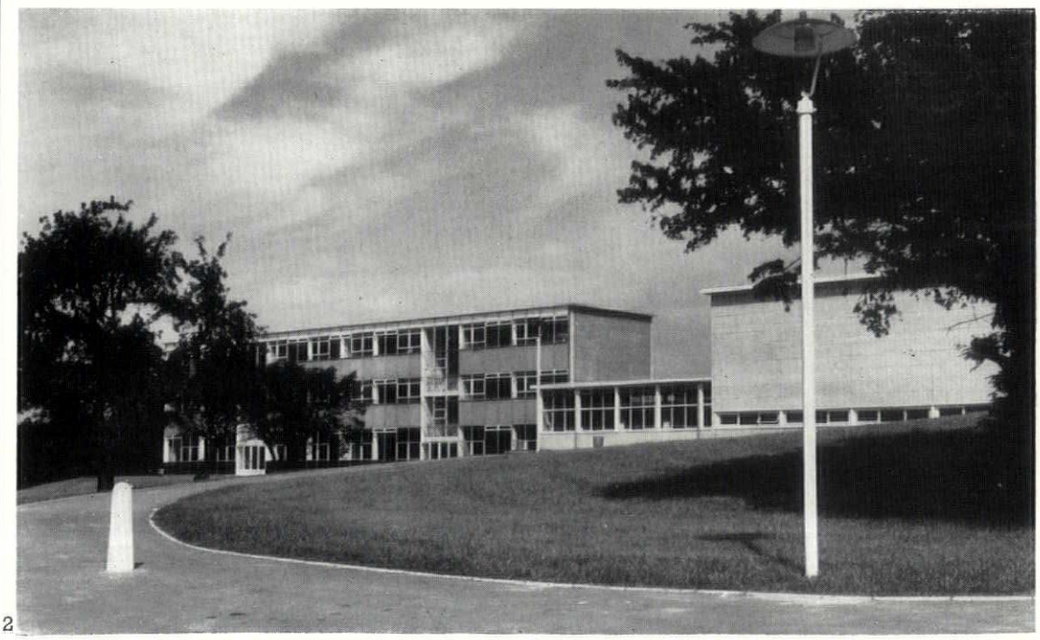


4

thought that here if anywhere some droplet of the need for unobtrusive street furniture might have percolated through; apparently not.

In fact the Borough Engineer deliberately specified this design because he preferred it. This of course is quite legitimate—far more so than apathy—but whereas the design of the standards themselves could be considered a matter of 'taste,' their effect in the street is very nearly a matter of mathematics.

35 Swansea Castle, Glam. (*Swansea City Council and Ministry of Works*). Swansea Castle is a queer thirteenth century building with the same sort of half-Italian touches as the Bishop's Palace at St. Davids. At the moment it is cheek by jowl with other buildings, chiefly those of a local paper. The Corporation wanted to demolish it for office space and applied for it to be removed from the list of ancient monuments, after prairie-planning a desert of avenues and gardens and architects' hack work for the rest of the City centre (the only place with any life is inside the blitzed shell of the market). Understandably, this didn't get very far; but the Ministry of Works would like to remove all the later additions and Set It Apart as a Monument, in the usual style. So the Swansea City want to kill it by demolition and the MOW want to kill it by putting it under a glass case. In fact, apart from some simple structural repairs, it should go



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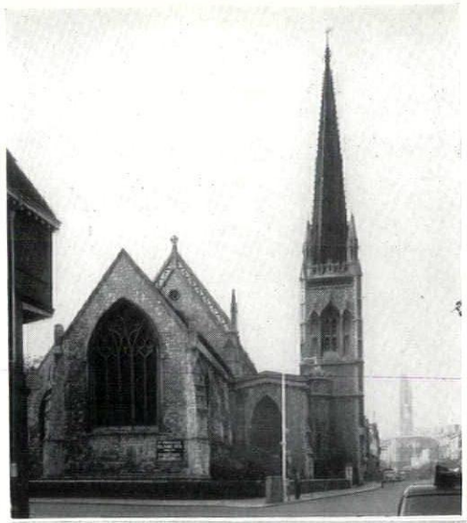
on as it is now, a fragment which is part of the life of the town as well as an entry in the history book. Swansea, as rebuilt, is certainly badly in need of it.

36 Markyate By-Pass, Hertfordshire (*County Council and Ministry of Transport*). This by-pass is one of the first completely new road projects to be finished since the war and is assessed here as a typical example of current British road-making technique. Similar reports on new projects in the landscape (e.g. reservoirs and airfields) will appear from time to time. At Markyate the score is as follows:—

Good: the general lines, 5, and the fact that a by-pass fitting closely round the village was considered at all; the underpass from village to church and especially the fine footbridge, 6, designed in the C.C. office by H. G. Baskett, engineer, and H. P. Chetwynd Stapylton, architect.

Bad: the asphalt path (people can easily walk through the village itself), the clumsy revetment of one of the banks, 7—it would have been much better without any attempt at 'detailing'—and the heavy trim—especially the wire (no new hedges seem to be grown) which negates the value of the subtle siting. The bus stops, provided without lay-bys, seem to be an utter anomaly and dangerous—again, buses can now legitimately go through the village.

This raises the problem of Markyate village itself. Before the by-pass came it was almost uninhabitable—a day and night stream of lorries travelling both ways in a very narrow street. As a result, understandably, there are now a dozen vacant sites and many more empty houses. What will happen to them? The village street is now quiet and peaceful, and there is no reason for not rebuilding to the street line, because it is an attractive place, 8, minus the lorries. In this way it could house a lot of people and benefit from it; if houses are detached and set back (as in a bad private estate at the south end of the village) the centre will fall apart. This choice is entirely in the hands of the planning authority: we know that the County Planning Officer disagrees with many of the REVIEW's ideas on open and close development: this is in a way a test case of terracing and maintaining street lines and the Bureau would welcome his comments on the problem.



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37 Colchester, Essex. (*City Council and Colchester and East Essex Co-operative and Industrial Society*). St. Nicholas Church, 9, which was a notable feature of Colchester townscape, was sold and pulled down two years ago—one condition being the sickeningly genteel one that the site wasn't to be used for the sale of fish and chips. Below is what has replaced it, 10, photographed last Easter and put up by the Co-operative Society (C.W.S. chief architect W. J. Reed)—set back to the existing street line, of course, so that the High Street now lacks a closing feature at its east end. The final touch is that the gravestones in the churchyard are to be re-used as crazy paving. This would be a serious contender for the year's worst-looking building; a pitiful misuse of a fine site. In the 'thirties under L. G. Ekins, Co-op. architecture was progressive and proud of it.

38 S O S: Devonport, Devon (*Plymouth City Council*). Another urgent cry from Plymouth: this time it is Ker Street, Devonport, 11, where the houses on the right-hand side of the street are to come down as being unfit. In fact they are still quite capable of being reconditioned—the trouble would never have arisen if they had been properly



11

maintained by the corporation—and preserved as a reminder of an older and better Plymouth than Armada Way.

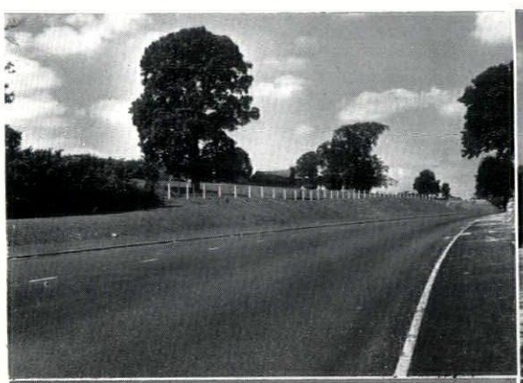
progress report on earlier cases

3 Edmondbyers Reservoir (*AR April* 1957). Case won. The Ministry has ordered that a landscape architect be appointed and that all landscaping and design of buildings shall be agreed with the County Council. This is a decision which may have far-reaching effects in other similar cases in the future; the credit should go to the Durham County Planning Office which prepared an admirable illustrated report showing exactly what the effect of the reservoir would be and how inept and municipalized handling had spoilt the effect of the older reservoirs nearby.

10 Westgate Fields, Chichester (*AR June* 1957). The Inquiry was held on October 8 and 9 and the Bureau gave evidence in opposition to the scheme. A note in the *Observer* asking for readers to send their evidence to the Bureau (who are able to present it by proxy) produced over eighty replies.

17 St. John's Wood (*Street lights, AR June* 1957). Case partly successful. St. Marylebone have put up improved alternative lighting systems—fluorescent and colour corrected mercury, the latter on information supplied by the Bureau, and the residents are to vote on them. This sort of step is a beginning towards making Britain a democracy once again and the Council are to be congratulated on taking it. Alas, they sent round a circular at the same time—which must have cost something, by the by—denigrating their opponents as 'Regency bucks' and saying that it was impossible to harmonize old buildings and new street furniture. This is utter unalloyed nonsense (cf. Coventry, Canterbury, or any German city) and that anyone could put it forward as a serious argument is almost beyond belief.

18 Feckenham, Worcs. (*CEA Sub-station; AR July* 1957). Public Inquiry Novembe 5; the Bureau will be giving evidence.



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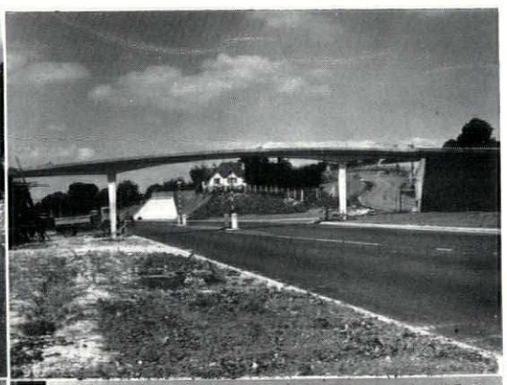

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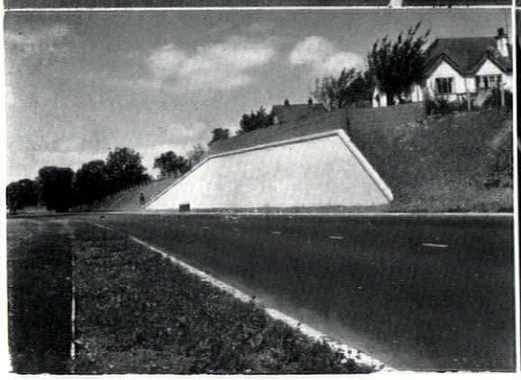

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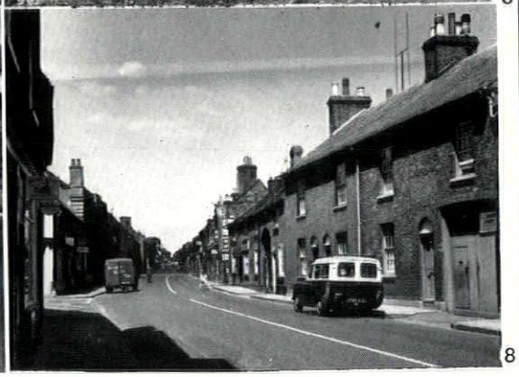


8

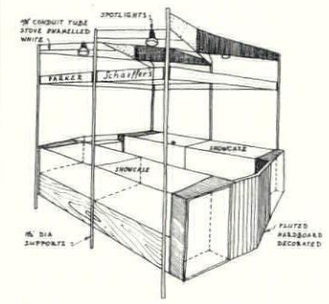
SKILL

A MONTHLY REVIEW

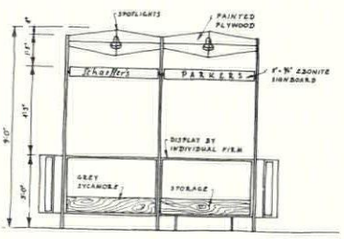
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design review
3 techniques
4 the industry

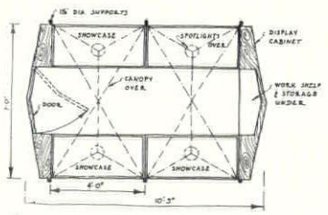
1, *pen and pencil kiosk on the ground floor of Harvey's. This and other shopfittings on the sales floors were designed by James Dartford.*



perspective



section



plan



STORE AT GUILDFORD

Architects: G. A. Jellicoe and Partners
Partner-in-Charge: F. S. Coleridge

The interior for public use at William Harvey's store consists of four shopping floors, a restaurant floor, and two levels of roof garden illustrated in last month's AR. The intention has been to open up the surrounding views by ascending stages. The south window in the front shopping floor is a preparation for the total contrast with the restaurant floor; here there is a framed view of the towers and roofs of Guildford, a composed view looking south along the Wey Valley towards Godalming, and a heterogeneous view west and north comprising Cathedral and countryside.

The structure of reinforced concrete takes the form of a 9-in. flat reinforced concrete slab without beams on a column

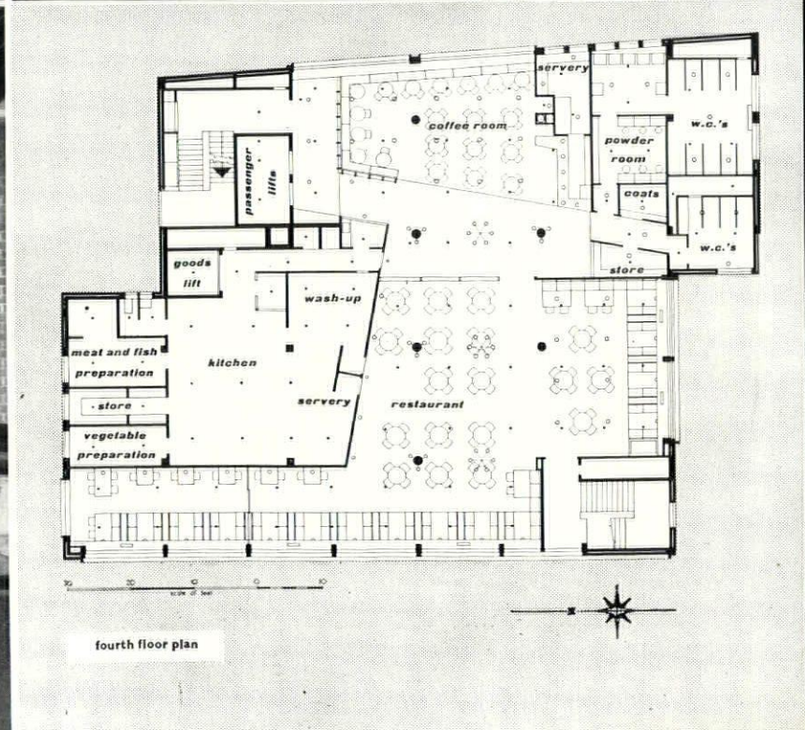












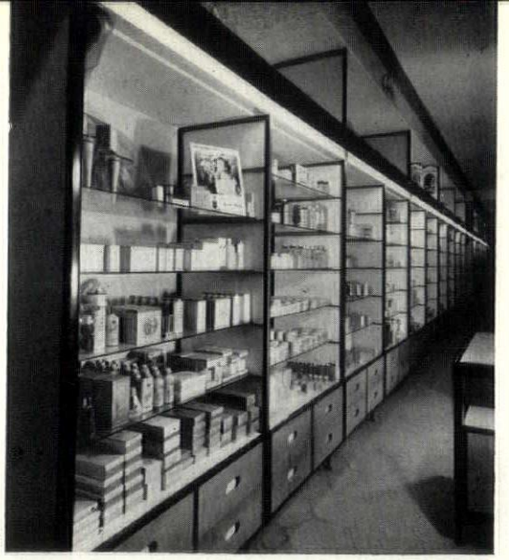
fourth floor plan

2 3 4 5 6 *Facing page, various views of the restaurant and coffee room on the fourth floor: 2, the coffee room from the lifts. 3, the restaurant looking towards the north windows. 4, the west windows of the restaurant. 5, the entrance foyer of the coffee room, and 6, photomural at the south end of the restaurant; here the ceiling is painted blue, elsewhere it is pale grey. On this page, 7, wall-fitting of perfume counter.*

grid of 20 ft. by 16 ft. 6 in.; columns are 14 in. square or 16 in. in diameter. The decision to have a flat slab was due to restrictions on the overall height of the building, and the absence of beams enabled the false ceiling containing all services to be suspended only 9 in. below the slab. Services accommodated in the false ceiling are the sprinkler installation and the pneumatic tube system, which was extended from the existing building and a new operating room installed.

The walls are generally plaster; the restaurant having natural western red cedar in 8 in. wide lapped vertical boards. The ceilings are 2-ft. square V-jointed fibreboard tiles, with the perimeters in plaster and expanded metal. Floor finishes are: in the basement, granolithic; on the ground floor, terrazzo tiles; on the first floor, carpet; on the second and third floors, linoleum; on the fourth floor, wood block and carpet, on the main stair, terrazzo, and on the escape stair granolithic. Doors, timber panelling and fascias to lift entrances are in sapele mahogany and door furniture is satin nickel alloy.

In the restaurant and coffee bar, no strong colours were introduced above sill height, to give the views their maximum effect. The colours of all crockery were specially selected; yellow and flame have been used entirely for the seating upholstery, and the carpet is green and black.



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The structure is by Ove Arup & Partners; the shopfittings on the sales floors are by James Dartford.

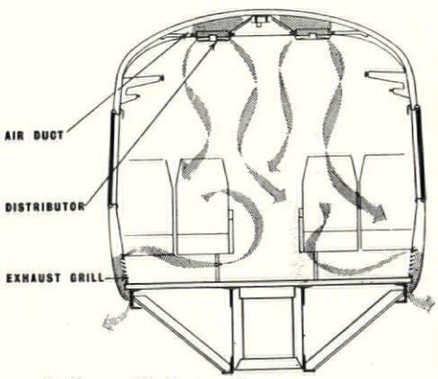
2 DESIGN REVIEW

PROTOTYPE RAILWAY CARRIAGE

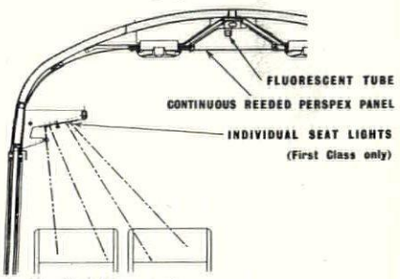
This prototype carriage is one of the results of British Railways' request to various coach manufacturers to suggest improvements to the comfort of travellers. Farmer and Dark were commissioned by Cravens, a firm of coach manufacturers, to design prototypes for both classes of travel, and except for wheel-gauge and overall dimensions, they were given freedom to design as they chose.

The designers wanted their railway coach to look like a form of travel and to have no suggestion of a drawing room on wheels. The passenger aeroplane was an obvious example of this lack of pretence, and the central open corridor, to accentuate the direction of travel, was therefore used.

The windows are double-glazed and have venetian blinds between the glasses, which allow the view to be enjoyed without glare; furthermore, with the provision of pressure ventilation, it was possible to avoid the nuisance of opening windows. Comfort being the first essential of travel, the seats and foot-rests were made adjustable to three positions; and the colour-scheme of the seats, cool and deep, was intended specifically as a background to good clothes, whether formal or the most informal. The wall and acoustic ceiling surfaces are various washable plastics. Other prototype carriages have been designed by Sir Hugh Casson, the British Railways architect and Trevor Dannatt.



3, *the ventilating system.*



4, *the lighting system.*

The two prototype carriages designed by Farmer and Dark for Cravens: 1, *the 2nd-class with seating capacity for* 52. *The first-class car,* 2, *seats* 33. *In both, seats are reclinable and the windows are double-glazed.*





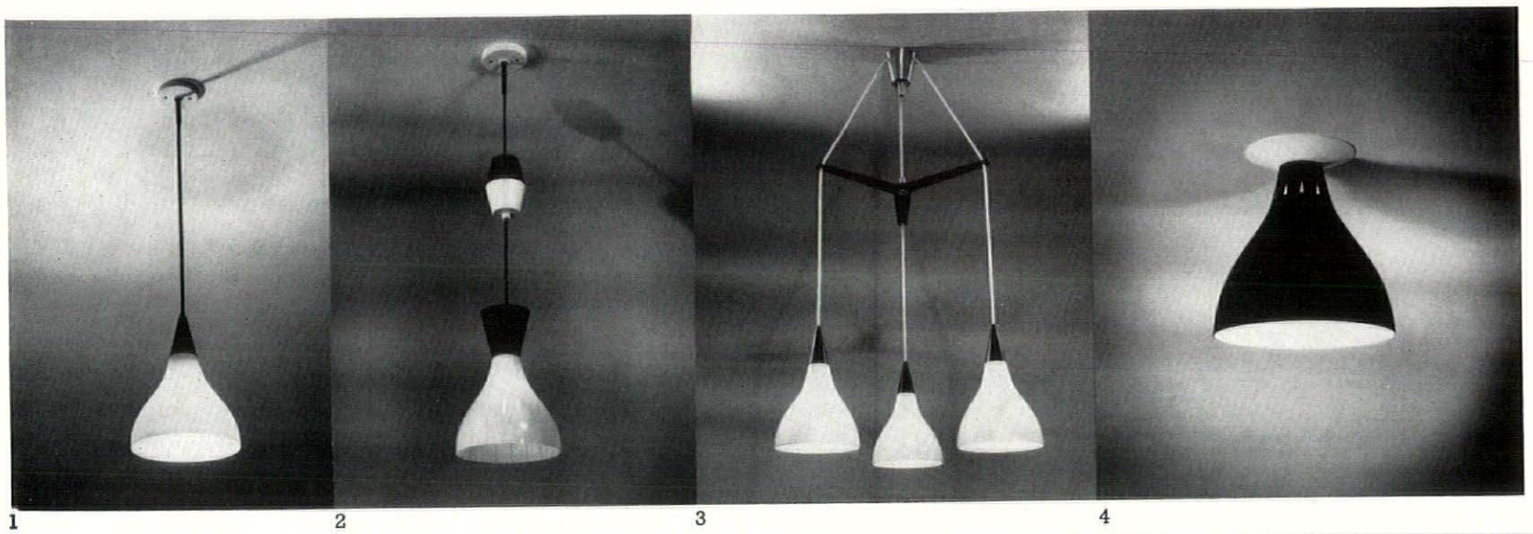
LIGHTING FITTINGS

Three simple shapes form the basis for a range of exceptional versatility.

Troughton & Young Ltd., in its new 'Harlequin' range of lighting fittings, has taken a theme of the utmost simplicity and woven it into a remarkable pattern of interchangeability. The range is based on three austere shapes; cone, cylinder and bell—the bell being available in one size only, the cylinder in two sizes and the cone in three. These, in turn, are made up in a variety of materials—aluminium finished in satin black or white, or in five good colours; white flashed opal glass or white ceramic fired glass with a simple two line decoration. Add to these a number of metal capping pieces—drum, cone, frustrum or shallow saucer—a dozen or so flush or pendant ceiling suspension systems with ebonized wood spiders for the multiple pendants, as well as

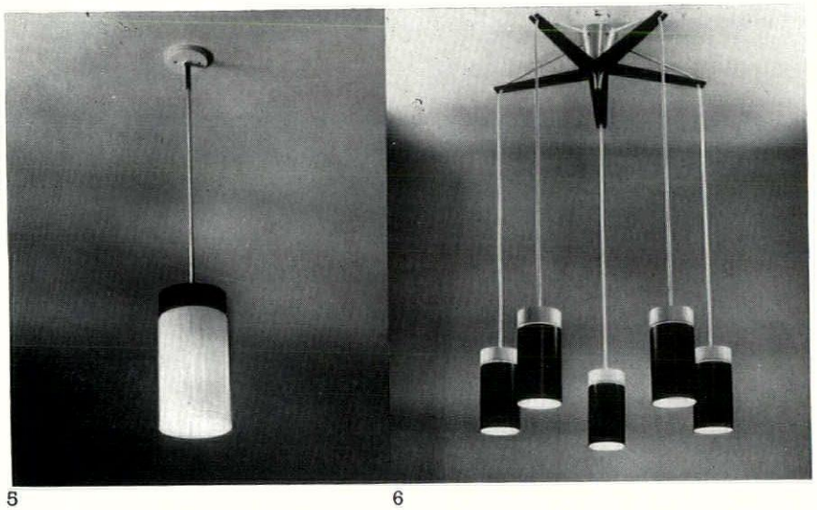
[continued on page 353

bell



1 2 3 4

cylinder



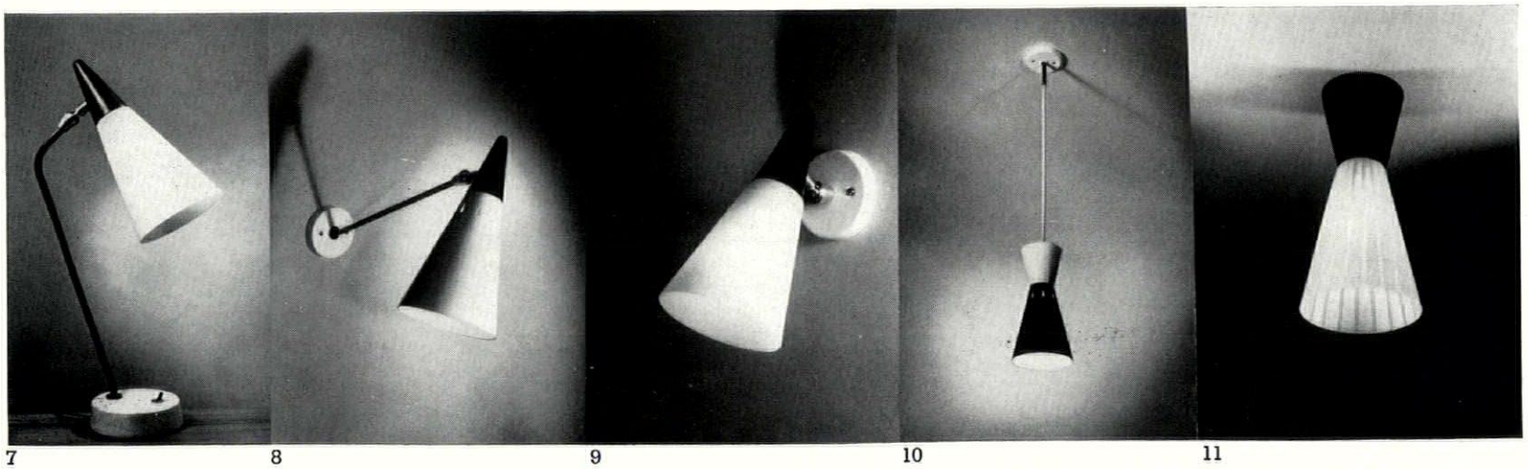
5 6

above *four fittings using the bell-shaped shade: 1 and 3 are in opal glass with contrasting conical metal caps. 2 has a ceramic fired glass shade with simple line decoration and in 4 the same shade is in black finished metal. Prices:* 1, £2 9*s.* 10*d.* 2, £4 11*s.* 10*d.* 3, £9 19*s.* 10*d.* 4, £1 5*s.* 5*d.*

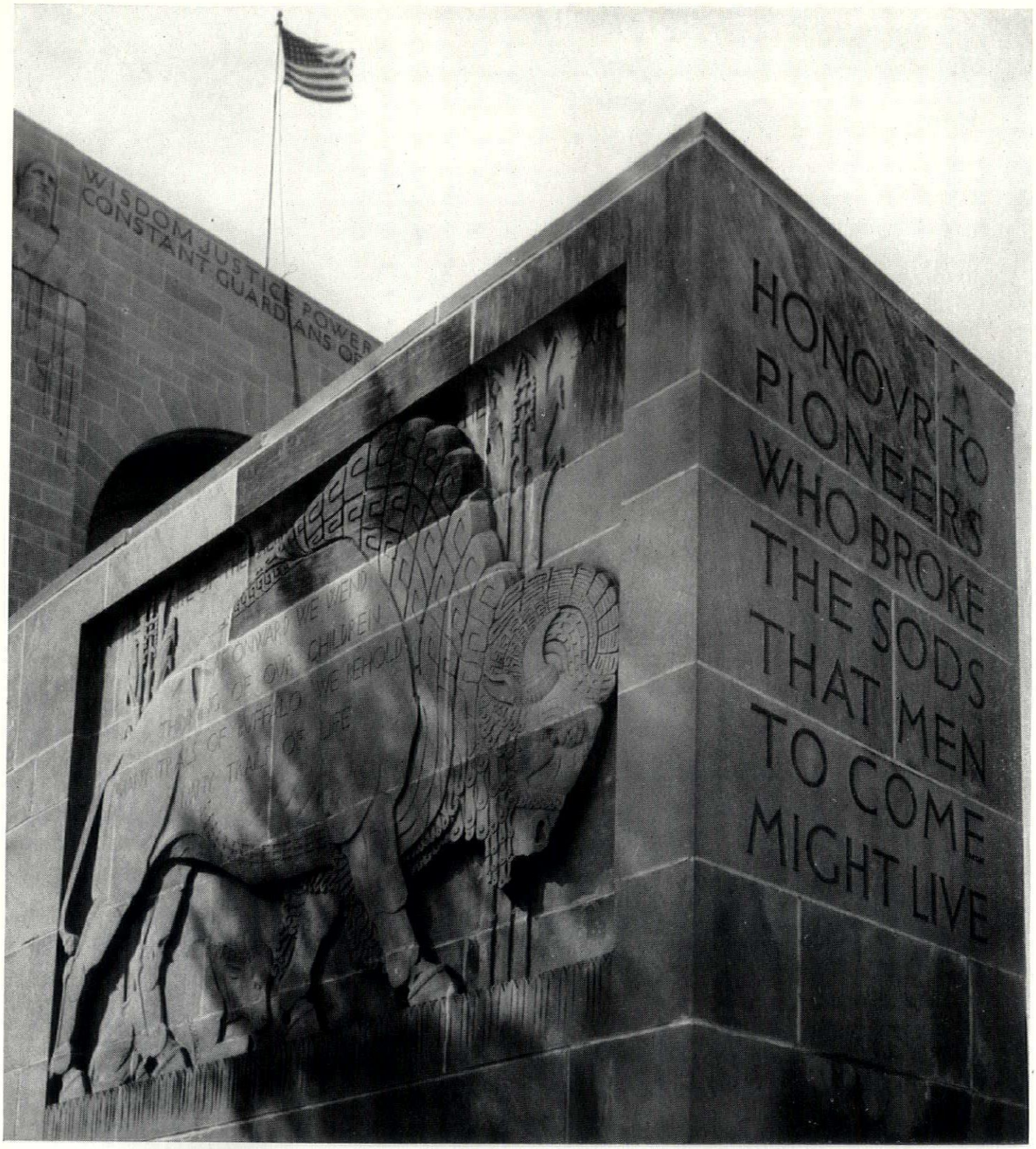
left *two fittings using the cylindrical shades. 5 is ceramic fired and decorated glass. 6 has black finished metal shades separated from the cylindrical capping pieces by perspex discs which give a feeling of lightness to the design. Prices:* 5, £3 12*s.* 0*d.* 6, £15 3*s.* 0*d.*

below *five variations of the cone-shaped shades. 7 and 9 are in plain opal glass. 11 is ceramic fired and decorated glass. 8 and 10 are in metal and show the variations which are possible in the combinations of shades with different capping pieces. Prices:* 7, £6 1*s.* 10*d.* 8, £3 14*s.* 0*d.* 9, £2 9*s.* 0*d.* 10, £2 3*s.* 2*d.* 11, £2 3*s.* 10*d.*

cone



7 8 9 10 11



Bison Relief, State Building, Nebraska, U.S.A.
Architect : Bertram Grosvenor Goodhue
Sculptor : Lee Lawrie

REMEMBER POPPY DAY

BISON *symbol of speed and strength*

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LICHFIELD: Dovehouse Fields, Lichfield, Staffs. *Lichfield 2404*
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LEEDS: Stourton, Leeds, 10. *Leeds 75421*
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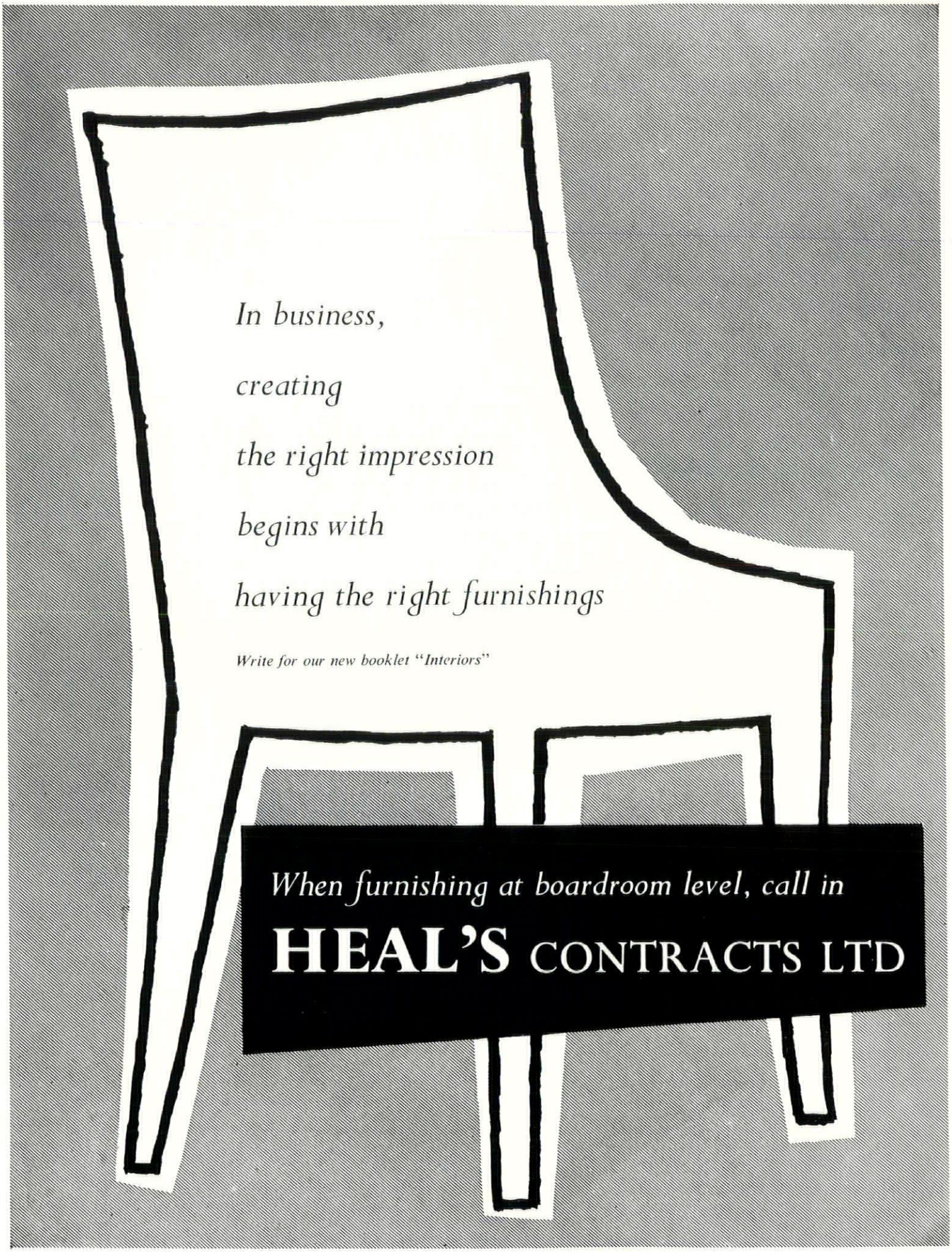
CON. 89

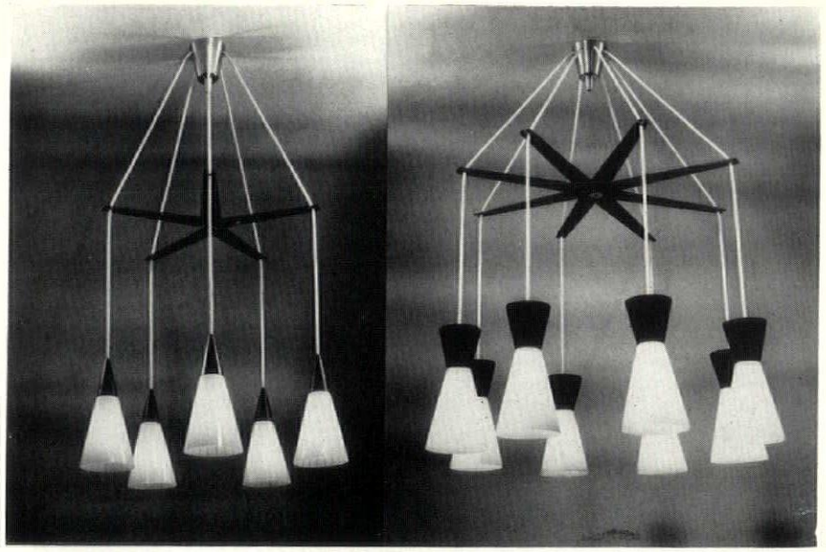


196 TOTTENHAM COURT ROAD, LONDON, W.1. TELEPHONE MUSEUM 1666

continued from page 352]

wall-mounted and table supports, and the possible combinations will clearly run into hundreds; if colours are taken into account, into thousands.

The success of the range, which was first shown at this year's Electrical Engineering Exhibition at Earls Court, rests precisely in the dramatic juxtapositions of shape and colour that are afforded by this versatile system, although some combinations, understandably, are less satisfying than others. Equally important is the attention given to detail design, a notable example being the treatment of the cylindrical metal shades. Here the shade is separated from its attendant capping piece by a thin 'Perspex' disc which lightens what might otherwise have been a ponderous shape. The fact that the glass is of British manufacture is sufficiently rare in fittings of this quality to be worthy of mention.



12 13

cone *(contd.)*
Two multiple pendant fittings showing the use of the simple wooden spreader units. Prices: 12, £15 18*s.* 0*d.* 13, £19 17*s.* 6*d.* *Prices include purchase tax where applicable.*

3 TECHNIQUES

THE BUILDING EXHIBITION

by John and Ann Voelcker

The Building Exhibition is of greater interest to the British architect in proportion to the influence he is able to exert on manufacturers; in proportion as the products shown there reflect what he thinks he wants. Though a visit to any post-war building exhibition shows that there is still a wide gap between what the architect wants and what the industry is pleased to give him, there is no doubt that his influence on manufacturers is on the ascendant and that therefore successive Exhibitions tend to get more rather than less interesting. In our attempt to do justice to this one, we are inevitably at a disadvantage in that we have to go to press a long time before the exhibition opens and before even many manufacturers have made up their minds what they want to show. It must be taken therefore as a description of the main lines of the Exhibition and not as a complete record of all that is to be found there.

It is in the nature of technical advance to be piecemeal in kind and discreet in its effect. When first confronted with the question 'what has been happening in the building industry since the last Building Exhibition?' your first reaction is to say 'almost nothing'; but then you realize that in almost every sector some shift has taken place in our building habits and that each of these shifts is destined, as the century moves on, to work a prodigious change in the look of our buildings.

In reviewing this year's exhibits it seemed reasonable to adopt the same classification used two years ago, namely the division into 'materials,' 'sheets and sections,' 'components' and 'assemblies' which has been hallowed by BSI. For this imparts an unshakeable order when, goodness knows, order is so badly needed.

What then has happened in 'materials' since 1955? There are perhaps no new materials on an architectural scale; that is, on a scale which can be seen at a distance. But there are several important developments of a subtle kind. Preservation, for instance, has been attracting much attention. It is only in the last few years that we have been made aware of the damage to timber through dry rot during the years of inattention of 1939–45 or of the threat to our inheritance in masonry through the dwindling of masonry skills. For the first we have much improved timber preservatives and for the second we have our growing knowledge of the use of silicones. The other class of materials which has had to be frenziedly developed is that of mastics and jointing compounds. Of the lasting powers of these when used in the revolutionary context of the light framed structure, even the pundits have little to say; but one great advance which we can note is the multiplication in the techniques for fixing them: techniques of squirting them with guns, of sticking them as tapes, of snapping them in place as extrusions, so that even if they don't last very long it should not prove costly to replace them . . .

Of 'sheets and sections' there is little to say. The development of lightweight building has called forth some new panels and decking units, but most of these, being composite, fall more properly into the category of 'assemblies.' There is, however, one authentic 'section' which has come on tremendously since the last Exhibition and that is the pitch fibre pipe. One of the most striking and hopeful facts about British building during the last few years has been the comparative readiness of the plumbing and drainlaying section (from whom much dogged resistance was expected) to take up the pitch fibre pipe and the single stack plumbing system.

But it is in 'assemblies' that the most evident changes are to be expected. There was already a formidable curtain wall entry in 1955 and that year must be taken as the year of the launching of the British off-the-peg walling industry; but though we were quite pleased with them then, we can see now how crude so many of the exhibits were and how many problems they left unsolved. In particular it will surely not be too much to hope that this year's crop will have solved the problem of the 'cold bridge,' of the passage of heat through a continuous metal section passing from inner to outer skin. It is precisely the rise in the price of fuel and the economic justification for higher standards of insulation, to which it gives rise, which has provided the main motive for change throughout this section. It affects roofs—the Thermal Insulation Act will come into full operation in January, 1959—and we must expect a new crop of roofing-cum-insulation-cum-ceiling units; and it affects walls and windows. It may even have made that luxury, the double window, an economic proposition. The other influence at work is the slight panic we have experienced concerning fire precautions. We will hear more of fire stops and curtains in factories and we hope that the curtain walling people will have found some method of substituting that clumsy expedient the back-up wall to meet the fire hazard between storeys.

materials

Two development associations have provided information on products they will be exhibiting. *The Timber Development Association* stand will contain a timber shell roof similar to that constructed for the Wilton Royal Carpet factory, and a laminated wooden staircase will enable visitors to inspect the construction in detail. Besides these exhibits the association will describe its valuable work in testing, designing, and advising. *The Copper Development Association* will concentrate on the decorative uses of copper and its alloys which will be shown in panels. In addition the use of copper

in domestic water and waste services, and in damp-proofing, will be shown. Of particular interest is the use of small bore copper tube for central heating systems, an example of such a system is on show at the Building Centre and it will be appreciated that the use of small bore tube not only effects considerable economies in the distribution of warmth but provides an installation which is easy to install in existing buildings and neat in final appearance.

William Oliver & Sons Ltd. will exhibit a selection of English wainscot oak available in a useful range of sizes. They will exhibit a number of foreign hardwoods wrot and unwrot together with sample logs of Mahogany, African Walnut, and that extremely useful if initially expensive timber, Iroko.

The last decade has seen the rapid development of products for the preservation of members and components in existing buildings. Necessarily the different parts of any building have differing properties of endurance and the extension of their useful life by the application of preservatives is usually cheaper than frequent replacement. Similarly products and processes for pretreating components which may be short lived have developed. *Protim Ltd.* will exhibit methods of pretreating timber so that it is resistant to insect and fungal attack, or resistant to fire. Methods of dealing with infected timber in existing buildings will be described and a method of preventing the spread of fungal attack by inserting sticks of concentrated fungicide in damp patches of brickwork or masonry will be shown. Most fungicides have the disadvantage of a strong unpleasant smell but this firm claim to have developed an odourless type of equal efficiency. For locating the damp conditions which are usually associated with fungus attack Protim have developed an instrument called the 'Protimeter'; there are three scales on the instrument, one records the dampness present in timber, another dampness in brickwork or masonry, and a third in plaster. The third scale should be of particular value in determining whether newly plastered surfaces are sufficiently dry for decoration.

Timber decay seems to be very photogenic and the lurid, eye-catching photographs of emaciated timbers together with evil visaged beetles must be the envy of many other exhibitors at the Building Exhibition. *Prestcure Ltd.* will reveal the secret life of the death watch and long horn beetle, of woodworm and the lyctus. Records of tests carried out by the DSIR Forest Products Research Laboratory indicate that Pesteure's P.C.L. Dry Rot Solution No. 2 brushed in two applications is effective.

The timber products of a number of firms will go to make up an all-timber stand for *Hicksons Timber Impregnation Co.* Hicksons' 'Tanalith' preservatives or 'Pyrolith' flame retardant, the latter intended to afford protection to timber against flame spread in addition to decay and insect damage, are applied to all the exhibits. Meriting close inspection will be a laminated timber lamp standard (by *Kingston Architectural Craftsmen*) and balsa wood ceiling tiles (by *Plantation Woods of Lancing*).

Material preservatives either applied as pretreatment or applied to existing structures damaged by corrosion are shown by *The Zinc Alloy Rust-Proofing Co. Ltd.*, who rust proof a variety of standard building products, by *J. H. Sankey & Son Ltd.*, who manufacture 'Glopane,' and by *Secomastic Ltd.*, who manufacture 'Galvafroid' Both 'Glopane' and 'Galvafroid' are zinc rich solutions which can be applied to metal surfaces to prevent corrosion. These are useful products but it should be remembered that since complete galvanizing cannot be achieved cold, they are not resistant where temperatures exceed 240 deg. F. and should not be used in moist situations where the temperature is likely to exceed 140 deg. F. A special grade of 'Galvafroid,' however, is made which the manufacturers claim may be used in temperatures of to 350 deg. F. provided the conditions are dry.

A number of products for the protection, preservation, decoration and for the easy working of concretes and cements are available. *J. H. Sankey & Son Ltd.* will exhibit their 'Snowtop,' 'Colourtop,' and 'Metaltop' finishes for concrete, and a sealer for concrete known as 'Sealtop' claimed to be highly resistant to oil staining. *Kerner Greenwood & Co. Ltd.* will exhibit their well-known 'Pudlo' products and in addition a fire cement known as 'Feusol.' *Tretol Ltd.* and *Expandite Ltd.* will show among their other products air-entraining additives, 'Aero-mix' and 'Barra 55' respectively, both of which increase the workability of concrete and increase its resistance to frost attack. *Kerner Greenwood, Sealocrete, Tretol Expandite Ltd.*, and *A. A. Byrd & Co. Ltd.* will show mortar plasticizers which again increase workability and save cement.

Silicone solutions which are eminently water repellant have developed since the last exhibition, and their effectiveness particularly on porous stonework, brickwork, or rendering has been proved. *Inertol Ltd.* will show their 'Inertol Plus' and *Kerner Greenwood* their 'Pudlo' silicone water repellent.

J. H. Sankey & Son manufacture six grades of 'Pyruma' fire cements and some of these products can resist intermittent temperatures of intensities reaching 1,580 deg. C. For other special purposes *Semtex Ltd.* have published a booklet which describes fire resisting cements; 'Latex,' 'Silicate Plastic,' Resin,' and 'Sulphur cements.' A useful series of charts is provided at the end of a booklet published by the firm describing the physical and chemical properties and application of each type.

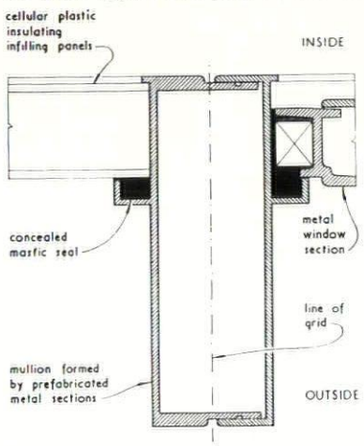
Information available on paints in general is scarce but *International Paints Ltd.* will exhibit their standard range of colours which include 40 of the British Standard '101' range and 34 of the 'House and Garden' range. They will also introduce their 'Policrome' multicolour paint which is availabe in 17 different colour combinations. *T. & W. Farmiloe* will demonstrate the qualities of their siliconized paints, put on the market since the last exhibition. *R. Gay & Co.* will also exhibit. For concrete and asbestos surfaces *Inertol Ltd.*, with the observation that 'concrete in the raw is ugly stuff,' will describe the qualities of their concrete paints which are available in a variety of full bodied colours. *John Ellis & Co. Ltd.* will show thair 'Emalux' glazed cement wall finish, their 'Novalux' eggshell finish, used extensively at London Airport, and their 'Decalux' which is suitable for application to smooth concrete and fair faced brickwork.

An interesting, useful, and well tried surface treatment for concrete, steel, or masonry structures is 'Pyrok,' a combination of cement, exfoliated vermiculite, plasticizer, and water made by *Pyrok Ltd.* It is claimed to be weatherproof, have good acoustic and thermal properties particularly against condensation; in addition it is resistant to fire, a 1½-inch cover provides a grade C (two-hour) resistance to steel members, and 'Pyrok' sprayed on to inflammable building boards considerably reduces the measure of flame spread.

A newcomer to the Exhibition is the *'Exsud' South American Minerals and Products Co.*, who market 'Exolit' firestop, a German-made foam barrier producing a fireproofing compound which it is claimed will reduce flame spread hazards to almost nil by a simple surface coating. Used in the new Jaguar works, the chemical has been under test at the Fire Research Station and copies of the report will be available.

In large structures liable to extensive thermal movement the problems of providing satisfactory expansion joints have, until recently, been met as they arise. This year's Building Exhibition will indicate that much thought has been given to the development of mastics applied with standard equipment, of standard extrusions which can be ironed into place, or of strips which provide continuous coverage. Perhaps the development of these products has been accelerated by the expanding use of curtain wall assemblies which present serious weatherproofing, condensation, and movement difficulties within themselves, and equally serious problems at the points where they connect to the structural assembly of the whole building which almost invariably behaves in a dissimilar way.

Secomastic Ltd. have improved on their application gun, 1, and in



1, *use of Secomastic in curtain wall mullion.*

addition manufacture a grade of 'Secomastic' which is metallic in colour and is therefore very suitable for use round metal frames. *The BB Chemical Co. Ltd.*, manufacturers of 'Bostik,' have produced a series of systematically laid out information sheets which describe the appearance of each adhesive, its properties, method of application, and the way in which it should be stored and packed. Both these concerns manufacture sealing strips, 'Secostrip' and 'Prestik' respectively.

Expandite Ltd. will exhibit a wide range of jointing and sealing products. Interesting among these are their 'Asbestumen' which can be applied with a trowel, 'Aerolastic' which is a petroleum resistant sealing compound useful for airport runways and garages, and 'RB 200' which is a pre-formed flexible sealer available in a number of standard sections or in sections made to special order. They also have interesting devices for applying their products, notably a 'Meltu pourer,'



2, *Expandite Meltu pourer for sealing compounds.*

2, for sealing with compounds which require heat control.

sheets and sections

The Linoleum Manufacturers' Association, who are naturally concerned with endurance and appearance of linoleum, will deal extensively with methods of adequately damp-proofing buildings. They will show different grades of linoleum, their colours, and a rather cryptic 'personalized floor.' A booklet published by the Association describes why and where linoleum should be used, and how it should be laid. *The Dunlop Rubber Company* will exhibit sheet flooring together with tile and studded tile variants, and *The Armstrong Cork Co. Ltd.* will show two new products—'Plasco,' a hardwearing, quicksetting flooring compound, and Armstrong Linoleum which the firm are once again producing. *British Congoleum Ltd.* manufacture a sheet patterned to imitate wall tiling.

The industry has been developing a number of different grades of building paper during the last few years, among which the aluminium foil backed types for thermal insulation are of particular value. *A. Latter & Co. Ltd.* will show their 'Latternax' building paper which is available in several grades with foil applied to one or, in one grade, both faces. In addition to these they will show their extensive range of general purpose papers for sarking and damp-proofing; a very light weight grade for use in temporary structures is of interest.

The British Plasterboard (Mfg.) Ltd., *Bellrock Gypsum Industries Ltd.* and *Gyproc Products Ltd.* cover the plasterboard field. Bellrock are to manufacture an extruded panel which incorporates its own frame and thus obviates the use of timber in studding and joisting; this product should be on the market next year. Plasterboard with an aluminium foil backing will be on the stand of Gyproc.

Timber veneered and melamine coated cork is shown by *Aga Veneers Ltd.*; this has an endurable high gloss surface. In addition the firm will exhibit a range of thin paper-backed veneers which are applied to wall surfaces in the same manner as wallpapers and can be french polished. Rolls of 11 yards and 55 yards in length, 19½ inches, 27½ inches, 32½ inches and 49½ inches in width are available.

Roofing materials can be seen at the stand of *Nuralite Co. Ltd.* who manufacture a useful thermoplastic bitumen-asbestos roof sheet. It can be worked in a manner similar to lead roofing but it should be re-

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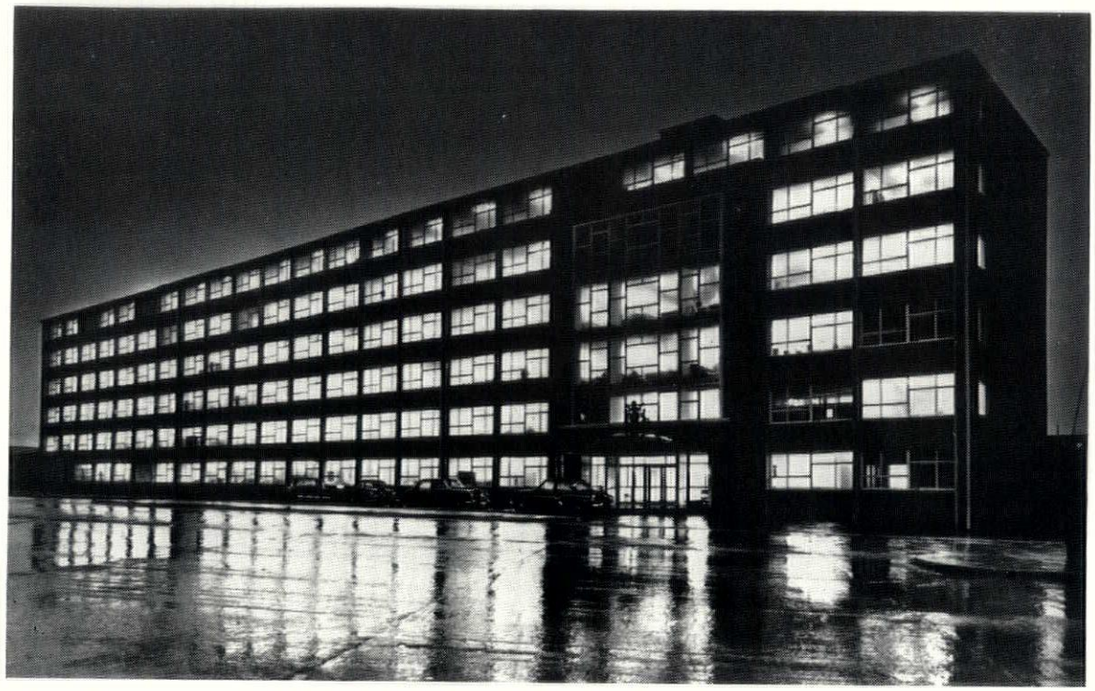

The United Kingdom Atomic Energy Authority
New Administration Block, Risley, Lancashire

Architects: T. L. Viney, F.R.I.B.A. and R. S. Brocklesby, A.R.I.B.A.

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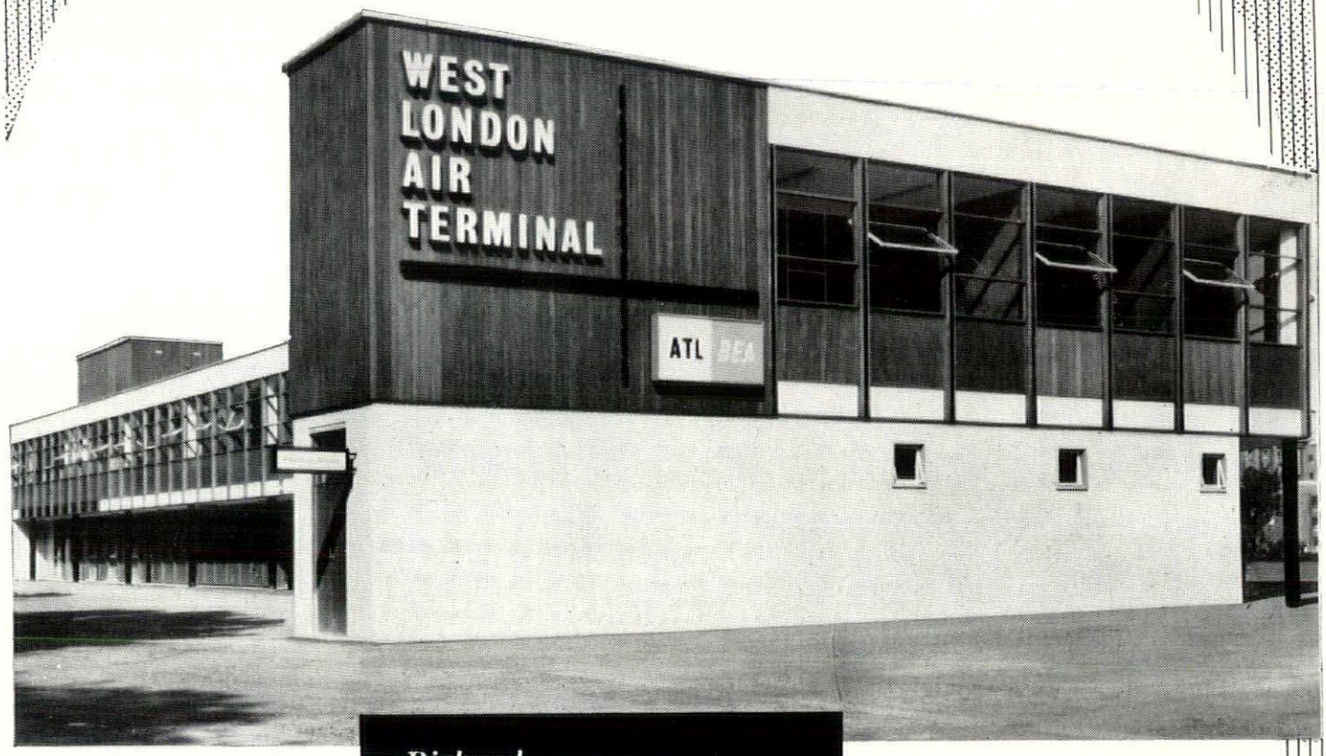

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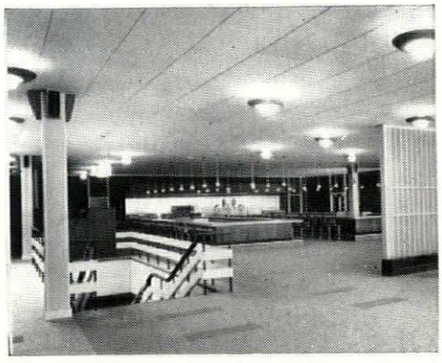

Only 4½ months were available for completing this £250,000 contract. In beating this tight schedule by 7 weeks, a very high degree of planning was called for, and the main construction involved a flexible system of pre-fabrication on a major scale. The West London Air Terminal is, in fact, one of the world's largest pre-constructed buildings for public use. With the actual building operation divided into three meticulously dovetailed phases, this project is yet another example of the speed, efficiency and technical resourcefulness of the world-wide Costain organisation.

UNITED KINGDOM • MIDDLE EAST • RHODESIA
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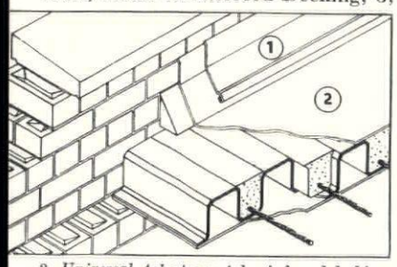
continued from page 354]

membered that it cannot be spread out in the same way; shaping therefore should be one directional wherever possible. *The Weatherall Roofing Co.* will show the latest developments in 'Nuralite' roofing techniques on their stand.

The *Universal Asbestos Cement Manufacturing Group* will exhibit three types of roof decking for flat roofs; Metal Re-inforced Decking, 3,



3, *Universal Asbestos metal reinforced decking.*

Hollow Insulated Decking and Battened Decking. Particularly interesting but still in need of development are the sandwich constructions which incorporate a 1-inch layer of glass fibre between two sheets of corrugated or troughed sheets. It is the experience of some erectors that these composite panels are not easily handled on site and a number of breakages result. Mention having been made of glass wool, *Fibreglass Ltd.* will exhibit their wide range of mats and quilts, and the use of 'Fibreglass' in air filters.

At the last building exhibition *The Northern Aluminium Co. Ltd.* introduced their Noral 'Snaprib' roof sheeting. In principal each sheet snaps over the rib of the adjoining sheet providing a continuous joint and avoiding the use of fixings which penetrate the sheets and only give point support. Since that time, 'Snaprib' has been used extensively and photographs will show a number of applications.

Ashdowns Ltd., a subsidiary of *Pilkingtons*, manufacture a reinforced fibreglass-polyester sheet called 'Undulite.' This is available in corrugated and flat sheets, in a variety of colours, and in semi-opaque or highly translucent grades. *Allan Blunn Ltd.* will exhibit a galt glass laminate also available in corrugated and flat sheets, this product is manufactured by *Durasteel Ltd.* who will be showing on their own stand their fire-proof and heat-resistant panels constructed of steel and asbestos.

Expanded metal has many uses in the building industry and the *Expanded Metal Co. Ltd.* will show a number of these applications: as reinforcement for concrete and brickwork, as lathing for plaster work, for fencing and barriers, walkways and cable trays, and in addition anodised variations for decorative purposes.

Little information of developments in tubes and pipes for building purposes has been released to date but *Key Engineering Co. Ltd.*, and *Union Fibre Pipes Ltd.* will exhibit the well-proved application of pitch fibre drainage and sewer pipes. While initially more expensive than salt glazed ware these pipes can be laid without concrete bases and the available lengths make laying operations, where there are long runs with few connexions, speedy and simple. Polythene tubing, used extensively for agricultural and industrial services and now more extensively for cold water and waste services in all types of buildings, will be exhibited in the form of 'Deltathene' manufactured by the *Delta Metal Company* and distributed by *F. H. Bourner & Co. Ltd.*

bricks, blocks, tiles, and other simple building components

It is surprising that the group of products including simple, rather ambiguous components such as bricks, tiles, blocks, items of ironmongery, etc., should remain undeveloped while the industry concentrates on the development of more complex single-purpose, 'take-it-or-leave-it-but-if-you-take-it-you-will-have-to-build-your-house-round-it' assemblies. In this year's exhibition this group of simple components is represented by a selection of tiles, bricks, blocks and run of the mill selection of builder's ironmongery.

The British Plasterboard Mfg. Ltd. manufacture 'Blue Hawk' flooring blocks, a wood surface backed with synthetic resin bonded sand. The tiles are 9 inches by 9 inches and are suitable for laying over floor heating. *The Armstrong Cork Company* have recently formed an acoustic department, the work of which has resulted in an acoustic floor tile and a second acoustic tile called 'Travertone' which is $\frac{3}{4}$ inch thick, available in two sizes, 12 inches by 12 inches and 24 inches by 12 inches, and may be obtained straight- or bevel-edged. These tiles are made of fissured mineral wool which gives a textured surface appearance and they are fire resistant.

Economical types of wood block flooring have been available for some years, they consist of small billets of hardwood bonded to a base of some cheaper material. *Calders Ltd.* will exhibit such a floor known as the 'Alufloor,' the tiles are 18 inches by 18 inches backed with aluminium foil, each tile is divided into 16 smaller squares consisting of small hardwood strips.

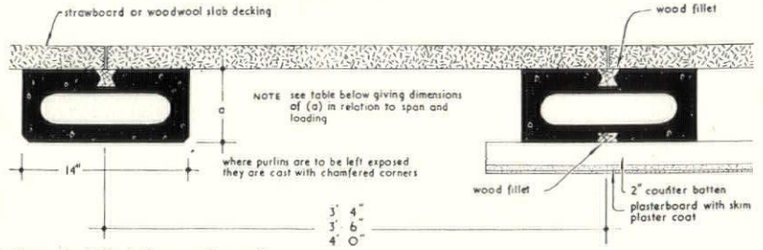
The *Marley Tile Company* publish a report which summarises the properties of the two main types of thermoplastic flooring, those with an asphalt base and those with a plasticised polyvinyl-chloride base. *Semtex Ltd.* will show a tough rubber ribbed tile measuring 18 inches by 18 inches by $\frac{7}{16}$ inch thickness in addition to their ranges of 'Semastic' thermoplastic tiles, and their 'Vinyflex' and 'Semflex' PVC tiles. Extra hardwearing flooring units known as 'Paviors,' 2 inches thick and multicoloured, will be shown by the *Accrington Brick and Tile Company*; and *J. H. Sankey* will show their 'Cerabos' compressed concrete decorative floor in addition to their highly resistant vitrified buff tile. *Ferodo Ltd.* and the *Safety Tread Company* will exhibit their ranges of stair treads and nosings suitable for decorative and hardwearing uses.

Elder Reed & Co. Ltd. will show their terrazzo, marble, and oxychloride jointless flooring, their ceramic glazed and unglazed mosaic, as well as the S.A.I.V.O. vitreous glass mosaic the sample card of which decorates so many architects' offices. *John Ellis & Sons Ltd.* will also exhibit mosaic panels together with their range of granite concrete paving slabs and curbs, concrete flower boxes, and sundry products such as fuel bunkers, bins, and concrete posts. *H. G. Thynne Ltd.* manufacture ceramic tiles either granite glazed, enamel glazed, or eggshell glazed; and in addition to these, will show a selection of hand painted and hand printed tiles, and their range of recessed or built-in ceramic bathroom fittings. *Packard and Ord Ltd.* specialize in hand printed tiles and pottery, among their exhibits will be a number of beer pull handles, which can be made to order to fit existing beer engines. *Ward and Co.* will be exhibiting examples of applied lettering, among which there are some cast aluminium letters suitable for external use.

Bricks, blocks, and tiles will be shown extensively by the companies and groups who manufacture them. *The South Eastern Tile and Brick Federation, The Sussex Brick Group of Companies, The London Brick Company* who introduce their 'Heather' and their 'Dapple Light' facing bricks, and *Eastwoods* who will concentrate on bricks, cement and concrete products, and roofing tiles, while reminding us that they are also general merchants for the distribution of building materials. *Redland Tiles Ltd.* and *Colthurst Symons & Co. Ltd.* will show clay roofing tiles of various colours and textures. *J. H. Sankey* will exhibit their range of special purpose bricks and blocks including their Blue Vitrified alkali and acid resisting brick, and three types of firebrick.

A number of standard concrete units such as tunnel segments, piles and beams will be shown by *Shockcrete Products Ltd. Concrete Ltd.*, the manufacturers of 'Bison' floors, will show their new hollow purlin unit which may be used to carry lightweight roof decking, 4; the planks are made in several depths to suit the particular spans and loadings required.

Information to hand on builders' ironmongery is limited but the *Vulcan Manufacturing Co.* will show their selection which includes a monkey tail bolt suitable for lightweight garage doors.



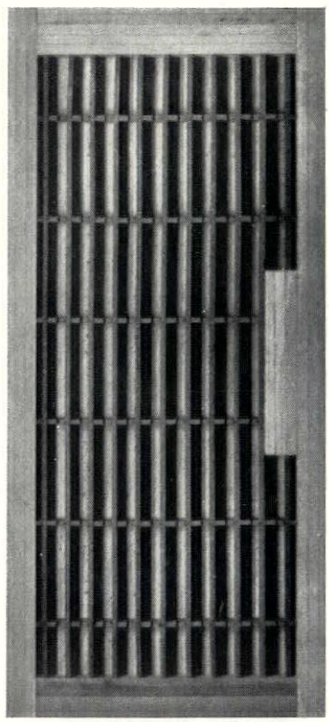
4, *Concrete Ltd's hollow purlin unit.*

assemblies

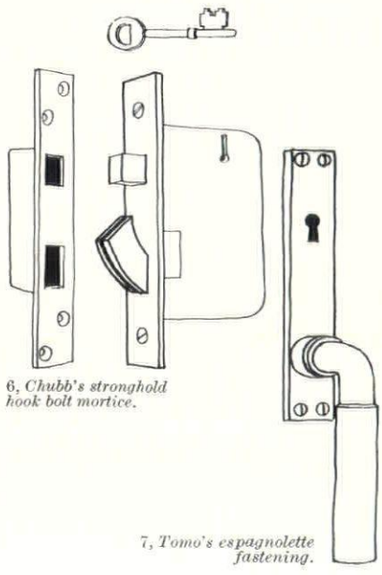
Quicktho (1928) *Ltd.*, who at the last building exhibition showed their 'Windowall' curtain walling, will show aluminium roof lights, dual horizontal sliding windows, and top hung ventilators which can be supplied with remote control gear if required. An improved version of 'Windowall' will also be shown. Another roof light will be shown by *T. W. Ide Ltd.* called the 'Twide' continuous curved roof light; various types of upstands and glass domes are manufactured by this firm and part of their stand will be devoted to the decorative features of coloured glass panels.

The *Bolton Gate Company Ltd.* manufacture gates of mild steel and aluminium alloys up to 30 feet in length and 200 feet wide, they will be exhibiting their ranges of collapsible doors and gates, power operated and photocell doors, and their 'Glydover' garage doors. Other garage doors will be shown by *Westland Engineers Ltd.* who make the well-known 'Welrise' and 'Wellift' doors and a new packaway door, the 'Welpak' which was exhibited in prototype at the last exhibition but has been modified and improved since. *Boulton and Paul Ltd.* will show their fencing assemblies and their tubular gates, and their ranges of standard red deal joinery which include windows, doors, fencing, and cupboards.

Shapland and Petter Ltd. are manufacturers of office unit furniture, laboratory fittings and Raleigh flush doors available with solid, semi-solid, 'Dufaylite,' and skeleton cores. *Gliksten & Son Ltd.*, makers of well finished veneer faced flush doors among other types, will exhibit their new 'Mark 7' door specially designed for use in schools; it is faced with $\frac{3}{16}$ inch British made Utile ply and cored with 'Glinex' insulating board, 5. *Bryce White & Co. Ltd.*, too, will show a new door called the 'Deseronto' together with a fire door which gives a fire check of half an hour. A pivot door available in standard sizes is manufactured by *Golmet Doors Ltd.*; to facilitate easy fitting these doors are supplied complete with frame and



5, *Gliksten's Mark VII flush door.*



6, *Chubb's stronghold hook bolt mortice.*

7, *Tomo's espagnolette fastening.*

spring loaded gear which is integral. *Chubb* will be showing a new 'Stronghold' hook bolt mortice lock for use on sliding doors, 6.

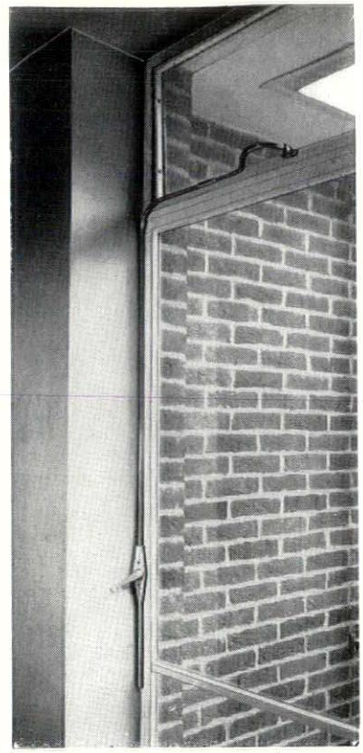
Windows will be exhibited by *Frederick Braby & Co. Ltd.* who manufacture high quality steel and aluminium windows, by the *Tomo Trading Company* who market double glazed timber windows fitted with robust espagnolette fastenings, 7. Another double glazed timber window is to be shown by *Esavian Ltd.* together with an Around-the-corner window suitable for showroom use. The splendid 'Carda' window will be shown on the stand of *Holcon Ltd.* Double glazing assemblies should see rapid development and good markets within the next few years; hitherto thermal economics have been in the balance but with the rising price of fuel there is no doubt that the use of double glazing will become more general.

Of the main building assemblies: walls, floors, and roofs, the *Ruberoid Co. Ltd.* manufacture an insulated metal deck roofing system, *William Briggs & Sons* will show their seven types of Bitumetal aluminium decking now available, a special section of their stand will deal with the problem of interstitial condensation so frequently encountered with lightweight metal roofs, and *Cafferata & Co. Ltd.* will show a roof deck formed of the new product 'Pyrocrete,' a gypsum concrete with good thermal and fire resistant properties which can be erected very swiftly. *George Greenwood & Sons* will exhibit the 'Myko' flooring system for suspended floors and roofs; the system consists of concrete box sections suitable for spans up to 17 feet or of prestressed beams which can be used in spans up to 32 feet thus saving extensive secondary support. Lattice steel purlins specially designed for domestic roofing purposes will be shown by *Sommerfelds Ltd.* who claim that considerable time is saved by their use, 8. *Stramit Boards Ltd.* will show applications of their strawboard for roof decking, partitions, and as an infilling to curtain walling. The boards are easily worked and methods of jointing have been carefully devised, particularly useful is the fact that the boards can be obtained in lengths of 12 feet or more if required. This reduces the number of joints and therefore increases thermal efficiency while reducing the labour in fixing. When used as a roof decking with felt applied immediately on top the boards sometimes suffer through condensation. An assembly of movable wall panels is manufactured by *Internal Constructions Ltd.*, it is called 'Intercon' and may be obtained with PVC coloured and patterned surface finish. Junctions are formed with black rubber seals and extrusions. A number of acoustic and heated ceiling assemblies have been designed by *Burgess Products Ltd.* whose perforated tiles are now available stove enamelled to any British Standard colour, while *Newsums* will be exhibiting not only their 'Trofdek' roofing and flooring and their 'Wal-pak' curtain wall but also their new 'Diaframe' lightweight roofing panels.

Before the last Building Exhibition several firms gave details of their curtain walling assemblies, only four such assemblies have been circulated to date for the present Exhibition. It is perhaps significant that this information has been replaced by copious information on flexible sealing compounds and strips. *Frederick Braby*, however, will show their 'Wallstrut' curtain walling, the mullions being aluminium extrusions 4 inches deep. *Gardner Sons & Co. Ltd.* have developed 'Murogard,' a curtain walling assembly which can be hung from within, thus obviating the need for staging. The manufacturers claim that the assembly has a two-hour fire grading. *Quicktho's* 'Windowall' claims to have overcome a number of condensation problems and to have an improved cill detail.

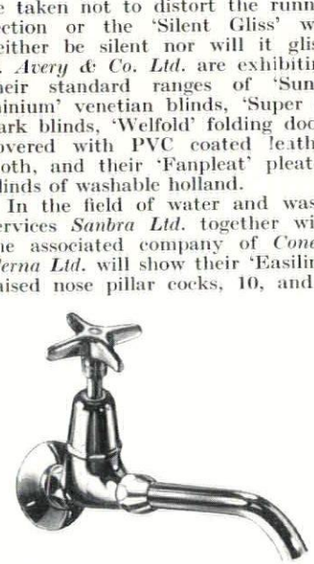
With porcelain enamelled steel playing an ever-increasing part in building, particularly as a curtain wall infill panel, a worthwhile visit can be made to the gallery stand of *Stewart & Gray Ltd.*, whose colourful 'Escol' panels have now been in use some time in atomic establishments and elsewhere. An unlimited variety of non-fading colours can be applied to the outer panel face of sheet steel, and the various types of inner core insulation will be shown, together with much useful technical information.

Special equipment associated with doors and windows is to be shown by *Ellard Sliding Door Gear Ltd.* who manufacture sliding door gear for all sizes of door. *Teleflex Products Ltd.* add a new assembly to their $\frac{5}{16}$ inch and $\frac{1}{2}$ inch cable remote control gear for windows, this is 'Neatagear' using $\frac{1}{4}$-inch cable, 9. It is suitable for the control of single top hung and centre pivotted windows, the square section cable conduit fits tidily into the window frame. The *Unique Balance Co. Ltd.* manufacture the 'Unique' spiral sash balance, three types are made to cover the ranges of sashes weighing up to 90 lb. A new 'M' type will be exhibited which is intended for ships windows in the 90-lb. class. A concealed curtain track called 'Silent Gliss' and manufactured by *Silent Gliss Ltd.* will be shown; nylon gliders to which curtains may be attached direct or by means of hooks, runners or eyes, run in aluminium runners. Twenty different profiles of rail are available, fixing is by means of special tools but care should be taken not to distort the runner section or the 'Silent Gliss' will neither be silent nor will it gliss. *J. Avery & Co. Ltd.* are exhibiting their standard ranges of 'Sunuminium' venetian blinds, 'Super C' dark blinds, 'Welfold' folding doors covered with PVC coated leather cloth, and their 'Fanpleat' pleated blinds of washable holland.



9, *Neatagear remote-control window.*

In the field of water and waste services *Sanbra Ltd.* together with the associated company of *Conex-Terna Ltd.* will show their 'Easiline' raised nose pillar cocks, 10, and a selection of copper traps, waste fittings, stack units, pipe connectors, gate valves, and a newly introduced radiator valve.



10, *Barking Brassware's projecting bibcock.*

Barking Brassware Co. Ltd. will be showing the full range of their admirably-conceived 'Hiflo' fittings, including three new designs, all with inclined headparts. The bibcock '64' type, , has an adjustable nozzle developed at the suggestion of architects, the '65' is intended for kitchen sinks and the '107A' bath tap for recessed fittings.

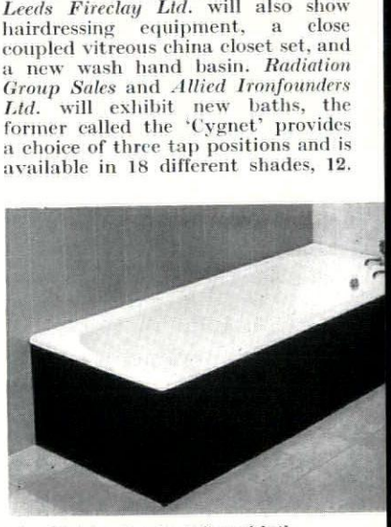
Of certain interest on the stand of *Econa Modern Products Ltd.* will be a 4-inch soil stack taken from the firm's laboratory, rigged up to reproduce, in a few moments, suction effects many times greater than that experienced in the tallest point block flats, and used to test the effect on various types of trap.



11, *Easliene 'raised nose' pillar cock.*

Kitchen equipment will be shown by *Ezee Kitchens Ltd.*, *Redwing Ltd.*, and *Leisure Kitchen Equipment Ltd.* A new feature of the 'Ezee' kitchen is a built-in mechanism which brings down the top shelf to the user's height. They also show sink units incorporating either a *Hoover* washing machine or the new 'Ezeemaid' dish washer. The *Redwing Ltd.* 'Silverwing' units are provided with legs to keep the cabinets clear of skirting boards and pipes, the drawer and shelf combinations of these cabinets can be varied to choice. A new Leisure sink unit incorporating the 'Culsynk,' designed for kitchenettes and only 36 inches in length, is to be shown.

The special exhibition 'theme' this year is the 'History of the British Bathroom and W.C.,' and the organizers hope to present a complete picture, from the Roman baths to the latest developments in pre-fabricated bathrooms. Obviously a good subject for the showman's touch. A search has been going on for historical fittings and the results may even reconcile one to the appearance of some of the present-day ware. In recent years better designed objects following the curvilinear *Adamsez* forms or the nice balance of rectangle and curve achieved by *John Knowles*, have appeared. *Shanks* will show their new 'Parva' bath of normal plan size but only 1 ft. 3 in. deep, their close coupled 'Enmore' closet set, and by way of special equipment an eye wash fountain, hairwashing equipment, and a babies' bottle washing unit in stainless steel. *Leeds Fireclay Ltd.* will also show hairdressing equipment, a close coupled vitreous china closet set, and a new wash hand basin. *Radiation Group Sales* and *Allied Ironfounders Ltd.* will exhibit new baths, the former called the 'Cygnet' provides a choice of three tap positions and is available in 18 different shades, 12.

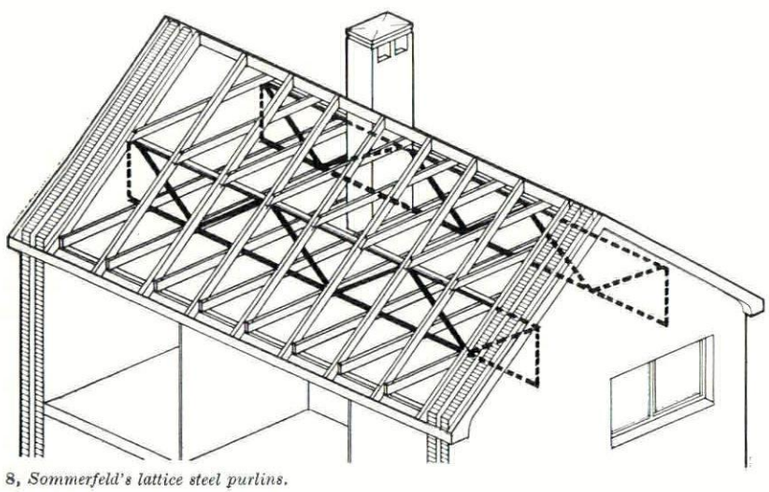


12, *Allied Ironfounders' 'Cygnet' bath.*

The latter, called 'Caprice,' is a space-saver combining all the functions of a shower, tray, and sitting bath, ideal for children, and it can be installed where there is insufficient space for a full length bath. *Steel Radiators Ltd.* hope to exhibit a new type of heating battery for convector installations.

A rapidly moving section of the industry is domestic heating and many products will be on view. *Ascot Gas Water Heaters Ltd.* will exhibit the new totally enclosed balanced flue water heater which has been sponsored by the Gas Council. The new 'Se-duct' to be shown is a centrally situated duct which enables

[continued on page 358

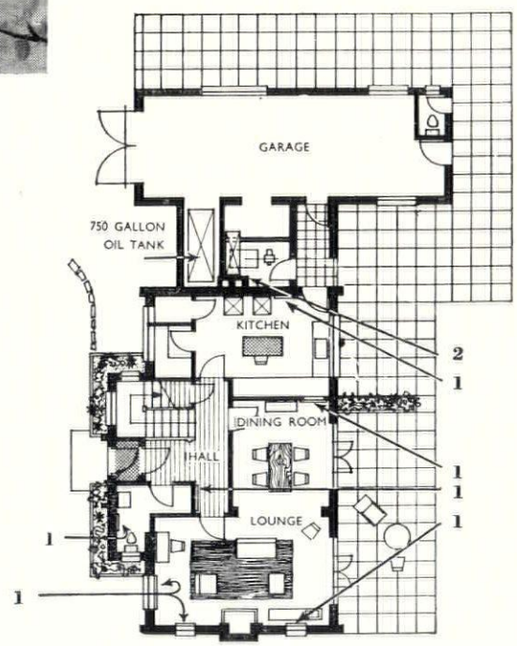


8, *Sommerfeld's lattice steel purlins.*



This modern, attractive, 4-bedroomed house is the home of Mr. C. R. Lindsey, member of C. H. Lindsey and Son Ltd., a leading firm of Heating Engineers. The central heating system is oil-fired, with fuel supplied by Shell-Mex and B.P. Ltd.

Heating engineer chooses oil-fired heating for his own home



1. *Dunham convector type radiator*
2. *Boiler room*

'Kingsdown', Gallows Green, near Colchester, owned by Mr. C. R. Lindsey, stands on land which was used as a burial ground during the Great Plague, when it was known as 'The Great Orchard'. A gallows at one time stood on the common land in front of the house.

Mr. Lindsey is an expert in house heating. He was careful to install the most efficient form of heating he knew – oil-fired heating. Central heating and hot water at 'Kingsdown' are provided by an oil-fired boiler using fuel stored in a 750-gallon tank. His expert knowledge is also responsible for refinements in the choice of radiators; for instance, the radiator in the hall backs on the part of the cloakroom where the coats are hung up, providing a gentle warmth to dry wet raincoats.

Oil-fired heating is clean, labour-saving, and economical. Automatic controls can ensure steady, even warmth and ample hot water whenever it is wanted. There is no fuel to carry, no stoking to be done and no ash or clinker to clear away.

Boiler and burner manufacturers have now produced oil-fired units for every need, from hot water supply in the smaller home to full central heating in the large country house. Shell Domestic Fuel Oil is used for the larger installations and BP Domesticol has been specially developed for smaller boilers with vaporising burners.

If you are designing or modifying almost any kind of building, public or private, you may well find it worth your while to make provision for this modern, efficient heating method. To find out more about oil-fired heating write for a copy of 'Oil Fuel at Home' to Shell-Mex and B.P. Ltd., Fuel Oil Dept. D6J, Shell-Mex House, Strand, London, W.C.2.

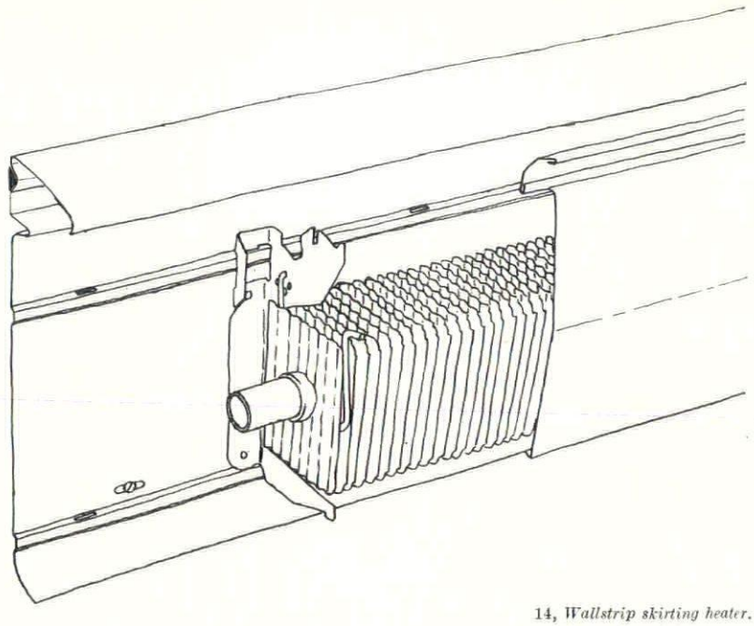


continued from page 356]

several balanced flue appliances to be jointly exhausted. *Radiation Group Sales* will show their large range of slow burning equipment and *Allied Ironfounders* manufacture the 'Rayburn Room Heater' and 'Panda' stove now fitted with thermostatic control. Both these firms have a new large assembly to show. *Radiation* the 'Heatmaster' which provides heat for cooking, domestic hot water, and spaceheating; cooking heat is thermostatically controlled and either coal or coke may be burnt. *Allied Ironfounders* have developed a compact and simple 'Rayburn' oil-fired boiler of the vapourizing pot type. Other solid fuel appliances will be exhibited by *Hattersly Bros.*, *Newton Chambers*, and of course *Aga Heat Ltd.* who will show the new 'Aga de luxe CB' and the 'Luxury Aga E' both of which are available in colour; in addition three new versions of the 'Agavector,' 12, the wall model, the kitchen model, and the cabinet model, which can be placed some distance from the boiler, will be on view. Electrical heaters exhibited will include the 'Ekco' 2 Kw convector manufactured by *E. K. Cole Ltd.* and a new infra red heater for industrial use by *Dimplex Ltd.* which will be available in October. Hot water and steam heating equipment will include the range of column and wall mounted steel radiators made by *Steel Radiators Ltd.*; *Dimplex* copper radiators, and the range of heating equipment manufactured by *Copperad Ltd.*, particularly interesting among this equipment are the radiant assemblies, 'Raystrip,' 'Wallstrip,' 12, and the flat radiant heating panels. *Watts Automatic Boilers* will show two solid fuel and two oil-fired boilers, the 45a model solid fuel burns anthracite grains and is rated at 45,000 btu, the '275c' burns small coke gravity fed and is rated at 275,000 btu. One of the oil boilers is a conversion, the '170' fitted with a pressure jet burner, the other is a purpose made oil unit, the '70w.' *Robert Taylor & Co.* introduce a 40,000 btu version of the popular 'Tayco Royal' model. A smaller oil-fired vapourizing pot boiler rated at 25,000 btu is to be exhibited by *S. Smith & Sons Ltd.*



13, *Agavector convection heater.*



14, *Wallstrip skirting heater.*

plant

Plant for general building purposes and special processes associated with building has developed rapidly, it is only to be regretted that much of the equipment usually exhibited is not in more general and widespread use. Examples of equipment to be exhibited include the 'Cowley Level' and 'Site-Square' manufactured by *Hilger & Watts Ltd.* The authors' Cowley level is in constant use, its operation is rapid, it is accurate within the context of building sites, the purpose for which it is intended, and every contractor should possess one of these thereby saving many man-hours a week. Of more specialized character *PSC Equipment Ltd.* will exhibit the latest type of 12-wire Freyssinet prestressing jack and a new range of light-weight jacks for stressing wires singly. The prestressed concrete division of *Cable Covers Ltd.* will describe the 'CCL Udall Lintol' method of underpinning structures and they will introduce the Swedish 'Interconsult' system of sliding shuttering for concrete. The control of dust is important in the manufacture of many building components. *Dallow Lambert & Co. Ltd.* manufacture pneumatic dust collecting equipment which will be shown on their stand.

[List of contractors on page 360



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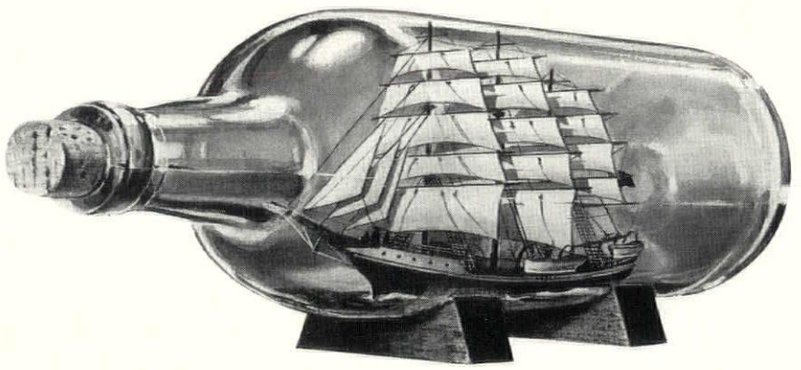

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PAPER MILL AT NORTHFLEET. *Architects:* Farmer & Dark.

Tissue Mill. Precast reinforced concrete frame designed by A. E. Beer. *Landscaping:* Brenda Colvin. *General contractors:* Holland & Hannen & Cubitts Ltd. *Sub-contractors: Patent glazing:* W. H. Heywood & Co. *Aluminium sheeting:* Carter Horseley (Engineers) Ltd. *Roofing:* Wm. Briggs & Sons. *Goods lift:* Wm. Wadsworth & Sons. *Loading bays gate:* Potter Rax Ltd. *Suspended ceiling and wall linings (machine house):* Structural Insulation Ltd. *Travelling cranes for window cleaning boats:* Palmers Travelling Cradle & Scaffold Co. *Foreman's office, laboratory-machine house and office block curtain walling:* Morris Singer Co. *Steel staircases and stair balustrading:* S. W. Farmer & Son. *In situ flooring (machine house):* Grano Metallic Paving & Plastering Co. *Rainwater goods:* Wiggins Sankey Ltd. *Sanitary fitments:* Adamsez Ltd. *Fire resisting doors:* Haskins Ltd. *Stoneclad metal panels over office block roof:* Mathews Refractories Ltd. *Altro plastic flooring, concrete stairs and conversion area:* Adamite Co. *Incinerators:* The Hygienette Manufacturing Co. *Internal aluminium cills:* Builders Iron & Zincwork Ltd. *Door furniture:* Alfred G. Roberts Ltd. *Glazed wall tiling:* Dennis M. Williams Ltd. *In situ terrazzo flooring and lavatory partitions:* Roman Mosaic Ltd. *In situ ceiling (office block):* Expanded Metal Co. *Cork floor tiling (office block):* E. J. Elgood Ltd. *Wood block flooring (office block):* Hollis Bros. *Flush doors:* D. Burkle & Son. *Fibrous plaster ceiling panels (office block):* Plaster Decoration Co. *Office block rooflights:* W. H. Heywood & Co. *Wall finishes:* Robb's Cement Enamel Finishes Ltd. *Lavatory waste fitments:* Econa Modern Products Ltd. *Slate cills:* John Williams (Rotherhithe) Co. *Metal louvre laylights (office block):* Courtney Pope (Electrical) Ltd. *Glazing generally except patent glazing:* E. Pollard & Co. *Strong room door:* Chubb & Son Lock & Safe Co. *Concrete and mosaic cladding (office block):* Malacarp Terrazzo Ltd. *Water supply services:* Engineering Services Installations Ltd. *Laboratory furniture:* Griffin & George Ltd. *Clothes lockers:* W. B. Bawn & Co. *Tea room equipment:* Benham & Sons. *Escape staircase:* Allen & Greaves Ltd. *Steel partitioning:* Roneo Ltd. *Bowaters sign lettering:* London Signs & Illumination Ltd. *Foreman's suspended office:* Hawksley S.M.D. Ltd. *Sprinkler systems:* Mather & Platt Ltd. *Plenum systems, heating and hot water supply:* Norris Warming Co. *Electrical services:* Tanjon Ltd. *Extract fans:* Sturtevant Engineering Co. *Bricks (purple Uxbridge flints, No. 92):* Uxbridge Flint Brick Co.

Engineering Division and Central Research Laboratory. *General contractors:* Holland & Hannen & Cubitts Ltd. *Sub-contractors: Steel:* Sommerfelds Ltd. *Rooflights:* W. H. Heywood & Co. *Venetian blinds:* J. Avery & Co. *Partitions:* Holoplast Ltd. *Acoustic ceiling panels:* Burgess Products Co. *Stoneclad steel spandrels:* Mathews Refractories Ltd. *Map mural:* Bakelite Ltd. *Planting and grassing:* Gilliam & Co. *Window wall:* The Morris Singer Co. *Furniture:* Hille of London Ltd. *Carpets:* Heals Contracts Ltd. *Bollard lights:* Frederick Thomas & Co. *Conditioned laboratory insulation:* Onazote Insulation Co. *Fireproof doors:* Dreadnought Fireproof Doors Ltd. *Glazed wall tiling and quarry tile:* Dennis M. Williams Ltd. *Illuminated ceilings (drawing office):* Lumenated Ceilings Ltd. *Cork tile flooring:* E. J. Elgood Ltd. *Wood block flooring:* The Acme Flooring & Paving Co. *Tiled mural panel:* Carter & Co. (London). *Ironmongery:* Alfred G. Roberts Ltd. *Flush doors:* Saro Laminated Wood Products Ltd. *Furniture to laboratories:* Cygnet Joinery Ltd. *Fire alarms:* Associated Fire Alarms Ltd. *Terrazzo and precast concrete wall slabs:* Malacarp Terrazzo Co. *Studded rubber tiles:* Semtex Ltd. *Veneered blockboard panels:* Wm. Mallinson & Son. *'Elkington Gatic' duct covers:* The Dover Engineering Works Ltd. *Balustrading:* Adrian Stokes Ltd. *Fibrous plaster:* Claridges (Putney) Ltd. *Roofing:* Wm. Briggs & Sons. *Precast floors:* George Greenwood & Sons. *Heating laboratory services, Plenum plant and air conditioning:* Norris Warming Co. *Light louvres:* Courtney Pope (Electrical) Ltd. *Slate:* Bow Slate & Enamel Co. *Lift:* Pickering Ltd. *Piling:* West's Piling & Construction Co. *Electrical installation:* Tanjon Ltd.

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Water Tower. *Quantity surveyors:* E. C. Harris & Partners. *General contractors:* Bierrum & Partners Ltd. *Sub-contractors: Cladding:* Williams & Williams Ltd. *Signs:* Franco-British Electrical Co. *Staircase:* Fredk. Braby & Co. *Ceilings:* Turners Asbestos Cement Co. *Floors:* Marley Tile Co. *Cement glaze:* Robb's Cement Enamel Finishes Ltd. *Doors:* Walter Lawrence Ltd. *Door furniture:* Nettlefold & Moser Ltd. *Sanitary ware:* Adamsez Ltd. *Venetian blinds:* J. Avery & Co. *Partitioning:* Rowe Bros. & Co. *Pipework:* William Press

[continued on page 362

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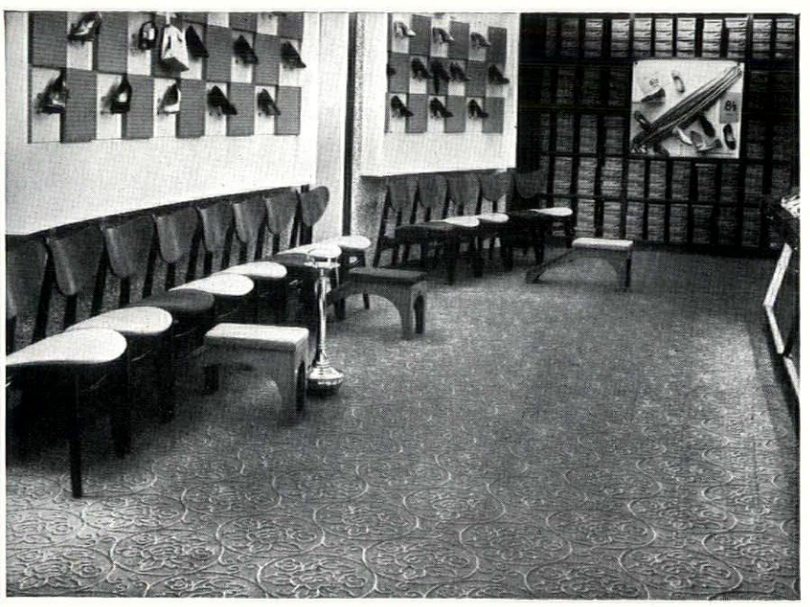

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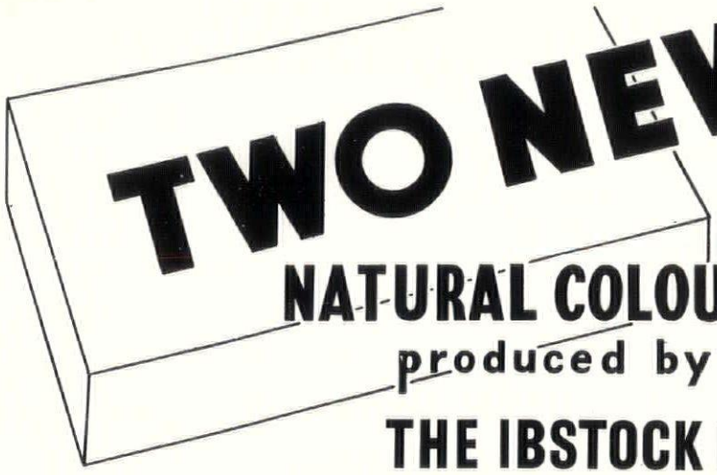

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continued from page 360

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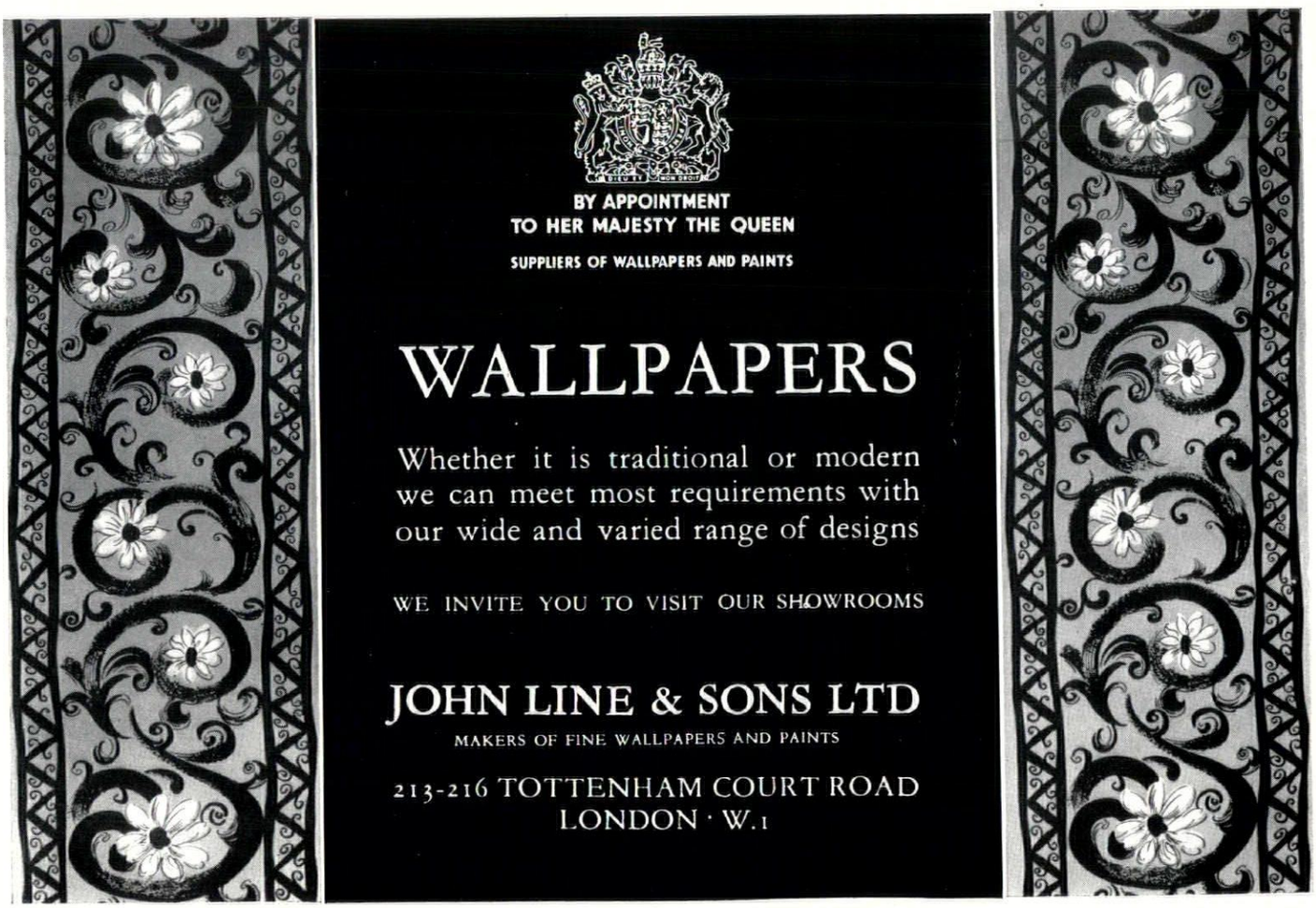

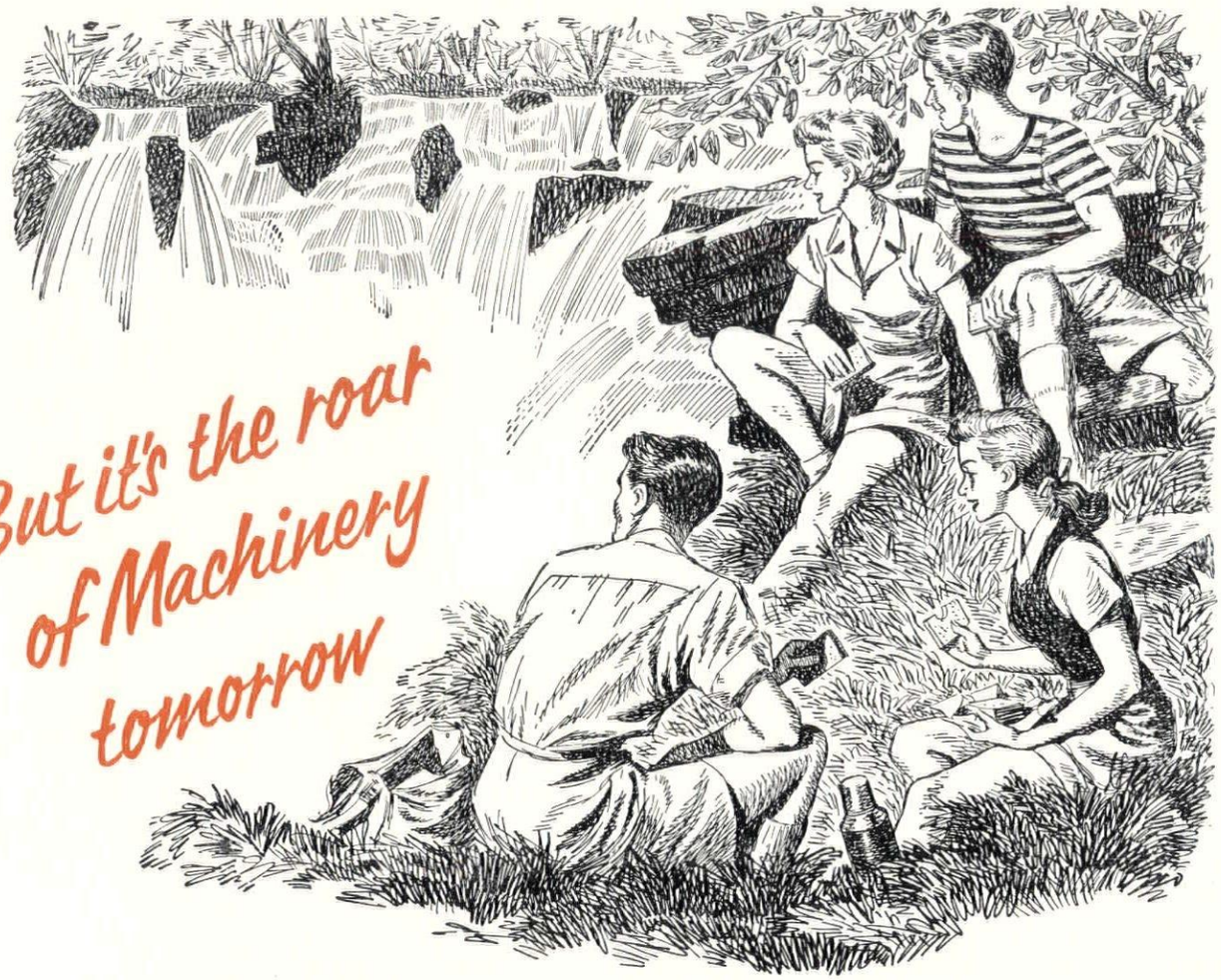

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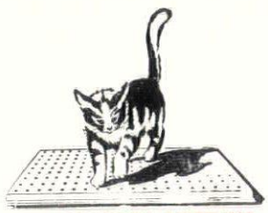

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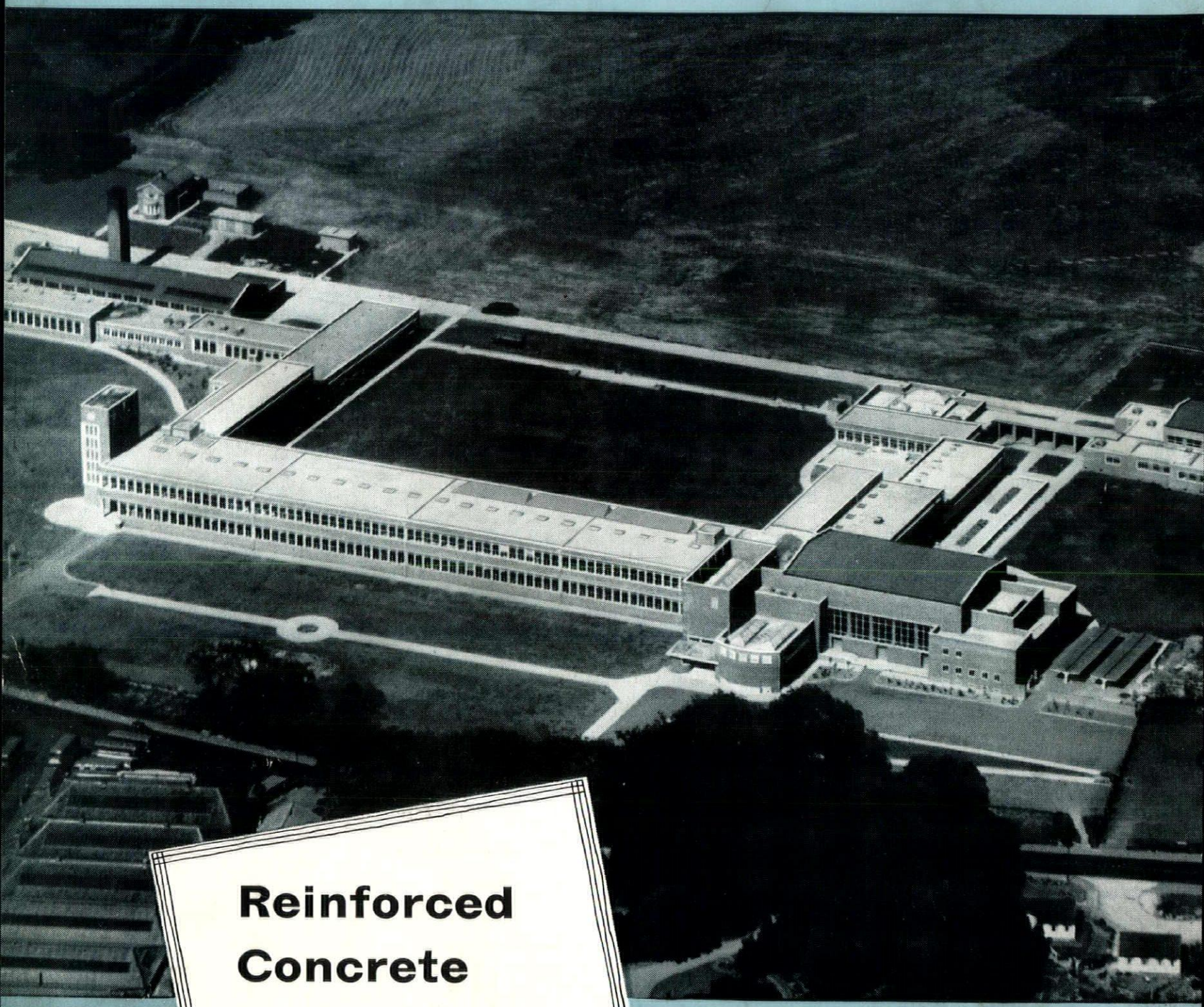

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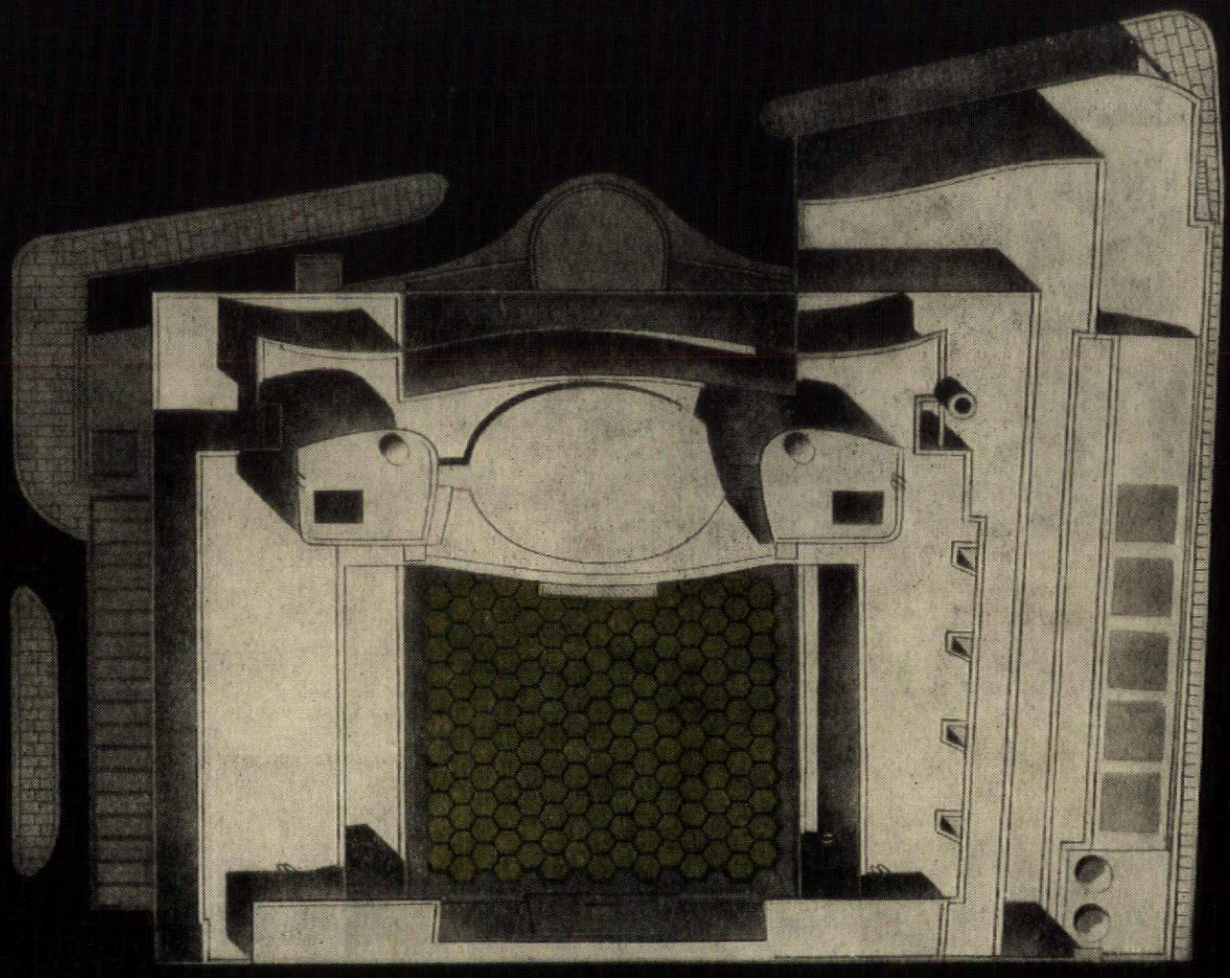

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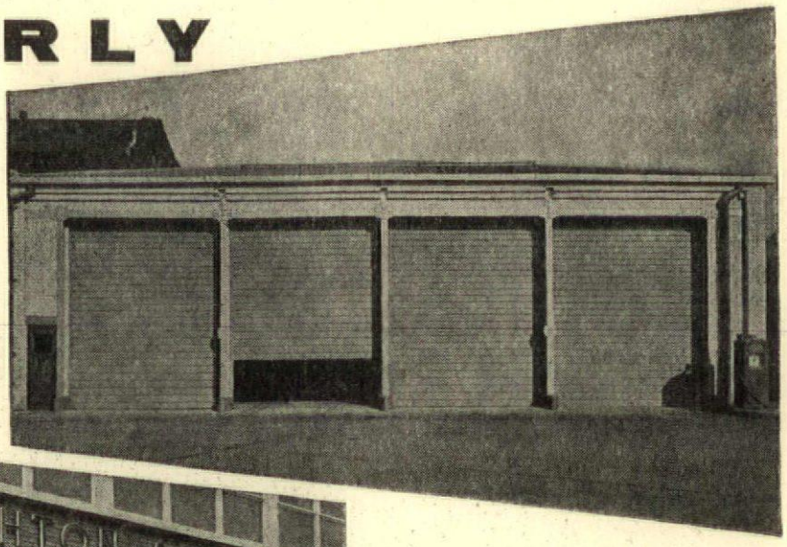

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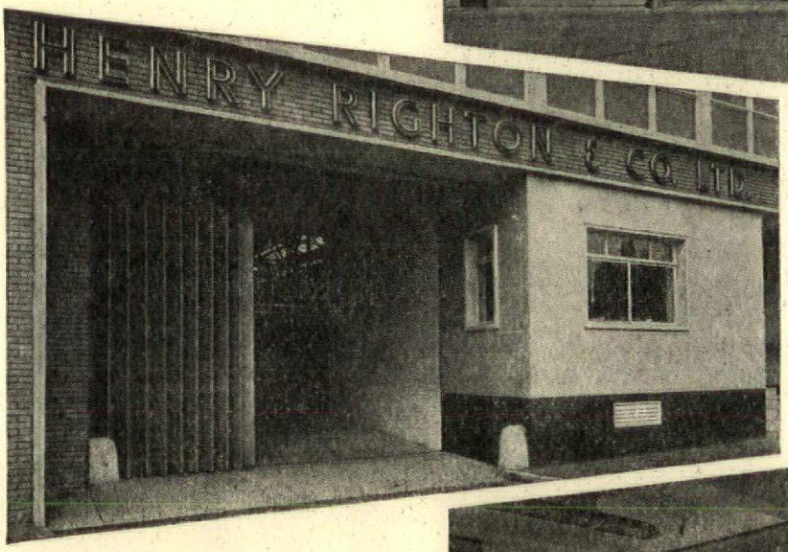

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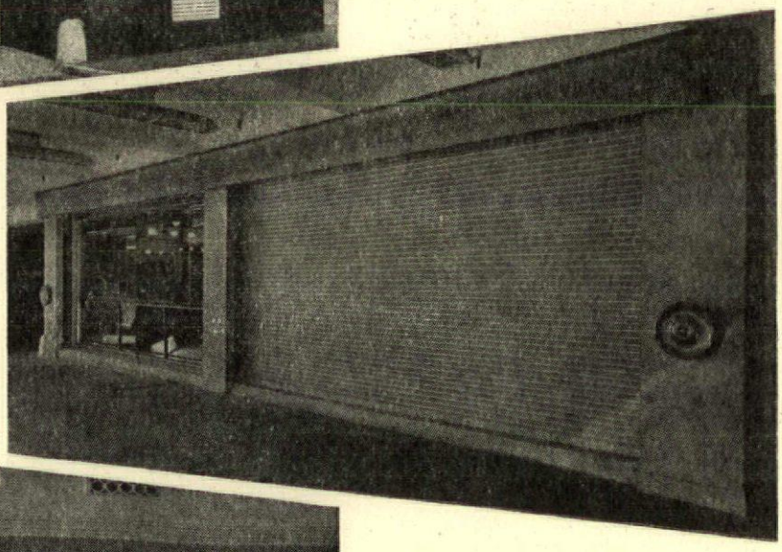

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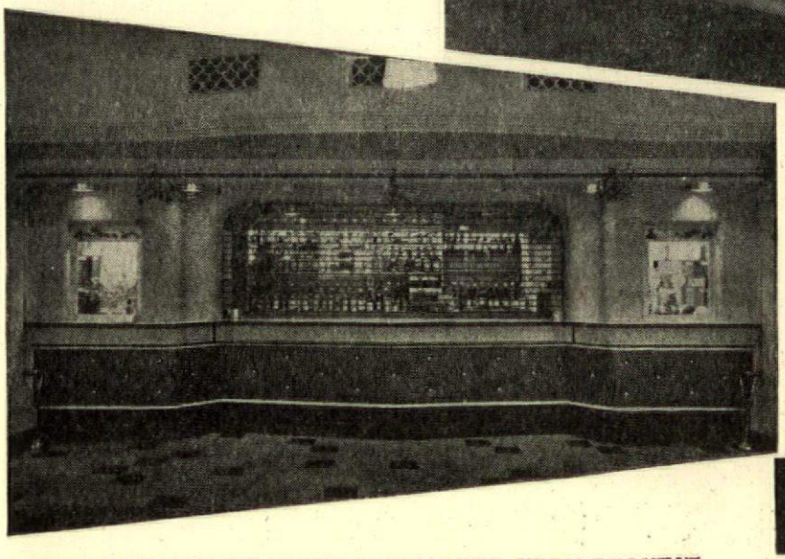

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MARGINALIA

Antwerp Bouwcentrum

Those who have abandoned hope of ever finding sermons in stones, books in running brooks, may yet find an encyclopaedia in standardized building-materials and components at the newly-announced Building Centre at Antwerp, which has been envisaged as 'une espèce d'encyclopédie du Bâtiment sous forme tangible' intended to initiate the visitor into both the 'qualités reputées des materiaux clássiques' and, in the inevitable phrase, 'les dernières réalisations de la technique moderne.' The tangible form of this encyclo-



1

paedic structure does not yet seem to be fully settled, but sketches by the architect, Renaat Braem, all show a covered way, 1, leading between administration buildings and a vertical feature bearing a suitable emblem, down to a run of exhibition buildings distributed diagonally across the centre of the site, and terminating in a last pavilion which closes the forecourt and stands on the same building line as the roadward gable of the administration block.

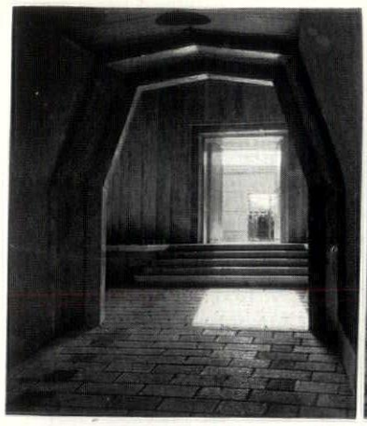
ICA at 10, E. C. Gregory at 70

Although the (London) Institute of Contemporary Arts has no precise foundation date, the body founded to sponsor and create it, Living Arts Ltd., was incorporated on July 22, 1947, and the Institute can reasonably see itself as ten years old at the end of 1957. It has been a turbulent decade in all the arts, and the ICA has contrived, throughout the period, to be somewhere near the point of maximum upheaval. In the late forties, when pre-war outlooks and programmes, having matured in cask (so to speak), seemed as generally palatable as they were heady, six hundred persons turned up to hear Ernesto Rogers, Cor van Eesteren and others in a discussion on *Painting, Architecture and Sculpture*, organized jointly with the Mars Group, and almost as many to hear Lucia Moholy to speak of her late husband, the great *Bauhausler*, Moholy Nagy. At the ICA, as elsewhere, this period reached its apogee in Festival year, the supreme point being, perhaps, Le Corbusier giving a little address on behalf of delegates to Hoddesdon CIAM congress, among the programmatic asperities of the exhibition *Growth and Form*, the last celebration (at the ICA at least) of the tidy, Platonic view of the universe as mathematical.

Already the pressure of post-war realities was being too sharply felt for such dream-worlds to persist, and just a year later began J. M. Richards's series of visits and discussions about current London architecture, that was ultimately to range over material as diverse as Bankside Power Station, Harlow New Town, the Time-Life building and the Pimlico development, and bring a number of architects to the bar of a tribunal that could be far more frank and far less discreet than the periodical press. The 'Unknown Political Prisoner' memorial competition, won by an architect-sculptor, Reg Butler, found the ICA marginally exposed to the embarrassments of the Cold War, on an international scale, and in 1953, the Brutalists' exhibition *Parallel of Life and Art*, saw the beginning of a hot war on the aesthetic plane that has enlivened much subsequent ICA activity, and has erupted in such forms as pioneer studies in the popular arts and mass media, in 1953–4, an interest damned as subtopian by one faction during the ICA discussion on the vexed subject of aesthetic control in town planning, in 1957. Threaded through this running debate have been a series of major exhibitions, some of them showpieces like Richard Hamilton's *Man, Machine and Motion*, others more straightforward gallery exhibits of Henry Moore drawings, the work of the great Brazilian gardener, Roberto Burle Marx, Olivetti design; of lectures, by speakers as diverse as Lewis Mumford, Maxwell Fry, Siegfried Giedion, R. Furneaux Jordan, Tomas Maldonado; of showings of comprehensive colour-slide reviews of the work of Le Corbusier and Buckminster Fuller, and films by Charles Eames.

At the head of the impressive roster of signatories to the memorandum instituting Living Arts in 1947 there appeared, very properly, the name of E. C. Gregory, universally known as Peter Gregory. One of the most tireless and effective workers for the promotion of contemporary art, he celebrated his seventieth birthday at the beginning of October. The centre of his activities has always been the publishing house of Lund Humphries, that has issued, under his guidance, standard works on Henry Moore, Ben Nicholson and Barbara Hepworth, a lavish report on the CIAM congress at Hoddesdon, mentioned above, Arthur Korn's *History Builds the Town*, Victor Fuerst's controversial book on Wren, and many others. Of Moore and Nicholson, as well as Edouardo Paolozzi and other rising talents, he is also a notable collector, and his further involvement with the visual arts includes the establishment of Ganymede Prints on British soil. His most lasting monument, apart from the ICA (which will survive its present difficulties as it has survived previous ones, by rallying its supporters), will undoubtedly be the Gregory Fellowships, at the University of Leeds, which make it possible for a sculptor, a painter and a poet to contribute to the life of the university, while enjoying, for the period of their tenancy, a welcome respite from the pressures of the London art world, and an opportunity to work in peace.

2



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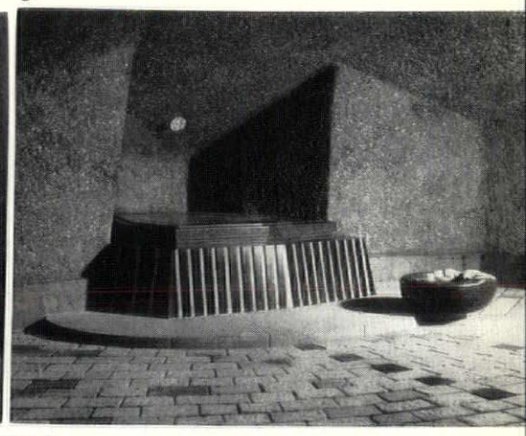


I.L.A. Conference

The Institute of Landscape Architects held a conference at Newcastle-on-Tyne in September which was primarily concerned with the reclamation of waste land on the same lines as the recent series of articles in the REVIEW. Many of the papers read are published in *Planning Outlook*, Vol. 4, No. 3.

In tours round the Three Rivers Region members experienced the visual impact of dereliction in all its varied forms, saw the old 'Gibraltars made of coal and slag' now eroded and weathered into forms of strange attractiveness, the evolution of new tips—one was reported to be 150 feet high by 2,000 feet long—saw for themselves the confusion of transmission lines, opencast coal sites, subsidence areas, trees and grass affected by atmospheric polution. They also saw some of the many attempts at reclamation, the new industrial estates on abandoned chemical waste lands, the opencast areas returned to agriculture, tips now planted and green, the new housing sites and recreation areas on reclaimed land.

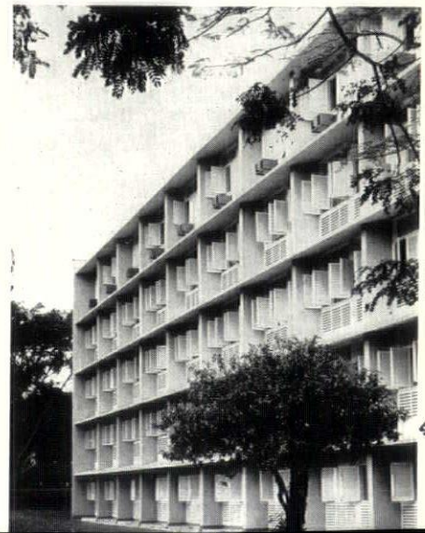
As had been said often enough, what is needed in this region is an over-all landscape plan. One which might co-ordinate the efforts of such progressive local authority planning departments as those of Durham, Lancashire and the West Riding and one, too, into which new reclamation schemes can be keyed. But more than that we must make up our minds what this plan might say and be clear-headed about ends as well as means. These are two separate but interacting problems. The first implies scale and the second attitudes of mind. As far as scale is concerned it is obvious that the humanized agricultural landscape as created in the eighteenth and early nineteenth centuries cannot survive the twentieth century industrial unit. And because of this it might be tempting to think about a new landscape of power, owing nothing to the eighteenth century tradition. But though visually exciting, the realization of this conception would be disastrous. What should be fought for is a master plan which will re-establish the right and humane relationship between man and the landscape as was done, for example, by TVA. The tremendous possibilities are a challenge which it is to be hoped will be accepted.

Processional Tomb

With most other media of monumentality forbidden him by the general embargo on figurative decoration, the architect of today, faced with the problem of designing a monument, tends more and more to aim at generating monumental emotions by means of sequences of spaces, through which the visitor is directed to proceed processionally by the nature of the plan. One of the first to be so designed, though one of the latest to be completed, is the Rothschild mausoleum on Mount Carmel, Israel, designed in the late 'thirties by Uriel Schiller. In it, the visitor, having traversed an elaborately laid-out garden, approaches the mausoleum proper by a sequence of spaces consisting of a polygenal courtyard outside the main gate, a square court whose floor is islanded by water, an ante-chamber reached by descending steps, and a curved passage—part of this sequence is seen in reverse order in 2, from the passage. By this point the visitor is below ground level, and enters the tomb-chamber directly, the double sarcophagus confronting him in a plain niche, 3, in the walls of sand-blasted concrete.

Sunshades of Singapore

Far too little notice is taken in Britain of the tropical architecture being designed by British architects in the Far East, and while more spectacular buildings—of undeniable merit—have attracted the limelight to other parts of the Commonwealth, the architects of Singapore in particular, working mostly in the field of large-scale residential work that leaves little margin for elaboration or exhibitionism have begun to achieve a workable tropical vernacular that is a valuable addition to the body of Commonwealth architecture. The sunshades and fenestration of the Nurses' hostel for Singapore General Hospital, for which the architect was K. A. Brundle, are a case in point, 4. The building has a concrete frame and the main sunshading element is, as it were, the edge of the floor slab, turned down to throw off rain-water. But from



4

floor to ceiling, and from column to column, the walling consists entirely of louvred panels and shutters, handled and detailed in a manner that is as elegant as it is unselfconscious—a living example of the Functional Tradition at work.

Architectural Historians in Piedmont

Piedmont was familiar ground for the 'Grand Tourist' of the seventeenth and eighteenth centuries. Prof. Wittkower found, for instance, that Lord Burlington borrowed the steps leading up to his Palladian villa at Chiswick from the Palace of Racconigi which he had passed on the way. And Richard Lassels, the seventeenth century traveller, describing the journey via Mont Cenis as the easiest way into Italy, gives an admiring account of Turin. Nowadays that has changed and Piedmont has become a rather neglected region in spite of its superb and varied landscape embracing alpine glaciers, slopes covered by chestnut and acacia trees, and many lakes, small and big. Its superbly interesting architecture ranges from Roman and early mediaeval to Olivetti at Ivrea (see AR, June, 1957). Thus this province was rather a good hunting ground for the participants of the *First International* (and the 10th national) *Congress* of Italy's architectural historians under the chairmanship of Prof. M. Salmi.

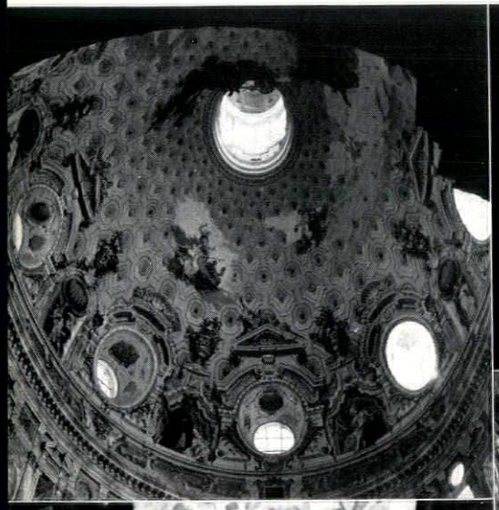
The mediaevalist could discuss the controversial date of the atrium of the cathedral of Casale Monferrato on the spot and visit Staffarda founded as a Cistercian abbey in the twelfth century, much of it in its pristine state, and the Abbey of Vezzolano full of interest for the iconographer, and both with innumerable riddles concerning the dates of re-used capitals. The late mediaeval castles of the Val d'Aosta, like Fenis or Issogne, give a unique view of domestic life and buildings of that period.

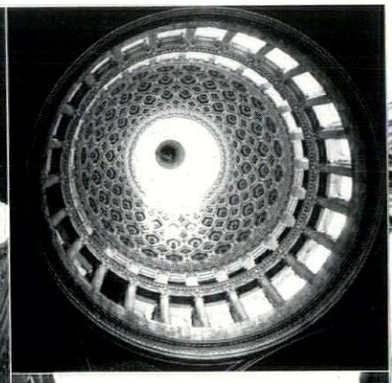
Whoever wants to study the seventeenth-century conception of a Gothic interior should visit the cathedral of Asti which was frescoed all over, walls and vaults, by Carlo Carlone in such a manner that one can hardly tell from below where Gothic construction ends and Baroque painting begins. The best known and the most important buildings are, of course, those of the seventeenth and eighteenth centuries. It must have been the *genius loci* of Piedmont which first made Guarino Guarini, a native of Modena, be called to Turin. He was followed by Filippo Juvarra, who when he left his native Messina for Turin was a finished architect who had found and fully developed his style (this was proved in a lecture by Prof. Maria Accascina) when he came to Turin.

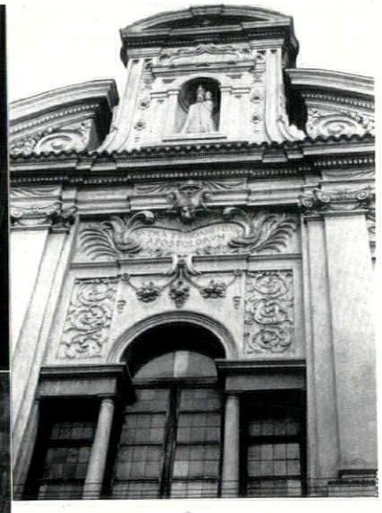
Vittone, the last of the triumvirate and the last to gain fame, was Piedmontese by birth; by now his churches at Bra and Chieri, dazzling constructions on centralized plans, are well known. But there are other architects too who deserve mention, e.g. Alessandro Vitozzi, to whom the first design of the staggering Santuario di Vicoforte near Mondovi is due, and F. Gallo, who amongst other churches built its cupola, 5, claimed to be the largest elliptical dome in existence. Generally speaking, nowhere else has the beholder to crane his neck so much and so often to look upwards to hovering domes of fantastic construction or painted perspectives, 6 (San Gaudenzio, Novara). Even the student of nineteenth century architecture, who is richly rewarded, has to gaze upwards whether inside or outside of Antonelli's cupola to the same San Gaudenzio, 7 and 8.

There is one general feature in Piedmont's architecture which ought to be mentioned, and that is a certain lack of conformity to rules; motifs like a Palladian window appear, e.g. in San Paolo in Casale Monferrato, 9, in the middle of a façade or elsewhere are inserted in the top storey of a campanile; another campanile, in Carignano, 10, displays a highly unorthodox collection of motifs. There are towers and gates which look wholly '*all Inglese*'. Thus the English architect or dilettante receiving his first impression of Italian architecture from Piedmont might well have been greatly impressed by it and take it for the real stuff.

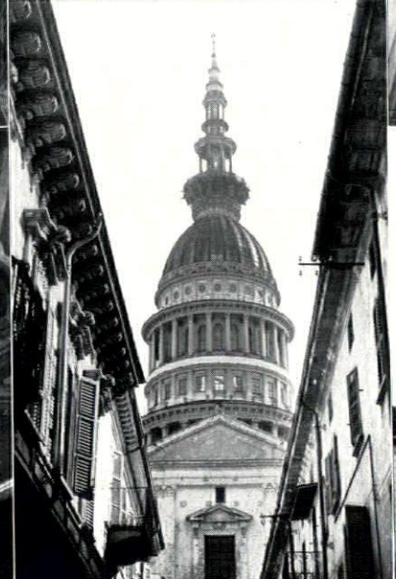
5|7|9
6|8|10 ***architectural historians in Piedmont.*** *5, the cupola of the Santuario di Vicoforte by F. Gallo. 6, an eighteenth century dome in San Gaudenzio, Novara. 7 and 8, inside and outside of the Cupola added by Antonelli to San Gaudenzio. 9, Venetian window in San Paolo at Casale Monferrato. 10, campanile at Carignano.*













CORRESPONDENCE

House at Watford

To the Editors,

SIRS,—When I look at the illustrations of the absurd little house in suburban Watford shown in your September issue and read the even more absurd apologia for it supplied by the architects, Alison and Peter Smithson, I am forced to the conclusion that the devotees of the new aesthetic mysteries are prepared to go to any lengths of silliness in order not to seem to be as other men are. Mr. and Mrs. Smithson may well be sick and tired of the sight of the speculative builders' solutions of this commonplace problem—so am I, but it seems to me, that in their efforts to avoid doing the same they have done not better, or even as well, but worse! Now I cannot think that this is because they are lacking in ability. Can it be then that they are not equipped with sound theory, which makes them go so wildly wrong?

Yours, etc.,
NORMAN HARRISON.
London, S.W.13.

Curtain Walls

To the Editors,

SIRS,—I note with interest that there are several kinds of glass curtain wall but in practice I have seen only the type which appears to be a many-decked sandwich of alternate glass and primary colour. A new flatted factory in Birmingham is exactly the same as the comprehensive school at Great Barr. There is, at first sight, a crude stimulus from these new structures standing out from their darker surrounds like the vivid hat and scarf of a Jamaican lady.

They owe this excitement to the contrast they provide against older buildings, but if a whole district or a city was consistently in this style (as Bath is consistently eighteenth century) the result would merit an issue of 'Outrage' all to itself.

Why should primary colours bash us across the head from these curtain walls? It is time that somebody used a decorative *form* rather than this cheap and un-English use of strong colour.

Yours, etc.,
R. G. BROADHURST.
Kings Norton, Birmingham.

Architect of the TUC Memorial Building (pages 370–388), **David du R. Aberdeen** was born in 1913 and trained at the Bartlett School of Architecture. Practice commenced 1937, won Watford Fire Station open competition in same year. Practice resumed after war as planning and design architect for the Brabazon Hangar, Filton. Has designed general hospital for Northern Ireland; university buildings—botany and zoology laboratories and halls of residence; offices; factories; housing areas and flats in several of the New Towns. Current work includes headquarters of international banking house in City and multi-storey flats.

ACKNOWLEDGMENTS

The colour block on page 407 appears by courtesy of Frederick Gibberd.

COVER, David Aberdeen. MARGINALIA: 4, Douglas C. Pike; 5–10, S. Lang. TUC MEMORIAL BUILDING, pages 370–388: Woburn Studios 1, Colin Westwood 4, 10, 11, 12, 16, 17, 22, 27. David Aberdeen 5; remainder Toomey, Arphot. STREET LIGHTING, pages 389–394: 6, 22–26, Toomey, Arphot; 4, General Electric Co.; 5, Poles Ltd., Birmingham; 15 and 16, Hobbs, Ofen & Co. BRASILIA, pages 395–402: 1, Carlos Bothelo. CANOVA, pages 403–6: 1 and 3, by gracious permission of Her Majesty the Queen; 2, by courtesy of Messrs. Wildenstein; 4, Devonshire Collection, Chatsworth, by permission of the Trustees of the Chatsworth Settlement. CURRENT ARCHITECTURE, pages 407–410: 1–5, Wainwright. MISCELLANY, pages 411–418. Functional Tradition: Nairn, Arphot. History: 1, 2, 4, 6, 8. Foto Gauss, Stuttgart. 3, Lossen & Co. 5, 7, 9, S. Lang. Exhibitions (Triennale): Nairn, Arphot (Interbau): Keystone (Painting and Sculpture): 3, Sport and General Press. 4, Galen Sayers; 5, Beaux Arts Gallery. SKILL: Interiors, pages 419–423: Showrooms in Wigmore Street, Stereograms Ltd. and Peter Cracknell; Garden Centre in Wigmore Street, John Maltby. Techniques, pages 423–430, Toomey, Arphot.



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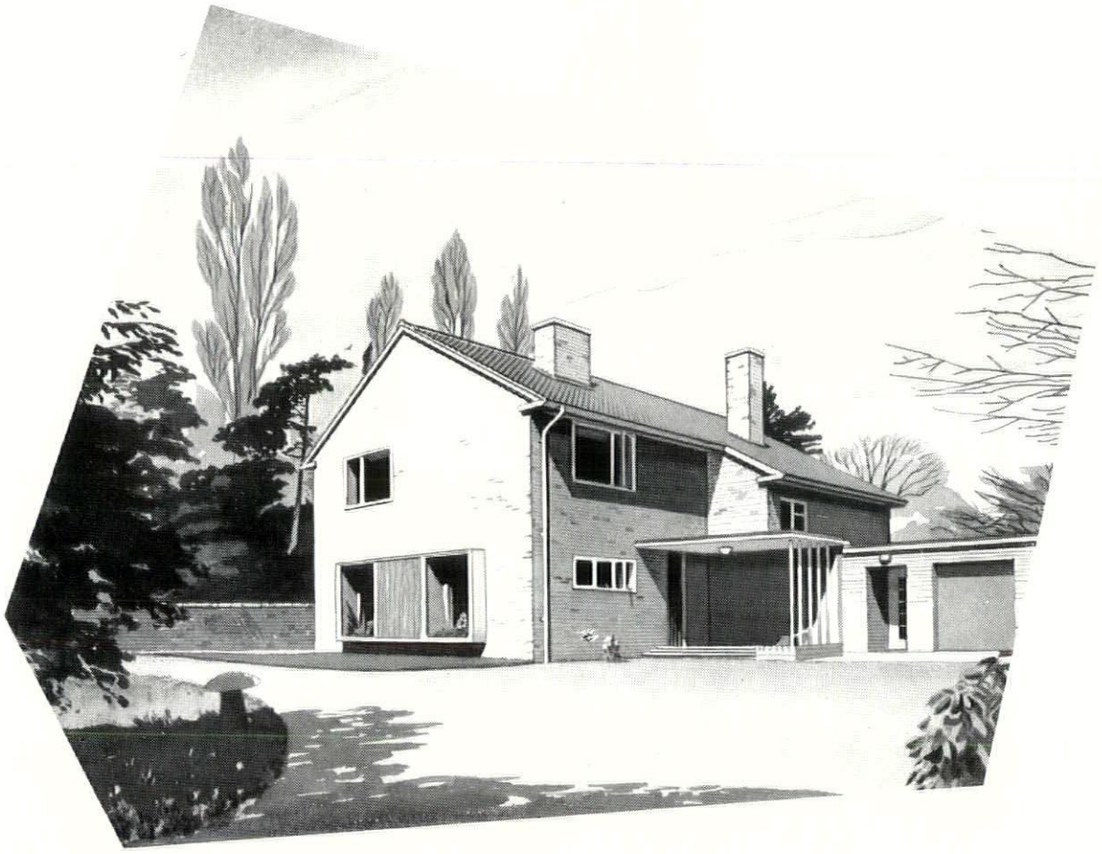
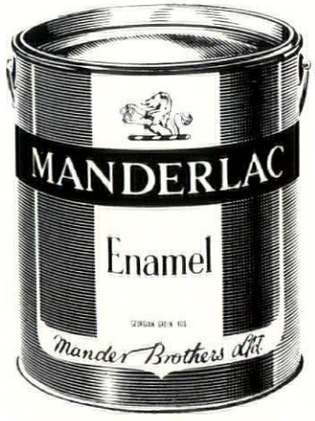


A. G. Sheppard Fidler, F.R.I.B.A.,
Birmingham City Architect with
L. J. Multon, F.R.I.B.A., in association

...this architect chose



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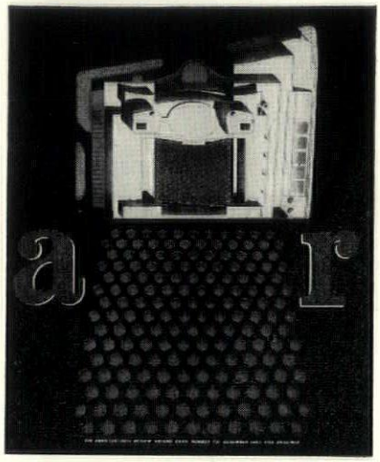
THE ARCHITECTURAL REVIEW

Volume 122 Number 731 December 1957



This month's cover ponders the seen and unseen aspects of the recently completed TUC Memorial Building. The plan view of any structure is a kind of professional secret shared between the architect and the building itself, glimpsed by an occasional air traveller, but never seen, and rarely appreciated, by those who use the building as it was designed to be used. The enquiring visitor may possibly be able to enjoy a sight of the rooflights of the conference hall, from a nearly vertical viewpoint, but otherwise the plan and the planning can only be appreciated from drawings, illustrations, and descriptions, such as appear, in the case of this particular building, on pp. 370-388.

363 **Marginalia**

364 **Correspondence**

366 **Frontispiece**

367 **John Britton** *by Peter Ferriday* As the nineteenth century began, topographical writing in England underwent an almost total revolution, and changed from an amateurish technique for flattering local pride and piety, to a professional discipline with pretensions to rational method and historical accuracy. The man who initiated, and largely accomplished this revolution, was John Britton, whose two volumes on Wiltshire, his native county, appeared in 1801, and launched him on a career that was ultimately to see most of Britain, and its ancient monuments, described and illustrated, often at a comfortable profit to himself and his partners. Mr. Ferriday describes the methods and career of this pioneer topographer, and makes an appraisal of the quality of the various illustrators who worked for Britton, among them John Martin and the elder Pugin.

370 **T U C Memorial Building** *Architects: David du R. Aberdeen and Partners*

389 **Street Lighting** *by Gordon Cullen* Quite apart from such problems as the design of the equipment involved, street lighting raises townscape problems of a broader sort, concerned with the siting of that equipment and the distribution of the light it produces. In both these matters the townscaper and the lighting engineer are likely to find themselves in direct opposition, because the codes of practice governing the height of lamp-standards, and the aim of even lighting (implicit in the theory of Silhouette Vision) both tend to produce a set of stock answers to all problems, irrespective of their location. Street lighting thus tends to become yet another agent of standardized Subtopia. Yet, as Mr. Cullen points out, the engineer, who normally insists on rigid conformity to standard practices, is the very man who can assist the townscaper seeking to enhance or maintain the specific character of a place, because he knows precisely what variations from standard, and other flexibilities of design, are possible with the equipment currently available, or will be possible with the equipment that will soon render Silhouette-Vision theory obsolescent.

394 **Brasilia** *by William Holford* As if to crown its internationally-celebrated achievements in architecture, Brazil is now proposing to implement legislation laid down some years ago, and create a new administrative and governmental capital city for half-a-million inhabitants on a virgin site in the up-country state of Goiás. The project has been entrusted to Brazil's new generation of architects from the start: Oscar Niemeyer is in overall architectural control, and the competition for the master-plan has been won by Lucio Costa, whose proposals are as bold and original as the project requires. Sir William Holford, who was a member of the jury for this competition, and thus speaks with inside knowledge, indicates the background and conditions of the project, and discusses the aims and approach of the Costa proposals, which are further expounded in the first full English translation of Costa's report, which appears on the pages following Sir William's article.

403 **Canova and the English** *by F. J. B. Watson* The part played by English artists and amateurs in the creation of the Neo-Classical movement at its original focus, in Rome, and in its subsequent development, was of considerable importance, but subsequently it has been largely ignored. In the case of Antonio Canova, whose bicentenary falls this year, there was some change of opinion, and although this sculptor of European standing was not much patronized or visited by the English in his youth, he became, after the Napoleonic Wars were over, a magnet for Englishmen abroad, and the recipient of distinguished patronage, including that of the Prince Regent. Mr. Watson, one of England's leading Neo-Classical scholars and the author of an article on Flaxman which appeared in the REVIEW in 1955, gives the fullest chronicle ever printed of the English interest in Canova, drawn from contemporary memoirs, correspondences and diaries, and illustrated with unpublished photographs of Canova's work in the Royal collections.

407 **Current Architecture**

Miscellany

411 **Books**

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414 **History**

415 **Exhibitions**

Skill

419 **Interiors: Showrooms in Wigmore St., W.1** *Designer: Julian Green*

422 **Garden Centre in Wigmore St., W.1** *Designer: F. M. Gross*

423 **Techniques: T U C Building** *by Lance Wright* Not only is it remarkable by virtue of being one of the mere handful of substantial public buildings erected in Britain since the war, but the TUC Memorial Building is also noteworthy for the very high standard of its finishes, trim and equipment, both in the materials employed and the care exercised in their choice and design. Since opportunities to work so lavishly have been very rare in the past decade, it has been felt proper to devote a whole article to these aspects of the building alone.

430 **The Industry**

432 **Contractors**

Author: *William Graham Holford:* apprenticed in South Africa before taking the five-year course at Liverpool under Charles Reilly. Contemporary of Gordon Stephenson, Denis Harper, Bryan Lewis and other professors. Spent a year with Voorhees, Gmelin and Walker, New York. Rome Scholar 1930. Lecturer and then Professor of Civic Design at Liverpool. Planned and built for the Special Areas Commissioner until 1939. Organized Ministry of Supply Office for factories and hostels. Headed technical division, Ministry of Town and Country Planning. Now Professor of Town Planning, University College, London.

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THE ARCHITECTURAL REVIEW

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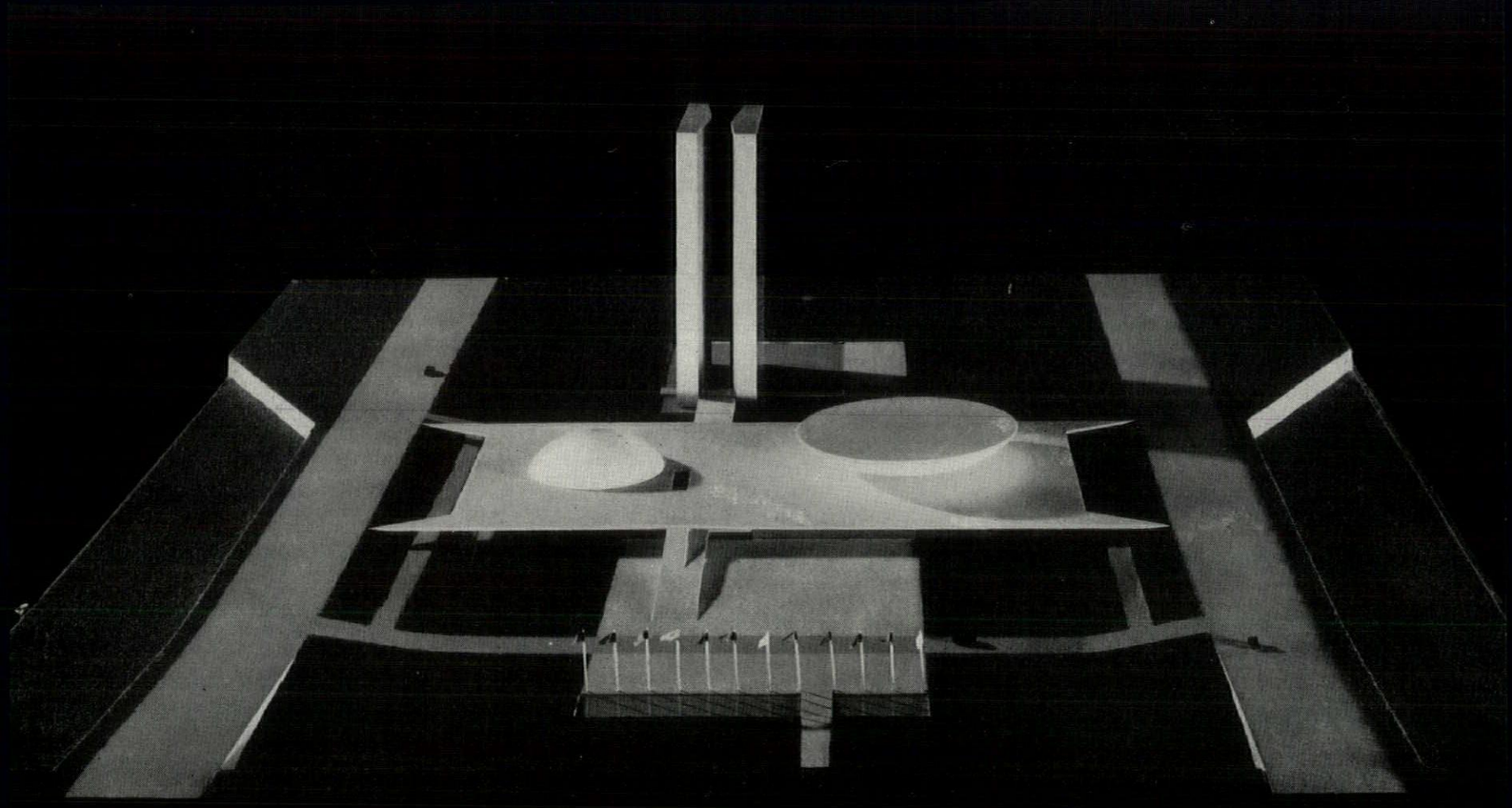
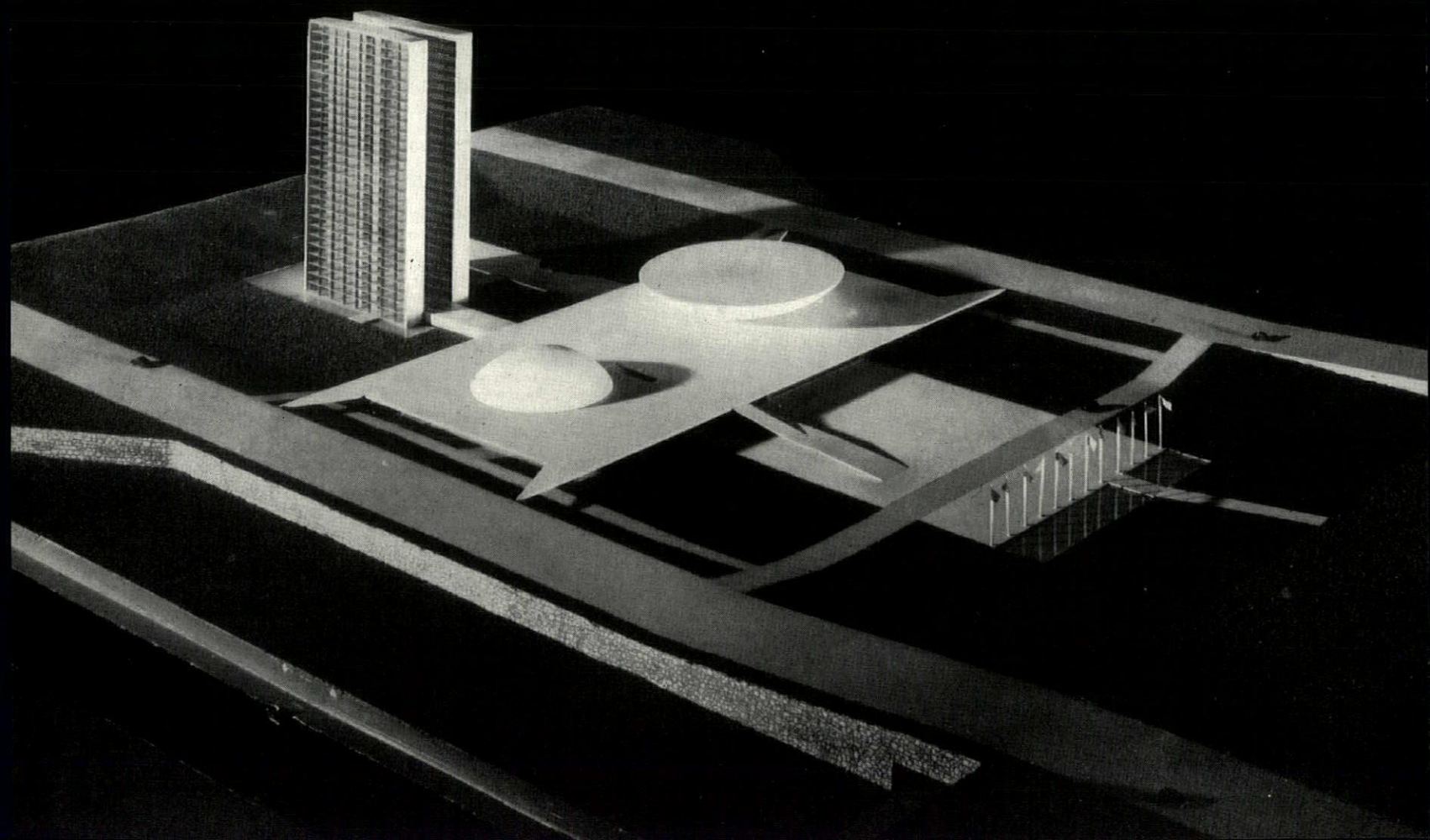
FIVE SHILLINGS



This masterly composition of elementary geometrical solids is a model of the parliament buildings by Oscar Niemeyer for Brazil's new capital city, Brasilia. Behind the broad platform is the secretariat and service building, and on the platform itself stand the Senate and the Chamber of Deputies. But, though Niemeyer will design other buildings, the overall town-plan has been entrusted to Lucio Costa, and his proposals are described by Sir William Holford on page 395.



Peter Ferriday

JOHN BRITTON 1771-1857

Topographical literature had a venerable and voluminous past by 1800. The form of the county histories—the most popular vehicles of topographical and antiquarian lore—had not changed much since the mid-eighteenth century. The church—its monuments, heraldry, incumbents, value as a living in the reign of Henry VIII—the Family and their Seat—in the luxurious volumes genealogical tables thrown in—a general and not well informed account of the history and geography, that constituted a county history.

These massive two, three, or four volume works, sometimes badly, never more than pleasantly illustrated, make unrewarding reading and must always have done so. They flattered the vanity of the owners of the Seats but although they vary in merit, the interest is very limited. Though the authors trudged from village to village with admirable industry and piety they usually forgot to carry their wits along with them. These county histories were subscription books—half down and half on receipt of the book. The plates of the Seats were paid for, very properly, by the owners. In short they were not commercial ventures but private speculations involving authors, booksellers and patrons. One thing can be said of all these early topographers, they none of them got a penny piece out of the work. A clever Wiltshireman was to show that there was money in topography and antiquity if you knew how to set about it.

John Britton was born in 1771 at Kington St. Michael. His father was a baker, shop-keeper, and small farmer, quite inefficient and going down in a county that was a proto-Depressed Area. Britton recorded that he was as a boy inquisitive, ambitious, emulous, sensitive and uneducated. He went to local schools and to a Chippenham one but learnt very little, though of course he had read his *Pilgrim's Progress* and *Robinson Crusoe*. After his schooling he helped in the bakery and yearned. In 1787 an uncle on his mother's side took him to London, apprenticed him to the Jerusalem Tavern, Clerkenwell Green, to learn the 'whole art and mystery of a wine merchant,' and then forgot about him. The unfortunate boy spent the next years of his life in a cellar and in the odour of wines and spirits. The art and mystery part of the profession was bogus.

Britton was befriended by various artist - craftsmen, and through William Essex met another apprentice (learning the whole art and mystery of enamelling), Edward Wedlake Brayley, a good and remarkable man. The two apprentices were determined to escape their bondage, and they looked to literature as the most likely way. Their first work was a ballad entitled *The Guinea Pig*, a skit on the powder tax and pigtails; they sold a thousand at a penny each, but a pirate cheated them out of more. In his twenty-second year Britton gave up the wine cellar, walked to Wiltshire to propose, was rejected, walked on to Bath, walked back to London, and re-entered the wine cellar. From the cellar he went to a solicitor's office, and thence, and for good and all, to literature. As a frequenter of political and social clubs he had acquired an ability for public haranguing and was able to earn three pounds a week at a Panton Street theatre by reciting, singing and writing. He came to know the Dibdins, Grimaldi, Belzoni (the 'Patagonian Sampson' at the time—the Egyptology came later), and many others. He took to regular journalistic hackwork, reviewing plays for the *Sporting Magazine* and wrote *The Life and Adventures of Pizarro*, Kotzebue having popularized this worthy. Inspired by the travels of Warner he began to take an interest in topography and came to know most of the London antiquarians and some of the architects, including Soane, Nash and Wyatt. Given the chance he was ready.

The *Sporting Magazine* was owned by John Wheble, and Wheble was looking for somebody to get him out of some difficulties. He had, as far back as 1784, when he lived in Salisbury, announced his intention of producing a topographical account of Wiltshire in two volumes and solicited subscriptions. The subscriptions to hand he turned his attention elsewhere. Conscience must have nagged him for in 1800 he asked young Britton to do the work for him. Britton's luck was in; for at about the same time a group of bookseller-publishers invited him and Brayley to edit a series of volumes to be called *The Beauties of England and Wales*. Though he knew little of topography, not much history and no architecture he undertook the jobs. He had to offer industry, intelligence, a good pair of legs, and the run of John Nichols's antiquarian library. He and Brayley walked Wiltshire.

The 1801 Wiltshire volumes were, as Britton later admitted, nothing to boast about, though considering the circumstances they could hardly have been better done. And they were done in a year, a fact which does something to explain Britton's success and to distinguish him from the old gang of amateurs. There were enough facts gathered to make it even today of some use to the writers of the Victoria County History but there was a great deal more padding. The theatrical declamation was put to good account in hiding the gaps. 'Happy, happy Britain! Well mayst thou be distinguished in the scale of nations, when the great ones of thy land disdain not to provide relief for the necessities of the indigent . . . Avert, oh Heaven! avert the gathering tempest! *Let Plenty be re-established in our land*, and peace *once more* re-visit our bleeding country.' (Britton added an immensely superior third volume in 1825—containing a John Martin drawing of Avebury that would have warmed a Druid's heart—and did much for Wiltshire studies. It was he who discovered Aubrey and built up a valuable Wiltshire library.)

The *Beauties* was a very considerable piece of publishing and the proprietors must have been brave men to entrust it to such young and inexperienced editors. No one publisher (or perhaps more properly bookseller, for the distinction was not yet completed) could have provided sufficient capital for such an undertaking and the tried practice (Johnson's *Dictionary*) of a combine was invoked. Vernor and Hood were the publishers, but Longman & Rees, Cuthell & Martin, J. & A. Arch, W. J. & J. Richardson, J. Harris, and B. Crosby all took shares. There can be little doubt that Britton laid down the plan of the work and provided the general direction. The text of the earlier volumes was in the main written by Brayley, and Britton has recorded his own share; 'The principal travelling, correspondence, labour of accumulating books, documents, direction of draughtsmen, and engravers, and some other necessary vocations devolved on me.' The two editors made their first general tour in June, 1800, and the first part—the series went alphabetically, so it was Bedfordshire—appeared in April, 1801, and the three Bs were completed by the end of the year. That was professionalism. 1802 saw the production of the four C counties, the Isle of Man and Derby, and in 1803 the remaining three D counties, Essex and Gloucestershire. Although these early volumes were clearly written in haste they were pretty satisfactory in the main. The geography, history (Camden, etc.), markets, fairs, industry, population (the new fangled Census had just come), agriculture (the reports of Arthur Young and others), the poor (Eden) were regular features. There was system and expedition.

Seeing that tramping and searching through published material was not enough Britton devised quicker and better ways :

Topographical History
of
WARWICKSHIRE

Having engaged to write a concise Topographical and Descriptive account of WARWICKSHIRE, for the Beauties of England, of which work the History of this County is to constitute part of the XVth volume, I am induced to trespass on your attention, and trust you will pardon the liberty. Desirous of rendering this Account accurate and satisfactory to the most intelligent Gentlemen of the County, I adopt this mode of interesting you to favour me with some information respecting the History, Antiquities, and present state of ———— and its neighbourhood. Should I not have an opportunity of paying my respects to you in person, during my tour through the County, I shall esteem it a *particular favour* if you will address any communication to

Your Obedient Servant,
J. BRITTON.

Tavistock Place,
London.

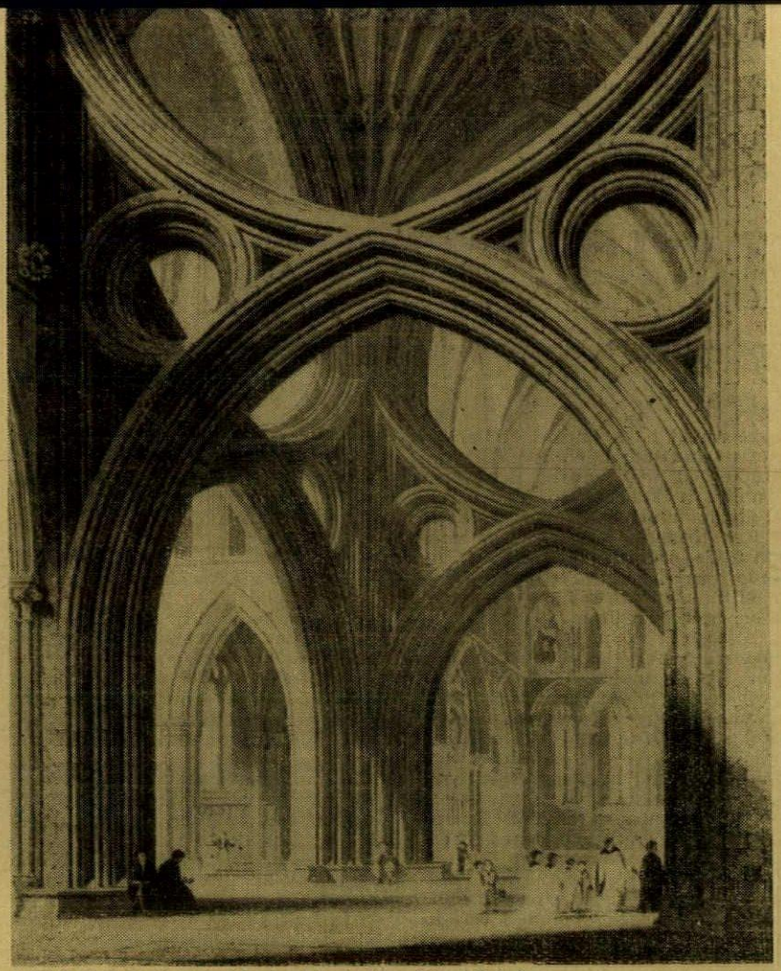
Thousands of such printed letters—very good advertising material—were no doubt dispatched to local antiquaries, clergymen, and denizens of Seats. Not suprisingly the volumes got fuller and fuller and the original plan had to be scrapped. The Kent beauties, written entirely by Brayley, ran to 900 pages, and the Middlesex volumes to about 3,800. By 1809 there was a steady sale of 3,500, a phenomenal achievement, and in spite of that another publisher found it worth while to run some of the counties in new editions only three or four years after the first publication.

In spite of the success the editors and publishers fell out. 'Angry contentions,' as Britton described them, became more frequent. The publishers wanted even quicker appearances but the main source of trouble was quite different. The editors wanted to put much greater emphasis on antiquities and architecture, the publishers insisted on 'seats and wood-scenery.' The differences were patched up until Hood died (Britton was on good terms with him) but when Harris succeeded as chief proprietor in 1811 Britton and Brayley were out. The series was completed by other hands in 1818 twenty-six volumes strong.

The *Beauties* are still very well worth attention and some of the illustrations of churches of great historic value. The two young editors had become masters of their trade.

Britton showed the drawings that the publishers thought unsuitable for the *Beauties* to Josiah Taylor, the leading architectural publisher and bookseller, and a new work was conceived. *Architectural Antiquities of Great Britain* was thoroughly advertised and Longman the greatest publisher of the time, took a third share. Britton was no mere editor but one of the publishers, owning the copyright himself and taking a share of the profits. (The copyright was, it will be seen, of some importance to him, and so was the fact that he was the owner of the drawings.) The first part of the *Antiquities* appeared in 1805, the volumes in 1807, 1809, 1812, 1814, and a supplementary volume with a separate title in 1827. The reviewers were kind with the exception of John Landseer, who was riled by Britton's obsequious dedications—'undulations of grovelling humility.' According to Landseer, Britton was a 'mere empirical pretender both in art and literature', and had a 'pompous manner of parading the little learning he possesses.' Landseer had 'a malignant and envious heart' noted Britton.

The value of the *Antiquities* lay in the illustrations. The days of the poor cuts in the *Gentleman's Magazine*



1, *Wells Cathedral from* Architectural Antiquities of Great Britain.

were past—here were accurate and beautiful plates available to a large public for the first time. Many people, some to make their mark in the Gothic Revival, were to learn their rudiments from the parts of the *Antiquities*. The quality of the text was not high but by the time the last volume had been issued John Rickman (the 'Quack Quaker' Britton called him) had issued his ready reckoner dating device and his style terminology and this helped greatly in the search for accuracy. The span of the *Antiquities* covers the creation of a large body of Gothic lovers, and Britton's work has a unique place as a popularizer. The five volumes cost £17,092 to produce. It was not surprising that the plates were better than anything seen before, it was surprising that the work paid.

While the *Antiquities* were in progress Britton wrote five books with himself and Longman's as publishers and then set about a new series.

In the eighteenth century two first-rate studies had been written about two different cathedrals as well as many not so distinguished, but nobody had thought of covering all the cathedrals or at least nobody had had the resources to do so. Britton had the thought, and, with successes behind him, the resources.

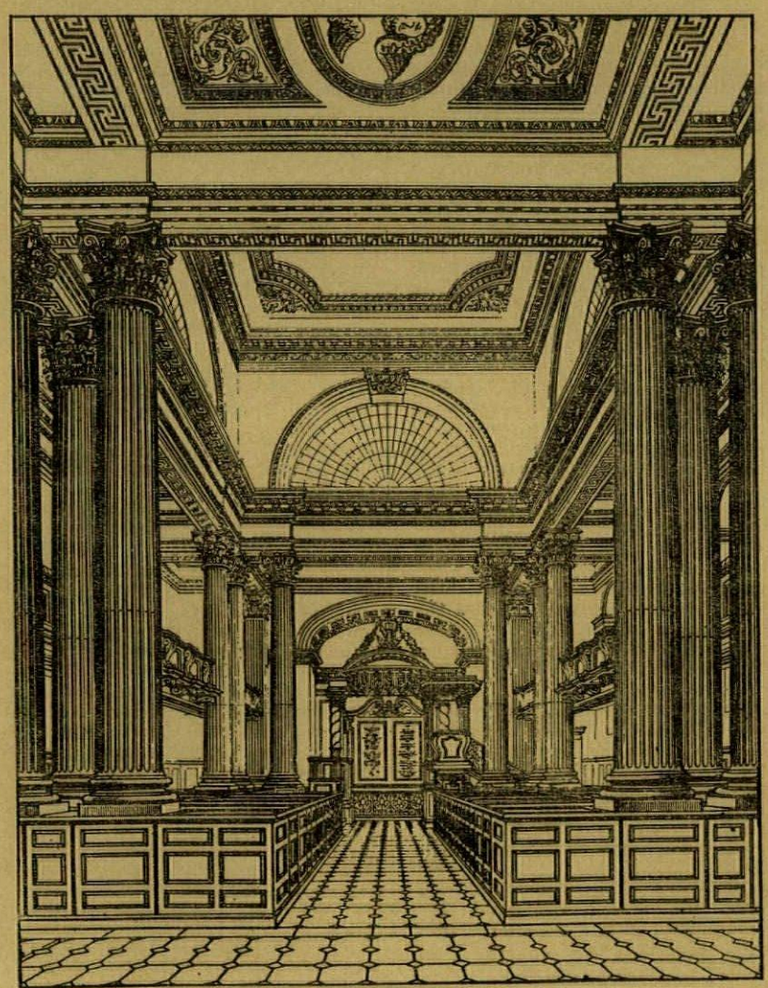
The Cathedral Antiquities of England is still one of the most sought after sets of the ordinary, non-incunabulistic, non-Redouté book collectors. The collectors go for the illustrations but at the time and for the time the text was excellent. Britton went through the compiler-historians for his ecclesiastical history, he acquired a complete set of books on each cathedral, he had the indefatigable Brayley going through fabric records, he applied to local scholars and the cathedral authorities for information. Then all the material was arranged in systematic form; each account began with the history, then came the construction and arrangement—the fabric—then the monuments, the lives of the bishops, and finally a bibliography. The form is substantially that of modern books. Britton had a tidy mind. The author himself accompanied two or three artists to the cathedral and there directed their labours for a month or so. The Le Keux brothers and other engravers then took over and after that the parts were issued.

Very properly, considering his provenance, the series began with Salisbury. Britton had hoped that Henry Hatcher (the ghost of the historian Coxe) would write the text but when he applied to him he learned that Hatcher had already undertaken to write the text for Dodsworth's projected book. Undeterred Britton went down to Salisbury with his chosen artist Frederick Nash. As soon as they got there Nash deserted to the other side. In spite of all this the first volume of the series was a great success and the work went steadily on. For some reason the success was not maintained and the series appears to have been quite unprofitable. This failure was all the stranger because the quality of the drawings improved as time went on, but whatever the cause Britton lost heart and the work was done very slowly. Each new volume had a preface full of the author's complaints. Here he was producing a work of national importance and what was he getting out of it? In fact he must have got quite a bit. He put up for sale a unique copy of the *Architectural Antiquities* with the original drawings and proofs of the plates for £500, and unique copies, with the drawings, of the Salisbury Cathedral and Norwich Cathedral volumes for 120 guineas and 100 guineas. They were bought by John Broadley, a Yorkshire patron, as were all the later cathedral volumes. That must have been quite a handsome capital gain. The money was well earned for the public had been rewarded with dozens of splendid engravings by the Le Keux brothers. They had for the first time managed to suggest the space, the spaciousness, the height and the delicacy of a Gothic nave. The engravings are still splendid works of art and worth a few thousand photographs apiece.

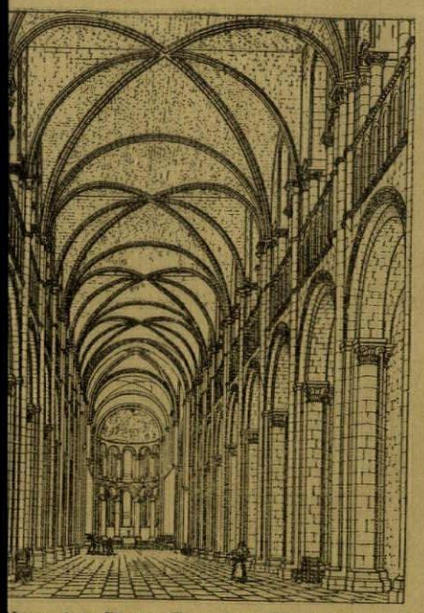
With the cathedrals dragging their weary and unprofitable way Britton undertook fresh work. The grand subscription volume, *Graphical and Literary Illustrations of Fonthill Abbey*, which had Beckford's approval, was published in 1823. As soon as the first copies were distributed (806 of them) some of the plates were destroyed, an excellent expedient still in favour. The drawings were by the competent Cattermole, the engravings from less competent hands—though Le Keux contributed some characteristic work. The text was redeemed from being dull by the account of the visit of Nelson and Lady Hamilton to Fonthill in 1800. In the evening the party did scenic representations and Lady Hamilton displayed herself as Agrippina, which has an irony all its own.

The next major work after the Fonthill volume was perhaps Britton's masterpiece. The *Illustrations of the Public Buildings of London* was published by Britton along with Taylor and Pugin. (According to Britton his fellow owners did him down.) Such is the reputation of this work that beyond saying that it is the finest thing of its kind, that the plates—elevations, plans, sections—were done with a marvellous simplicity and grace that has not been equalled since and that as architectural *book* illustrations they are without any equal, one need not specify. Two points are, however, worth mention. The Le Keux engravings were not better than the others—Le Keux had not slipped, he had bitten the rest. The second point is that the text almost deserved the illustrations. The two volumes cost £3,360 to produce and were not a success on the market.

In 1827 Britton published *The Union of Architecture, Sculpture, and Painting; exemplified by a series of illustrations, with descriptive accounts of the house and galleries of John Soane*. He had known the great architect for thirty years, had been a buyer for him (one of his purchases was Hogarth's *Election*), and this was to be a tribute as well as a profitable venture. The text was by the journalist, W. H. Leeds, and very dull, the illustrations were competent and minutely accurate, and the whole thing a disastrous failure. Before the consequences of the failure had come home Britton had issued, with Pugin and the Le Keux brothers as fellow publishers, *Architectural Antiquities of Normandy*. The engravings only were sold and the text, a worthless one, was given to the subscribers in order to circumvent the eleven copies law. (Britton waged unceasing war on the receivers of the eleven copies, which cost him a fortune—he was all the more angry in the knowledge that some wily Celts sold all the free books they got. Britton wrote a bitter book for Longman's on the subject. He gave the British Museum a copy of the Normandy book—Sir Frederick Madden was a friend and helped him with information.) The interiors of the churches and cathe-



2, *St. Mary Woolnoth, London, from* Public Buildings of London, Vol. 1.



bbaye Aux Dames, Caen, from The Architectural uities of Normandy.

drals as drawn by Pugin and engraved by either Le Keux are quite the finest work of the kind ever done. They are accurate and beautiful and such things will never be made again.

The Soane book brought Britton down, so he let it be known. He wrote to Soane: 'Instead of publishing myself, I must write for the publishers at so much per sheet, and I have now two or three offers. I must still work hard to keep up my credit and pay my way.' Soane replied that Britton could forget his debts for the time being but not long afterwards was so infuriated by Britton's haggling over the price of the plates of the *Union* that he reminded him that £550, minus the cost of books bought on his behalf, was owing. The quarrel was patched up and in 1835 Soane very generously bought the plates for £680 10s., thus squaring accounts.

Naturally enough the hackwork he had to undertake late in life was far from the standard of his own publications. Nevertheless it was good enough and indeed he must, with this experience as writer, editor and organizer, have been a boon to any publisher. He wrote *Bath and Bristol* to illustrations by T. H. Shepherd, then, in 1830, *Memoirs of the Tower of London*, in collaboration with Brayley. In the same year came *Picturesque Antiquities of the English Cities*, a charming and valuable collection of W. H. Bartlett—Le Keux plates. In 1832 he produced *Descriptive Sketches of Tunbridge Wells and the Calverley Estate*, one of the most candid guide books ever written. So candid is it that one might suspect the author to be a hireling of Buxton or Bath. Readers were warned at great length of the dangers resulting from the steel in the water. especially the ladies, who could expect 'preternatural turgesence of the uterus,' which sounds pretty horrible. The steel in the water 'produces costiveness, congestion of the liver, and, ultimately, preternatural fulness in the brain, with its consequences.' However he dealt fairly and showed how the steel could be removed (a method all his own and guaranteed by Faraday) and stated the waters to be good for all diseases which had general or local debility for their basis (for example 'the dyspeptic state of the literary student, panting for fame and distinction in his secluded study'). Apart from the medical lore it was a useful compilation.

Slowly and very unwillingly Britton went down. The *Cathedral Antiquities* had to be given up. Britton made strenuous efforts to keep them going and finally wrote to the cathedral authorities asking for their support. He should have known better—most of them did not even bother to reply. So, in 1835, it was decided that Carlisle, Chester, Chichester, Durham, Ely, Lincoln, and Rochester would not take their place in one of the finest series of books ever published. (Happily R. W. Billings later made good two of the gaps.) Britton, his work done, put all the unsold copies, along with the plates, up for auction, added to them all the remaining copies of those works—*London*, *Architectural Antiquities*, and *Normandy* among them—which he had published. They were all bought by M. A. Nattali, who sold them off at between a half and a third of the original price. It must have been a considerable transaction. The *Cathedral Antiquities* alone had cost over £19,000 to produce. It is sad to record that the sale did not do Britton much good. He invested his money in a railway company and in five years had lost it nearly all.

After the grand sale work went steadily on. 1836 saw the publication of *A Dictionary of the Architecture and Archaeology of the Middle Ages* (another financial failure) and *The History of the Ancient Palace of the House of Parliament at Westminster*, which he wrote with Brayley. In 1839 he wrote the text for John C. Bourne's drawings of the building of the London and Birmingham Railway—a splendid volume of great historical value. In this year he also sold part of his library* and it fetched £1,029 14s. In 1840 he published *Graphic Illustrations . . . of Toddington, Gloucestershire, the seat of Lord Sudeley*. Sudeley was an amateur architect designing in a Gothic of c. 1800 and he paid for the plates, which were pleasantly drawn and etched by R. Kitton.

The literary work continued but by now a new race of 'scientific' antiquaries had come into being and the sort of thing Britton could write would no longer do. The younger men, to their credit, got up a subscription and gave him a testimonial† (the list headed by Prince Albert) and a dinner at a favourite resort of his, the Castle Hotel, Richmond. In exchange Britton undertook to write and present to each subscriber to the testimonial a copy of his *Autobiography*. (This rambling work only took his story a small way through his long life and was devoid of any literary merit.) At the time of the testimonial—1845—some figures were collected about Britton's works. As a publisher or part publisher (that is excluding the *Beauties* and much else) he had issued 66 volumes, of 17,122 pages, with 1,866 engravings and costing £50,328. The quality of the productions completes the story.

After that Britton lived in retirement. He satisfied a life-long ambition by writing a book to prove that the Junius Letters were by Colonel Barré, a theory not embraced by other literary historians. One of his last literary compositions was a tribute to E. W. Brayley, who died after sixty years of continuous literary work in 1855. Britton himself died on the first day of 1857.

John Britton was a special case. His mind was undistinguished, his character not particularly endearing. Yet without being very clever, or very learned, or very amiable, or very successful how well worth doing his life's work had been. The work itself fits into no obvious category. Britton was a popularizer, the most important of the Gothic Revival. An antiquary who knew him well wrote: 'He is something between a book-maker and a book-seller. He seems to have thought that there was a great virtue in Advertising. He told me he had spent £500 in advertising one of his works and 250 on another. His schemes in this way have been very successful.' His advertising propensities were equalled by his knack of getting scholars to do unpaid work for him by personal, and fulsome, appeals to their good nature. Of a 'popular' journalist an unpopular novelist wrote, 'his sincerity took the form of ringing doorbells and his definition of genius was the art of finding people at home.' Britton put his hand to many doorbells and found many useful people at home. But that is only part of him.

Having no great talent as an architectural writer still Britton knew exactly the sort of books he wanted to bear his imprint. It is the Britton imprint not the Britton text that matters. The imprint implies Mackenzie, Pugin, Ansted, Blore, Kitton, Bartlett, Cattermole, the Le Keux brothers. It was Britton who gathered these artists, who supervised them, who published them. It was he who formed the projects which gave them the chance to display their splendid talents. It was he who brought architectural book illustration to its perfection. It was he who showed that beautiful books need not be mere monstrous folios for the rich collectors' libraries. Comparisons bring it all home. The next cathedral series after Britton's was the dumpy, workmanlike, railway station bookstore guides of Murray's. They were textbooks for trippers, unlovely and efficient. The Bell series of the end of the century were, so far as the text went, the best of all—but the drawings and photographs! Apart from Gothic what book on the buildings of London published in the last hundred years can compare with Britton's? None.

The special talent of an impressario, of a popularizer responsible for a succession of such beautiful books cannot adequately be put into words; to feel it, to admire it, it is necessary to look at a Mackenzie-Le Keux plate of an English cathedral, a Pugin-Le Keux plate of a Normandy cathedral, a scene of an English cathedral town by Bartlett, an illustration of a London building of 1820. To look at them is to realize that Britton's work had been worth doing, to have looked at hundreds of them, to have had such pleasure, is to feel the greatest respect for their inspirer.

The apprentice authors of the ballad about the powder tax had had high literary ambitions. One lived to publish some of the finest of English books, the other to write the masterpiece of English topography. They surely had, not imagining the drudgery of it all, lived up to their hopes. We can hope, the drudgery behind them, that they knew at the end of their long literary lives that it had been worth the labour.



4, *Friars Street, Worcester, from* Picturesque Antquities of Englilsh Cities.

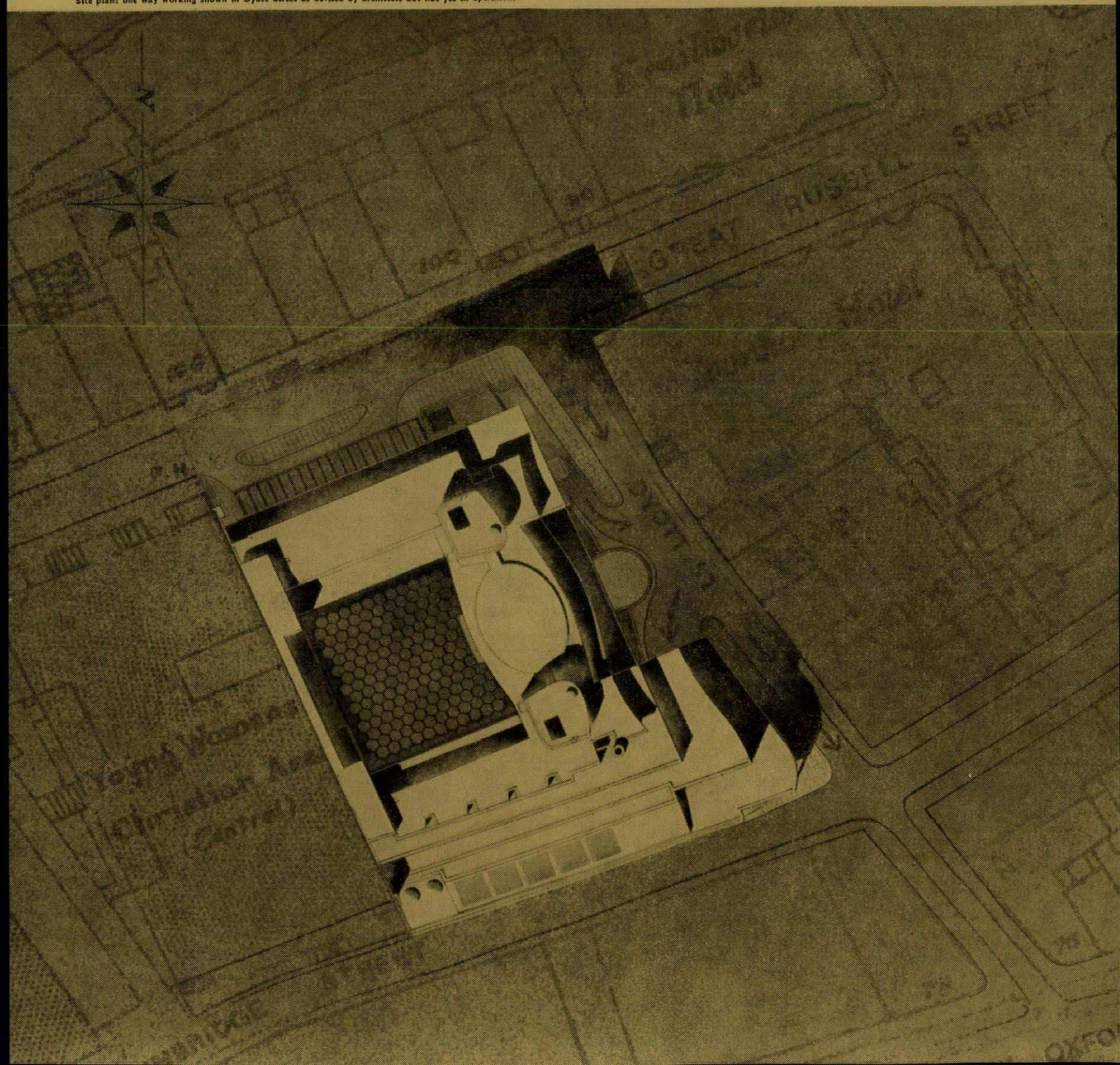
* His book collecting methods were none too scrupulous. Wilkie Collins was very annoyed by the cadging. (Letter in Mr. Robinson's *Life*.)

† Organised by George Godwin—a prince—who worked with him on the Art Union. Britton helped with his London church book.

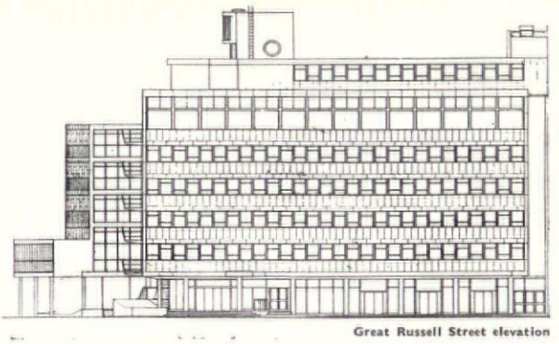
T. U. C. MEMORIAL BUILDING

Unlike the Festival Hall—the only comparable building erected in London since the War—this building has a restricted site in a congested area. The architect's response to this challenge, turning a relatively unemphatic façade to the street, right, and looping traffic under the block and out at its back, below, is only one of the remarkable features of this design, which is fully described and illustrated.

Site plan: one way working shown in Dyott Street as devised by architects but not yet in operation.

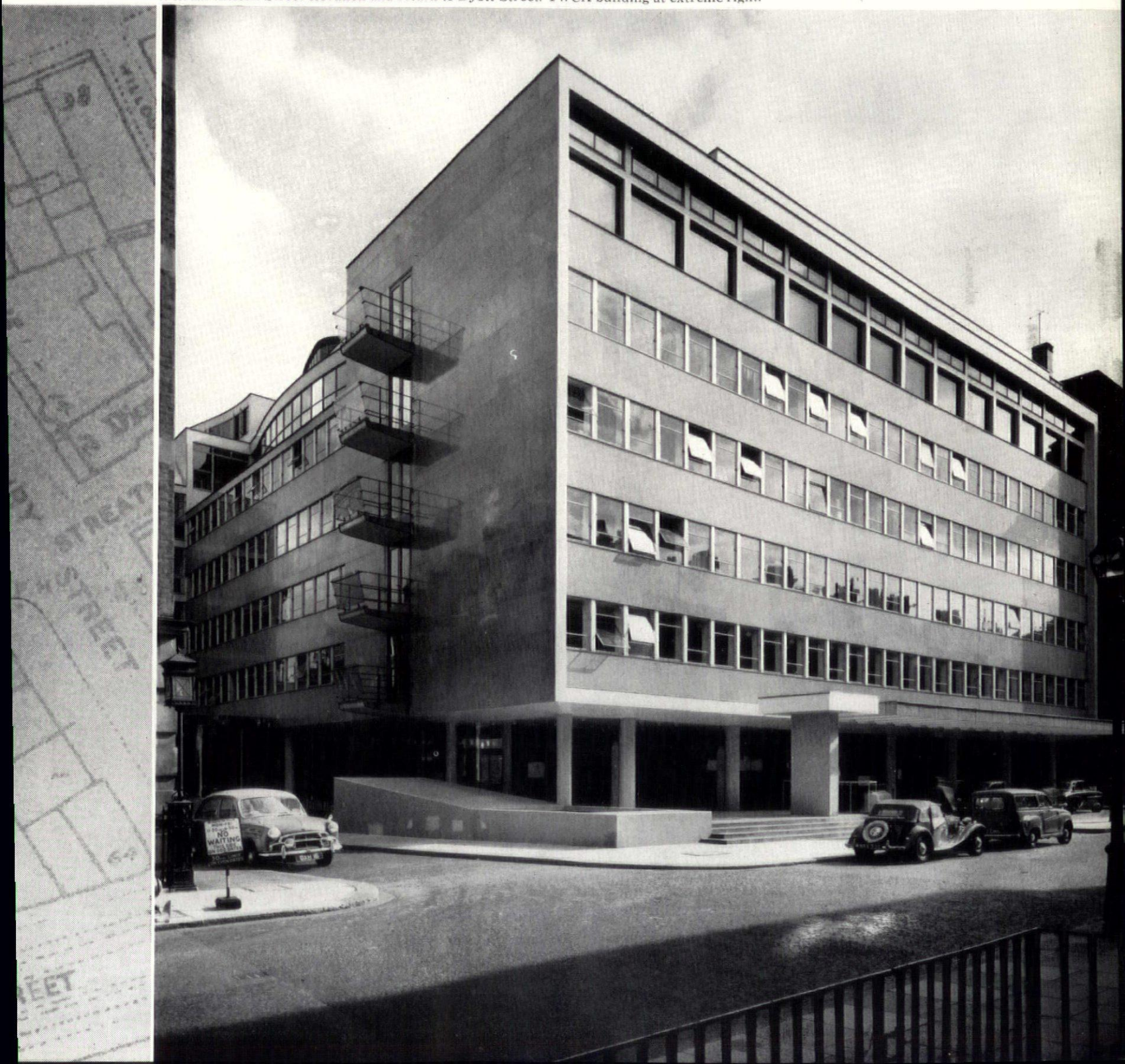


ARCHITECT	**DAVID DU R. ABERDEEN**
partner-in-charge	**Peter Hatton**
associated partner	**J. S. Heathcote**
assistant architect	**J. M. McIntosh**



Great Russell Street elevation

1. Great Russell Street elevation and return to Dyott Street. YWCA building at extreme right.

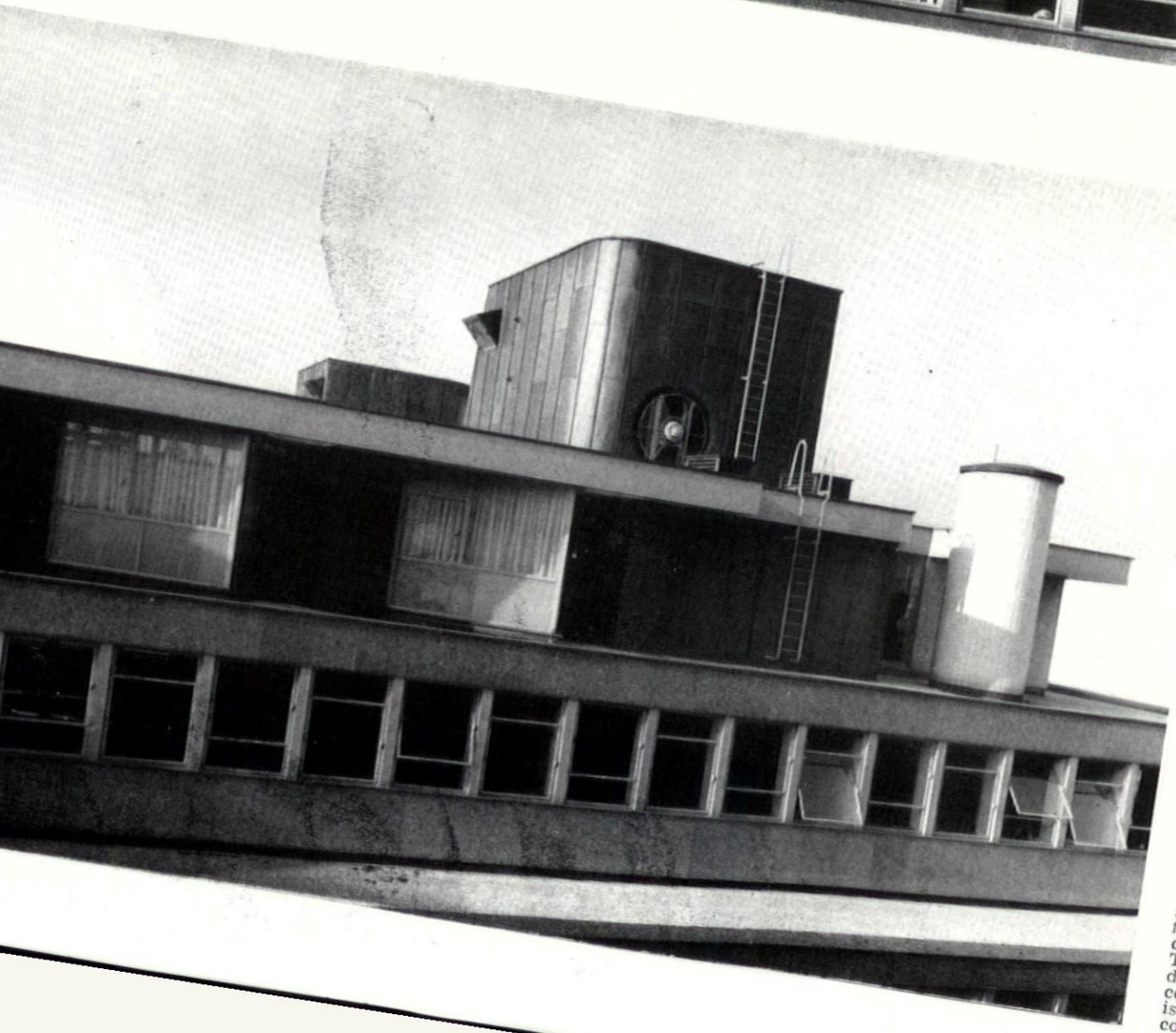




2

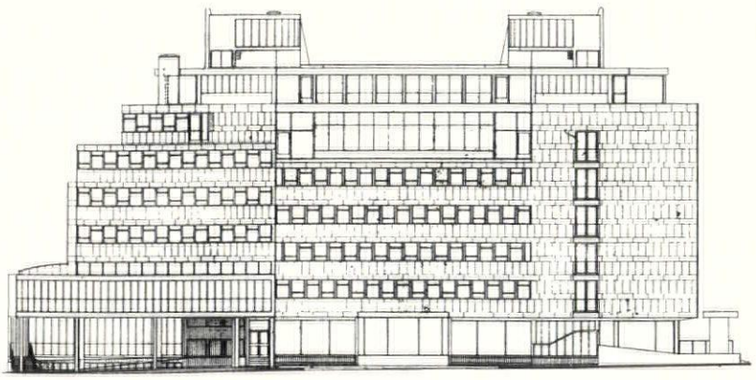
2, detail of upper portion of Dyott Street façade. The first set-back is the council chamber; the second, at sixth floor, is the original boardroom (now general office area). The council chamber mullions are non-structural being of Burma teak with a metal core. The windows are fixed double-glazed. The sixth floor mullions are structural members supporting the roof. The set-backs result from stipulated LCC building angles from back of pavement opposite the building.

3



3, the upper portion of the Bainbridge Street façade showing part of the caretaker's flat. The penthouses are copper covered with vertical standing seams. The visored windows are the spotlight ports for floodlighting Epstein courtyard group. The circular fan delivers air to the cooling tower which is part of the air-conditioning syste

T.U.C. MEMORIAL BUILDING



Dyott Street elevation.

4 and 5, night and day views of the Dyott Street front. The cladding is generally 2in. Cornish granite, windows are painted galvanised steel, mullion fascias, cills and head drips are aluminium. The two penthouses, one just visible in 5, have vertical patent glazing on this side, with the lift machinery behind.

4

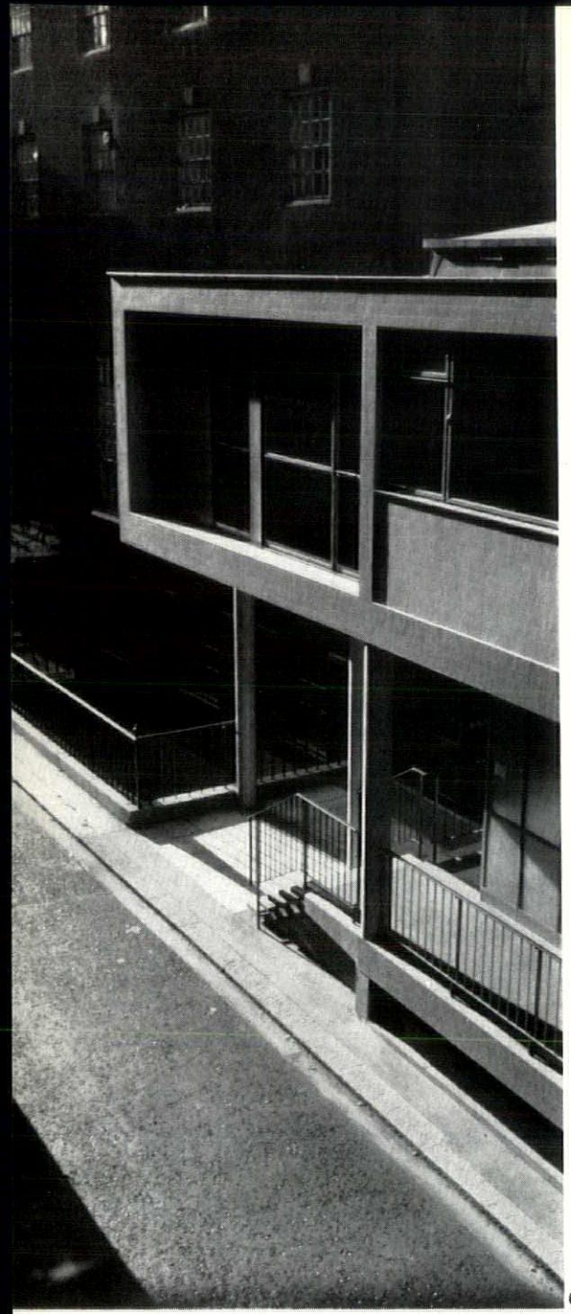


5



T.U.C. MEMORIAL BUILDING

6, night entrance to the training college on the Bainbridge Street side. The open portico is surmounted by the college offices. Cladding to the columns and elevated pavement edge is vitreous mosaic; to the first floor above, frost-proof tiles.
7, view along Bainbridge Street from the east, evening sun falling on the building from the west. In the background, Lutyen's YWCA. The elevated pavement, over the car park rampway, gives access to the ground floor tenant's entrance. The whole of the first floor comprises the training college accommodation. The blank wall is to the lecture theatre.
8, view of the Great Russell Street foyer serving the conference hall. The staircase leading to the hall passes under the main entrance portico. Glazed screens and doors are plate glass and armour plate glass respectively, in bronze frames.
9, view across the conference hall roof, forming the floor of the courtyard, taken from the base of the sculpture group at the foot of the memorial wall. Lead lined drainage channels form the network between the triple glazed hexagonal units which are mounted in the roof coffers.



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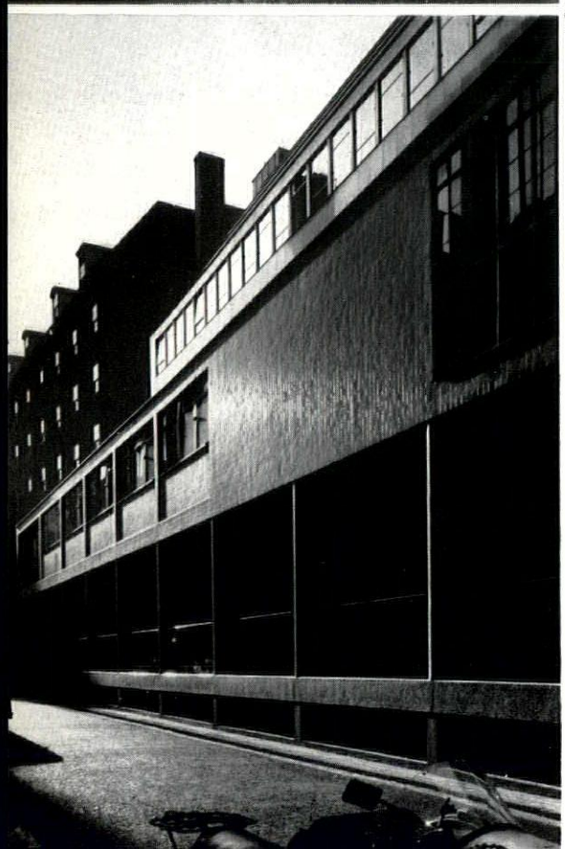

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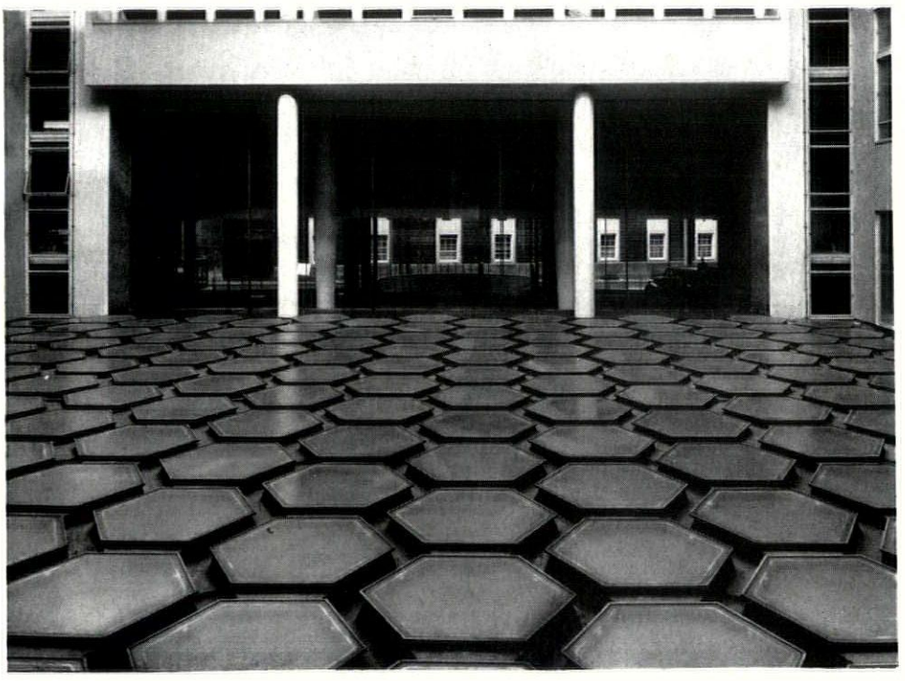
8

On the facing page,
10, night view of the main entrance lift hall from the Dyott Street side. In the foreground is the suspended hood (lead covered timber) over the car park/portico staircase.
11, night view of the conference hall roof seen from the memorial hall viewing balcony.



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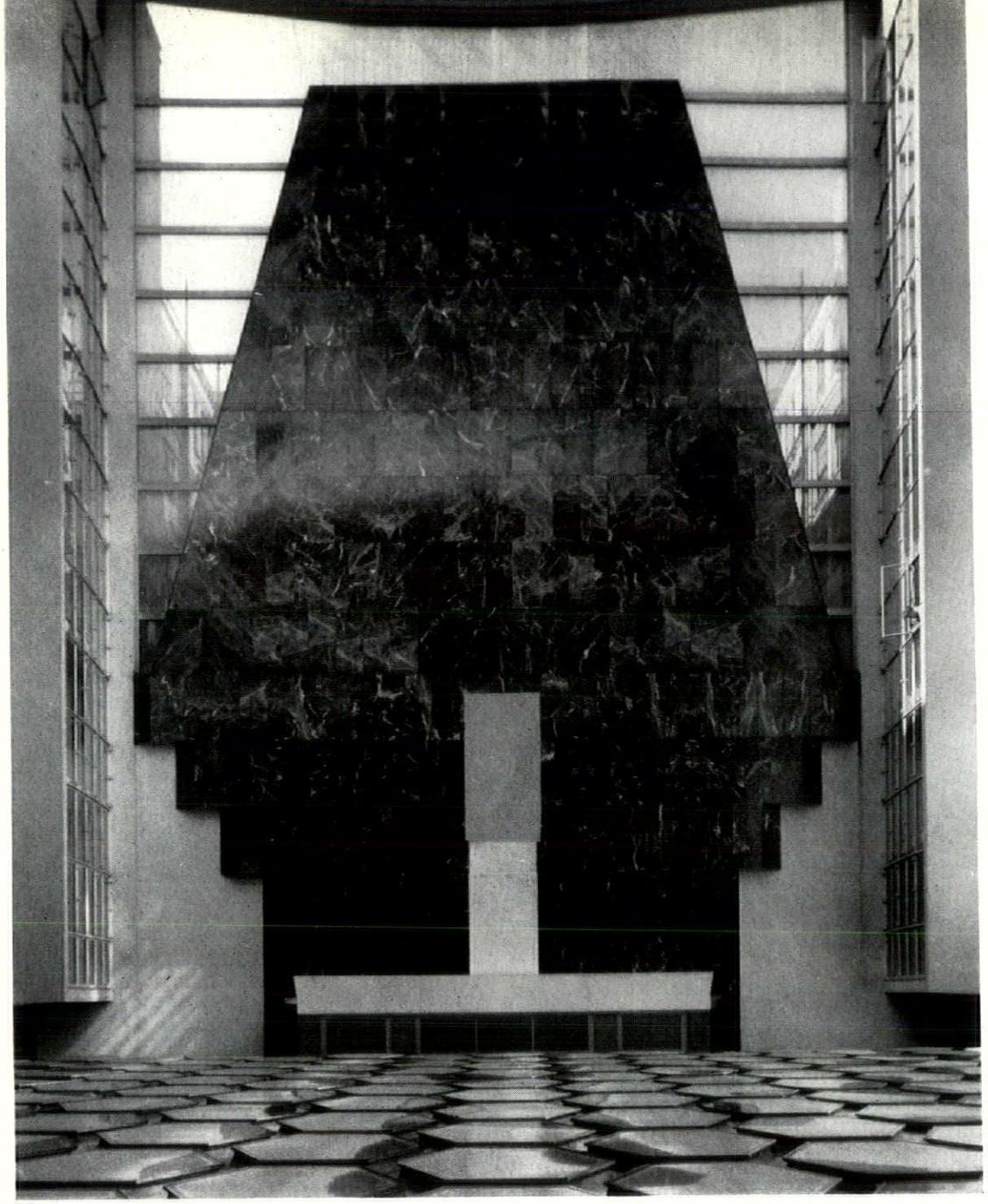

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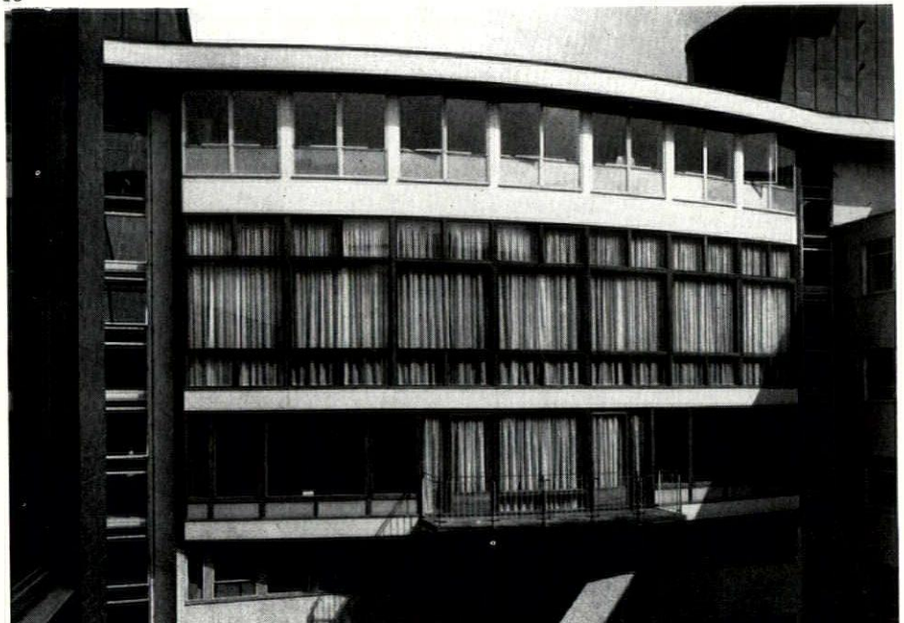
12, the memorial wall of the courtyard from the ground floor, looking through the screen of rods to the twin light wells of Lutyens' YWCA building. The sculpture on the pedestal is by Epstein but will not be unveiled until 1958 and hence has had to be masked.
13, upper part of the centre block to the courtyard, looking on to the memorial wall. Below the top floor (original boardroom, now general office area) is the Council chamber and the lowest bow with its balcony is the general secretary's suite.
14, courtyard detail. The memorial wall faced with Genoa green marble is flanked by Pyrex glass rods set in non-ferrous metal frames. The marble to the wall has a slate capping surround. The head beam houses a monorail from which a cradle can be hung and travelled anywhere over the wall for hand cleaning and maintenance. The staircases each side of the wall have fully glazed landings overlooking the sculpture group.

13



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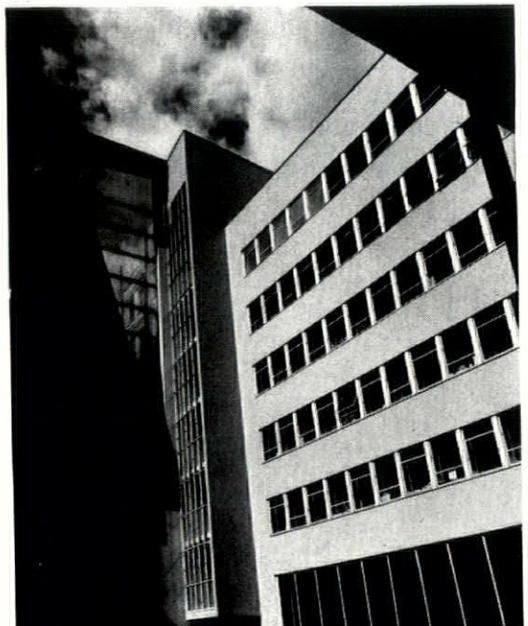


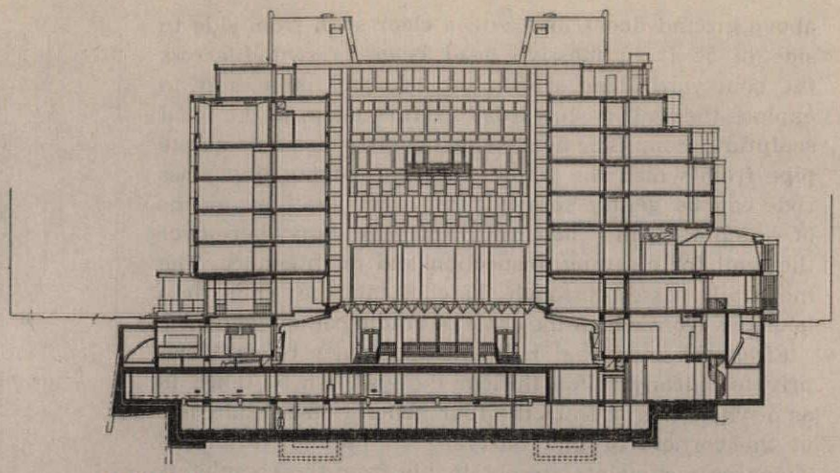
The design of this building was the subject of an open architectural competition won by the architect in 1948. Detailed development of the scheme was started immediately after the competition award although it was not until early 1953 that a building licence was granted. The building has been occupied in stages, beginning in September, 1956, and all the accommodation above ground floor has been in use since March, 1957. The whole job was virtually completed in June of this year.

There were exceptional problems in creating a memorial and headquarters building providing all the necessary accommodation on a site which was cramped —a rectangle about 180 ft. by 130 ft.—and surrounded by narrow streets on three sides and by Lutyens' YWCA building on the fourth. Two of the side streets, Dyott Street on the east and Bainbridge Street on the south, with carriageways only 12 ft. and 15 ft. wide respectively, carry negligible traffic. The third, Great Russell Street on the north, upon which the main frontage is arranged, is moderately busy. A scheme of one-way working for the surrounding streets was devised at the competition stage and is still subject to consideration when the building is fully functioning with its conference hall in use.

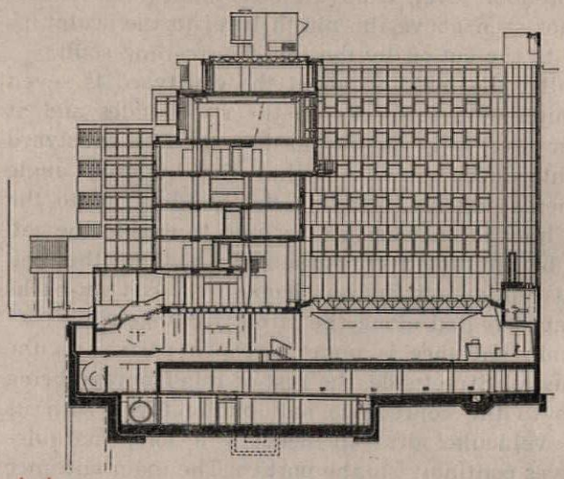
Great restrictions were imposed in the matter of building angles (51 deg. from the back of the pavement on the opposite side of the surrounding streets with the same angle applying to all internal light-wells: this latter being subsequently reduced to 45 deg. from cill level of the lowest windows in the courtyard) and a height limitation for the building of 80 ft. These site restrictions, coupled with the great amount of accommodation made up of components of radically different usage (administration offices, secretariat, council suite, training college, conference centre, libraries, dining hall, etc.), precluded any solution on the lines of a single lofty slab with the special units suitably disposed at its foot or cast off as wings from the main block.

The plan forms three sides of a large central courtyard with the building roughly following the street alignments. The fourth side of the courtyard is closed by the YWCA, 'E' shaped on plan, with the middle stem of the 'E'—flanked by mean and narrow light-wells—coming axially on the courtyard. The party wall of the YWCA is used as the support for the memorial wall which fills this side of the courtyard entirely. The building is virtually organized about the wall and the axis which its scale and symmetry create. Everywhere within the courtyard the wall and the sculpture group at its foot are either seen or sensed. The wall itself, of deep Genoa green marble, is designed as a 'back-cloth' for the sculpture which Epstein has carved on site out of a ten-ton block of light Roman Stone.

From the ground floor memorial hall facing the wall across the courtyard, the eye may travel to the full height of the wall, the sides of which are canted (14½ deg.) in order to prepare the eye for its halt. At the flanks of the wall and across the top, lightly curtaining the YWCA wells, a complete screen of Pyrex glass rods permits diffused light from the wells to enter the courtyard and silhouette the wall turning the drab utilitarianism of the wells to æsthetic advantage. From the west, the sun strikes powerfully through the glass rods, making them scintillate brilliantly while the marble wall becomes sombre. In fact, the light and shade, the effect of reflection and diffusion, is constantly changing within the courtyard with every variation in the sky and the position of the sun. At the very top of the wall (85 ft. 7 in.



section a : a



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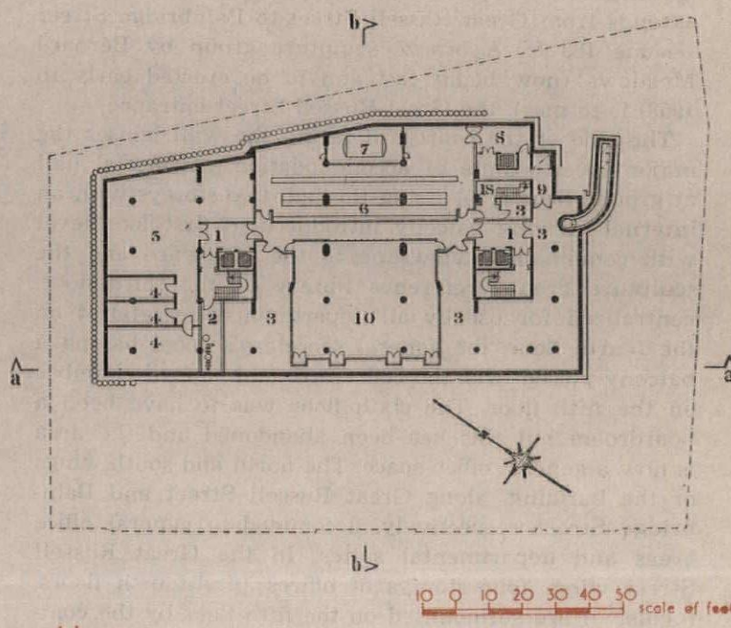


lower sub-basement

key.
1, lift hall. 2, ejector plant. 3, store. 4, strong room. 5, future strong rooms. 6, stationery store. 7, chilled water tank, 8, goods lift hall. 9, lift motors. 10, recreation room. 18, service staircase.

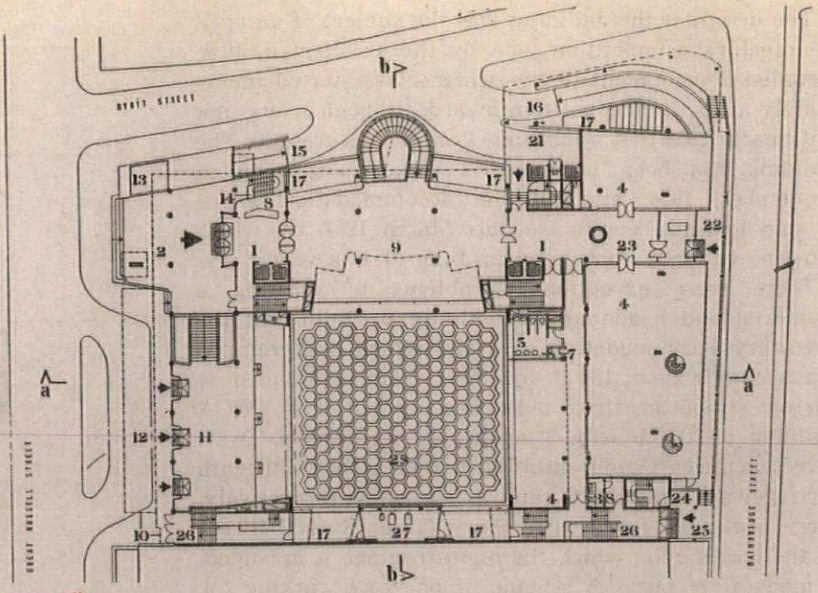
above ground floor), and with a clear span from side to side of 54 ft., a massive head beam is swung across the courtyard. This arrests the eye and induces it to explore the wall downwards to return again to the focal sculpture group. The head beam houses a cleaning sparge pipe from which the whole wall and surrounding glass rods can be gently sprayed, and a monorail by means of which a bosun's chair can be travelled anywhere over the wall for cleaning, inspection and maintenance. The monorail passes through hatches at the ends into housings from which the chair or cradle can be launched.

From the memorial hall and the general secretary's private balcony at fourth floor the wall can be taken in as a whole, while from the four general office staircases at the corners of the courtyard an infinite variety of changing viewpoints are obtainable from the completely glazed landings all the way up the building. The views of the wall from other rooms overlooking the courtyard (unless one approaches close to the windows) are truncated slices of marble flanked by glass rod wedges, designed to be effective compositions in their own right. At ground-floor level, from the street, the view of the wall is not seen above the plinth level to the sculpture base due to the cut-off by the first-floor ceiling soffit.

Generally, the building about the courtyard is seven storeys high with set-backs on the street sides and at sixth-floor level only on the north and south courtyard sides, introduced to fall within the building angle requirements. By not bringing the building up to the building lines it has been so disposed to enable the set-backs to be integrated sympathetically without the feeling of disruption which conspicuous terraced set-backs would have created along the street frontages.

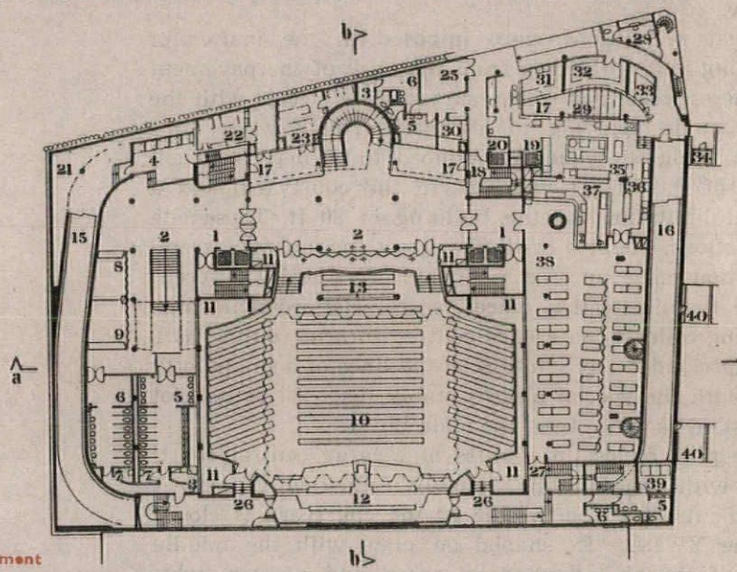
The main entrance is under an open portico on the Great Russell Street side, the rest of this frontage being given up to the conference hall public foyer with its separate vehicular draw-in beneath a long marquise which gives continuity to the portico. The main entrance links to the memorial hall, occupying the full width of the courtyard, and this in turn connects with the tenants' entrance on Bainbridge Street. Lift batteries are arranged at the TUC and tenants' entrances with general staircases incorporated behind the shafts. Spacially and visually the circulation area of entrances and halls extends from Great Russell Street to Bainbridge Street —some 180 ft. A bronze sculpture group by Bernard Meadows (now being cast and to be erected early in 1958) is to mark the Great Russell Street entrance.

The side of the courtyard facing the wall houses the major special units of accommodation: memorial hall at ground-floor level rising through two storeys with an internal viewing balcony introduced at first-floor level with commanding views on to the courtyard and the sculpture group; reference library on the third floor, centralized for use by all departments; secretariat on the fourth floor, the general secretary's room having a balcony poised over the courtyard, and council chamber on the fifth floor. The sixth floor was to have been a boardroom but this has been abandoned and the area is now a general office space. The north and south wings of the building, along Great Russell Street and Bainbridge Street respectively, accommodate general office areas and departmental suites. In the Great Russell Street wing, four storeys of offices (first-fourth floors, inclusive) are surmounted on the fifth floor by the committee suite which runs the whole length of the building. Four committee rooms are planned en suite and can be thrown together to form one room 110 ft. long. The



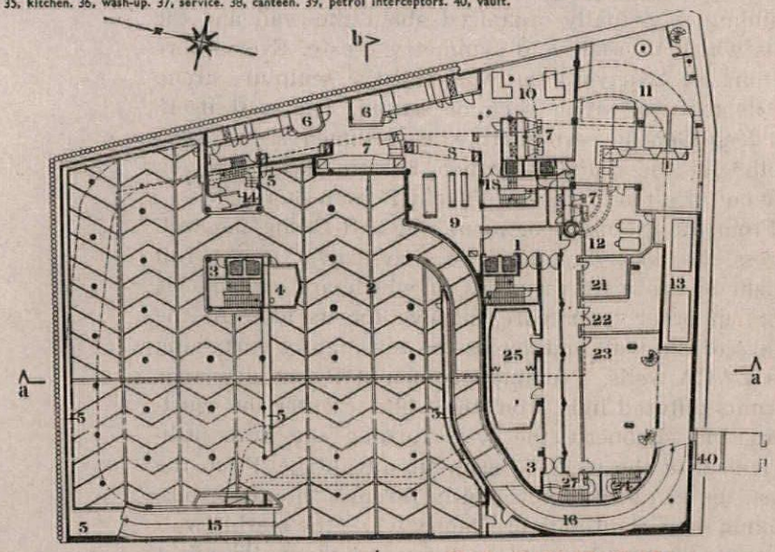
ground floor

key.
1, lift hall. 2, entrance portico. 3, store. 4, general office area. 5, male lavatory. 7, cleaner. 8, enquiries. 9, memorial hall. 10, outline of building over. 11, street foyer. 12, car draw-in. 13, plant box and ramp hood. 14, portico to car park staircase. 15, car exit ramp. 16, car entrance ramp. 17, area. 21, loading dock. 22, high-level pavement. 23, tenant's entrance. 24, car park fire-fighting staircase. 25, night entrance. 26, emergency exit. 27, projection room. 28, glazed roof of conference hall.



basement

key.
1, lift hall. 2, conference hall foyer. 3, store. 4, telephones. 5, male lavatory. 6, female lavatory. 7, cleaner. 8, male cloaks. 9, female cloaks. 10, conference hall (seats reversible). 11, duct space, etc. 12, dais. 13, collapsible cinema screen. 15, car exit ramp. 16, car entrance ramp. 17, area. 18, service staircase. 19, garbage hoist. 20, goods lift. 21, switch room. 22, transformer chamber. 23, battery room. 25, telephone intake and apparatus. 26, emergency exit. 27, conference hall retiring rooms staircase. 28, engineers' lavatory. 29, heating chamber roof-light. 30, check office. 31, vegetable store. 32, dry goods. 33, larder. 34, cold store. 35, kitchen. 36, wash-up. 37, service. 38, canteen. 39, petrol interceptors. 40, vault.



sub-basement

key.
1, lift hall. 2, car park. 3, store. 4, attendants' room. 5, car park extract duct. 6, air-conditioning plant. 7, ventilation plant. 8, air intake over. 9, evaporator and condensers. 10, compressors. 11, heating chamber. 12, calorifiers. 13, oil tanks. 14, car park to portico staircase. 15, car exit ramp. 16, car entrance ramp. 18, service staircase. 21 engineer's office. 22, engineers' workshop. 23, tenant's storage. 24, car park fire-fighting staircase. 25, conference hall retiring rooms. 27, retiring rooms staircase. 40, vault.

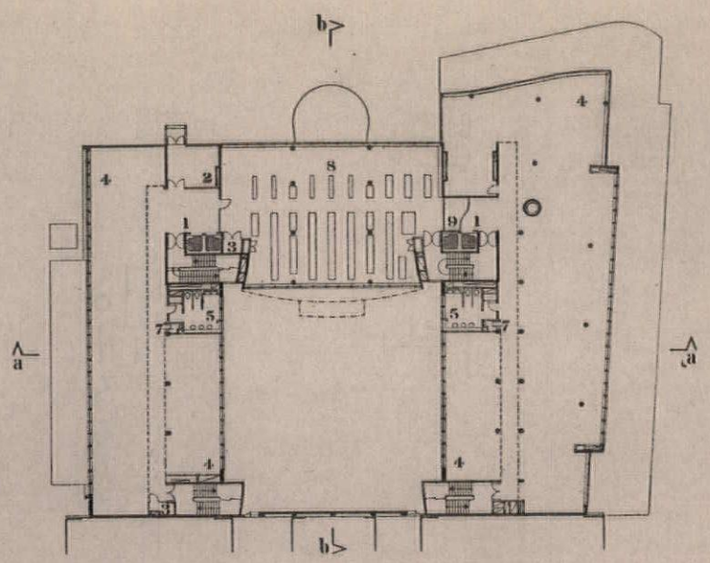
committee rooms are part of the council suite and the rest of the floor is given up to members' rooms, lavatories, chairman, etc. The council suite rises through 1½ floors, with a 15-ft. height.

In the Bainbridge Street wing, the whole of the office accommodation is let to one tenant (second-fifth floors, inclusive) with an independent entrance from the street. The sixth floor is occupied by the caretaker's flat, the saw-toothed arrangement of window walls giving the rooms a panoramic view of St. Paul's in the distance to the south-east. The first floor of the wing is devoted to the training college—an entirely self-contained unit for handling short courses of 50-70 students. The college is approached from the main entrance across the viewing balcony or by separate entry on the Bainbridge Street side at the YWCA end. It includes a lecture room to seat 70, with terraced seating; five seminars, each seating 12-15, and capable of being thrown together by means of folding screens; and a large library/reading room.

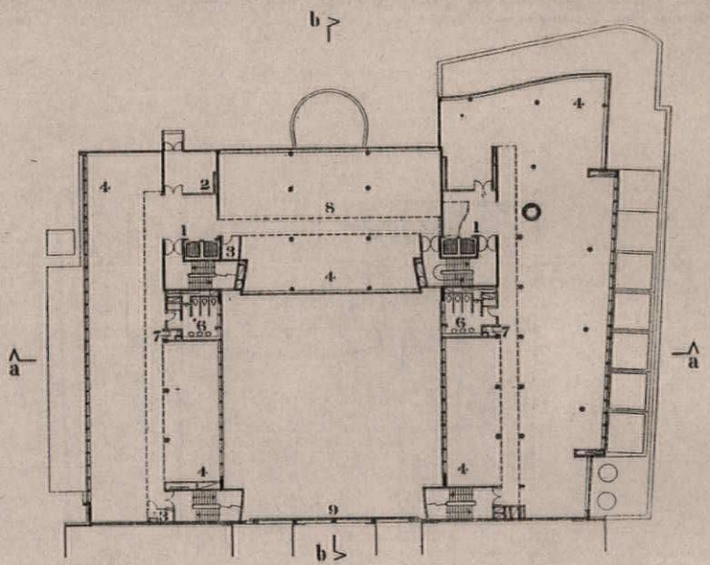
The conference hall, at basement level, is approached from the street foyer by a broad, straight staircase in an open well passing under the main entrance portico. The staircase links with a lower foyer repeating the memorial hall form above. This lower foyer can be fully opened up to the conference hall by sliding fully glazed screens. The hall is seated beneath the courtyard floor and extends under the north and south side wings of the building, having a clear width of 95 ft. The memorial hall and lower foyer are connected by a fully-glazed horseshoe staircase on the memorial wall axis of the building. The conference hall, its foyers, circulation, cloaks, etc., are planned to function as an entirely self-contained unit so that it may be let to outside bodies without the user entering the TUC's private portion of the building above. The hall is fully licensed by the LCC. The roof of the conference hall is glazed over-all with hexagonal coffers forming an integral part of the completely exposed welded structural steel space frame. The daylight factory in the hall is as high as anywhere else in the building under natural lighting conditions. Each of the 172 coffers has its own lighting point and the artificial light seen from above through the triple glazed roof units gives the courtyard floor a soft luminosity—a pavement of hexagonal flags. At night the light illumines the courtyard to the full height of the building with an even diffusion of light.

The rest of the basement, apart from the conference hall and its ancillary accommodation, is occupied by a dining hall, seating 250, with kitchen, etc., equipped to cook for banquets up to 700. The kitchen is designed for use in conjunction with the hall, if desired, when it is let for functions. Beneath the conference hall, at sub-basement level, is a car park for fifty cars approached by ramps from Dyott Street. The ceiling of the car park (floor to the conference hall) is a 24 in. thick reinforced concrete civil defence slab requested by the Ministry of Works. At this level also is housed the main ventilation plant room and heating chamber with engineer's stores, workshops, etc. A lower sub-basement accommodates strong rooms, general storage and cleaning staff rooms.

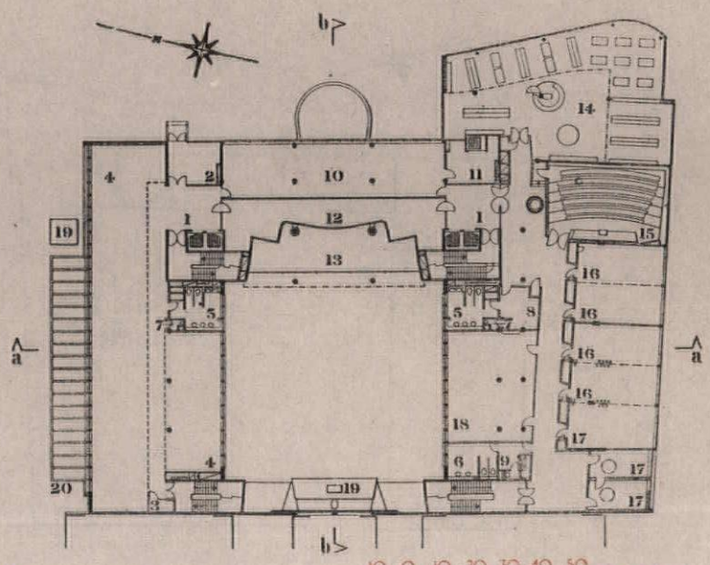
The structure is a monolithic r.c. frame with r.c. floors and roofs and hollow pot infilling in the superstructure generally. Beams are for the most part concealed in the slab thickness to give flat ceiling soffits—particularly in the general office areas—for flexibility and ease of subdivision with the standardized demountable partitioning employed. Low-pressure hot-water radiant heating panels are incorporated in the ceiling soffits or in suspended



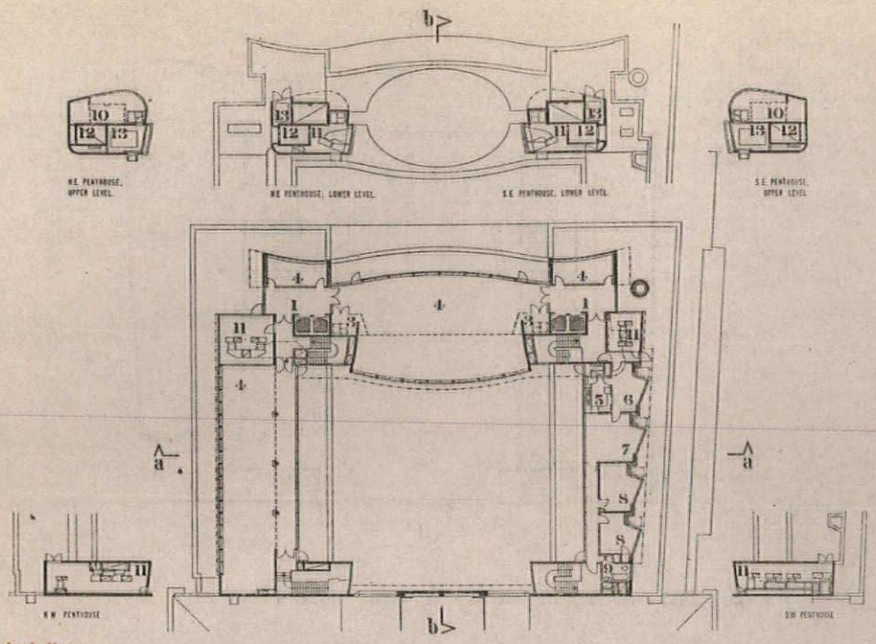
third floor
key.
1, lift hall. 2, waiting. 3, store. 4, general office area. 5, male lavatory. 7, cleaner. 8, library. 9, void.



second floor
key.
1, lift hall. 2, waiting. 3, store. 4, general office area. 6, female lavatory. 7, cleaner. 8, TUC filing. 9, memorial wall.



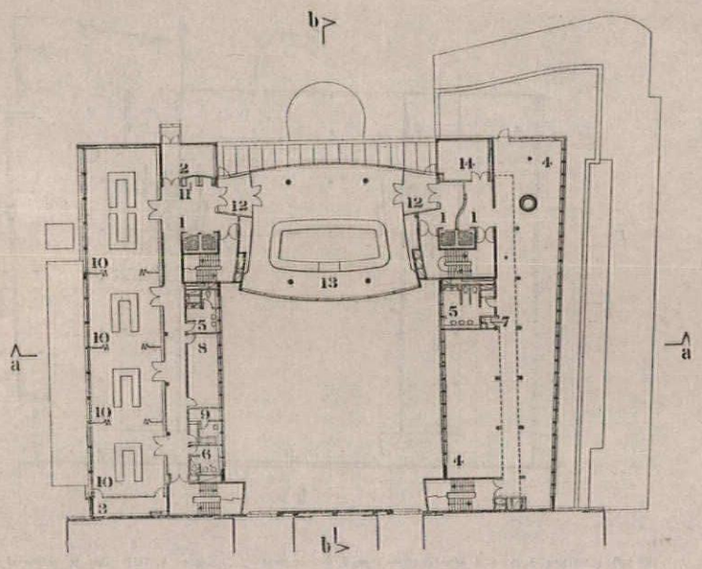
first floor
key.
1, lift hall. 2, waiting. 3, store. 4, general office area. 5, male lavatory. 6, female lavatory. 7, cleaner. 8, male cloaks. 9, female cloaks. 10, despatch department. 11, goods lift hall. 12, viewing balcony. 13, memorial hall: upper part. 14, library. 15, lecture theatre. 16, seminar. 17, study. 18, common room. 19, sculpture base. 20, glazed marquise.



sixth floor

key.

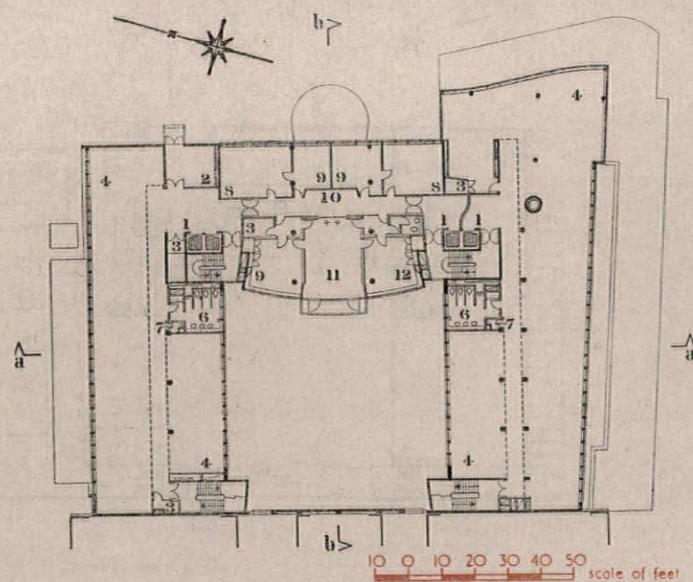
1, lift hall. 3, store. 4, general office area. 5, kitchen. 6, dining. 7, living. 8, bedroom. 9, bathroom. 10, lift motors. 11, ventilation plant. 12, cooling tower. 13, tanks.



fifth floor

key.

1, lift hall. 2, chairman. 3, store. 4, general office area. 5, male lavatory. 6, female lavatory. 7, cleaner. 8, members' room. 9, bathroom. 10, committee room. 11, telephones. 12, ante-room. 13, council chamber. 14, spare office.



fourth floor

key.

1, lift hall. 2, waiting. 3, store. 4, general office area. 6, female lavatory. 7, cleaner. 8, assistant secretary. 9, private secretary and typist. 10, ante-room. 11, general secretary. 12, committee room.

plaster ceilings. In the office areas, continuous radiant heating panels are provided beneath window cills (completely flush with the wall face) to augment the ceiling heating. Where it has been desired to keep the heating panels out of ceilings altogether they have been arranged beneath the floor finishes of hardwood block or marble. The structural members in the external walls are r.c. mullion ribs between windows taking the place, in general, of main stanchions in the outside walls. In the undulating walls, floors are carried from stanchions set back within the building.

The street facings are 2-in. Cornish granite slabs polished to a 'wet sheen'. The slabs are supported on cramps and non-ferrous metal corbels, built into pre-formed pockets in the structure; r.c. aprons form the infilling beneath cills between the slender mullion ribs (5 in. wide by 10 in. deep) and provide essential stiffening to the ribs and structural backing for the facings. A ½-in. cavity is left between the granite and the structure.

In the courtyard the facings are 1¾-in. precast vitreous mosaic-faced panels with haunches on the back which seat into preformed pockets in the structure. The panels are solid-bedded. The wall beams in the north and south courtyard walls are 5 ft. deep and span 54 ft. The mullion ribs were formed after the beams and provide vertical stabilizing tie members between the top of the beam (at cill level) and the floor slab at ceiling level (soffit of the beam above). In situ vitreous mosaic is used to columns and other limited faces on the street sides together with a certain amount of frostproof tiling, generally forming panels.

All staircases are of r.c. monolithic with the structural carcase but shuttered up and formed subsequently. General office staircases are finished with precast terrazzo tread and riser units cast in one piece. Main staircases are finished with 2-in. Burma teak.

In the office areas floors are of compressed cork tiles laid over 2¾-in. screeds in which a complete under-floor fibre duct system is arranged for the running of all electrical and telephone services. Corridor ceilings are finished with acoustic sound-absorbing tiles. All partitions in the office areas have been designed to standardised details and modules to permit flexibility in arrangement. They are completely demountable, lightweight, and have numerous wiring chases housed in them for use with the flexible lighting and switching system perfected for the office floors.

In all the special areas and lift halls, floors are either hardwood strip or block, except for the main entrance hall, which is Sicilian Pearl marble. All the major units of accommodation are lined with hardwoods and veneers and, in general, have suspended plaster ceilings. The considerable amount of trunking associated with the mechanical ventilation services is arranged behind the linings, since these areas are fully air-conditioned: refrigeration plant is linked to the system—in the conference hall, council suite and general secretary's suite. The dining hall, kitchen and all below-ground accommodation have full plenum mechanical ventilation, while the car park, corridors and lavatories throughout the building have mechanical extraction. The consulting engineers were Ove Arup & Partners (structural); J. Roger Preston & Partners (heating and ventilating) and G. H. Buckle & Partners (electrical). The quantity surveyors were D. R. Nolans & Co., the clerk of works was Mr. W. H. Roberts, and the general foreman for Sir Robert McAlpine & Sons was Mr. A. Farndan.

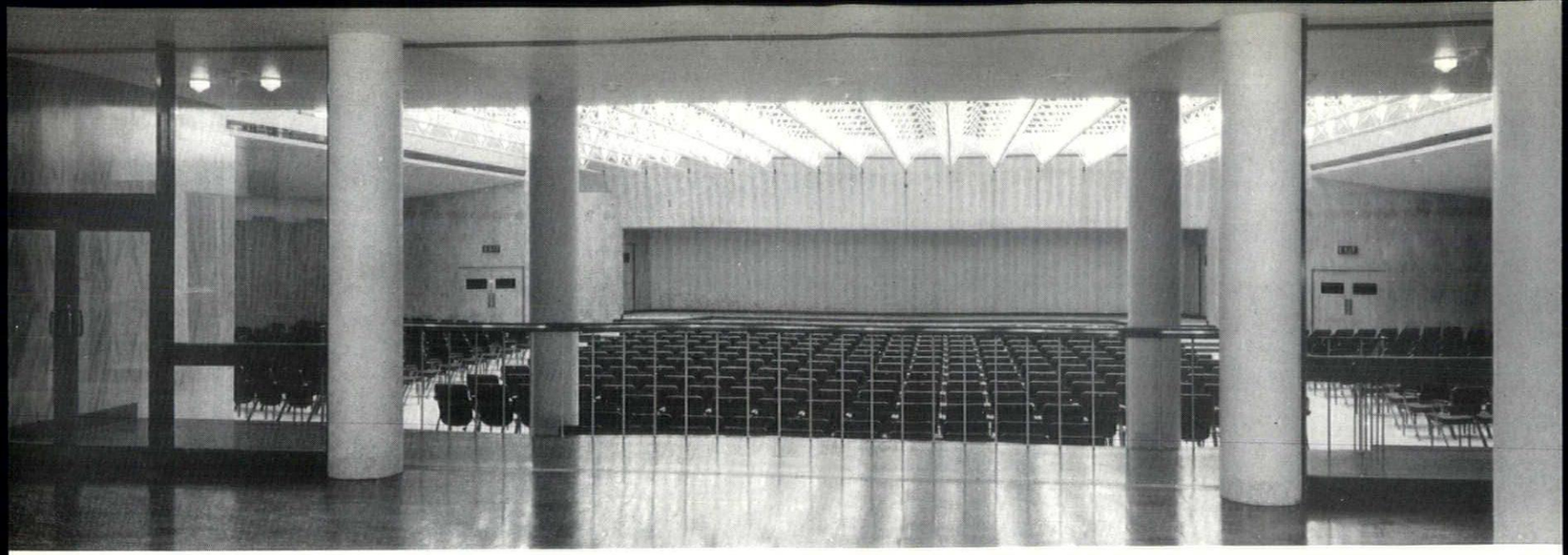
assembly hall



15

T.U.C. MEMORIAL BUILDING

15. the conference hall from the dais end. The horseshoe staircase from the memorial hall to the basement foyer can be seen in the background. Foyer and hall can be thrown together by the sliding away of fully glazed screens. The exposed structural space frame is surrounded by reinforced concrete perimeter edge beams with a fairface, white painted, finish.



16

16. view of the conference hall from the basement foyer with the dividing screens folded away to stores at the sides. Veneered linings to the hall are Lebanon cedar and Yugoslav beech. The floor to the hall is fully sprung maple strip ; to the foyer, Rhodesian teak block. The foyer ceiling is dead flat, painted white.

17

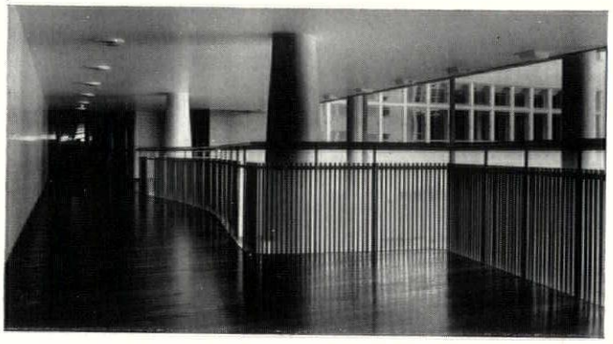


17. detail of the conference hall roof. Each coffer has i's own lighting point for evenness of lighting within and similarly for leakage of light through the roof to the courtyard above ; see 10. The timber apron is a temporary provision concealing the winding gear for the blackout curtain, to be installed later, and designed to cover the underside of the whole roof when cinema projection is in use. The 172 lights are dimmer controlled and can be brought on from nothing to full in a sequence of four groups, each group forming a symmetical pattern over the hall. The four groups can be used in any combination giving 24 different arrangements (and choice of light intensities) to suit the great variety of uses to which the hall will be put.

18. the viewing balcony forming the upper part of the main entrance memorial hall. The balustrade consists of a continuous run of 1 in. diameter polished British Columbian pine rods supported off bronze standards ; the handrail is teak.

19. the main entrance memorial hall shewing the viewing balcony. Ceilings are dead flat, painted white. The floor is Sicilian Pearl marble with a fine hexagonal pattern picking up that of the conference hall roof.

20. the main entrance memorial hall under the viewing balcony. The courtyard is to the right and the horseshoe staircase leading to the basement foyer is to the left. The tenant's entrance from Bainbridge Street is on the axis of the doors in the background.



18

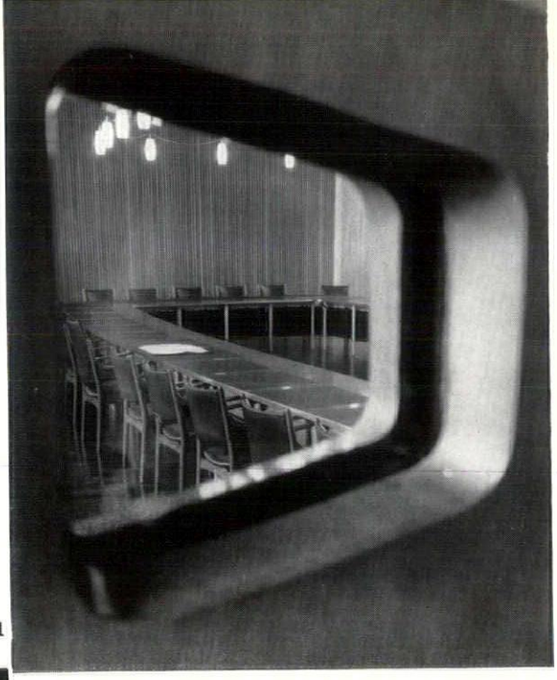


19

20



council chamber



21



22

T.U.C. MEMORIAL BUILDING

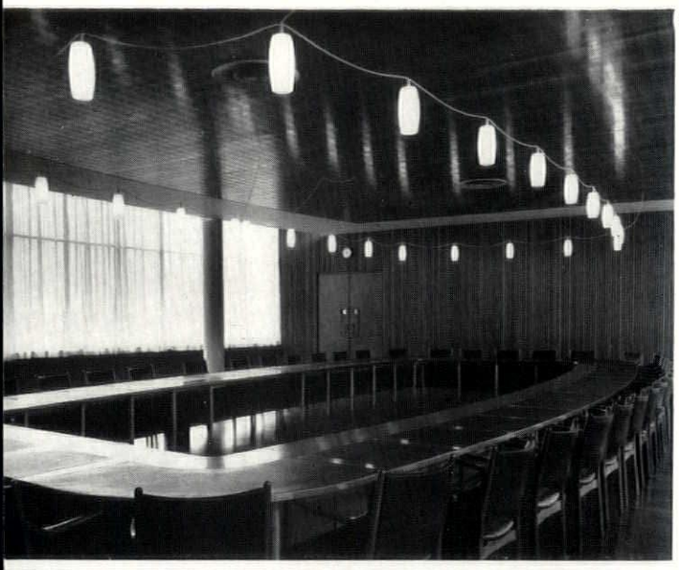
21. peep vision window in the council chamber doors.
22. detail of the council chamber. The side walls are of British Columbian pine slats designed on the Copenhagen principle for sound absorption and diffusion. The ceiling is of British Columbian pine, slotted for acoustic purposes—resonance and absorption. The floor to the chamber is of Rhodesian teak strip.
23. hide-covered doors to the council chamber from one of the anterooms.



23

committee & teaching rooms

24. general view of the council chamber. The light fittings are suspended by piano wire from the timber ceiling. The line of lights follows the council table under 25 and 26. details of the council chamber furniture. Aprons, table top insets and chairs are covered with holly green hide. The chair frames are of Honduras mahogany.



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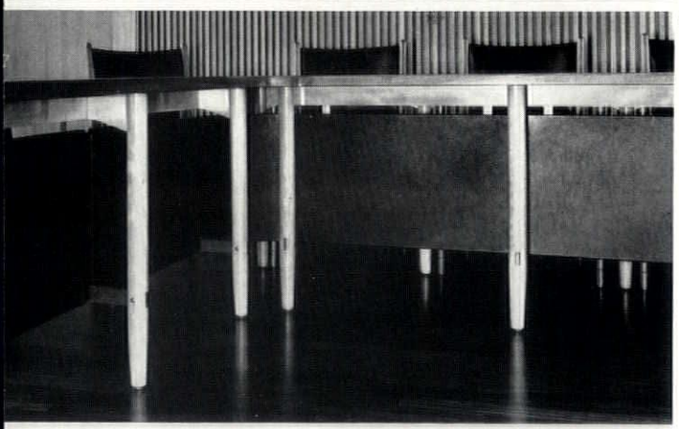


25



26



27



28



29

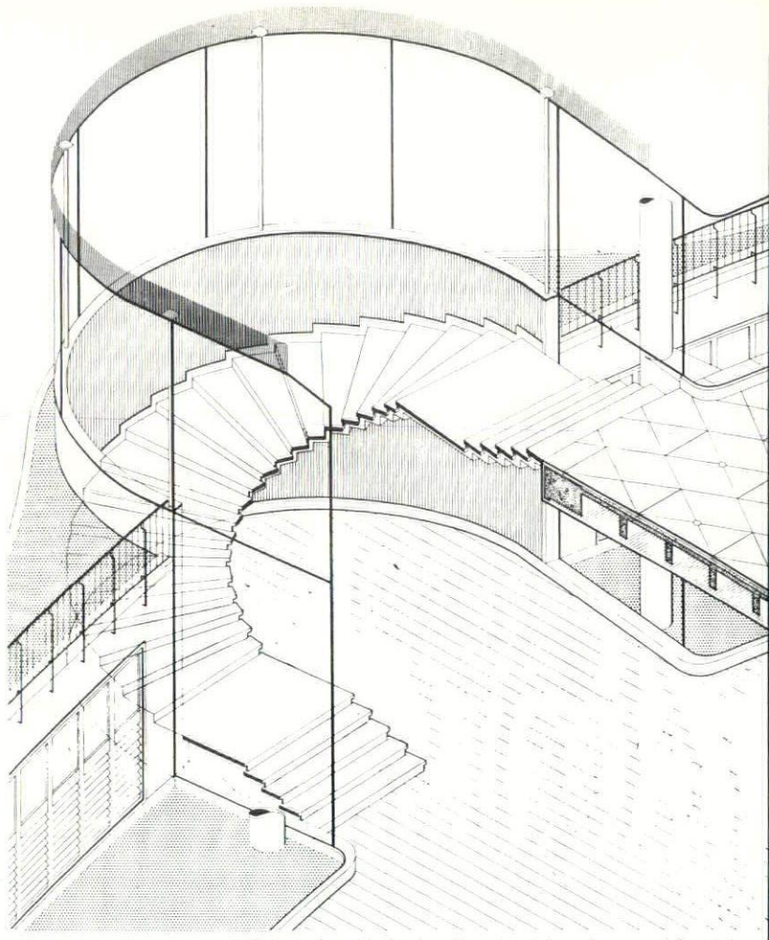


30

27, training-college seminar rooms.
28, training-college lecture theatre, seating 70 in five terraced rows of seats.
29, general view of one of the four committee rooms forming the suite at fifth floor level which runs the whole length of the Great Russell Street frontage. The furniture is temporary.
30, detail view of the sliding/folding doors between two of the committee rooms.

staircases

31, the glazed drum of the horseshoe staircase connecting the memorial hall to the conference hall basement foyer. The glazing is in bronze frames with mahogany cover fillets internally.
32, internal view of the horseshoe staircase. The reinforced concrete structural carriage and enclosing wall are fairface finish, painted white. The treads, landings and risers are 'carpeted' with Burma teak. The handrail threads are bronze, supported on the well side off painted mild steel balusters bolted through the 2in. thick timber treads.



Cut-away isometric drawing of horseshoe staircase from ground floor to basem

31



32





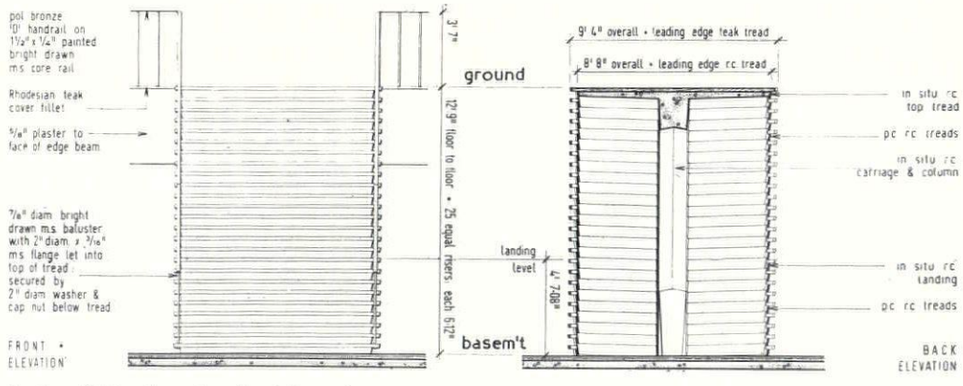
33



34

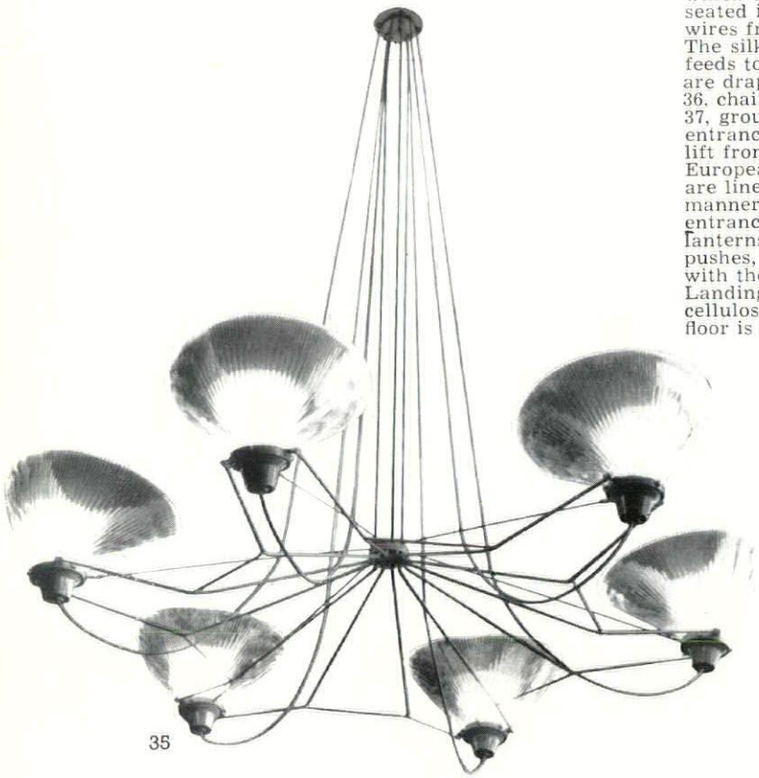
T.U.C. MEMORIAL BUILDING

33 and 34, the staircase joining the street entrance foyer to the conference hall in the basement The carriage is painted fairface r.c. carrying 2in. polished Burma teak treads and 1in. polished Burma teak risers ; the handrail is polished bronze carried by mild steel balusters. The floor at basement level is polished Rhodesian teak.



Elevations of staircase from entrance foyer to basement.

35. committee suite light fittings. Standard prismatic glass reflectors are incorporated in fittings designed by the architect. The thin metal frame supporting the galleries into which the reflectors are seated is suspended by piano wires from the ceiling fixing. The silk covered electrical feeds to the individual lights are draped chandelier fashion.
36. chairman's seat.
37. ground floor main entrance hall showing the lift fronts. The slats are European oak, and lift cars are lined out in an identical manner. The reveals to the lift entrances are iroko. Hall lanterns, indicator plates, pushes, etc., are integrated with the slat arrangement. Landing doors to lifts are cellulosed silver-grey. The floor is Sicilian Pearl marble.

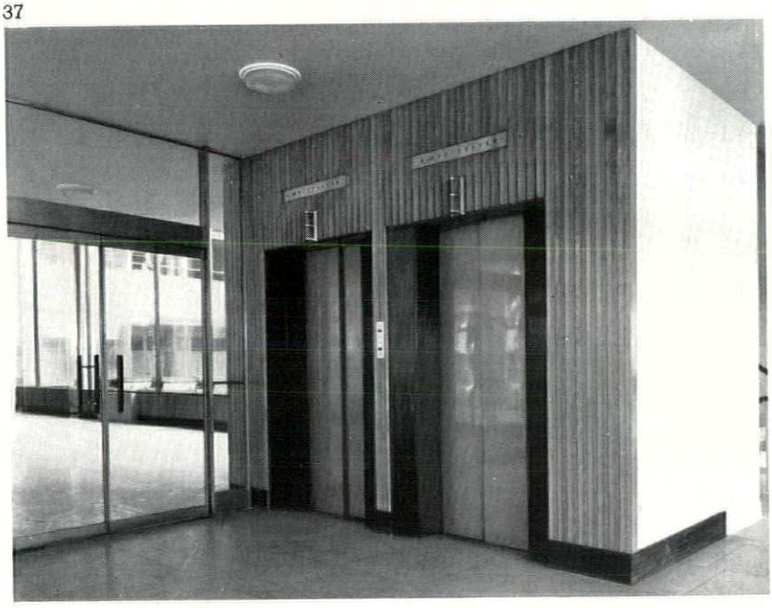


35



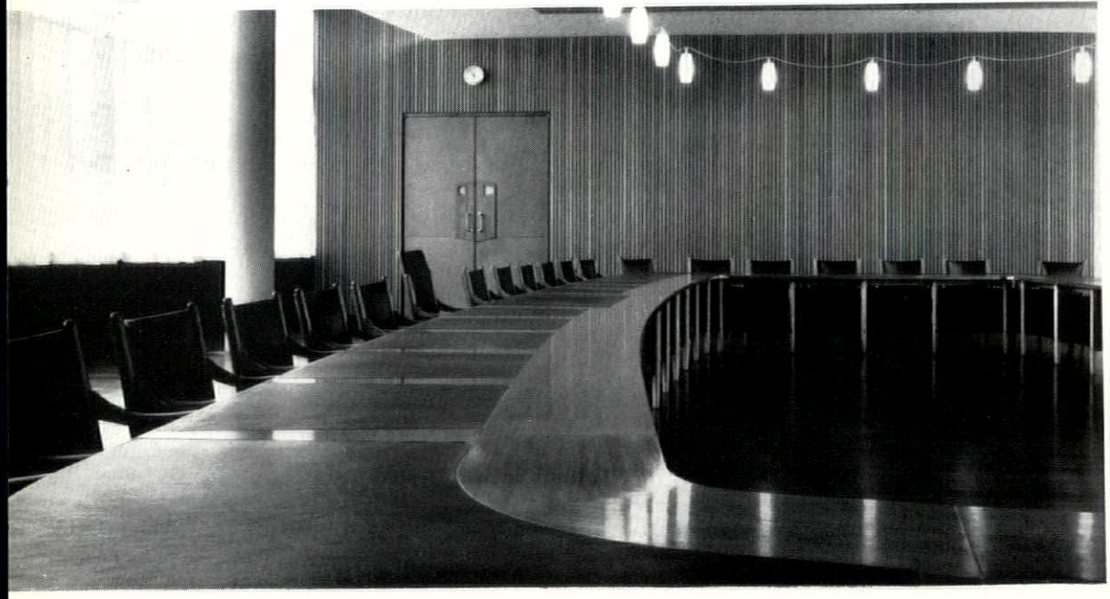
36

37



38. council chamber furniture. Detail—see description of materials, etc., given against captions (23), (24) and (25). The furniture has been designed by the architect in consultation with Heal's Contracts, who made it.
39. telephone booths off lift hall serving council suite. The veneer to the booths, externally and internally, is agba ; the floor is dahoma.

38



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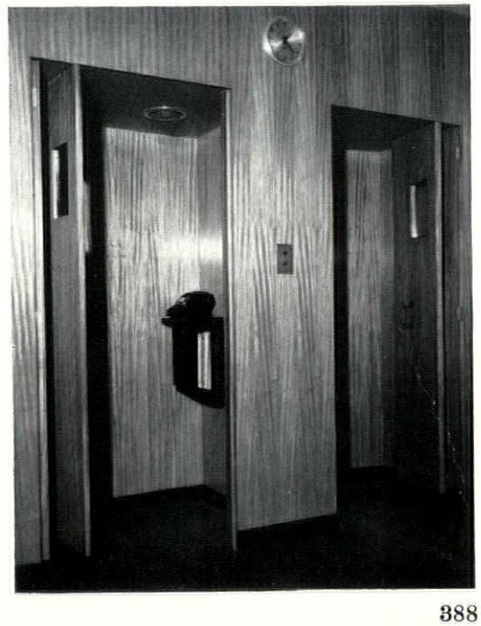


Gordon Cullen

STREET LIGHTING

In this article we are concerned with the impact of a modern public lighting installation on towns and not, primarily, with the design of fittings[1]. Naturally it is impossible to disassociate the two since, as in all townscape, we are concerned with two aspects: first, intrinsic design and second, the relationship or putting together of things designed. Still, for the time being let us give thanks to the hard work put in by the Council of Industrial Design on the improvement of fitting design and concentrate here on the total effect of installations.

There are two sides to the problem.

1. The lighting engineer's requirements.
2. The demands of amenity or townscape.

Recent (post-war) installations in Great Britain are based on the principle of silhouette vision or surface brightness of the road. To imitate daylight—whereby the road surface and objects on it are seen three dimensionally and in colour—being economically impossible the alternative is, using a lower intensity of light, to reflect light off the road surface evenly so that any object on it is seen as a silhouette which the eye can interpret as man, dog, car, hazard, etc. (As set out in the British Standard Code of Practice CP. 1004:1952).

The system relies on the even illumination of the road surface; there must be no pools of darkness. To achieve this the light sources must be placed and sited with some accuracy in relation one to the other especially on curves.

Height, overhang and siting begin to have a certain inevitability. Add to this the Code of Practice recommendations relating to mounting heights (of lanterns) for Group A (25 ft. 0 in.) and Group B (15 ft. 0 in.) roads and we have in all its authority and inevitability a modern lighting installation, which marches through a town like a posse of soldier ants.

Now turn to the townscape side of the problem. There is an obvious incompatibility between the ruthless and rigid installation and the actual condition of our towns and villages. Broadly speaking there are three demands which the townscaper puts to the engineer.

To achieve. (1) Unity of scale
(2) Kinetic unity
(3) Propriety.

Unity of scale: The installation should be in scale with the street or environment. To flout this rule will result in an installation either drawing attention to itself by reason of its overpowering height or bulk and making the buildings appear silly and doll-like, or as in the case of Kingsway, failing to make that contribution to the intricacy of the scene (which a good installation ought to do) by being too small, and insignificant.

Kinetic Unity: By this is meant the unity of movement. Most installations, of course, are in streets which to a large extent express motion in a straight line. But as students of Townscape are aware there are many other kinds of urban enclosure; square, crescent, circus, focal point, closure, etc., which express a static feeling. In such places it is important that the installation, especially by daylight, should not disrupt and destroy this static quality by driving a monument to motion through them.

Propriety: There are times and places where it is difficult to reconcile an orthodox installation with the scene at all. One thinks of some new bridge, a piece of reinforced concrete sculpture, and try as one may the orthodox illumination by means of light sources placed on posts seems to destroy the scene. One thinks

[1] To be dealt with in a technical article in the REVIEW for March, 1958.

also of such places as the Radcliffe Camera group in Oxford and again finds it hard to reconcile ordinary practice with the particular case. In other words, as our examples will show, from time to time some solution out of the ordinary is called for even if it means some sacrifice and a challenge to ingenuity.

If, therefore, the townscaper puts these points forward as essential for the creation and preservation of urban values and at the same time the lighting engineer maintains that 'efficient lighting' comes first and no compromise is possible then we have reached deadlock. Fortunately the situation is not static. Even assuming the continued validity of silhouette vision the insistence, in the Code of Practice, of 25 ft. 0 in. and 15 ft. 0 in. mounting heights for lamps for Group A and Group B roads respectively appears to be the imposition of a rule rather for the sake of having a rule than anything else. Quite clearly the essential is to achieve uniform surface brightness not to say how this is to be achieved. However, the system met its Waterloo at Marlborough (Wilts) where a precedent was created. Although the High Street is a Group A road the light sources were mounted at a height of 20 ft. 0 in. in order to preserve unity of scale at the insistence of the Royal Fine Art Commision. Furthermore, silhouette vision is, in itself, an unsatisfactory form of illumination. If one silhouette is behind another silhouette then only one shape can be seen and thus we get the danger of motorists being unable to anticipate people stepping out from behind buses. But already more powerful light sources are being marketed which approximate much more to normal three-dimensional vision. The advent of these light sources must surely challenge the whole intricate structure of silhouette vision layouts. For the more abundant the light the more flexible one can afford to be with the installation layout.

What, in fact, the moral of all this is is now becoming clear. What we put forward is a plea for flexibility. Once the lighting engineer understands townscape, the urban scene, then he immediately responds, he manipulates light. For no one knows better than the engineer just how flexible his solutions can be. To regard the design of a lighting installation as an exact science is, I think, putting it a little high resulting in doctrinaire decisions. To regard an installation as a separate piece of construction to the fabric of the town will inevitably result in abuse and lost opportunities, and to regard the light as being of a different kind of light to that provided by shop windows, floodlighting, private lighting and so on can only result in sterility of scenery.

What we need to do is to integrate street lighting with the fabric and character of the town, both by day and by night, to manipulate light and the light sources in the full knowledge and love of our towns and cities.

1. THE CODE OF PRACTICE

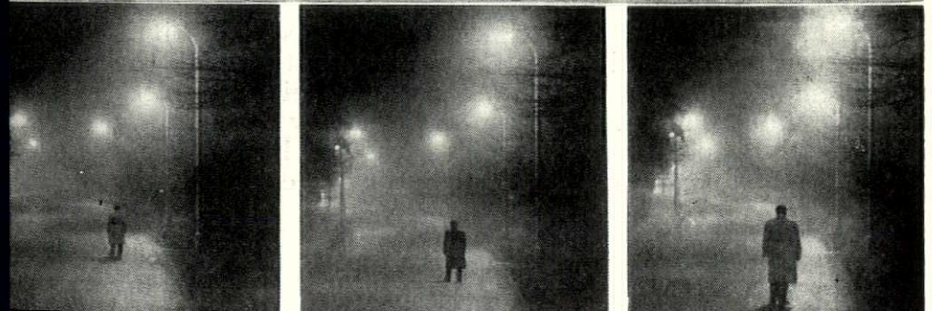
Silhouette vision whereby the surface brightness of the road reveals objects on it as a silhouette is admittedly second best. To illuminate in three dimensions was regarded as impractical; 1, shows the absurdity of trying to achieve normal vision by artificial lighting. Hence the Code of Practice based on Silhouette Vision, 2, and its often brutal and insensitive impact on towns, 3. This is the world where everything is its own law and where nothing is seen in relationship.

1



2





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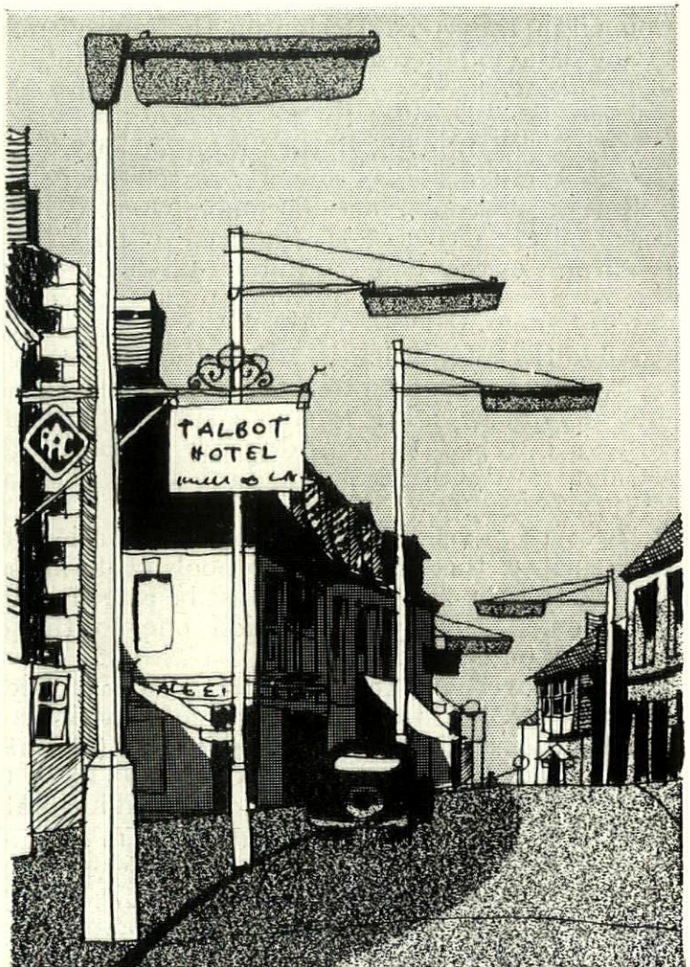


2. THE TOWNSCAPE UNITIES

scale

Everyone wants good lighting. We believe that respect for the environment does not preclude good lighting. There are three demands the townscaper makes of the engineer. The first is to observe scale. The idea is simple enough; examples of light fittings of suitable scale to the environment are shown below at Hatfield, 4, Pimlico, 5, and Dulwich, 6. Below there are three failures, two, 7 and 8, in which the fittings are too large and one where it is too small and insignificant, Holborn, 9.

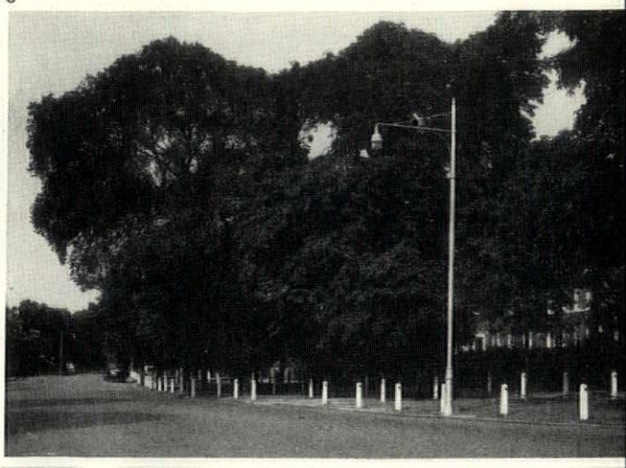
4

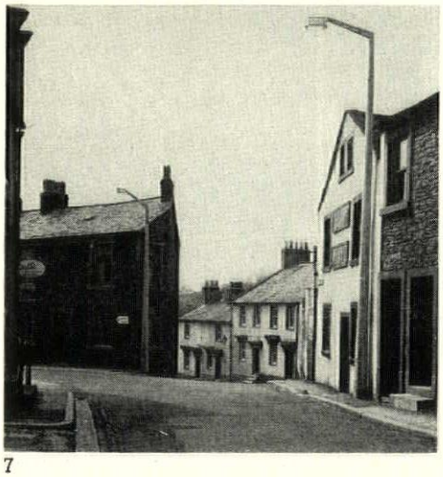


5



6





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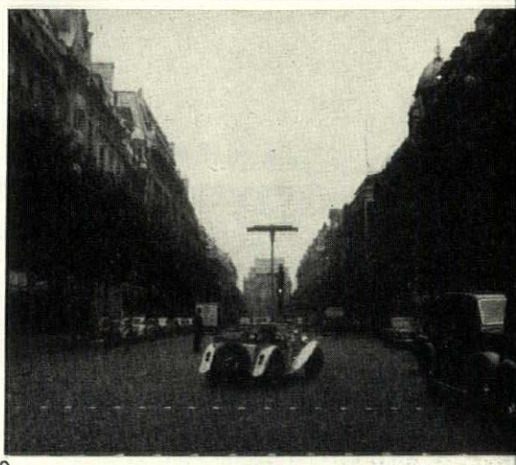


9

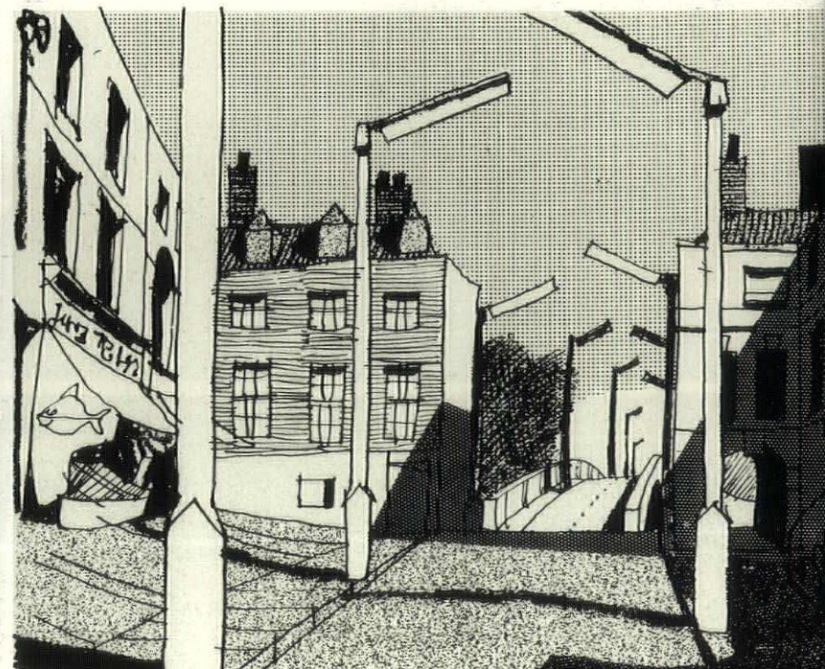
movement

Kinetic unity is perhaps more complex to appreciate but of vital importance to the impact of the environment. Below, 10, we see a village scene, the shopping street is given enclosure (a sense of personality) by the re-entrant buildings and beyond the bridge the vista is closed by trees. The scene is static whereas the installation, 11, bores a hole right through it. The kinetic unity is broken.

10



11

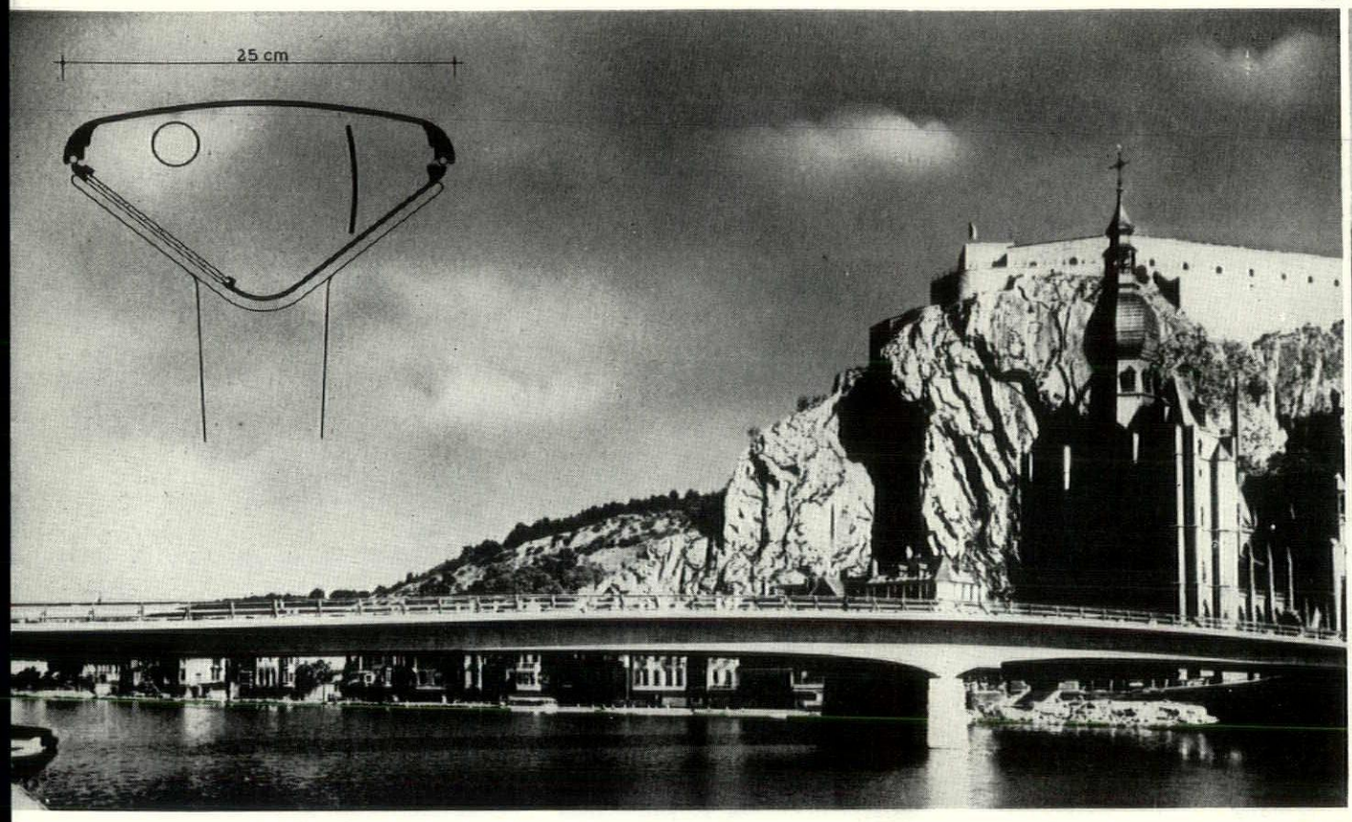


the Townscape Unities (cont):

propriety

There are cases where the orthodox installation is not wanted at all, where the purity of the scene cannot be improved by an installation yet light is needed. At the Pont du Carrousel in Paris they have lights on telescopic masts which are raised at night, Below, 12, on the bridge over the Meuse at Dinant the lighting is built into the handrail (see section). At the Radcliffe Camera in Oxford, 13, one would like to see the only possible solution, floodlighting, 14. All these various solutions will in fact cost a little extra. We expect that flexibility of approach for the vital 5 per cent.

12



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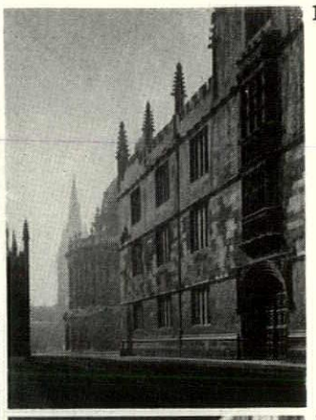

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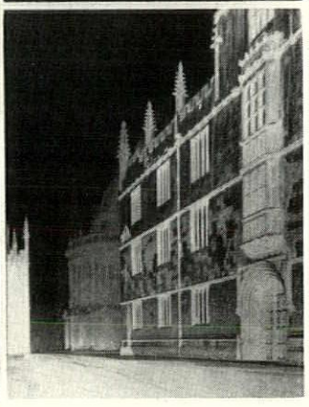
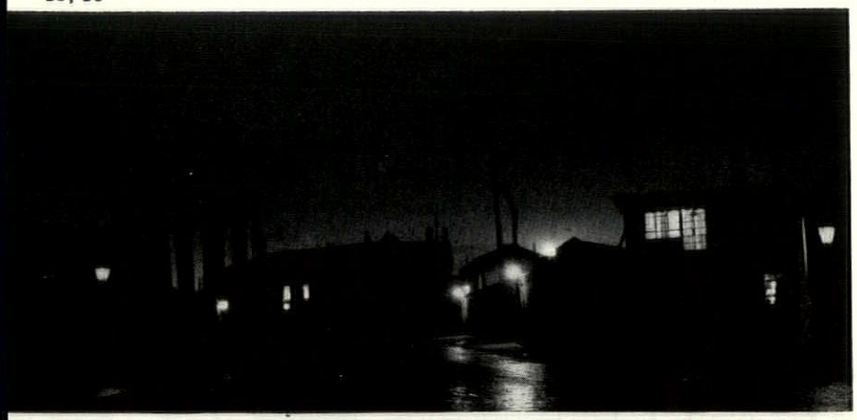
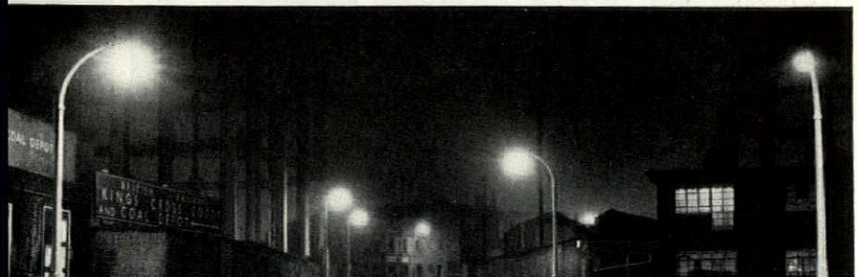


3. TOWARDS FLEXIBILITY

Once the basic townscape is appreciated then the drive towards flexibility begins. New and powerful ligh sources, 15 and 16, are making the theory of silhouette vision obsolete. Marlborough has recently installed 20 ft. light fittings, 17 (as opposed to Code of Practice 25 ft., 18.) 19 and 20 show that the road surface can be evenly lit with lamps at varying heights.

15, 16





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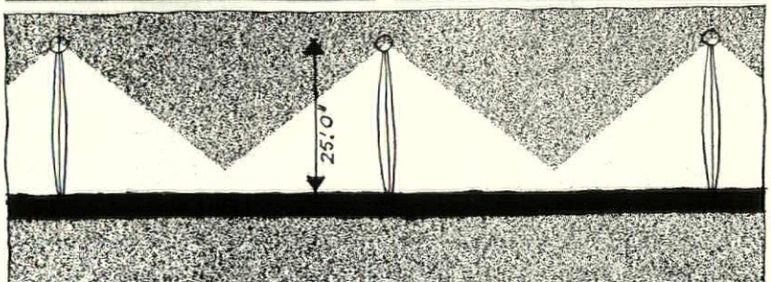


19

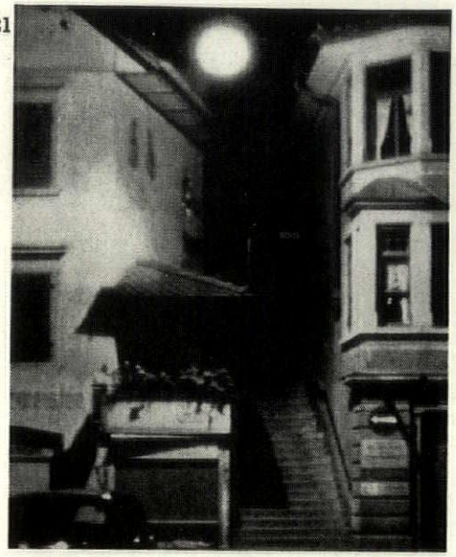
20

4. FLEXIBILITY

On this page we feature, with pleasure, a model prepared by two lighting engineers, C. R. Bicknell, M.C., B.Sc., A.K.C., F.I.E.S., and J. T. Grundy, to illustrate their lecture on public lighting to the Association of Public Lighting Engineers. Believing that the visual impact, by day and by night, of an installation is just as important as its scientific virtue they have made their points in this model.

From Vienna we quote Dr. Leopold Fink, on the exact placing of lights: 'The shadows under the canopy and on the steps introduce the shaping quality and the light on the flowers the friendly element in this picture. Any change in the position of the lamp would spoil this impression. The experienced man in charge of town lighting should know the locations where such effects can be achieved. He will know them when he loves his town and his task.'

21



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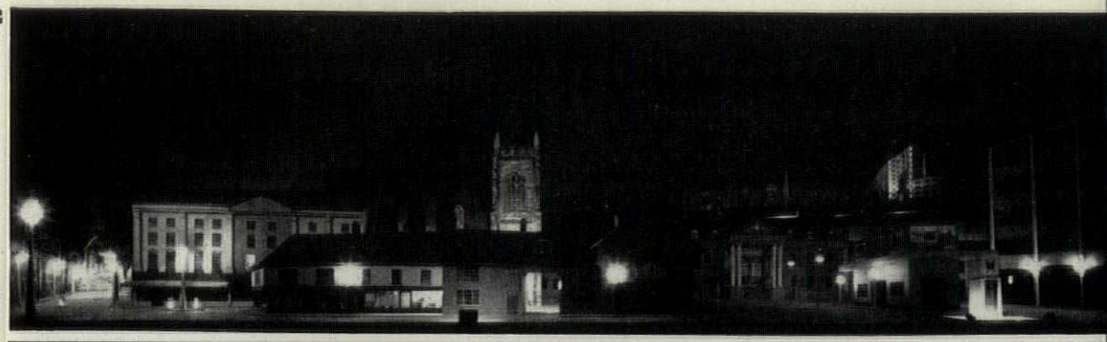

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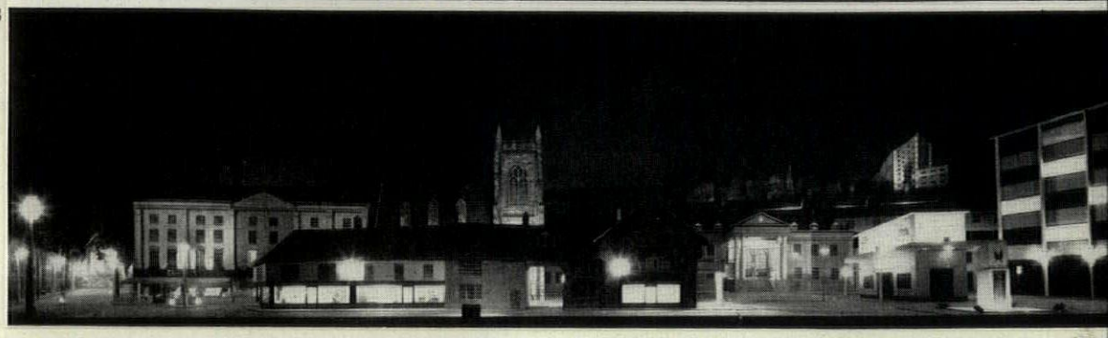

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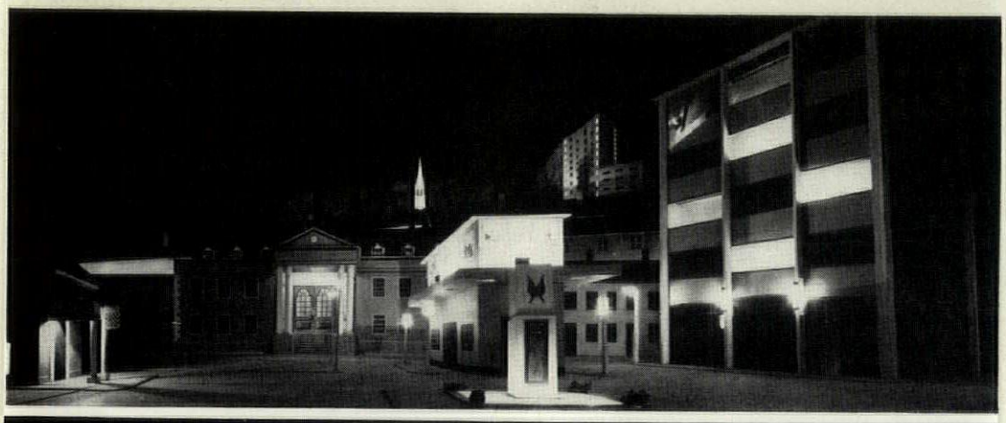

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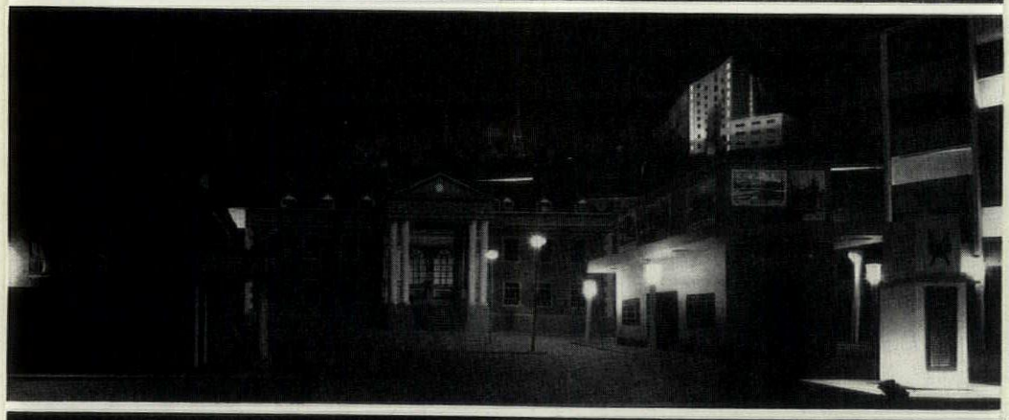

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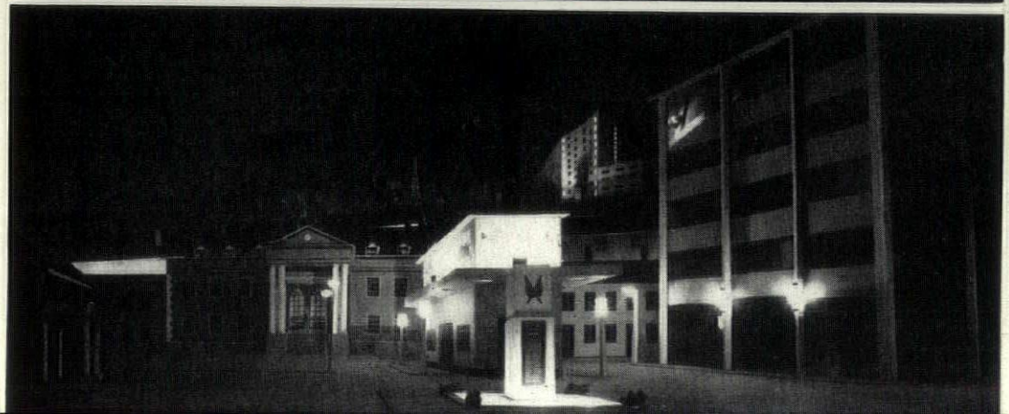


The two pictures above, 22 and 23, show the same scene with different lighting effects. From left to right:

Road with 20 ft. columns so that trees can be preserved. Vista closed by stain glass church window.

35 ft. vertical lantern acting as beacon at main cross roads for motorists.

Wall-mounted lights on small foreground building.

Church tower lit up by sodium fog lamps on traffic island.

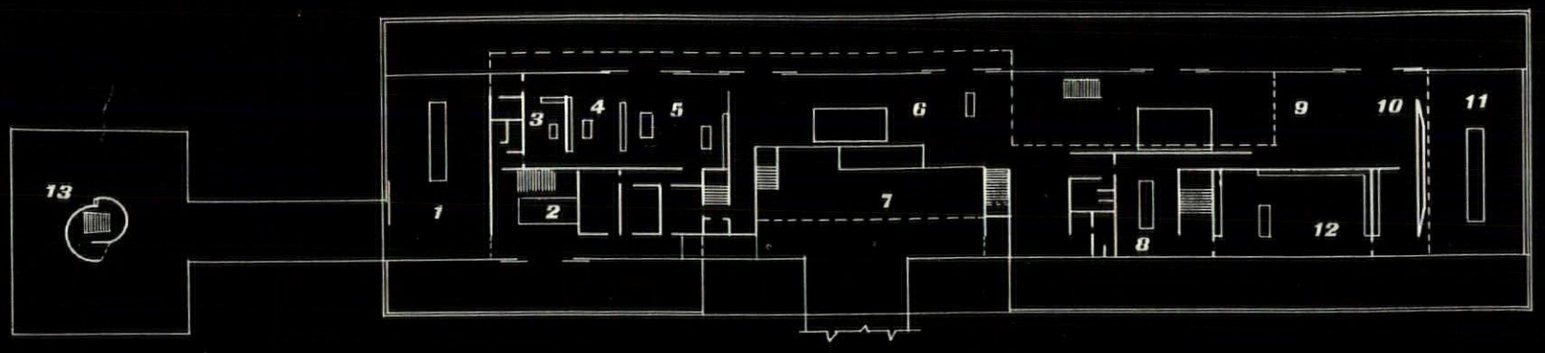
Square in front of town hall lit by 25 ft. posts and wall-mounted lamps on bus station.

Floodlit advertising.

Blocks of flats floodlit.

War memorial lit from below decorative water.

Curtain wall building carries built-in street lighting and is lit at night internally. The group of three pictures, left, 24, 25 and 26, shows in more detail the sort of variations in lighting effect that can be obtained; difficult to show in a photograph is the dimming effect whereby the street lighting is reduced in intensity after the heavy traffic has passed for the night.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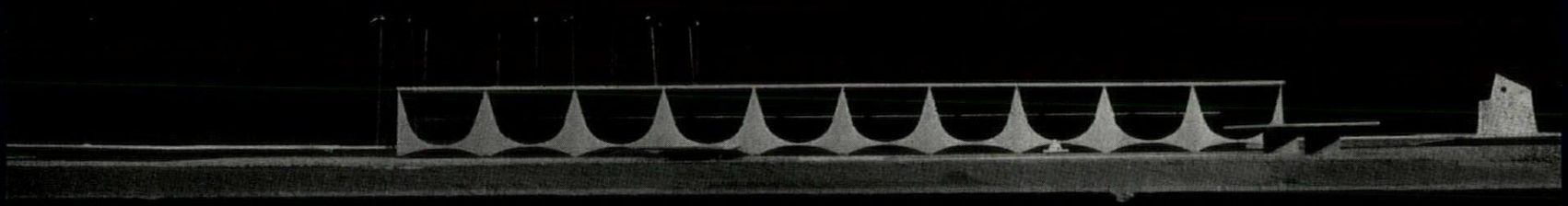
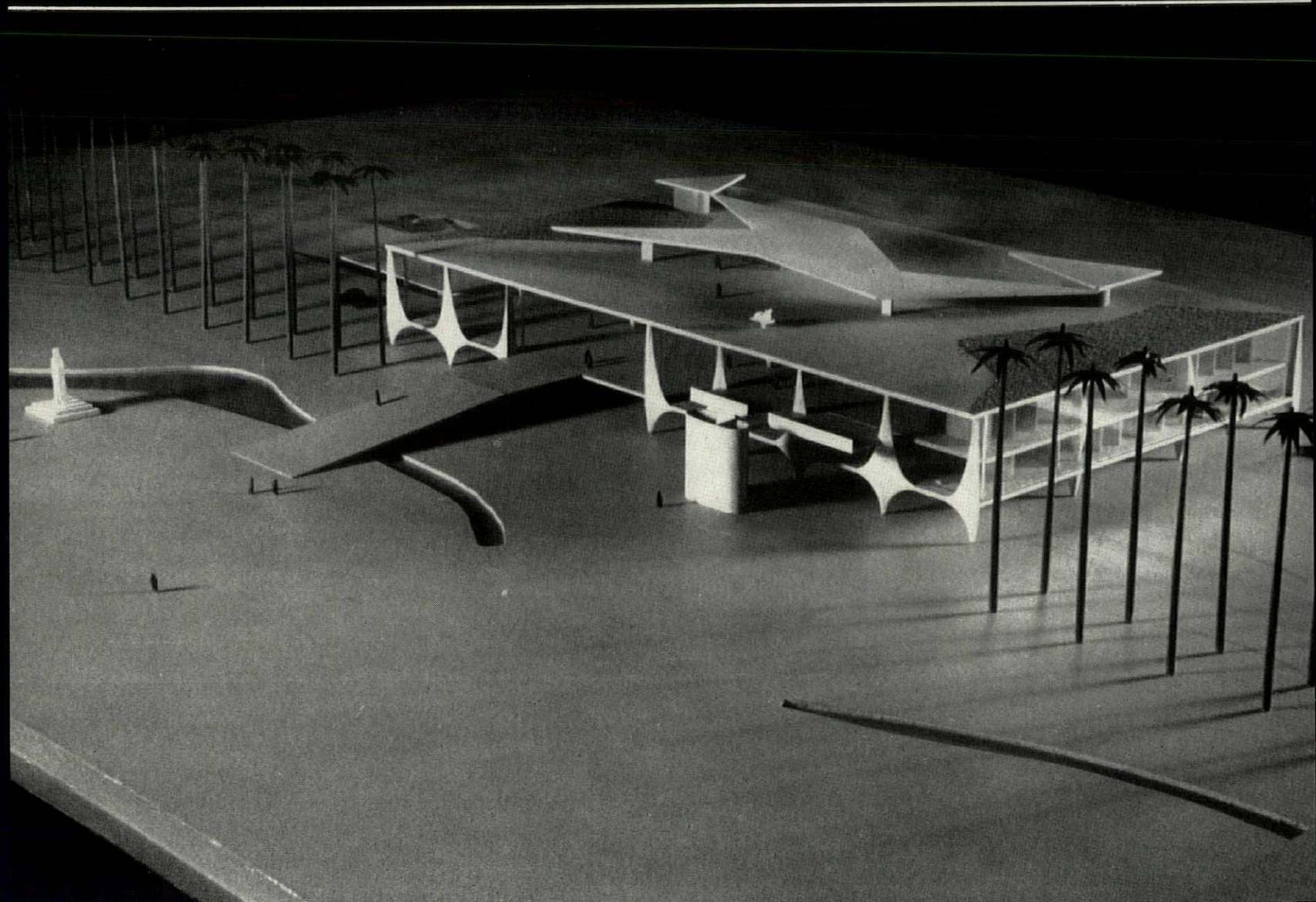




Among the first buildings to be put in hand on the site of Brasilia, whose overall plan is described below by Sir William Holford, was the residency for the President of the Republic which, like the parliament buildings (see p. 366) has been designed by Oscar Niemeyer. The model shown in the upper photograph opposite gives the revised form of the residency design with the chapel annexed to it on the platform at the right, but the earlier version below gives a better idea of the plastic effect of Niemeyer's newest variations on concrete structure.

key: 1, cabinet room. 2, waiting area. 3, prudential secretary. 4, president. 5, library. 6, hall for receptions. 7, entrance hall. 8, breakfast room. 9, music. 10, bar. 11, dining room. 12, kitchen. 13, chapel.

William Holford

BRASILIA

A NEW CAPITAL CITY FOR BRAZIL

Rio de Janeiro is now a very overcrowded city of 2½ million inhabitants, where enormous granite rocks plunge into the Atlantic and, in between, the high buildings stand together in the fashion of the Giants' Causeway. It did not become the capital of Brazil until 1763. In 1888 (the same year that saw the setting up of the London County Council) slavery was abolished in Brazil; and the next year the Emperor Pedro II abdicated and the Republic was proclaimed. The republican constitution provided for the building of a new capital city.

Much had to happen before this could come about. Growth and surplus growth, wealth and surplus wealth, had to accumulate. Manufacturing industry and building capacity had to develop. Earth-moving machinery, automobiles and oil had to be imported. Most important of all, an architectural revolution had to be experienced and the whole climate of opinion changed. How suddenly it changed can be seen in the centre of Rio, where two buildings designed at the same time stand side by side, representing the old world and the new. One is the Ministry of Finance; the other is the Ministry of National Education whose *compère* was Le Corbusier, and whose *chef d'orchestre* was Lucio Costa—the same Lucio Costa who, in 1930, had been for a few electric months Director of the National School of Fine Arts, and later foremost among the architects disqualified in the competition for the design of the Ministry building. After 1936 new buildings appeared which had no precedents in nineteenth and early twentieth century architecture in Brazil.

Belo Horizonte, which had been founded as the State capital of Minas Gerais in 1897, grew into a modern metropolis, with a population of 350,000, in twenty years. São Paulo broke every link with the past, and became the fastest-growing city in the world. And

at last, to mark the coming of age of the architectural revolution in Rio in 1936, the Brazilian Government took steps to leave it and to plan the new capital on an upland site 600 miles to the north-west, in the State of Goiás, for a population of half a million.

The press, firmly established in cosmopolitan Rio, were on the whole opposed to this idea, and said so. The project was criticized as unnecessary, uneconomic and unfortunate. But conditioned as they are by the achievements of the last twenty years, they did not suggest it was impossible. And the Government clearly wanted to be master in its own house. Rio is overbuilt. The traffic congestion at the peak hours is worse than London's, noisier than Rome's and far more lethal in its effects than that of New York. Ordinary civil servants may live fifteen miles from their offices and even then spend a third of their income on rent. Meanwhile enormous potential wealth, in agriculture, stock, minerals, waterpower and other natural resources, remains untapped for lack of centres of communication, marketing and culture, in the partly unexplored hinterland of Brazil.

So, despite the criticisms, the President of the United States of Brazil willed the new capital into being, appointed a Commission to settle its precise location, and created a Development Corporation, under the dynamic direction of Dr. Israël Pinheiro, to build it.

Since the 1930's, architecture in Brazil had once more become the Mistress Art. Designers achieved something like the glamour of poets in Elizabethan England, or musicians at Salzburg or film directors at the Cannes Festival. They had begun to influence painting and sculpture and landscape and engineering, the making of furniture and fabrics and tiles. The past they looked back to was not in the previous century but in the eighteenth—the culmination of the Jesuit influence—when men like the architect-sculptor Antonio Francisco Lisboa, known as the Aleijadinhó, designed Baroque churches with great plastic and emotional content, and furnished them, and carved wonderfully moving figures to decorate them.

The new movement was subject to discipline, but impatient of control from without. An inner artistic code replaced the religious order of the eighteenth century, and this had nothing to do with regulation by governmental or local authority. 'Planning,' in the western European sense, came to be regarded as an administrative device for promoting competition among architects; and its police functions—like most police functions in Brazil—were tolerated but not respected. Confronted by a difficulty, the architect and his client will both say 'There is a way round it!'

The result, in the development of town and countryside, has been very unequal. There are groups of buildings, housing estates, exhibition layouts, highways and entire man-made landscapes, which lift the heart and stimulate the imagination. And there are slums and suburbs, prairie towns and mad metropolitan muddles, which make one long for the Town and Country Planning Act of 1947 and a corps of devoted and anonymous planning officers.

Now, suddenly, the creative discipline of the architect is to be invoked on an enormous scale. Brazil is confident that an entirely new town, an administrative and federal capital, can emerge, fully appointed, from the designer's brain and become a metropolis within one generation.

The precedents do not provide much help in deciding whether such an enterprise is possible, and if so whether it could be successful. Plato conceived a complete city of about 5,000 citizens, and many of the humanist writers and architects designed ideal towns, some for limited and some for unspecified populations. James Silk Buckingham in 1849 wrote a detailed prospectus for a model town which he called Victoria, to accommodate no more than 10,000 workers and their families. But Chandigarh, post-war and post-partition capital of the Punjab, in India, is being planned for 150,000 people in the first instance, with the expectation of growth to a much higher figure later on.

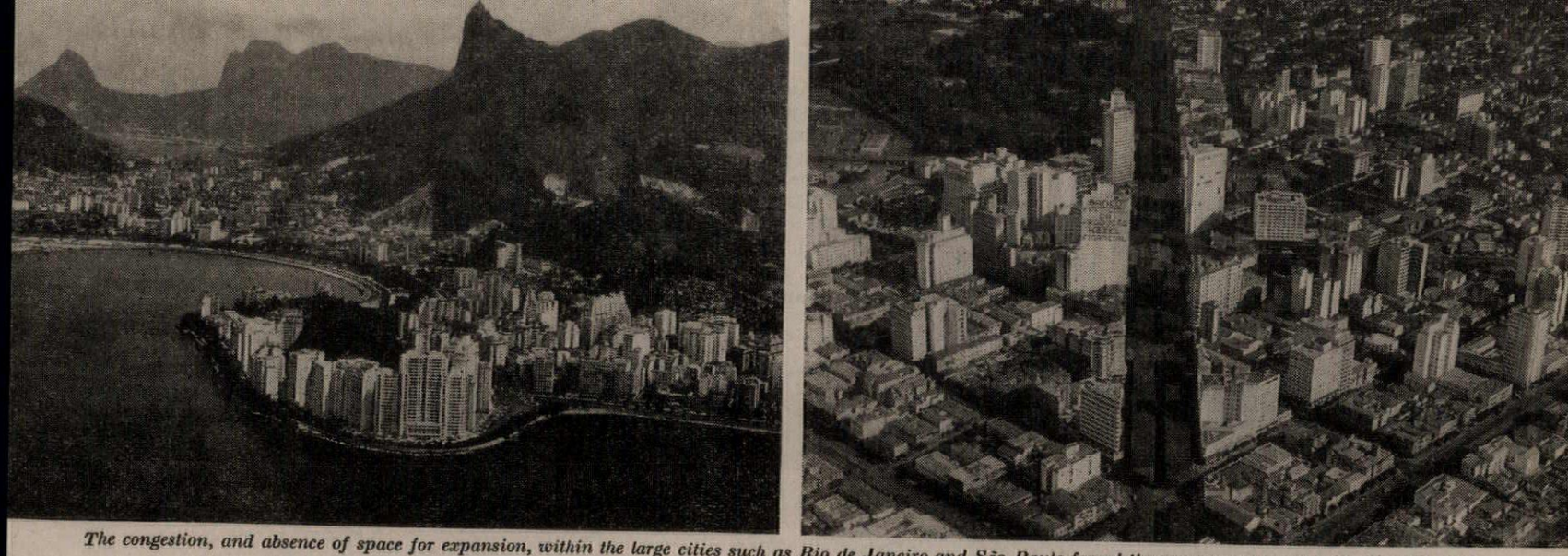
Meanwhile the new and satellite towns of Britain and the USA are building to intermediate population targets; they range between 20,000 and 80,000. The first of those built under the British New Towns Act of 1946 are now ten years old and not quite half as big as they have been planned to be. Socially and economically they stand a good chance of succeeding in what they set out to do. But they are in no sense metropolitan, except as constituents of the metropolis of Greater London; nor are they likely to become regional centres. Much has been learnt about administration and estate development, about schools and neighbourhood units and housing in a domestic landscape. But the greater challenge has not been taken up. In a western Europe recovering from war damage and faced with overwhelming problems of urban renewal in a hundred old cities at once, the ideals of Plato or Alberti or Le Corbusier have had no chance to bear whole fruit.

The problem facing the President of the Republic of Brazil, Dr. Juscelino Kubitschek da Oliviera—to give him his full name—is to hitch all the practical machinery, and the state and private investment required for a new town, to an ideal plan on an unprecedented scale. The Federal Commission on the Location of the New Capital, under the presidency of Marshal José Pessôa, had already surveyed the Federal District and received a technical report from Donald J. Belcher and Associates, a firm of development engineers from Ithaca, New York, who with the help of Brazilian officials and a number of consultants from Cornell University had specified five possible sites for the Capital City, and established their rating on the basis of a whole list of physical criteria.

President Kubitschek then appointed a Commission, on the lines of a Development Corporation, to take over the selected federal site, build the new capital and transfer federal and diplomatic premises, with the majority of their officials, from Rio de Janeiro. At the same time he asked Oscar Niemeyer, who had designed so many buildings for him when he was Governor of the State of Minas Gerais, to build two token structures within a park area or reservation within the capital site: one is the President's Palace itself, the White House of the United States of Brazil; the other is a Government Guest House or Hotel.*

The President also asked his architect to make sketch plans for the layout of the capital; but Niemeyer advised him and Israël Pinheiro (who heads the Development Corporation) to hold instead a preliminary competition of ideas from among Brazilian architects, engineers and

* Both are now well on the way to completion. The design for the Palace, known familiarly as 'Oscar's Cardiogram,' shows the latest development in the series of *pilotis* which Niemeyer has used to support or suspend the free floor areas of his buildings.



The congestion, and absence of space for expansion, within the large cities such as Rio de Janeiro and São Paulo forced the government to plan the New Capital.

town planners. In view of subsequent events it is worth putting on record this very significant fact. Although everyone was impatient to begin, and although the difficulties of establishing equitable conditions of competition, and adequate information, were well understood, administrative pressure was deliberately held back to enable an architectural idea of the form and character of the New Capital to be born first.

This was a notable decision. Oscar Niemeyer became Director of the Department of Architecture and Urbanism to the Capital Development Corporation and, as such, one of the national assessors of the competition for a *Pilot Plan*.

The conditions were issued in September, 1956. They were, perhaps, the simplest ever issued for a competition of this size. Competitors were given a good deal of information and were asked to visit the site when they had studied the maps, charts and aerial mosaics supplied at various scales from 1:2,000 up to 1:50,000. But they were asked to hand in only two essential documents:—

(*a*) 'A basic layout of the city, indicating the position of the main items of the urban structure, the location and interconnexion of the various sectors, centres, installations and services, the distribution of the open spaces and lines of communication, to the scale of 1:25,000.

(*b*) A supporting report.'

The programme indicated other subjects which competitors might consider relevant to the pilot plan and which might be within the specialist capacity of members of the competing groups; e.g. agricultural economics, natural resources, land tenure, water and power supply, employment opportunities, and the planning and investment required at different stages for what was called 'progressive balanced development.' But it was made clear that these items would require deeper research and a wider experience than the competing groups could bring to bear in the short period of six months terminating on March 11, 1957. They could only be estimates of function to support the central idea of form. The jury was to have the President of the Development Corporation, Sr. Pinheiro, as its non-voting chairman, a representative from the Institute of Architects of Brazil (Paulo Antunes Ribeiro), a representative from the Society of Engineers (Horta Barbosa), two representatives from the architectural and town planning department of the Development Corporation (Oscar Niemeyer and Stamo Papadaki), and two town planners from abroad—(André Sive from Paris, and myself from London).

* * *

From this point my narrative becomes largely personal. For one thing the report of the Jury, which was made at the end of March, was not unanimous. It was signed by six out of the seven members, accepted by the President of the Republic and by the Development Corporation and duly published. But the representative of the Institute of Architects made a minority report, asking for the combined premiums of 2,400,000 Cruzeiros (about £6,000 at one of the official rates of exchange) to be divided equally among the ten leading competitors, and also for the disqualification of the design placed first on the grounds that it was too slight to be considered. It was apparent that the Institute favoured the farming out of the capital works to leading architects and regarded the competition as the second best method of securing a short list.

For another thing, the jury was involved from the start in almost continual discussion with press, public, competitors, and officials, even over the period of judging. There was none of the judicial calm, secrecy and detachment which surrounds the deliberations of a jury in this country. And our decisions had to be justified at some length, both verbally and in writing. At one point I gave up keeping records of our discussions, as it saved time to read them in the newspapers the following morning.*

It was soon clear that it was the foreign members of the jury who were being asked, presumably as the most disinterested and impartial judges, to tip the balance in favour of one scheme as against another. So that once again a very personal approach was required; and it is for that reason also that the following comments are written in the first person.

I realized as soon as the submissions were handed in that our choice would lie between breadth and depth. There was imagination in plenty, both of the practical and the theoretical kind. But whereas some competitors had concentrated on what might be called the ideology of the design, illustrating their idea by a sketch plan and some significant diagrams, others had widened their appreciation of the problem to include details of agriculture and manufacture, of building costs and returns, of local government and community organization.

The best of these, and the most complete, was the entry by the firm of M. M. M. Roberto. The ideas behind this astonishing presentation, which ran to scores of drawings and a full report that took 12 hours of concentrated effort to absorb, are set out trenchantly in a full-page interview of Marcelo Roberto recorded in the *Correio da Manha* of March 24, 1957. I can only say, for my part, that I have never seen anywhere in the world a more comprehensive and thoroughgoing master-plan for a new capital city on a cleared site. We all realized, at the same time, that if the Development Corporation adopted this plan they would take on board more than a pilot. They would have purser and quartermaster and bo'sun, a complete ship's company from cabin boy to captain, and a Director of the Line as well. The principle of the plan is to break down the metropolis into self-contained *unités d'occupation*—seven to start with, each with a main government activity in its business district; then ten; ultimately perhaps fourteen. The Federal Government Centre, detached from these hexagonal model towns, remains the same. The 'regional city' is established, as it were, by decree. After admiring this scheme for several days, my own feeling was that everything in it was worthy of admiration, except its main objective. It was not an Idea for a capital city.

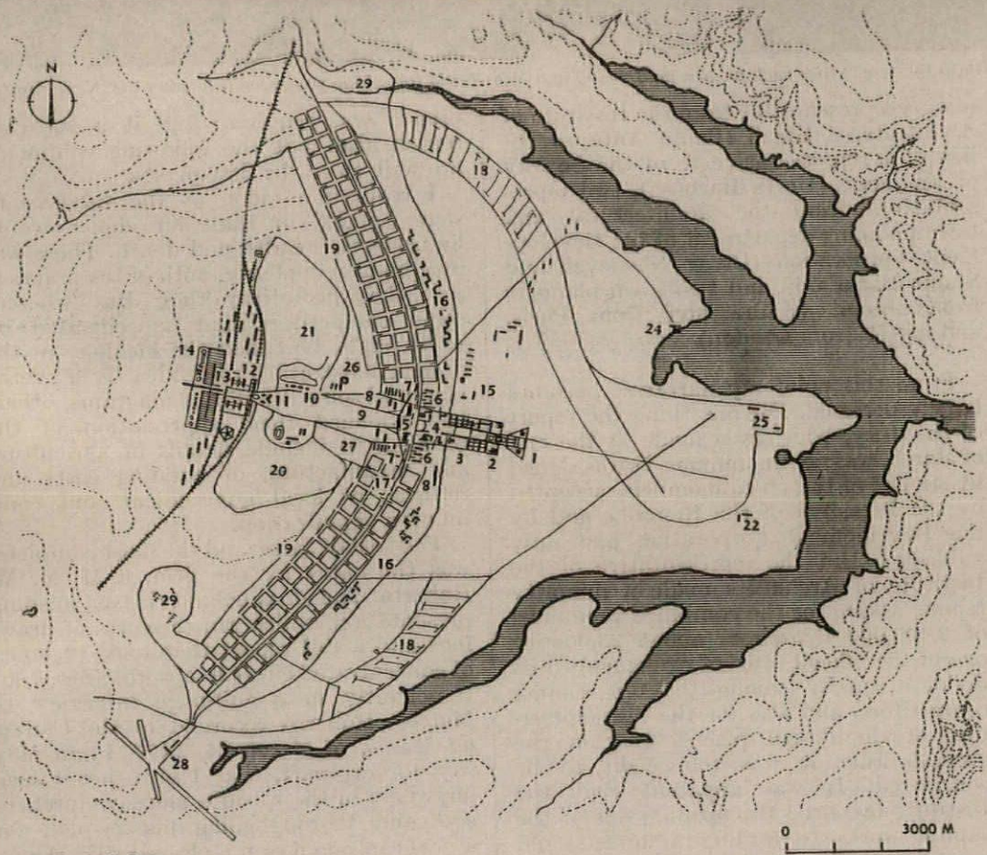
At the opposite extreme was the submission by Lúcio Costa. Here was an Idea and the skeleton of a metropolitan form —and practically nothing else. Presented on five medium-sized cards (which included

* Although one soon began to translate the written language and to understand the meaning of paragraphs in the press, the spoken word often required an interpreter. So did most of the competitors' reports, as only three of them had English or French versions. I can therefore only give my own impressions of what went on.

the short report) and without a line of mechanical drawing, no models, no land-use schedules, and no population charts, the entry went some way to justifying the criticism of Paulo Antunes Ribeiro that it was hardly worth consideration by a serious jury. And yet, at the first reading of his report, one realized that here was a thinker, an urbanist, of the first order. On second reading one realized that there was not a single unnecessary word in the report, and not a single unnecessary line in the sketch plan or diagrams: yet everything essential was said. And on further reading this member of the jury, at least, became more and more convinced that the direction of advance for a great administrative capital had here been indicated in a masterly way, and the fundamental problems of communication, urban residence, metropolitan character and richness of growth within a unity of artistic conception, had all been recognized and anticipated.

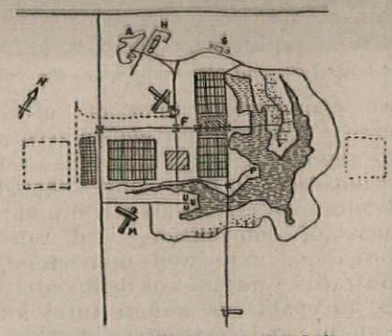
Lúcio Costa's report is so good that it can hardly be summarized. Even to me, who am no Portugese scholar, the original version was immediately lyrical and striking; and even the translation (which is given here in full) is good enough to

[*continued on page* 402

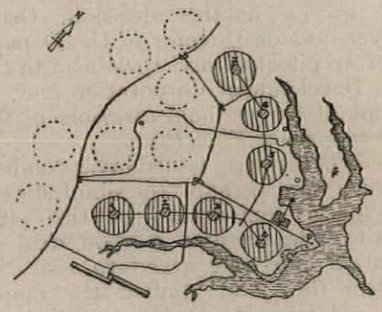


1st. prize: Lucio Costa

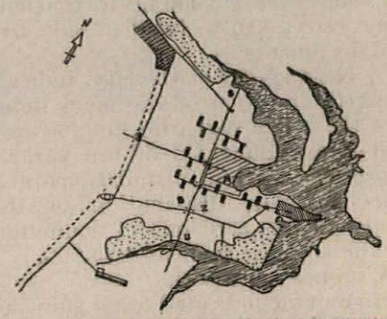
1, parliament. 2, ministries. 3, cathedral. 4, cultural area. 5, recreation centre. 6, banks and offices. 7, commercial area. 8, hotels. 9, radio and television centre. 10, stadium. 11, town square. 12, private dwellings. 13, railway station. 14, craftsmen and small industries. 15, universities. 16, embassies and legations. 17, residential zone. 18, detached houses. 19, gardens. 20, botanical garden. 21, zoo. 22, golf club. 24, yacht club. 25, residential area. 26, bus station. 27, site for fairs, circuses, etc. 28, airport. 29, cemetery.



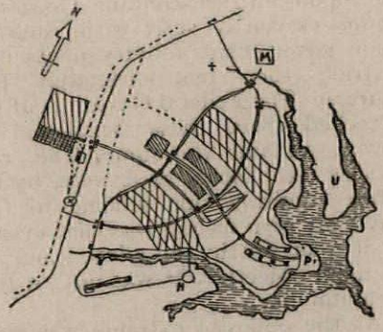
2nd prize: Baruch Milman, José Henrique Rocha and Ney F. Gonçalves.



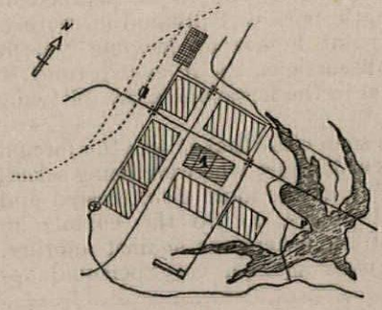
Joint 3rd and 4th prize: M. M. M. Roberto.



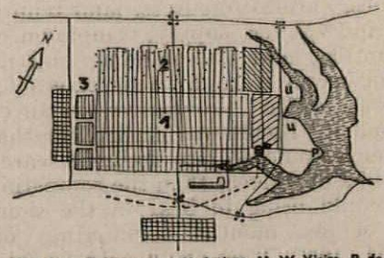
Joint 3rd and 4th prize: Rino Levi, R. Cerqueira and L.-R. Carvalho Franco.



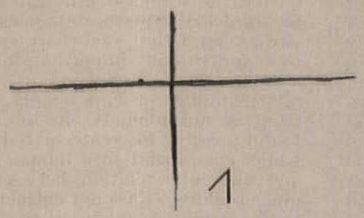
5th prize: Henrique Mindlin and Giancarlo Palanti.



5th prize: Construtecnica SA.



5th prize: C. Cascardi, J.-V. Artigas, M.-W. Vieira, P. de Camargo and Almeida.



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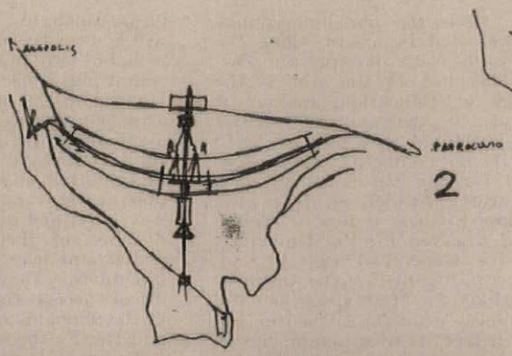

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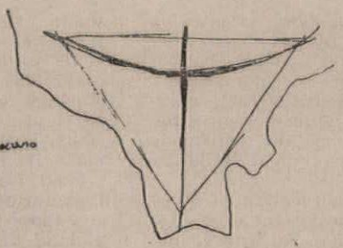


Lucio Costa's prizewinning report and accompanying sketch designs:

In 1823, *José Bonifacio suggested transferring the Capital of Brazil to Goiás, and rechristening it Brasilia.*

First of all, I should like to apologize to the Directors of the Development Company (Novacap) and to the Jury of the Competition, for the sketchy manner in which I am submitting the idea which I have followed in my suggested outline plan for the new Federal Capital; and at the same time, I must justify myself.

It was not my intention to enter the competition—nor indeed, am I really so doing. I am merely liberating my mind from a possible solution which sprang to it as a complete picture, but one which I had not sought.

I therefore come forward, not as a properly equipped expert, since I do not even run an office of my own, but as a mere *maquisard* of town planning who does not even mean to continue working out the idea offered in this report, save perhaps as a consultant. And if I speak with such candour, it is because I base my reasoning on this simple assumption: if my idea has any validity, my data—although given apparently in such a sketchy manner—will prove quite sufficient, showing that despite its spontaneous origin, I subsequently gave it a great deal of thought before reaching this solution. And if the suggestion has no validity, then the Jury will find it easy to eliminate it, and I shall not have wasted my time, nor that of anybody else.

Since there were no restrictions in the way of entering the competition, there was less possibility of consulting the Development Company on what is, in fact, a point of great importance: namely what, from a planning standpoint, they think this city should be—since in this instance it will not be the outcome but the cause of the regional plan. For this is a deliberate act of possession, the gesture of pioneers acting in the spirit of their colonial traditions: and each competitor is, in effect, being asked how he conceives of such a city.

It should be conceived of, I believe, not as a mere organic entity, able to function effortlessly and vitally like any modern town; not as an *urbs*, therefore, but as a *civitas*, having the virtues and attributes appropriate to a true capital city. To achieve this, the town planner must be imbued with a certain dignity and nobility of purpose—for it is from this basic attitude of his that must spring the sense of order, fitness and proportion which will confer real monumentality on his urban scheme. I use the word not in the sense of ostentation, but as the palpable and conscious expression of true value and significance. He must design a city in which orderly and efficient work may be carried out: but also a city of vitality and charm, conducive to rêverie and intellectual speculation, capable of becoming not only the seat of Government, the administrative headquarters of the nation, but also a centre of culture which will attract to it the finest and most perceptive intellects in the country.

And now let us see how the plan was born, outlined, and developed to its present conclusion.

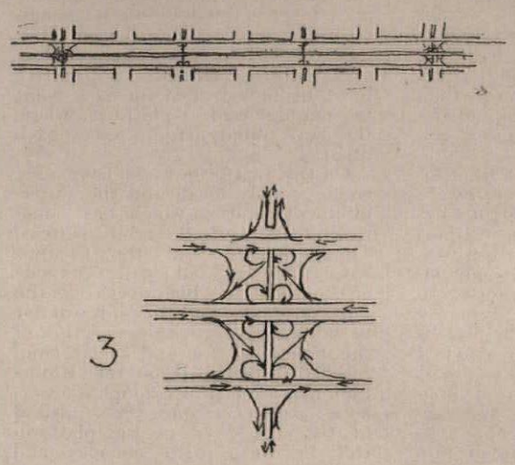
It was born of that initial gesture which anyone would make when pointing to a given place, or taking possession of it: the drawing of two axes crossing each other at right angles, in the sign of the Cross, 1. This sign was then adapted to the topography, the natural drainage of the land, and the best possible orientation: the extremities of one axial line were curved so as to make the sign fit into the equilaterial triangle which outlines the area to be urbanized, 2.

Finally, it was decided to apply the free principles of highway engineering, together with the elimination of road junctions—to the technique of town planning. The curved axis, which corresponds to the natural approach road, was given the function of a through radial artery, with fast traffic lanes in the centre and side lanes for local traffic. And the residential district of the city was largely located along this radial artery, 3.

As a result of this concentration of the city's housing, it seemed logical to dispose the other important centres along the transverse radial artery, which thus came to be regarded as the monumental radial artery. Here, then, are located the Civic and Administrative Centres, the Cultural Centre, the Entertainment and Sports Centres, the Town Hall and other Public Buildings, the Barracks and the zones designated for warehousing and supply, local light industries and the railway station, 4. At the intersection of the two arteries, but functioning essentially as part of the organization of the monumental radial artery, are the banks, the finance corporations, big business buildings and offices housing the liberal professions as well as extensive markets and shopping centres.

Since the monumental radial artery underpasses the residential radial road, it was necessary to create a spacious platform, to be kept clear of all traffic not specifically intending to park there. The quiet refuge of this platform makes it the logical site for the Entertainment Centre where cinemas, theatres and restaurants are grouped together, 5.

Traffic heading for the other parts of the city flows down in a one-way stream to the lower level roofed over by the platform. It is thus sandwiched as it were between two platforms, with the sides left open. The 'under-platform' will also house a large car-park and here too is the



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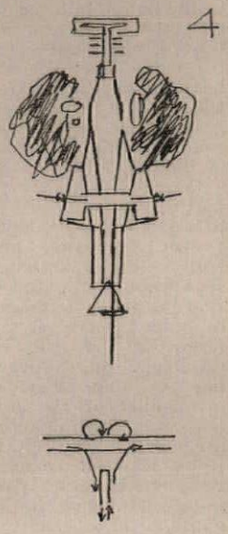

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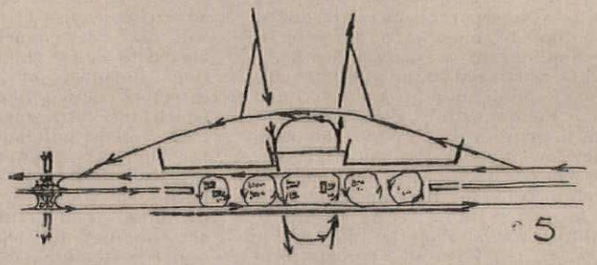

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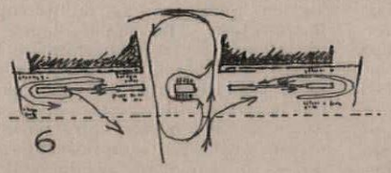

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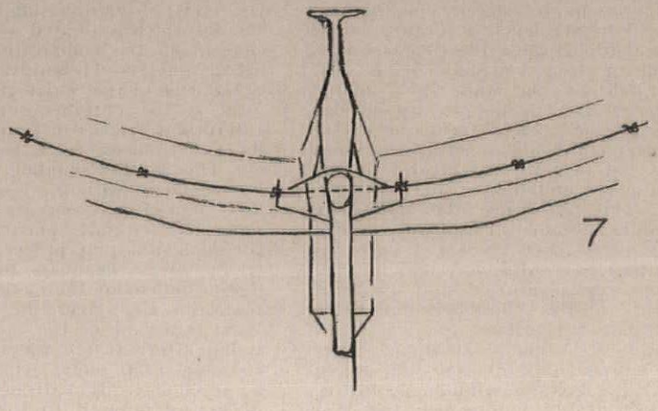

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Interurban Transport Centre—a building reached by passengers from the upper platform, 6. Only the fast traffic lanes, already underground, dive below the centre of the 'under-platform' which spreads down the hill until it reaches the Esplanade on which the Government Buildings are located.

Thus, with the creation of three complete clover-leaves in each arm of the residential radial artery, and of an equal number of underpasses, car and bus traffic will flow unimpeded through the central and residential districts, and with no road intersections. An independent and secondary traffic system has been worked out for heavy vehicular traffic; it has crossings marked by traffic lights, but does not communicate with the first system except beyond the Sports Centre. It has basement level access to buildings in the Shopping Centre, and it skirts the Civic Centre at a lower than ground level, with approach galleries tunnelled through the terraced embankment, 7.

Once a general network for motorized traffic had been established, an independent grid of safe-transit footpaths for pedestrians had to be organized, 8. However, separation of the systems of circulation must not be taken to unnatural extremes, since it must not be forgotten that the car, today, is no longer Man's deadly enemy; it has been domesticated, and is almost a member of the family. It only becomes 'de-humanized' and reassumes its hostile, threatening attitude, when it is reintegrated into the anonymous body of traffic. Then indeed, Man and Motor must be kept apart, although one must never lose sight of the fact that, under proper conditions and for mutual convenience, co-existence is essential.

Within the framework of regulated traffic, the separate areas are linked together to make one harmonious system; let us see how. The highlights in the outline plan of the city are the public buildings which house the Fundamental Powers. These are three, and they are autonomous: therefore the equilateral triangle—associated with the very earliest architecture in the world—is the elementary frame best suited to express them. For this purpose, a triangular, terraced embankment (terreplein) was designed: it will be supported on retaining walls of rough stone rising above the surrounding countryside, and can be reached from the ramp of the autostrada running between the President's Residence and the airport. At each angle of the triangular piazza—the Place of the Three Powers, as it might be called—stands one of the three buildings: the Government Palace and the Supreme Court at the base; the Congress Building at the tip. This building also fronts on to a wide esplanade on a second, rectangular embankment on a higher level, according to the local topography: the entire perimeter of this embankment is also supported on walls of unfaced stone. To transfer to present-day usage the ancient technique of the terreplein lends a certain harmony to the pattern and creates an unexpected and monumental strength, 9. This esplanade—the Mall as it would be called in England—is lined by a wide grass verge used by pedestrians and also for parades and processions; on to it front the Ministries and the Offices belonging to the Public Authorities, 10. The Ministries of Foreign and Home Affairs occupy the lower corner sites adjoining the Congress Building, and they are suitably landscaped; the War, Sea and Air Ministries face a separate square, while the remaining ministries are sited in a row along the Mall, each with its private car-park. The last in the row is the Ministry of Education, making it adjacent to the Cultural Centre which is treated as a park so as to make it more effective as a background for the Museums, Library, Planetarium, Academies, Institutes, etc. Close to these is a wide stretch of land reserved for the University City, its General Hospital, and, later on no doubt, for the Observatory. Along the Mall, space has also been allocated for the Cathedral, but this will face its own piazza, not so much for reasons of protocol, since in Brazil the Church is separated from the State, but more because of the question of human scale and the need to give this building its monumental value. Another reason, even more important, is of an architectural nature: the Mall's perspective must be undisturbed up to a point beyond the central platform, where the two radial arteries cross each other.

On this platform, as we have seen, traffic is only local; and the Entertainment Centre—which has something in it of Piccadilly Circus, Times Square and the Champs Elysées—is situated on it. The side of the platform which overhangs the Cultural Centre and the Mall will not be built over, with the exception of the Opera House and a tearoom, reached directly from the Entertainment Centre, or through a lower-level passage from the Cultural Centre. The front of the platform will be lined with cinemas and theatres, all with the same low height regulations, so that if viewed as a whole, they will make an uninterrupted architectural mass, with arcades, wide sidewalks, terraces and cafés. The façades of the buildings provide a fine field for illuminated advertisements, 11. The theatres will be inter-connected by lanes barred to motor traffic, in the traditional manner of Rio's Ouvidor Street, Venetian alleys, or arcades which run into small patios where there will be bars and cafés. Behind the buildings, footpaths and lanes will lead to 'loggias' overlooking the park. The purpose of this careful planning is to provide pleasant surroundings for social gatherings and friendly intercourse. The street level of this theatreland complex will be open and unobstructed except for the cores of access leading to the upper floors, so as to maintain an uninterrupted perspective. The upper floors will be glassed-in on both sides, so that the restaurants, clubs, tearooms, etc., may look on to the lower esplanade on one side, and on the other may have a view of the hilly park—an extension of the monumental radial artery on which the commercial and tourist hotels are located—and beyond this, of the imposing Radio-TV Tower, which is treated as a plastic element in the composition of the urban mass, 9, 11 and 12. Slightly to one side of the centre of the platform is the entrance hall of the Interurban Transport Terminal with its ticket-offices, bars, restaurants, etc. This is a low building connected by escalators with the lower departure hall which, in its turn, is separated by glass partitions from the departure quay proper. One-way traffic forces the buses to make a detour on leaving the road under the platform; this gives the travellers their last view of the monumental radial artery before the bus enters the residential radial artery, and is a psychologically satisfactory way of saying farewell to the national Capital. Also situated on the platform (which, like the lower platform, will house extensive car-parks) there will be two spacious piazzas for pedestrians; one facing the Opera House and the other, symmetrically arranged, looking on to a pavilion overhanging the gardens of the Cultural Centre and consisting of a restaurant, bar and tearoom. In these piazzas the carriage roads are one-way only, and are raised for a good distance of their course, so that pedestrians may cross freely in both directions. They will also have direct access through the piazzas to the Shopping Centre, to the Banks and the Finance Corporations.

To one side of the Entertainment Centre and connected to it are the two great cores of the Shopping Centre, with their smaller shops and department stores, and also the other Centres which are quite distinct from these—the Banks and the Finance Corporations, and the Centre which groups together the big business firms and agencies, and the liberal professions. Here, respectively, are the Bank of Brazil and the General Post and Telegraph Office. These centres can be reached by car via the respective approach roads, and by pedestrians along sidewalks which avoid street crossings, 8. There are also two-level car-parks and basement entrances corresponding to the lower level of the central platform. Both in the Banking and Business Centres, the pattern of the building plan is to be three high-rise blocks and four lower ones, all interconnected by a wide street-level area with mezzanines, which will provide covered communication and ample space for branches of banks, business firms, restaurants, etc. In the Shopping Centre the pattern suggested is an ordered row of long buildings followed by one larger building, but all having a uniform height and all interconnected by a similar street-level area of ample proportions, for shops, mezzanines and arcades. Two raised branches of the road ringing this building group will give pedestrians access to each building.

The Sports Centre, with its extensive car-parks, is situated between the Municipal Square and the Radio-TV Tower. This tower is triangular and consists of a monumental base of unfaced reinforced concrete, stretching up to a studio and office floor, and of a metal superstructure with a look-out section half-way up, 12. On one side it overlooks the stadium and its pavilions, with the Botanical Gardens behind them; on the other, it has a view of the racecourse, grandstands, stables and ancillary buildings and, adjacent to these, the Zoological Gardens. The two great green parks, symmetrically laid out in relation to the monumental radial artery, are the 'lungs' of the new city, 4.

The Town Hall, Police HQ, Fire Station and Public Welfare Building stand in the Municipal Square. The Prison and Insane Asylum, though set apart at a good distance from the central built-up area, also belong in practice to the same part of the outline plan.

Beyond the Municipal Square are the City Transport Garages; and beyond them, on both sides of the monumental radial artery, the Barracks. A large area which stretches across the artery from one side to the other will concentrate the warehouses, the local light industries and their own housing schemes; at the far end is the railway station which is also linked with one of the branches of the road for heavy vehicular traffic.

Now that we have travelled down the monumental radial artery from point to point, we can perceive that its flexibility and compactness of pattern, 9, from Government Piazza to Municipal Square, do not exclude variety; and that each part appears to be individually important, forming a living, plastic organism in the overall planning scheme. Since each part is autonomous, it has been found possible to create spatial areas which correspond to a human scale, and the inter-relation between the great buildings does not detract from the contribution made by the architectural characteristics of each area.

As regards the problem of housing, the solution chosen was the arrangement of an uninterrupted sequence of super-blocks, in double or single rows, lining the residential radial artery, and with a wide green belt, densely planted with tall trees, round each super-block. Each one will give pride of place to one species of tree; the ground will be carpeted with grass, and shrubs and foilage will screen the internal grouping of the super-block from the spectator: who will get a view of the lay-out through a haze of greenery, 13. This will have the two-fold advantage of guaranteeing orderly planning, even when the density, category, pattern or architectural standard of individual buildings are of a different quality; and at the same time, it will provide the inhabitants with shady avenues down which to stroll at leisure, in addition to the open spaces planned for their use in the internal pattern of the super-block.

The residential buildings in the super-blocks can be arranged in varying manners, though always in obedience to two general principles: uniform height regulations—perhaps a maximum of six storeys above the pilotis—and segregation of motorized traffic and pedestrian transit, especially near the entrances to the Primary School and the urban amenities located in each super-block, 8.

Behind each super-block runs the service road for heavy vehicular traffic; on the opposite side of this are the garages, workshops, wholesale warehouses, etc., while an area equivalent to a third row of super-blocks is given over to flower gardens, market gardens, and orchards. Between the service road and the radial artery are extensive building spaces with alternating approach roads. It is here that the Church, the secondary schools, the cinema and the retail trade serving each neighbourhood are located, each according to category and classification, 13. The district market, butchers' shops, grocers', greengrocers', ironmongers', etc., line the first section of the traffic lane which corresponds to the service approaches; and the barbers' shops, hairdressers', dress shops, tearooms, etc., are concentrated along the first section of the accommodation road used by cars and buses; here, too, are the servicing and filling stations. The shops have plate-glass display windows, and they form rows along pavements protected by built-out canopies.

They face the wooded belts round the super-blocks that are only used by pedestrians, and also the belt on the opposite side of the road, adjoining the accommodation road. They are inter-connected by lanes and alleys, so that they are really semi-detached, although if viewed as a whole they appear to form one single composition, 14. Where each four super-blocks meet, there is a church, and behind it the secondary schools: the cinema is on the service road but facing the residential radial artery, so that those who come from other parts of the city may find it easy to reach. The space between these two main roads will be occupied by youth

clubs with their sports fields and play plots.

The social structure of this housing zone can be graded by setting a greater value on specified super-blocks, such as, for example, the single rows which adjoin the diplomatic quarter. This quarter stretches on either side of and parallel to the radial artery. It has a tree-lined accommodation road and a service road for heavy vehicular traffic—this latter shared with the other residential super-blocks. The tree-lined road, which is exclusive to Embassies and Legations, will only be built-up on one side; on the other there will be a free and unobstructed view over the landscape, with one exception—the most important hotel will be located here, since it is not far from the centre of the city. On the opposite side of the residential radial artery, the super-blocks fronting on to this will naturally be more valuable than those facing inwards: this, too, will allow of classification according to economic conditions in force at the time. Nevertheless, the four-by-four grouping of the super-blocks will, while favouring co-existence of social groups, avoid any undue and undesirable stratification of society. And, in any case, variations in the standard of living from one super-block to another will be offset by the organization of the urban scheme itself, and will not be of such a nature as to affect that degree of comfort to which all members of society have a right. Any differences in standard will spring from a greater or lesser density, a larger or smaller living-space allocated to each individual or family, or from the quality of building materials selected and the degree of finish which these receive. And since such problems are being raised, the growth of slums, whether on the city outskirts or in the surrounding countryside, should at all costs be prevented. The Development Company should, within the scope of the proposed outline plan, make provision for decent and economical accommodation for the *entire* population.

Provision is also being made for island sites surrounded by trees and parkland, to be acquired for individual houses. It is suggested that these plots should be staggered; thus the houses on the higher land will make a good pattern against the background of the landscape, since they will be built at a good distance from each other. This arrangement will make it possible for one service road to serve all the plots, 15. Also, the construction of some houses of a high architectural order (which does not necessarily mean that their cost will be exorbitant) has been seriously envisaged. In such cases, the regulations should specify a minimum distance between each house, of at least five-eighths of a mile (1 kilometre); this will emphasize the exceptional character of these private building concessions.

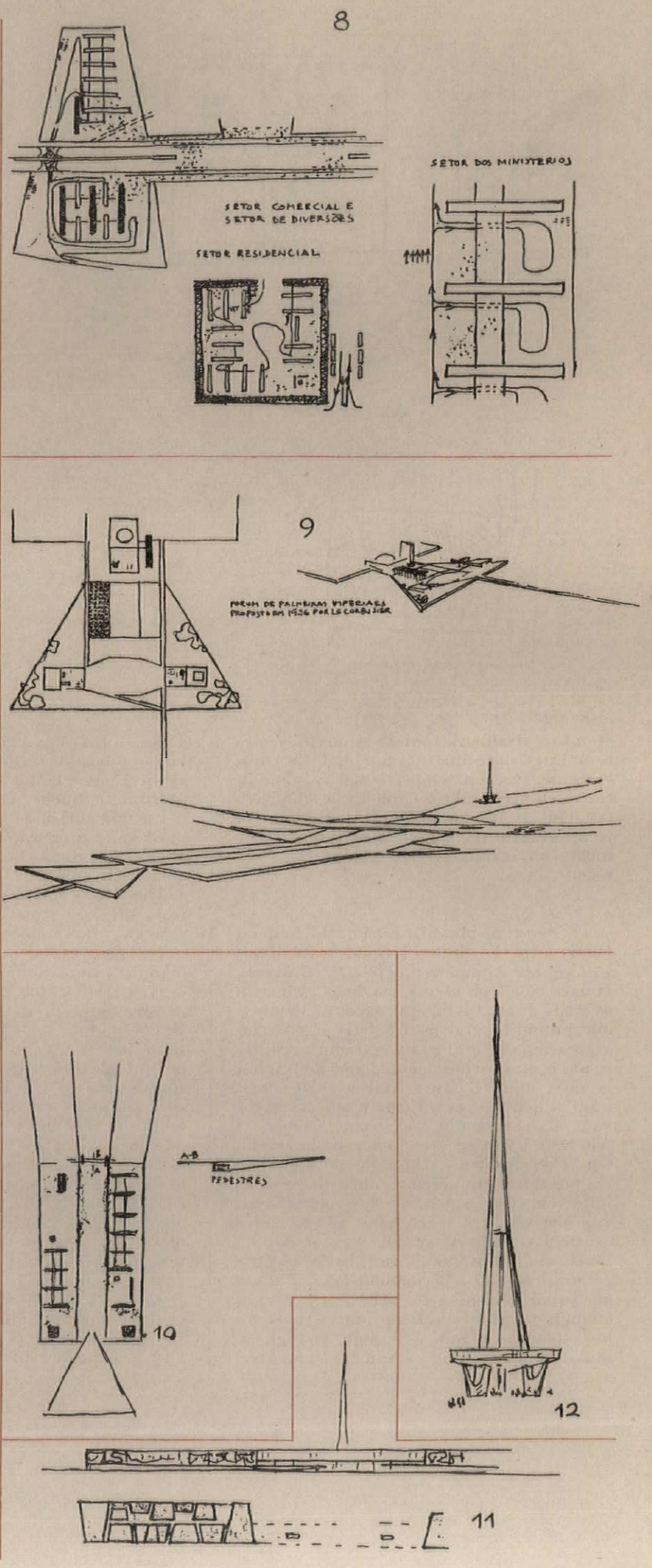
The city's cemeteries will be sited at the extremities of the radial arteries, so as to prevent funerals crossing the City Centre. They will be planted with grass lawns and be suitably wooded: the gravestones will be the simple, flat slabs used in England, the idea being to avoid any sign of ostentation.

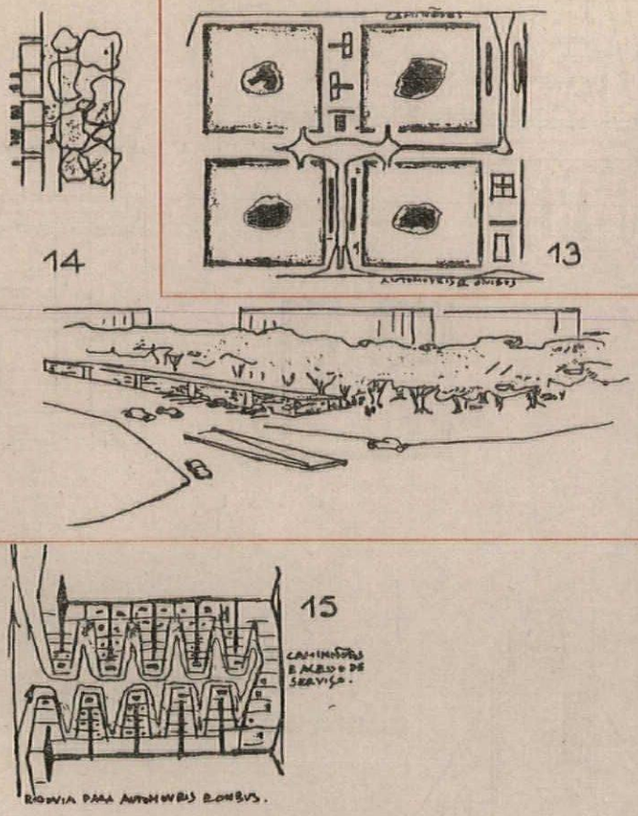
No housing will be permitted round the lake: the area must be kept unspoilt. The lakeshore will be treated as woodland and parkland, and green spaces over which the citizens may walk and enjoy other countryside amenities. Only sports clubs, restaurants, playfields, swimming enclosures and fishermen's clubs may operate round the lake. The Golf Club is already located to the east, near the President's Residence and the Hotel, both of which are now under construction; and the Yacht Club will be sited on a nearby creek. Small woods crossing these clublands will run down to the edge of the lake, which is ringed by a tree-planted avenue that sometimes wanders inland, and will later be landscaped with flowering plants and dotted with more trees. This ring avenue joins the residential radial artery and the approach autostrada running from the airport to the Civic Centre—a road to be used by famous visitors to the Capital city, although on their return they may with advantage use the residential radial artery. It is hoped that the final location of the airport will be on the near side of the lake, so as to obviate the need for crossing it or driving round it.

Street numbering should start from the intersection of the two axes—using the monumental radial artery as a point of reference to divide the city into two halves, North and South. The super-blocks will be given numbers; the buildings inside each, letters; and finally each apartment will be numbered according to usual practice. For instance, one address might be N-Q3-L apt. 201. The buildings will be lettered in a clockwise direction, from the entrance to each super-block.

There still remains the problem of how to dispose of real estate and make it available to private capital. I feel that the super-blocks should not be subdivided, and suggest that not the land, but shares in the land, should be sold. The price of these shares would depend on the vicinity and the height regulations. This would overcome any obstacles standing in the way of present planning and any possible future re-planning of the internal arrangement in the super-blocks. Such a plan should preferably be worked out before the shares are sold; but there is nothing to prevent purchasers of a substantial number of shares from submitting their own planning scheme for a specified super-block to the approval of the Development Company. Nor is there anything to stop this Company, in addition to facilitating the acquisition of shares by other corporations, from itself functioning as a building corporation. I think, too, that the price of the shares should include a fixed percentage to cover the expenses of the project. In this way, good architects could be invited to submit designs and competitions could be started for the planning of those super-blocks which are not being developed by the Architectural Division of the Development Company. I would also suggest that two phases should be adopted for the approval of the various planning schemes: a pilot plan and a master plan—which would make selection and control of the quality of architectural solutions easier for the Company.

In the same way, advance planning should be undertaken before the final lay-out of the Shopping Centres, the Banking and Financial Centre, and the Big Business and Liberal Professions Centre is proceeded with. It would then be possible to divide them up into subsectors and independent units, without detracting from the harmony of the overall architectural pattern. The separate parts could then be put up for sale in the real estate market, while the total or partial construction o the buildings would be paid for by the interested parties, by the Company, or by both, working in collaboration.





To sum up—it is easy to grasp the criteria used in this plan for a capital city, since its characteristics are the simplicity and clarity of the original pattern. As has been shown, these factors do not exclude variety in treatment of the individual parts, each of which is conceived of according to the special nature of its respective function. The result of such treatment should be harmony, despite requirements which are apparently contradictory. Thus, though the city is monumental, it is also convenient, efficient, welcoming and intimate. At one and the same time it is spread out and compact, rural and urban—and its aims are lyrical and functional. Motor traffic flows swiftly, unhampered by road junctions, yet the ground is given back in a fair measure to the pedestrian. And since the structure of the city is so clearly outlined, its construction will be easy: it is based on the crossing of two axes, on two terraced embankments or terrepleins, a platform, two arteries going in one direction and one in another. This last one can be built in two phases—first the central traffic lanes with a cloverleaf on each side, then the lateral traffic lanes which could continue their progress simultaneously with the normal development of the city. There would always be space for more buildings in the green belts adjacent to the radial arteries. The super-blocks would be merely levelled off and landscaped, each with its frame of green, planted from the very outset with grass and trees, but not given pavements or curbs of any kind. On the one hand, the use of highway technique; on the other, the technique of the landscaper, planting parks and gardens.

Brasilia, capital of the aeroplane and the autostrada, city and park. The century-old dream of the Patriarch.

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stand by itself. All that I can usefully add is a brief note on the site and the programme, in an attempt to clarify some of the references and to enable those who have not had an opportunity of visiting Brazil to appreciate the significance of one of the most important civic competitions of recent times.

* * *

The 'city' or building area of the Federal District in the State of Goiás is of about 150 square kilometres (say 37,500 acres). It is 3,000 feet above sea level, with an average annual temperature of 67 degrees, low humidity and no frost. It has an invigorating air; and as I stood on the gently rising ground whose centre and high point is now marked by a tall wooden cross (and which in Lúcio Costa's scheme is the site of the Radio-Television Tower) I felt that I was on the crown of the world. On the horizon, throughout the 360 degrees of circumference, one can see blue hills. On two sides of the roughly triangular site are converging rivers which are to be dammed at the apex, making a head of water for initial hydro-electric generation, and a permanent lake of about 40 square kilometres. The rock is low enough to give excellent foundations for big structures but not high enough to make underground services expensive. Trees, once supplied with water on this kind of terrain, grow three times as fast as in England and there is nothing impossible in Lúcio Costa's idea of marking out neighbourhood units or building groups into squares, bordered by belts of trees and service roads, before building development takes place.

The São Francisco River, not very far from the site, is the spine of an enormous regional development scheme, including power generation, mineral extraction and manufacturing industry and will in time be made navigable right down to the sea. Air traffic is already highly developed in Brazil, and in Goiãs I found more air-taxis than land-taxis. A runway and airport of international dimension is already constructed at Brasilia, and there will be civil and military airports and air clubs in addition. The highway from Anapolis is now being improved and before long the railway will be extended from the existing railhead. (The railways, handed over by the British at the end of the war, are obviously inadequate, and remain a weak feature in the development of Brazil's resources.)

The population of the United States of Brazil, which at the beginning of the century was 18 million, is now virtually the same as that of the United Kingdom and is expected to reach 250 million by the end of the century. The number of civil servants per 1,000 of population, which has now reached a peak of 4.3, will probably decline. Nevertheless the statisticians estimate that the proportion living in the Federal Capital in 1980 will be near that of the USA—about 12 per cent of American officials live in Washington. This means approximately 45,000 officials in Brasilia by 1980, each with an average of four dependants; always provided that the dwellings are ready for them.

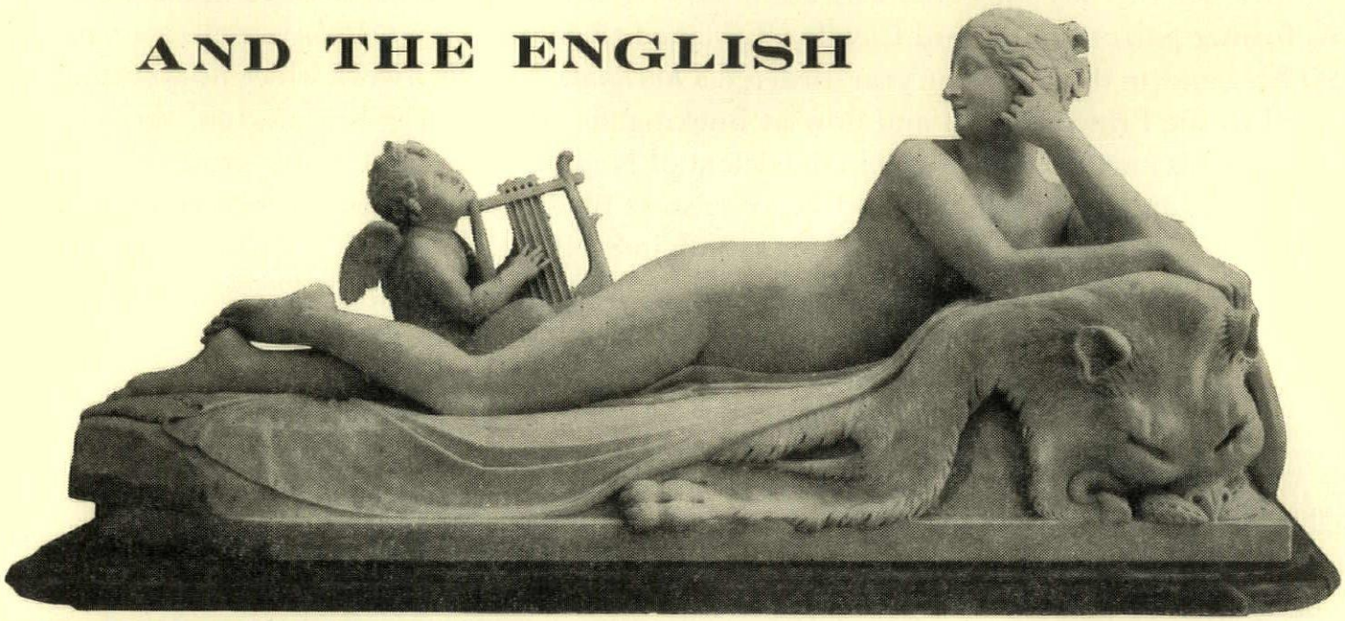
Embassies, consulates, United Nations agency headquarters and the diplomatic Corps will be offered sites. The Federal Government, who own all the land, will build on some of it, lease some and, in order to increase initial capital, sell some under covenant to private enterprise housing co-operatives and approved development agencies.

* * *

One of the Press comments after the award was to the effect that Lúcio Costa had spent 25 Cruzeiros to win a million. But with this expenditure—still only a tenth of what is needed in these days of inflation to buy a good French Impressionist painting—the Brazilian Government has made, in my opinion, one of the best investments in urban development that the twentieth century has produced.

F. J. B. Watson

CANOVA AND THE ENGLISH



1, Reclining Nymph. *commissioned by first Lord Cawdor*, 1815.

Antonio Canova was born late in 1757, and his work in sculpture is one of the chief glories of the Neo-Classical period in European art. On the occasion of his bicentenary, Francis Watson explores an almost unknown aspect of Canova's life—the constant respect and encouragement afforded to him by English patrons and friends, visitors and admirers—drawing on many hitherto untapped sources of Canoviana in contemporary memoirs and diaries.

In spite of the important part played by English artists and English patrons in the early development of neo-classicism at Rome[1], the English patronised the young Canova, the principal exponent of neo-classicism in sculpture, surprisingly little. This is the more curious in that Gavin Hamilton, a leading neo-classic painter and one of the principal English art-dealers and *ciceroni* in Rome, had been the first to befriend the young sculptor on his arrival from Venice in 1785 and exercised a critical influence on the development of his style. It is true that two distinguished collectors of classical sculpture, Sir Henry Blundel and Colonel Campbell (subsequently Lord Cawdor and long afterwards one of Canova's most enthusiastic patrons) together with an unidentified Irishman named La Touche gave minor commissions to the sculptor in these years, but thereafter the Napoleonic wars cut English travellers almost completely off from Rome and Italian art for nearly twenty years. Indeed, it is significant that Colonel Campbell's *Cupid and Psyche*, only completed in 1797, was acquired by Murat and never reached its intended owner.

[1] *See:* THE ARCHITECTURAL REVIEW, CXVIII, No. 707 (Nov. 1955), pp. 285/9: *Flaxman: the Bi-Centenary of an English Neo-Classicist.*

When in 1814 continental travel again became possible, the English flocked to Rome in great numbers. Canova was no longer the brilliant young sculptor whose studio a few enthusiastic English travellers like the Misses Berry had visited before the French Revolution. He had become a European figure, "the renovator of modern taste which had fallen into the most woeful corruption through the tortuous labours of Bernini and his wretched imitators", as one of the most popular English handbooks to the Rome of this period puts it[2].

From this time onwards until his death, there is a great change in the situation, and Canova was literally showered with commissions from the English. Even before Waterloo his former patron, now Lord Cawdor, hastened to commission a *Hebe* as well as a figure of *Peace* and, in the following year, ordered a *Reclining Nymph*, a work which he eventually ceded to the Prince Regent and now at Buckingham Palace. The Regent, too, very conscious of his part and England's in the defeat of Napoleon, ordered a large group of *Mars and Venus*, an allegory of War and Peace, also at Buckingham Palace, as well as subventing the cost of the erection of the Stuart tomb in St. Peter's.

[2] *Rome in the 18th Century . . . in a series of letters written in the years 1817 and 1818.* Anon., (Mrs. C. A. Eaton), (1820), Vol. 3, p.293.

It would be wearisome to enumerate in detail all the works commissioned by Englishmen from Canova in these last eight years of his life, for the principal ones are recorded by all his early biographers. Mrs. Jameson, describing a visit to Canova's studio, writes: 'the most beautiful things I have seen in the various Studij have been executed for English, German and Russian noblemen. The names I heard most frequently were those of the Dukes of Bedford and Devonshire, Prince Esterhazy and the King of England.' In addition, many English collectors acquired earlier works by Canova from the now impoverished Napoleonic aristocracy.

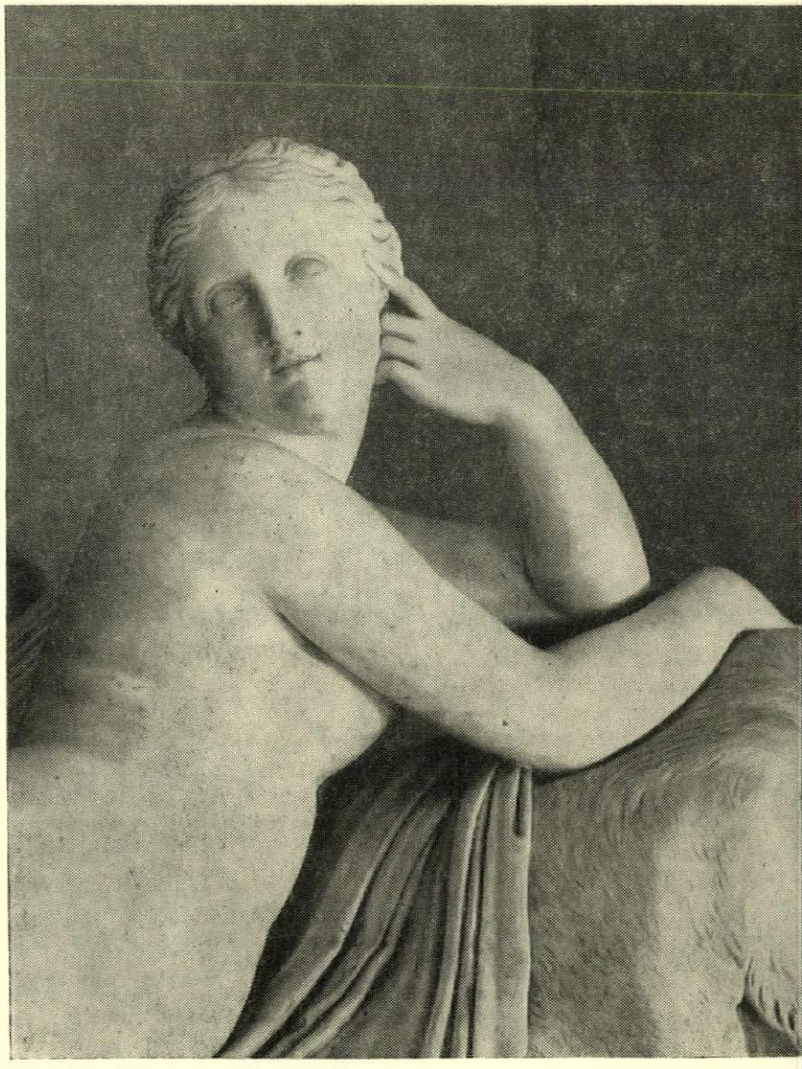
After 1814 Canova's studio became one of the principal places of pilgrimage in Rome for the travel-thirsty British. The memoirs and travel journals of the period contain numerous accounts of visits to the sculptor's *atelier* some of which are of considerable interest and all, without exception, entirely overlooked by Canova's biographers. Even earlier, during the short-lived Peace of Amiens, a few English, bolder than most of their countrymen who merely hurried to Paris to gape in awe at the splendours of the First Consul's *parvenu* court, had pushed on to Rome. One of these, Miss Catherine Wilmot, who was travelling with her friends, Lord and Lady Mount Cashel, confided to her *Journal* an account of a visit paid to Canova's studio in April 1803, which is entertainingly unsophisticated and gives some idea of Canova's immense prestige even at this date:

'One of the sights most beautiful to behold is the *attelier* (*sic*) of Canova. He is look'd upon by many, to surpass the ancient sculptors—and I am convinced if it was not for the prejudice in favour of the antique some of his productions would outshine any that was ever seen in the world before. The loves of Cupid and Psyche are delightfully represented: a Pugilist, a Hebe, the Bust of Bonaparte and amongst other things the King of Naples as a collossal (*sic*) figure of Mars, which is a good joke after he had fled from his country the moment he was attack'd. The exquisite perfection of everything he does surpasses belief . . . that by which he expects to immortalize himself is his Hercules in the act of flinging a man into the sea. This is particularly opposed to the Farnese Hercules which is in a state of repose leaning on his knotted club. If you choose to see through my eyes you will prefer Canova's a thousand times beyond the other, for I cannot help thinking the Farnese Hercules one of the most lubberly propositions I ever saw in my life.'[3]

Of the numerous later descriptions of Canova's studio in Rome some of the most interesting are to be found in Lady Murray's *Journal*, the five rare and privately printed volumes of which are a mine of artistic information about Italy in the early nineteenth century.[4] With her husband, she paid a first visit to Canova's *atelier* on July 25, 1816. Amongst the numerous works which she describes as actually in progress are the *Nymph and Cupid*, now at Buckingham Palace ('Canova rejoiced in the peculiarly fine quality and purity of the marble'), and the *Three Graces* for the Duke of Bedford, now at Woburn Abbey. They actually watched him at work on a seated figure of a Muse (presumably the *Polyhymnia*) and noted that he caressed the marble somewhat complacently just as he did later when showing them the statue of Pauline Borghese, with the remark, '*Ce n'est pas du marbre, mais de la chair.*' The impression given is of somewhat Italianate boastfulness, but Lady Murray assures us that 'Canova was perfectly conscious of the merit of his performance, but totally unaffected and void of pretension,' a view of the artist's character supported by others of such differing characters as Tom Moore, Frances Lady Shelley, Mrs. Eaton and Stendhal.

The artist became exceedingly friendly with the two Murrays who visited him on many occasions both at his studio and in his home. Lady Murray describes a number of his paintings which he showed with particular pride. This fondness for his own paintings was clearly a weakness of the sculptor's, for a few years later Tom Moore, on one of his many visits to Canova, notes in his *Journal*:

'Called at Canova's and again looked over his treasures. It is strange enough (if the world did not abound in such anomalies) that Canova values himself more on the



2, *detail of unfinished version of* Reclining Nymph.

[3] *An Irish Peer on the Continent* (1801-1803), ed. T. U. Sadleir (1920), pp. 179-80.

[4] *A Journal of a Tour in Italy.* Anon., privately printed (n.d.), 5 vols. The account of Canova is to be found in Vol. II, pp. 294-302. The authoress is Anne Elizabeth Chomley Phipps (1788-1848), who married Sir John Murray, 8th Bart. of Dunmore.

wretched daubs he has perpetrated in painting, than his finest sculptures.'[5]

The description is rather less than fair to Canova's attractive if somewhat slight oil paintings, but no less so than Lady Murray's suggestion that he might have been as great a painter as a sculptor, had time permitted.

'It is one of the pleasures of Rome to lounge in the Studij of the best sculptors,' wrote Mrs. Jameson[6] at this period, and Canova's *atelier* was certainly one of those most frequented by her countrymen. When the gushing Lady Shelley visited the sculptor in December of the same year, 1816, she noted:

'He has just finished a group of Mars and Venus which is perfectly lovely. Perhaps the hands of the Venus are slightly an exaggeration of *potelé*, and the fingers taper too much. I ventured to ask him if he had seen any hands like that in Nature? He replied: "Yes, those of the Princess Borghese." He told me that his idea of the Mars and Venus came into his mind at Dover, while waiting for the packet boat.'[7]

A few days later, on January 3, 1817, she paid a further visit to the studio 'and saw the preparations for the mould of the Mars and Venus, the model is now broken into little bits. Canova accompanied us to see the great horse he has made and which was intended for an equestrian statue of Napoleon. It is wonderfully fine. Canova wishes to put the figure of the Duke of Wellington upon it, and it is certainly worthy of him.'[8]

This last comment may have been flattery on Canova's part or mere romanticism on Lady Shelley's for she liked to play the Egeria to the Duke's Numa.

Of all Canova's works in Rome the recumbent statue of Pauline Borghese was the one which most intrigued visitors. Its somewhat equivocal character and the fact that since his separation from his wife, Prince Borghese had kept the statue locked up in a room in the Borghese Palace, the key of which he was said always to carry on his person, only increased this interest. Few were privileged to see it, but one of the fortunate ones was Tom Moore. On November 9, 1819, he writes in his *Journal*:

'At half past five Chantrey and I went by appointment to Canova, to be taken by him to see his beautiful Venere Vincitrice (the Princess Borghese) at the Borghese Palace: a great favour to be permitted to see it. . . . I saw the statue by candlelight, Canova himself holding the light and pausing with a sort of fond lingering on all the exquisite beauties of this most perfect figure.'[9]

To the chorus of praise of Canova which rose from the lips of English visitors to Rome, there is only one dissentient voice, that of Henry Mathews, who noted in his diary when he paid his third visit to the studio just six days after Lady Shelley had been there:

'Went for the third time to Canova's Studio. He has perhaps attained a reputation beyond his merits . . . (there is) a finical fashionable air about his female figures and his men are all attitudinarians. He is too fond of borrowing from the ancients.'[10]

But Mathews describes his diary as *The Journal of a Tour in Pursuit of Health*, so his may have been a jaundiced temperament.

When the Murrays next visited Rome five years later, in 1821, Canova was still putting the last touches to the *Mars and Venus* which Lady Shelley had found 'finished' four years earlier. In addition, a *Venus* for Thomas Hope was 'almost finished' and the artist had just begun a *Magdalen* for Lord Liverpool.[11] Lady Murray goes on to add:

'Canova had begun a reclining nymph for Lord Darnley, but spots having appeared on the marble, he left it unfinished and tried another block where, after the figure was much advanced, the same circumstance occurred. Canova wrote to mention this to Lord Darnley, who returned for answer, he left the matter entirely to Canova, and should be satisfied with whatever he sent; on which Canova wrote to a gentleman for whom he was doing a beautiful dancing nymph, and asked him to give it up to Lord Darnley, accompanying his letter with a bust of which he begged the gentleman's acceptance. Canova was giving the finishing strokes to the nymphs when we called.' . . .

The exchange was evidently never effected, for the statue is presumably the piece described by Cicoguara as '*Najade giacente ma senza l'Amorino, repetezione di quella posseduta da sua maestà Britannica*,'[12] commissioned by Lord Darnley and recently acquired by Messrs. Wildenstein from the Darnley collection at Cobham Hall.

In spite of the personal care that Canova was clearly taking to please Lord Darnley, this piece of sculpture was still in Canova's studio at his death a little more than a year after the Murrays' visit and is described by Cicoguara as '*poco meno che finito*'; the defects in the marble noted by Lady Murray are still quite apparent.

On the same visit in April 1821, Lady Murray noted: 'the model of Endymion with his dog sleeping by his side' (which she describes as 'most beautiful') was now completed.[13] This must have been the full size plaster model, for she adds that Canova 'had not yet touched the marble' commissioned by the Duke of Devonshire although he had only eighteen months more to live. The completed work arrived in London shortly before July 18, 1823, when Henry Fox saw it during a ball at Devonshire House at which 'the newly arrived statue of Endymion was exhibited much to the real or affected horror of some ladies.'[14] Their reaction to the nude male figure was not typical, for a short while before, the same diarist tells us:

'(Canning) talked of Canova and Chantrey and praised both amazingly. Said he would rather possess Canova's *Magdalen*, *Endymion* and some other I forget, than all the works of art he ever knew.'[15]

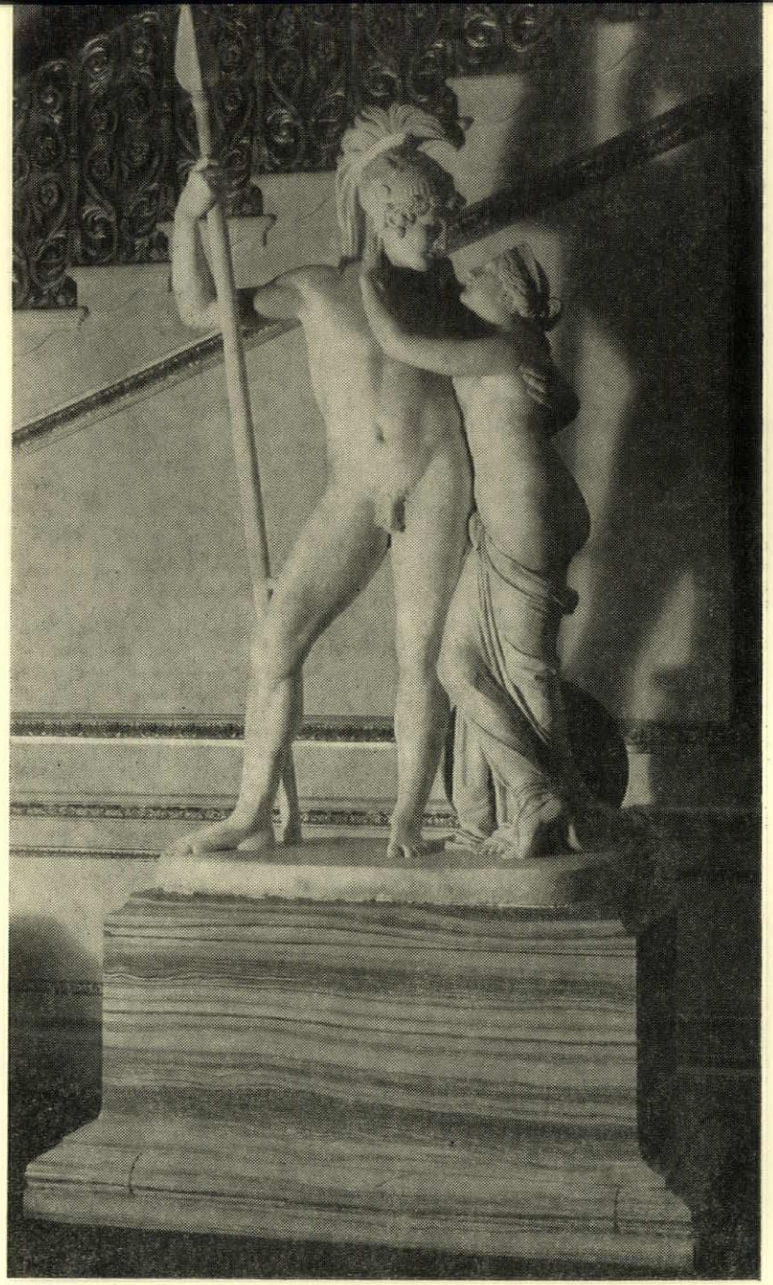
Fox concludes the earlier account of the *Endymion* with

'It was Canova's last work and he expressed satisfaction that it was finished for he justly esteemed it one of his best works.'

Support for this claim that it was in fact completed by the artist himself comes from its original possessor, the sixth Duke of Devonshire, for in describing his Sculpture Gallery in the exceedingly rare *Handbook of Chatsworth and Hardwick*, he wrote:

'If evidence were wanting of its having been finished by Canova, I have plenty of letters in my possession that establish that point; but none can be required when you contemplate the admirable perfection of the work. The quality of the marble is so fine, so hard, so crystalline, that Canova would not change it on account of the stain in the arm; that on the cheek he liked, and thought it represented the sunburnt hunter's hue. He had often enquired of me what subject I preferred, and which of his works, and I told him always the sleeping Genius of the Archduchess Christine's tomb at Vienna, and also the Genius on Rezzonico's monument. He, accordingly promised me something that I should like still better. I had already attached myself to him very much; and it was with mingled feelings of grief and exultation, of boundless admiration and recent bereavement, that I first saw my group in the well-known studio, where I had passed so many happy hours with the most talented, the most simple, and most noble-minded of mankind.

'What anxiety for it's voyage to England! A cast of it, sent from Leghorn to Havre, was lost at sea; it was to have been copied in bronze at Paris. In other respects, good fortune has attended all my cargoes. . . .'[16]



3, *allegorical representation of* War and Peace, *commissioned by the Prince Regent* 1815.

[5] *Memoirs, Journal and Correspondence of Thomas Moore*, ed. the Rt. Hon. Lord John Russel, M.P. (1853), Vol. III, p. 71. The entry is dated Nov. 13, 1819. Moore's *Journal* abounds with descriptions of Canova's studio, his character, etc., for together with Sir Thomas Lawrence, R.A., Jackson, the portrait painter, and the sculptor, Chantrey, he seems to have spent a great deal of time in the sculptor's company.

[6] *Diary of an Ennuyée*, by Mrs. A. Jameson (1826), p. 199. In this, her first published book, it is interesting to find the future popularizer of the Italian primitives ecstasizing over neo-classic art only.

[7] *The Diary of Frances, Lady Shelley*, 1787-1817, ed. R. Edgcumbe (1912), Vol. I, p. 350.

[8] Shelley, *loc. cit.*, p. 360.

[9] Moore, *loc. cit.*, p. 68.

[10] *The Diary of an Invalid . . . in the years* 1817, 18 *and* 19, (1820), p. 126. The passage is dated January 9, 1817.

[11] It was *à propos* of this commission that the Duchess of Devonshire wrote to Sir Thomas Lawrence: 'Canova must not do too holy a figure for Lord Liverpool, who is a great admirer of female beauty and would like a Nymph or a Venus better than a Magdalen.' (MSS. letter belonging to Royal Academy.)

[12] *Della Vita di Antonio Canova* libri quattro compilati da Melchior Misserini (Prato, 1824), p. 513.

[13] If this implies that it was only recently completed, Canova must have worked on it for a considerable period, for on August 15, 1819, the Duchess of Devonshire wrote to her step-son: 'Canova came last night—he had worked with such ardour that he was quite exhausted, but he won't yet tell me what he is modelling for you.'

[14] *The Journal of the Hon. Henry Edward Fox*, ed. Lord Ilchester (1923), p. 172.

[15] Fox, *loc. cit.*, pp. 53-54. This, in fact, was what Canova himself told the Duke's stepmother. (Chatsworth MSS.)

[16] *Handbook of Chatsworth and Hardwick* by William, 6th Duke of Devonshire, privately printed (1845), pp. 104-5. The *Handbook* is in the form of a series of letters addressed to 'Dearest Harriet,' his sister, Lady Granville.

The Duke was, perhaps, the most fervent of all English collectors of Canova's works. He writes, indeed, 'I was famished at that time (i.e. 1819) for his works,' and more of Canova's sculpture remains at Chatsworth than anywhere else in this country. No doubt his step-mother, the Duchess Elizabeth, influenced him in this direction, for she was very friendly with the sculptor during the years she spent archæologizing in Rome. The Duke indeed admits as much when writing of another marble by Canova at Chatsworth:

'Canova's bust of Madonna Laura was dearly loved by the sculptor, entirely formed by his own chisel: and it required all the Duchess of Devonshire's powers of persuasion, added to my entreaties, to make him part with her.'[17]

The most esteemed of the Canovas at Chatsworth is, of course, the life-size seated figure of Laetitia Bonaparte, Napoleon's mother, of which the Duke wrote:

'Madame Mère! first acquired treasure, next to Endymion the most valued! Renouard, a French bookseller, negociated the purchase for me at Paris in 1818. Canova made no repetition of it; but, after his death, Jerome, Prince de Montfort, got Trentanove to copy the original cast in marble, and that or another copy I saw in the Palazzo Bacciochi in Bologna. But Canova was truth, and he told me there was no other by him. The old lady herself used to receive me at Rome, and rather complained of my possessing her statue, though my belief is that it was sold for her advantage. Canova made it at Paris, and it was exhibited in the Louvre. Lord Holland found the single word that expresses so much on the pedestal—one Greek word from the Iliad, that says, "Unfortunate mother of the greatest of men" "ΔΥΣΑΚΙΣΤΟΤΟΚΕΙΑ".'[18]

[17] Handbook, *loc. cit.*, p. 102.

[18] Handbook, *loc. cit.*, p. 94-95.

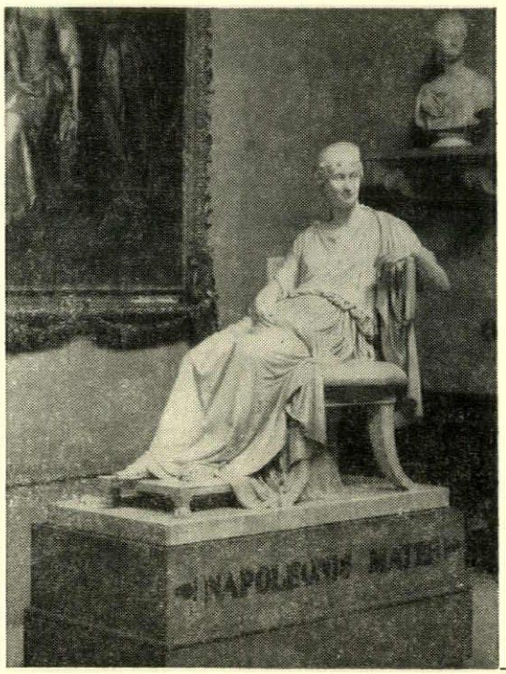
In addition, a most interesting relic of the artist is still to be found at Chatsworth. When writing of the over-life size bust of Napoleon given him by the Marchioness of Abercorn and now in the sculpture gallery there, the Duke adds:

'And now you must look under the bracket of your left hand for Canova's tools—another interesting relic procured by that warm-hearted friend of the great sculptor—and certainly the last he employed. Her sister, Lady Julia Lockwood, gave them to me. Lady Abercorn had the strongest of feelings, and could not disguise them, or her grief at her friend's death; so that in Rome, that city of fountains, she was called from her ready tears the Acqua Infelice.'[19]

The Duke claimed that the bust of Napoleon was kept by Canova in his bedroom till his dying day: 'I know of no other authentic bust of Napoleon by Canova; and I believe that none exists, though everybody calls their own so.'

This remark, like certain of the other passages already quoted, raises the interesting question as to just how much of the later works attributed to Canova in England, especially those many repetitions of his best-known sculptures and the numerous ideal busts, herms, etc., are really the work of his own hand. In fact, the Duke of Devonshire actually names three of the studio copyists responsible for other 'Canova's' in the Chatsworth Sculpture Gallery: Benaglia, Trentanove and Rinaldi. Lady Murray saw so large a number of unfinished works, mostly of large size, in the studio only eighteen months before Canova's death, that it is impossible to believe he completed them all himself. Indeed, in certain instances Cicoguara's lists assure us that he did not. The case of Lord Lansdowne's *Sleeping Nymph*, now in the Victoria and Albert Museum, is fairly well known.

[19] Handbook, *loc. cit.*, p. 93.



4, Laetita Bonaparte, *mother of Napoleon, acquired by the Duke of Devonshire*, 1819.

After the sculptor's death, his brother, the Abbate Canova, assured Lord Lansdowne that it '*attendait seulement d'être travaillé par le createur du modèle*,' thus implying that Canova had not worked on the marble at all, though J. N. Fazakerly, M.P., a friend of the owner, was assured by one of the studio assistants that the whole space between the shoulders and half-way down the body 'was exclusively the work of his late master.'[20] To reach finality in such matters is generally impossible for, as Fazakerly himself remarked, 'the glorious uncertainty of Italian evidence makes the attempt hopeless.' For this very reason accounts of the sculptor's methods are particularly interesting, although these were probably common enough in his own day as they certainly were during the latter part of the nineteenth century, and to some extent still are. During her stay in Rome, in 1718-1719, Mrs. Eaton, like so many English visitors, seems to have spent a considerable time in Canova's studio. She gives a very careful description of his methods of work for, she says, she found that many of her countrymen 'had previously supposed that his custom was to fall upon a block of marble and chisel away till he made it into a statue.' In fact, she goes on:

'. . . he forms his model in clay, and this is entirely the work of his own hands; but before he begins, the statue is perfectly *ideato*—the visionary figure is before him.

'When finished, a cast is taken from it by his assistants which is dotted over with black points at regular intervals, to guide the workmen. From this model they begin to work, and having reduced the block of marble into form, and made it a rough hewn statue, the sculptor himself resumes his labours. The exterior surface, as it were, is his to form and perfect, and the last finishing touches he generally gives by candle-light. It is afterwards polished with pumice-stone.'[21]

This account of the artist's use of the procedure known as 'pointing' agrees in almost every particular with that given by Stendhal in his *Journal* under the date October/November 1811, though the Frenchman suggests that the artist's work on the marble even at that date was absolutely minimal, concluding his account with '*viola son seul travail sur le marbre. Il se reduit a quelques coups de lime.*'[22]

Canova's particular affection for the English was partly due to his appreciation of the part played by them—and especially by the Duke of Wellington—in assisting him to obtain restitution of the art treasures looted from Rome by Napoleon. There are numerous references to the subject in contemporary English memoirs, but it is perhaps worth quoting just one particularly vivid account of the difficulties he encountered during his mission from the Pope. On October 14, 1815, Samuel Rogers wrote from Paris to his sister Sarah:

'I saw Canova out in the open street with the "Transfiguration" and the "St. Jerome" of Domenichino and two other Raphaels, half supported in the dirt, and at a loss how to marshal the Austrian soldiers who were to transport them on their heads, uncovered, to the barrack; where I have been two or three times and which is a terrible scene of confusion. The horses (i.e. from St. Marks, Venice) went by our windows (at the Hotel Meurice) one by one, in as many carts uncovered like dead horses, and the people stood at the doors to see them pass.'[23]

In the latter part of Canova's life his position as the leading European artist was undisputed. He was probably the last artist whose claim to occupy this pre-eminent position was hardly questioned by any man of taste regardless of nationality or age. His contemporaries saw him as the true descendant and worthy continuer of the great classical artists—indeed as their rival. Chantrey (who thought Michelangelo's *Moses* 'vulgar and extravagant in many respects') told Tom Moore that 'if, by any trick the *Creugas* of Canova could be buried and dug up again in fragments as an ancient statue, it would produce a great sensation,'[24] and this sets the tone of contemporary critical comments on Canova.

Lord Broughton was not a highly emotional man nor one particularly interested in the arts, and for that reason his description of how, whilst in Rome, he heard of Canova's death at Possagno, is the more telling. Only the day before he had been assured, on enquiry at the studio, that the absent sculptor was in the best of health. 'The news of Canova's death,' he wrote, 'was told to us on the day I am writing this, October 21st. We felt extremely affected. For my part, though knowing him but a very little, I could not help feeling as if something that attached me to existence had dropped away for ever. I had been so accustomed to think of Canova and Italy as making part, as it were, of each other. The loss of such a man seemed to take away the interest of the country and the age in which he had lived.'[25]

[20] The documents are printed in the sale catalogue of the Lansdowne Marbles (Christie's, March 5, 1930), pp. 73-75. Fazakerly's statement seems to agree with Cicoguara's listing as printed by Misserini.

[21] Mrs. Eaton, *loc. cit.*, Vol. 3, p. 299.

[22] *Stendhal: Oeuvres Intimes* (*Bibliothèque de la Pléiade*, 1955), p. 1180.

[23] *Rogers and His Contemporaries* by P. W. Clayden (1889), Vol. I, p. 205.

[24] *Moore, loc. cit.*, p. 54.

[25] *Recollections of a Long Life*, by John Cam Hobhouse, Lord Broughton, ed. Lady Dorchester, Vol. III, pp. 8-9.

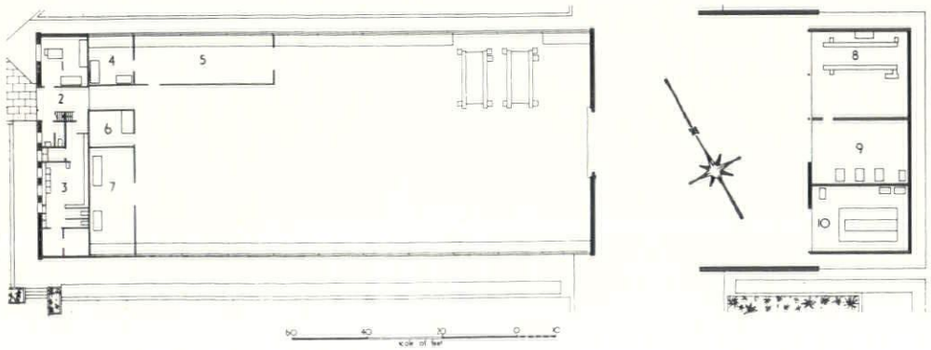


1, *the end of the main motor lab. block; the greasing building is behind the wall in the right.*

RESEARCH CENTRE AT THORNTON-LE-MOORS, CHESHIRE

ARCHITECT, FREDERICK GIBBERD. PARTNER-IN-CHARGE, R. J. DOUBLE
ASSOCIATE ARCHITECT, J. W. GRIMES. ASSISTANT ARCHITECT, DALE SMITH

This is a road test laboratory for Shell Research and carries out research work connected with the testing of motor fuels and lubricants, including preparation, maintenance, servicing and dismantling of test vehicles. It is the first of a series of extensions to the Thornton Research Centre, all to be designed to a 12-foot structural grid, with a standard truss depth of 5 feet, which will permit spans of up to 60 feet. There are two units, the main motor laboratory block and a car washing and greasing building, linked to it by an open court and screen walls. The laboratory has a mezzanine floor at one end housing offices and stores; the remainder is an open area providing the main vehicle standing and working spaces, with subsidiary rooms in which motor components can be dismantled, cleaned, inspected and measured. The light steel frame has welded steel trusses with rod bracing; the RSJ columns are supported on pier foundations carried down approximately 4 feet 6 inches on to rock shale. The aluminium roof deck is covered with three-ply roof felt finished with a white spar dressing. End walls are cavity construction with dark blue handmade facing bricks; the side walls are clad with patent glazing on a 3-foot module. The centre panes are ¼ inch wired roughcast glass with top panels of white diffusing plyglass; the bottom panels have blue vitreous enamelled steel sheet with an inner lining of 4½-inch brick. The main laboratory floor has a hardened granolithic finish, generally laid *in situ* but with precast tiles in the engine-stripping bay, because of oil spillage. Fluorescent light fittings have been used in the main areas of the laboratory: a grid of box trunking has been fixed directly to the bottom chord of the roof truss and light fittings have been suspended directly from this grid. Low pressure steam is used for heating this building; a continuous pipe coil is run round the perimeter of the main laboratory at low level and unit heaters have been hung under the monitor roof lights.



key.
1, supervisor.
2, lobby.
3, cloakroom and lavatory.
4, solvent wash.
5, engine stripping.
6, office.
7, machines.
8, greasing bay.
9, lubricant bay.
10, car wash bay.



Research Centre at Thornton-le-Moors, Cheshire

2, the greasing bay in the subsidiary block looking towards the main laboratory.

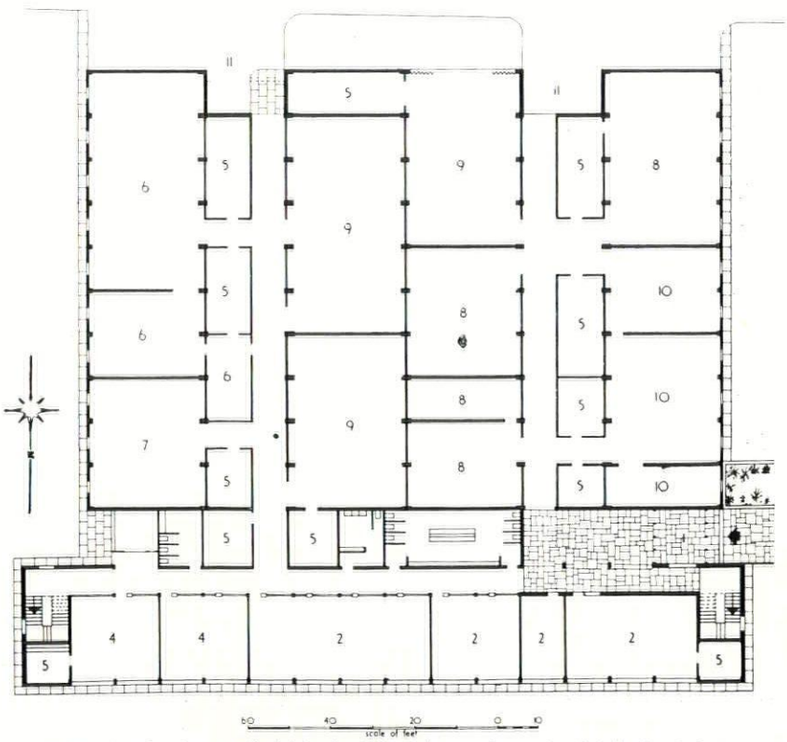
3, top left drawing the three-storey labs. and offices from the east with Old Swinford School in the background. 4, top right, the join of labs. and workshops with main entrance between. 5, below, detail of the workshop elevation and monitor rooflights.

TECHNICAL COLLEGE AT STOURBRIDGE, WORCS.

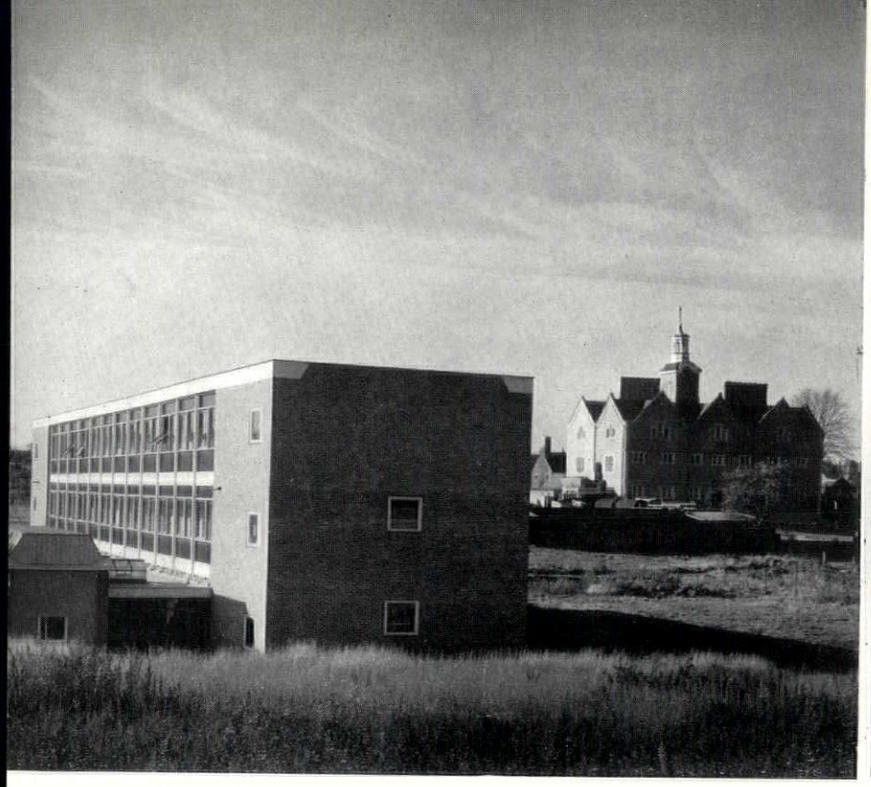
ARCHITECT, FREDERICK GIBBERD

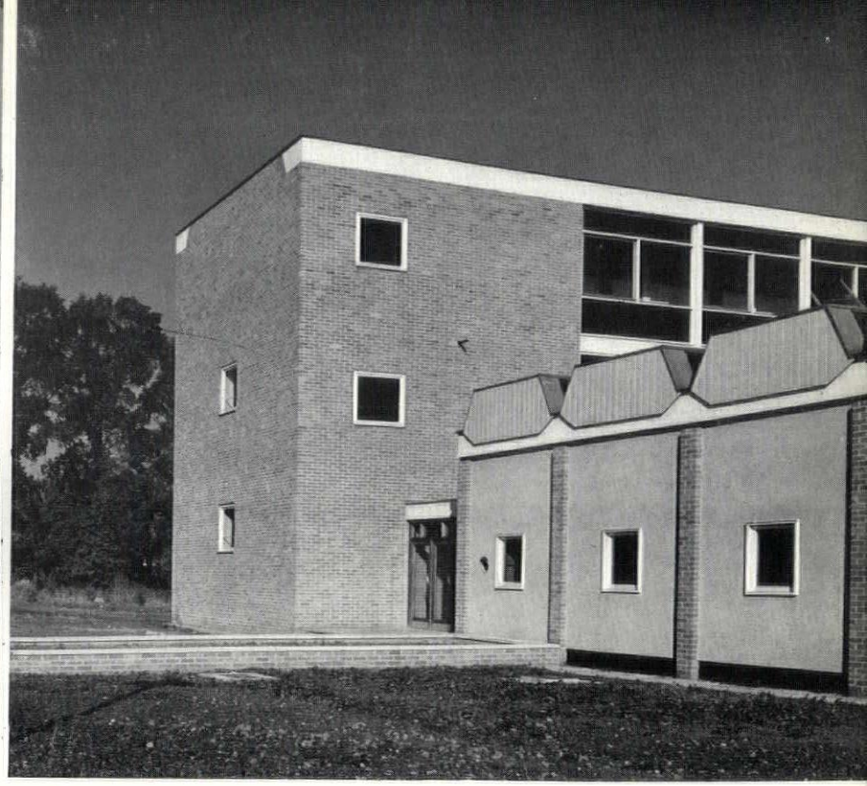
ASSOCIATE ARCHITECT, J. B. FORREST

The site for the College is on Hagley Road which slopes up steeply out of the town towards the south-east. The aim was to cover as little of the site as possible, and to keep the view from the main road to the seventeenth-century Old Swinford Hospital School. The principal subjects taught are glass and pottery manufacture, for which there are design studios, workshops and furnace rooms. There are four main units; a single-storey workshop block with a three-storey laboratory and drawing office block in one unit, a dining and recreation block, a T-shaped tower of general classrooms and studios, and a large assembly hall. All these units are linked by a continuous spine corridor stepped to follow the ground slope. The workshops, laboratories and drawing offices have been sited on the small flat plateau on the west side of the site and form the first stage, illustrated here. The workshop block is single storey, with three banks of workshops separated by stores and access corridors which connect at one end to the service road for delivery of materials, and at the other to the three-storey laboratory block. All the specialist rooms, except sculpture, are in this block and the plan allows flexibility of room arrangement on each floor. The three-storey block has a r.c. frame with columns on each side of the teaching rooms. Floors and roof are patent pre-stressed plank and hollow pot construction. End walls of this block are in facing bricks with breeze block inner skin; side walls are prefabricated panels of glazing with a glazed infilling to cill height. The workshop block structure is load-bearing brick piers carrying pre-stressed, pre-cast concrete valley gutters, on which are pressed metal frames which span the bay width of 11 feet and form patent glazed monitor lights roofed by wood wool slabs.

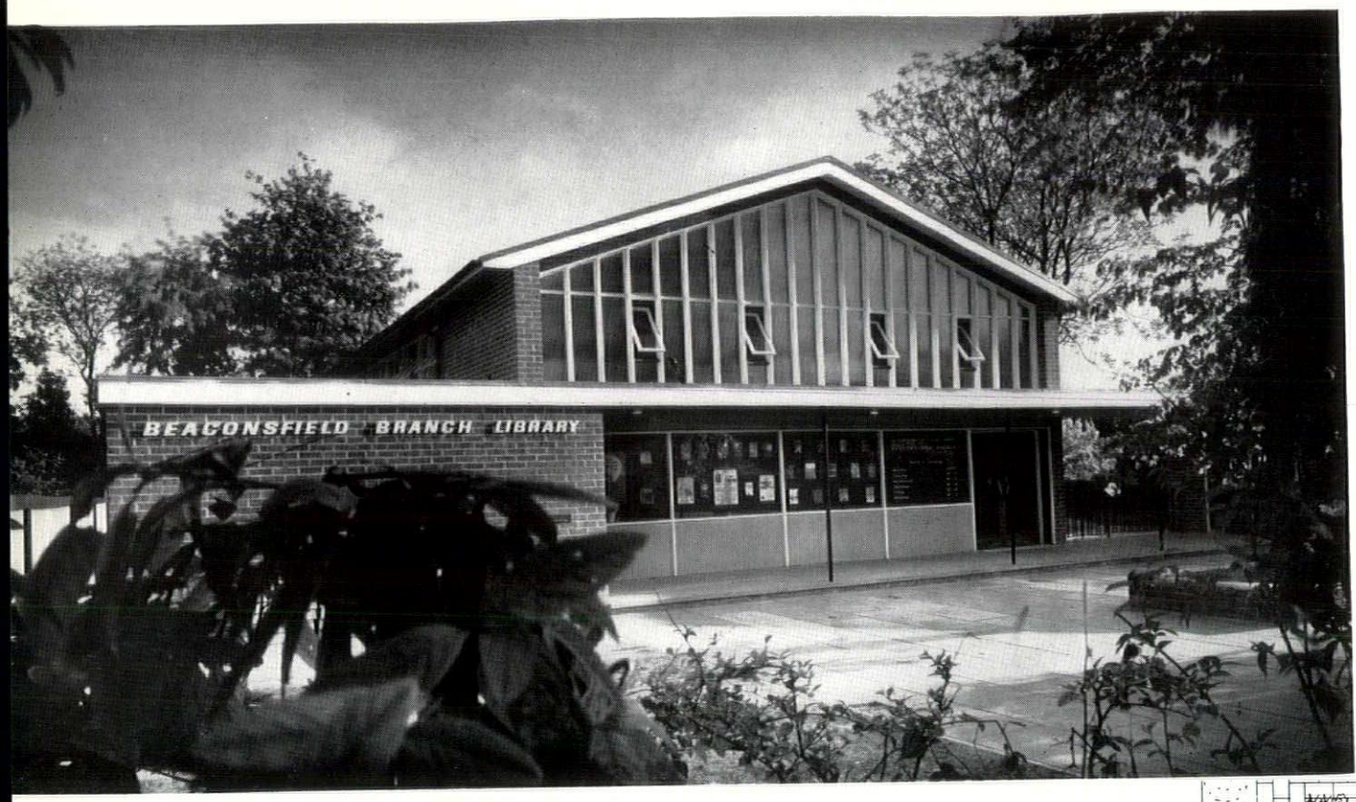


ground floor. key. 1, main entrance. 2, administration. 3, labs. 4, classrooms. 5, stores. 6, mechanical engineering. 7, electrical engineering. 8, glass. 9, building. 10, pottery. 11, service entrance.









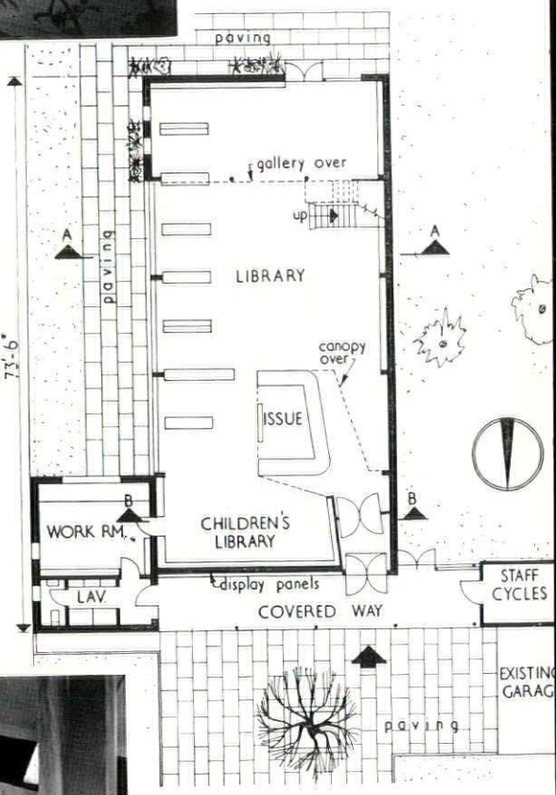
6, the north front, showing verandah and display panels to the left of the main entrance.

BRANCH LIBRARY AT BEACONSFIELD, BUCKS

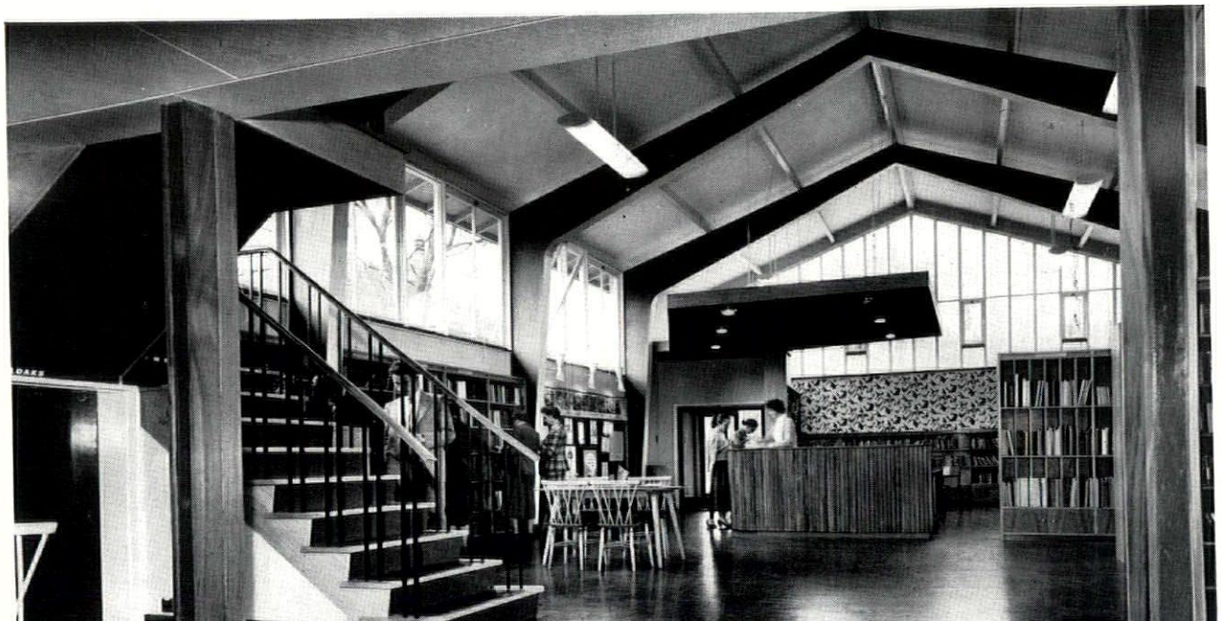
COUNTY ARCHITECT: F. B. POOLEY

ASSISTANT ARCHITECTS: STEPHEN GEORGE, DAVID EALES and AMBROSE HUMPSTON

This branch library is in Reynolds Road near the town's shopping centre. It is in part of a mature garden, and has been set back from the road frontage to preserve existing trees, and to provide a paved forecourt. The building has load-bearing brick external walls, timber windows and a low-pitched roof of 3 in by 2 in. joists which is finished with copper sheeting carried on prefabricated timber portal frames spanning 30 ft., chosen for economy and quick erection—four arches were put up in five hours. The south wall has an outer skin of horizontal cedar boarding; the spandrels between the windows on the east side are West African mahogany. Double glazing up to door height level has been used for the windows on the east side to reduce heat losses. The inside is designed to be controlled by one assistant at the issue desk if necessary. The canopy above the issue desk has been formed by the projection into the library of the ceiling of the draught lobby at the main entrance. It is timber framed and suspended from the roof purlins by tension wires. The portal frames are painted dark grey with white edges, and the walls light grey.



ground floor. scale: 1/24 in. = 1 ft.



7, the interior from under the gallery which houses the librarian's office. At the far end is the issue desk with canopy over suspended from the roof purlins by tension wires.

BOOKS

GOTHIC MYTH AND MATHS.

THE GOTHIC CATHEDRAL. THE ORIGINS OF GOTHIC ARCHITECTURE AND THE MEDIEVAL CONCEPT OF ORDER. *By Otto von Simson. London, Routledge & Kegan Paul, 1956.*

This new volume on the creation of Gothic architecture is not a handbook of medieval archaeology. The reader must not expect to find there a detailed discussion of the Norman, Burgundian or other sources of Gothic, or a continuous story of the experiments which took place in the Ile-de-France in the course of the twelfth century. Professor Otto von Simson has concentrated his attention on the two buildings which, in his view, represent the most intense creative moments in the formation of the new world of forms: the Saint-Denis of Suger, and the Chartres of 1194. His aim has been to make us understand why and how the new architecture was invented. He decided that this could be achieved only by treating history not in length, but in depth, and in so doing he has given us a beautiful and most illuminating essay on the nature and meaning of Gothic.

The beauty of the book lies perhaps mostly in the vision it gives of the richness and unity of historical life. Professor von Simson has brought together around its main theme an enormous amount of precise and up-to-date information covering nearly every aspect of human activity in the times of Louis VI and Louis VII of France, but mostly connected with movements of ideas; and all the forces at work recover their intense vitality and their onward thrust. At no moment does the author allow the movement of history to be reversed by some anticipation of what was to happen later and at each stage the act of artistic creation takes up all its weight and significance from being placed again at the apex of historical urgency.

All great works of art are supported by some mythical impulse, and Professor von Simson analyzes with great insight all the elements at work in the myth of Saint-Denis. The fusion into one of the three Denises—the Areopagite, the bishop of Paris and the Syrian visionary—was of course one of the essential elements in the ideological construction which found its expression in the new abbey church and its stylistic inventions. But here Suger the statesman, Suger the creator of a new political ideology, appears no less important than Suger the maker of symbols and allegories. Behind Suger's urge for a complete transfiguration of all the means of art, we now find a background of intentions which may appear even richer and more revealing than the one reconstituted by Professor Panofsky in his introduction to Suger's writings—and this is no mean merit on the part of the author. The same method is followed in the analysis of Chartres. There again we find the stimulus of a myth of long standing, which suddenly takes up a new significance in a momentary convergence of opportunities.

This notion of myth is an essential element of historical explanation: it acts as the connecting link between the various levels of thought in the minds of both patrons and artists. But it is not given the first place in Professor von Simson's study: actually the first 58 pages of his book are devoted to *the Medieval concept of order*, and behind the cosmologies and the theological constructions of the time the author discovers the basic aesthetic principles which made the Gothic vision possible. Gothic was conditioned by the Platonic revival of the School of Chartres, by the concept of geometrical harmony as the inner law of divine thought, to which every superior achievement of man should conform. Of no less importance were the metaphysics of light, which had found their most striking expression in the writings of the Pseudo-Areopagite and were translated by Suger and his team into the aesthetics of light. These two major trends of philosophical speculation explain, in Professor von Simson's view, the two most original aspects of Gothic: the use of light and the new precision in architectural designing.

The principle of light is well known and on this point there was probably little to be added to the remarks of other scholars. The principle of harmony is more interesting in its formulation, since it is made to cover at the same time the relation between structure and appearance, the obvious geometrical nature of Gothic and the calculation of proportions. No doubt these various aspects all reflect one and the same nexus of reasoning. But the matter is on the whole treated on a somewhat general plane and one would like to ask a few more questions. First of all, it might have been useful to distinguish between the different types of architectural geometry. We know that Suger wanted his church to rival Hagia Sophia in splendour. Now at Hagia Sophia also the building expresses a purely geometrical harmony, but the geometry we find there is conceived in terms of large volumes, it is to a considerable extent a geometry of the sphere, based on curved surfaces enclosing a centralized space. Gothic visualizes a completely different geometry, in the form of a linear network, of a closely articulated framework. This linear articulation of architecture begins at an early date in the West, about 1000 at the latest, and it reflects the advent of this new vision of geometry, in which the volumes are not defined by surfaces, but by mere lines. Is not that linear definition of forms in some way connected with the formal dissection of all systems of thought into dry statements and formulas submitted to a syllogistic framework? Panofsky's idea of a profound analogy of mental structure between Gothic architecture and the methods of Scholasticism cannot be too easily dismissed. At any rate the term Geometry has to be more precisely defined. In the same way, could we not have been reminded that submission to a strict geometrical order was already one of the basic laws of Romanesque sculpture? What the Portail-Royal shows is a change of geometry, the simpler framework of architectural lines being substituted for the autonomous network to which Romanesque sculpture had had to conform.

A more serious weakness in Professor von Simson's book is that it fails to demonstrate what geometrical formulas were actually used by Gothic builders. Chartres is the only building for which we are given a tentative system of explanation, but even in this case the reader is left with some doubts: the neck of a capital is not a convincing landmark in the design of an elevation; the level of the abacus is certainly what must be accounted for, and as long as one significant measurement is left out of a proposed reconstruction, the whole formula must be suspect. As for the appendix on the south-west tower of Chartres, it is difficult to see what relation it bears to the work it is meant to explain. More rigorous methods are obviously required in this dangerous field of investigation. But Professor von Simson is surely right in his belief that every line and measurement in a Gothic building was the result of exact calculations derived from some mathematical law of harmony. We may in fact be on the eve of getting at last a better understanding of how this was worked out: a young English scholar, Doctor Peter Kidson, has recently proposed a new approach to the problem, based essentially on the principles used in Roman and post-Roman metrology, and we must hope that he will be able to publish soon the results of his research, as this might put us, for the first time, on firm ground.

Professor von Simson tends to exaggerate considerably the similarity between Cistercian and Gothic principles. The Cistercians actually took no part at all in the elaboration of Gothic architecture and it is only after 1150 that they adopted and started spreading across Europe a simplified version of the new style. Before that, Cistercian architecture was deliberately

archaistic, its aim being a primitive simplicity, even if it accepted some 'modern' features such as the pointed arch. But the influence of the Cistercian ideal was not restricted to the churches of the Order, and on this point Professor von Simson has a very tempting suggestion to make: might not Sens cathedral reflect Saint-Bernard's idea of what a cathedral should be, powerful and modern in its design, without becoming ostentatious? This is by no means impossible. But if it was so, the stylistic gap between Cistercian and Gothic architecture would only become more obvious, and almost measurable. Sens cannot in any way be detached from the group of Saint-Denis; it shares with it the same connections with Normandy. The triforium at Sens is definitely not Burgundian: it repeats a formula first used at the Mont-Saint-Michel and soon after at St. Alban's; the sexpartite vault comes from Caen; and the oblique plantation of the rib shafts—which, by the way, is the rule in the Ile-de-France from the 1120's—is a characteristic feature of all the earliest rib-vaulted buildings of Normandy as distinct from England, with the only notable exception of Lessay. The vault of the apse is also derived from a Norman prototype: the chapter-house of Jumièges, a much more important building than the conservative Saint-Georges de Boscherville. In fact the nave of Sens seems to combine in its treatment the two successive architectures of Saint-Denis: the major piers, with their enormous projection, recall the huge piers of the narthex of Saint-Denis, while the thin shafts over the twin columns, and, indeed, the whole upper part of the elevation, conform to the linear style of Suger's choir.

Jean Bony

TECHNOLOGY ENHANCED

TOMORROW'S LANDSCAPE. *By Sylvia Crowe. Architectural Press, London,* 21*s.*

This is the second book on the art and science of landscape architecture to be written by professional and practising landscape architects in this country since the war. It deserves a wide sale among laymen and it is a particularly valuable addition to the working library of professionals concerned with the use of land.

It is a companion book to Brenda Colvin's *Land and Landscape* and it in no way detracts from its originality to say that it could not have been fully appreciated without its predecessor. These two volumes are attempts to establish a theory and a methodology which has, and will increasingly have, an influence on future practice. It was Brenda Colvin's contribution to landscape theory that she introduced the biological attitude to the problems of landscape design, and it is Sylvia Crowe who has evolved methods by which it can be usefully applied. Both writers see Nature as a process rather than a norm, in distinction to the nineteenth century idea, which continues to this day, of Nature as virgin and inviolable. And since flux and change and the process of evolution are the essential facts which are considered to be true in all nature, then the work of the designer resolves itself into finding, not arbitrary and fixed solutions but methods of control and guidance. So in the work of these two writers the systematic study of plant communities or plant ecology is a dominating principle.

From no other viewpoint could Sylvia Crowe have evolved her classification of scenery in relation to its ability or failure to resist human contact and use and to formulate her theory of wear. Her book is concerned with applying this theory to the immediate problems of land use, the reclamation of industrial waste land, the complex questions raised in the designated areas of the National Parks and in combating the blight of subtopia in all its forms.

This theory of density and its relation to scenery is one which ought to be studied closely by planning officers in national park areas who are concerned with, or who are empowered to make themselves responsible for, the preservation of scenic beauty. The chapter in this book dealing with Open Country would be of use in helping them to find a balance between what appear to be incompatable ideals, the conservation of wild scenery, the provision of facilities for its enjoyment by holiday makers and its use, in the public interest, for mining, water supply, reafforestation or the needs of the Services. On the subject of forestry Sylvia Crowe's opinions are more balanced than some which have sometimes appeared in the pages of this journal in as much as she takes into account the multiple uses of timber and timber trees and its wider biological aspects. The author's views on the landscape of towns, and of new towns in particular, contain a sensible analysis of basic needs. What might have been emphasized is the importance of sensitive site planning, grading and detailing generally since these factors form a structure more productive of amenity than anything else. Failure in site planning cannot be rectified or corrected by planting alone. It says much too for her evenness of temper that as a New Town landscape consultant she can write about open space in present day local authority housing without indignation. In no other century has its function been so misunderstood.

H. F. Clark

ST. PAUL'S OLD AND NEW

A HISTORY OF ST. PAUL'S CATHEDRAL, *Edited by the Very Rev. W. R. Matthews. Phoenix House,* 50*s.*

This is a notable book, containing chapters by six recognized authorities, covering all aspects of the history of St. Paul's; one, indeed, which will become indispensable to any future scholar. For though the evolution of Wren's building is by now familiar enough, this book differs from all others in its very full treatment of the earlier centuries, and also of the changes since Wren's day, including an account of the war damage and its repair. Much of the information is not architectural, but all is of interest and importance for a complete understanding of the history of the building. The chapter on the history of the fabric—a good account, marred by one unfortunate misprint stating that the walls of the choir and transepts were completed in 1675—is fittingly written by Mr. Martin Briggs, that pioneer writer on Baroque architecture, who dared to say as long ago as 1913 that Wren's architecture had Baroque characteristics (a view which was then almost heretical) and so was a just expression of its age. The plates are adequate and there is an excellent bibliography with full references to primary sources.

M.D.W.

Books Received

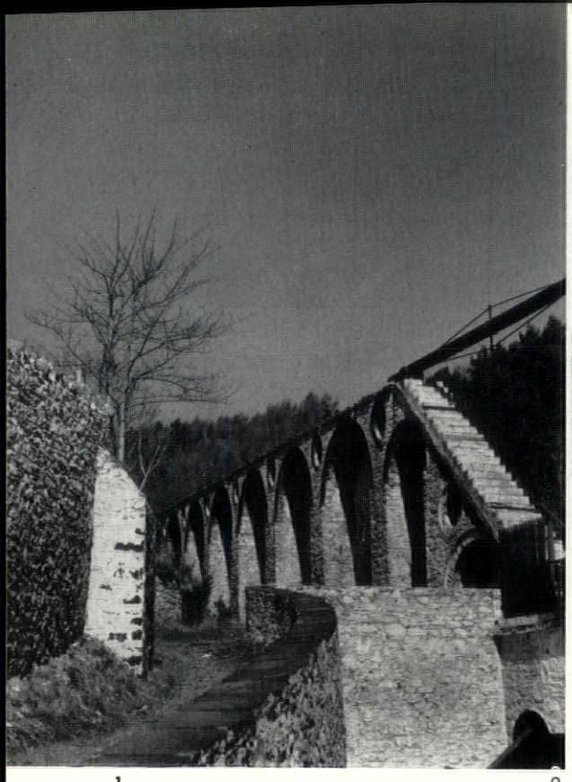
AN INTRODUCTION TO FLORENTINE SCULPTURE IN THE 15th CENTURY. By J. M. Bulla. Rockliff. 25s.
CITIES IN FLOOD. By Peter Self. Faber & Faber. 21s.
RECORD HOUSES OF 1957. Architectural Record, USA.
INDEX OF AMERICAN ARCHITECTURAL DRAWINGS, 1900. American Association of Architectural Biographers, Charlottesville, 1957.
QUIET PLACES. By Basil Collier. 25s.

FUNCTIONAL TRADITION

Most functional tradition buildings disappear as soon as they cease to be functional. Lady Isabella, the Laxey Great Wheel* in the Isle of Man, is a happy exception. It is exceptional in many other ways too; probably the largest water-wheel of it's type in the world (diameter 72 ft. 6 ins.) it was built in 1854 as a pumping engine for the Laxey Mining Company (engineer, Robert Casement); the wheel operated a system of rods 600 feet long, carried on a viaduct and attached at the other end to a pump on the mine shaft. The water used came from the surrounding hills, rose by hydraulic pressure to the top of the tower and was fed onto the wheel pitch-backshot (i.e. underhand); the normal overshot wheel would have required so much shrouding to prevent water spilling out of the buckets that it would have been uneconomic. The apparatus for water collection is incredibly ingenious, some of the water being used nine times over. The mines closed down in 1929 and after ten years the wheel was bought and repaired by Mr. E. C. Kneale, of Laxey, a local builder, who couldn't bear to see such a fine thing go to ruin (there are plenty of British industrialists in similar circumstances who could and have). He repainted it at his own expense and the splendid result can be seen opposite. The Manx Government now keeps a fatherly eye on it, recognizing that it is one of the best buildings on the island. It is in fact in a class of its own because of the complexity of function, a complexity equivalent to today's atomic plants and electricity sub-stations. When faced with such a problem the nineteenth century gave it inspired and decorative inflection of structure: all we seem to be able to give it is desperate shrubbery.

Ian Nairn

* Much of the information in this note comes from a delightful privately printed book on it by Anders Jespersen, obtainable from Mr. Kneale at Laxey, price £1. Illustrations also appeared in AR December, 1956, page 406.



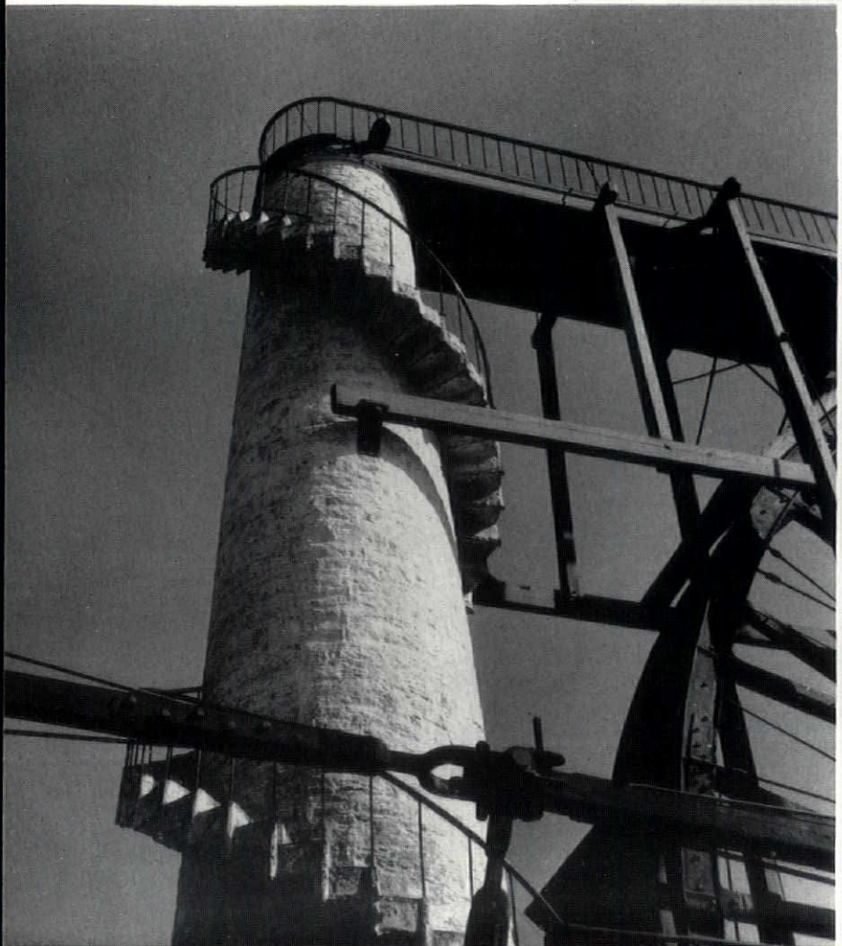
1

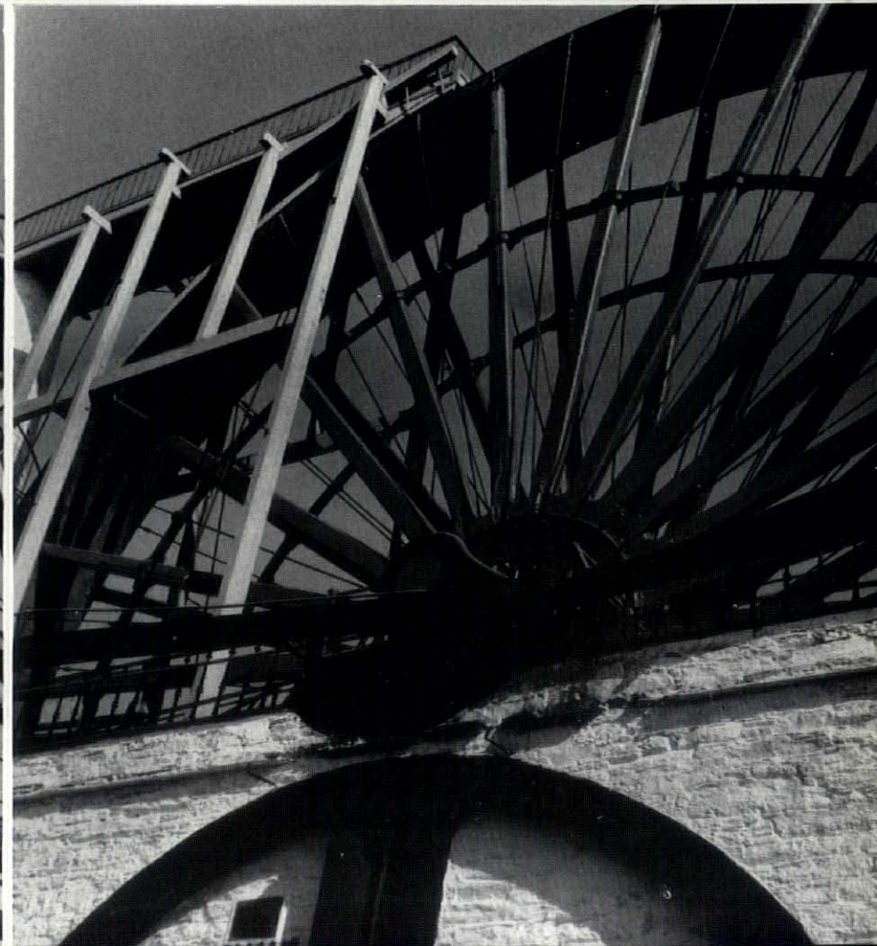


2

Lady Isabella: *four views of the Laxey Great Wheel.* 1, *the viaduct carrying the system of rods from the wheel to the pump in the mine shaft.* 2 *and* 3, *the tower which carries the water to the top of the wheel and the ramp from which the water drives the wheel pitch-backshot (i.e. anticlockwise).* 4, *close up of the wheel hub and axle: the axle is* 17 *feet long and weighs ten tons. The colour throughout is black and white.*

3, 4





HISTORY

WEISSENHOF

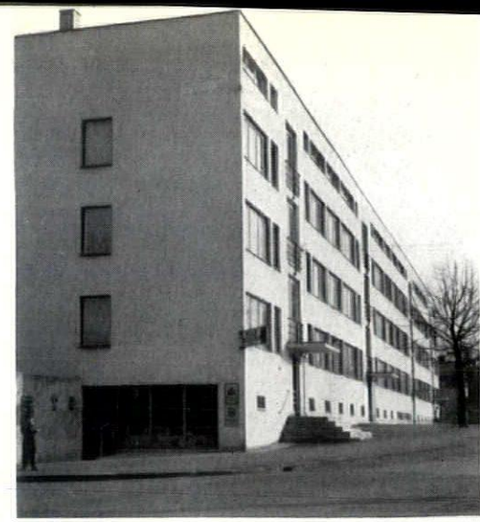
The Interbau Exhibition at Berlin in its early preparatory stages advertised the rebuilding of the Hansaviertel as an unprecedented enterprise

—an estate in a town commissioned for an exhibition from architects from a variety of countries and built to become part of the permanent townscape. The contention was an error. Exactly thirty years ago, in 1927, Stuttgart did the same. The Deutscher Werkbund under the same conditions built the Weissenhof-Siedlung. It is true that it was all on a more intimate scale without point blocks and restaurants and a Congress Hall, but it was the same nevertheless—the architects in that case being

P. Behrens
Le Corbusier
R. Döcker
J. Frank
W. Gropius
L. Hilberseimer
J. J. Oud
H. Poelzig
A. Rading
L. Mies van der Rohe
Hans Scharoun
Adolf Schneck
M. Stam
Max Taut
Bruno Taut

What does the Weissenhof look like now, after one generation, after the anti-modern Nazi regime and after the bombing of the war? The following pictures and remarks provide the answer.

Of the houses, the following are fairly well preserved. Mies van der Rohe's block of flats, 1, the terrace of cottages by Oud, 2, and the villas by Schneck, 3 left, and Scharoun, 4. On the right in 3 is Le Corbusier's famous house for one family as it was, 5 shows it as it is and in front of it Le Corbusier's two-family house. Both were damaged but have been restored after a battle last year when the Württemberg Treasury intended to pull them down. Damaged and repaired also is the fine terrace by Stam, 6. Preserved only as a fragment is the house by Bruno Taut, 7, preserved but ruined completely by reconstruction to different plans is the house by Frank. The block of flats by Behrens, 8, has been equally thoroughly ruined by receiving a pitched roof. The tower in the photograph does not belong to it, it was built separately in 1929–30. This interference with some of the houses in conjunction with the complete disappearance of the houses by Döcker, Gropius, Hilberseimer, Poelzig, Rading and Max Taut and with the erection of new houses on the estate in a tame municipal style, 9, has reduced the impact of the Weissenhof most deplorably and, it must be said, unnecessarily. N.P.



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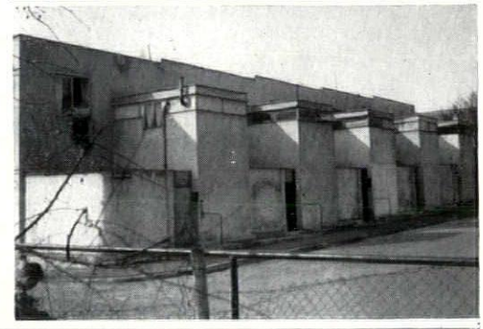

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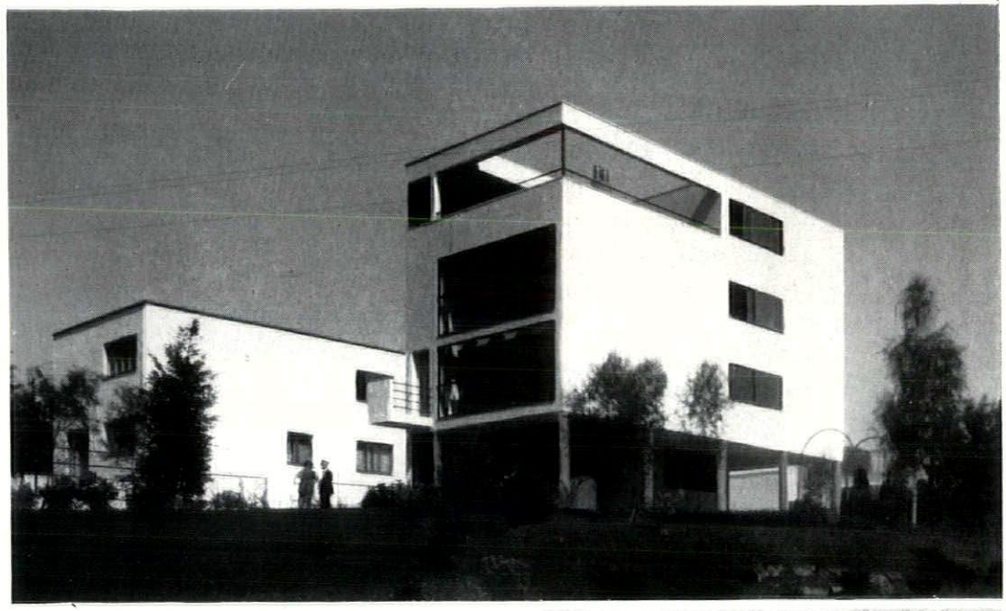

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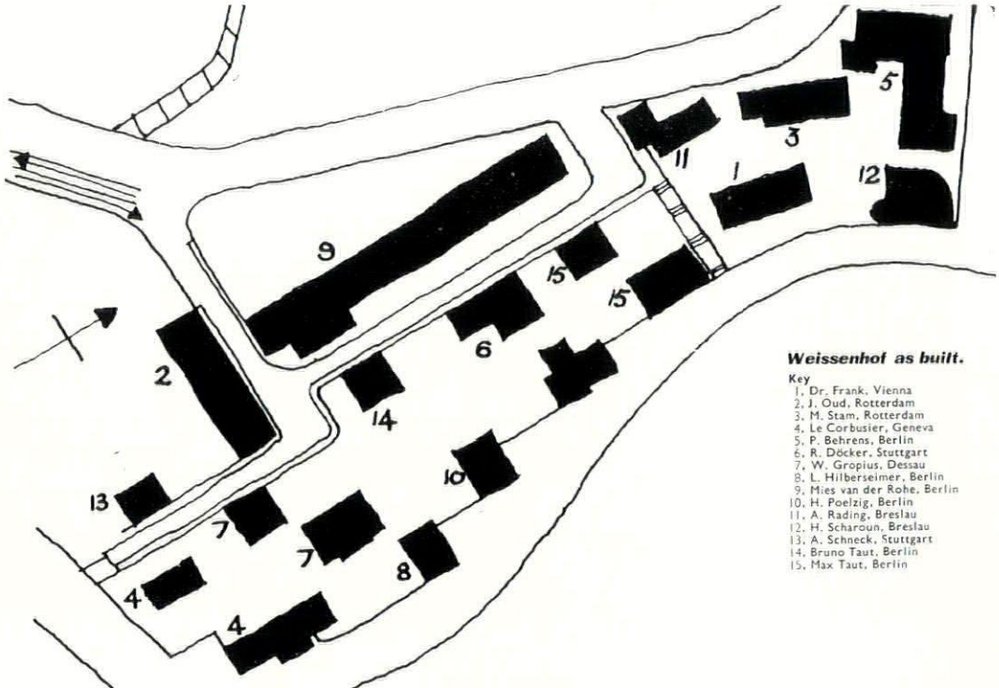
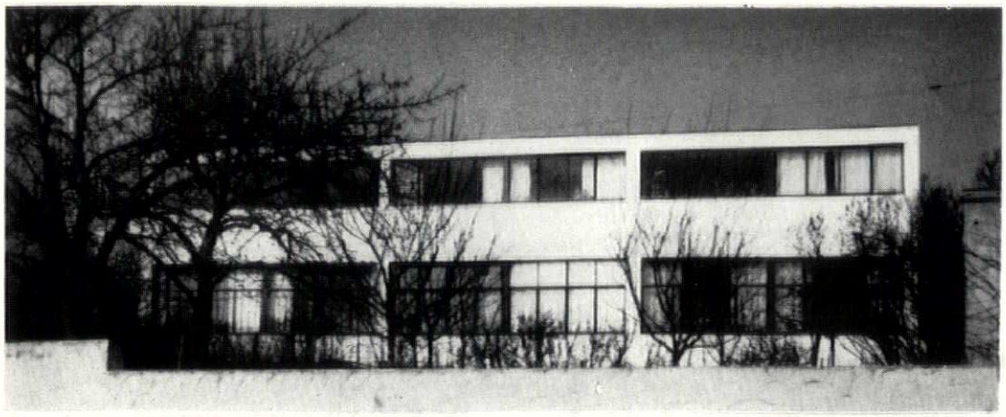


Weissenhof as built.

Key
1. Dr. Frank, Vienna
2. J. Oud, Rotterdam
3. M. Stam, Rotterdam
4. Le Corbusier, Geneva
5. P. Behrens, Berlin
6. R. Döcker, Stuttgart
7. W. Gropius, Dessau
8. L. Hilberseimer, Berlin
9. Mies van der Rohe, Berlin
10. H. Poelzig, Berlin
11. A. Rading, Breslau
12. H. Scharoun, Breslau
13. A. Schneck, Stuttgart
14. Bruno Taut, Berlin
15. Max Taut, Berlin



6



7



8



9

EXHIBITIONS

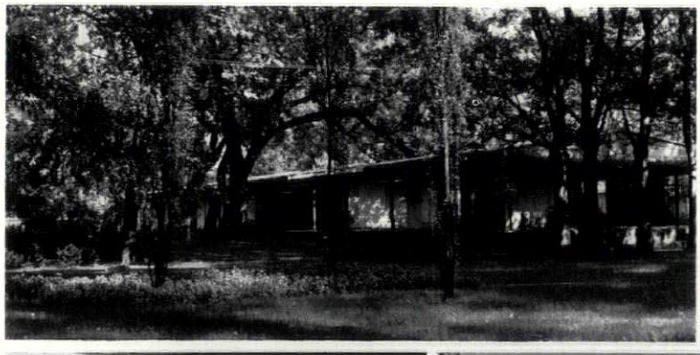
MILAN TRIENNALE

The Milan XI Triennale gave exhibitors a baited hook; and it must be admitted that most countries swallowed it whole. It provided anonymous spaces inside the Palazzo dell'Arte for display of furniture, industrial design or textiles, and anonymous pavilions outside in the Parco, 1 and 2, made up of steel I-joists, wood and corrugated asbestos, in which exhibitors were free to produce typical contemporary rooms.

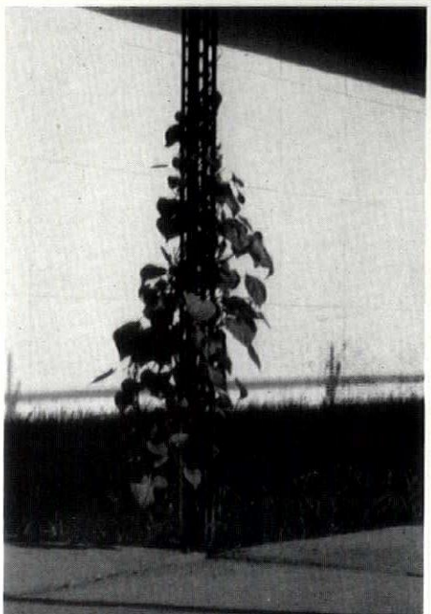
In this situation there were three alternatives. The first was to do nothing to the space provided and leave it to the exhibits —in which case the exhibits had to be very good and very coherent: and here was the baited hook. The second was to go it alone and either have a separate pavilion or make the allotted space unrecognizable. And the third was to make imaginative use of the given spaces themselves: to make an artistic virtue out of necessity. The Triennale gave a lead by providing a fine example of this last technique in the walkway between Palazzo and Parco, a ramp made up of simple 'Safim' angle sections which make a more effective pergola, 3, than the most elaborate contrivance. The same angle sections were used to frame a modular rectangular tent for the textile pavilion, by Eduardo Sianisi, 4 (ramp on left, Palazzo beyond), where again the extreme contrast of textures was more effective and much cheaper than an arty bit of decor.

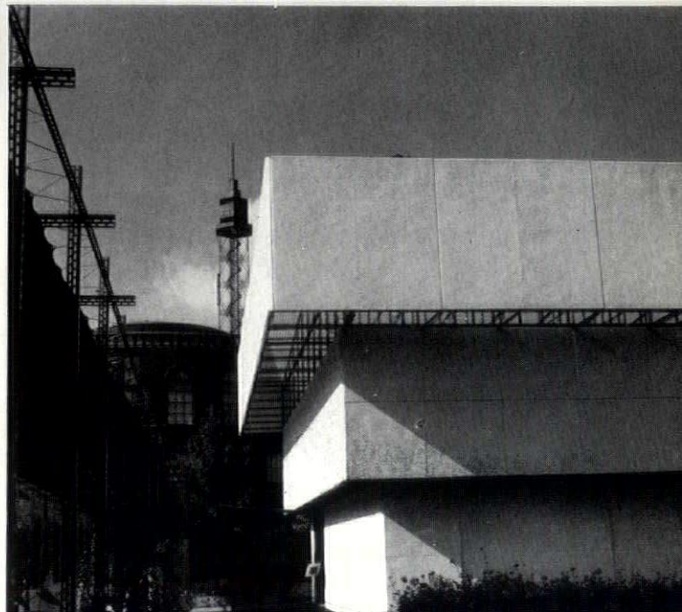
The countries, all too many, which relied on the exhibits or the furniture can be quickly dismissed. Only the Finns produced a coherent and individual scheme out of their rugged unstained wood and chunky design, with the Danes coming a moderate second in producing furniture where at least there was none of the awful intellectual snobbery that contemporary design seems to premise. Most of the rest were like national parodies: France a section of a *grand magasin*, Canada a travel agency, Sweden a psychologist's waiting room. Belgium, always the joker of Europe andesign, produced such a conjunction of odd things under the heading of industrial design that the room was crazily effective in its own right: rifles, a junction box, ornate leather-bound books, and something that looked like a large porcelain dragon.

In the second category, the USA went it alone with a ham geodesic dome in the Parco by Paul McCobb, 5 overleaf, and a ham message to go with the exhibition of communications equipment inside it: 'whatever characteristics (the designer) may give them, they are never somber. They help to make Americans one people, their life gayer at leisure and more efficient at work.' Gio Ponti designed a squat aluminium pavilion to show the different uses of aluminium prefabricated cladding using the 'Feal' technique designed by Giovanni Narlonga—perhaps inevitably it looked rather like a drunk prefab, 6 overleaf, and approximated to the buildings one fears that the Milanese architects are likely to erect in aluminium. The exhibits probed much deeper









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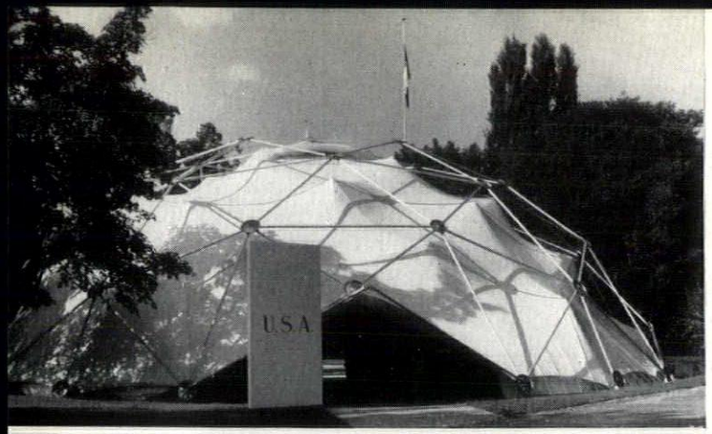
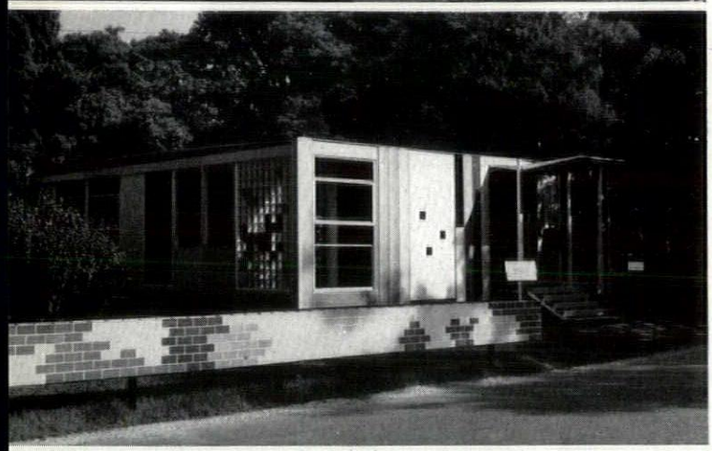
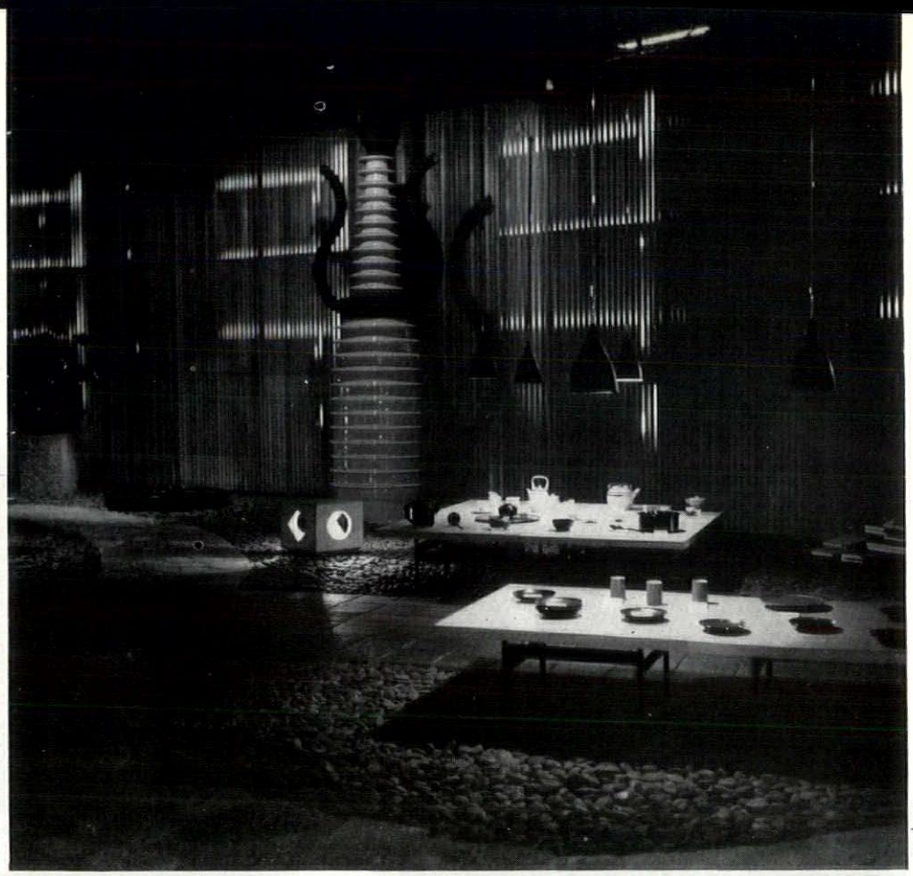
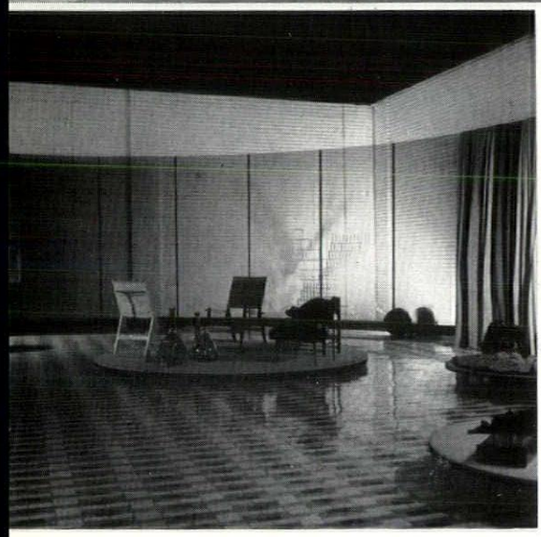
3 | 4

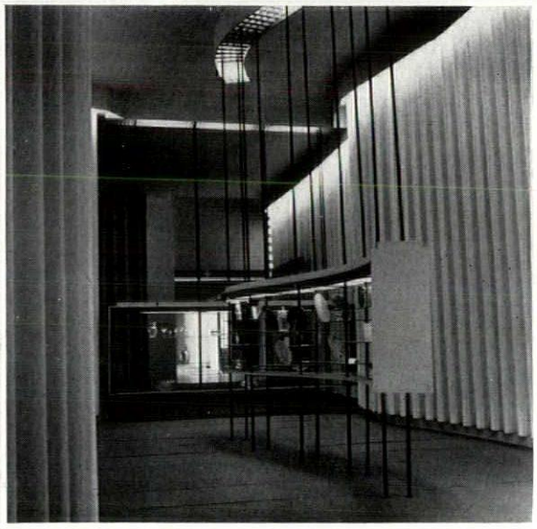


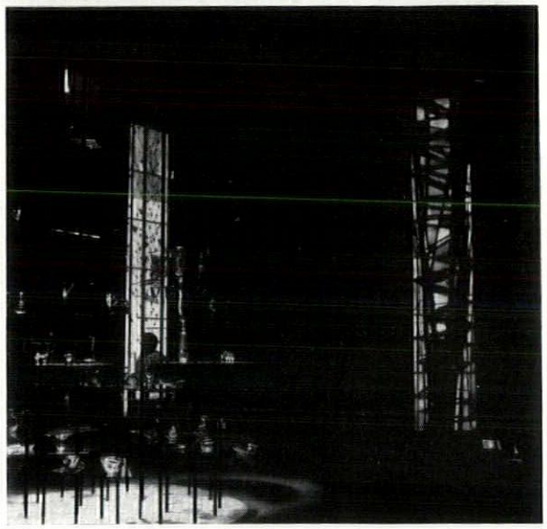




5/6/7



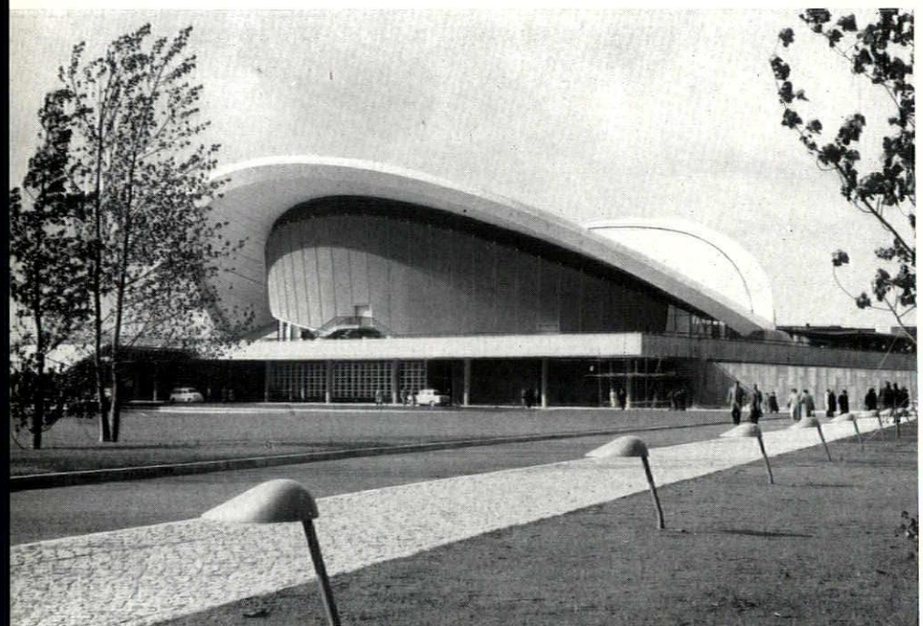




8,9,10

milan triennale: 5, *U.S. pavilion.* 6, *aluminium pavilion.* 7, *Japanese room.* 8, *Spanish room.* 9 *and* 10, *Czech room.*

interbau: 1, *Congress Hall by Hugh Stubbins.* 2, *le Corbusier's Unité (Type Berlin).*





1,2

into the idea's potentialities and ranged from models of complete buildings to a single L-shaped bathroom unit incorporating a square bath, bidet, w.c. and basin. In the Palazzo, the only country to use this technique was Japan,* who did it brilliantly, 7, to produce an equivocal mixture of inside and outside space, chiefly by transforming the floor with tiled paths and loose pebbles. This, by Junzo Sakakura and Kiyoshi Seike, was purely International Style design, in the sense that it could have been fitted into any exhibition space, whether in Milan or Manchester, but it was very well done.

Finally, that small band of countries—an odd band too—to accept the challenge of the Triennale's anonymous spaces and to exploit it. Of the pavilions, the only one to treat the room as part of the garden exhibition outside was Jugoslavia, by Mario Antonini and Niko Kralj, and this sensibility transformed the gauche but humane furniture. It ought to be a truism that an open plan can't stop at the windows, but nobody else realized it. Indoors, Norway suggested extreme multi-spatial complexity in a very small space, by Arne Körsmö: a trademark which readers will recognize from AR Feb. 1957—Germany provided a very good room inside the Palazzo by Arnold Bode, a huge oblong divided up by sets of oblong strips at right angles to one another with a colour scheme of black, white and red, plus the accents of draped textiles. Spain conquered its square room by the simplest and most elegant of formal devices (by Francisco Ferrer and Jose Garcia de Paredes) of inscribing in it a circle of fine wire mesh, 8, with some of the exhibits inside the circle and some outside in the corners, completed by a black ceiling and blue-white-black tiled floor—another reminder, like the Japanese section, that for this sort of exhibition the floor is perhaps the most important plane surface in the room. But the best display of all† came from Czechoslovakia. In a big oblong room devoted entirely to Czech glass design, Frantisek Tröster divided up the middle with a double-S shaped wall. One side was white, and housed black-painted Miesian display frames, 9, the other was dark and mysterious, with top-lit cylindrical display frames seen against a ripple background of Royal blue from floor to ceiling, formed quite simply by stiffened curtains, 10. As so often, the most commonsense solution of all worked like a charm: the curtains were superbly rich and could be seen to be curtains: the spaces were in perfect counterpoint and could be seen to be on either side of the same wall.

What the UK would have done, no one can tell: there was, once again, no participation. The only hint that there was anything stirring in the Old Country was our part in the large and admirable exhibition of modern architecture in photographs and models. That Britain had its fair share in this (with both the pioneer suburbs and new work like Harlow and Roehampton) was due not to the activities of many underworked officials but of one overworked enthusiast, Dr. Pevsner. Is Whitehall still not convinced that the relatively small cost of British participation would repay itself handsomely? The present official stinginess may well rebound on us very smartly, in the form of countries which work harder at both ends than we do, notably, of course, West Germany and Japan, both with good lavish displays at the Triennale. If it does rebound we will have deserved every bit of it.

Ian Nairn

LAST DAYS OF INTERBAU

The last days of September and of the Berlin Interbau exhibition found this manifestation of live architecture still alive, and beginning to tot up a record of achievement that extended beyond mere cubic footage of architecture by famous names. Though less susceptible to rapid comprehension than the *Triennale*, it seems to have made a bigger impact, and attracted more visitors. Particularly noteworthy was the massive and continued flow of architects and others from Eastern Europe. Visitors to the exhibition in its closing weeks would have found Hugh Stubbins' dramatic and very New-American congress hall completed, 1, in spite of a minor contretemps with a flash of lightning that set back work on the roofing and delayed its completion. Le Corbusier's *Unité Type Berlin*, 2, was still far from finished although work was proceeding visibly and impressively, and—as was the case at Marseilles—two or three flats had been mocked-up in the lower part of the frame so that visitors could get an impression of life *à la Corbu*. Other much noticed and much discussed late finishers were the Schwippert-haus, which was noticed less for its display of structure than for its integration of balconies into its living-spaces, and Otto Senn's sixteen-storey point block, whose square grouping of four flats per floor around a central stair-tower, familiar enough to English eyes from the LCC's recent work, was new to Berliners. Almost in the closing minutes of the exhibition two interesting examples of single-storey, single-family houses became accessible to viewers: those by Sepp Ruf and Werner Fauser, which seem to have been both admired and deplored for the *rustikalen Effekt* of their brickwork; and the atrium-houses by Arne Jacobsen, which were among the most eagerly awaited small structures in the exhibition. And as a general boost to the tone and scope of *Interbau*, its final weeks also embraced an exhibition of contemporary building for the German Evangelical Church—which must have left Iron Curtain visitors with some curious and disturbing memories to take back with them across the zonal frontier to the *Beaux-Arts* aridities of the Stalin-Allee.

Michel Santiago

PAINTING AND SCULPTURE

The ICA has recently held three exhibitions connected with the origins of art: bark paintings by Australian primitives, paintings which might be called pre-primitive, produced by two chimpanzees, and neo-primitive sculpture by William Turnbull.

The paintings by the chimpanzees Betsy and Congo must be considered a triumph for evolutionists; they bring our 'close relations' a little closer, and offer no comfort to those who still cling to the hope that man has not evolved entirely by natural selection. These paintings disclose incontrovertible evidence of an instinct for pattern making. The paintings produced by Betsy, a seven-year-old female in the Baltimore Zoo, are strikingly different from those made by Congo, the two-and-a-half-year-old male in the London Zoo, and both of them have something approximating to a personal style.

Their work has a tasteful look which is simply a by-product of human supervision, and has no bearing on their pattern making: in Betsy's case it can be ascribed to the ration of carefully chosen paint blobs placed on the paper before she smears with her fingers; in the case of Congo, who uses brushes, it is due to the fact that he is allowed to choose only one colour at a time, and does not himself dip the brush in the paint.

Congo invariably produces a roughly fan-like configuration of downstrokes sloping inwards, 1, overleaf, and Dr. Morris, who supervises Congo's activities and has contributed an interesting preface to the ICA catalogue, tells me that when Congo starts to dab at the paper instead of making strokes it is a sign that he wants to make a fresh start on a clean piece of paper. His work is more stilted than Betsys,'

* To be fair, to do this must have cost a lot more than some countries were prepared to afford. The Triennale catalogue ought really to include the cost of each pavilion.

† Apart from one awful social-realist tapestry, quickly left behind.



1



2

partly because he is very young and partly because it is more difficult to paint with a brush than with the fingers.

There is no doubt about Betsy's dexterity. She uses her fingers with firmness and delicacy, and the movements and countermovements of her curvilinear strokes, which take the impress of her nails and gain light and shade from the varying pressure of her finger-tips, 2, must be in some measure the fruits of experience. Nevertheless, there is a gulf between their work and that of even the most primitive of human beings, for they show no sign whatsoever of being capable of making symbols.

The paintings on eucalyptus bark by Australian aborigines were collected by Mr. Charles Mountford on expeditions to Arnhem Land and Melville Island. The art of this 'stone age' people ranges from 'X-ray' representation, as in the picture of a spirit-man spearing a kangaroo, to geometrical abstraction which is not pattern making but a language of symbols referring to myth, topography and aboriginal astronomy. I see that one critic has tried to make a virtue of this absence of symbol from the 'free abstractions' of Betsy and Congo, as if they represented an alternative, non-geometrical, non-figurative tradition!

Dr. Morris doesn't of course make any such claim, but I don't understand why he says that comparisons made between the action painting of humans and the action painting of apes are 'odious,' since he himself points out the resemblances. 'Both are abstract,' he says, 'and neither can be described as "geometric." Also in both cases the moment of action involved in the creation communicates itself very forcibly.' Then he adds, rather summarily: 'the methods used may be similar, but the brains involved in the two cases are, after all, very different.' In any case, the term 'method' seems scarcely to apply to the chimpanzees, for their work does not appear to have reached the stage of being a procedure for attaining an object. If, however, I am wrong, I cannot but agree that the very different brains involved make it unlikely that they have the same object in view as human action painters. It seems to me that a good deal of action painting represents the final, paroxysmal stage of twentieth-century primitivism, and that under some atavistic compulsion that I only dimly and shudderingly understand, a number of gifted painters manage to reflect in their work something analogous to a state of pure, idealess animality. I cannot think that the chimpanzees have such an object in view. I am now keeping my eyes open for 'free abstractions' which show signs of becoming cold, smooth and slimy, for it will probably mean that someone is beginning to envy the reptiles.

Action sculptors are making less progress than the painters in the journey backwards, and, with their reluctance to eliminate preconception altogether, do not seem likely to get much further back than the stone age. William Turnbull, for instance, in his one-man show at the ICA seems content to record his spontaneous creative acts on rudimentary human effigies. In the 'Standing Female Figure' reproduced here, 3, the artist's spontaneous creative acts include a charmingly decorative treatment of surface produced by the imprint of corrugated paper, and what I take to be an unpremeditated double image, which provides a girl's head if one looks for a face on the left, and the head of a bearded man if one switches one's glance to the right. The exhibition as a whole has the look of a neatly contrived effect of powerful clumsiness, and conveys the impression that Turnbull is trying to escape from his imaginary museum by forgetting everything it contains, except, maybe, a few choice examples by Giacometti, Dubuffet and Picasso, and a number of cycladic figurines.



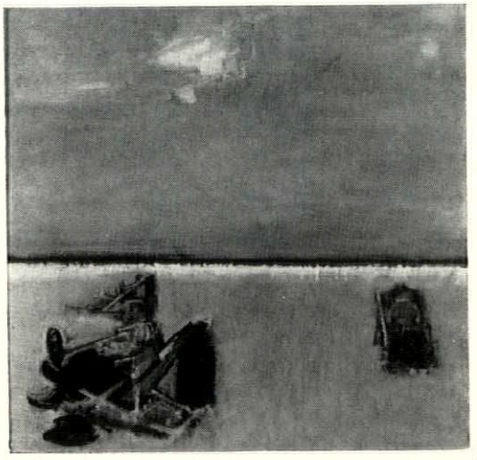
3

Turnbull's crudity is the result of a special kind of refinement; John Bratby's, on the other hand, seems to spring from a vulgar, I'm-all-right-Jack delight in his own talent and his fearsome environment. One doesn't think of him as having been an art student but rather as a new kind of art trainee, and in the frieze-like paintings he recently exhibited at the Beaux Arts, 4, he has become the master of a decorative style which exemplifies and celebrates a raw and voracious materialism.

By comparison, Ruskin Spear's *genre* paintings of beach and bar look remote and synthetic, 5. Spear is one of the artists who were chosen by the art critic of *The Observer* for his anthology of contemporary English painters at Tooth's. The others were Mathew Smith, Ivan Hitchens, Edward Burra, Alan Reynolds, Anthony Fry and Robyn Denny. Between them, they created an extraordinarily good-tempered atmosphere, as if they had agreed to put aside any differences they might have, in order to pay tribute to Nevile Wallis's endearing personality.



4

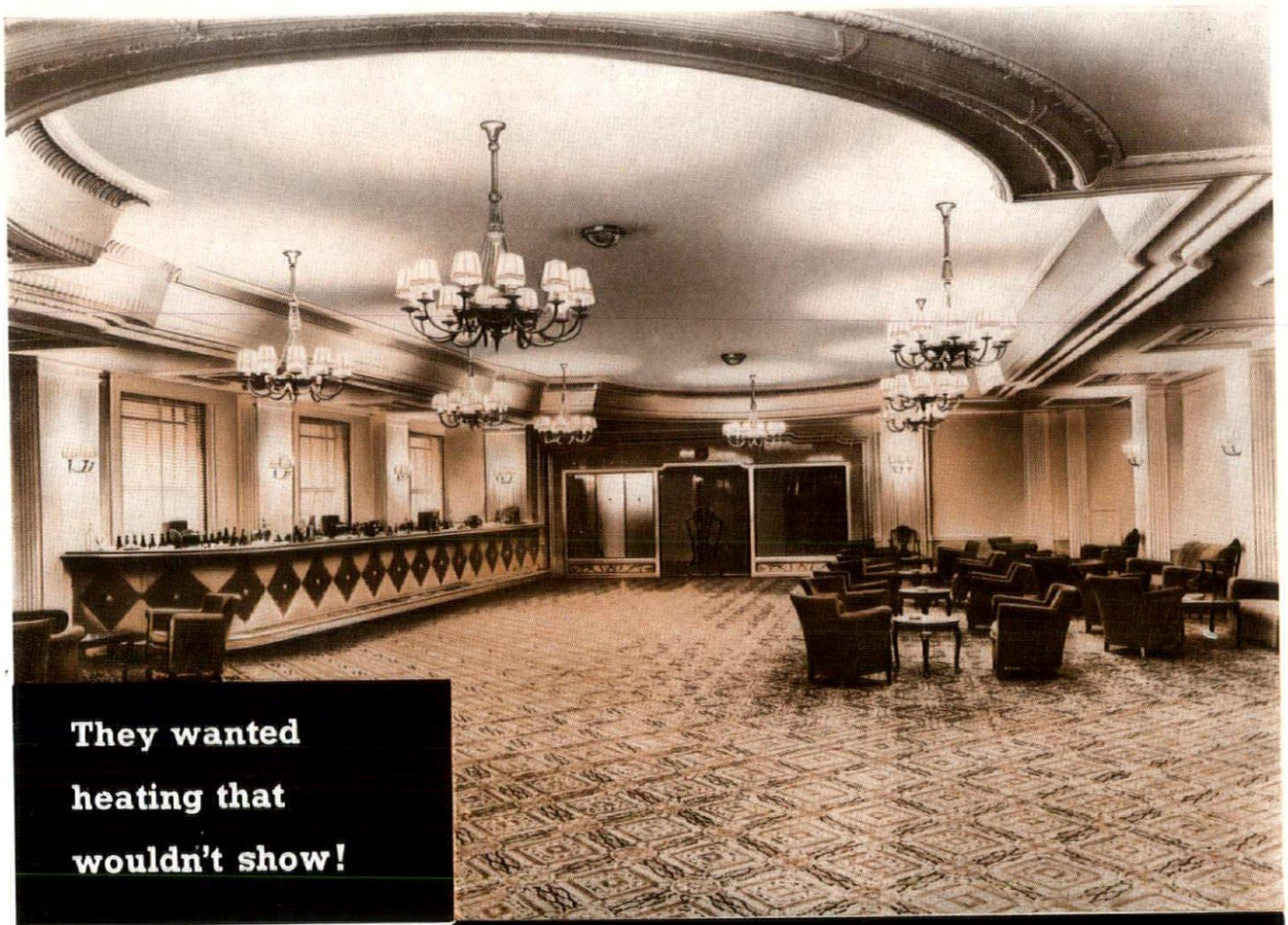


5

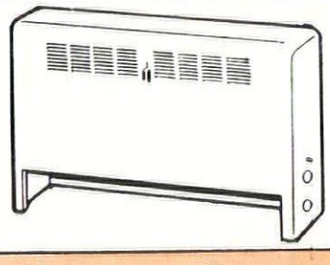
Robert Melville



A detail from the Reredos designed by Joseph Ledger, A.R.C.A. and executed by Carter & Co. Limited for the Church of St. John Fisher, Rochester · H. S. Goodhart-Rendel, C.B.E., M.A., PP.R.I.B.A., Architect.



They wanted heating that wouldn't show!



Copperad *or equal*

When the new entrance foyer and bar to the Connaught Rooms, London's famous rendezvous, were being planned, heating equipment was required that would be thoroughly efficient and economical but, above all, unobtrusive —hidden heating, almost. The choice was COPPERAD Convectors, which in addition are noiseless and, where desired, give controllable heat.

*The heating engineers were J. Jeffreys & Co., Ltd., of London, S.E.*1.

These words, so often seen on specifications, speak for themselves. In fact, of course, COPPERAD has no equal.
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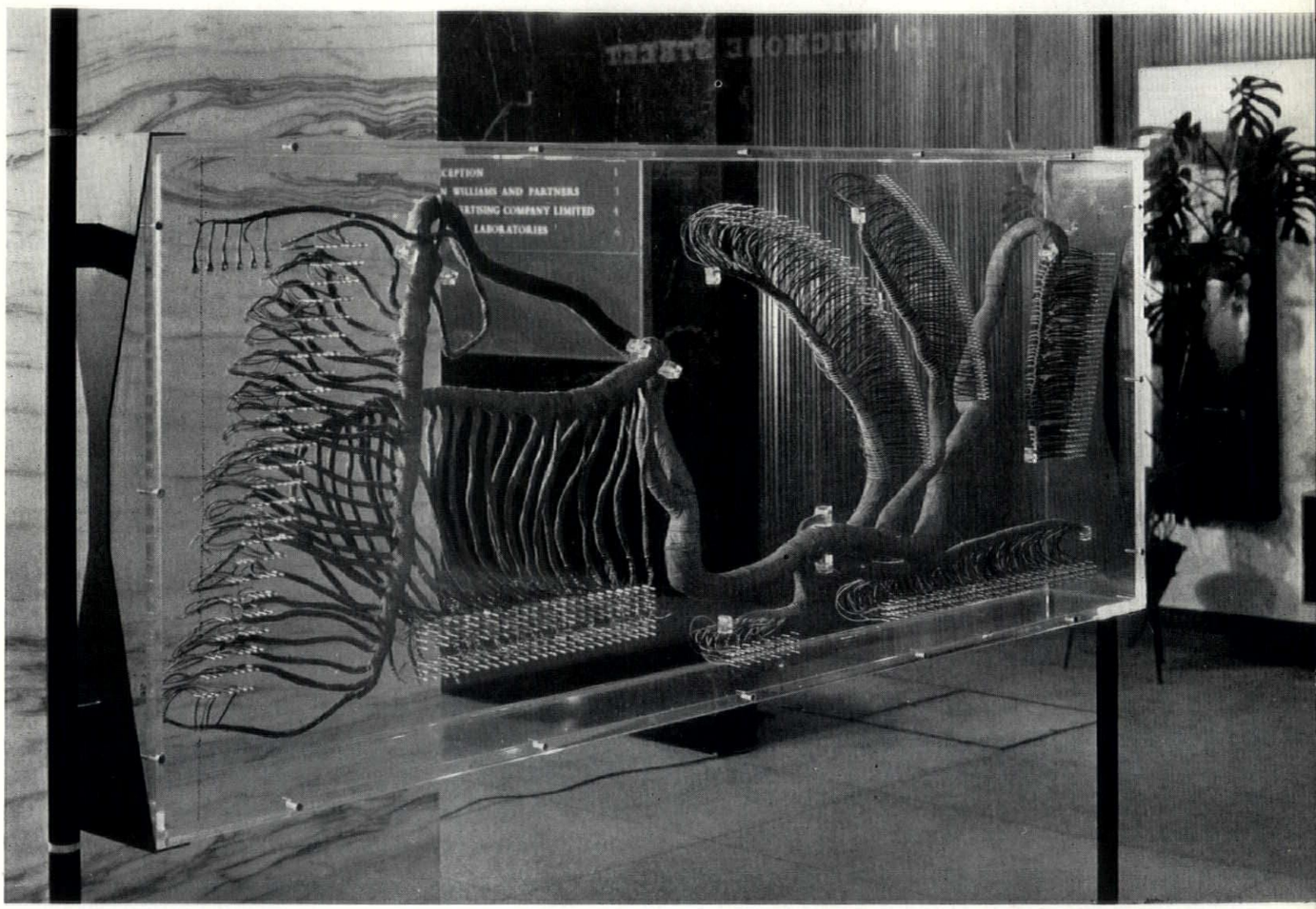
SKILL

A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN

1 interiors
2 design review
3 techniques
4 the industry



1, wiring harness from a calculating machine in the main entrance.

1 INTERIORS

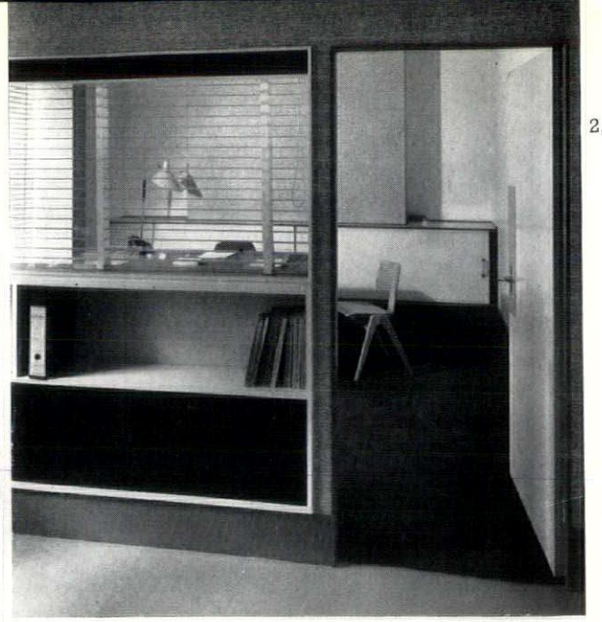
SHOWROOMS IN WIGMORE STREET, W.1

Architect: T. Ritchie; Interior Designer: Julian Green

The computing centre and showroom at 101 Wigmore Street is on the ground floor of the office space occupied by International Business Machines (United Kingdom), one of the principal lessees of the Wigmore Street development by Cecil Elsom. The main problem in installations like this is that of dispersing the heat generated by the computers. In this case the heat amounted to 234,000 B.T.U's per hour and is removed by overhead extract trunking. A large 700 Series IBM computer will be added shortly and will generate another 500,000 B.T.U's per hour. The headroom is thus reduced to 7 feet 7½ inches and thereby increasing the noise level. The maximum was to be 50 dbs and the main ducts were therefore acoustically treated and the duct sections kept as near square as possible. The acoustic-tiled false wall at the back of the showroom covers the main air conditioning ducts. The platform is covered by heavy linoleum and the public gangways with

[continued on page 421





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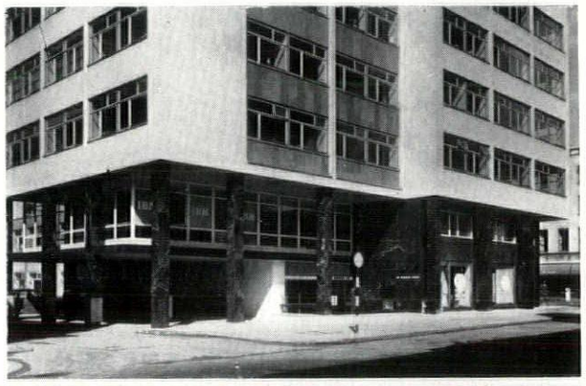

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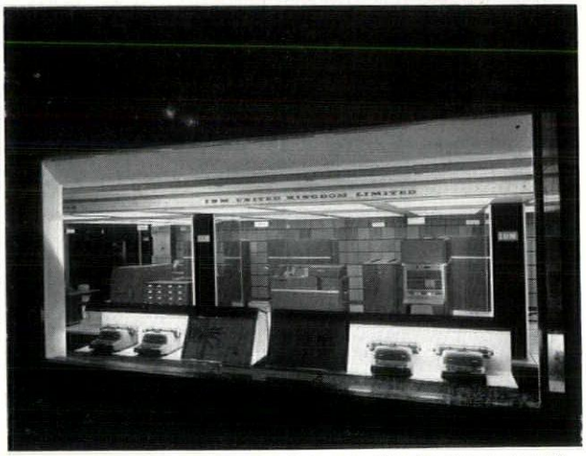
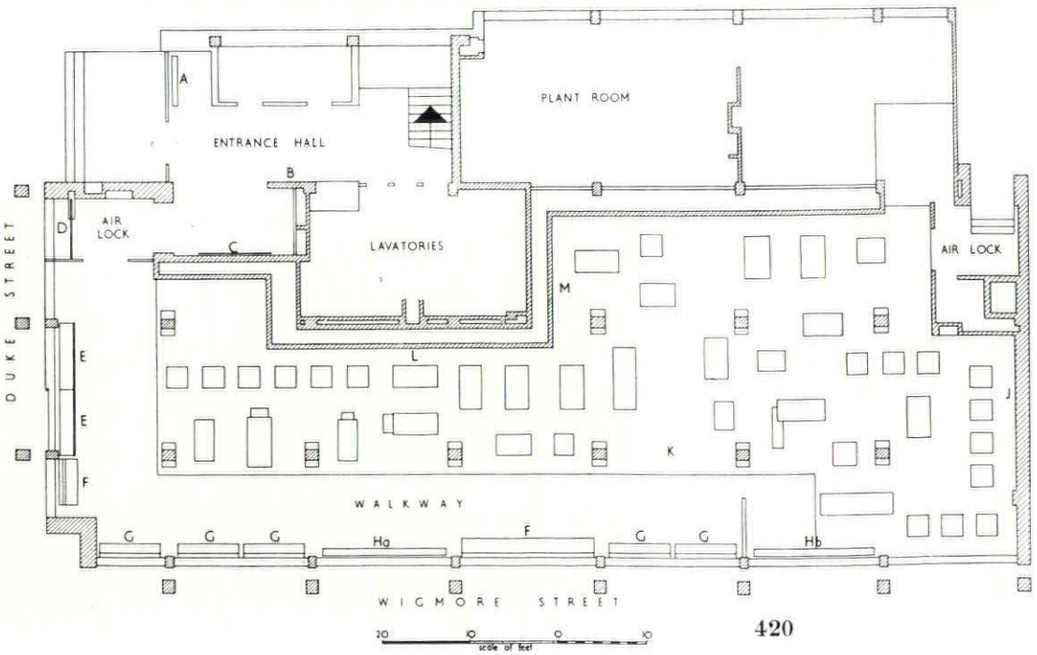


5, 6

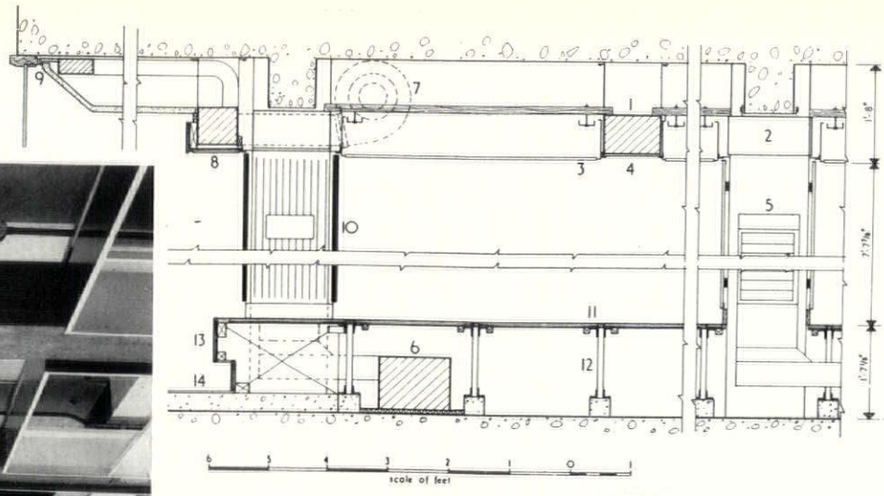
2, reception area showing treatment of column casing. 3, manager's office from typical secretary's office. 4, exterior from Wigmore Street. 5, part of the display of calculating machines. 6, night view from Wigmore Street showing portable typewriter units in position.



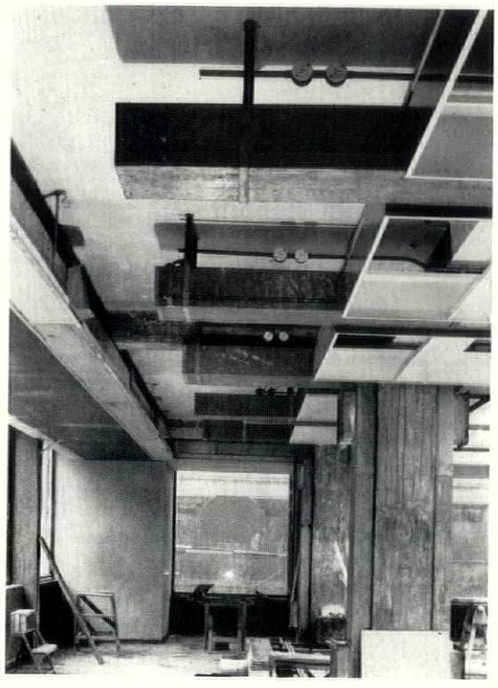
key

A, perspex display case containing computer wiring assembly.
B, occupation board, plastic letters in slotted felt panel.
C, master clock system display panel.
D, airlock screen.
E, typewriter display tables, also used for exhibition units.
F, showroom seating. Hille tele-chairs, covered 'Arlinghide' antique ivory.
G, typewriter stand. On two canted legs with splayed bracing rods hooked to eyes in stall riser. Heights vary to suit stall riser, units can be placed in any window and tilt back to change typewriters or clean window.
H, display screen suspended from overhead track and sliding to any window, height adjustment allow for stall riser variations.
a, 'Story of Calculation.'
b, 'World Coverage.' Screens a temporary office in the walkway. Screens are permanent, displays may be changed as required.
J, photostat of breaking waves covering whole of end wall.
K, raised platform with cavity below to receive ducts and machine cables. Loose floor panels can be removed individually and cable holes cut in them as needed.
L, brick walls to main duct cavity faced with 'Paxtile' acoustic tiles, with horizontal dividing strips, on walls facing Wigmore Street.
M, return duct wall plastered and painted.

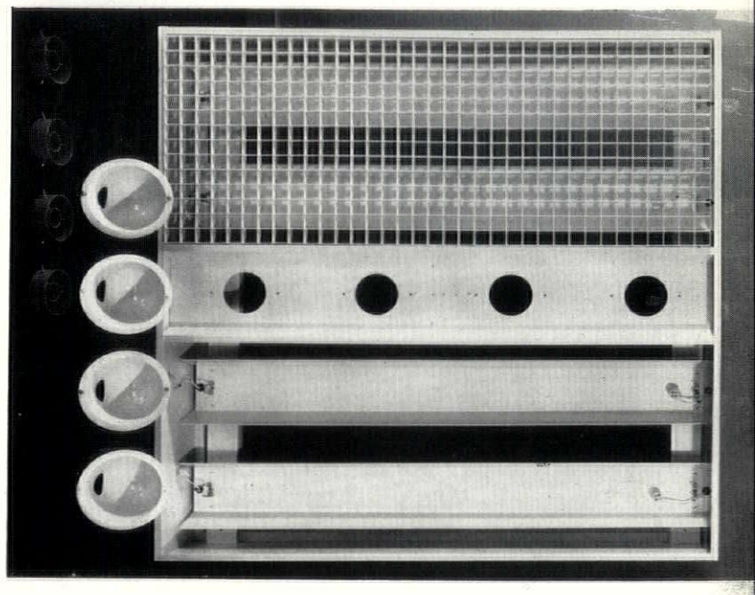
SHOWROOMS IN WIGMORE STREET, W.1



section through ceiling trunking.
key
1. return air duct suspended from r.c. slab and supporting light fittings.
2. dummy duct between columns, supporting light fittings.
3. special light fitting 4 feet 3 inches by 4 feet 3 inches with 2 circuits with two 4 feet fluorescent lamps plus two 65 w. ballast lamps in each circuit. Plastic louvres in underside allow heated air to rise.
4. asbestolux panels masking ducts.
5. air supply ducts up the column faces, fitted with 2 no. 'Deflecto' grills.
6. underfloor supply duct coupled to main duct behind rear showroom wall.
7. fans drawing heated air from above ceiling and supplying de-mist system through pressure duct.
8. pressure duct in perimeter of false ceiling.
9. secondary duct and injector opening of window de-mist system at window head concealed by fibrous plaster subceiling.
10. column casing of steel framed copper-faced ply on Asbestolux backing. Open grill of m.s. bars to ducted faces. Magnetic trademark on grill.
11. 2 feet 0⅛ inch by 1 foot 11⅛ inches floor panel of ⅛ inch resin bonded exterior grade ply with ¼ inch lino top finished with 'Phenoglaze'.
12. 14 inch Sommerfeld lattice beam on 4 inch concrete curb.
13. platform edge of vertical-grain mahogany Warerite.
14. plastic floor finish to walkway.



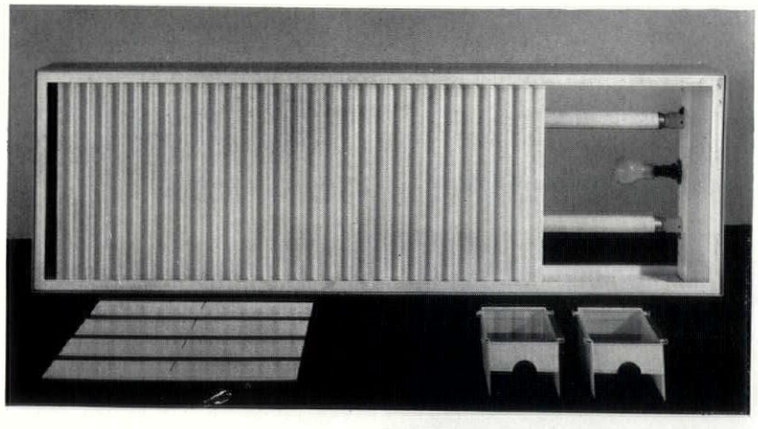
7, ceiling ducts before boxing in, see section above right. Compression duct on left-hand side, with two portions ready to receive centrifugal fans.



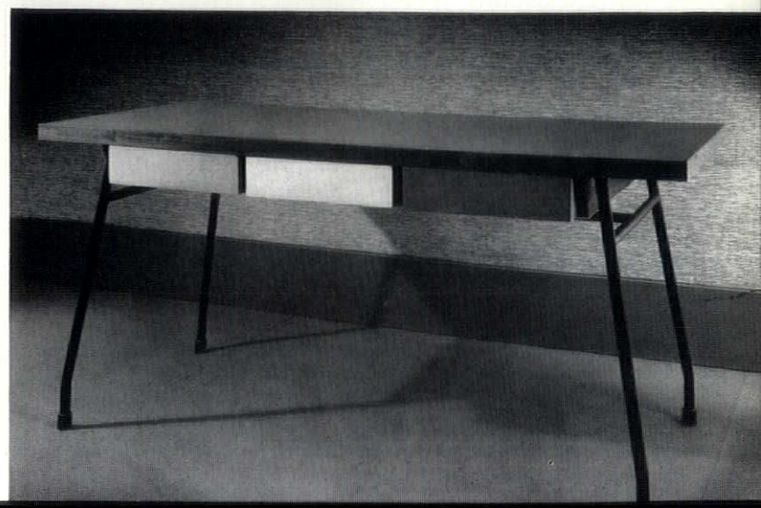
8, component parts of showroom lighting unit, each contains four fluorescent tubes and four 60 watt ballast lamps, directed through metal louvres.

continued from page 419]

plastic. In order to reduce drumming on the machine platform to a minimum, the cavity has been filled with fibre glass pillows, and an asphalt membrane separates the platform from the concrete floor. The machine platform was constructed of lattice beams (laid on the existing concrete floor) which support modular floor panels of ⅞ inch resin-bonded birch ply, tested to 800 lb. point load. This accepts the necessary machine connecting cables with their critical bending radii together with the underfloor air-trunking. Two faces of the structural columns carry airflow trunking and there are ventilation exits between cheeks of copper-faced plywood. These air outlet grills carry the company's loggotype (the three letters IBM which are the company's 'signature') in the form of magnetic plate, the position of which can be adjusted. The specially designed lighting units, using fluorescent tubes and ballast lamps in place of chokes, form a grid ceiling which is supported by air-conditioning trunking. A compression duct, forming the edge of the ceiling unit, collects hot air from the ceiling void above the lighting grid, builds up pressure with centrifugal fans and blows air on to the plate glass windows to prevent misting. An overhead track parallel to the windows runs the length of the showroom and is used to move heavy display structures.



9, detail of general office lighting fitting showing the louvre replaced with corrugated vinyl sheet.

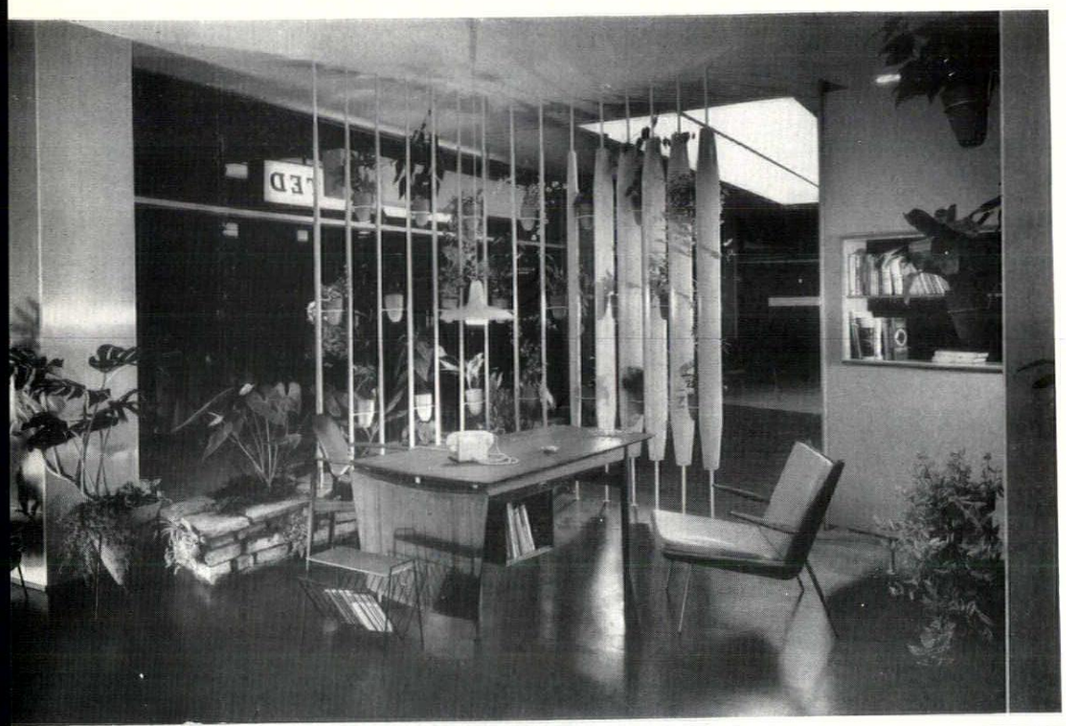


10, desk for typewriter engineering students. Drawers open both sides, a disc running in a grooved sail preventing the drawer being pulled right through.

GARDEN CENTRE IN WIGMORE STREET, W.1

Designer: F. M. Gross

The garden centre for Fisons is on the ground floor of 95 Wigmore Street near the IBM (United Kingdom) showroom. It has a total floor area of 22,600 square feet, which has been divided into two main rooms by a double-sided multiple display unit combined with flower carrying fins. The counter in front of it is natural waxed pearwood with a black and grey top. There are also three displays in this part of the centre: Human Health, Plant Health and Chemicals for Industry. The whole centre has been designed to be seen from the outside with a clear view through



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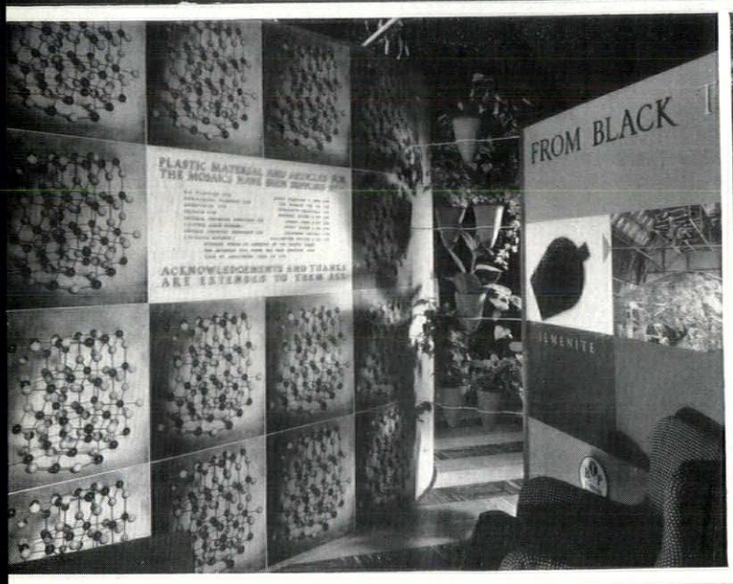
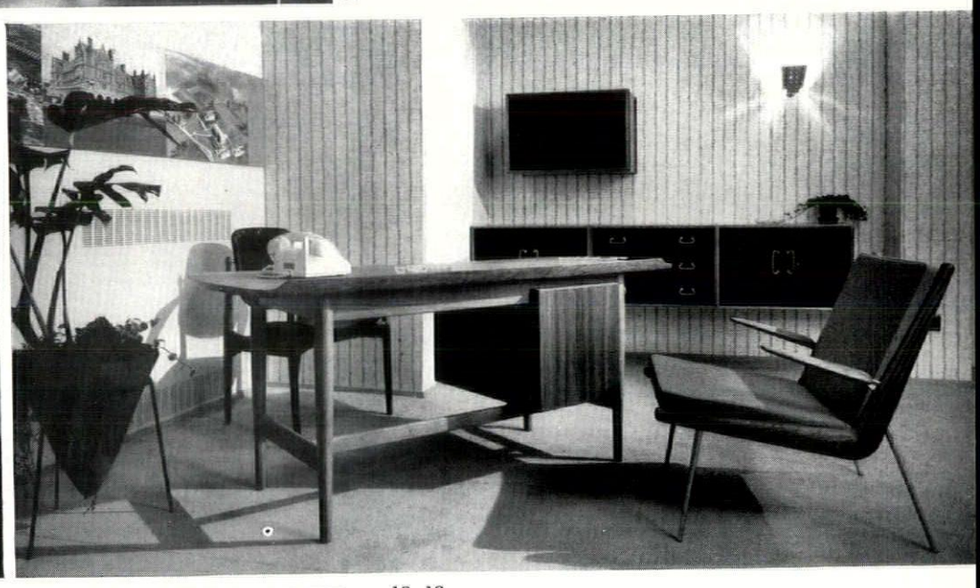
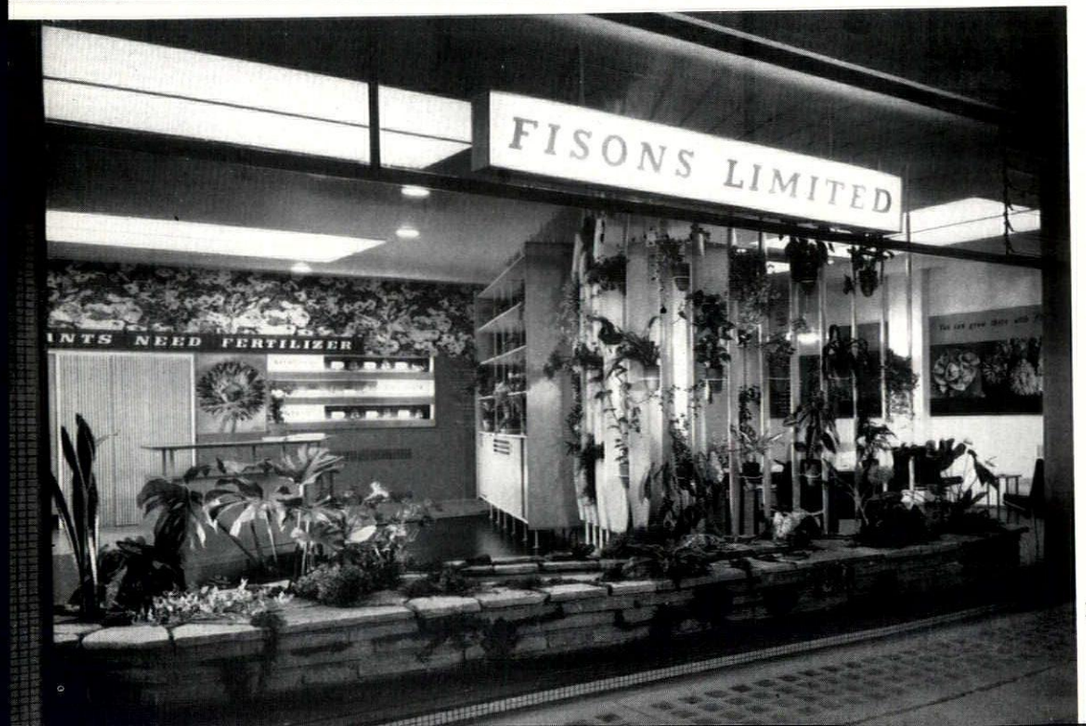




12, 13

to the rock garden beyond, whose purpose is to display specially chosen sub-tropical plants.

The Centre is heated by warm water panels carried between the lower plaster ceiling and the upper corrugated plaster ceiling which carries the light sources for the showroom. A few extra convectors are flush-recessed into the walls. The sgraffito murals were carried out by J. Dernbach and designed in co-operation with the architect.



14

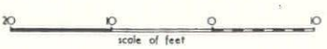
11, the horticultural advice bureau looking through the flower-carrying fins. 12, one corner of the main showroom. 13, the reception room. 14, horticultural advice bureau from street.

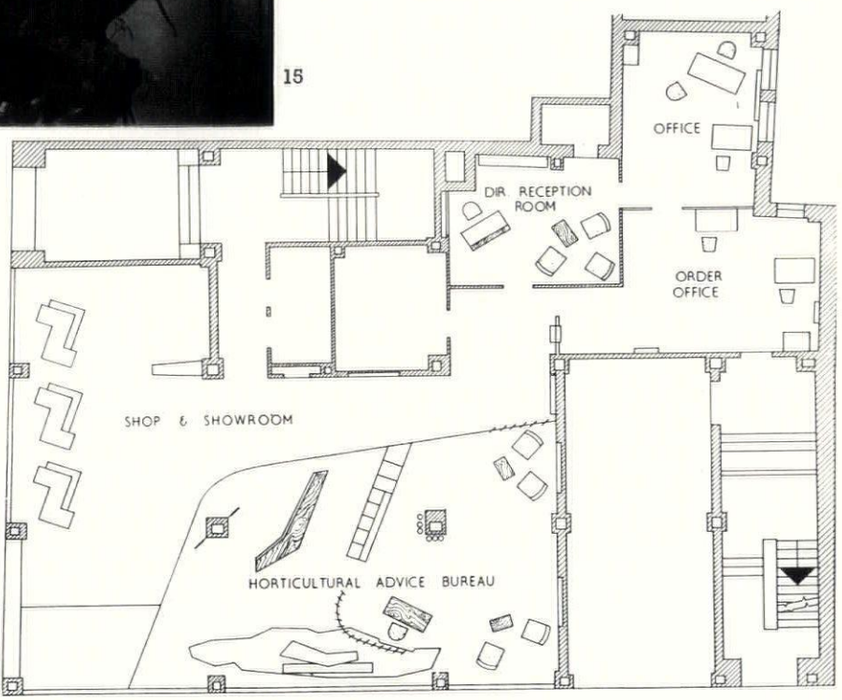


15

GARDEN CENTRE IN WIGMORE STREET, W.1

15, showrooms as seen by an outside viewer looking in at horticultural advice bureau. 16 and 17, Wigmore Street front showing contrasting effect of day and night lighting.







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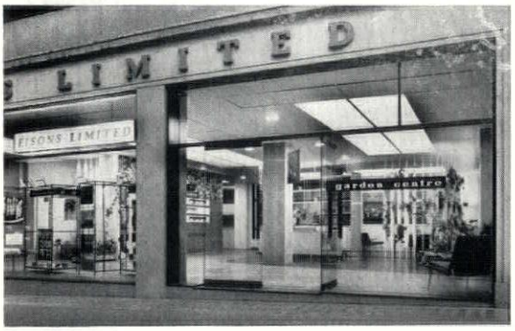

17

3 TECHNIQUES

TUC BUILDING

by Lance Wright

Owing to the rapid adoption since the war of lightweight structures and of new, or at least untried, finishing materials, modern architecture has had to endure irregularities of finish and a susceptibility to wear and dirt which would not have been tolerated by earlier generations of architects. Whatever its contribution to planning or to architecture in the large sense, there is no doubt that the TUC Memorial Building sets a new standard in finishes. It seems reasonable therefore to devote this technical postscript to the presentation in the front of the paper (see pages 370 to 388) to this one aspect.

An examination of the finishes of the TUC building reveals at once a certain anomaly. The finishes themselves are nearly all traditional: marble, slate, mosaic, hardwood, bronze, lead, plaster. There is, indeed, some aluminium on the façade and there is a discreet amount of acoustic tiling in the passage ceilings and elsewhere, but these remain the exceptions. What makes this building so interesting is the manner in which traditional materials have been used to produce those effects of floating planes, of light and of machine precision which we rightly associate with modern architecture. To achieve this, the architect has evolved a grammar of detailing which is perhaps best described by considering in turn certain characteristic sequences. A reinforced concrete structure is in effect an assembly of rough planes which perpetually moves and breathes and which requires to be clothed in some manner on virtually every face: it is in the treatment of the lines of junction between the different parts of this clothing and between this clothing and such lighter structures as windows and partitions which bridge in between, that so much modern building has come to grief and where this building so conspicuously succeeds.

the External Walls

Perhaps the concept which differentiates this most readily from other good quality building of between-the-wars is that of built-in maintenance. It is ironic that it is only when the nation has determined on a policy of clean air that architects should have decided for the first time in history to provide for the systematic wiping away of dirt; but there are two factors which have led to this. The first is the growing acceptance of factory made, precision components which require relatively frequent cleaning to maintain their effect, and the second is the growing appreciation of the importance, when building in cities, of the reflection factor on walls to obtain good lighting

at low levels. This second factor is particularly significant in the TUC building owing to its confined site and courtyard plan and it is for this reason that the courtyard walls are mostly clothed with light coloured mosaic. These walls give admirable lighting in the lower rooms but they will only continue to do so if they are kept clean; and, to encourage this, a double rail has been fixed on the roof behind each parapet and the architects have helped to devise a pair of running davits to enable every part of the main walls (except the memorial wall itself which has other arrangements) to be safely and cheaply cleaned by the TUC's own maintenance staff, 1. Thus, though the wall structure is so far removed in its nature from the curtain wall, and though most of the materials used on it are what our forebears (quite wrongly) considered to be self-cleaning, the total effect has more in common with lightweight post-war structures than might otherwise be expected.

Another detail which reminds us that we are, after all, in the presence of a machine age building is a device incorporated in the window head to ensure a true horizontal line. One of the most deplorable defects of curtain wall structures has been the failure to achieve that precision which is (or ought to be) implicit in the system. The architects realized that the same precision was implied by the use of the polished granite facing and that nothing would damage the integrity of the façade more certainly than if, on running your eye along one of the horizontals, you found that the line of the window head departed noticeably from the line set by the lower edge of the granite facing. To prevent this and to provide an opportunity for an exact truing of the continuous heads, lug boxes of a special kind were cast into the concrete (two per window) to permit vertical and lateral adjustment, 2, 3.

Another feature of all main façades is the use of a lead capping at the head and of a lead trough at the foot of every main vertical surface. Of these two the detail at the head is the most interesting, 5. In general the leadwork on this building is of a magnificence which must be unique in modern architecture. The lead capping comprises 5 lb. cast lead formed over 10 g. mild steel carriage plates. Each plate is rather less than 7 ft. 9 in. long (corner plates being mitred and welded) and the 1½ in. gaps between plates accommodate welts. Each 'leaded plate' thus formed rests on felt and is screwed down with four brass screws. The edge of each plate is turned down (inside, over the asphalt skirting, outside, over the granite face) and the effect is neat and convincing.

The windows (if we exclude those of the ground floor foyers which are of a different family altogether) are of two kinds: those of the special rooms (council chamber, committee suite, secretariat) are double glazed, of teak and often with mosaic covered r.c. mullions and transoms, while the office windows are of steel (hot dip galvanized and painted light metallic grey) with aluminium head drips, covers and external sills, 4. The interest of the window details (apart from the lug boxes mentioned above) consists in the internal treatment and centres round the architect's mistrust of plaster as a material for reveals. The treatment in the offices is to cover the structural concrete reveals with a pressed aluminium lining which runs behind the steel window section and is in turn covered, at the back of the mullion, by a strip of softwood, 6, 7. The joint between aluminium and softwood is marked by a characteristic checking of the wood, but both are painted in the same light colour for reflection and avoidance of glare, as in traditional Georgian reveals, which suggests (to the non-professional eye) a conventional plaster reveal. A similar treatment is used at the head and real plastering only begins at the ceiling.

the Marquise and the Conference Hall Roof

The marquise gives the passer-by in Great Russell Street an opportunity to wonder at the leadwork which is everywhere so surprising a feature of the external skin. Structurally the marquise is a piece of concrete 'carpentry' of the kind that prestressing has now made familiar. Precast, prestressed beams cantilever forward from the face of the building, and to these are bolted ('morticed' might almost be the word) a somewhat similar prestressed fascia. Traditional patent glazing bars are

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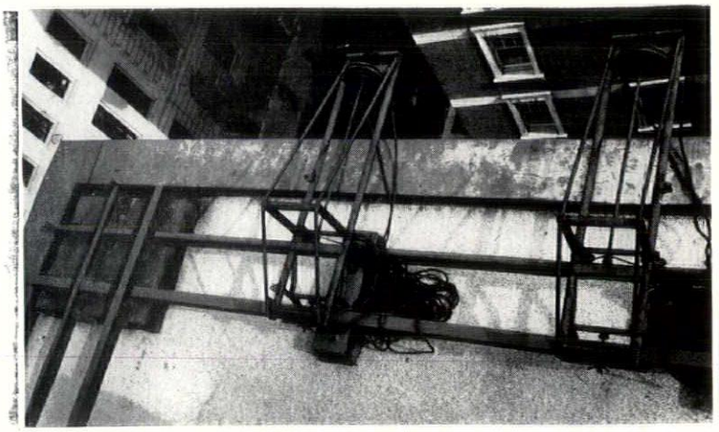
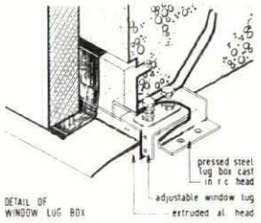
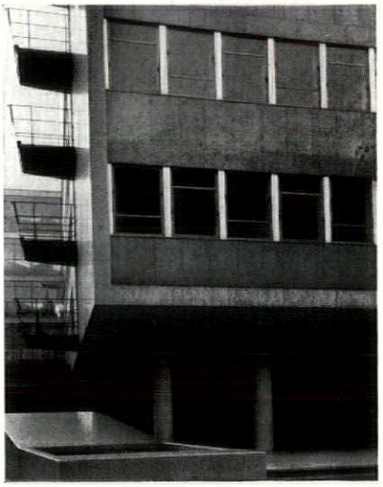


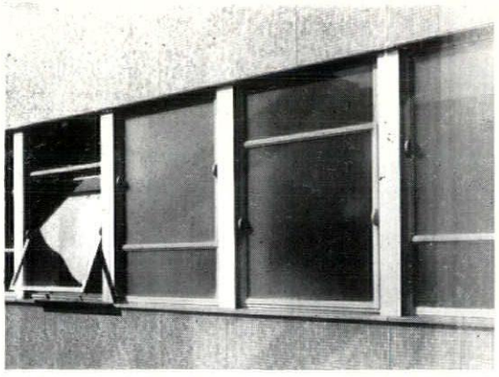
1, *rail and davits for cleaning scaffold.*



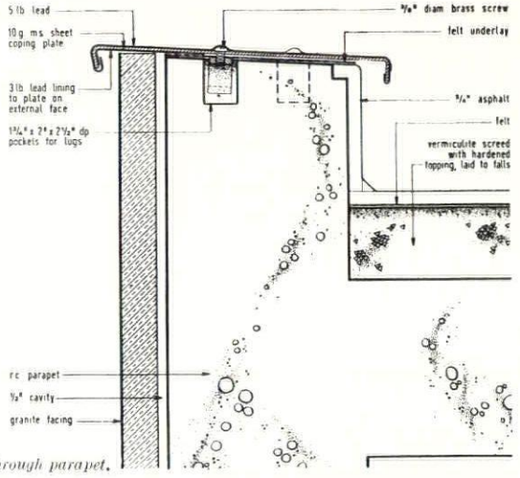
2, *detail of window lug box.*



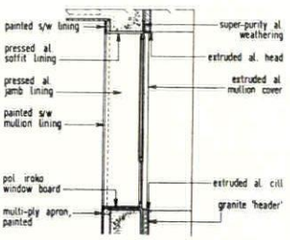
3, *external view of office window.*



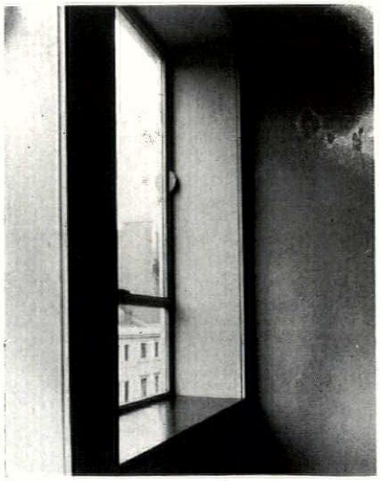
4, *external view of office windows.*



5, *section through parapet.*



6, *section through typical office window.*



7, *internal view of office window.*

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secured near the top surface of each structural member to hold the glass and both these and each member are covered with a 5 lb. lead flashing. The fascia itself, however, has a full dress lead coping similar in kind to those which cap each wall and its forward edge is covered by a remarkable cast lead fascia which is secured to the concrete and protected against creep by mild steel hangers, 8, 9.

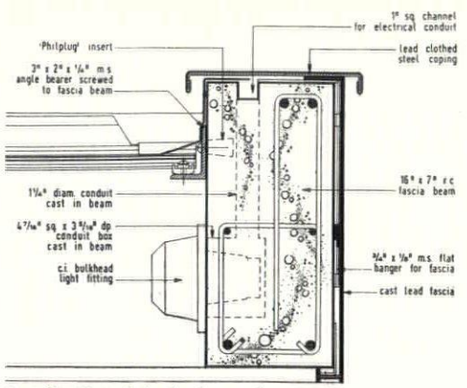
The conference hall roof, which is the *tour de force* of the building's coverings, is conceived in rather the same spirit, in that a system of construction which we have come to associate with lightweight structures is again invested with unexpected weight. The main bearing structure is a series of contiguous welded steel space frame trusses, the top boom of each truss being, on plan, a series of hexagons formed in steel angle, the points of each hexagon being connected to the bottom boom by a $1\frac{1}{16}$ in. diameter m.s. tube, 10, 11. These trusses were shop welded and after being placed on site were site welded to their neighbours along the line of junction of the hexagons. When this was completed triple glazed rooflight units were mounted in the timber hexagonal coffers (172 in number) bolted on to the top of the steel space frame. The depth of these coffers was determined by the need to provide a sufficient fall in the zigzag channels formed between them. 1 in. cork slabs laid in bitumen line the outsides of the wood coffers of the rooflights, the falls are formed in lightweight screed laid on building paper, and the entire space between lights is flashed with 5 lb. lead—also laid on building paper. As the wood coffers are tilted inward, and as a light fitting is fixed on the bottom boom at the centre of each hexagon, the pattern of the laylights is thrown into high relief and as each element in the repeating pattern is relatively large, the effect is to reduce the apparent size of the hall and to give something approaching intimacy. The coffers are painted off-white (Archrome 42), the plates on which they rest a deep grey (Archrome 46) and the remainder of the steel a lighter grey (Archrome 43), the motive for the choice of colouring being to throw the geometry into relief rather than to express the materials, 12.

the Memorial Wall

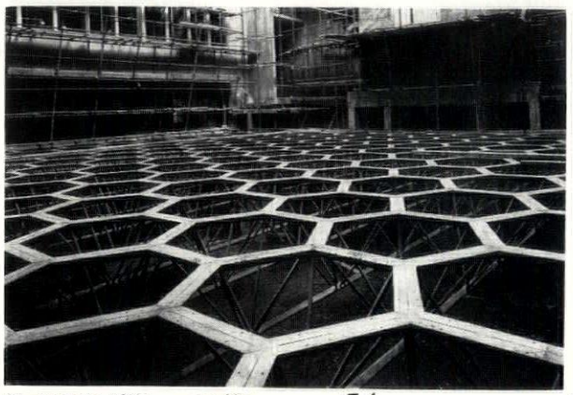
In its finishes the memorial wall (which closes the fourth side of the courtyard) has more in common with the remainder of the building than its form might suggest. These show the same preoccupations in the architect, for this must surely be the first monument in history to have built-in cleaning arrangements. The wall itself is concrete faced with green Genoa marble edged with Corris blue slate, but it is flanked and topped with a screen of toughened glass (Pyrex) rods, designed to interrupt the view of Lutyens' white tiled, narrow 'light' wells beyond; and above this again is a canopy, or rather a giant pelmet, to conceal not a curtain rail but a gantry for a cleaner's platform and a sparge pipe for the cleaning of the rods, 13. The glass rods are exceedingly strong and are unlikely to be broken in the course of nature but, for fear they should be, the fixing can be unlocked at the top of each to allow new rods to be easily inserted, 14, 15.

the Foyers Windows

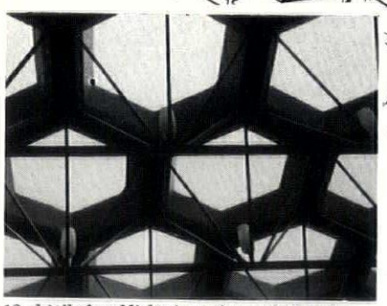
One last element in the outside



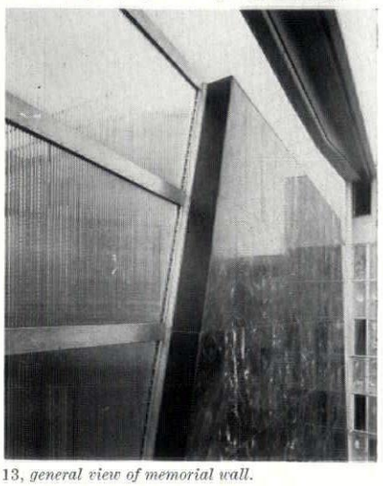
8, *section through fascia of marquise.*



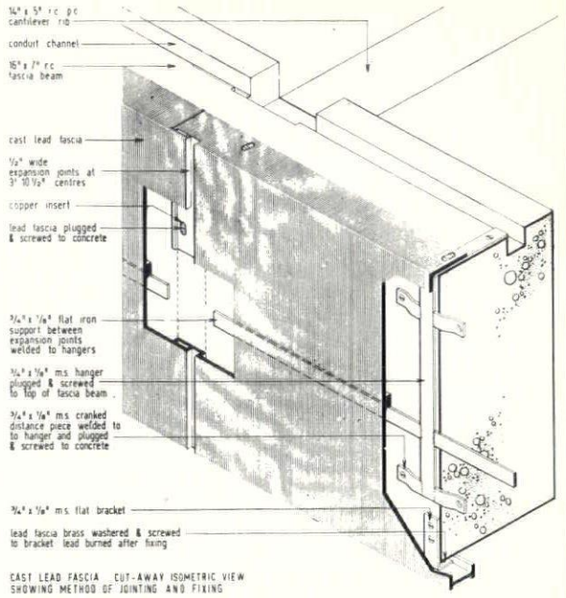
10, *progress photograph of assembly hall roof.*



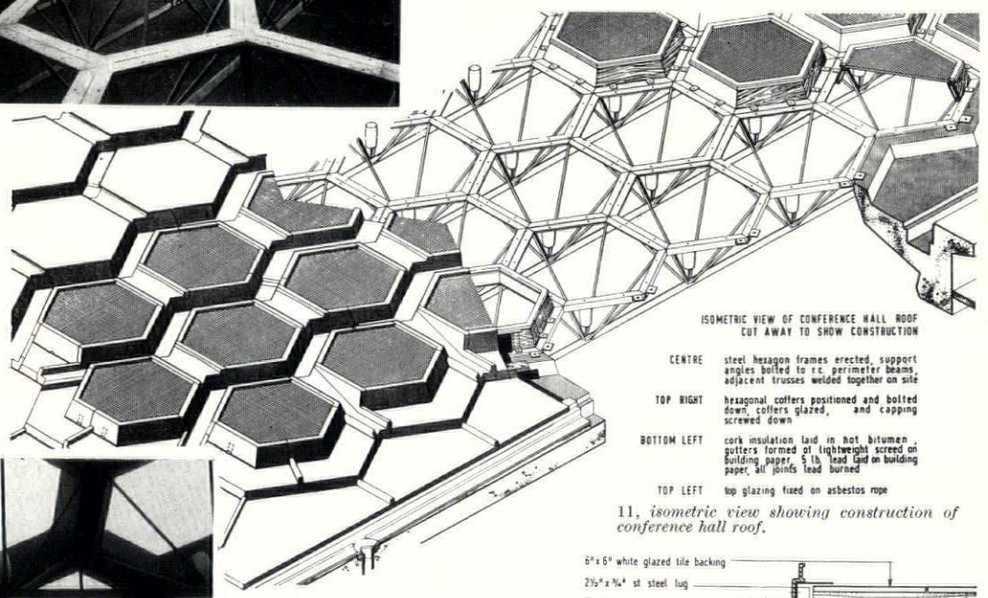
12, *detail of roof lights in conference hall roof.*



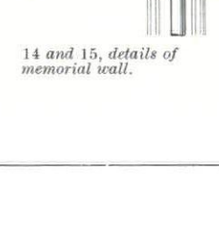
13, *general view of memorial wall.*



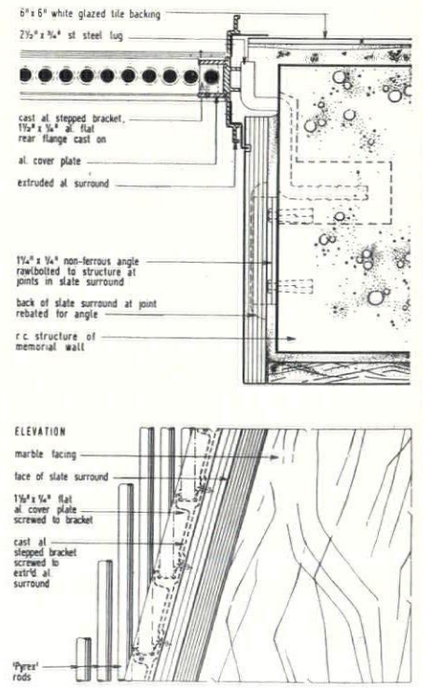
9, *cut-away isometric of joinery and fixing of cast lead fascia to marquise.*



11, *isometric view showing construction of conference hall roof.*



14 *and* 15, *details of memorial wall.*



skin which calls for special comment is the glazed screen which encloses the ground-floor and basement foyers. Since this screen weaves in and out of the structural frame with considerable freedom, it gives rise to a series of very taxing junctions which have been detailed particularly well, 16. Two of these are illustrated here. One is taken at the head of the horseshoe stair leading to the conference hall at the point where the stair roof enters the granite face of the facade; and the other is taken at the other side of the stair and at a lower level where the glass screen turns into the building, to pass on the inside of one of the structural columns, and compels a most intricate crossover between the vertical glazing and the edge of the structural floor. The essential of both these details is, of course, that the transparent planes of the glass should pass and repass the various barriers with a minimum of apparent fuss. This they do. Thus, to take the roof detail first, only the shallow bronze channeling and beading is allowed to read along the glass edge, 17. The lead fascia of the roof finishes so close against the channels that it adds almost nothing to the visible thickness of the junction, so that the thin dark line passes straight into the depths of the building without hindrance. Above, the lead of the fascia passes straight through the granite facing and turns at right angles (out of sight) to form a flashing. The same sense of effortless economy is given in the second detail (which is, incidentally, an internal shot), 18. The face of the edge beam coincides with the mullion. The mullion is formed of a mild steel T clothed in teak. Where it passes the edge beam, part of its depth is cut away to leave a comparatively narrow, dark line. This is sufficiently wide to mark the continuity of the glass it edges, but not so wide that it will unduly break the line of the edge beam.

The surface of the floor above is marble. The balusters pass through preformed holes in the marble slabs and are secured in a concealed core-rail which runs beneath the marble and is bolted to the concrete. There is thus no danger of movement in the rails splitting the marble.

Internal Finishes

The internal finishes are the easier to discuss because they have been built up on a set of coherent principles. One of these arises from the architect's healthy fear of plaster cracks. The avoidance of all possibility of these has led to a very characteristic grammar of white surfaces. As we have already seen when discussing the window reveals, small and tiresome areas which are traditionally plastered, are usually metal covered and painted, 19. Fair face concrete, also painted, is even used round the edge of the ceiling of the conference hall itself. Where plaster was considered unavoidable (as, for instance, in the main foyers) it was designed to be laid as a continuous operation, with no dry joints. The really big ceilings were a plasterer's *tour de force*: an army of plasterers was lined up at one end of the ceiling and ordered to proceed *en masse* to reach the other end without a stop. In addition $\frac{1}{16}$ in. gaps were left round all column heads to avoid cracking through structural movement, and similar gaps were left at the ceiling edge wherever plaster passes behind wood panelling.

Another characteristic of the building is the use of wood as a wall finish, either as a veneer or as slats. Apart from painted softwood, only three timbers are in general use in the walls: door and window frames are teak (except for the immense glazed sliding doors of the conference hall which are of Honduras mahogany, 20), the various forms of acoustic wall are Columbian pine, the most frequently met veneer is cedar of Lebanon (all of which, incidentally, is cut from a single tree), and other veneers are Jugoslav beech and crown elm. In a modern building the integrity of the wall is constantly threatened by the circumstance that it must conceal so much within its thickness: it must contain every kind of wire, tube and duct, and each of these will require outlets and often access as well. If we are not careful the wall will become a chapter of accidents. To avoid this happening here and to preserve the integrity of inside walls a certain grammar of detailing has been consistently followed. Window and door frames are invariably flush with wall or sill with square sunk quirks at their only mouldings, 21, 22, access doors in veneered walls (of which there are many superlatively neat examples) are invariably secret, without visible frames, 23, and most characteristic of all is the free use

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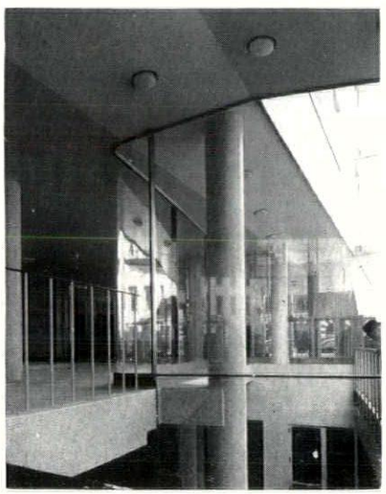
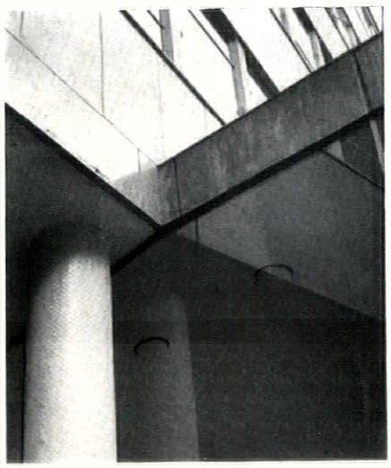
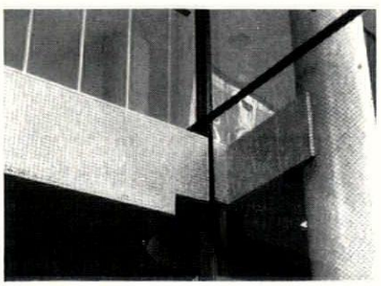


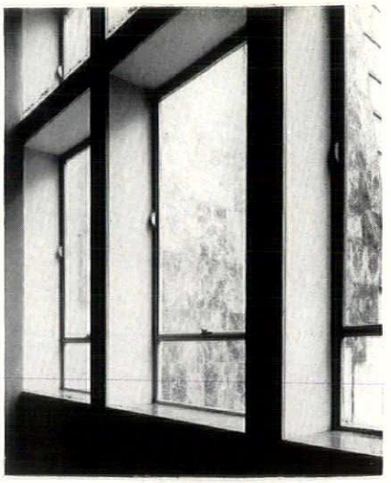
16, *general view of glazed screen on Dyott Street facade.*



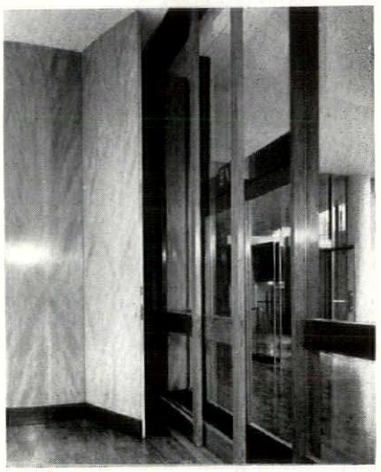
17, *detail of junction of stair roof, glass screen and facade.*



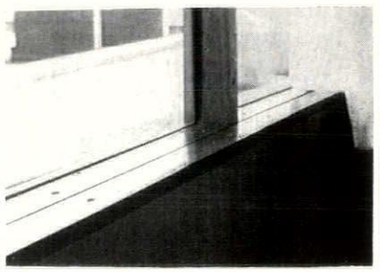
18, *detail of junction of glazed screen with balcony edge beam.*



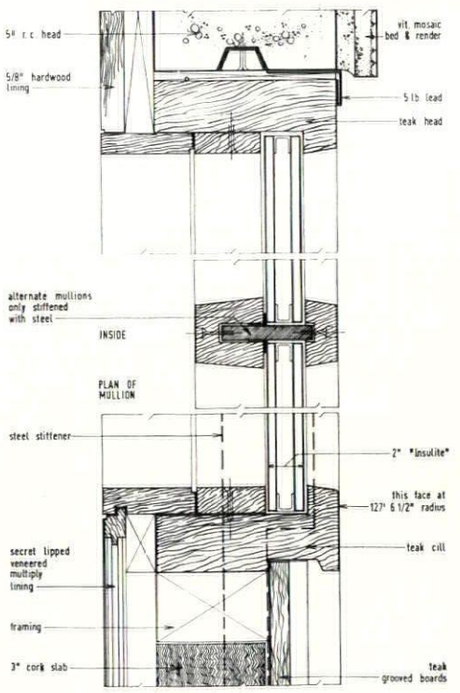
19, *interior view of committee room windows.*



20, *sliding doors to conference hall.*



21, *detail of council chamber window.*



22, *section of council chamber window.*



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continued from page 426]

of Copenhagen slatting to serve the double purpose of sound absorption and the concealment of extract ducts and goodness knows what else, 24, 25. The rift sawn Columbian pine of which these slats are made figures importantly elsewhere and is used always with exceptional skill and care. It is used, for instance, on the curved balustrade which overlooks the upper foyer of the memorial hall, 26, 27. Here the slats are more properly described as rods as they are round in section and, being fixed vertically at close spacing somewhat forward of the balcony edge, are used to make a screen and to reinforce the curved plan shape.

The other use of rift sawn Columbian pine slatting, which must be the last item to be described in this

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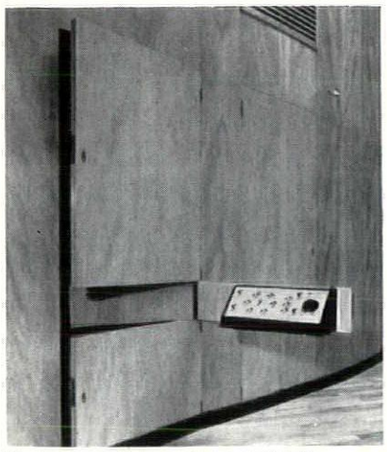
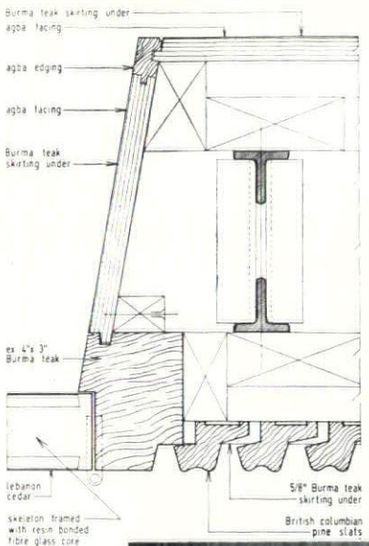


23. *access panels in conference hall walls.*



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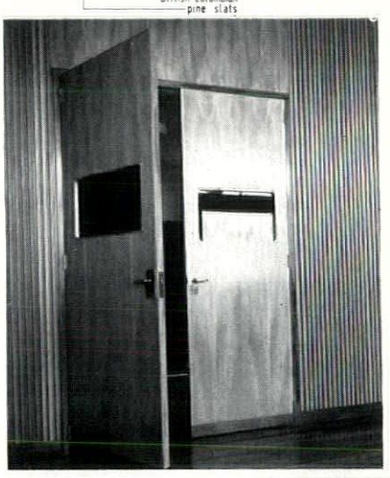
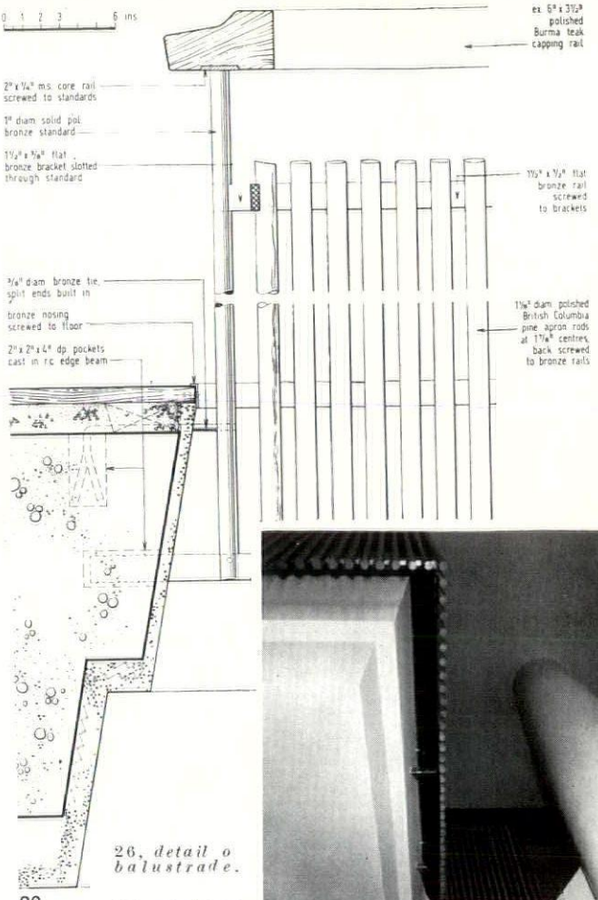


24, *detail of Copenhagen slatting.*

25, *doorway in committee room showing Copenhagen slatting.*

25



26

26, *detail o balustrade.*

27, *photo of balustrade from below.*

27

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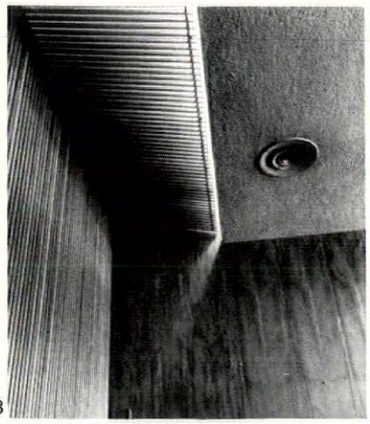
short review, is as movable lattices to conceal fluorescent lights and other impedimenta in the ceilings of council and committee rooms, 28, 29. These are meticulously made and, to ensure that they can be aligned perfectly, are provided with screw gauges on the hangars. Whatever else may be said for this building, it provides that precision in its visible parts which modern architecture promised from the beginning but which is so rarely fulfilled.



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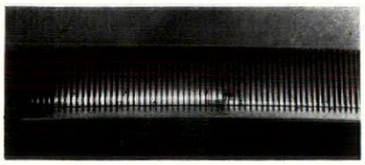
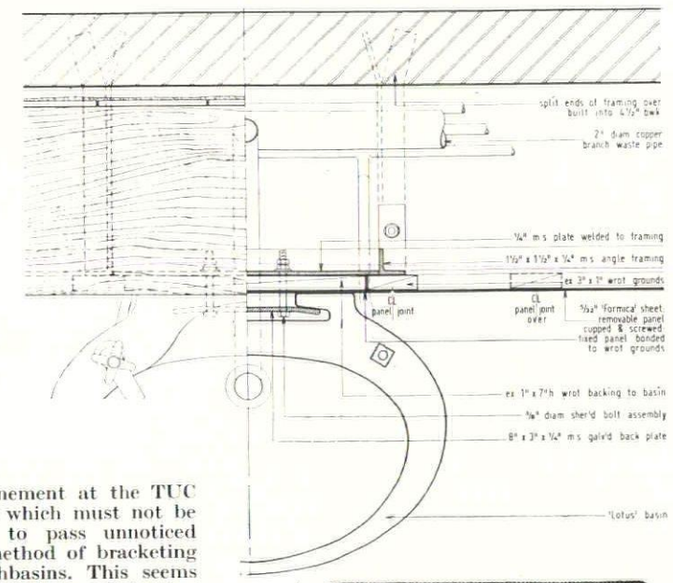


29

28, *slatted screen to fluorescent lights in committee room.* 29, *slatted screen to fluorescent lights in council room.*

4 THE INDUSTRY



A refinement at the TUC building which must not be allowed to pass unnoticed is the method of bracketing the washbasins. This seems to mark the culmination of the efforts of architects and the industry to do away with those shameful festoons which hung beneath our plumbing. The first stage was to hide the main pipes in a duct, next came the substitution of the bottle trap for the P trap, and now at last Messrs. Adamsez and the architects have found how to do away with the visible bracket. Nibs are cast on to the back of the basin and these are clamped with a plate to the mild steel framing behind.

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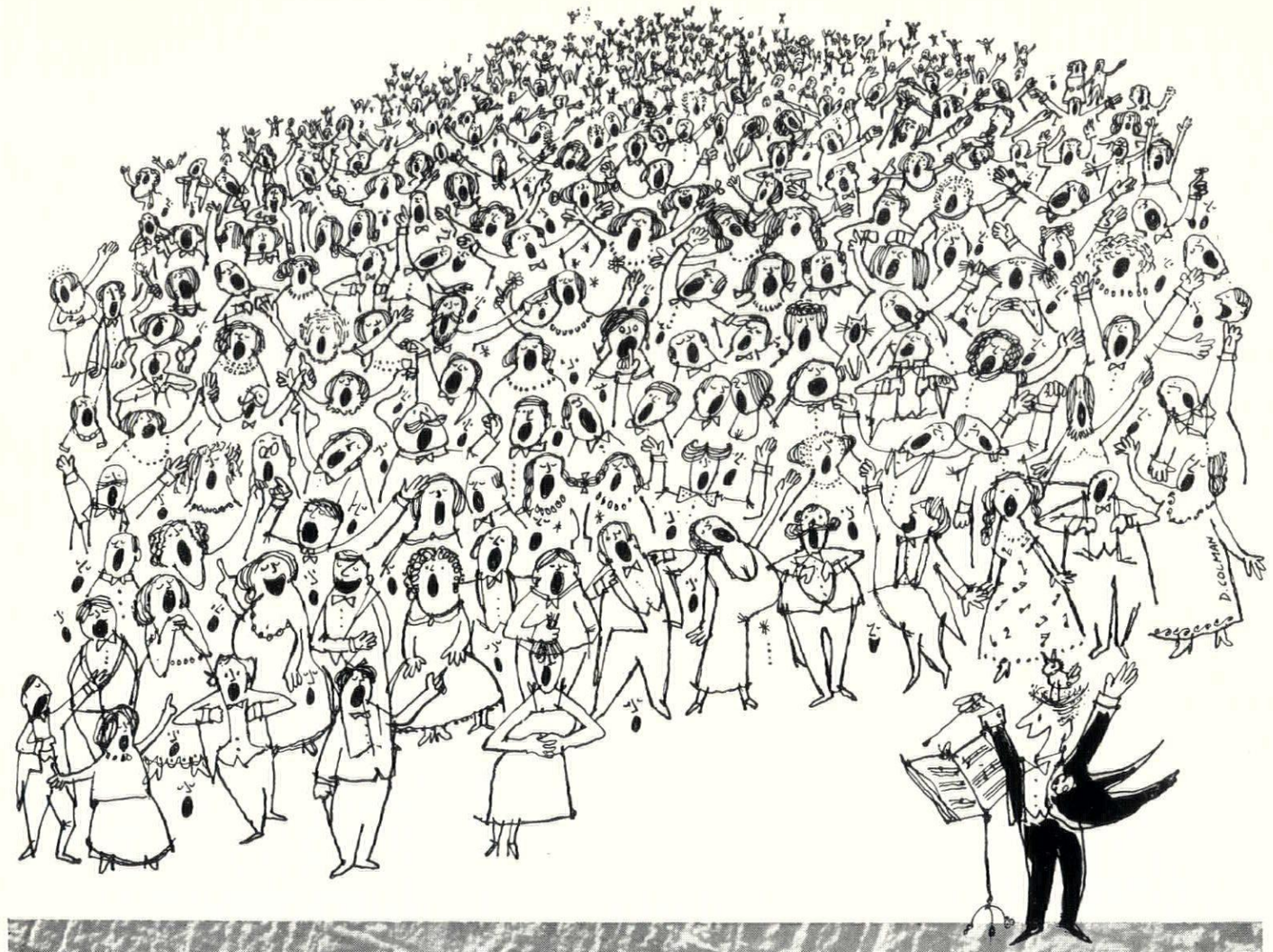

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continued from page 430]

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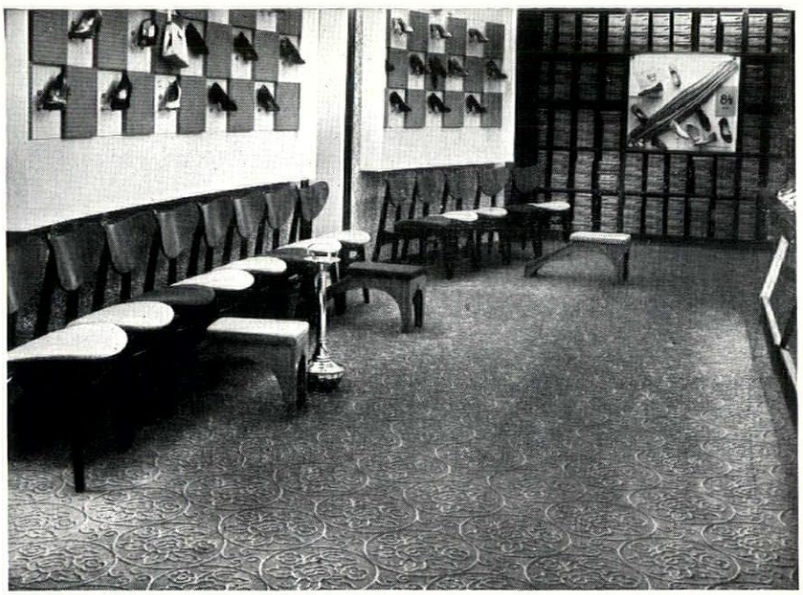

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