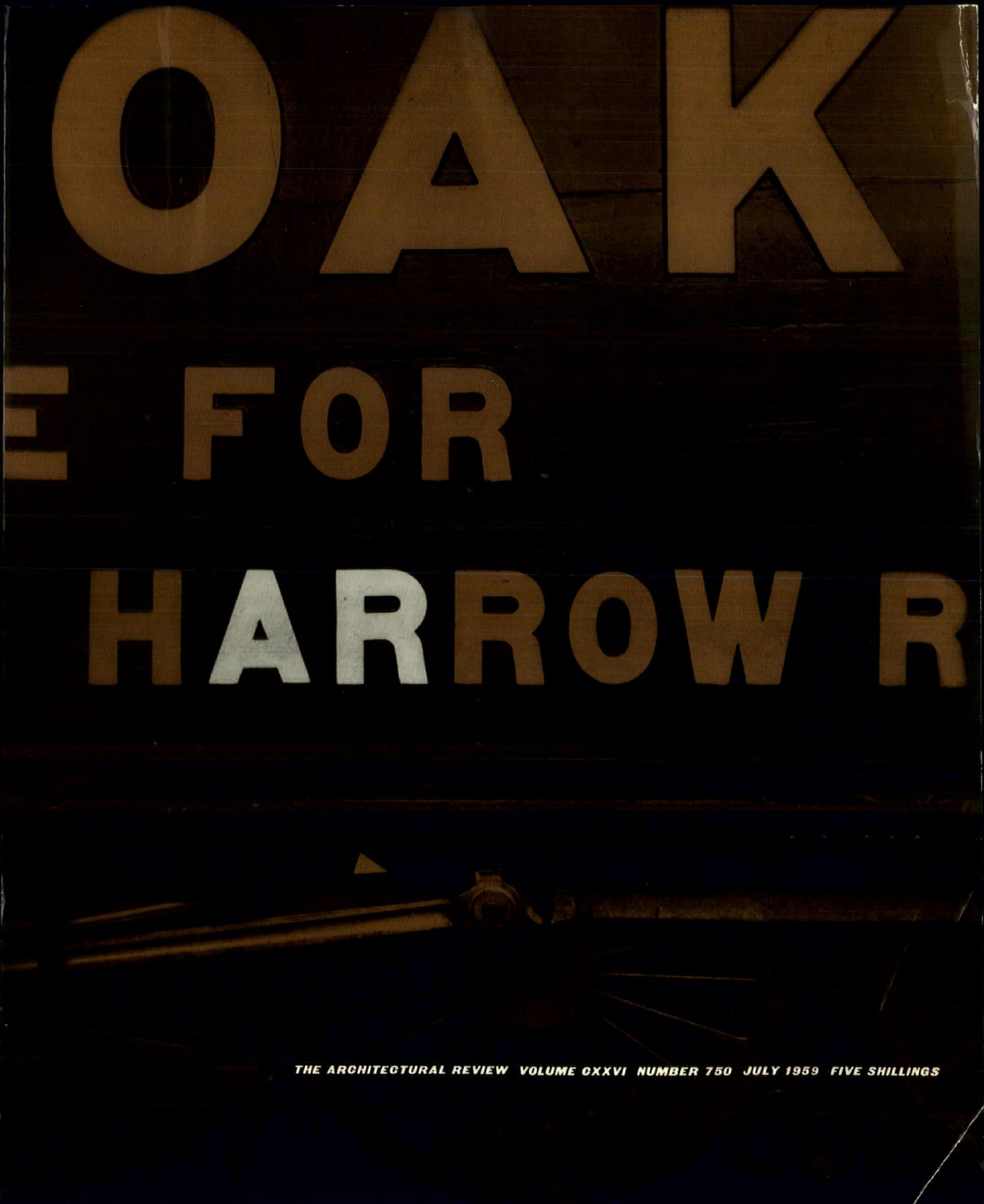

THE ARCHITECTURAL REVIEW VOLUME CXXVI NUMBER 750 JULY 1959 FIVE SHILLINGS

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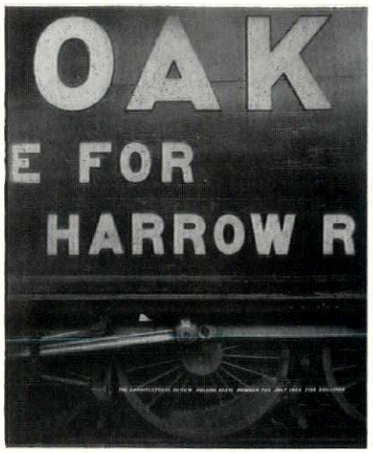
THE ARCHITECTURAL REVIEW

Volume 126 Number 750 July 1959



This month's cover is a symbolic montage of lettering in motion; steam-age railway typography mounted on the steam driven wheels that were its reason for existing. An article on pages 53-56 of this issue examines the strength and nature of the great steam-age tradition of railway lettering, epitomized in this station name-board from Royal Oak on the old Great Western Railway, and goes on to suggest the measures that must be taken to retrieve railway lettering from the state of genteelism and unreadability into which it has sunk since that tradition was broken in the nineteen-thirties.

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This issue appears more than a month late owing to the recent dispute in the printing industry. An August-September issue will appear in a month's time. The loss of one issue will be made up by extending subscriptions by a month.

BOOK REVIEWS

Not Dark nor Satanic

THE FUNCTIONAL TRADITION IN EARLY INDUSTRIAL BUILDINGS. *By J. M. Richards. The Architectural Press. 36s. net.*

The word 'functionalism' has been more associated with contemporary architecture than any other. It is a word which, constantly—and often deliberately—mis-applied, continues to engender heat between those who maintain that functionalism is the basic architectural philosophy of our time and those who are emotionally influenced by the value bestowed on buildings by time and things past. It is to the occupants of the latter camp, whose prejudices have done so much to label functionalism a dangerous and seditious creed, that Mr. Richards primarily addresses his book.

And a very beautiful book it is, too. Supported by Eric de Maré's wonderful photographs—there are over 200 of them—the author sets out to prove that, far from being a manifestation peculiar to our day, functionalism is an architectural tradition which has fulfilled itself in nearly every period of our history. He describes it as

> 'the principle that the process of designing a building begins with a close analysis of the needs it is to serve. It has as its object the fulfilment of such needs as logically and economically as possible, by taking full advantage of the means and materials available. Its aesthetic character is created as part of the same process.'

With that as a premise, what buildings more functional—if the time of their erection is taken into consideration—could one find than the cathedral and the castle of the Middle Ages, created by the demands of liturgy or defence?

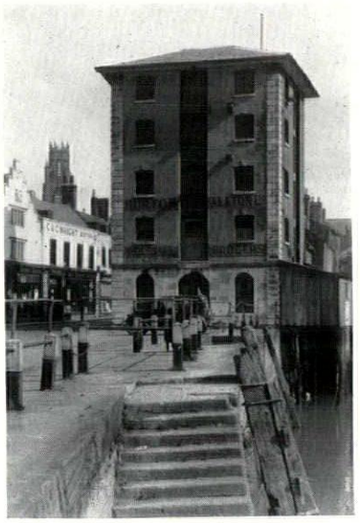
But this study has nothing to do with the mediaeval aspects of functionalism; its concern is the buildings of the Industrial Revolution, the period which made the last half of the eighteenth century and the first half of the nineteenth one of the greatest in our history. We are now far enough removed in time—but only just—for due appreciation to be made of the aesthetic qualities of the buildings which the exigencies of manufacture and trade demanded of architecture. We can now look dispassionately on most aspects of the nineteenth century and award the 'dark Satanic mill' very nearly as much adulation as was being accorded the classical temple of the Ægæan in the very year the mill was going up on the steep side of some Pennine valley. The reason for this, it is explained, is 'the automatic operation of the cycle of taste' and the current response 'to those buildings which possess the qualities our own aspire to.'

Was it no more than thirty years ago that we rediscovered the works of our early civil engineers, giants like the canal builders, Telford and Smeaton, and the railway men,

Brunel and Stephenson? By aqueduct and bridge, these men contributed as much to the formation of the beloved and familiar English scene as ever did the mediaeval manorial system. Yet it was the works of such engineers, rather than those of the architects, which opened our eyes in wonder at the way the challenge of expanding industrialism and its entirely new problems could be met. The architects of the day were still, for the greater part, over-obsessed by pedantry. New materials, new forms of structure, were the obvious answers to fresh challenges, and such is the case today when we find ourselves confronted with a whole new series of demands in a rapidly changing world. The current exigencies of architecture have made us sympathetic to those who grappled with them in a former era of equally drastic transformation. We discern in these early industrial buildings a preoccupation with functionalism which is very similar to our own. Let this sympathy, then, be as whole-hearted as we can make it!

For the modern architect has reached a crucial point. Presented with new technical means, new conceptions of planning and new aesthetic ideals, he is still at work in a revolutionary period. But when the impetus of revolution eases up, as inevitably it must—for, as Mr. Richards observes—no art can remain for ever in a state of revolution, consolidation will follow, consolidation based 'on the creation of a vernacular language in which the most worth-while ideas of all the innovators gradually become merged.' The perfection of such a vernacular is, he contends, architecture's special need today. And how can this be better done than by striving to perpetuate the functional tradition which inspired the vernacular of these early industrial buildings? This is, indeed, something to think about.

But more must be said about the beautiful pictures in this book and the admirably concise and instructive notes which accompany them. Docks, warehouses, factories, breweries, maltings and oast houses, mills—both wind and water—and a particularly interesting one on the Royal Dockyards (Mr. Maré commands additional respect for his success in getting his camera into these practically sacred precincts)



2, warehouse at Boston.

are sections into which the book is divided for individual treatment.

This should prove an invaluable and unusual guidebook to everybody who is conscious about what is known as our 'architectural heritage'—especially to the traveller who has had his fill of church and castle. It should be a good dollar earner, too, for it deals with an element in the English scene of which the American visitor, in his quest for culture, is probably not yet fully aware.

R. P. Ross Williamson

Coloured, Surprising, Mysterious

GARDEN DESIGN. *Sylvia Crowe. Country Life Limited. 52s. 6d.*

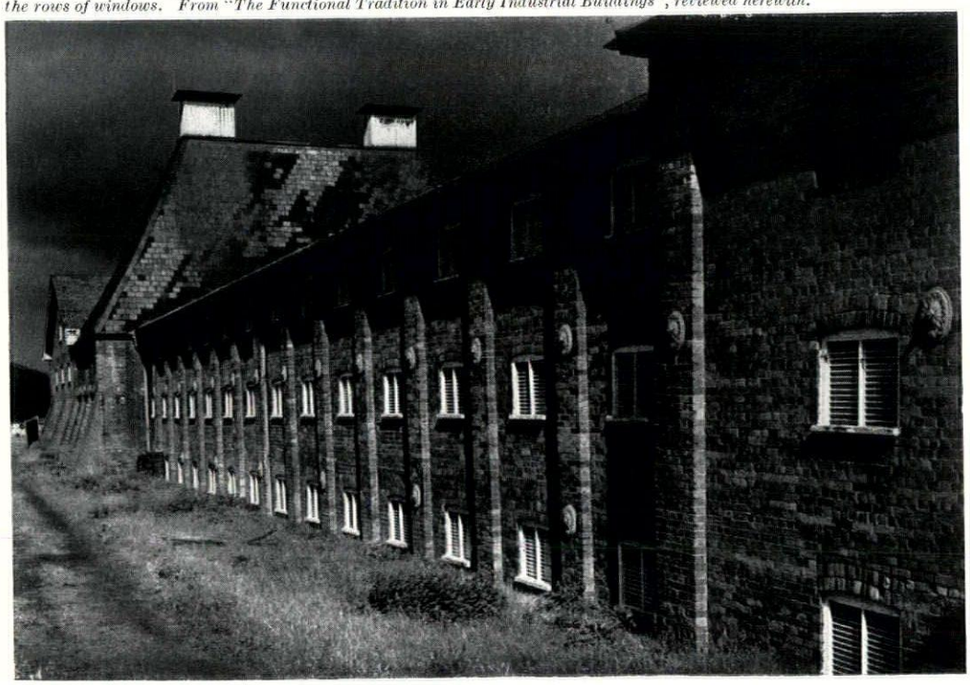
Any attempt to trace 'certain principles of composition which remain unchanged because they are rooted in the natural laws of the universe,' and to show how they can be employed in design for the surroundings of modern facilities—flats, factories and schools—is prone to the error of losing sight of these principles before the imagined demands of our modern age. This book suffers from the phantasm. The best it can do with factory gardens is to advise 'broad simplicity' and (very practical) polyantha roses as a permanent substitute for bedding out. 'Simplicity' and 'sincerity' are the author's favourite terms; we learn, in fact, that bedding out coincided with a general lowering of taste. The new fashion for the High Victorian which Betjeman and others are establishing in architecture has not yet penetrated Miss Jekyll's 'natural' woodland.

The principles are brought out well enough in an historical beginning and in the chapters on design. The book is too skimpy on Italy and France, but makes a very good analysis of Stowe, with plenty of evidence for the reader to discover that the earlier formal plan is the real backbone of the park. The author is quite aware of axial virtues—in their place, which is timed by a stop-watch at about 1720, when landscape gardening began. 'To the extent that the French garden expressed the power and magnificence of the monarchy, so it must fail in truth today.'

Gardens are not simple or truthful, as one of the illustrations—a fantastic tangle of weeds and flowers in Onslow Square—points up. They are perverse, quite often unmanageable, and the best ones are highly-coloured, surprising, and full of mystery, with hints of other worlds beyond. The best complement to a factory is a garden to remind the operatives of history, philosophy and art—all of which can be captured with the wonderful resources of today's plant materials, sculpture and technical skill. I am sure that factory workers would be bored by the corrugated shuttering which this designer uses. After arriving at a car-park laid out in quincunxes of pleached lines, they ought to be able to stroll to the orangery for the coffee break, and have lunch on a marble terrace designed for kings and princes. Such things at least—the book has everything but imagination.

Christopher Tunnard

1, malting at Colchester, 1853, with double kiln on left and a scale of sometimes less than 6ft. between floors and therefore between the rows of windows. From "The Functional Tradition in Early Industrial Buildings", reviewed herewith.



Large House, Small Guide

CASTLE HOWARD. *Castle Howard Estate Ltd. 1958. 3s. plus 9d. postage.*

No bookstall browser can claim ignorance of the Pitkin Pictorials, that growing series of neat, slim, shiny, attractively printed, large-paged, inexpensive, well illustrated and generally informative guides to the Royal Family, stately homes, cathedrals and other national institutions. Mr. George Howard's guide to what Horace Walpole called 'the grandest scene of real magnificence I ever saw' is an independent publication, though it is of Pitkin format. It includes a plan of the house, an approach map and a handy aerial view which is simpler than Kip or E. H. New and clearer than a photograph. The booklet starts appropriately with the great obelisk and gives us the inscription on it; few stop to read it, it is not in the big books, and it records for all time that Lord Carlisle 'began these works in the year MDCCII.' Whatever these works were, the house was begun, as we are soon told, a little earlier.

This sort of guide is meant to be a companion on the spot and a souvenir afterwards. Between brief histories of the house and the family are sandwiched a room-by-room tour of the apartments and a description of the 'outworks' scattered through the Castle Howard landscape. This sandwich, seasoned as it is with about forty illustrations, will sustain both the visitor who has left his Whistler at home and the many who have no Whistler. And it will whet the appetite of the non-visitor. The section on the interior of the house and its contents is less of a piece than the rest, being held together only by the sequence of rooms through which it leads. While we should like to know much more about the collection and its history, and something about the disastrous effect on it of past sales and of the fire of 1940, there is here a good deal of information about the decoration and furnishing of the house that is not available elsewhere. This section in fact shows both how useful and how desirable a full-scale catalogue would be.

The text is necessarily short, but the more curious are referred to Whistler. Some of the commentary on the contents of the house is rather glossy and gratuitous—you can imagine the living guide rattling it off—but the general house-viewing public wants just this sort of presentation, though the visibly repainted colour photograph of the hall before the fire is a travesty. The other plates are good.

K.D.

SHORTER NOTICE

Danish Made

BRUGSKUNST. *By B. and C. Enevoldsen. Publishers, Arkitektens Forlag. Price D. Kr. 28.*

An illustrated catalogue of what's going on in the furniture world in Denmark. Examples of furniture, textiles and light fittings are collected under seven headings, each with a short introductory text in Danish, German and English. Some of the items are twenty years old, but all are in current production and all are of recognized high quality.

The captions to the photographs consist purely of basic useful information about each piece, including sizes, price, finishes, name of the designer and manufacturer, and no attempt is made to discuss the design. The introductory texts to

each section give very elementary general advice, presumably aimed at the lay public. They also tell us that well designed beds scarcely exist in Denmark and that dining tables and chairs are getting lower. For the expert the inclusion of dates in the captions provides an interesting chronological study of each designer's work, particularly in the chair section which is by far the largest and richest.

This is a pleasantly produced and unpretentious book. The photography is honest and straightforward and never over-dramatizes, but to some eyes the sameness of this honesty may seem dull. But can this really be anything like the total of this quality of design produced in Denmark in the last few years? The scope of the textile section seems unnecessarily restricted and there are notable gaps among the light fittings.

J.P.

BOOKS RECEIVED

MODEL MAKING IN CARDBOARD. *By Thomas Bayley. Dryad Press.* 12*s.* 6*d.*
THE DESIGN OF PHYSICS RESEARCH LABORATORIES. *By the Institute of Physics. Chapman and Hall.* 21*s.*
DESIGN MANUAL FOR CABINET FURNITURE. *The Furniture Development Council. Pergamon Press.* 17*s.* 6*d.*
PLUMBING. *By Sydney Webster. B. T. Batsford Ltd.* 30*s.*
A LAND. *By Jacquetta Hawkes. Penguin Books.* 3*s.* 6*d.*
ALANYA. *By Sefton Lloyd and D. Storm Rice. British Institute of Archaeology at Ankara.* 42*s.*
MASTERS OF MODERN ARCHITECTURE. *By John Peter. B. T. Batsford Ltd.* 70*s.*
PARKING. *By G. Baker and B. Furnaro. Reinhold Publishing Corporation.* 76*s.*
PLANNING 1958. *American Society of Planning Officials.*
STRUCTURAL MECHANICS. *By W. Morgan and D. T. Williams. Pitman.* 30*s.*

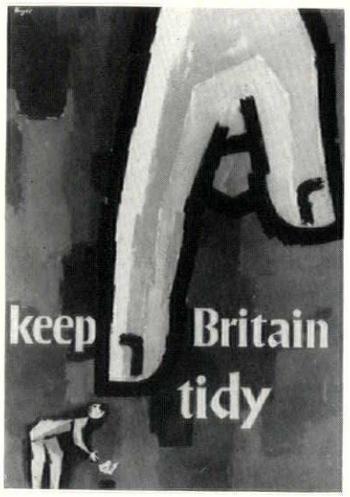
MARGINALIA

Transported Bath-house

Arnos Court Bath House, a prime example of the functional folly, detailed in Batty Langley Gothick and built around 1760, was in a condition to cause some alarm two years ago, having become so decrepit that rescue seemed unlikely. However, a dramatic gesture by Clough Williams-Ellis has resulted in its partial salvation, not on its original site outside Bristol, nor in its original function as a bath house, but as an ornamental colonnade, 3, in the gardens at Portmeirion, the resort-village on the Welsh coast that is fast becoming, in Mr. Williams-Ellis's words, a home for fallen buildings. The AR has, before now, expounded the case for preservation through transportation (*Exporting Buildings*, April, 1953) as a possible solution to the problem of the eccentric or not-quite-first-class monument, and this particular instance is a step in that direction.

Litter-Conscience

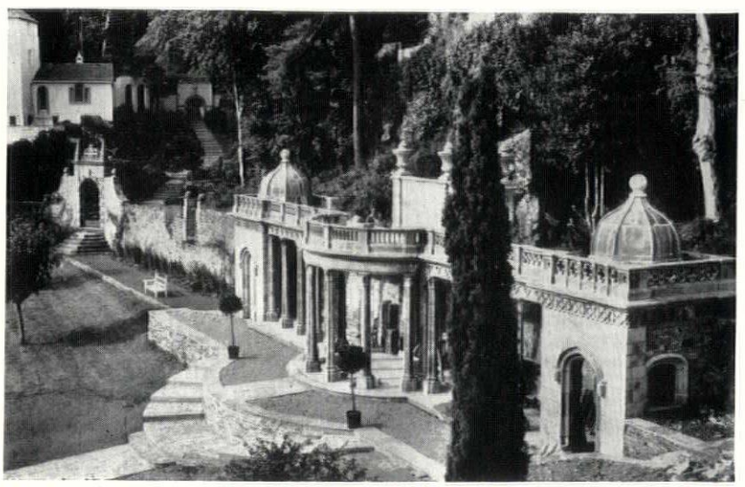
Since the dropping of litter is a bad habit that afflicts all grades of society, including readers of *The Times* (Marginalia, October, 1955) the campaign to Keep Britain Tidy must, presumably, attack on different levels at different seasons. The neat circular arrow-and-litter-basket roundels with which the campaign started are still with us, but have probably become ineffectual with over-familiarity; last year's painfully sentimental girlie-with-doggie seems to have been ridiculed even by those it was intended to have its effect upon. This year the attack has shifted again—and for the better it seems—and we now have the forceful expressionism of Hans Unger's *Finger of Conscience*, 4, which will be the main



4

visual weapon of this summer's campaign. The strong colours and easily apprehended symbol should give it far more punch than the flower-bordered genteelisms of the standard poster still current in the Royal Parks and the campaign deserves all the success it can get.

However, well-wishers to the campaign might still like to be re-assured that solid motivational research as well as the talents of distinguished poster artists are being put to work. Is it sufficient, for instance, to prod the public's conscience, in this way, without also reminding them where they should put the litter they ought not to drop?


3, Bristol bath-house now re-erected as an ornamental colonnade in the gar dens at Portmeirion.

OBITUARY

J. L. Beddington 1893—1959

One of the only ways in which one could offend Jack Beddington was to cast a slur on the advertising business. This was not because he took particularly seriously what is called the art of advertising but because he was devoted to the arts of painting and film making.

He considered that big firms with money to spend on publicity should employ real artists and not 'commercial artists.' He saw that the days of the rich private patron were numbered and that commerce was the only hope, for most artists, of earning a living. Therefore it was his constant endeavour to persuade commercial firms not always to stick to direct advertising of their products but to venture out into the world of films, literature and art galleries: at the same time he took much trouble to persuade artists and writers that there was nothing shameful in accepting commissions from say petrol or chocolate firms, particularly when they would not be required to paint or write anything about the products.

His warm and generous temperament was combined with his knowledge of painting and a shrewd and rapid judgment of character. He was the ideal impresario. Though he was a very kind man, he was also forthright. He would help a bad artist privately but he would never employ him. I have been with him when some sad creature with a training in a school of 'commercial art' came with a portfolio—some ideas for advertisements. 'Of course, this is only a rough draft' the man would say. 'I would rather see some rougher. This is no good. What is your sketch book like? What are you really interested in?' He was always ready to see people, even the most persistent or least talented, again and again. His joy of fulfilment came when he discovered genuine talent. No matter how gauche, proud or difficult the owner of that talent was, Jack went out of his way to encourage and employ him. His appreciation was catholic and he had an eye for a man who could draw with a comic line as well as for the most grandiose romantic or austere abstract artist. In films he could pick out the director with an original viewpoint even if the film of his which he first saw was of some highly technical subject.

The sense of quality which distinguished him came partly from his family. His aunt was Ada Leverson, Oscar Wilde's 'Sphinx' and the author of witty Edwardian novels recently reprinted. His father was a notable lawyer and his mother was a cultured French woman. His wife and children and his gardening in the country were his sure and steady anchorage in the turbulent sea of telephones, committees, banquets and interviews which comprised his public life in London.

No words can express the fun it was to be in his company—the shrewd glance of those almond eyes, those excessively spruce clothes which showed the Balliol man of the Raymond Asquith era and the officer of the 1914 war, the delight in being laughed at, the intense enjoyment of life which he communicated to everyone who had the privilege of meeting him. Above all there was the continuity of his loyal friendship through poverty or riches, disgrace or success.

John Betjeman

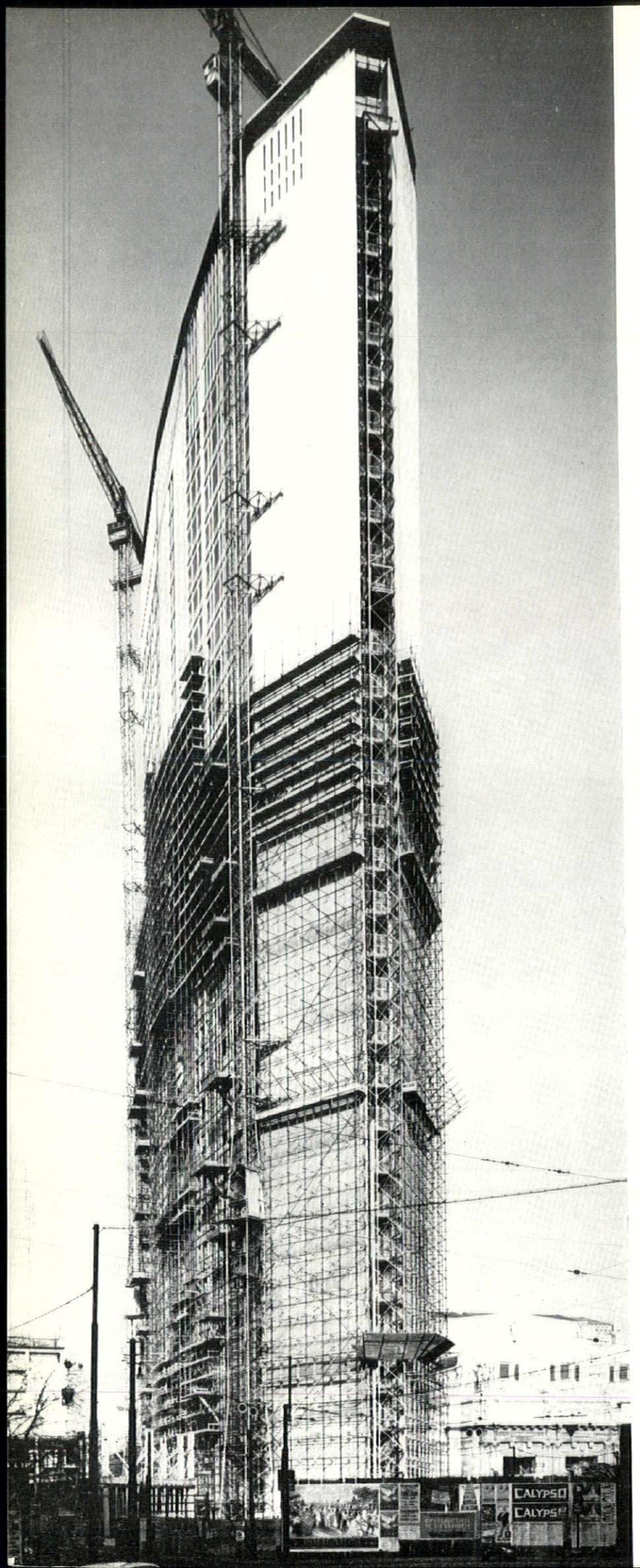
CORRECTION

In the article on the offices at Eastbourne Terrace, Paddington, in the April issue, pages 237 and 298, the glazing was referred to as 'double glazed units'; this should have read 'dual glazed.' A double glazed unit is one where two individual pieces of glass are glazed into a frame with a parting bead in the centre and a dual glazed unit is one which is made up as a single unit with two sheets of glass hermetically sealed.

Also in the article on Two LCC Comprehensive Schools (May AR, pages 306–313) the following credits should have been included: Deputy Architect to the London County Council, F. G. West. *Garratt Green School*, Group leader, M. Kenchington, Job architect, K. Jones. *Kingsdale School*, Group leader, A. Donnan, Job architect, L. H. Lloyd. We apologize for this omission.

ACKNOWLEDGMENTS

COVER, Browne, Arphot. BOOK REVIEWS, pages 1—2: 1, Eric de Mare; 2, John Piper. FRONTISPIECE, page 4: Fototecnica Publifoto, Milano. HOUSE AT MONGEWELL, pages 8—10: Sam Lambert. HOUSE AT FAWLEY BOTTOM, pages 11—13: Sam Lambert. DATING MORRIS PATTERNS, pages 14—20: Victoria and Albert Museum. ROEHAMPTON, pages 21—35: 3, Oeuvre Complet, Corbusier; 4, Aero Material; 6, 9, 22, Sydney W. Newbery; 10, 11, 15. 17, London County Council; 12, 13, 16, 18, 19—21, 23, 26—31, 33, Galwey, Arphot; 14, Toomey, Arphot; 24, 25, Keystone Press Agency Ltd.; 32, Wainwright. INTERIOR DESIGN, pages 36—40: Offices in Hanover Square, 4, 5, Banham, Arphot; 3, 6—9, Galwey, Arphot. Boardroom in Grosvenor Place, Toomey, Arphot. DESIGN REVIEW, page 41: 1, 2, Heal's Contracts. THE COLLEGIATE PLAN, pages 42—48: 7, 9, Mann Bros.; 8, 11, 12, 19, 20, 25—27, Edward Leigh. CURRENT ARCHITECTURE, pages 49—52: 1, 2, John Pantlin; 3, Archie Handford; 4, Matthew Photography; 5, J. T. Walters; 6—9, Colin Westwood. RAILWAY LETTERING, pages 53—56: Browne, Arphot. WORLD, pages 57—60: Factory in New York, 1, Ezra Stoller; 2, 3, George Cserna; Bank in Brussels, 1, 2, Ezra Stoller; Petrol Institute in Rueil, 1—3, Laverton. Page 59, 2, Dr. Balch; 4, Campbell & Chipman; 9, 10, Duprat Photographe. MISCELLANY, pages 61—64; Exhibitions, 2, Photo Studios Ltd.; 3, Schone Kunsten der Gemiente, 's Gravenhage; 4, Arts Council of Great Britain. Floorscape, 1, 4, McCallum, Arphot; 2, I. de Wolfe; 3, Reece Winstone. SKILL, pages 65—68: 1, E. J. Studios; 3, I.C.I. Billingham Division; 4, Northern Aluminium Co. Ltd.; 5, T. I. Aluminium Ltd.; 7, Saga Services Ltd.; 8, Evening Post. THE INDUSTRY, pages 68—70: 2, Photo Finishes Ltd.



The Pirelli skyscraper in Milan, designed by Ponti, Fornaroli and associates, with Pierluigi Nervi as engineer for the structure, is rapidly nearing its completion, as the picture on the left shows.
But this picture has a double significance. Not only does it show one of the most important new buildings in Europe, but it also shows a building in a controversial theoretical context. The picture was sent to the AR *by Gio Ponti with a covering letter pointing out that not all Italian architects had retreated from Modern Architecture. The reference was to Reyner Banham's article* Neoliberty *which appeared in the* AR *for April* 1959, *and posed the problem of an apparent revival of an historical style—Art Nouveau—in recent Italian deviations from the accepted canons of Modern Architecture.*
The boat-like, anti-slab plan of the Pirelli skyscraper is also a deviation from those canons but can hardly be termed a retreat from the ideas and methods of the Modern Movement.
Rather, since it is based on a close study of office planning modules, and a drastic re-appraisal of reinforced concrete tower structures, it may well take its place beside such other radical concepts of office-building design as Hentrich's Mannesmann Tower in Dusseldorf, making a decisive and progressive break with a tradition of rectangular glazed envelopes that may well suit the technological and economic conditions of America, but could prove to be a wishful dream in Europe, where economics, technology and the wage-structure of the building industry are so different.
In addition, the Pirelli skyscraper will take its place as an objective fact in the disputed territory of the Milanese skyline, and those—like Bruno Zevi and others—who concern themselves with the responsibility that modern Italian architects owe to their traditional townscapes, will be able to compare it with Ernesto Rogers's Torre Velasca, *which makes a deliberate gesture on behalf of the historical tradition, and assess in fact what has only been a matter of conjecture so far—whether a tall tower block, having broken with the traditional scale of the buildings around it, still owes any stylistic consideration to earlier towers, such as those of the Cathedral, that had invaded the skyline before it.*

J. M. Richards

COMPETITIONS

Controversies about who is to be the architect of some important new building—for example that which arose recently about Arne Jacobsen's appointment to design the new St. Catherine's College at Oxford, which some people objected to because he is a Dane—usually include the proposal that there ought to be a competition. Such proposals come from architects, but outside the profession there is less faith in competitions. What are in fact the present defects and virtues of the competition system and what measures are needed to make it more useful and restore to it some of the prestige it once had?

It would be a pity to let it decline, but there are signs of that happening, partly because the system has been brought into disrepute by the unfortunate outcome of a number of recent competitions. Those who advocate competitions will say that nevertheless a number of architectural competitions held in England since the war have resulted in first-rate buildings of a quality that would probably not have been achieved by other means. That is true. Obvious examples are the TUC headquarters in Great Russell Street, London, the Pimlico and Golden Lane housing schemes and the new buildings for Sheffield University. And the Churchill College, Cambridge, competition holds out promise of adding another to the number. But a few successes among many are not enough. If public authorities and other prospective building owners are to be sincerely recommended to hold competitions, there must be reasonable prospect of a satisfactory result in every case—or at least as satisfactory as the best architects in the country are capable of producing.

How unsatisfactory the system can be has been shown up several times—notably in the competition, held earlier this year, for a one-and-a-half million pound civic centre for Ipswich. It is generally agreed that the winning design was far below the best standard

of which English architects are capable. The Ipswich Council showed enterprise in holding a competition,and have cause to complain that the architectural profession (or the competition system) let them down. Other building-owners have felt the same after the results of important competitions have been declared. What tends to go wrong?

A great deal depends on how the competition is judged and by whom, and a system cannot be regarded as satisfactory if it only solves the problem of how to choose an architect by posing the problem of how to choose an assessor. For the choice of assessor may determine the whole outcome of the competition. Architects become inhibited and subconsciously restrict the scope of their imaginations when they know their designs are going to be judged by a man with particular preferences and prejudices, and they may even feel constrained to assume a style of design they think will please him. What is more important, many architects will not enter for a competition that is to be judged by someone they feel to be unsympathetic, and because assessors have to be responsible people and are therefore often chosen from the staider and more senior members of the profession, it is likely to be the more progressive and enterprising architects who refrain from competing.

One possible answer is to have more than one assessor, which is the normal practice outside England. That spreads the responsibility and ensures a more objective outlook at the judging, and for this reason gives more confidence to prospective competitors. It means, that is to say, that the competition is less at the mercy of whatever factors may determine the choice of a single individual by whoever appoints the assessor—usually the RIBA.

There are other advantages, too, of a jury or panel of assessors, one being that a representative of the client can be included. This is a way of avoiding the complaint, sometimes made afterwards, that the man who is going to pay for the building had not enough say in choosing it. An architectural competition must nevertheless remain a professional affair, and if it is to be judged by a panel of assessors it is important to maintain the RIBA ruling that such a panel must contain a majority of architects. It must be added that there is one disadvantage in a panel of assessors—their tendency to choose a scheme because none of them dislike it, thus encouraging compromise solutions and giving the safe preference over the brilliant.

Two other improvements in the rules that govern competitions could usefully be made in order to increase confidence—both within the profession and among the public—in their outcome. It should be obligatory to exhibit all the entries publicly—not simply the winners—and the assessor or assessors should publish a report giving reasons for the award. It is important not only that competitions should be fairly judged but that they should give every impression of being fairly judged, with all the cards, as it were, laid on the table.

These three requirements apart (more than one assessor, exhibition of all the designs, a reasoned report) there seems to be little wrong with the rules and customs of architectural competitions as governed by the RIBA. But unfortunately a well-conducted competition does not guarantee a successful result because the best architects still may not compete. What are the factors that determine whether they do? The answers must be sought in the changes that have recently taken place in architectural practice.

The great days of the competition system were also the great days of private practice, when every office draughtsman carried a brass plate in his knapsack and the accepted way of launching himself on the road to lucrative practice, membership of the Academy and a knighthood was winning an open competition; so much so that the story-book idea of the unknown genius who becomes famous overnight and never looks back commonly came true in the world of architecture because of the competition system. The last classic case was that of Sir Giles Scott, who in 1903 won the Liverpool cathedral competition at the age of twenty-three and is still building it.

Because of the prestige accorded to architectural competitions those responsible for new public buildings seldom hesitated to seek a design or an architect by this means. The question is whether the architectural competition has, along with other essentially Victorian institutions, had its day. Those who would answer yes point in explanation to changed conditions of practice. Architects are supposed to be no longer willing to speculate with their time as they used to do, or else to be too hard pressed to work on designs for buildings that may never be put up. It is certainly more difficult for them to do so, if only because, with the decline of the pupilage system, the work of preparing the elaborate competition drawings usually demanded must fall on highly paid assistants instead of on pupils for whom such work used to be considered excellent training.

On the other hand, even in modern conditions there are arguments in favour of the busiest architects taking part in competitions, whether or not they are financially rewarding. In any case the monetary basis of the competition system is deceptive. The sums awarded—often two or three thousand pounds as first prize—sound impressive, but the winner's prize-money is merged in the fees he will eventually get for the resulting building; so although the winning of a competition may bring work into the office and advance an architect's reputation, it is not in itself very profitable.

Paradoxically, the most immediately remunerative thing is to make a practice of coming second in competitions, thereby winning a substantial prize without the subsequent work of putting the building up. But this is not likely to satisfy most architects, who want to build and value competitions because they create opportunities of doing so. The reason why many busy architects still enter for competitions is,

I imagine, directly related to the time they have to spend nowadays on administration and on fighting their way through the complications of legal procedure. A competition gives them an excuse once in a way to raise their nose, as it were, from those particular grindstones and concentrate on architecture rather than the restrictions imposed on architecture. A competition may be regarded as a kind of post-graduate exercise, which many architects find revivifying to themselves and of educational value to their staff.

Nevertheless it is certainly true that unless the educational value of competing (which cannot be reckoned in man-hours of a draughtsman's labour) is taken into account, the time and energy consumed by the preparation of a couple of hundred schemes in as many architects' offices in order to produce one that will be carried out—and that not certainly—is wasteful, and it is a form of waste that, because of higher salaries and overheads, the profession finds it increasingly difficult to afford. If architectural competitions are to continue therefore, it may be necessary to concentrate in future on other forms of competition than the open free-for-all.

There are two recognized alternatives. One is the two-stage competition (recommended in an RIBA report in 1954) which requires sketch designs only in the first stage, on the basis of which a small number of the competitors is selected to take part in the final stage. These receive a fee for competing. Apart from the obvious advantage that only the architects selected for the second stage have to spend time working out their design in full detail, this method offers the possibility of consultation with the client, who can be shown the selected entries at the end of the first stage, can discuss with the assessors which of these go forward to the final and can, if there is one that he thinks outstanding, commission its author then and there and avoid the need for a second stage at all. It would be undesirable, however, to allow him to push forward a scheme that the assessors had rejected for the second stage.

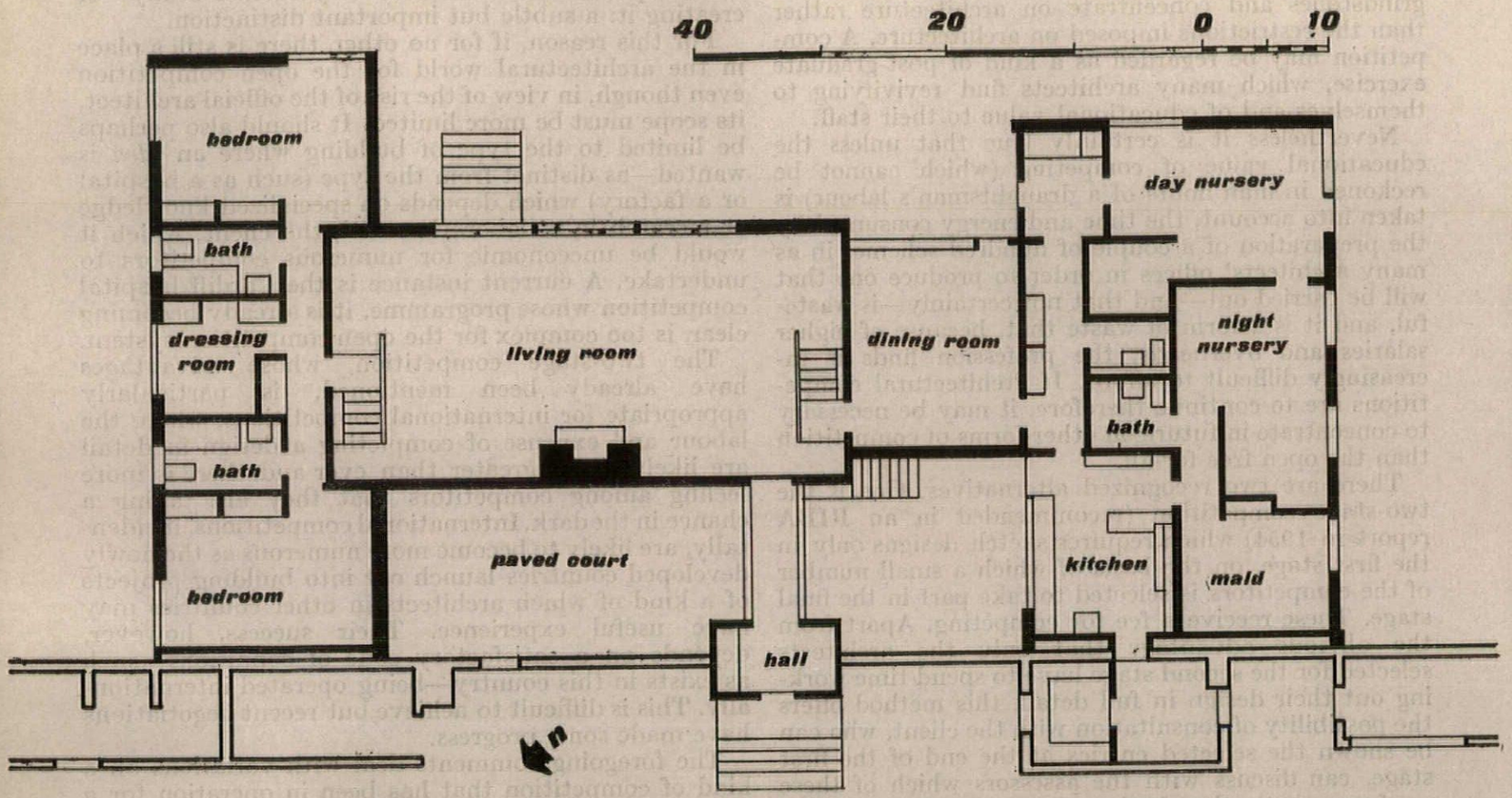
The other form of competition which is less wasteful than the free-for-all is, of course, the limited competition, in which a few architects, known to be well qualified for the particular task in view, are invited to compete against each other. Usually they receive a fee for competing (though this was not so in the case of the recent competition, limited to twenty architects, for Churchill College, Cambridge). This system is being increasingly used and has its obvious advantages, but it does not serve the traditional purpose of the architectural competition: that of bringing forward unknown young men. It enables a number of trained minds to be applied to the same problem with, therefore, a better chance of a first-class answer being discovered, whereas it used to be said of the traditional open competition that its object was not so much to find the best design as to find the man most capable—after the necessary further study—of creating it: a subtle but important distinction.

For this reason, if for no other, there is still a place in the architectural world for the open competition even though, in view of the rise of the official architect, its scope must be more limited. It should also perhaps be limited to the type of building where an *idea* is wanted—as distinct from the type (such as a hospital or a factory) which depends on specialized knowledge or research in collaboration with the client, which it would be uneconomic for numerous competitors to undertake. A current instance is the Cardiff hospital competition whose programme, it is already becoming clear, is too complex for the open competition system.

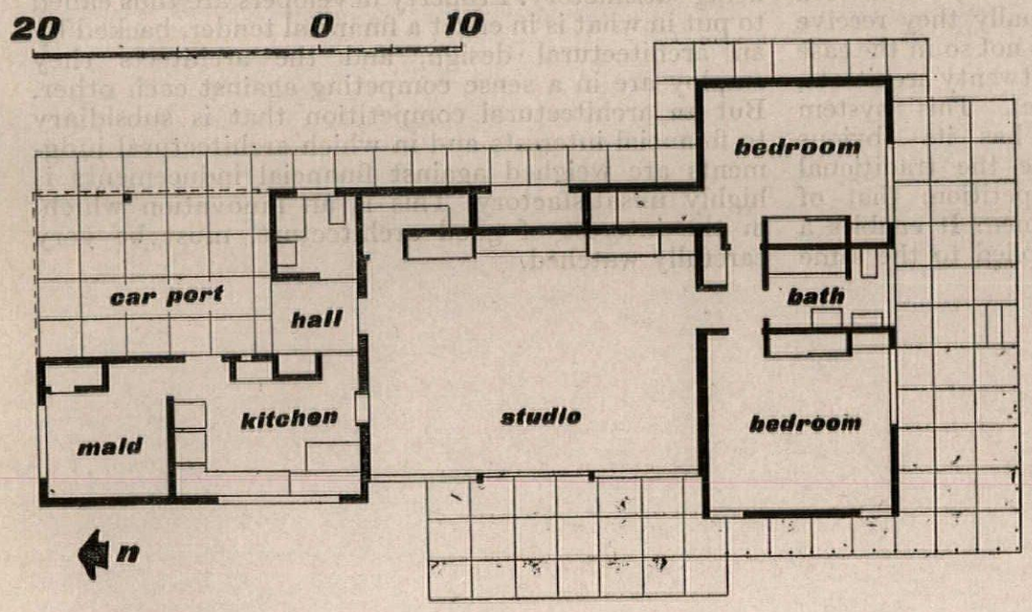
The two-stage competition, whose advantages have already been mentioned, is particularly appropriate for international competitions, where the labour and expense of completing a design in detail are likely to be greater than ever and there is more feeling among competitors that they are taking a chance in the dark. International competitions, incidentally, are likely to become more numerous as the newly developed countries launch out into building projects of a kind of which architects in other countries may have useful experience. Their success, however, depends on a satisfactory code of conditions—such as exists in this country—being operated internationally. This is difficult to achieve but recent negotiations have made some progress.

The foregoing comments deal with variations on a kind of competition that has been in operation for a great many years, but a final comment must be made on a wholly new kind of competition which is just beginning to rear its rather ugly head, and which has come into existence almost by accident. It results from the system under which local authorities, having made a plan for the comprehensive rebuilding of some area of ground, throw it open for development by whichever property company makes the best financial offer, subject to the proposed architectural treatment being satisfactory. Property developers are thus called to put in what is in effect a financial tender, backed by an architectural design, and the architects they employ are in a sense competing against each other. But an architectural competition that is subsidiary to financial interests and in which architectural judgments are weighed against financial inducements is highly unsatisfactory. This is an innovation which, in the interest of good architecture, must be very carefully watched.

HOUSE AT MONGEWELL, OXFORDSHIRE



HOUSE AT FAWLEY BOTTOM, BUCKINGHAMSHIRE (see page 11)



HOUSE AT MONGEWELL, OXFORDSHIRE

ARCHITECTS	***BRETT, BOYD AND BOSANQUET***
Partner in charge	***Lionel Brett***
Chief Assistant	***Victor J. Hutchings***

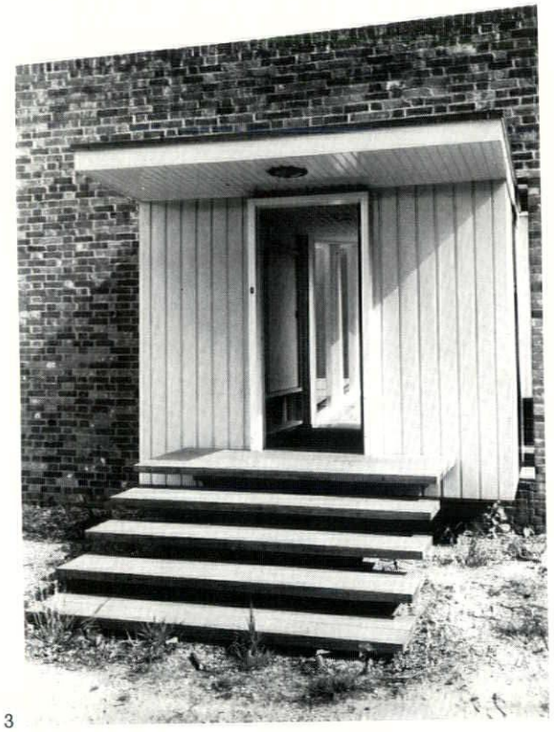
1, the house seen from the south east, across the lake. The living room is raised 3 ft. above the lawn to give better views. The projecting wing on the right is the master bedroom, that on the left the day nursery.

Standing on the shores of an artificial lake, this house in the Thames Valley two miles from Wallingford is on the site of the original kitchen garden of Mongewell Park and surrounded on three sides by high brick walls

2

2, the sloping bridge crossing the paved patio from the front door on the left to the living room is carried by cranked steel channels and faced in plate glass in wood frames.

backed by beech woods. The large living room separates the two wings, one containing the main bedrooms and bathrooms, the other the children's rooms and kitchen. The wings are of cavity brickwork, with wood and steel windows and a timber, felt-covered roof. The living room is framed in timber, faced with vertical siding painted pale grey, with tapered box beams supporting woodwool slabs for the roof. Two of the large windows on the east are fixed, the other slides open and the whole of this wall is curtained at night.



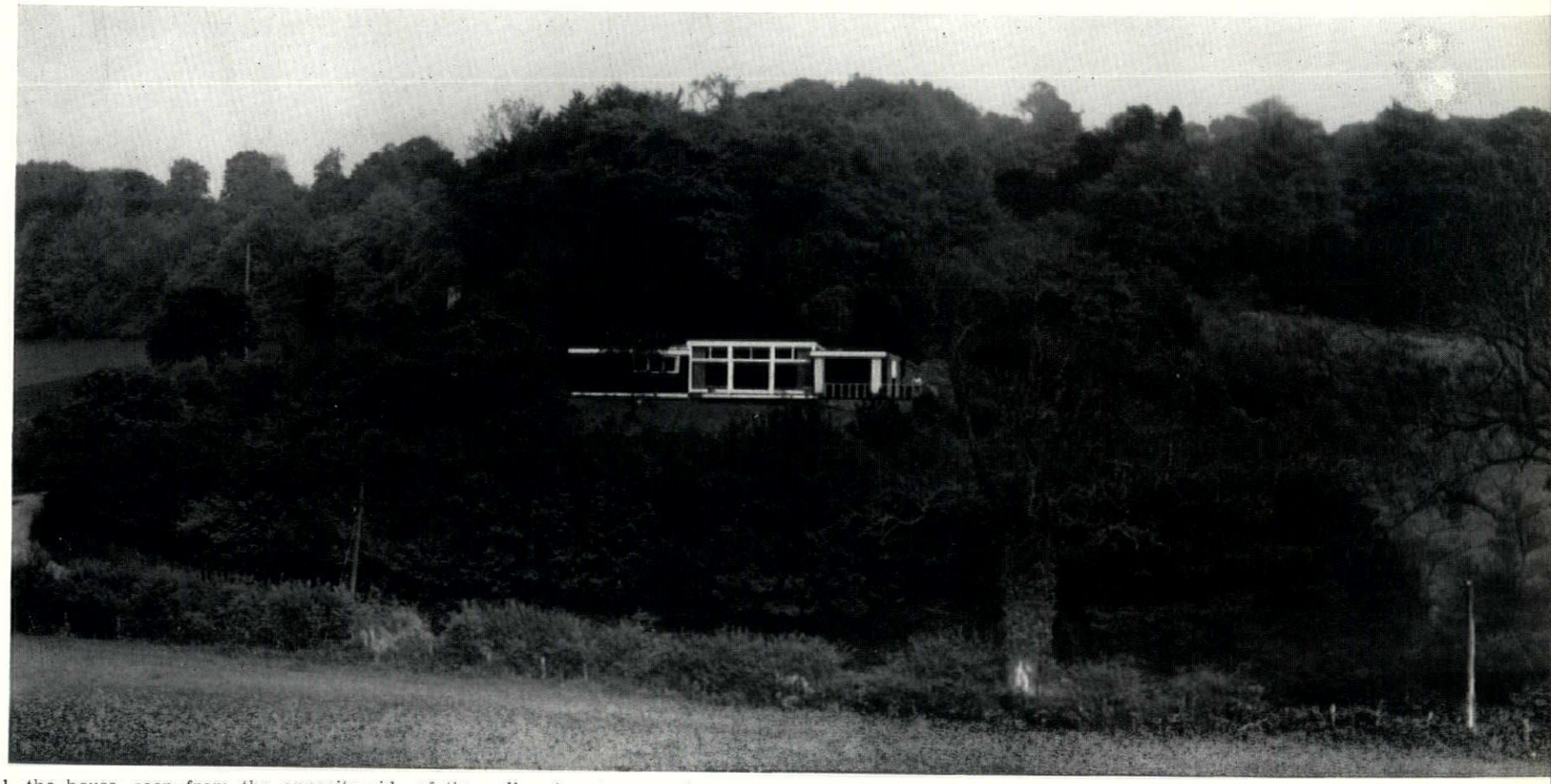
3

3, the entrance hall is a wooden box balanced on the high brick wall on the west of the house and is the only part visible from the road. The steps are solid iroko carried on steel channels. 4, from the north, the main bedroom wing with the living room rising beyond. Bricks are red to match the old walls.

4

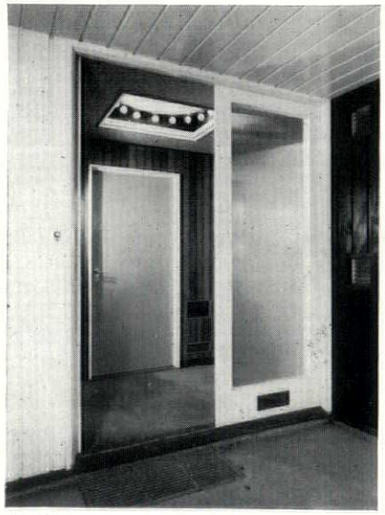
HOUSE AT FAWLEY BOTTOM, BUCKINGHAMSHIRE

ARCHITECTS	***BRETT, BOYD AND BOSANQUET***
Partner in charge	***Lionel Brett***
Chief Assistant	***Victor J. Hutchings***

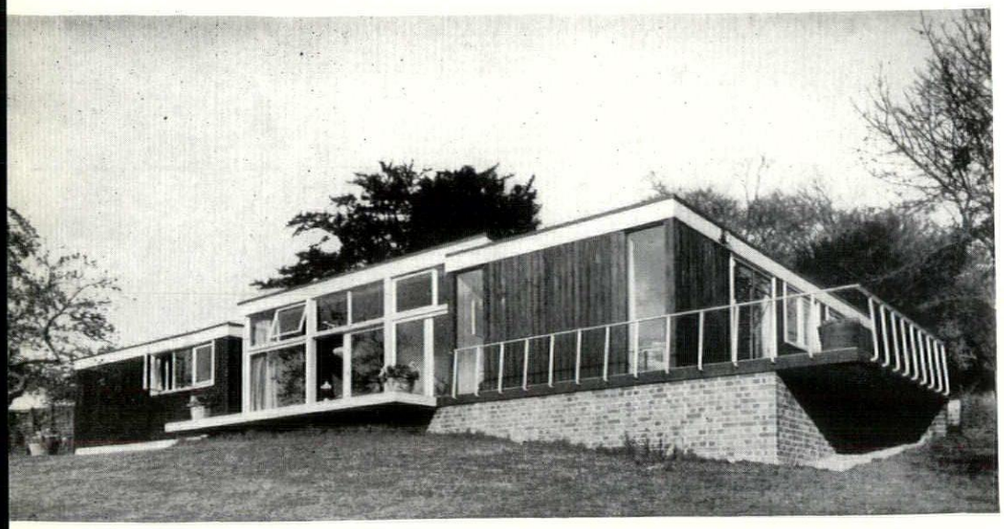


1, the house, seen from the opposite side of the valley, is set among beech woods.

This is a weekend house in the Chilterns, four miles from Henley on Thames, and is simply designed as a flat on a wide terrace, using the platform excavated for the cottages which formerly stood there. The covered car port is between the front door and the kitchen, for easy access. The house is lined inside and out with wood and has aluminium foil insulation. Heating, lighting and cooking are all by electricity. The wood



2, the square entrance hall, here seen from the car port, is lit by a glass dome by day, and by a circlet of small bulbs at night. It is floored entirely in coconut matting.



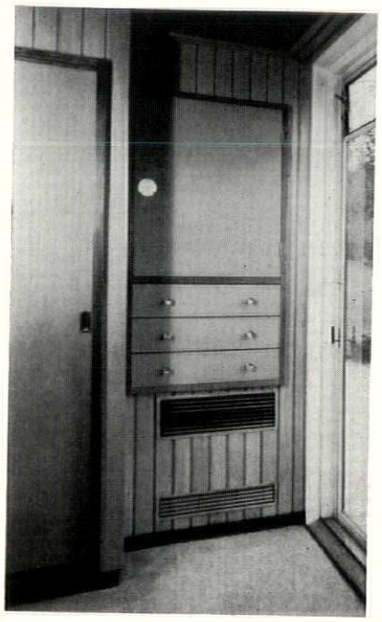
3

3. the big windows of the studio look west across the valley, and the balcony outside the bedrooms gives views to the south.
4. the balcony and bedroom windows from the east.

HOUSE AT FAWLEY BOTTOM

structure of the house is on a 3 ft. square grid, and the walls are covered externally with vertical pine boarding tarred black. The roof over the wings is of timber joists lined in insulated plasterboard and covered with boarding and 3-ply bituminous felt. The studio roof is of 8 ft. long 2 in. thick reinforced woodwool slabs carried on laminated fir beams. Windows are mainly vertically pivoted deal casements. The glazed doors to the bedrooms are special heavy-section steel incorporating glass louvres at the top. Plan on page 8.

4

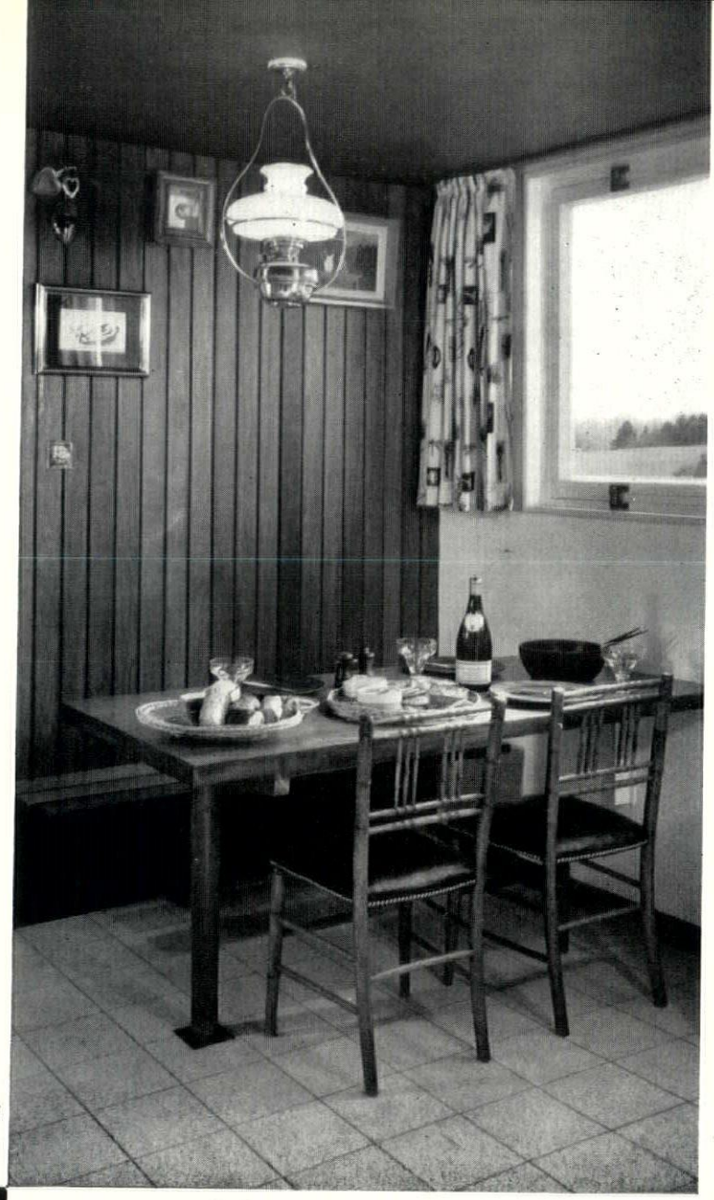


5

5, the bedrooms have a built-in convector heater with a cupboard above.

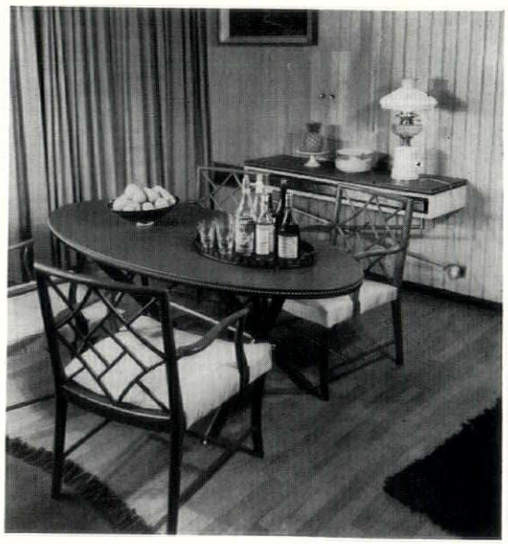
6, kitchen cupboards are painted elephant grey and white ; the ceiling is blue. The cooker has a polished copper extract hood.

6



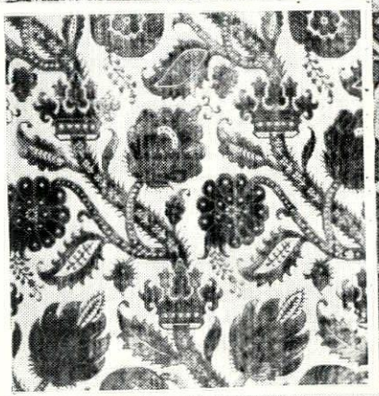
7

7, the dining corner of the kitchen, with teak table and wall and bench of walnut.
8, in the studio the table and sideboard have olive green leather tops and were specially designed by Dennis Lennon. The wall is pale yellow ramin, the floor maple.



8

Now that it is possible to give a detailed chronology of William Morris's chintz designs, as Peter Floud does for the first time in the article opposite, it is also possible to see how much he depended on the historical precedents afforded by the fabrics in the South Kensington Museum. The clearest example of this is his adoption, between 1883 and 1890, of a diagonal mode of composition, exemplified by the print on this page, that had never before appeared in his work, but which entered the Museum in 1883 in the form of the fifteenth-century Italian cut velvet seen in the inset right.



PETER FLOUD

DATING MORRIS PATTERNS

Writers about William Morris's designs have always been very vague about dates. They have invariably relied on the two standard works of Aymer Vallance and May Morris. These both discuss the principal designs in approximately chronological order, but they give very few exact dates, there are discrepancies between their lists, and as they both deal with each category of design in isolation—i.e. wallpapers, chintzes, woven textiles, carpets, etc.—it is impossible to piece together from them any continuous picture of Morris's overall development as a designer.

On the basis of a number of records which have not previously been systematically used (listed on page 20), it has been possible for the first time to date precisely the great majority of the designs for wallpapers and chintzes. These two categories formed the basis of Morris's world-wide reputation and influence as a designer, for they alone were within the means of the average middle-class householder, by contrast with the much more costly woven fabrics, the hand tufted rugs, the embroideries, and the tapestries. The placing for the first time of these wallpaper and chintz designs in correct chronological sequence leads to some surprising conclusions. Their validity can only be judged visually, and they are therefore set out in the illustrations on the following five pages.

The first conclusion is that if we concentrate on the steady stream of designs—amounting to seventy-three in all—which Morris produced for wallpapers and chintzes between 1872 and his death in 1896, we see immediately that they fall into four clearly defined periods, each characterized by its own predominant style. This leaves out of account the isolated batch of three early wallpaper designs which Morris produced experimentally in 1864. This is justified, for although all three were popular throughout Morris's lifetime and after, they bear little relation to his later work and are quite untypical of his mature style. The 'Trellis' (Fig. 1)—the first of the three—with its crudely squared-up pattern, is without any parallel among the later designs, and is in any case only partly attributable to Morris, for the birds were drawn by Philip Webb. The 'Daisy' (Fig. 2) is far naiver than any of the later designs, and is based on a simple row-structure which Morris repeated in only one later design. The last of the three—the 'Fruit' or 'Pomegranate' (Fig. 3)—though much more sophisticated, is equally untypical.

The four separate phases of Morris's mature style between 1872 and 1896 are illustrated on pages 17–20 with one page devoted to each phase. The examples have been deliberately selected so as to emphasize the characteristic style of each, and thus to point the contrasts between them. Inevitably this method of presentation overstresses the degree of standardization in Morris's work, but it is not thought that it produces any distortion in the basic picture of his development, and the only significant point which this selection of illustrations leaves out of account is Morris's fondness at all periods for patterns in which the vertical lines sway from side to side as they move up the design. It is only in the final period that this type becomes predominant, and is therefore illustrated.

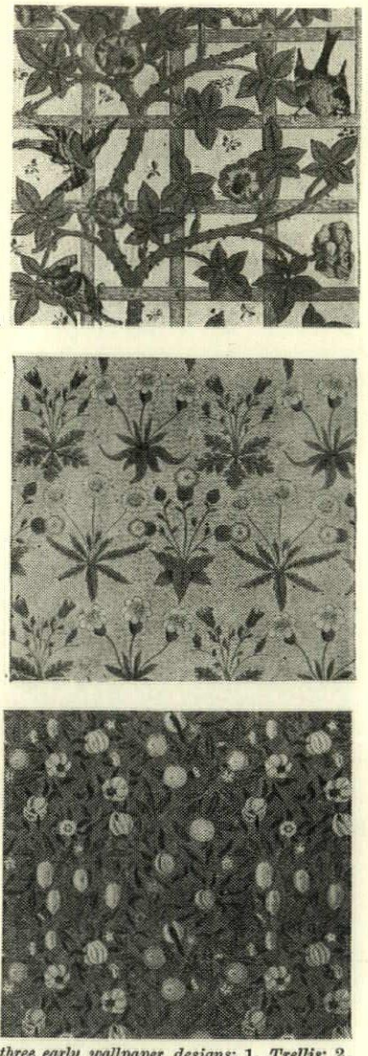
The second conclusion is that Morris's designing underwent a radical transformation in 1876, at the end of the first of these four periods—a transformation from free-flowing meandering naturalistic patterns to rigid symmetrical formal patterns. The third conclusion is that this drastic change was caused by two related factors—namely Morris's first interest in weaving in 1876, and his discovery then of the woven textiles in the South Kensington Museum.

The connection between this change to formal patterns and Morris's first interest in weaving, is shown by the fact that the patterns to which Morris switched over in 1876 were almost all severely symmetrical patterns with sharply emphasized repeats turning over mirror-wise about a series of vertical axes. This type of pattern—called by weavers a point pattern—comes naturally on a loom, because by mirroring the repeats on each side of a vertical warp-thread the work of setting up the monture on a draw-loom, or the harness of a jacquard loom is greatly simplified.

The connection between this change and the textiles in the South Kensington Museum can best be demonstrated by the four juxtapositions set out on page 16. These show that some of Morris's patterns were much more directly inspired by historic examples than has hitherto been supposed. It has always been known that Morris spent much time in the Museum. His firm's earliest secular commission was to decorate the Green Dining Room there in 1866. From 1876 to 1896 he worked each year at South Kensington as one of the Science and Art Department's examiners. He was regularly consulted about the acquisition of tapestries, and on one occasion visited Paris on behalf of the Museum in connection with a purchase. Moreover we have his own testimony before the Royal Commission on Technical Instruction (1882), that 'perhaps I have used the museum as much as any man living.' Nevertheless, it has not before been realized that many of Morris's designs were based very directly on particular specimens which he saw in the museum.

The connection between this reliance on museum examples and Morris's first interest in weaving is provided by the fact that in the years before 1876, when Morris had tried his hand only at wallpapers and printed textiles, the museum collections could afford no direct inspiration, for at that time they included practically no wallpapers or printed textiles, whereas they incorporated a splendid range of woven fabrics ready to hand for Morris to study when he first turned his attention to weaving.

If there were any doubt about this influence of the South Kensington woven textiles, it should be dispelled by the designs of Morris's third period, which lasted from 1883 to 1890 (see page 19). The change which initiated this period was by no means so radical as that of 1876, for it involved no more than a shift from one type of rigid pattern—the vertical turn-over type—to another—the diagonal pattern. The extent to which Morris became preoccupied by diagonal patterns during this third period is shown by the fact that all his nine diagonal wallpaper and chintz patterns date from this period, and that they account for 54 per cent of all the wallpaper and chintz patterns of this period. This preoccupation was undoubtedly inspired by a magnificent Italian cut velvet, which was acquired in 1883—the very year in which Morris first turned to the use of diagonal structures. The similarity between it (Frontis) and Morris's diagonal designs is too close to be coincidental. As in the second period, the most striking feature is that



three early wallpaper designs; 1, *Trellis*; 2, *Daisy*; 3, *Fruit or Pomegranate.*

Morris's interest in these weaving patterns was so strong that it impelled him to introduce their rigid structure not only into his own woven designs, but also into his wallpapers and chintzes, despite its inappropriateness to the quite different medium of woodblock printing.

The fourth—and final—period can be dated from 1890 (see page 20). During the last six years of his life Morris turned back to freer, more flowing patterns, reminiscent of his earliest style. Several of these last designs include, side by side, completely naturalistic and highly conventionalized details, with a curious incongruity which seems to reflect an unresolved dilemma between Morris's love of spontaneous natural forms on the one hand, and his respect for the traditional formal motifs of the historic woven fabrics on the other.

If this analysis of the four stages in Morris's development as a pattern-designer is correct, then his discovery of the woven textiles at South Kensington can only be regarded as a misfortune. His own personality was so strong that even when he was most strongly under their spell, his designs never degenerated into mere pastiche, and his taste and sense of colour were assured enough to give almost all his patterns a distinction and authority lacking in the work of his contemporaries and followers. Nevertheless, after 1876, his immediate individual vision was so overlaid with the weight of historical precedent, that he rarely thereafter succeeded in recapturing that spontaneity and freshness which had been the secret of the beauty—and equally of the commercial success—of his earliest creations.

THE INFLUENCE OF SOUTH KENSINGTON

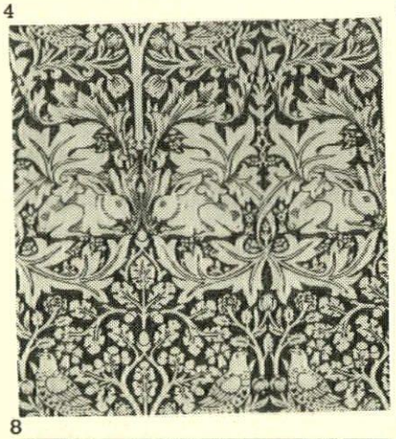
Four juxtapositions showing the extent to which Morris, after 1876, relied for inspiration on textiles in the South Kensington collections.

I. 4, 5, the 'Brother Rabbit' chintz is typical of the rigid style to which Morris suddenly switched in 1876. Note the similarity to the Museum example in the general structure of the design, and especially in the disposition of the birds. Not only does the vertical emphasis in the design reflect the influence of weaving, but in this particular example the way in which Morris has divided the pattern into contrasting horizontal stripes—a light one incorporating the rabbits and a darker one the birds—is much more appropriate to a woven than a printed fabric, and would normally result from the use of additional shuttles to produce alternating bands of colour in the weft.

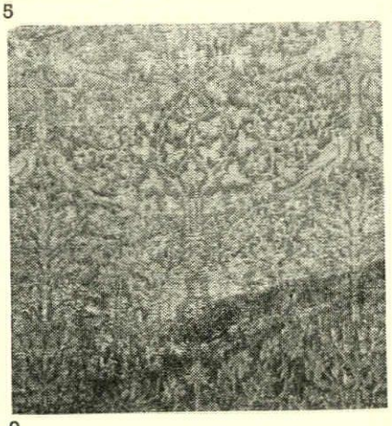
II. 6, 7, an odd case in which Morris has been inspired not by an early woven textile, but by a fifteenth century printed Rhenish linen, which was itself a cheap substitute for, and based on the design of, a woven fabric. Although the 'Crown Imperial' flower has been substituted for the bird, the similarity is too close to be coincidental. Morris used the same structure for the 'Iris' and 'Bluebell' chintzes (see Figs. 18 and 19).

III. 8, 9, the most direct of all Morris's adaptations of historic textile patterns. Note how all Morris's changes in the drawing of the individual details are in the direction of a greater naturalism—such as the replacement of the crown by a rose, and of the figured ribbon by a thorned stem.

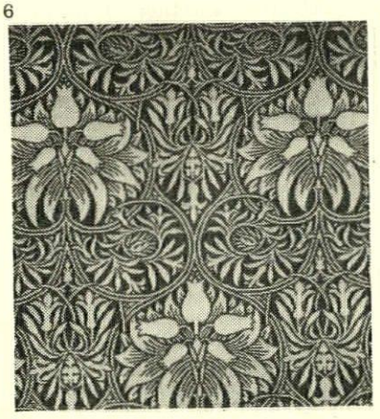
IV. 10, 11, this juxtaposition shows a much freer adaptation. Although the general disposition of the design remains more or less unchanged, the individual details have been transposed. Nevertheless, the similarity in the basic structure of the two designs, and especially in the arrangement of the birds and of the conventionalized flame-like motifs, is close enough to justify the assumption that Morris must have seen, and been influenced by, the Italian piece.



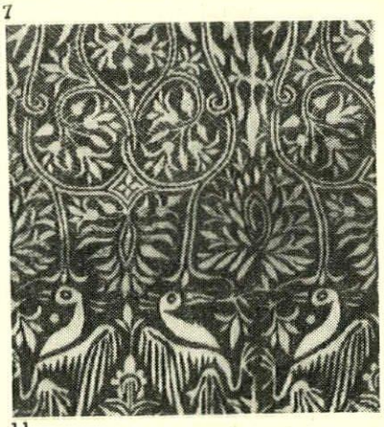
4, *'Brother Rabbit' chintz.* 1882.



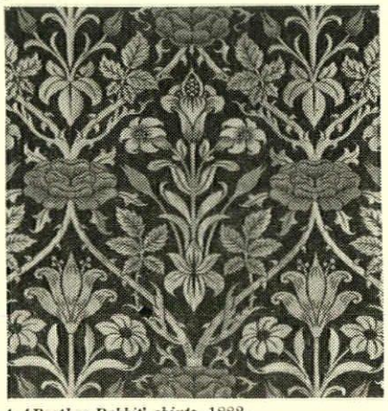
5, *Italian woven silk.* 14*th century.*



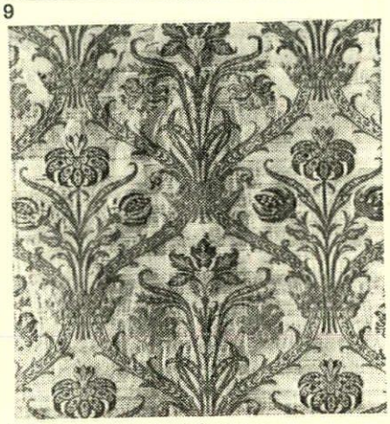
6, *Mohair damask.* 1876.



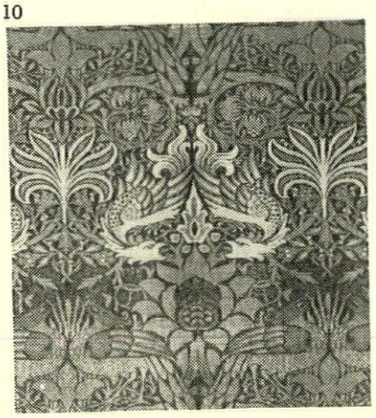
7, *Rhenish printed linen.* 15*th century.*



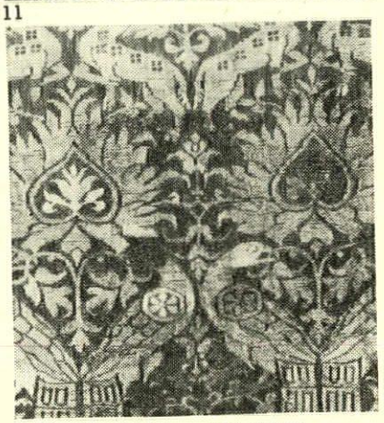
8, *'Rose and Lily,' woven silk and wool. c.* 1880.



9, *Venetian silk and gold brocade.* 16*th century.*



10, *'Peacock and Dragon,' woven wool.* 1878.



11, *Italian woven silk and linen.* 14*th century.*

FIRST PERIOD 1872-1876

Although Morris issued his first three wallpapers in 1864, he produced no further designs for serial production until 1872 when he recommenced wallpaper designing, and produced nine patterns by 1876. (Although the 'Rose' wallpaper, shown in Fig. 17 below, dates from 1877, it is included in this group as being a particularly clear example of Morris's early naturalistic style.) In 1873 Morris turned for the first time to the design of printed textiles and completed three designs by 1876.

With one exception, all these twelve designs are based on meandering lines, flowing over the surface in loose informal curves, with the structure of the repeats deliberately concealed. The consequent effect of spontaneous growth is emphasized by the asymmetrical, and apparently haphazard, placing of the principal objects, and by the way in which buds and shoots seem to branch off as nature, rather than the formal logic of a repeating pattern, would require. Details of the flowers and leaves are drawn with sufficient naturalism for each to be readily identifiable with a particular species.

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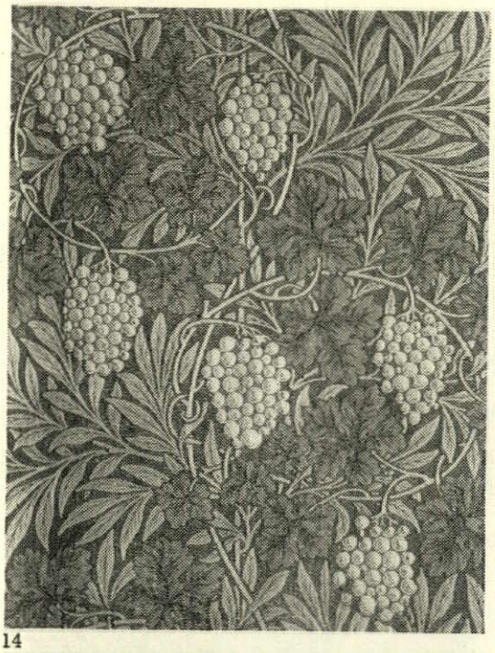

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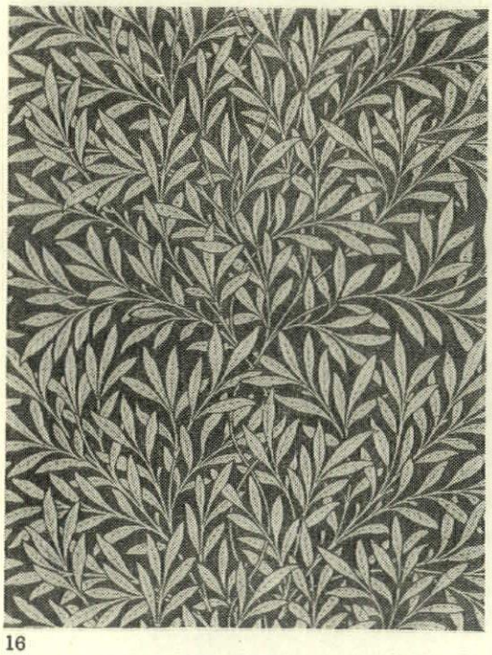

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12, *'Jasmine' wallpaper*. 1872.
13, *'Scroll' wallpaper*. *c*. 1872.
14, *'Vine' wallpaper*. 1873.
15, *'Tulip and Willow' chintz*. 1873.
16, *'Willow' wallpaper*. 1874.
17, *'Rose' wallpaper*. 1877.

SECOND PERIOD 1876-1883

18, *'Iris' chintz.* 1876.
19, *'Bluebell' chintz.* 1876.
20, *'Snakehead' chintz.* 1876.
21, *'Sunflower' wallpaper.* 1879.
22, *'Acorn' wallpaper.* 1879.
23, *'Strawberry Thief' chintz.* 1883.

This was Morris's most prolific period, with eleven wallpapers and twenty-two chintzes. Of these thirty-three designs, only two or three show any sign of the flowing naturalism of the first period, while nineteen are based on a rigid vertical turn-over structure which Morris had never used before 1876. This type of pattern is particularly suitable for weaving but not for block-printing. Morris's frequent use of it during this period can only be explained by his preoccupation with weaving.

The spontaneity of the earlier patterns is now replaced by formalism, and the direct observation of nature by the use of conventional symbols derived from a study of historic textiles. The framework of the design is now emphasized rather than concealed. Instead of flowing naturally across the surface, stalks are now trained to fit into symmetrical ogees and ovals. The drawing of details is now so generalized that flowers and leaves are often not identifiable with particular plants. The contrast with the first period can be seen particularly clearly by comparing the two grape designs (Figs. 14 and 21).

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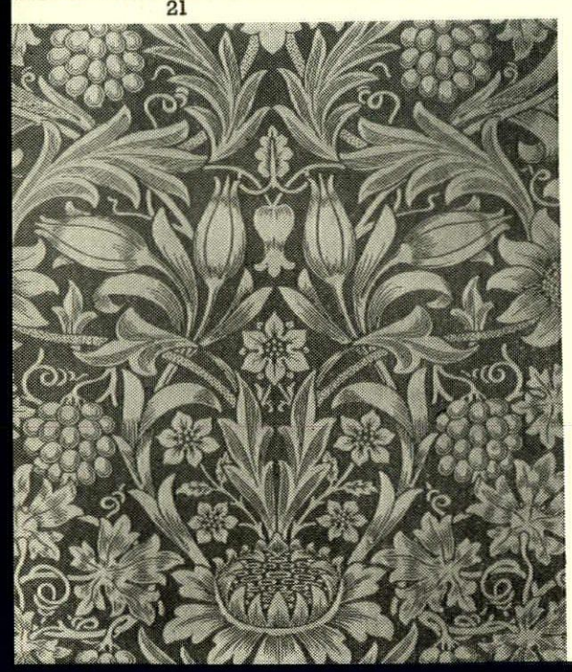

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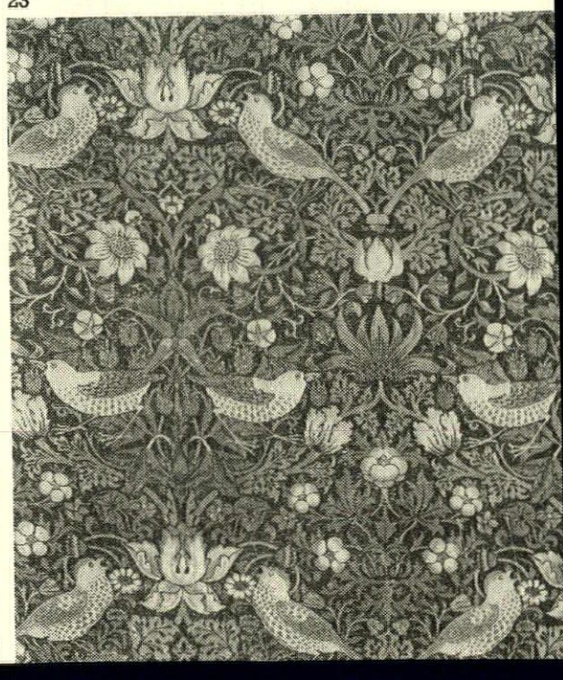

THIRD PERIOD 1883-1890

During this period Morris designed ten wallpapers and seven chintzes. Nine out of these seventeen designs were based on an emphatic diagonal structure, which Morris had never used before. The only plausible source for this new development is the fifteenth-century Italian cut velvet acquired by the South Kensington Museum in 1883 (Frontis). Morris followed this model not only in the direction and angle of the diagonal, but more particularly in carefully arranging the flowers which grow out on either side of the diagonal stem so that their repetitions form a subsidiary horizontal and vertical grid, which helps to give stability to what would otherwise be a very restless type of pattern. The delineation of the details during this period continued to be conventional rather than naturalistic.

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24, *'Wey' chintz.* 1883.
25, *'Cray' chintz.* 1884.
26, *'Wandle' chintz.* 1884.
27, *'Trent' chintz.* 1889.
28, *'Norwich' wallpaper.* 1889.

FOURTH PERIOD 1890-1896

During this final period Morris was too busy with the Kelmscott Press to do much pattern-designing, and produced only ten wallpapers and one chintz. In the majority of these designs there is a return to a somewhat more flowing, less rigid, structure, with particular emphasis on designs with an upward movement swaying from side to side. The diagonal designs of the previous period disappear entirely. A marked characteristic of this last batch of designs is the blending in the same pattern of conventional symbols and naturalistically drawn flowers, or the superimposition of decorative details on naturalistically drawn petals or leaves. Morris appears to be striving to combine a return to his earlier naturalism with the formalism derived from his study of historic textiles. His last design—the 'Compton'—completed a few months before his death, is certainly one of the richest of his entire output.

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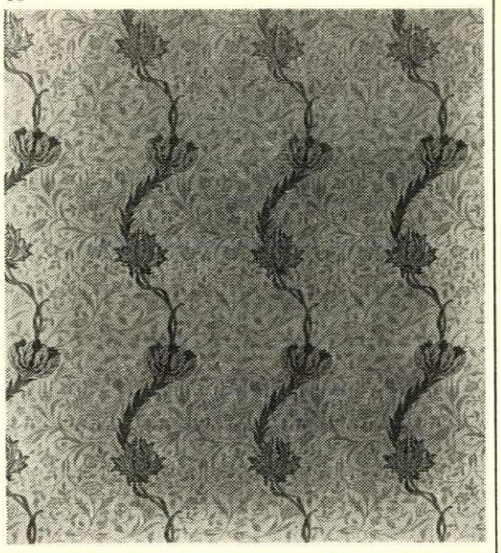

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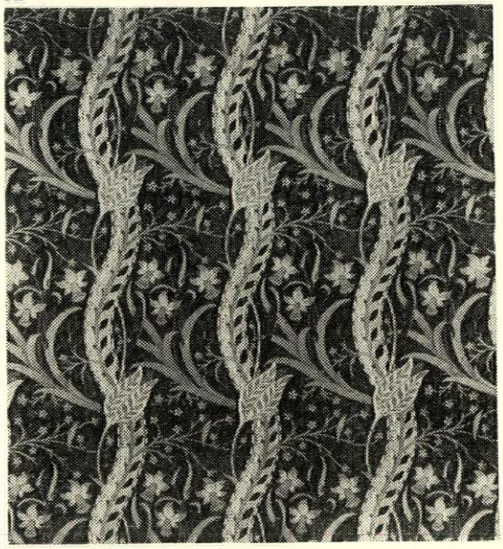


33

29, *'Wallflower' wallpaper. c.* 1890.
30, *'Pink and Rose' wallpaper. c.* 1890.
31, *'Trail' chintz.* 1891.
32, *'Daffodil' chintz.* 1891.
33, *'Compton' wallpaper.* 1896. *Morris's last design.*

The new sources used as the basis for this article are the following:—

1. Original pattern-books of Messrs. Jeffrey & Co. giving production date and full details of all Morris's wallpapers as printed by them. Now in the possession of Messrs. Sandersons.
2. Original samples registered with the Patent Office under the Copyright of Designs Acts.
3. Original pattern-books of Sir Thomas Wardle & Co. of Leek, giving full details of those early chintzes printed by them before Morris undertook his own printing. Now in the possession of Messrs. Bernard Wardle of Chinley.
4. Sixty-one unpublished letters from Morris to Sir Thomas Wardle. Now in the possession of Mr. Fred Wardle.
5. A dyeing and printing ledger kept by J. H. Dearle when acting as Morris's assistant at Merton Abbey. Now in the possession of Mrs. Duncan Dearle.

Note.—All wallpapers and textiles are in the Victoria and Albert Museum. All photographs crown copyright reserved.

Nikolaus Pevsner

ROEHAMPTON

LCC HOUSING AND THE PICTURESQUE TRADITION

Standing securely in a modern European tradition of town planning that reaches back into the early twenties, and equally securely in an English landscape tradition that goes back almost two centuries further, the LCC's Roehampton Estate is one of the masterpieces of post-war residential design. In the article below, Dr. Pevsner makes an appreciation of what has been achieved there and the lessons that can be learned from the planning methods employed.

The London County Council's Roehampton Estates known variously as Alton East and Alton West or Portsmouth Road and Roehampton Lane are the largest single housing job undertaken by the Council and one of the largest undertaken anywhere in Europe. It houses or will very soon house a population of 9,500 as compared for instance with Venice-Marghera - Mestre 10,500, Rome - Tuscu - lano 16,000, Milan - Cesate 6,000, Berlin - Hansaviertel 3,000, to name only a few at random.

The area available was 130 acres. Of this the smaller south-east part, called Alton East, was built in 1952–55, the much larger north-west part, Alton West, in 1955–59. The total density for both parts is just under a 100 persons per acre, as against Marghera - Mestre 100, Tusculano 180 and Cesate 175. The 130 acres are rolling country in an ideal position between Putney Heath and Richmond Park and, when taken over, were in the ideal state of mainly consisting of a few fine eighteenth-century mansions in their grounds and many Victorian villas in their gardens. The former were preserved; of the latter as many trees as possible were also saved and made the distinguishing feature of the whole estate. The mansions are partly on the edge of the estate and do not actually belong to it (Roehampton House by Thomas Archer of 1710, Upper Grove House, now the Froebel Institute, of 1779), but are partly also inside the estate (Downshire House by Brettingham of *c.* 1770) and indeed in very important positions. This applies in particular to Manresa House, the Jesuit College, which was built by Chambers in 1750, Mayfield Convent (1939, neo-Georgian) and Mount Clare of 1772–80. Mount Clare and Downshire House, one white the other of dark brick, have been taken over by the London County Council and will be used for some public purpose.

Apart from these buildings of yet undetermined function, the Roehampton estates contain few buildings dedicated to anything other than dwellings. There is a tenants' club at Alton East and a club-room and warden's house for the old people's houses at Alton West. There was already a recent primary school in Alton Road before the estate was begun, there are two more on the Alton West part, and there are going to be a big secondary school as well, several small nursery schools, a small (too small ?) community centre and a public library and shops. The main shopping centre is going to have sixteen shops in all. Two subsidiary shopping terraces, one in Bessborough Road, the other near the middle of the estate, will account for another twelve. That must seem preposterously little for nearly ten thousand people, but it ought to be remembered that the Roehampton estates lie alongside the old village centre of Roehampton with its long-established shops. In this old centre are also the church, a big building by Fellowes Prynne with a commanding spire, and a number of pubs. The new estate has sites reserved for a small church and a non-conformist chapel. The library has not yet been started, but will be in operation in 1961. It forms a precinct with the two main terraces of shops and one ten-storey block also still on paper. Otherwise the estate is now more or less ready, except that turfing and planting will still go on this year.

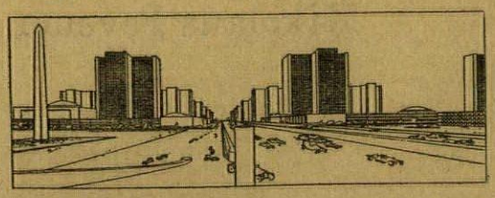
The housing consists of twenty-five point-blocks in three groups, five eleven-storey slabs of maisonettes, a large number of terraces of four-storeyed maisonettes, a smaller number of terrace houses, mostly of two storeys, and a number of single-storey old people's houses. The high buildings are of reinforced concrete, the maisonettes and terraces essentially of traditional construction.

The plan is characterized by the absence of any centre in the academic sense. If a centre can be named, it would be the rising lawn of Downshire Field, a negative, picturesque, informal centre. How it is reached, how the groups of point-blocks are experienced variously, can only be appreciated in the form of a perambulation, and such a perambulation has been attempted on pages 24, 25, and will be made more persuasive by the accompanying pictures.

The elements which make up the character of this vast, yet not inhuman, composition are the point-blocks and the high slabs, the mixture of high and low and the placing of all the buildings in landscape. To appreciate what the London County Council has made of these elements, their origins must now be considered, and their handling by others who used them before the Roehampton Estate was planned. For this purpose the elements must be examined singly.

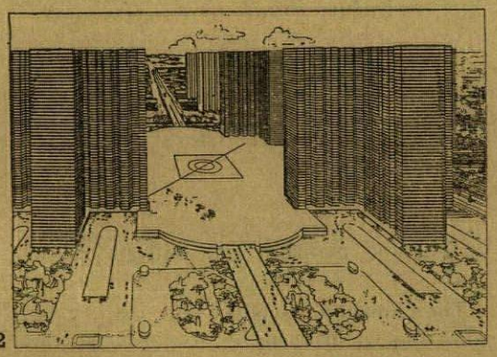
At the beginning as well as at the end of the pedigree of Roehampton stands—as in many other aspects of twentieth-century

architecture—the great and elusive figure of Le Corbusier, a stimulus as well as a danger.



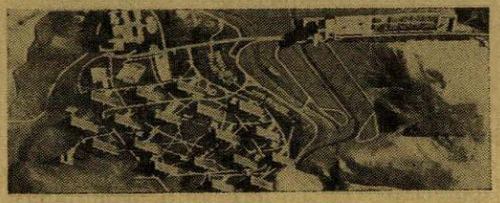
1

His *ville contemporaine* of 1922, 1, established the vision of twenty-four identical skyscrapers rising above uniform lower blocks. The layout is rigidly formal and symmetrical, a Versailles for the three million people of a twentieth-century city. Only parks and gardens are treated freely and picturesquely, but, it seems, without much attention or gusto. The *plan voisin*



2

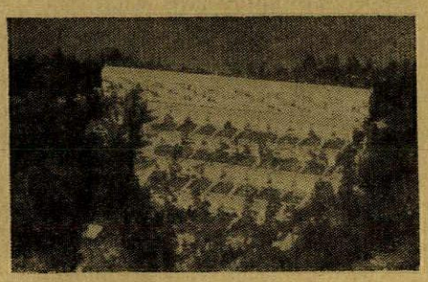
of 1925, 2, has more of that, at least in the perspectives, but the general rigidity remains in spite of the fact that now this absolutist pattern was to be imposed on the centre of Paris. No compromise of existing features and new features is tolerated. In a later more concrete planning scheme, that for Nemours of 1935, 3,



3

Le Corbusier used in addition about twenty high slabs in staggered tiers.

Meanwhile Sweden had started from the other end. The Co-op estate on the island of Kvarnholm near Stockholm planned by Olaf Thunström in 1927, 4, was informal, sympathetic to the rock and pine landscape and combined mill, elevators and different types of housing in a happy



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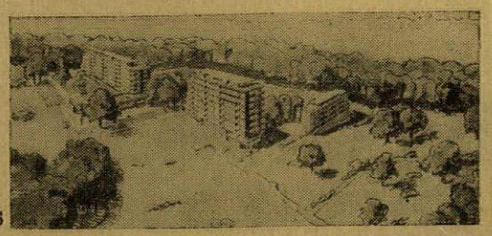
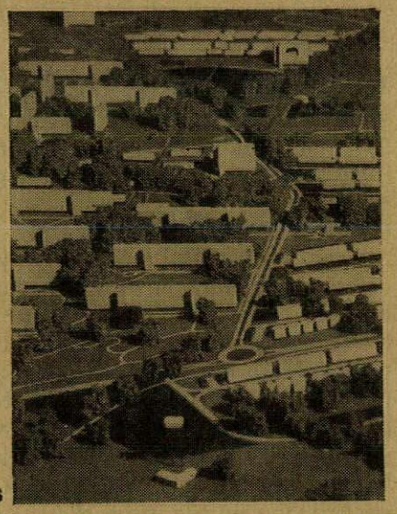
ensemble. Whether Gropius and Maxwell Fry knew of this when, in 1935, they made their plan for an Isokon estate at St. Leonard's Hill near Windsor, 5, is not recorded. It does not seem necessary to



5

assume it; for the *genius loci* of England certainly acted with vigour on Gropius, and the idea of a picturesque English estate endowed with modern instead of Palladian blocks might well have appeared independently.[1] The buildings here are two eight- or nine-storeyed slabs and one lower range at right angles. That the AA boys who put forward their splendid and astonishing scheme for Faringdon in 1938,[2]



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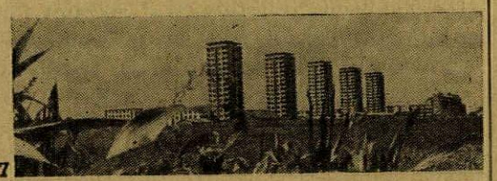
6, had studied Gropius's project goes without saying. Theirs is larger, more varied and remarkably prophetic with its mixed arrangement of high and low ranges and its intelligent use of the landscape elements of the site. Here for the first time we seem to move in Roehampton surroundings.



7

In the years between Kvarnholm and St. Leonard's Hill, in 1932–33, Baudouin & Lods had built their bleak estate of fifteen-storeyed point-blocks and three-storeyed blocks at La Muette, Drancy, 7—an estate of 1,200 flats—and in Holland J. F. Staal had erected a single point-block at Amsterdam[3] and van Tijen, Brinkman and van der Vlugt a single high slab at Rotterdam.[4] The point-block as such was no innovation, nor was the high slab. Dr. Sekler in his excellent little book on *Das Punkthaus*[5] very prettily traces the conception back to Chambord and illustrates an eight-storeyed point-block by Hoeger of Hamburg dated 1911. High blocks of flats go back even in England at least as far as Queen Anne's Mansions in London with its fourteen storeys (1876–1888 by E. R. Robson of the London Board Schools), and high slabs—still in severely parallel lines—were Gropius's recommendation at the CIAM Congress of 1930.[6]

During the war these various themes were worked through with much intelligence and understanding in Sweden, one of the few countries in which building continued. Here, in 1942–45, amongst other things, the *parti* of clusters of point-blocks was developed. Among the earliest is Backström and Reinius's Danviksklippan, 8. In

8

these schemes architects learned to appreciate the effect of grouped skyscrapers arranged in an orderly, not a chaotic American, fashion. But not one of these wartime schemes in Sweden is on a really large scale.[7] Yet one can be sure that they form the principal inspiration for English work after the war.

So only two more jobs are needed to complete this pedigree of Roehampton:

[continued on page 35

[1] See THE ARCHITECTURAL REVIEW, vol. 77, 1935, pp. 188, etc.

[2] Their names were: Planning: Elizabeth Chesterton, P. L. Cocke, R. V. Crowe, D. Duncan, A. Pott, P. M. Thornton, J. Wheeler. Housing: A. J. Brandt, R. L. Davies, D. S. Gladstone, J. C. de C. Henderson, A. W. Nicol, P. Saxl, F. L. Sturrock. See *Focus*, No. 1, 1938.

[3] Daniel Willink Plein, 1931.

[4] Bergpolder Flats, 1934.

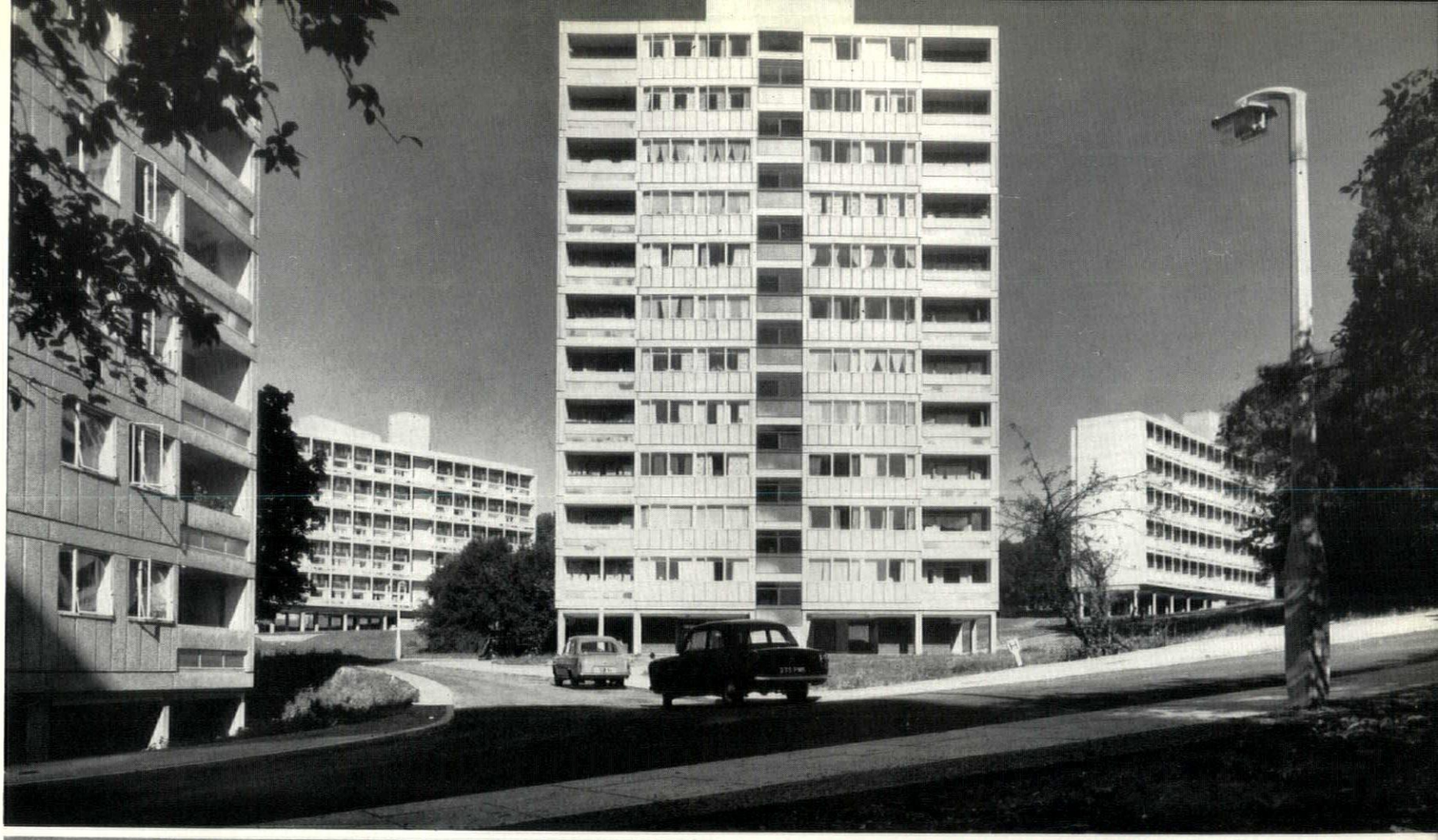
[5] Vienna, 1952.

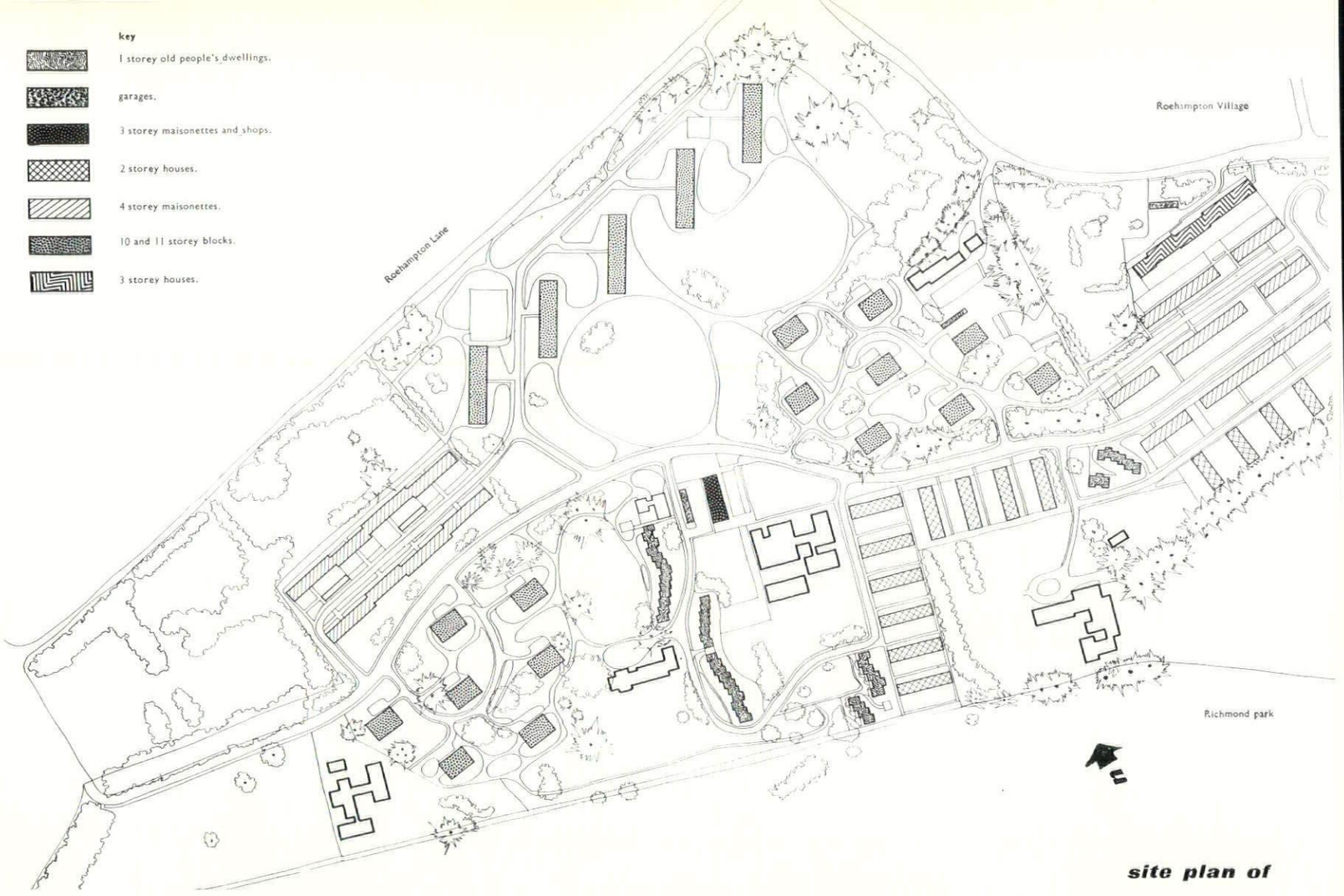
[6] *Rationelle Bebauungsweisen*, Frankfurt, 1931, p. 30.

[7] The largest probably is Reimersholm by Forbat & Egler with 888 flats.

On the facing page, Alton East, 10, and Alton West, 9, the two parts of the Roehampton Estate. The planning in landscape is the same for both, the architectural character is different. Here lies one of the critical problems of the estate.

9 → 10





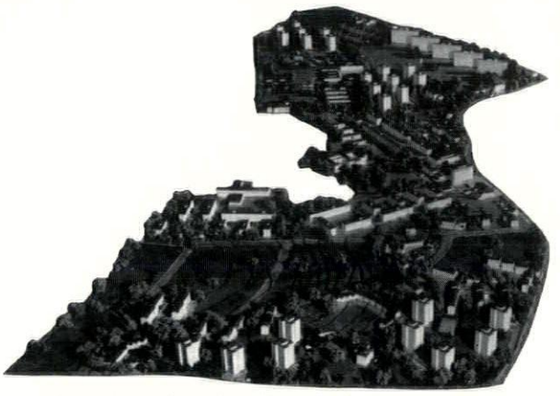
site plan of

PERAMBULATION

The plan can be described as follows; appreciation and criticism are given in the accompanying article. There is no centre in the sense of academic planning. Instead there are three principal nuclei: the three groups of point-blocks. The first (and earliest) stands at the corner of Portsmouth Road and Roehampton Lane dominating in a most exhilarating way the main approach to London along A.3 and holding out hopes of a new London which the foreign visitor, arriving by car from Southampton via Alton, the Hog's Back and Guildford, will hardly see fulfilled. Below that eminence to the west are terraces of maisonettes and cottages. They are of brick partly rendered white and partly in colours, have gently pitched roofs and are grouped variously without any attempt at axiality. They hide successfully in the old trees which also rise between the point-blocks. This scenery, both urban and arcadian, extends as far as Alton Road beyond which, to the north-west, the character changes. Here is the boundary between Alton East and Alton West.

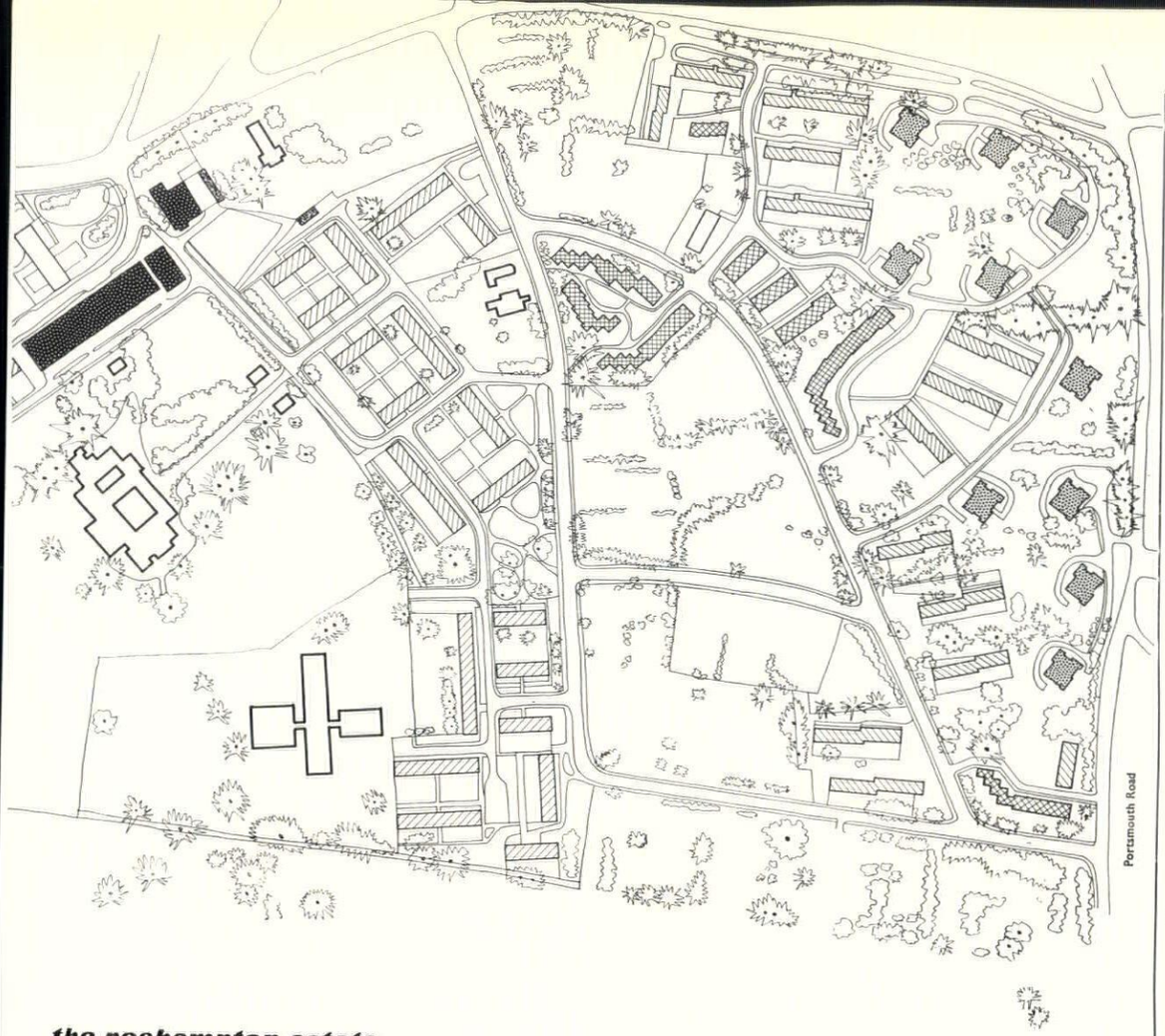
Alton West should be approached from Roehampton Village; that is, after having completed the loop of Roehampton Lane—Portsmouth Road—Alton Road, a little further north along Roehampton Lane. Here, just opposite the weather-boarded King's Head, is the shopping centre, which will dominate more than it does now when the one point-block is erected as a beacon and the library with its low domes extends from it to the south-west. The two shopping terraces stand at right-angles to each other at the entrance to Danebury Avenue, a short street but lined on both sides by long terraces of maisonettes, somewhat like a Georgian street, says the London County Council. This attempt at a central axis is, however, foiled by the shortness of the street and the anti-climax at its end which is no more than a staggered terrace of single-storeyed old people's houses. The Manresa estate is behind to the south and to its east are three groups of maisonettes again arranged in themselves axially, each with three ranges around an oblong centre. The windowless brick end walls of the blocks speak very eloquently. The trees and the rolling contours are in contrast to this layout. To the north behind Danebury Avenue are more lines of four-storeyed maisonettes with behind them one row of three-storeyed houses of almost identical external design.

Then the axis swings round a little and one approaches the centre of Alton West. Mayfield Convent, placed higher than this central part, rises with its neo-Georgian front to the south behind rigidly arranged lines of two-storeyed houses with their walled back gardens. But to the north are eight of the later type of point-blocks, all identical. This group faces to the west towards an area which is to be important but is not fully developed yet and can hardly ever become a visual climax. The primary



Model of the scheme, from the south-east

Alton East from the air



the roehampton estate

school lies back a little and is low. The site for the nonconformist chapel is small and so is that earmarked for the community centre.

Also the whole group will have to compete with the scale opposite to the north where the real climax of Alton West lies; Downshire Field, a spacious rising lawn with the dramatic, hard-hitting rhythm of the five high slabs set at an angle along the top. Downshire House appears in the distance between slabs and points as one approaches the end of this central area and looks back. Finally, after a glance at the chaste façade of Mount Clare to the south-west, the west corner towards Richmond Park forms the end of the perambulation, with the third group of point-blocks, another low school and another axial line of maisonettes (Sherfield Gardens).

credits

Architect to the Council: Hubert Bennett in succession to Professor Sir Leslie Martin.

Deputy Architect: F. G. West.

Principal Housing Architect: H. J. Whitfield Lewis.

Senior Planning Officer: L. W. Lane in succession to A. G. Ling.

Architects in Charge: Alton East
M. C. L. Powell
A. W. Cleeve Barr
O. J. Cox
Mrs. R. S. Stjernstedt

Architects in Charge: Alton West
K. J. Campbell succeeding M. C. L. Powell.
C. A. Lucas

Architects: Alton East
J. N. Wall
H. P. Harrison

Architects: Alton West
J. A. Partridge
W. G. Howell
J. A. W. Killick
S. F. Amis
J. R. Galley
R. Stout

Principal Quantity Surveyor: M. F. Rice.

Chief Engineer: J. Rawlinson.

Consultant Structural Engineers: Alton East· Ove Arup and Partners.

Consultant Structural Engineer: Alton West. W. V. Zinn.

Consultant Heating Engineers: Alton East. Oscar Faber and Partners.

Consultant Heating Engineer: Alton West. Chief Engineer to the LCC.

Quantity Surveyors: William C. Inman and Partners.

typical gross rents

Alton West

Point Blocks: 58s. 9d. to 71s. 6d.

Maisonettes: 53s. 6d. to 69s. 9d.

Terrace Houses: 63s. 6d. to 64s. 9d.

Old People's Dwellings: 28s.

Alton East

Point Blocks: 40s. 1d. to 75s. 5d.

3 Storey Flats: 25s. to 34s. 5d.

Maisonettes: 45s. 9d. to 58s. 4d.

Cottages: 57s. 1d. to 62s. 7d.

techniques

Alton West (Roehampton Lane)

nearly 100 acres 1,867 dwellings

Proportions

Point blocks	c. 35%
Slabs of maisonettes	c. 18%
Maisonettes	c. 30%
two- and three-storey terraces and single-storey old persons dwellings	c. 17%

Accommodation

Point blocks

12 storey. Each floor, two 3-room and two 2-room flats.

Slabs of maisonettes

11 storey. Living room and working kitchen and 2 bedrooms.
One 10 storey of flats and maisonettes not yet built.

Maisonettes

4 storey. Living room, dining-kitchen and 3 bedrooms.

Terraces

3 storey with 3 bedrooms, 2 storey with 4 bedrooms.
Single storey with one bed-sitting room.

Construction

Point blocks

r.c. frame.
precast cladding.
precast floor beams, staircases.

Slabs of maisonettes

alternating r.c. frames and load bearing r.c. cross walls.
precast cladding.
precast floor beams, staircases.

Maisonettes

load bearing brick cross walls with timber and glass infill panels.
r.c. floors and roofs.

Terraces

load bearing brick cross walls with timber and glass infill panels.
timber floors.

Alton East (Portsmouth Road)

28 acres 744 dwellings

Proportion

Point blocks	c. 57½%
Maisonettes	c. 32½%
Two storey terraces	10%

Accommodation

Point blocks

11 storey. Each floor three 3-room plus one 2-room flat.

Maisonettes

4 storey. Living room, dining-kitchen, 3 bedroom.

Terraces

2 storey. 3 and 4 bedroom.

Construction

Point blocks

externally r.c. columns and beams
internally r.c. load-bearing internal walls.
brick cladding.
ground floor, strong colours and tiles.

Maisonettes

load-bearing brick cross walls.
brick facings for external walls.
pitched roofs.
r.c. floors.

Terraces

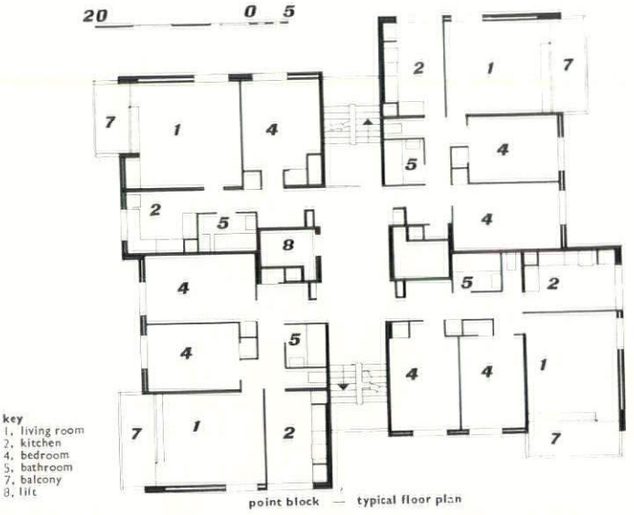
traditional brick construction with pitched roofs.
Colour much used externally.

13→

11

ALTON EAST, ROEHAMPTON

11, 12 and 13 (opposite), three views of Alton East, showing the three contrasts on which the aesthetic success of the estate depends: high and low, trees and building, curved and straight. The buildings in this case are point-blocks, four-storeyed blocks of flats and two-storeyed cottages.



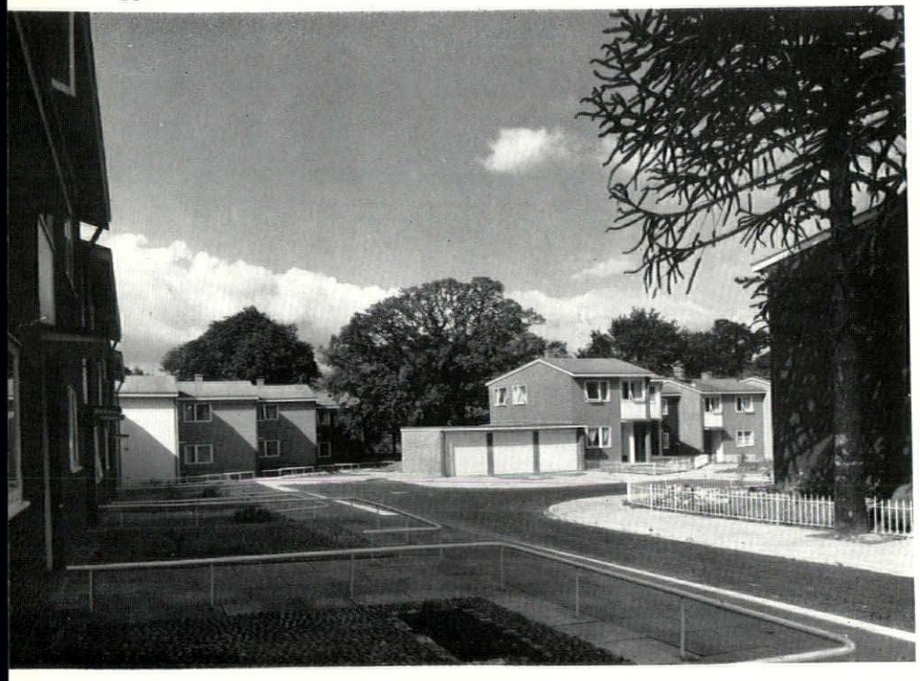
12

14

ALTON EAST, ROEHAMPTON

14 and 15, according to how the photographer places himself an urban effect can be experienced or one belonging to the tradition of the English garden suburb.

15

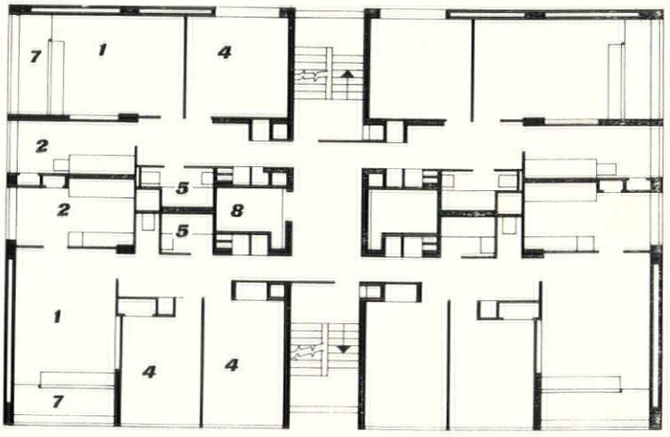


16, two of the most thrilling views of the Roehampton Estate are that of Alton East from the approach to London on the Portsmouth Road and that of Alton West from Richmond Park illustrated above.

ALTON WEST,

17

key
1, living room
2, kitchen
4, bedroom
5, bathroom
7, balcony
8, lift



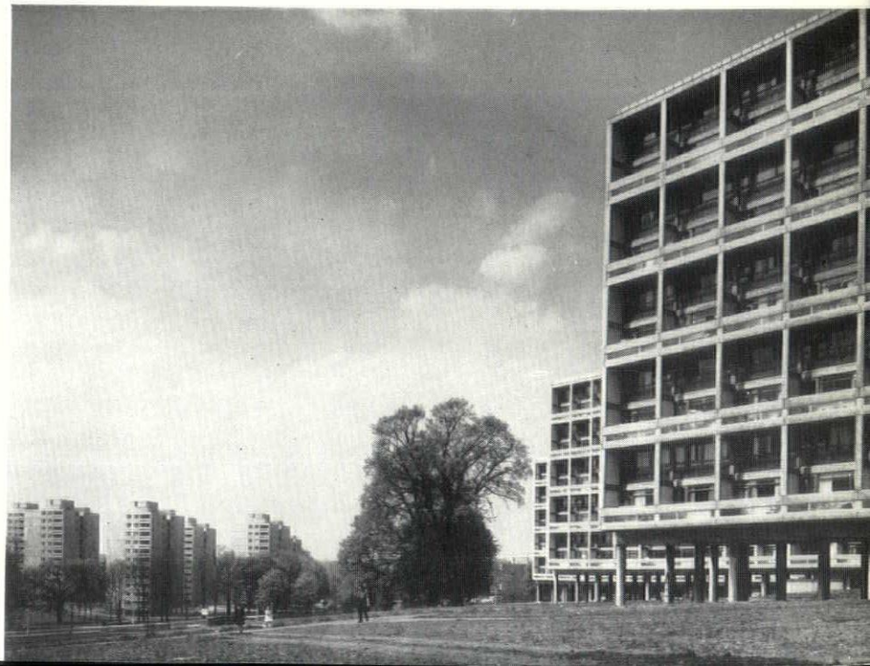
40 20 0 10

point block, first floor plan

ROEHAMPTON

17, 18, *the point blocks of Alton West are sheer (top), where those of Alton East,* 14, *had recessions and projections. They are faced with concrete aggregate where those of Alton East were faced with light brick. The purely architectural character is more exciting and in the high slabs of maisonettes more ruthless. The trees and the winding walks between the point blocks help to mellow the squareness of the architecture, just as the spacious sloping-down lawn of Downshire Field introduces curves and a lush colour to set off the slabs.*

18



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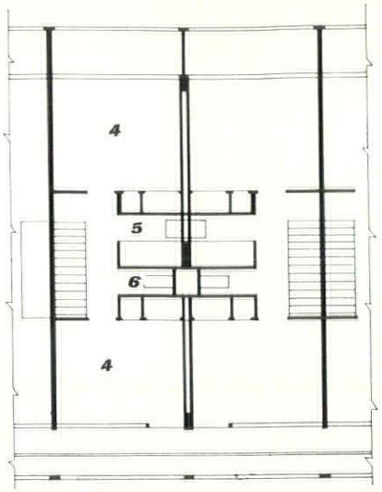
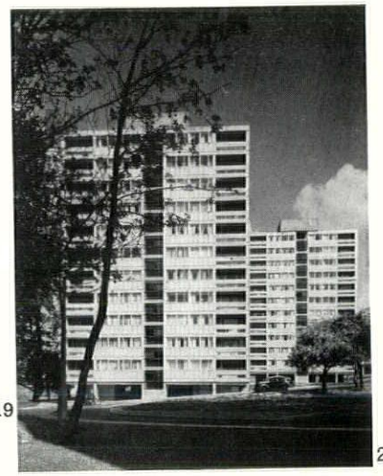


maisonette, upper floor



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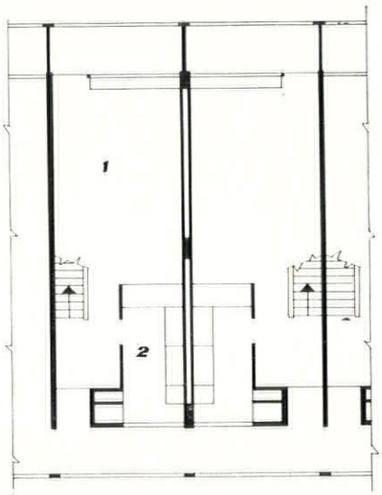
21



30 0 10

maisonette, lower floor

key
1. living room
2. kitchen
4. bedroom
5. bathroom
6. w.c.

19–21 *and* 22 *and* 23 (*facing page*), *the relations of the point blocks to each other and of the slabs to each other varies according to one's viewpoint, a matter of course, but one taken into consideration at Roehampton with much intelligence and sensitivity.*

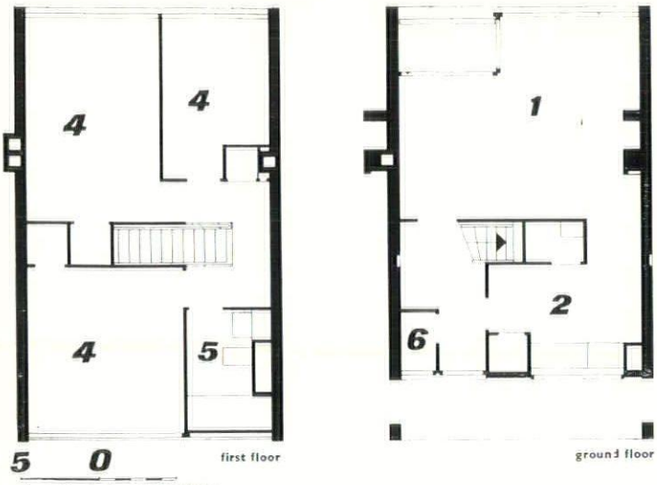
22

23

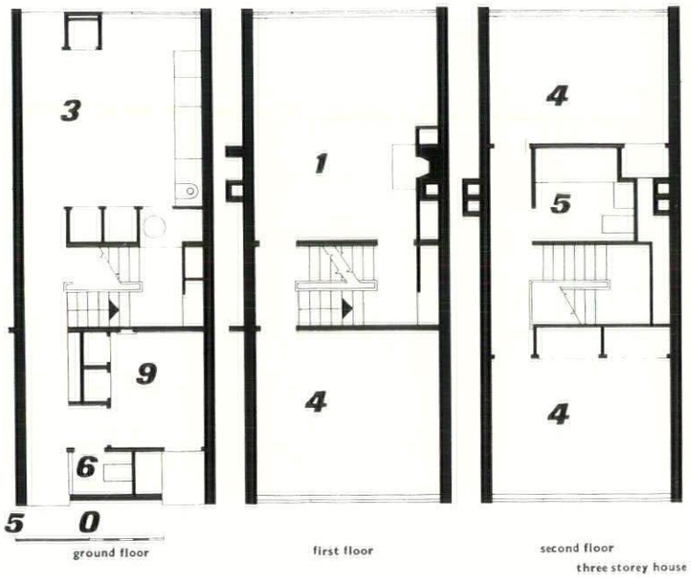
ALTON WEST, ROEHAMPTON

24

24, the boiler plant is close to one of the high slabs (see plan). Its roofscape and its tall chimney appear in this view, demonstrating the fruitful influence on Alton West of Le Corbusier's recent style and in particular the Marseilles Unité.



maisonettes in four storey blocks



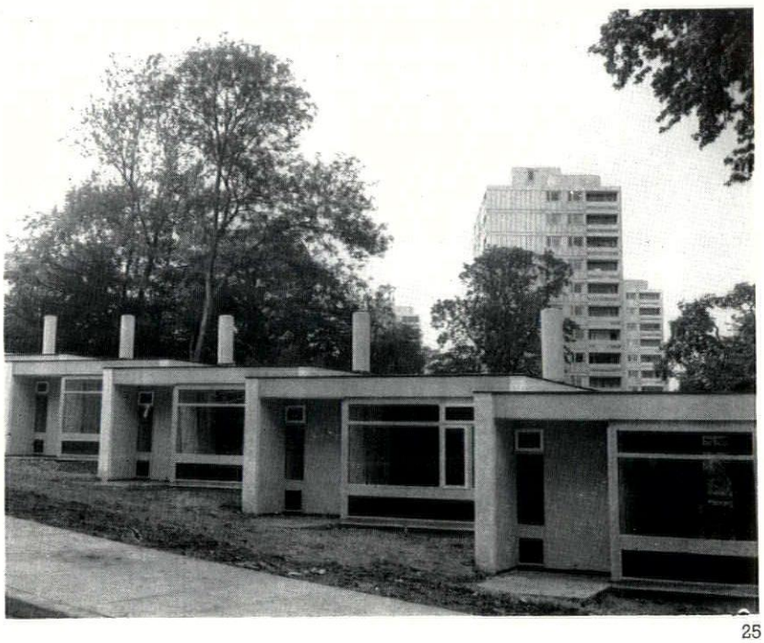
three storey house

ALTON WEST, ROEHAMPTON

25, *the staggered line of the old people's cottages in the foreground; point-blocks behind.*
26 (*opposite*), *one of several identical rows of cottages. They are placed rigidly in parallel lines with exposed bare brick end-walls and garden-walls.*

27 (*lower picture opposite*), *the long terraces of maisonettes along Danesbury Avenue. More of these, again rigidly in parallel lines, are behind it to the north.*

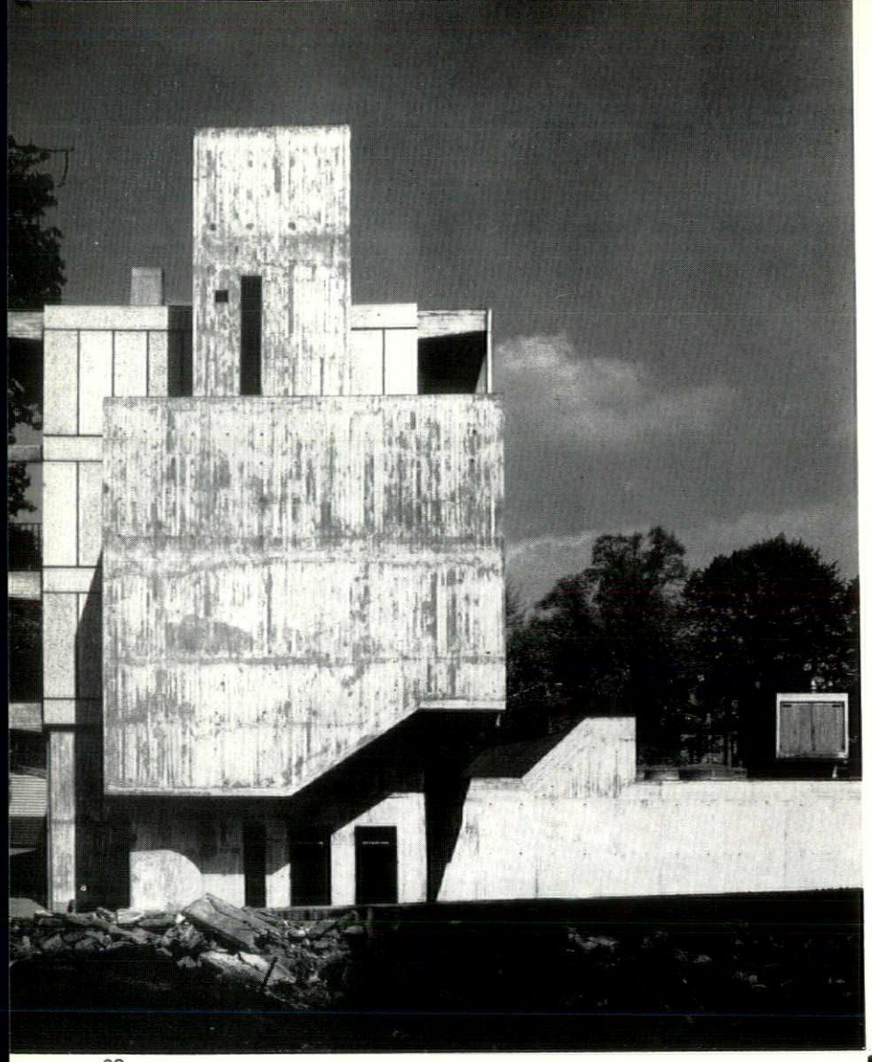
26 → 27



25

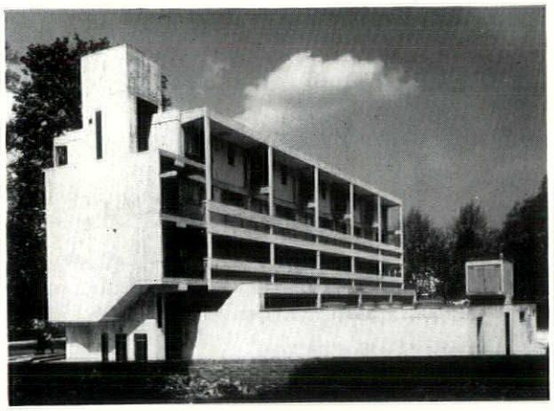
key
1, living room
2, kitchen
3, dining kitchen
4, bedroom
5, bathroom
6, w.c.
9, store

two storey house



28

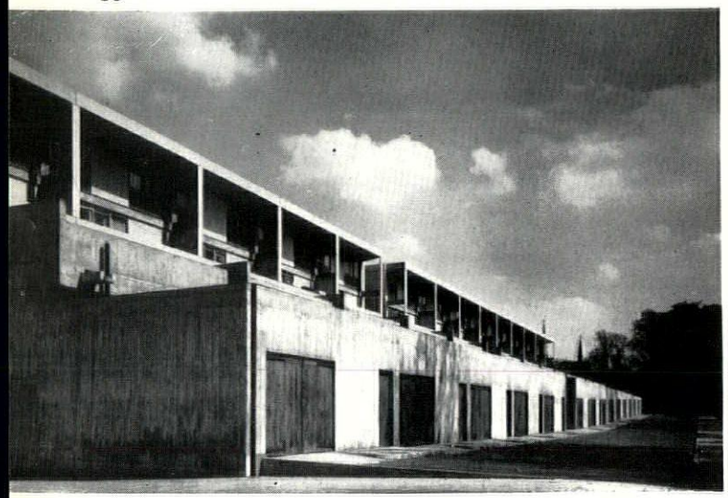
ALTON WEST, ROEHAMPTON



29

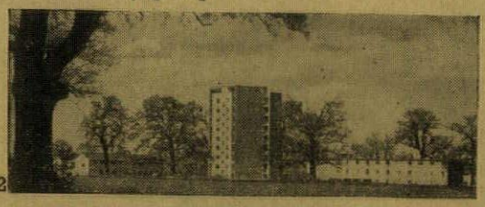
28–31, *brutalism is a label which ought perhaps to be avoided. Yet the details of the end walls and the backs of the shopping terraces at Roehampton have that pride in* beton brut *and that delight in chunky shapes which justifies the term in reference to Le Corbusier at Chandigarh and to this most recent part of the Roehampton Estate. The composition of the shopping area will only be complete when, in addition to the two terraces, a ten-storeyed block has gone up and a branch library with a series of low domes.*

30



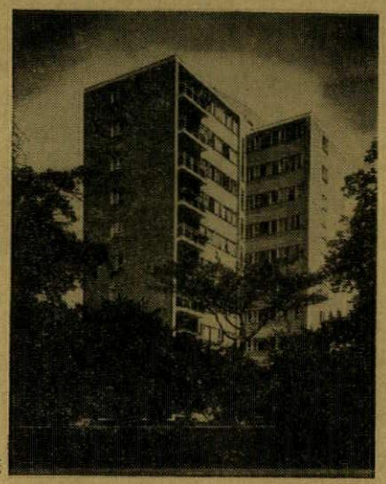
31

continued from page 22]



32

Frederick Gibberd's The Lawn, Harlow, 32, of 1950, carried out with one ten-storeyed block surrounded by lower terraces but designed to repeat this pattern several times, and the London County Council's own Ackroydon estate at Wimbledon, 33, only three-quarters of a mile across Putney Heath from Roehampton. This was begun early in 1951, when Robert Matthew was architect to the Council and Leslie Martin



33

his second in command. When the Alton Estate, that is Alton East or Portsmouth Road, was begun in 1952 he was still in charge. But in the course of 1953 Leslie Martin took his place and remained until after most of the Roehampton Estate had been designed and much had been built.

It has already been said that the Roehampton Estate is one of the largest planned estates of Europe. It must now be added that it is also the one planned by the largest architectural office of Europe. In the Architect's Department at County Hall a staff of about two and a half thousand is at work, including about five hundred trained architects. Of these the housing department employs about two hundred and fifty. It remains a mystery how so large a staff can produce so unified a style. On the other hand it can perhaps be said that, if this style is not uniform, although it is unified, the multitude of talents working in the department is perhaps the reason. Even so the conception of the estate and of each type of building must ultimately be one man's and who this man is, we don't know. What is certain, however, is the brilliance of the conception and the eminent skill of the execution. There is much to be said in favour of the opinion demonstrated by the last Milan Triennale which gave Roehampton one of the central positions in the section dealing with recent housing all over the world. The Hertfordshire schools have made history for England in one way; Roehampton is making history now in another.

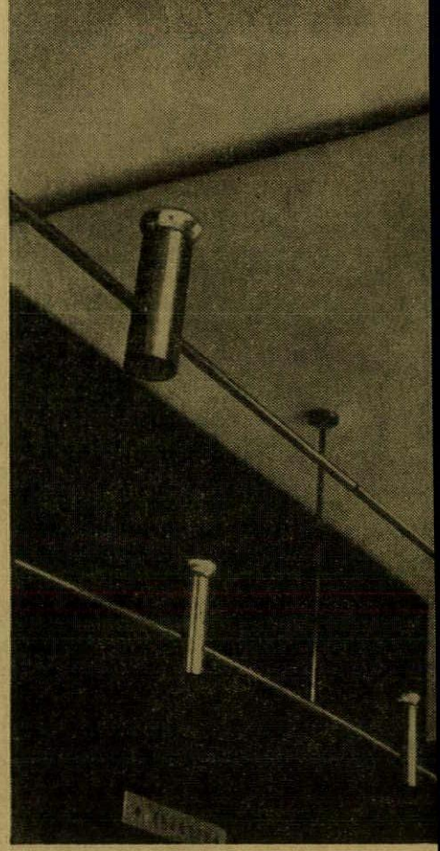
Whatever the sources of its planning and architecture, the combination of the two is highly individual and moreover eminently English. The setting of a cubic type of building in landscape is eighteenth-century tradition and has once before made a deep impression everywhere abroad. The informal but highly thoughtful grouping of buildings is equally English and has established Bath as the opposite of Nancy in eighteenth-century town planning. Benefiting from this civilized Georgian tradition the architects of the Roehampton Estate succeeded in combining human scale with vast extent—a feat no French nor any Italian or Dutch architect has been able to achieve. The effects accomplished at Roehampton range from the cosy to the violently startling.

But although humanism and variety are the hallmark of the whole scheme they are not active equally in all parts. In fact there is a very noticeable change between Alton East and Alton West. It is patent in the architectural design and affects the relation of buildings to plan. The earlier point-blocks are faced with pale cream brick and have lively projections and recessions in outline. The earlier maisonettes and cottages have roofs of gentle pitch. The whole combines perfectly with the picturesque plan, the winding streets and informally placed trees. It is architecture at ease. The later architecture is exacting. It is highly intelligent, concentrated, of great integrity, crisp and precise. The point-blocks are completely flat in their elevation. Nothing must stick out. The maisonettes have flat roofs and windowless end walls and the slabs are extremely interesting but unquestionably ruthless in their rhythm. In fact, if the foreign source of Alton East was Sweden, the foreign source of Alton West is the *Unité* at Marseilles. This was finally completed in 1952, shortly before Alton West was designed. The *Unité* is one block only, but more were intended, and we have already seen that Le Corbusier, in other schemes dating back to 1935 had suggested rows of staggered high slabs.

Whether the change in the architectural style of the Roehampton buildings was due to the change from Robert Matthew to Leslie Martin or to the change in the team of young designers cannot be stated with certainty.[8] The team on Alton East had been Michael Powell, Cleeve Barr, Oliver Cox, Mrs. Stjernstedt, J. N. Wall and H. P. Harrison. On Alton West it was Colin Lucas, John Partridge, W. G. Howell, John Killick, S. F. Amis, J. R. Galley and R. Stout. The truth in such matters of the creative contribution in team work is probably one of cross-fertilization. That the design of the buildings at Alton West is one of the best produced in England in the last ten years there can be no doubt. That the design of the buildings of Alton East was less outstanding, in the literal sense of the word, can also not be denied. But the earlier part of the estate has a humanism which in the newer part has admittedly not become brutalism—though in the end elevations of the shopping terraces there is more than a touch of the deliberate violence of the brutalists—but has lost some of the suppleness of movement. There is less variety in the architecture and more *unité*, as it were, and this instinctive refusal to compromise with sentimentality has created a conflict between the site and layout and the architecture. The site and layout, taking it all in all, have remained picturesque, but the buildings are so rigidly lined up that they call for a rigid general plan as well, and so the terraces to the north of Danebury Avenue and parallel to it, and the other areas of completely parallel development, endanger the greatest visual attraction of Roehampton, the asset which distinguishes the estate from any abroad. This warning, it must be understood, does not apply to Downshire Field, the open space with the point-blocks on the east and the slabs as a backdrop to the north. Here the rigidity of the individual building is poignantly contrasted with the undulations of the terrain and the lawn. So here contrast adds to enjoyment, and, what is more, this particular contrast is one badly needed in the architectural situation of today.

There has been, as everyone knows, a great longing among architects after the war to get away from rationalism and to recover fantasy. Ronchamp is as much a sign of this as the Neo-Liberty of Italy, the chunky concrete of the English brutalists as much as the chequerboard patterns of fenestration of the English non-brutalists or the arbitrary patterns in screen walls inside and outside the Americas. Roehampton demonstrates the possibility of up-to-date sanity. It is not necessary to cover the surfaces of buildings with arbitrary bits. Planning and siting ought to serve the purpose of creating that sense of variety, contrast and relief which everyone wants. Buildings can remain rational, as they ought to, if they are sensitively grouped and if they are placed in juxtaposition with lawn and trees. That is what distinguishes the best mid-twentieth century schemes from those of the twenties and thirties.

[8] The Deputy Architect, F. G. West, the Principal Housing Architect, H. J. Whitfield Lewis, and the Senior Planning Officer, L. W. Lane, were the same on both parts.



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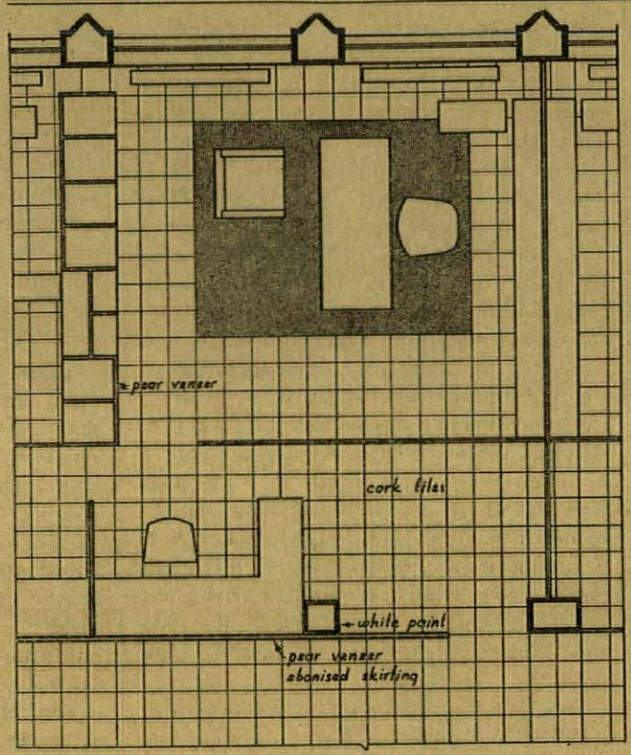
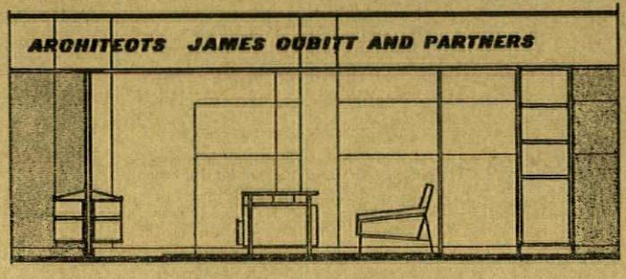
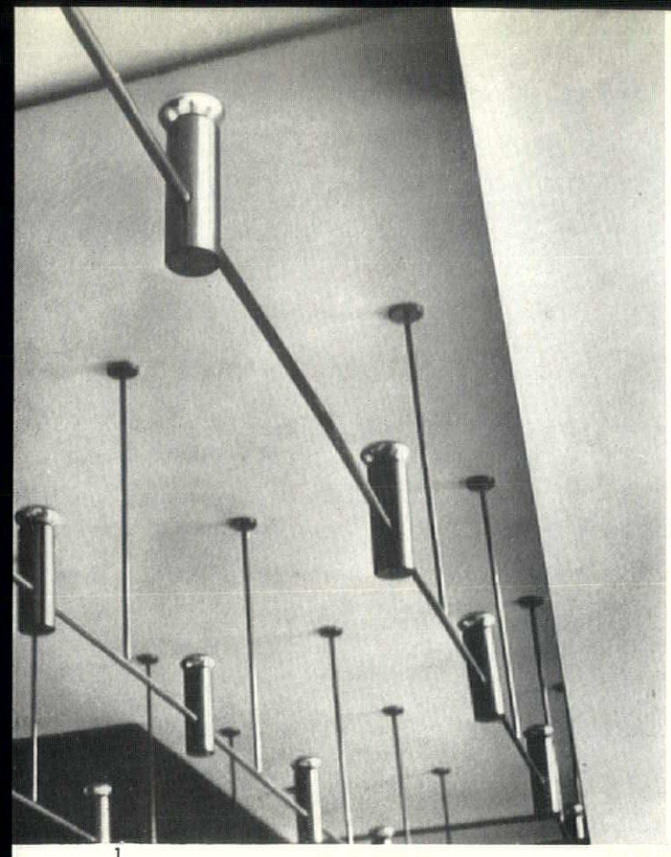
a monthly review of interior design



Offices in Hanover Square, London





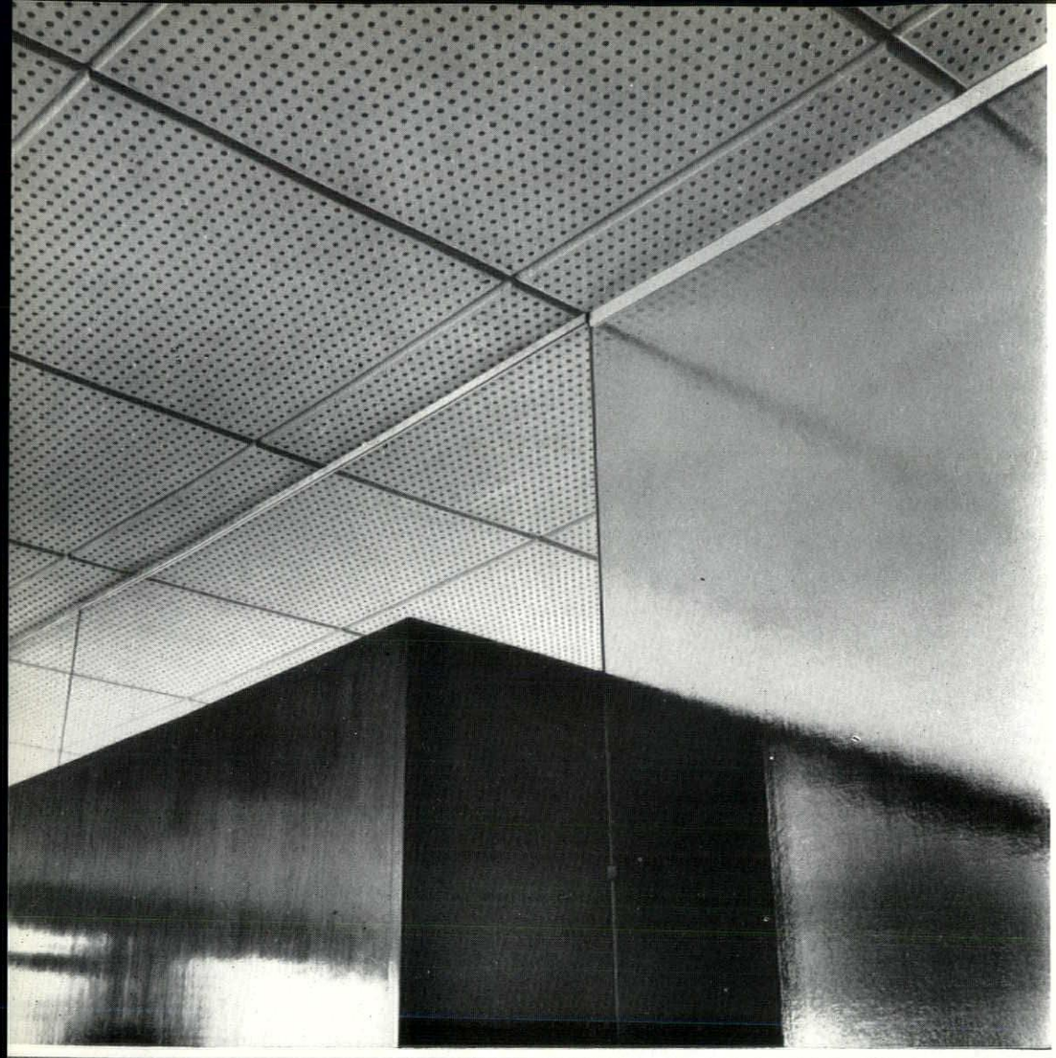
1

2
3

London offices for an international fashion magazine, and its associated publications, had to be inserted in the upper floors of a building already in construction, and permitting few modifications to the frame (except on the top floor, to give increased space for studios), with the result that the planning tends to follow the existing structural grid (see plan on next page).

In order to establish the firm's character from the moment the visitor enters the building, the architects of the offices also partly re-designed the entrance hall. These ranks of light-fittings, 1, designed by Bernard Schottlander span the hall between mirror-walls that repeat them optically to infinity.

2 and 3, the boardroom, lit by a mixture of upward-directed fluorescent tubes and downward-directed spots, has its rear wall panelled out in the special storage units, here faced in pearwood veneer, devised by the architects in collaboration with Andrew Pegram, and used, with variations, throughout the scheme.



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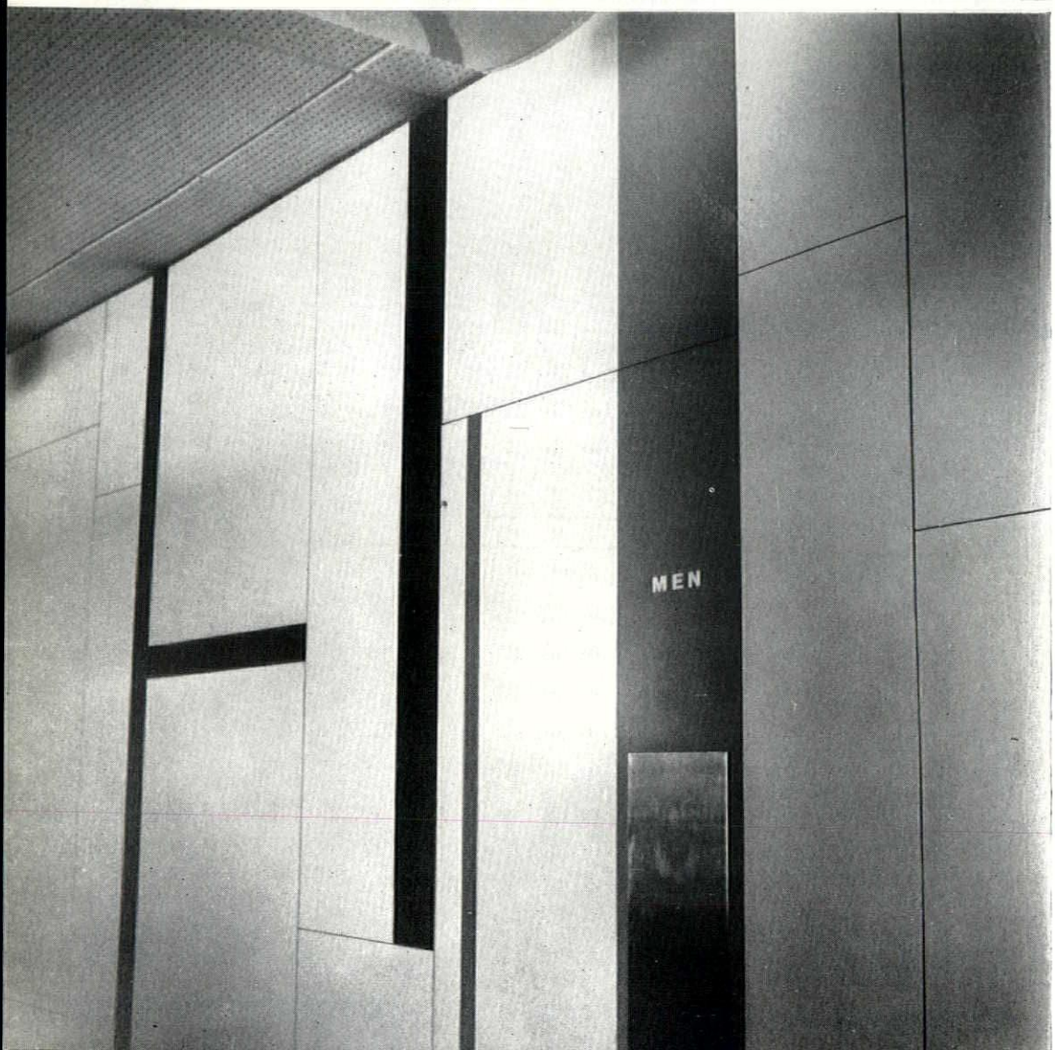
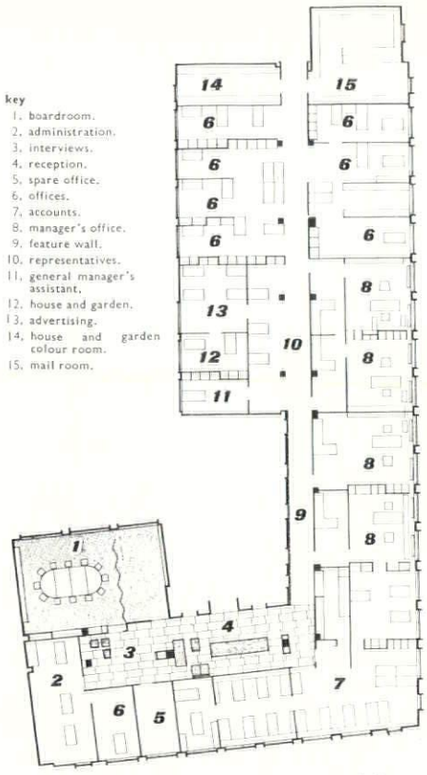


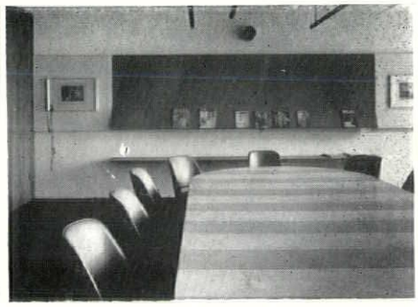
5

key
1. boardroom.
2. administration.
3. interviews.
4. reception.
5. spare office.
6. offices.
7. accounts.
8. manager's office.
9. feature wall.
10. representatives.
11. general manager's assistant.
12. house and garden.
13. advertising.
14. house and garden colour room.
15. mail room.



general plan

0 10 30 50



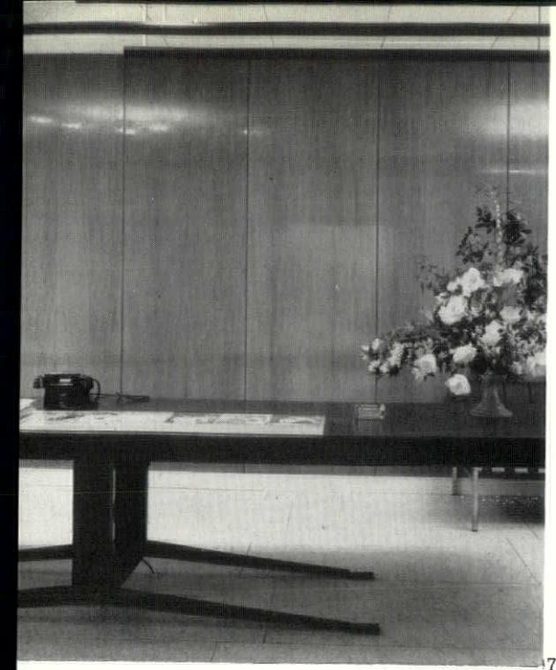
6

4, to preserve a sense of openness and light, partitions not made of storage units are in clear or obscured glass. This detail shows the junction of cupboards, glass and ceiling.

5, an abstract pattern of horizontals and verticals helps to 'lose' the lavatory doors in the corridor-wall opposite the executive offices.

6 and 7, the large tables on metal legs in the boardroom, 6, and reception-area, 7, opposite, were purpose-designed by the architects, as were the directors' desks, of which one is seen in part in 8.

8 and 9, opposite, the degree of visual continuity of the office spaces obtained by the use of glass in the partitioning is well shown here. In 8, the pattern of acoustic tiles and light-fittings can be seen extending across the ceiling of the next office. In 9, the sheet of obscured (unpolished plate) glass, though sufficient to secure privacy, still permits vision enough to emphasize the continuity of adjoining office spaces.



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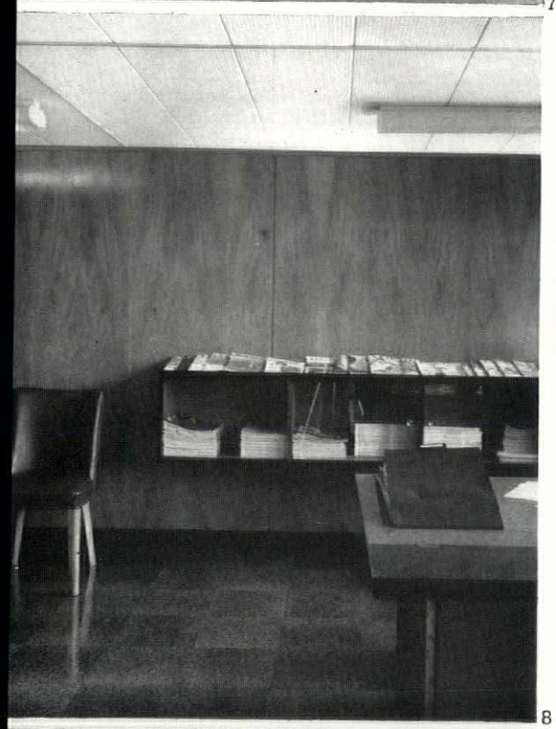

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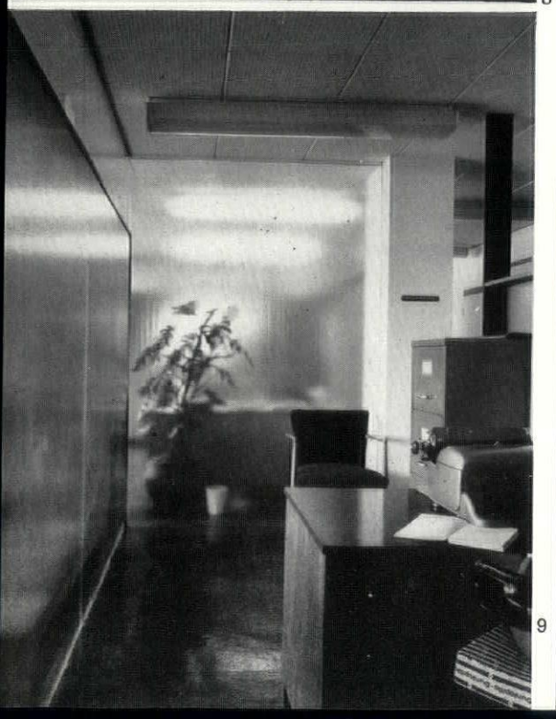


9

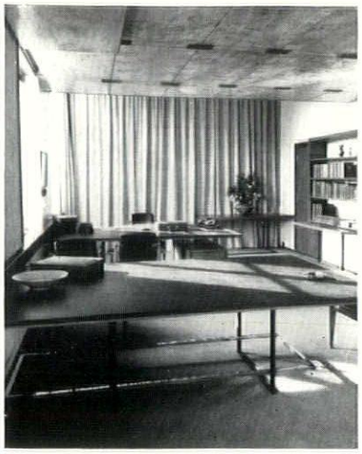
Boardroom in Grosvenor Place, London

architects : Basil Spence and Partners

1

The brief called for a boardroom, in a space with no strong given factors except the module of the fenestration, and a room for a company secretary with well-defined personal and professional needs.

1, a doorknob of turned teak with manganese-bronze door-plate; the door, giving access to the secretary's room, is also of teak. This combination of wood and metal, carefully detailed, runs through the whole scheme.



2

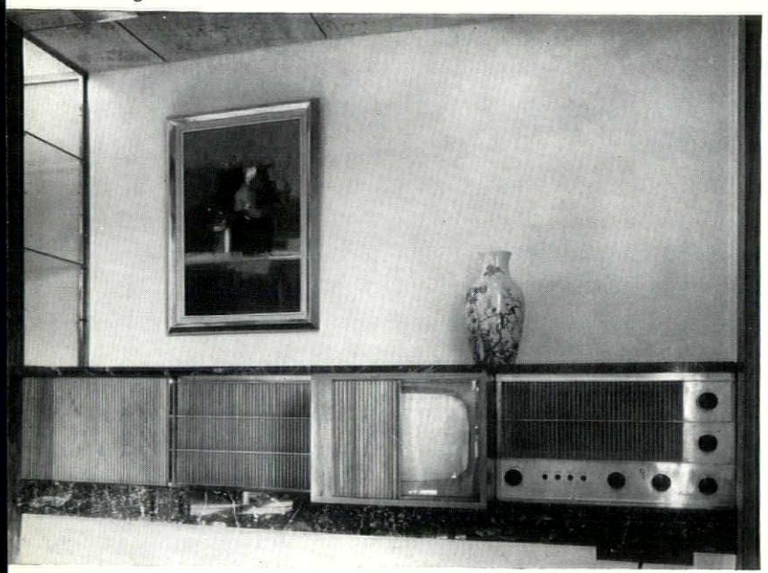
2 and 3, the company secretary's office. The ceiling has been lowered over about two-thirds of its area, but is at full height over the main desk, seen at the far end in 2. The shelf unit on the right is seen in detail in 7. On the other end-wall of the office is a combination unit, 3, housing radio, television, etc., and a glass-fronted cabinet for a valuable collection of china.

4, a general view of the boardroom, with the mural by Edward Bawden on the end wall. The ceiling is of Indian-red hide, the walls of yellow hide, divided into panels by manganese-bronze strips on the module of the windows.

4

BOARDROOM IN GROSVENOR PLACE

3



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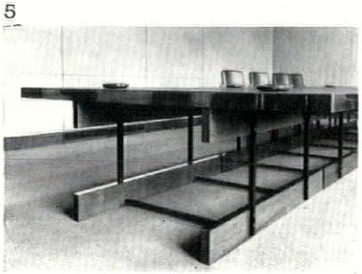
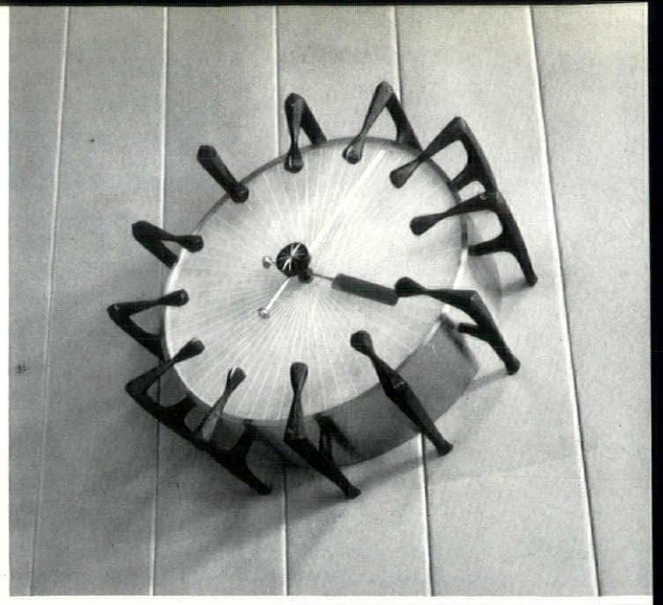


5, the boardroom table; the legs are of mild steel, with identical teak bearers top and bottom, and loose top made up in four sections so that it can be adjusted to suit meetings of varying sizes. The top is in black leather with a manganese-bronze edge-strip.

6, purpose-designed clock (boardroom) with brass case and hands, engraved alabaster face, wrought iron hour-marks.

7, adjustable teak bookshelves in the secretary's office.

8, one of the chairs designed by the architects, and used throughout the scheme: teak, with manganese-bronze fittings and black leather upholstery.



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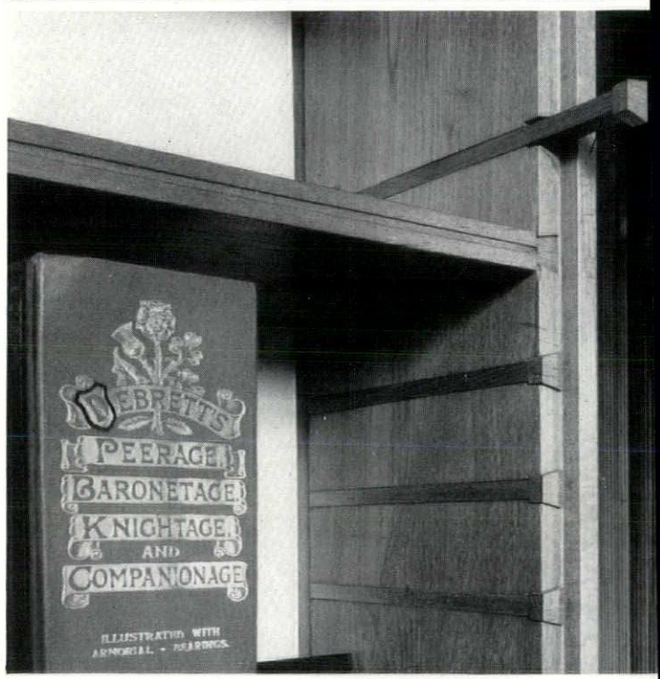

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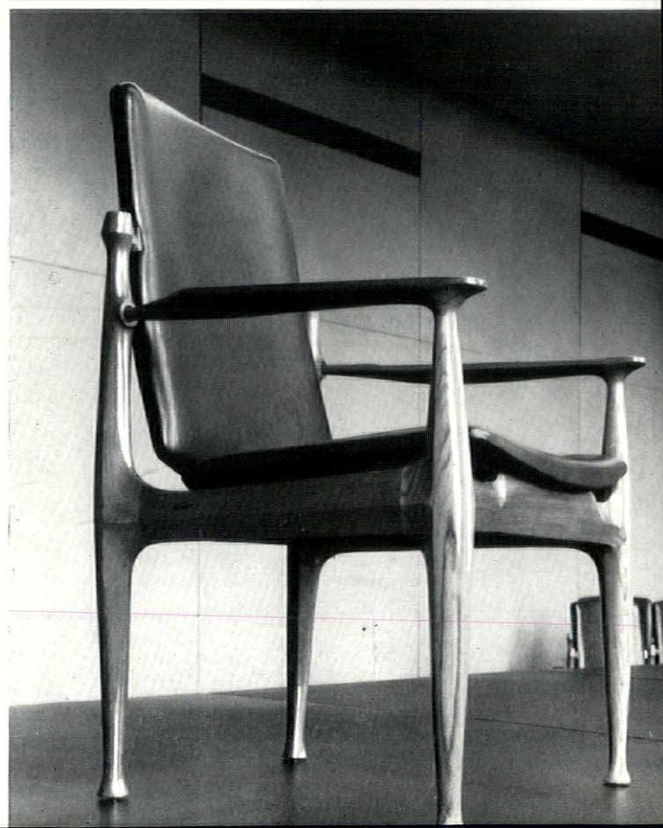

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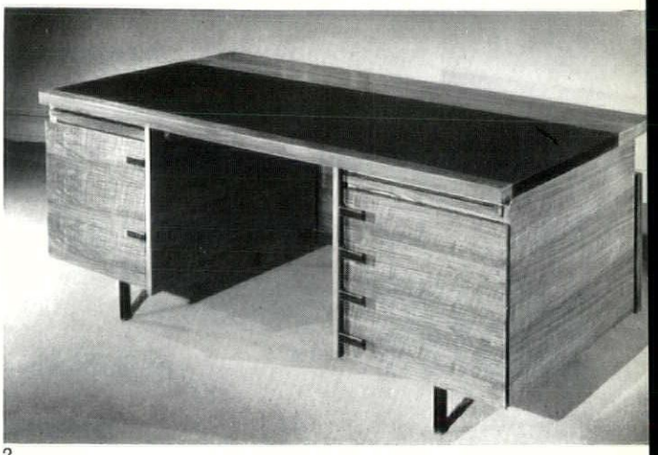


2

Status Furnishing 1

Among the Contract and Purpose-Made furniture now available from Heal's there are two notable pieces in the grand manner for really opulent interiors. **1,** *an eight-foot by four-foot oval table, described as a dining table but usable for more ceremonial purposes, with teak veneered top and matt-black painted cast-iron pedestal; designed by Nigel Walters, it is priced at £95.* **2,** *is an impressive executive desk, which sets walnut against black metal and black leather (the latter for the top and the draw-pulls), designed by Clive Hunt. There are two related cupboard units in the same materials, which help to build up a unified executive suite, and the flat-board across the back of the desk swings up to unite with the top in creating a work-surface and conference-table dimensions. Prices of the units in this HC 600 suite are: desk, £213 10s. 6d. cupboards, £105 10s. 0d. and £53 4s. 6d.*

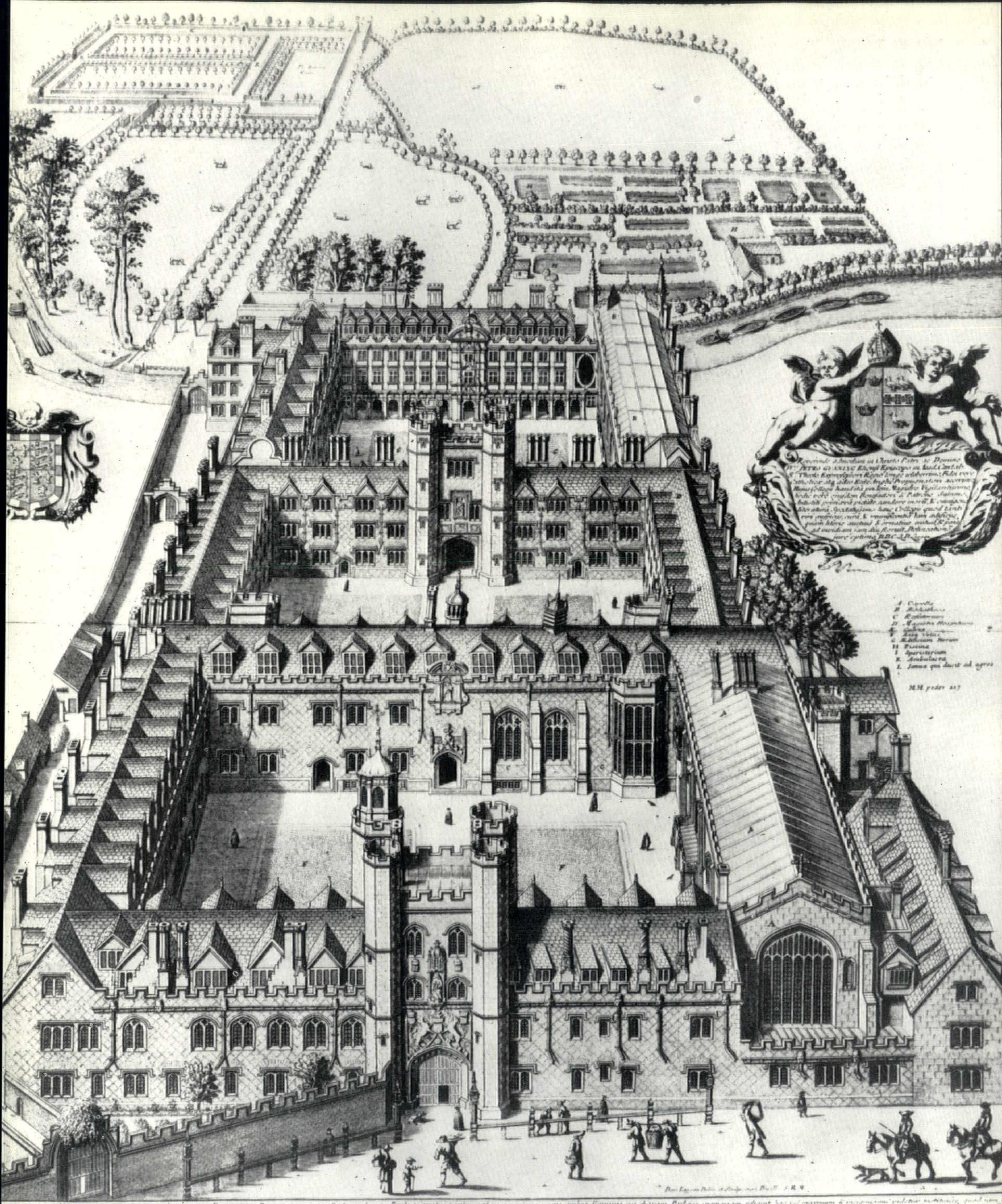
Status Furnishing 2

Hille of London are producing some new office furniture designed by Robin Day called the Status Group. **3,** *the range consists of pedestals with a choice of interior fittings, desk tops, tables and storage cabinets in various sizes which can be combined to suit an almost infinite variety of needs. The pedestals can be fitted to take filing or pen trays, or can have cupboards, drawers, adjustable shelves or typewriter storage.*

The components are made in Pacific walnut, mahogany, teak or rosewood with wood or plastic tops. The frames are square section and can be black or satin chrome. Front panels are supplied in black or white plastic or veneer to match the desk.

The double pedestal desk in the foreground is 6 ft. by 3 ft. and with one three-drawer unit and one cupboard unit costs approximately £62. The single pedestal desk is £32 16s. 6d. and the L-shaped combination of a 5 ft. 3 in. by 2 ft. 3 in. single pedestal desk and side typing table costs £67 15s.

3



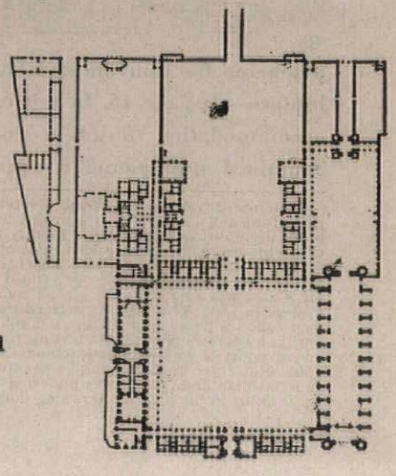
THE COLLEGIATE PLAN

The courtyard plan, exemplified in Loggan's view of St. John's College, Cambridge, opposite, ☜ *has been the theme of many recent discussions of university architecture. In the article below, the modern potentialities of the same plan are discussed in relation to a number of university projects. The architect for the women's hall of residence at Leicester University is Sir Leslie Martin in association with Trevor Dannatt. All the other work illustrated is by Sir Leslie Martin in association with Colin St. John Wilson. Patrick Hodgkinson was principal assistant on the project for Gonville and Caius College, Cambridge.*

These schemes, prepared during the past three years, are linked to each other by a similarity of programme; in addition they are all built up round one central architectural idea—the idea of the court.

This idea is fundamentally one of organization. From the thirteenth century the enclosing wall of buildings round a private space has identified the collegiate community. Rooms round staircases have related individuals to groups. The court has related groups to each other. Courts of varying sizes added to each other have given a recognizable consistency and order to the buildings of the whole community.

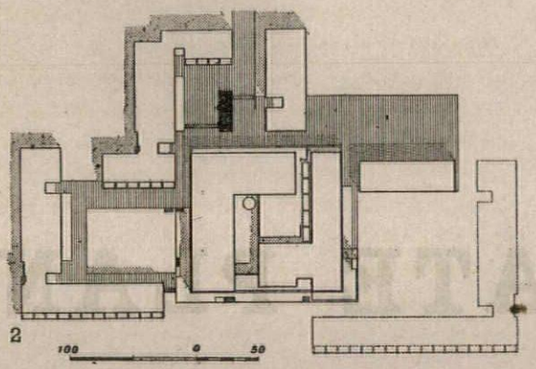
The powerful unifying form of the court is well illustrated in Loggan's view of St. John's College, Cambridge, opposite. In the first court, buildings as dissimilar as the chapel, the hall and the residential accommodation are brought into relationship. In 1602, when the second court was built, and again fifty years later when the third court was added, the architectural style was changed; but the court continues to provide the underlying order. Indeed, the architectural conception of the court is more lasting than superficial changes of style. It forms the basis of the earliest plans for Cambridge colleges—Pembroke, Gonville, Trinity Hall and the first court of Corpus Christi, built in 1350. And in spite of Wren's dislike of the closed court and the increasing interest of Renaissance designers in balance and symmetry, the court is still the basis of Hawkesmore's plan, 1, for the completion of King's College.



1

The main principles inherent in the court plan* are still valid for university residential buildings. Building round an individual court can be a complete thing in itself, but lends itself to ordered extension as a community develops. The sizes of individual courts can vary considerably and are readily adaptable to differing space requirements and site conditions.

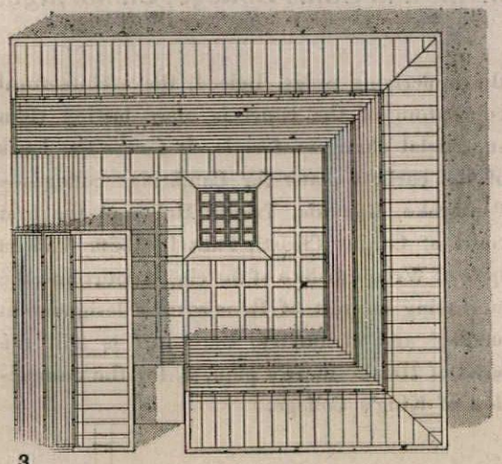
2 shows a scheme for a women's hall of



2

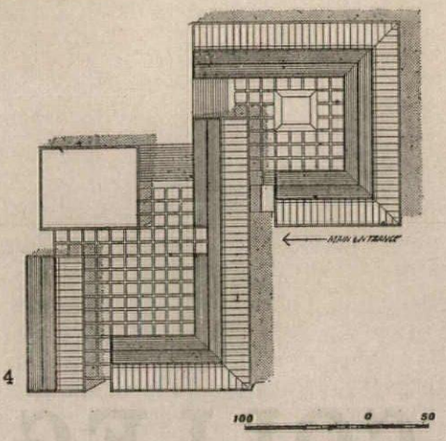
residence now being built at Knighton for the University of Leicester. Two related courts (100 ft. by 80 ft. and 70 ft. by 70 ft.) are associated with a central block of buildings which contains common rooms, dining hall and recreational facilities. A third court, again of different size, forms a possible future extension. Courts in this case are built up round a central nucleus: three sides of each group form a peripheral wall of residential accommodation; the fourth side gives access to the central social block.

The additive principle by which the court can be readily extended is again shown in 3 and 4,


3

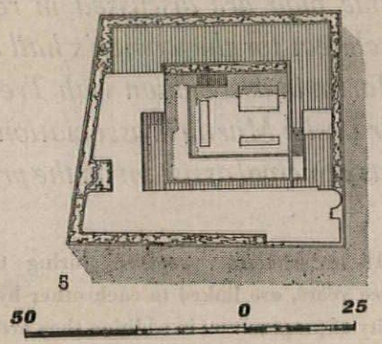
a scheme for Gonville and Caius College, Cambridge—see page 46. In this case the residential accommodation forms a complete and self-contained unit round a square court. Future building can be linked to this initial form to provide an extension of the court idea.

The principle adopted is that the residential accommodation itself forms the enclosure of the



4

court—the rooms used by the community (the hall, common rooms, etc.) are self-contained and independent buildings within the enclosing wall of student rooms. The sizes of courts are related to the groupings of the community itself. They lend themselves to considerable variation and are as suitable to the tight, compact planning of an urban site as they are to the subdivision of a large community into manageable social units. 5, for example, shows a project, now

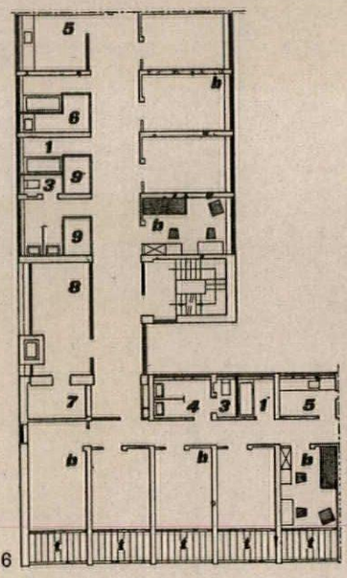


5

abandoned, for residential accommodation for King's College, Cambridge, on a central site.

The residential accommodation which forms the court is itself susceptible to variety in its form. In the examples which follow, this variety is largely the result of two considerations: first, the aspect of the rooms themselves; and secondly, the grouping of rooms around points of access. These two considerations are to some extent interdependent.

In the scheme at Knighton, Leicester (already shown in 2 and illustrated in more detail in 6-9 on the right), buildings running north and south have rooms facing east and west and a central corridor access. Buildings running east and west have south-facing rooms only: there are no north-facing residential rooms. Such an arrangement depends on corridor access, 6. Staircases at the angles and at the ends of blocks limit corridor lengths. Room sizes in this case are



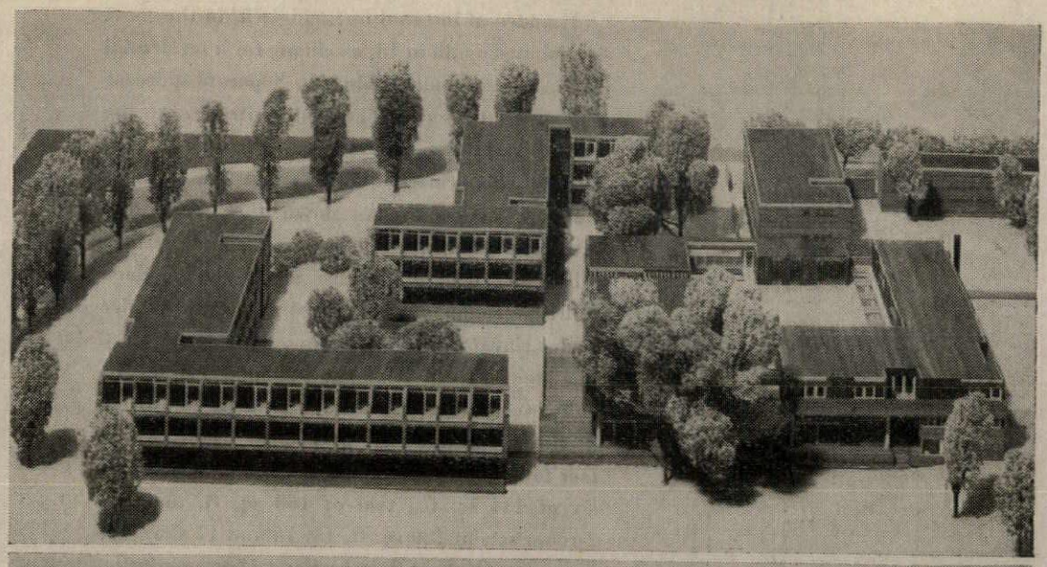
6

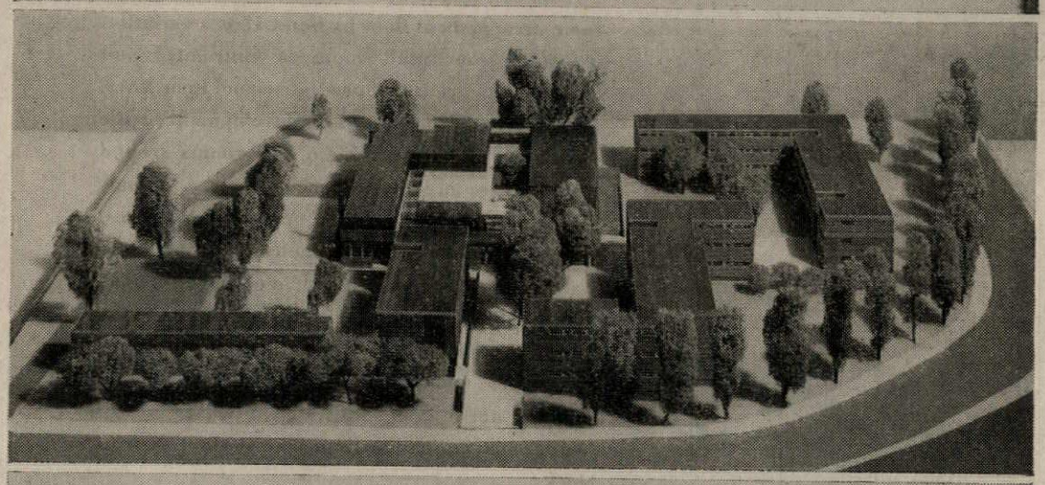
key
b, bedsitting room.
t, terrace.
l, bathroom.
3, w.c.
4, cloakroom.
5, kitchen.
7, ironing room.
8, laundry.
9, store.

On facing page: 7, 8 and 9, three views of the model of the women's hall of residence now under construction at Knighton, for the University of Leicester (architect, Leslie Martin in association with Trevor Dannatt).

11 and 12, model of a scheme, now abandoned, for King's College, Cambridge, with residential accommodation over ground-floor shops (architect, Leslie Martin in association with Colin St. John Wilson).

* An interesting account of the 'Evolution of the College Court' in Oxford and Cambridge is provided by Mr. G. P. Gutterridge in an unpublished thesis in the Library of the Cambridge School of Architecture. The open-ended court already existed, he writes, in Jesus College, where the buildings had a monastic rather than a collegiate foundation. The open-ended court was also urged by Dr. Caius when he built the second court at Gonville and Caius College in 1565. The Statutes decreed that the fourth side of this court should never be built up 'lest the air from being confined within a narrow space should become foul.' The idea of the open-ended court is followed in Hammond's plan for Emmanuel in 1592. But these earlier examples are different from the interest in axial planning, which was preferred by Wren and later used by Wilkins in his plan for Downing College.





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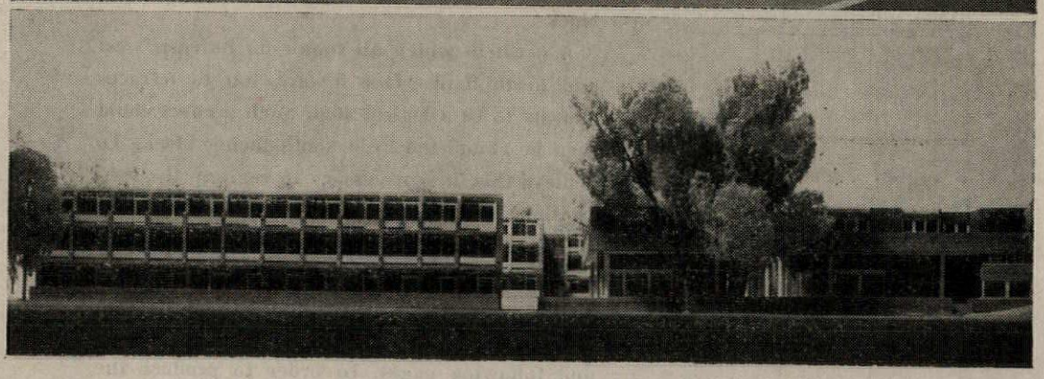
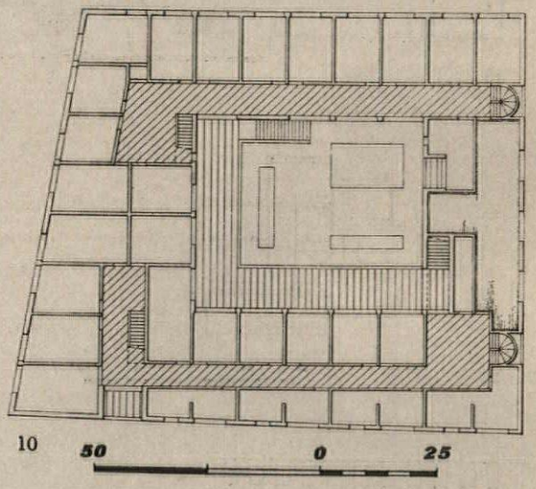


9

fairly constant and meet the University Grants Committee limit of 120 sq. ft. All the south-facing rooms have balconies.

This consideration of aspect has an interesting effect on the appearance of the court itself. Within a single court no two sides are identical. South-facing walls have their characteristic balconies; north-facing walls are comparatively windowless, 7 and 8. Long views through two courts pick up the repetition of wall treatment and convey the unity of the scheme, 9.

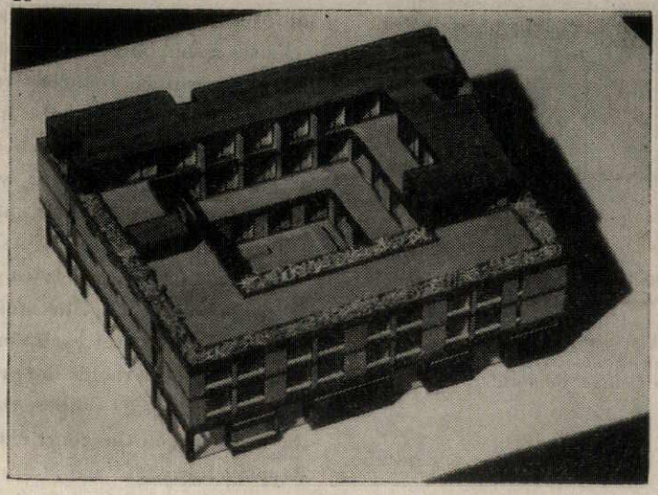
The effect of considerations of orientation is again shown in 10, a more detailed plan of the scheme for King's College, Cambridge, already shown in 5. Here a centre court within a tightly planned block is provided with terraces in front of its south and west-facing rooms. The stepped forms of these terraces introduce the possibility of variety in size and shape of the rooms at each floor level (see the model of the same



10

scheme, 11). Rooms are double banked at either side of a central corridor, but the corridor itself widens out at certain points and has windows overlooking a central court. Each level of the stepped terracing is linked externally by stairways placed so that, together with the terraces, they form a spiral ascent within the court itself. The terraces also serve as galleries for an open-air theatre within the court, 12.

11



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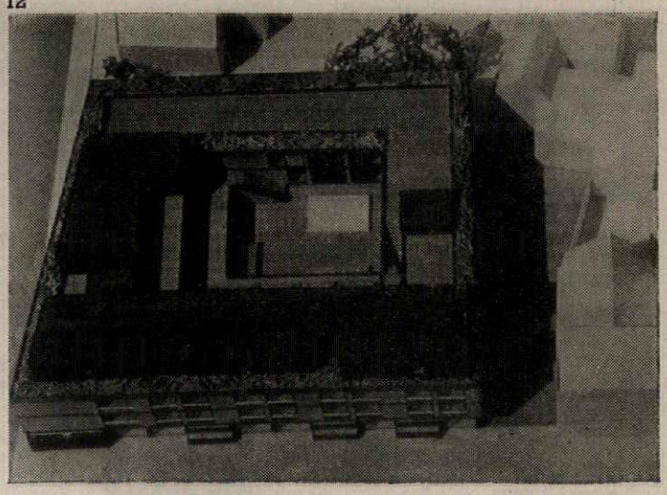

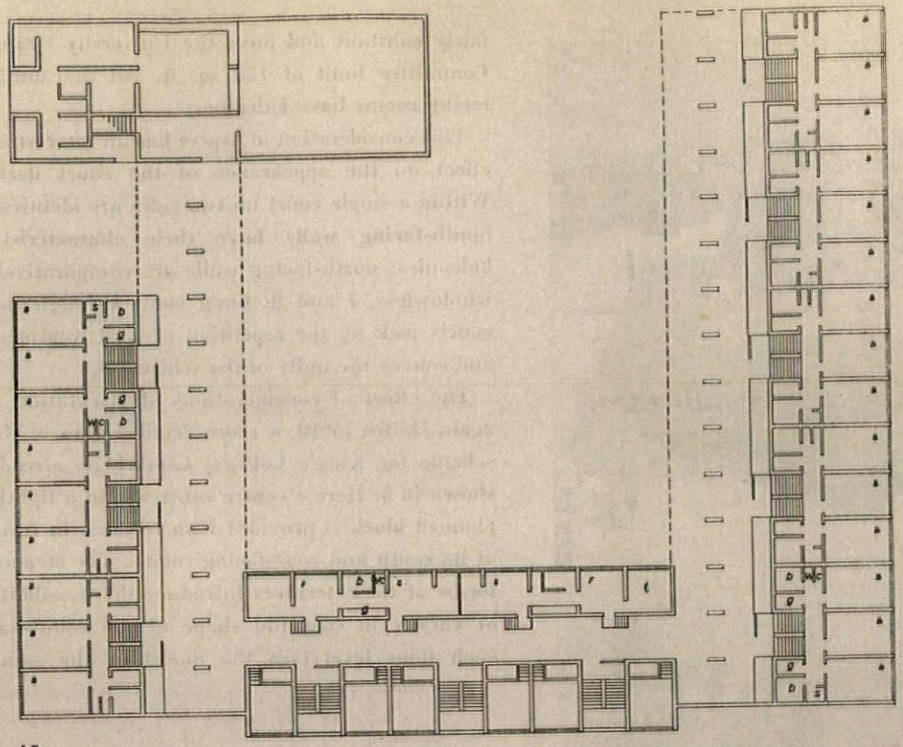

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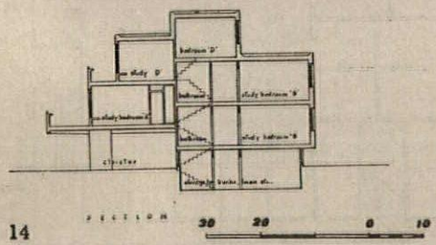

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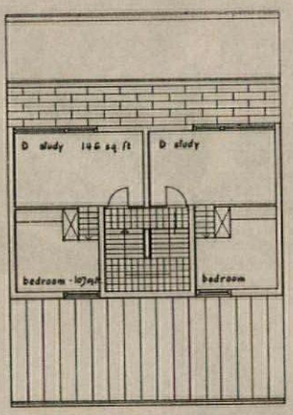
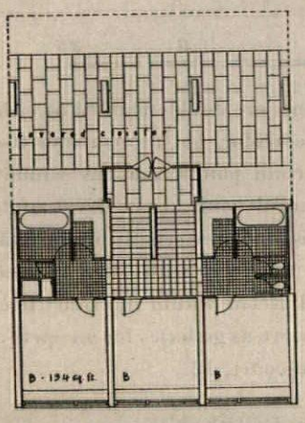


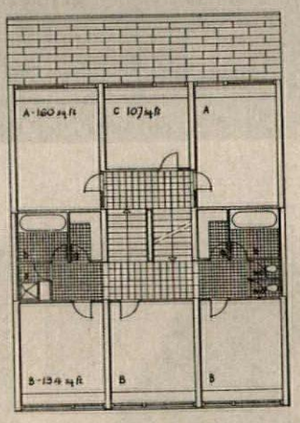
PLAN OF SECOND FLOOR

16



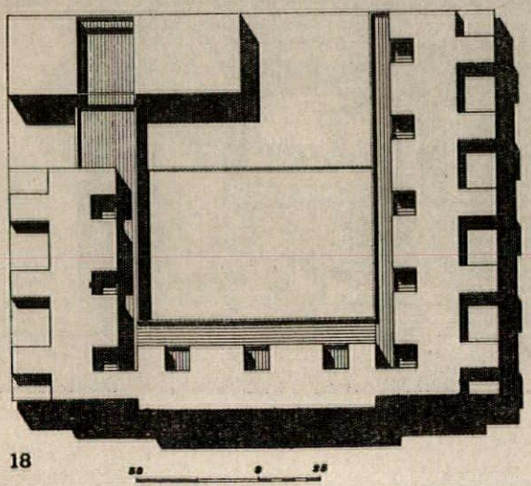
PLAN OF GROUND FLOOR

15



PLAN OF FIRST FLOOR

17



18

30 20 0 10

On this page: first scheme for a residential block for Gonville and Caius College, Cambridge.

The idea of internal terracing within the court is exploited again in 13, a scheme for a residential block for 100 undergraduates. Separate staircase access is introduced. The main entrances to the various staircases are approached from a covered cloister which runs round the court. The separate staircase access breaks down the community into local groups. Each group of rooms form a 3-bay unit with a staircase at its centre. Each staircase serves eleven rooms and their service rooms (lavatories, bath rooms, gyp rooms, etc.). The stepped section of the building, 14, and its half-level planning allows considerable variety in the shape and size of rooms. There are in fact four main types of room: one of 107 sq. ft., six of 134 sq. ft., two of 160 sq. ft. and two 2-room sets of 220 sq. ft. 15, 16 and 17 show the room arrangement floor by floor. 18 is a variation in which the small room is eliminated and 2-storey sets are introduced at second floor level.

This type of planning is a development of the Cambridge college tradition. The rooms around the staircase are given variety in size. Rooms facing on to the court itself open on to terraces. The planning lends itself readily to simple cross wall construction. But this form of layout is open to several criticisms: one is the number of staircases; another is the orientation of the rooms themselves, which works well enough for blocks running north and south, but involves north-facing rooms or a change of plan in the east-west blocks.

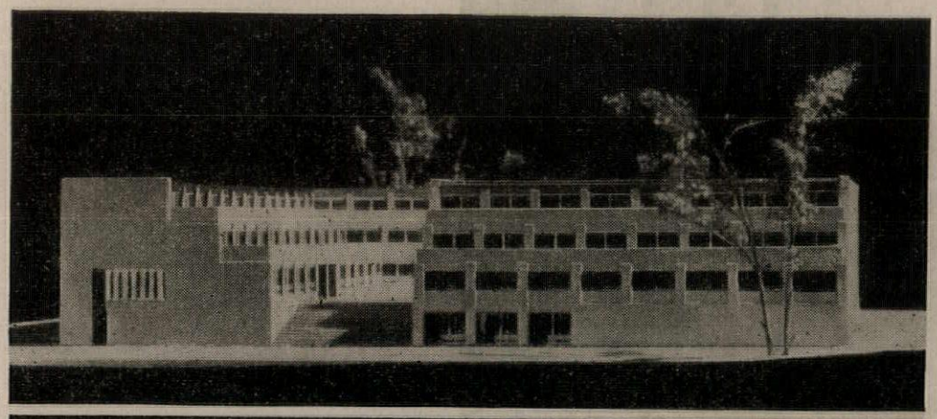
A court in which all rooms on its east, west and north flanks face inwards on to terraces appears to be a logical step. Such a court could then be completed by a south-facing block. To achieve this, it is necessary to regroup the subdivisions of the community around the access points, which has been done in the last project illustrated: the final scheme for the new residential building for Gonville and Caius College, Cambridge, shown in 19 and 20 on the facing and following pages. In order to produce the greatest number of rooms facing on to the court itself, it is necessary to remove staircases on to external peripheral walls. This at once achieves a simplification: the number of separate staircases can be reduced from eleven in the earlier plan to five, and the number of separate flights from 50 to 23. Each single stair serves a greater number of rooms, with the possibility of greater variety in their shape.

The main staircase points in this plan are approached from an enclosed peripheral corridor at ground level, 21. The staircases serve short lengths of landing at each floor, 22 and 23, and around these the rooms are grouped. The section of the building, 24, shows the stepped form of the terracing on the court side and the outward stepping forms of each staircase flight.

The grouping of rooms now produces the following variations of size:—

41 rooms of 173 sq. ft.
21 „ „ 228 „ „
10 „ „ 226 „ „
6 „ „ 240 „ „
6 „ „ 300 „ „

and 6 large sets of 680 sq. ft., which can be sub-



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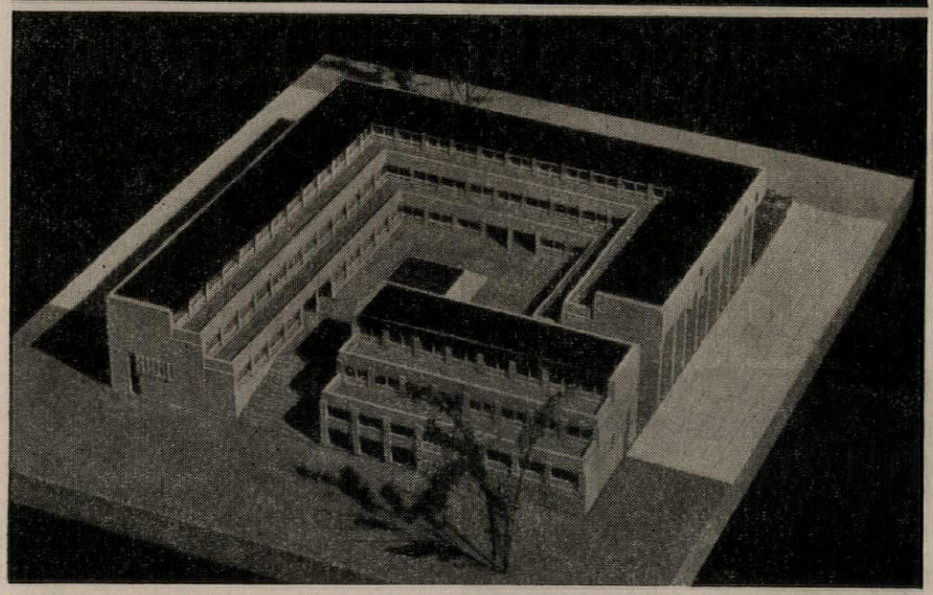

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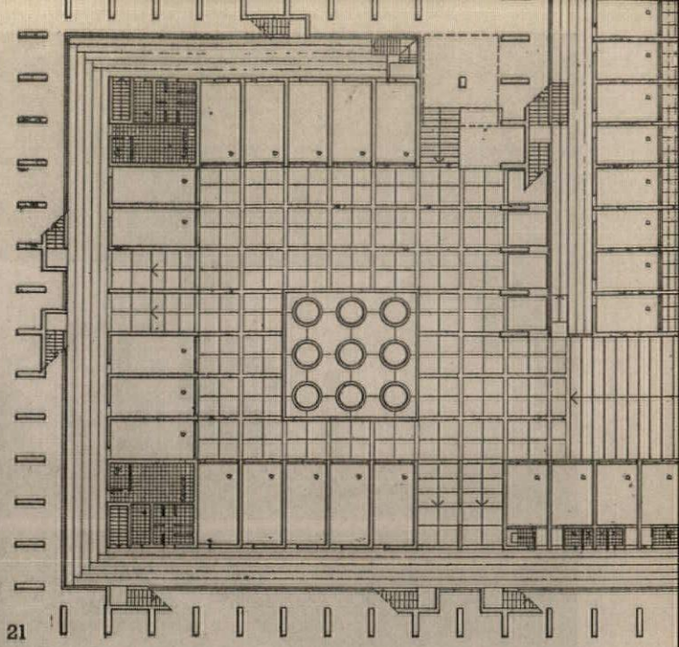

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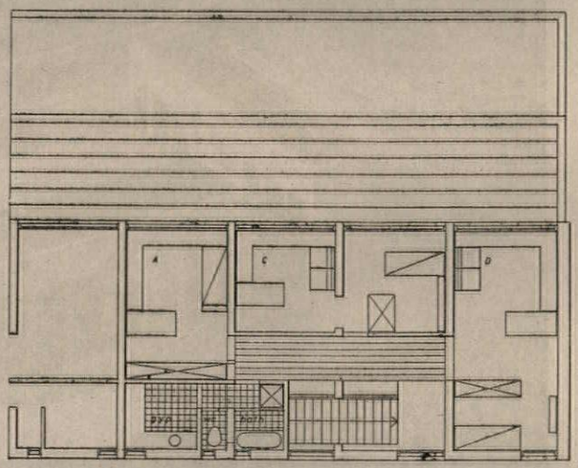

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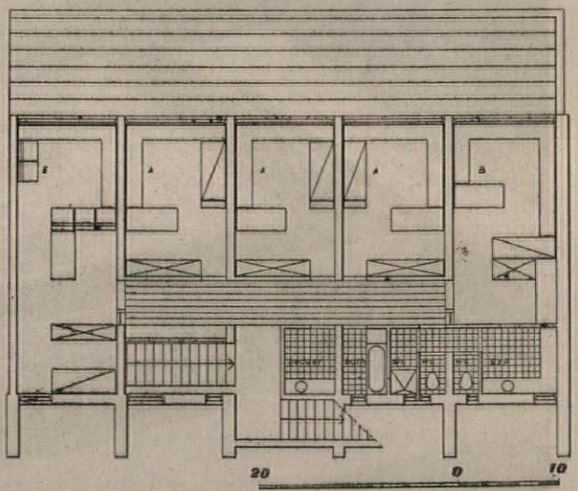

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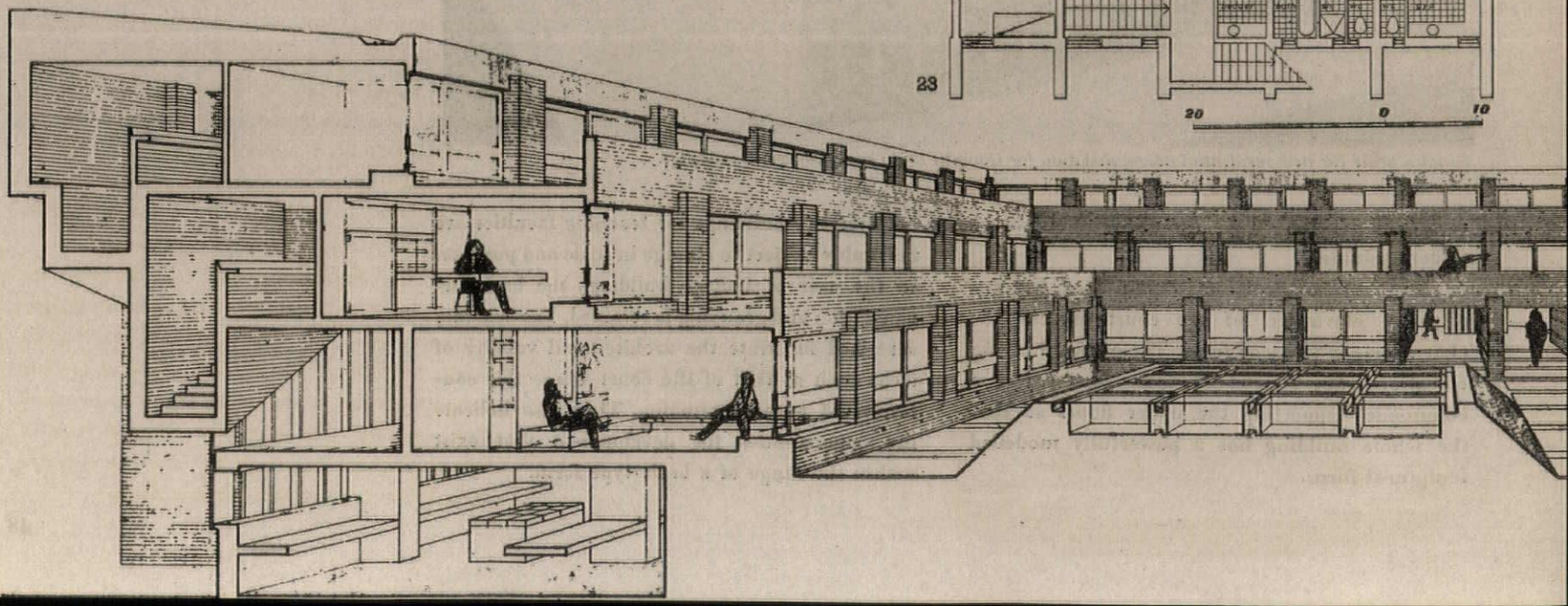
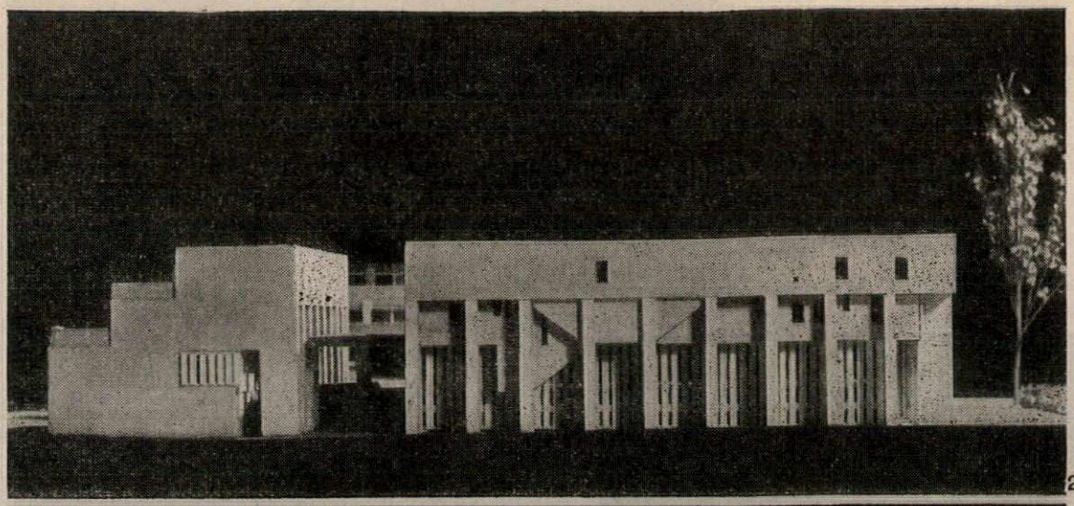


24

On this page: final scheme for new residential accommodation for Gonville and Caius College, Cambridge (architect, Leslie Martin in association with Colin St. John Wilson).



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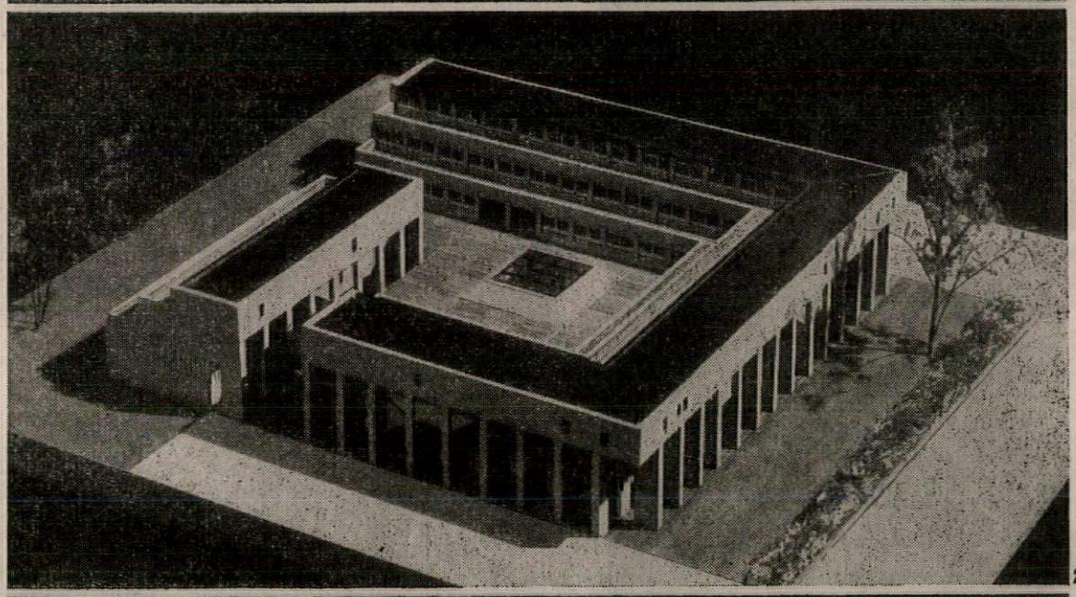

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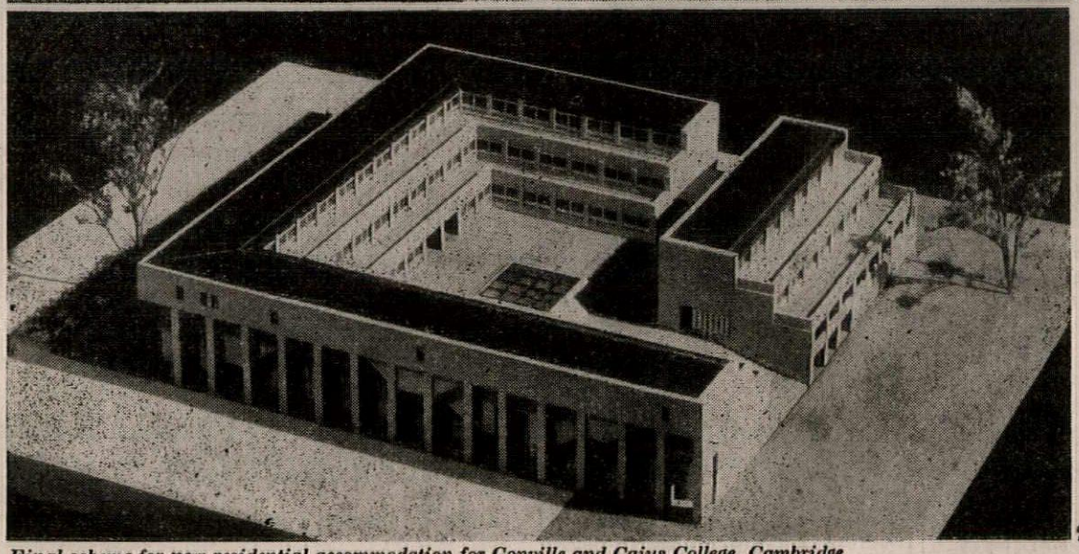


27

Final scheme for new residential accommodation for Gonville and Caius College, Cambridge

divided in various ways for use by Fellows or undergraduates.

Cross wall construction is again used. Externally the elevations of the court present the characteristic terraced form. The outward facing elevations, 25, 26 and 27, take the form of a colonnade supporting the upper floors so that the whole building has a powerfully modelled sculptural form.

University buildings for teaching faculties are inevitably subject to change in scale and purpose. In the case of College buildings the basic organization and grouping is retained. The schemes described illustrate the architectural validity of ideas such as that of the court where this continuity of purpose remains. They also indicate the opportunities for development that exist within the range of a basic type form.

1, *the Gordon Square front, with examination halls in the Taviton wing on the right.*

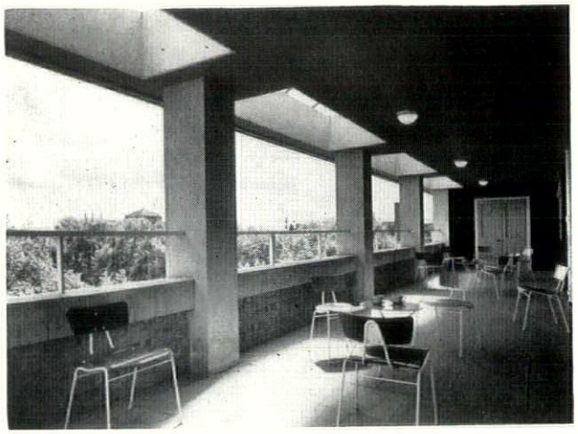
UNIVERSITY BUILDING, GORDON SQUARE, LONDON

ARCHITECTS: BOOTH, LEDEBOER AND PINCKHEARD

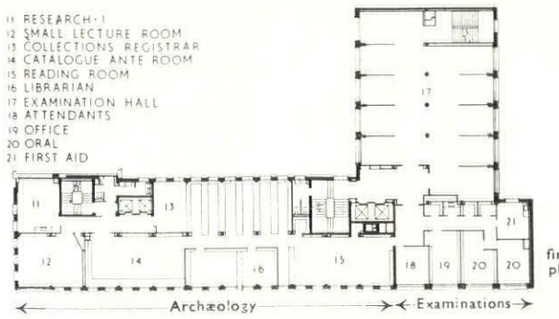
The building houses the Institute of Archæology, a newly-formed Institute of Classical Studies and a number of large halls for University Examinations.

The main wing occupies the whole of the frontage on the north side of Gordon Square. It is seven storeys high, a height determined (before the publication of Sir Leslie Martin's long-term development plan) as being the likely prevailing height of the proposed future development on the other sides of the Square. It houses the two Institutes and some of the examination hall accommodation, the remainder being in the return wing of four floors above an open ground floor storey. This gives the wing a total height of five storeys and maintains the existing height of the Taviton Street terraces. The space under the wing gives cover to waiting examinees, who gather in large numbers on examination days. A road under gives vehicle access to a car park at the rear of the building.

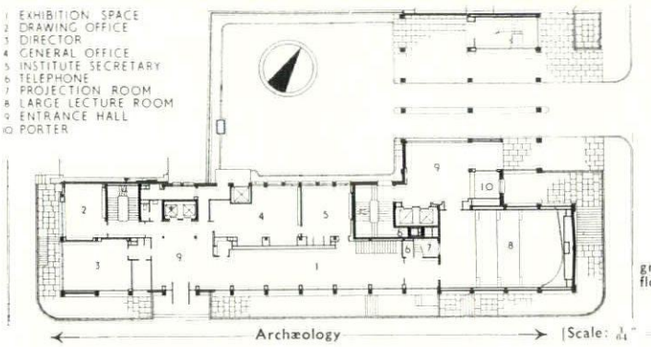
The building is steel framed with reinforced concrete



2, terrace outside the common room of the Institute of Classical Studies on the sixth floor.



first floor plan



ground floor plan

University Building, Gordon Square, London

floors. It is faced with brownish-yellow Stamfordstone bricks. Cornice, string courses and column facings are Portland stone. The panels between columns at ground and sixth floor levels are faced with green Westmorland slate.

The total floor space is approximately 70,000 sq. ft. of which one third is devoted to examination halls.

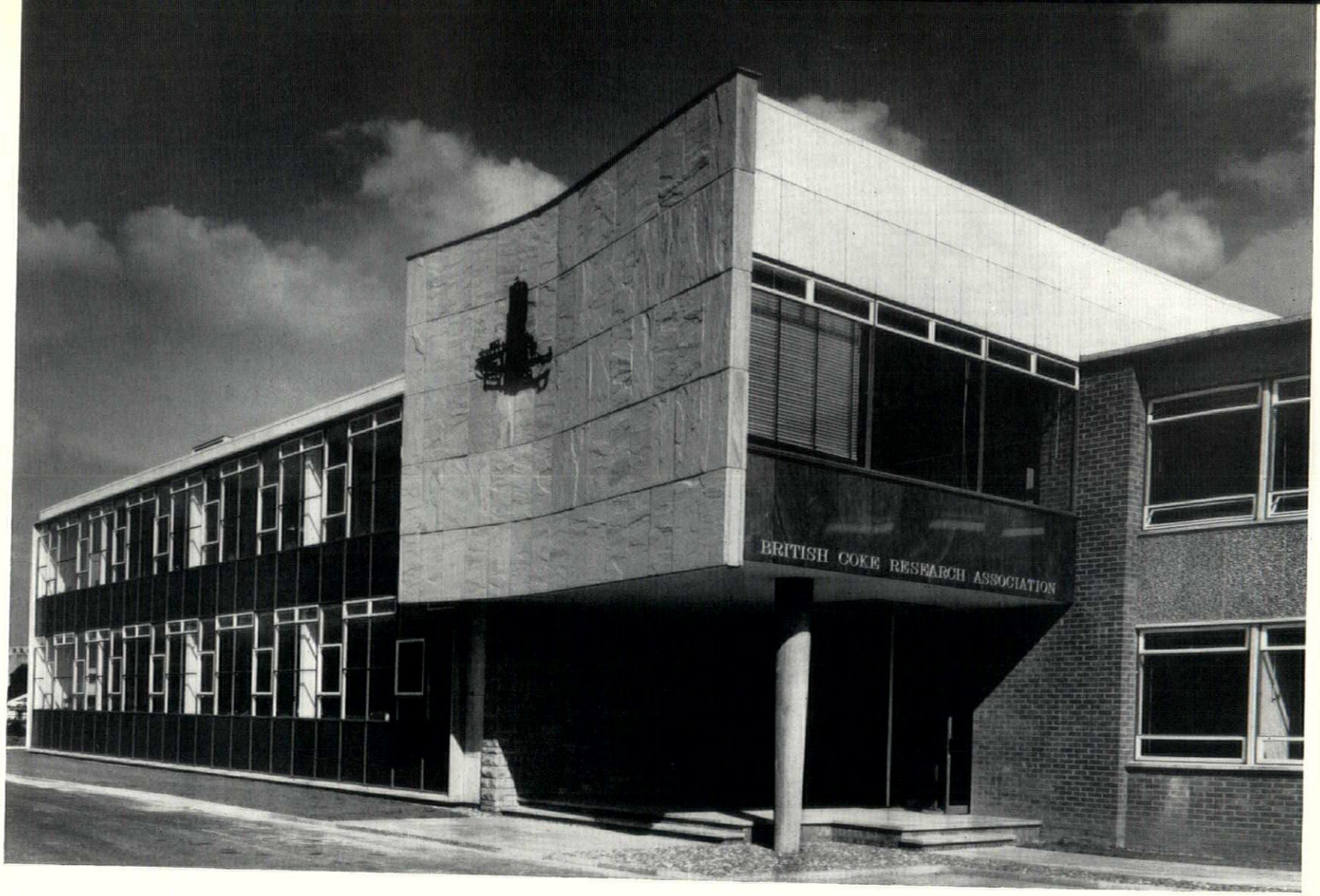
HOUSING AT CROYDON

ARCHITECTS: RICHES AND BLYTHIN

3, the nine-storey block from the north-east, showing the access balconies.

This development in South London stands on a bombed site of just over an acre, formerly occupied by four semi-detached Victorian houses and a dance hall, provides a total of 44 flats and maisonettes. The nine-storey block, with bed-sitting room flats on the ground floor, and maisonettes above, has a reinforced concrete frame and hollow-tile reinforced concrete floors. The three-storey block contains one-bedroom flats and is constructed with load-bearing party walls and tiled roof. The traditionally constructed single-storey block contains flats for old people. Space heating and hot water is provided by an open fire with back boiler in the lower blocks and by closed stoves in the tall block, and there is a laundry fitted with a washing machine, hydroextractor and drying cabinets.

4, the two main blocks from Elmwood Road, with the single storey bedsitting room block just visible on the right.

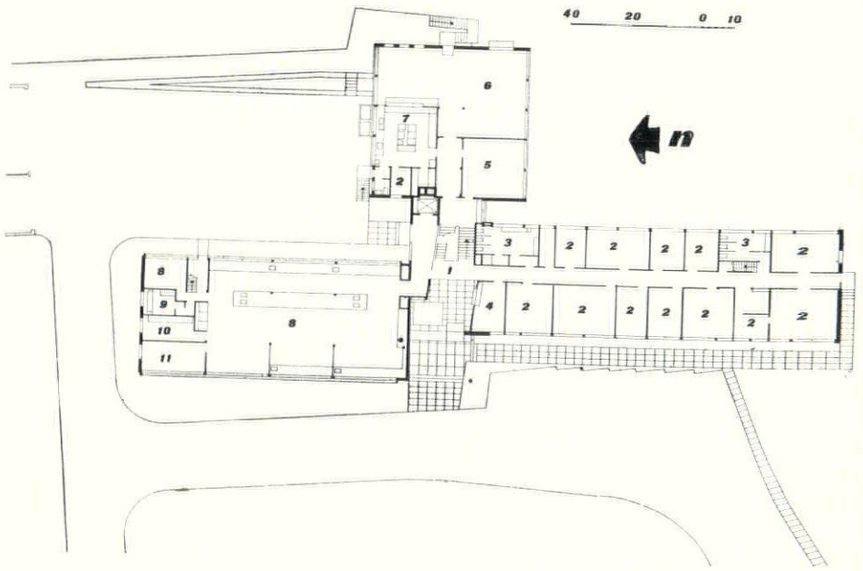


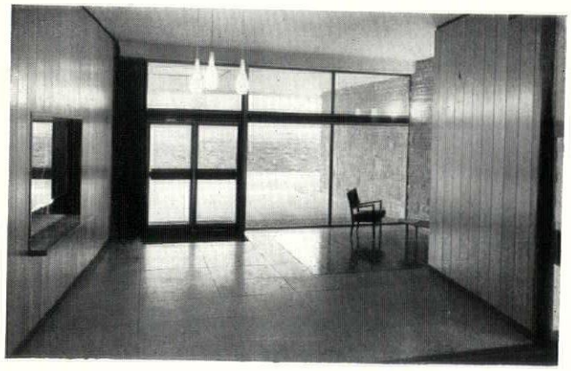
5, the main entrance, with the library above and the laboratory wing beyond. The wrought iron sculpture, designed in the architects' office, is based on a section through a coke oven.

LABORATORIES AT CHESTERFIELD

ARCHITECTS: WESTWOOD, SONS AND PARTNERS

The British Coke Research Association's new buildings in Wingerworth, near Chesterfield, house laboratories, offices and canteen, forming the wings of a T-shaped building, with the library and main staircase at the centre. The structure is of reinforced concrete throughout. The laboratory block has mild steel curtain walling with slate blue glass panels below the windows, and an end wall of reconstructed stone. In the office wing the panels are of exposed aggregate, and the end wall is brick faced. The library is cantilevered over the main entrance, with a single concrete column which was shuttered in foam rubber. The curved west wall is of local stone slabs, the panel below the windows is of polished slate with gilded engraved lettering.



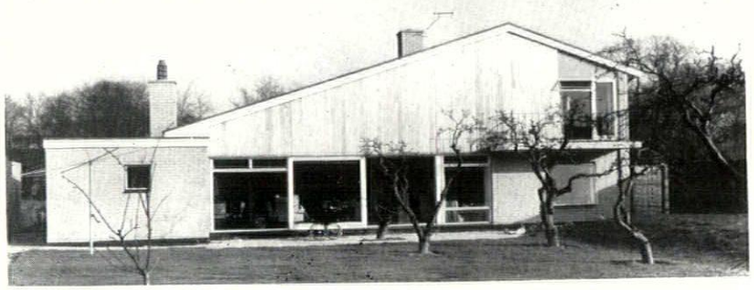


6, the entrance hall has walls of pine boarding and a floor of polished stone, with a panel of hardwood in the waiting area to the right of the door.

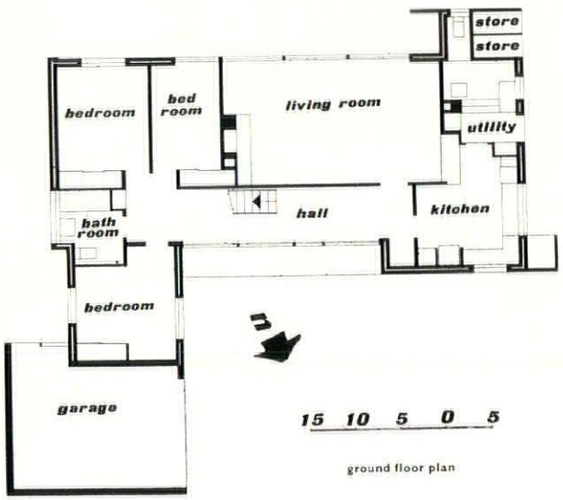
7, *double glazed windows light the hall and staircase. The front door and letterbox panel are of mahogany.*

HOUSE AT HAM COMMON

ARCHITECT: LESLIE GOODAY

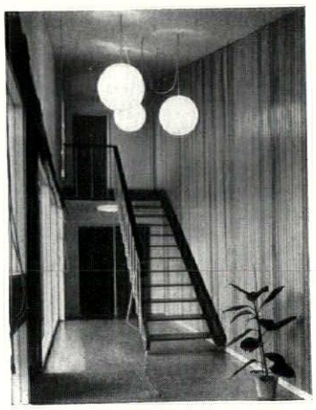


8, *the house from the south.*



ground floor plan

One of a group built by the same architect on the south-west side of Ham Common, near Richmond, this house was designed mainly on one level, with the owner's bedroom and bathroom on the first floor. The hall and living room in the centre of the house link the kitchen and utility rooms on the west with the three bedrooms and bathroom. The external walls are of buff brickwork, with vertical cedar boarding over the living room and lounge windows. The roof is of lightweight timber trusses with 1 in. insulation board panels covered with copper. Windows have galvanized steel opening lights in timber sub-frames; the large sliding window in the living room and the fixed windows are timber framed. Internal doors are mahogany veneered; floors in the hall and living room are of cork tiles, in the kitchen, bathroom and downstairs bedrooms they are of thermoplastic tiles. Heating is by coils embedded in the ground floor, with individual controls in each room.



9, *the open staircase has polished mahogany strings, treads and handrail with bleached ash inserts, and painted steel balusters.*

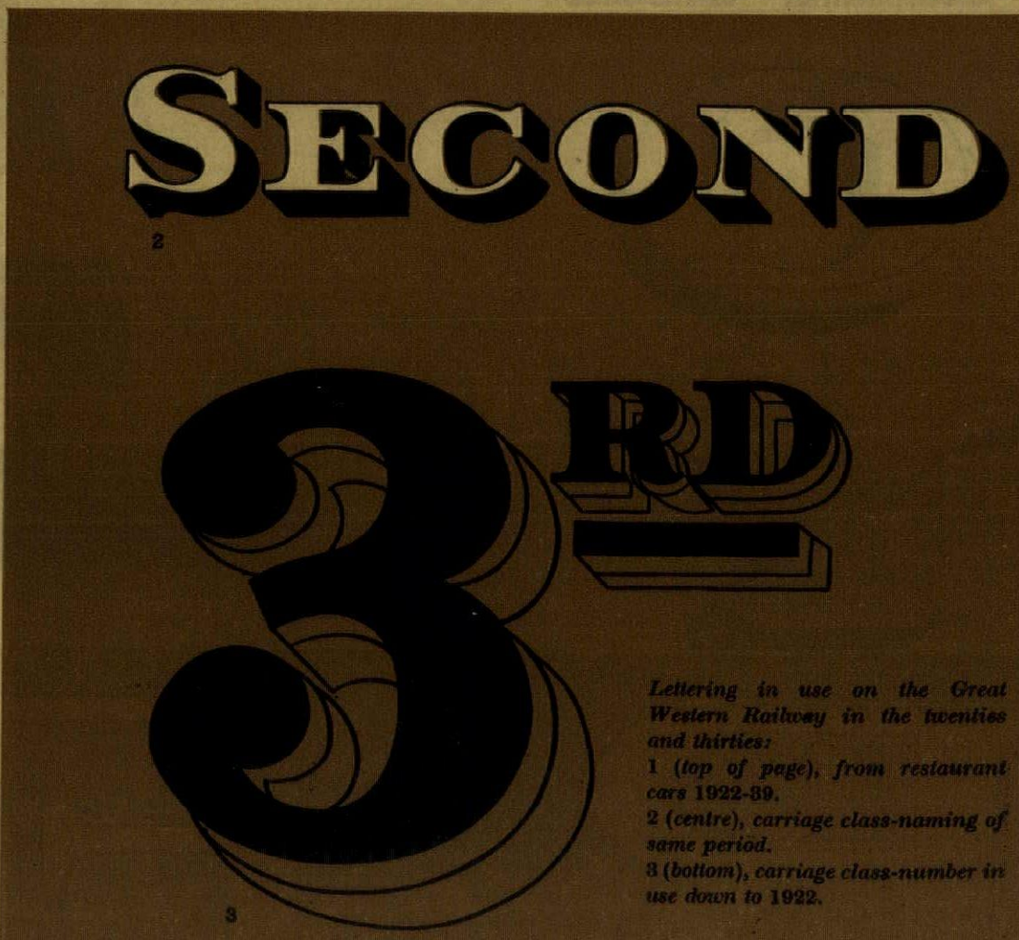
RAILWAY LETTERING

Hugh Wykeham

The disquiet that has been expressed over recent developments in the design and use of lettering, crests, and so forth on the railways of Great Britain is visibly justifiable. But it should be remembered that these disquieting developments are—to a large extent—manifestations of a trend that was praiseworthy in its origins. Twenty or more years ago, London Transport were being praised for adopting, against the run of tradition, Johnston's purpose-designed 'Underground Sanserif.' Other railway organizations began to follow suit, using Gill Sans off-the-peg. However, the adoption of a ready made type-face, Gill or otherwise, is a different matter to commissioning a special one, and destroyed an old tradition without putting a live one in its place. And however outmoded it might look, the illustrations on the following pages, collected by Peter Strevens from Western Region, the old GWR, suggest that even at the time that the tradition was being broken it could still produce first-class work, in accord with the spirit of the railways.

To understand the disturbing effect of the typographers' revolution, it is necessary to understand the tradition as it stood in its undoubted nineteenth-century heyday. The variety of lettering then in use was immense; even a sampling gives an idea of its variety—signwriters' lettering, numerals and crests on all kinds of rolling-stock from royal coaches to ballast wagons; cut-out gun-metal numerals and letters, cast brass name-plates, crests, etc., on engines and tenders; cut-out wood letters, etched or transferred letters on glass, sign-painted letters, etc., in stations.

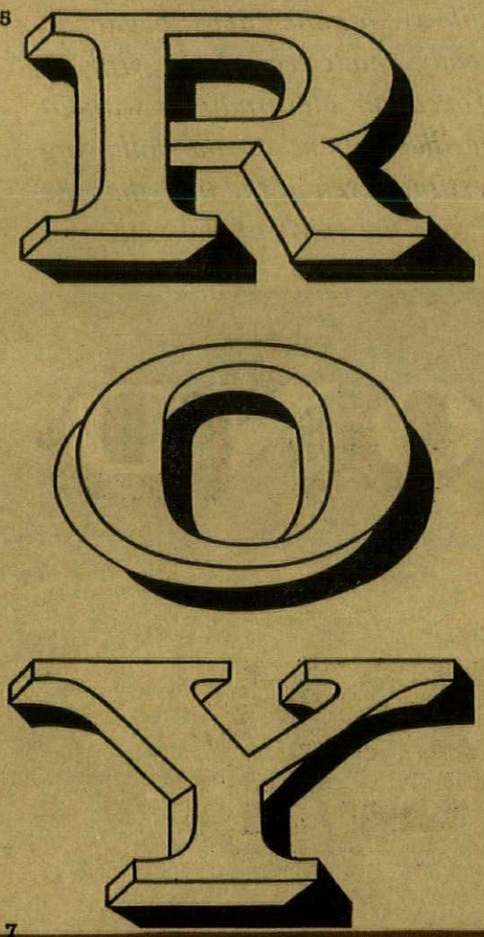
Only in the very loosest sense was there any general house-style covering this great variety of work. In every case, lettering exhibited at least minor peculiarities associated with craft traditions or the materials and techniques employed. Some alphabets appear to have been used only for a single purpose, such as engine name-plates, and appear to derive from something even more localized and specialized than the traditions of a craft; in this case the traditions of a particular workshop. The growth of such shop traditions was inevitable (*a*) when there were no typographical authorities outside the trade to consult, and (*b*) when sign-painters, draughtsmen and other technicians responsible for



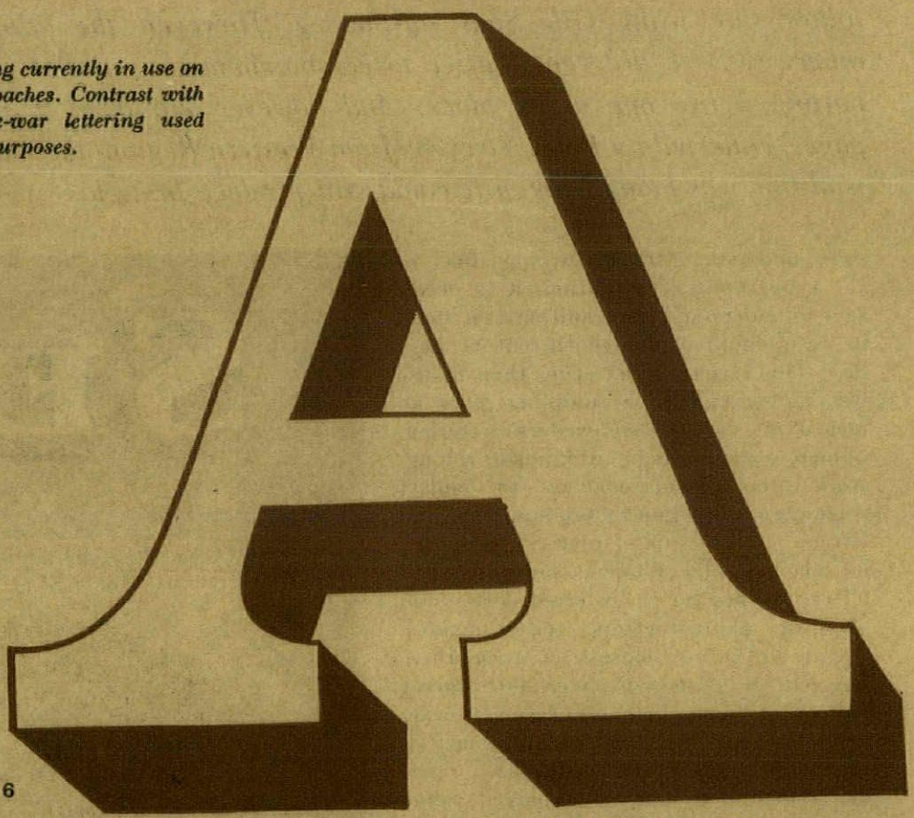
Lettering in use on the Great Western Railway in the twenties and thirties:
1 *(top of page), from restaurant cars* 1922-39.
2 *(centre), carriage class-naming of same period.*
3 *(bottom), carriage class-number in use down to* 1922.

4 (*above*), *gun-metal engine numbers from a drawing dated* 1919.

5



5 (left), lettering currently in use on Royal Mail coaches. Contrast with 6 (right), pre-war lettering used for the same purposes.



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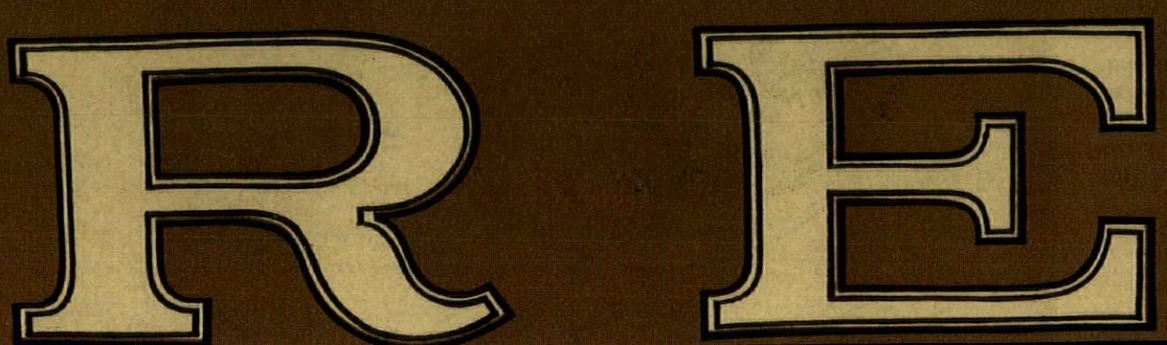


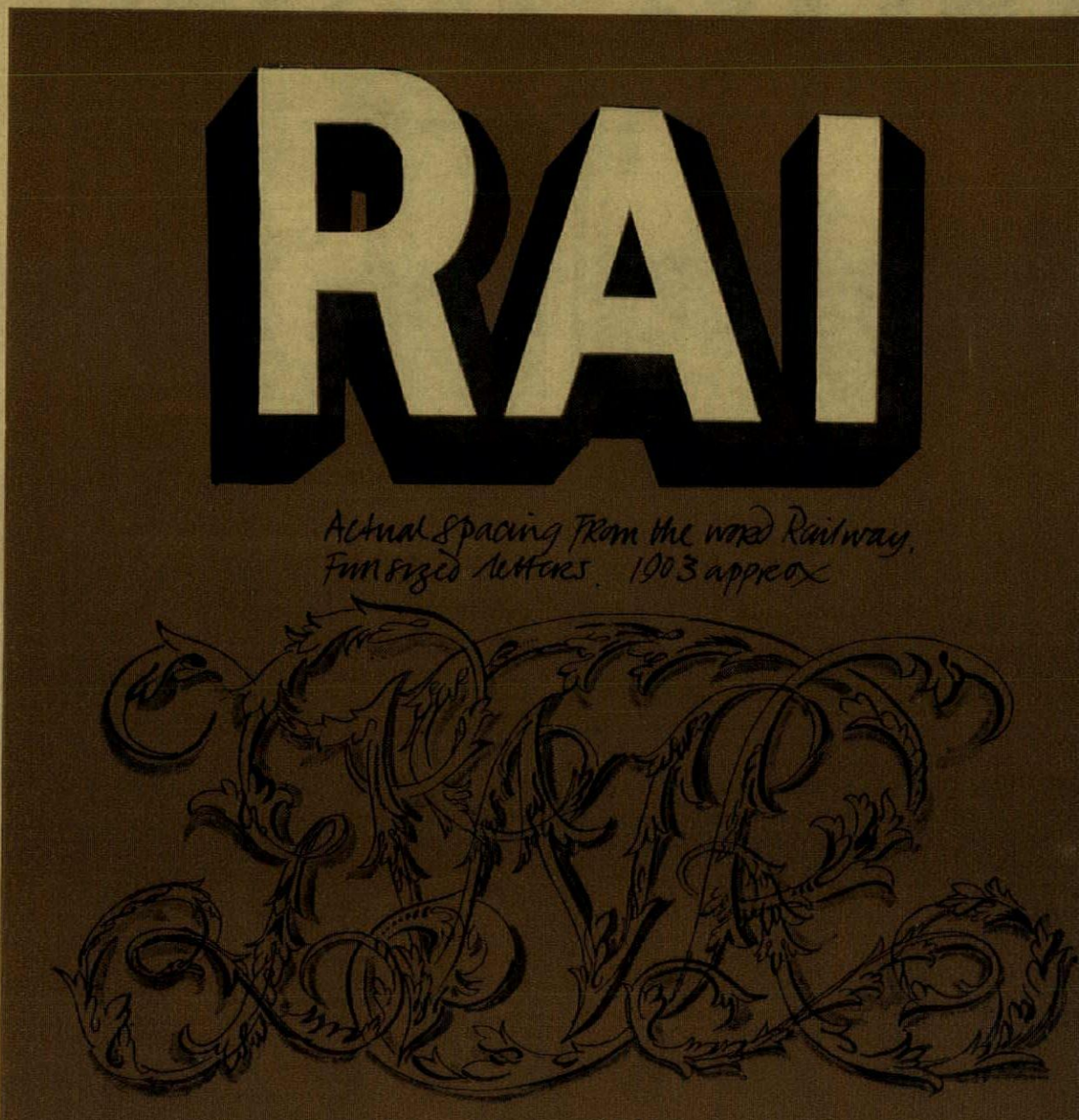
7, gold letters with double black outline, currently in use for restaurant, buffet and sleeping-cars, shown here with correct spacing to scale.

8 (above), engine-nameplate letters from a works drawing of 1937. In this field there had been some detail improvements—compare the later (far left) R with the earlier (King Edward) version. The use of these letters in curved plates is now, however, being replaced by Gill Sans in rectangular frames.

design received their entire training as apprentices inside the industry, looking to their masters and previous work done in the shop both for their patterns and their standards of execution and taste (this may well be an oversimplification, but it gives the general picture of conditions in which the tradition of railway lettering were formed).

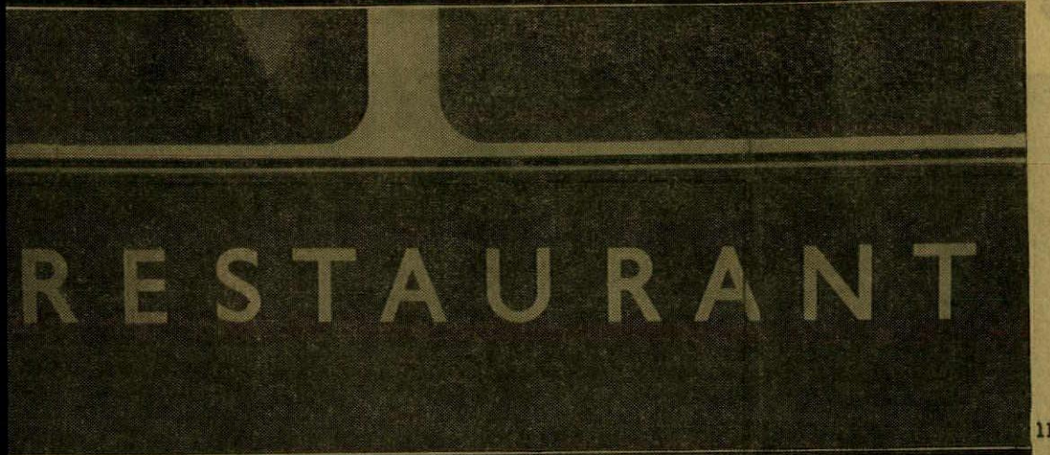
Styles that grew up in these circumstances might change progressively over the years, and usually did. For almost three-quarters of a century, the functions, equipment and users of the railways hardly changed any faster, and over that period traditional methods in lettering (and other branches of design, too) were still adequate, as some surviving examples from the early 1930's show. Nevertheless, new ideas were astir, and were brought to a head by Frank Pick, trying to create a new 'brand image' for London Transport, which was offering concepts of transportation that were new in every sense of the word (see *Underground*, by P. Morton Shand, AR, November, 1929). But the commissioning of a new typeface for London Transport and its imposition as a house-style was not the end of the old tradition. The real break with tradition came when the Southern Railway began to 'go modern' adopting Gill Sans (and related letters) along with a sub-Mendelsohn style of architecture.

Although Gill Sans was admittedly based on Johnston's Sans, and was first used to letter a painted shop-sign, the fact remains that it reached the average sign painter as a typesetting face, adapted to the technical necessities of type-founding and punch-cutting, the product of a tradition alien to most of the situations to which



9, lettering, and a tender-cipher, of the turn of the century, the cipher reduced from a works blueprint.

10



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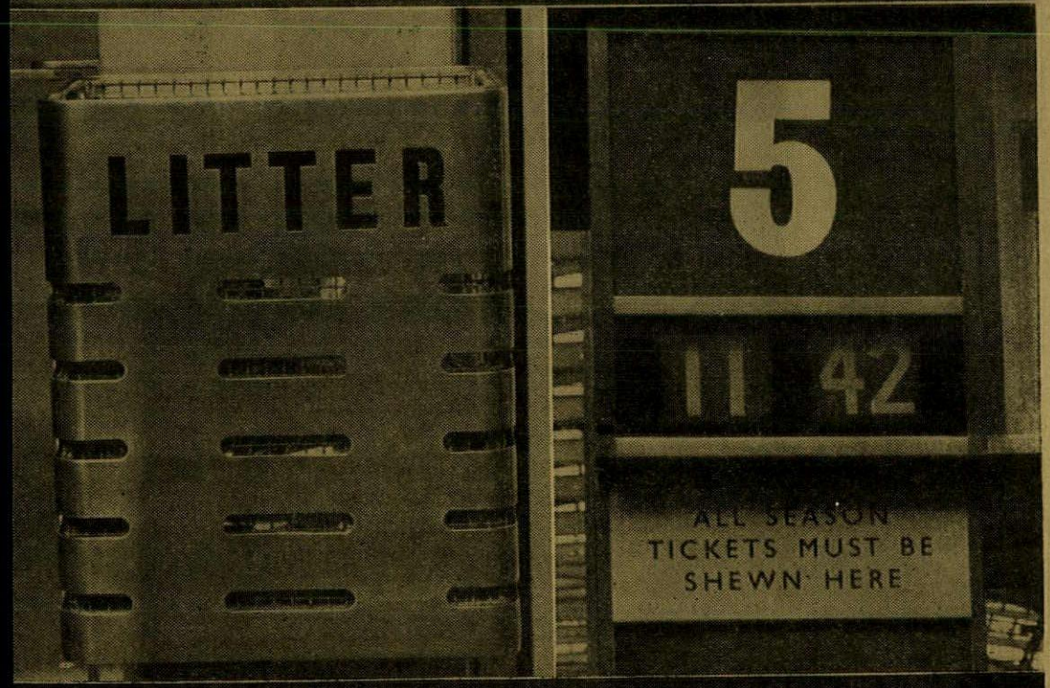


13 14

15

it was applied on the railways. Not only were the letter-forms strange and new, but their family relationships and the niceties of spacing they demanded were strange too. Left to his own devices with such forms, the railway sign painter—and this goes for other typographers' faces besides Gill—soon showed that it is possible to have first-class craftsmen, elegant letters, and execrable lettering.

The established kind of apprenticeship training, even with the addition of day-continuation study for the City and Guilds certificate, is clearly inadequate to this changed situation. So, too, is the routine method of promotion of railway staff, which often produces the situation that a man with no skill or experience in lettering is the effective arbiter of the quality of design in this field. It is clear that if the initiative in the design and application of lettering is to go to an outside consulting expert, as is now so often the case, and the sign-writer is no longer asked to conceive the work he executes under the guidance of a tradition to which he himself is a contributor, then excellence in the end-product depends on a drastic revision of the present set-up.

Firstly, it seems self-evident that ultimate control and responsibility for the whole continuing programme of lettering must rest with a consultant designer; he cannot be turned on and off like a tap, but must see the job right through. Secondly, the position of the craftsman must be overhauled. It would be possible, no doubt, to give him completely packaged instructions, down to the last detail, and reduce him to the condition where it would be simpler to replace him by a photographic technique for reproducing given logotypes to any size. But even the metal-built coaches of a fully nationalized, electrified or dieselized railway system are not completely standard goods, quite apart from hard cases like repairs and renovations, station lettering, and so forth. A vastly better solution would be craftsmen with a fuller training, supervised by even better-trained staff able to make effective liaison between craftsman and expert. If the big promises implicit in British Railways hiring the services of men like F. H. K. Henrion and Misha Black are not to prove flashes in the pan, something must be done to provide more enlightened and effective realization of their ideas on the workshop floor.

The present chaos of railway lettering: **10**, *surviving nineteenth-century sanserifs.* **11** *and* **12**, *Gill Sans indiscriminately and everywhere, often with excessive spacing, typical of the thirties and forties.* **13**, **14** *and* **15**, *fashionable grots of the fifties, used with varying sensibility and legibility.* **15** *would presumably be an Egyptian if a full alphabet of it existed; at present it is used only to number diesel passenger locos.*

WORLD

Beginning with this issue, the AR intends to simplify its coverage of world architecture by uniting, under one heading, items previously distributed in various parts of the magazine. As before, however, the coverage will consist chiefly of buildings described and illustrated for their inherent interest, as well as those included in foreign magazines for the sake of the trends and movements they exemplify.

FACTORY IN NEW YORK

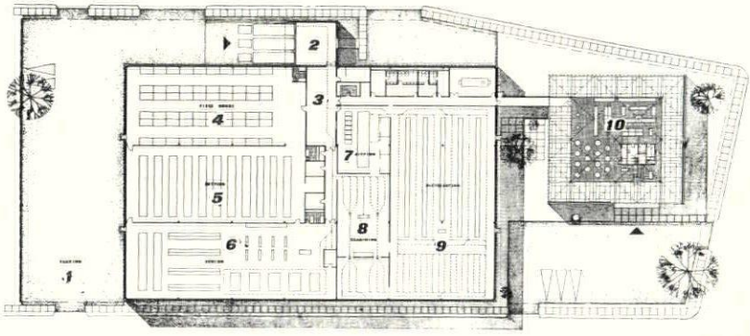
ARCHITECT: ULRICH FRANZEN

The entire process of manufacturing coats, from raw material to packed goods, is handled in the main block, with offices, canteen, etc. in the smaller structure.

Key to plan: 1, car-parking; 2, stockroom; 3, entry area; 4, piece goods; 5, cutting room; 6, sewing room; 7, dispatch; 8, examination; 9, distribution; 10, offices.

The planning and methods of the garment industry in the US have hardly been revised since the nineteenth century; this is the first modern plant for manufactures of this kind, and had to be laid out from first principles.

1, the office-block with factory corridor beyond.



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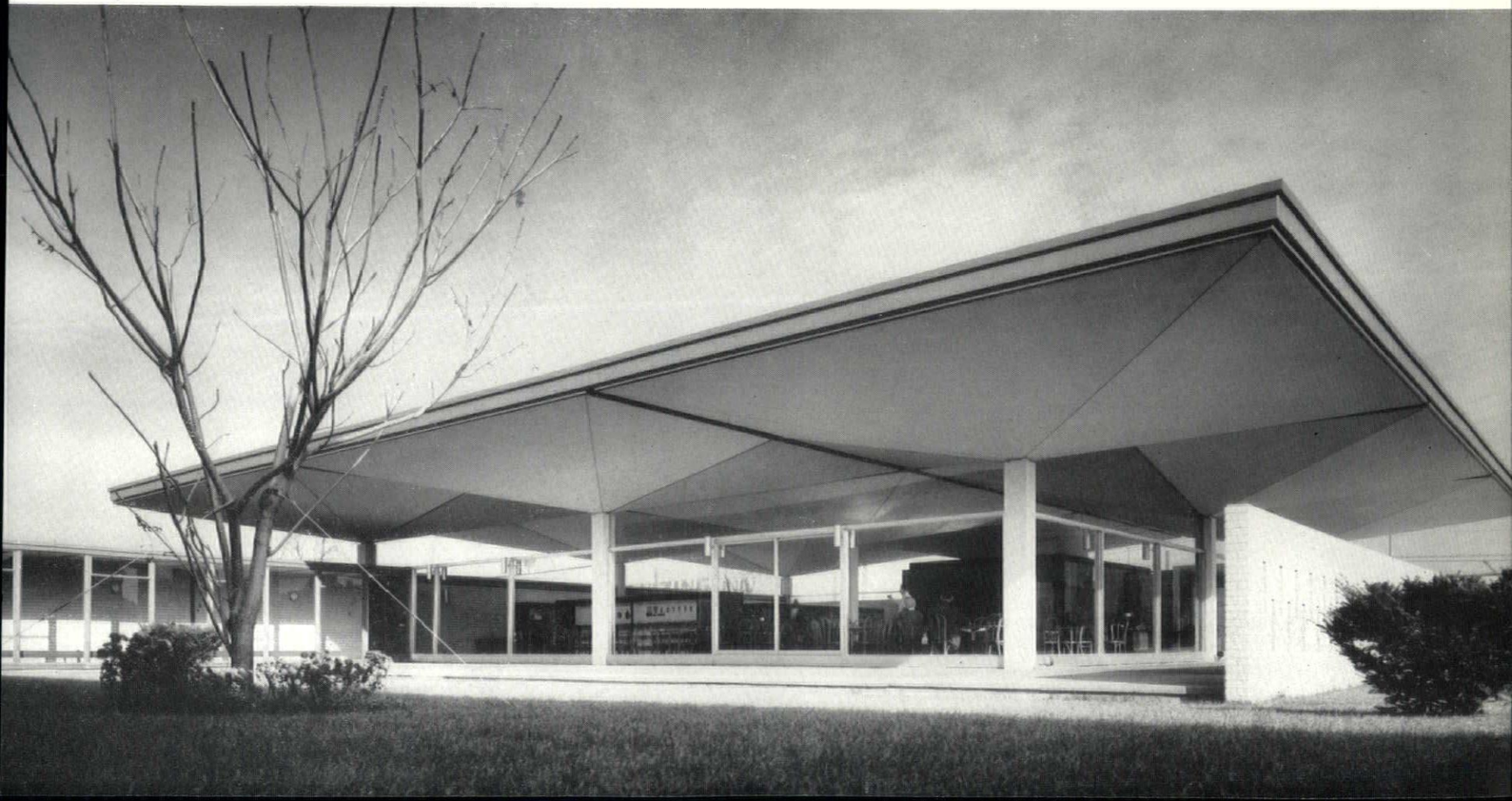

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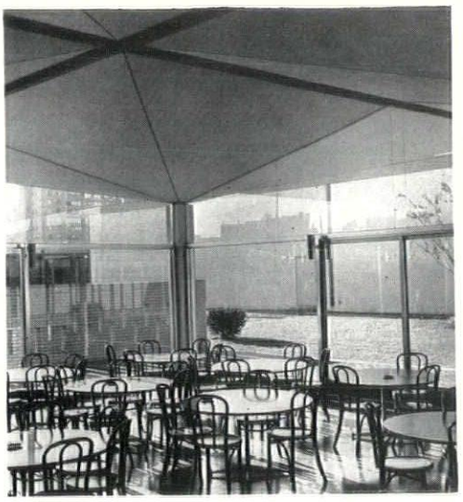


3

Factory in New York

2, the covered walk round the office area, with screen-wall on left and the wall of the factory block beyond. The structure of this block consists of nine steel 'umbrellas' carried on steel columns, and joined to make three hinged arches. Glass walls between the outer columns create an enclosed pavilion.

3, the light and airy effect produced by this type of structure is seen in this view looking outwards toward the corner of the canteen area, the corner column being the same as that in 2.

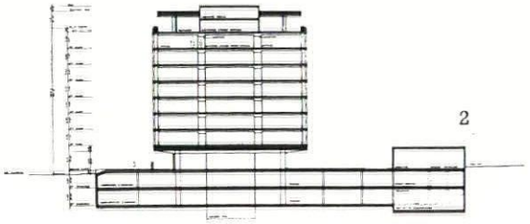
BANK IN BRUSSELS

ARCHITECTS: SKIDMORE, OWINGS AND MERRILL

The project is intended to house a private banking firm, on a site facing the Avenue Marnix, Brussels, and a private pent-house for the proprietor's family on the roof.

1, the main structure of the upper parts of the building consists of cruciform pre-cast concrete units, each tier supporting that above through stainless steel ball-and-socket joints, the cross-member forming permanent shuttering for the edge of the concrete floor-slabs. Windows are set back from the structural grid, leaving a walkway for cleaning and other services.

2, the section shows how the weight of the structure is transferred from the outer wall to rows of set-back columns by a massive slab at first-floor level. Banking rooms are on the ground floor, with parking and services below.



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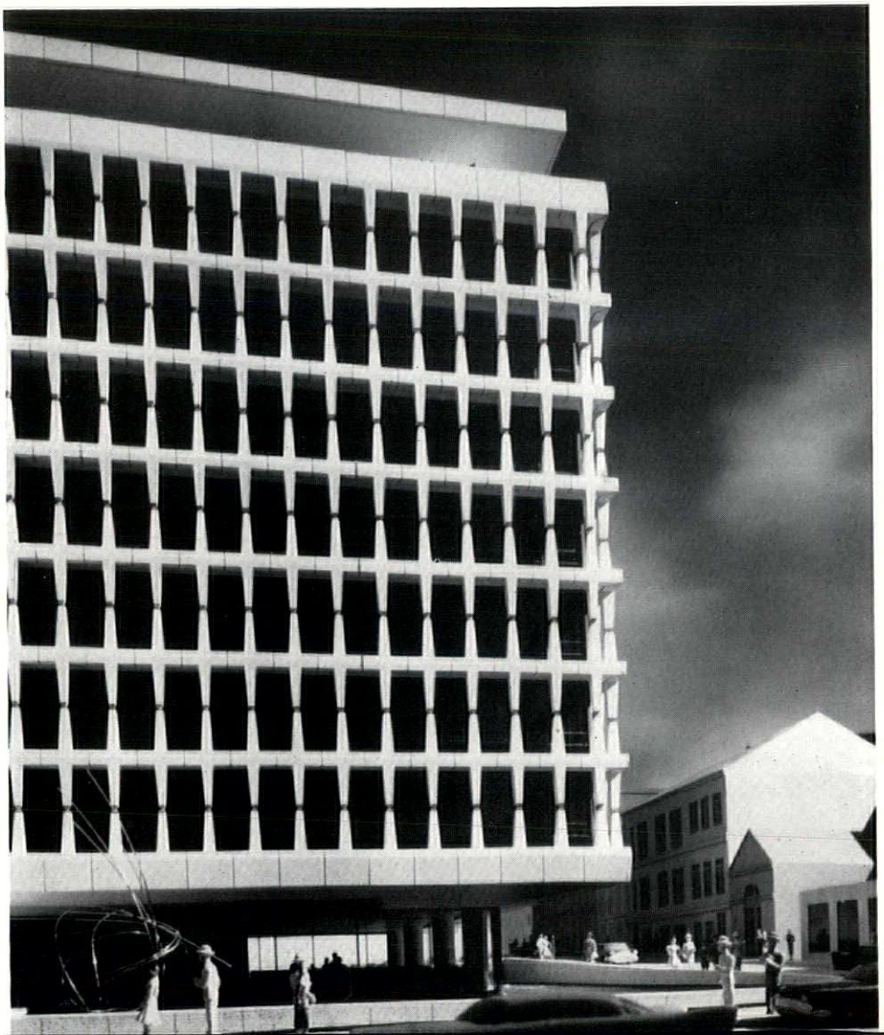

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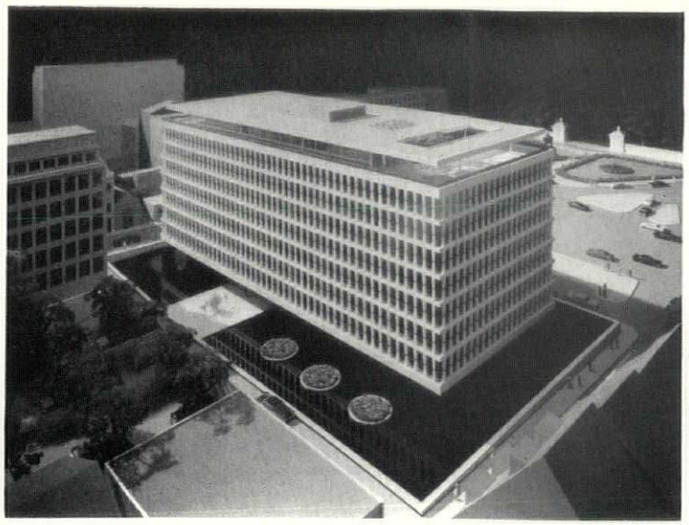


3

Bank in Brussels

3, the scale of the block, both in bulk and in detail, was largely conditioned by the dominantly residential neighbourhood in which it is located, while its noticeably monumental form and surface treatment arose from considerations of its aspect, looking down the Place du Trône toward the Palais Royale. The whole structure is set up on a travertine-faced podium, whose surface, outside the limits of the enclosed area of the ground floor, is almost entirely occupied by a reflecting pool with island flower-beds.

PETROL INSTITUTE IN RUEIL

ARCHITECT: PIERRE DUFAU

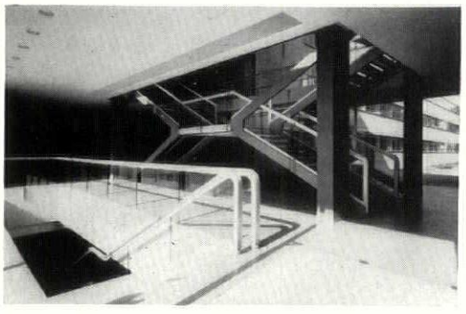
The two conjoined wings of the building house offices and teaching-spaces respectively for the French Petroleum Institute, whose work has expanded considerably as a result of oil-strikes in the Sahara.

1, the circulation block, between the two main wings, housing staircases and the entrance, the projecting porch with its two sets of swing doors being an all-metal structure. The main load-bearing construction throughout is in reinforced concrete, the teaching block, left, having very large clear-spans between supports, and is faced in polished black Swedish granite, reflecting the trees in the open grounds of the Institute.

2, the entrance-hall, showing part of the elaborate system of interlacing metal staircases, descending to basement level (foreground) and rising to higher floors, beyond. The balustrades are filled in with plate glass, and are braced by glass struts on the outside of the stairplates.

3, the rear (road) side of the circulation block, with the back of the teaching wing on the right.

1



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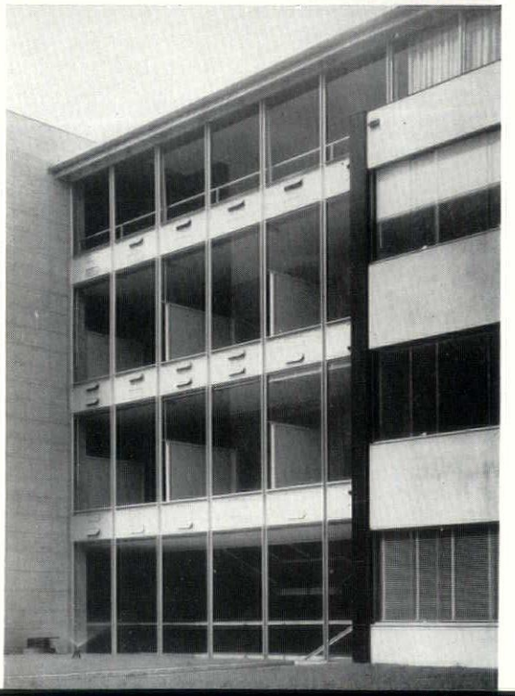
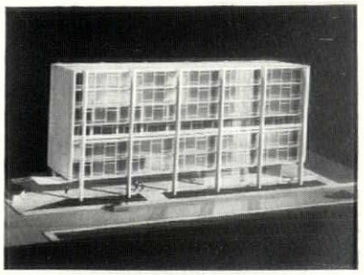


3

WORLD NOTES

Straight Niemeyer

Those who believe, on the strength of Brasilia and some earlier works, that Oscar Niemeyer has 'gone curved,' or 'relapsed into Brazilian Neo-Baroque,' or has abandoned rational structural form, might do well to take note of a project for a public library building in Florianapolis, 1, designed by him in collaboration with Flavio de Aquino. The



1, *public library in Florianapolis.*

structure here is as 'rationalist' and as rectilinear as in any Mies-school work in North America, and for very similar reasons—just as in Skidmore, Owings and Merrill's *Inland Steel* building, the stanchions have been moved outside the main envelope in order to leave the internal floors unobstructed, but Niemeyer has carried his stanchions clear of the facade, leaving an appreciable air-gap—more than a foot—behind them.

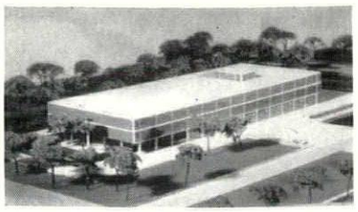
Canadian Galleries

Although the proposed National Gallery of Canada, described below, is among the most important museum projects in North America, it has been temporarily overshadowed, in the public eye, by the Lord Beaverbrook Art Gallery in Fredericton, New Brunswick, designed by the Fredericton architect Neil M. Stewart. Although its disappointingly old-fashioned and classicist exterior, 2, might not suggest it, the design of this gallery subscribes to the accepted Functionalist idea of evenly diffused top-lighting in all display spaces. As its name implies, this building will eventually house Lord Beaverbrook's

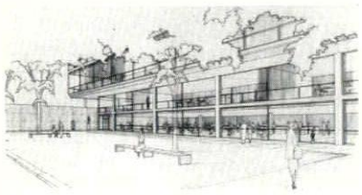
2, *the Lord Beaverbrook Art Gallery in Fredericton.*

gift of works of art to his fellow-Canadians.

The National Gallery of Canada project is a different affair in practically every way. The outcome of a two-stage competition to which an undecided jury finally added a third stage (at which point the site was changed, quite independently of their difficulties in reaching a decision), the approved design is a tidy, three-storeyed rectangular structure, with a suitably formal air, 3, designed by the Winnipeg firm of Green, Blankstein, Russell and Associates. The model photograph shows it on the new site, overlooking Green Island Park on the outskirts of Ottawa, and it also shows the two features of the design on which the Jury commented at some length in their report—its obviously Miesian inspiration, and



3, *the winning design for the National Gallery of Canada.*

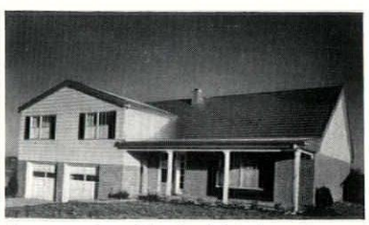


4, *perspective of one of the courtyards.*

the extensive external glazing, which is right against the grain of current thought on gallery design. The Jury, which included Alfred H. Barr, Eero Saarinen, and John Bland, of the McGill Architecture School, appear to have satisfied themselves that the Miesianisms were seriously intended, and not just applied aesthetics, but on the other point they said 'The Jury is not in sympathy with clear glass, and wishes to go on record on this matter,' and went on to explain that their worries included, e.g. the visual confusion caused by the visibility of multifarious internal activities of different sorts, mostly beyond the architects' control. However, some of the published perspectives of the scheme, 4, suggest that this kind of effect may have been deliberately cultivated, in some degree, and the final solution is, therefore, awaited with interest.

Look Back in Aluminium

Recent programmes of research and publicity sponsored by the Aluminium Giants of North America have done much to establish the material in the public mind as the brave new building material *par excellence*. The Reynolds Company's *House of Ease* programme, which offers 'at minimum cost, a complete package of thirty or more aluminium building products from threshold to roof (which) cuts heating and air-conditioning costs, and gives . . . more leisure through liberation from maintenance' sounds like more of the same, until one sees what a typical *House of Ease* looks like, 5, complete



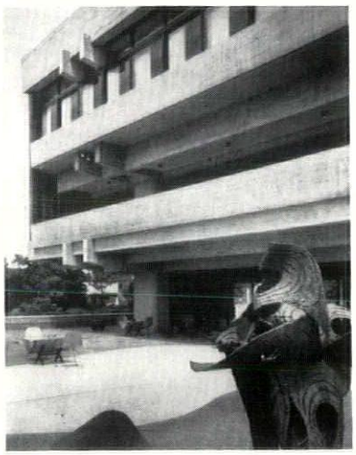
5, *one version of the aluminium house.*

with its coloured aluminium roof-shingles. It is just as well that most architectural thinkers have now given up the old Rationalist-Functionalist dogma about materials and techniques dictating architectural form, but even so, it is difficult not to feel a twinge of split-level schizophrenia at the application of this outstandingly neo-technical material to what remains, in bulk, a paleotechnical conception of the dwelling. There is, perhaps, some comfort in the fact that most contractors who are pioneering the *House of Ease* programme also offer 'contemporary models.'

Japanese Maturity

The award of the first *Grand Prix Internationale d'Architecture et d'Art* (organized by the French magazine Architecture d'Aujourd'hui) to Kenzo Tange is, one suspects, more than just an award to one man and two buildings, it is also a recognition that the modern architecture of Japan is growing up. The two buildings cited in the award are Tokyo City Hall (Marginalia, December, 1958) and the Sogetsu Arts Centre, 6. Both underline what seems to be the settled trend of large-scale Japanese architecture toward reinforced concrete and thickly plastic structural members, a trend that has reached a remarkable degree of power and maturity in a new apartment block in Tokyo that must surely rank among the outstanding buildings of 1959.

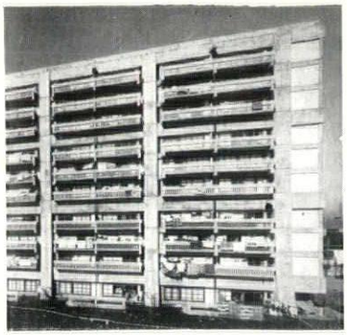
The Harumi Apartment Building, designed for the Japan Housing Corporation by Kunio Maekawa and Associates, stands, at first sight, 7,



6, *the Sogetsu Arts Centre.*

7, *the Harumi Apartment Building.*

astonishingly close to a great deal of recent (unbuilt) English thinking on the subject of high-rise apartments. Conceived as a Neutral Technological Frame with the minimum of applied aesthetics, it is, effectively, a street-deck scheme with access decks at every third floor, stairs going up and down from the deck to floors above and below, with a massive slab of structure and services dividing one three-storey sandwich from the next. The frame is of thick and very *brut* concrete, but the type plans that have been slotted into it are—to Western eyes—very delicate and Japanese, with planked and

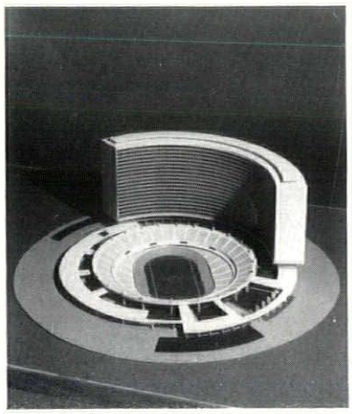


8, *washing on the Harumi balconies.*

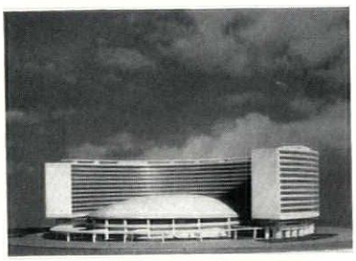
matted floors, sliding screens and alcoves. Indeed, the widespread discussions of the scheme in Japanese magazines have often taken the line that this basic frame can take anything, including a generous display of washing and airing, 8, or the invasion of its street decks by the local delinquent gangs—the superficial resemblances to Brutalist aesthetics seems to be matched by a similar, but deeper, resemblance to the Brutalist concept of every new building a contribution to the leading of a fuller, urban life in the city.

New Vel D'Hiv

The old *Velodrome d'Hiver* has nearly as secure a place in the mythology of the school of Paris as the Cirque Médrano—where was it, after all, that Le Corbusier had his decisive thoughts about the staircase of the Villa at Vaucresson? The new *Vel d'Hiv* (as the institution has



9, *the Vel d'Hiv by Pierre Dufau.*

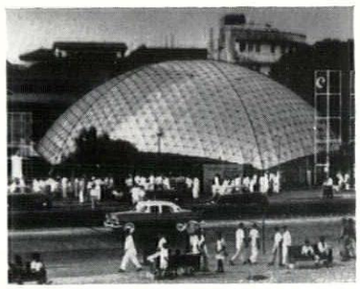


10, *the alternative, lower scheme.*

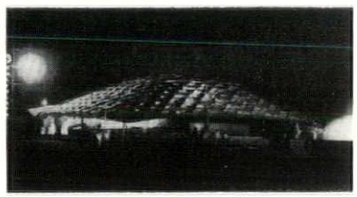
always been called), 9, designed by Pierre Dufau, is to be at Puteaux, and will join the cluster of remarkable buildings (such as the new CNIT exhibition hall, AR, November, 1958) around the Place de la Défense. An interesting point in the aesthetics of large developments of this kind is raised by an alternative scheme, in which the Velodrome is backed up by a block only fourteen storeys high, but embracing more of its circumference, 10. Which is better, a twenty-two storey backdrop, or a fourteen-storey 'wall' which defines the rotundity of the building at its foot?

Featherweight Domes

Long after Bill Stout's Ford aircraft and pioneer dream-cars have been forgotten, his celebrated motto 'Simplicate and add more lightness,' will be quoted wherever the frontiersmen of technology forgather. It is a slogan that has become almost a way of life in dome design, and a good example of it in action is provided by the first-fruits of Buckminster Fuller's visit to India. The two domes built for the enlightened Sarabhai company (a patron of Le Corbusier, it will be remembered) to house what might be termed the Calicloth Road Show, are of almost identical diameter (100 feet) and serve the same function, to shelter the 700-odd spectators at mannequin parades advertising Calicloth products. Both answer to the normally high standards of performance expected of Geodesic domes but as between the first Calicloth



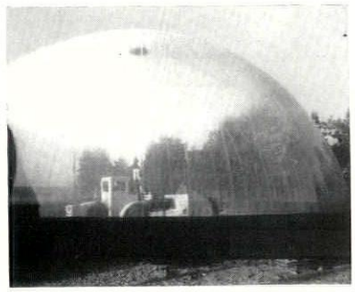
11, *the first Calicloth dome.*



12, *the second dome by night.*

dome, 11, and the second, 12, which stands only two-thirds as high, a saving of fifty per cent in the footage of structural piping has been achieved and a reduction of one-third in the area of water-proofed cloth needed to cover it.

But, clearly, simplification and the addition of lightness can be carried even further if, say, the structure can be omitted, and the possibilities of skin-only domes have been carried almost to their ultimate as a recent pneumatic bubble created by the Birdair Company of Buffalo demon-



13, *plastic bubble warehouse.*

strates. This consists simply of a skin, 13, of Mylar plastic film, sixty feet in diameter at the base ring, held up by a slight difference of pressure between internal and external air. Foldable, transportable and remountable, it is to be used as a movable warehouse.

EXHIBITIONS

PAINTINGS

There is a certain kind of picture that looks at its best in the Royal Academy Summer Exhibition: it finds a perfect setting in the huge, disorderly context of weaker and more sensitive, stronger and more vulgar pictures which the Academy incontinently provides: in return, it gives the Summer Exhibition a vestigial and faintly surrealist dignity. There is no precedent in the best traditions of the Academy for the pictures I have in mind, since they are characterized by extreme coldness and hardness, and these are qualities which are not as a rule considered to be praiseworthy. But in the humid, swampy, over-populated conditions of the Summer Exhibition an excess of coldness and hardness expresses the presence of an elite. Only a very tiny elite; one that has not moved with the times, and has no ear for the glutinous ticking of Dali's soft watch.

It is not difficult to find pictures which are *moderately* cold and hard, but the moderation is produced by a kind of mental deliquescence. Norman C. Blamey, for instance, gives a neat, clear but purely journalistic account of an interesting visual situation in a picture called 'The Liturgy of Good Friday,' starring three clerics lying flat on their faces. Another work in the same genre, Anna Zinkeisen's 'Night Duty' is less efficient, and although the painter has confronted herself with a thoroughly picturesque scene, her picture is only a vivid account of the strain to which it has put her technical resources. This is a pity. The subject is of a kind that would cover the shortcomings of a commonplace talent if they were not unreasonably short: the sight of nurses round a desk lamp in a darkened ward operates in the average mind as an optimistic emblem of the human situation, and it is a very bad sign indeed if the Academy can't produce a 60-watt tenebrist capable of leaving the automatic associational values of such a scene undiminished.

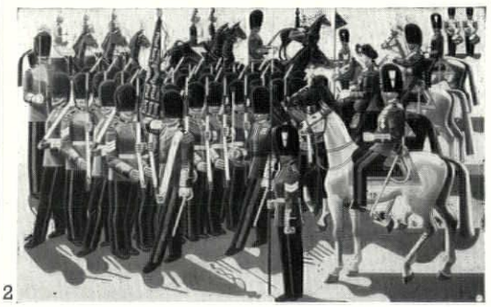
A hard, cold technique needs the support of a compulsively refrigerative vision before it can produce an interesting travesty of reality. Only two works in the exhibition disclose the line that paralyses and a coldness of colour that burns. One is 'Hulks,' 1, by Tristram Hillier; the other is 'The Trooping of the

1

Colour,' 2, by William Roberts. The theme of both these works, conscious or otherwise, is the cessation of change.

In Hillier's painting, which looks as if it has never been touched by human hands, the cataclysmic event which brought life and death to an end could have happened a million years before it was recorded, because it is clear that the broken boats are no longer involved in the process of decay. This world was swept and dusted on the last day, and not another speck has fallen out of the icy blue sky. It is an eery and fascinating work. Years ago, Hillier was influenced by Chirico, but in 'Hulks' he presents a kind of reversal of Chirico's landscapes of presentiment. This coastal scene is filled with the promise that there will never be another happening; it is a vision of total indifference, a detailed view of nothingness.

Roberts has transformed a Royal event into a taxidermal nightmare. As soon as



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one's eye accepts the invitation to tease out the ingenious pattern of bearskins and bayonets one becomes insufferably aware that nothing is really happening, that no figure is in touch with any other, that the soldiers who are sliding the right foot forward cannot adopt any other position, and one wants to push everything over, with a violent sweep of the hand. A companion picture along such lines, with those sliding right feet pointing woodenly at the sky, would have added immensely to the macabre pleasure afforded by the neat, cold intricacy of the design, and I'm sure that Roberts could have done it brilliantly. But it isn't likely that this picture is a joke. Roberts hasn't been starching and drilling the human figure all these years simply to provide us with elaborate light entertainment. He has held on to his cubist caricature of the figure through a long period of neglect, as if it were his claim to mastery, and he has been putting it through its paces with the obsessiveness of the most ruthless of martinets. In this military fantasy he has found at last the perfect image for the obedience, the dumb servitude that he has always demanded of his own creations, and thus in a small way has come as near to being a god as damn-it.

Without ever going down completely under the rain of wax fruit, bottles and clay pipes flung by the guardians of pure pictorial values, the art of Odilon Redon has for many years been seriously undervalued and condemned to partial obscurity by the activities of those critics who only feel safe from the seductions of contingent values when conducting a witch hunt against the 'taint of literature.' Half-blinded by the beauty of a thousand still lifes, they have only to note that a lithograph by Redon is an illustration to Flaubert's 'Temptation of St. Anthony' to be certain that all its values are 'literary.'

But during the last few years Redon has been rapidly coming into his own, and it is a sign of the times that an exhibition of his lithographs at the Arts Council was still running when a loan exhibition of his paintings, pastels and drawings came on at the Matthiesen Gallery.

Redon is a master in his lithographs and pastels but not in his oils. The best of his oils are small still lifes, close in spirit to the art of Fantin Latour, and completely out of touch with the poetic qualities of the pastels, where sudden collusions of colour provide glimpses of unseen worlds.

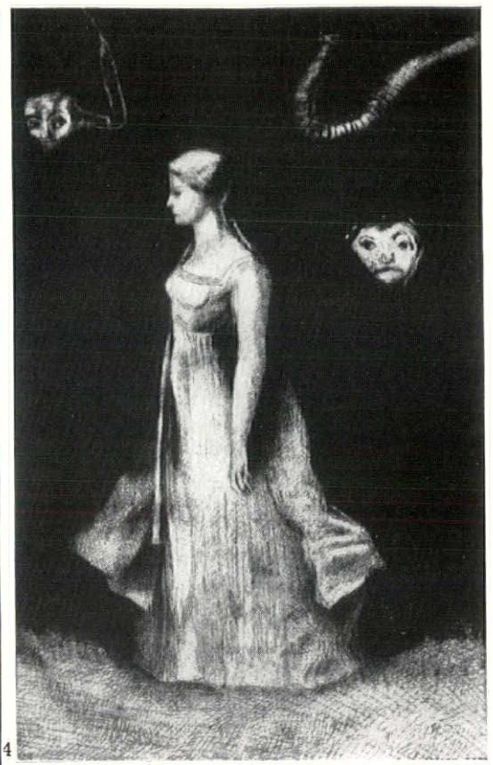
Our ratification of his highly personal visions springs from our response to his spatial ambiguities and his subtle handling of the partial emergence of forms. Oil painting never gave him the cloudy depths, the shifting, twilight spaciousness from which faces, flowers and grotesques could softly and roundedly, but never totally, obtrude themselves. He experimented rather desperately with 'grounds' and 'surfaces' which frequently remind us of the pastes of some of the more precious of the French adherents of informal abstraction, but they never achieved the shadowy penetrability of the pastels or the cavernous blacks of the lithographs, and instead of emerging through a veil of atmosphere, the figurative elements in the paintings cling, flat and outlined, to the painted grounds or, at best, are pushed into it. The figures in

the oils are thus of a quite different nature from those in the pastels. Those in the oils are symbols; they belong to various mythologies, and although it is evident that Redon has read a private meaning into them, we are not induced to speculate upon them. We are, in fact, convinced that they will be as cranky and involved as the symbolism of Blake. But when Redon uses similar forms in the pastels and lithographs they are not symbols. They do not have to explain themselves. If they meant anything before they became what they are, they have shaken themselves free. They do not 'stand' for anything; they are the pure yield of line and colour and have no other existence. They are as much pure pictorial reality as the apples of Cézanne. Even when he draws a portrait, as in the lovely monochromatic pastel called 'Le Dame au Manteau d'Astracan,' 3, the likeness is

3

committed by his characteristic use of the medium to the world from which he fetches his grotesques. The coat and hat are a protective darkness in which the face of the girl looms and forms like an apparition.

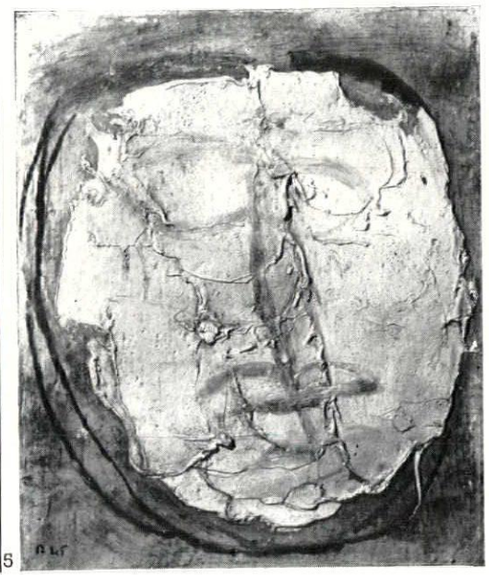
The lithograph called 'Hantise,' 4, is not among his very finest works in this medium, but it conveys some sense of the sumptuousness of his 'Noirs' and of the quiet and undemonstrative way in which his grotesques and nightmarish figments put in an appearance. Their studied indifference to the one whom they 'frequent' is an effect which Redon must have learnt from Bosch. The plate for Flaubert's 'Temptation' called 'Des Fleurs tombent et la tête d'un python parait,' is among his greatest works. The beginnings of serpen-



4

tine movement in the fragments of reptilian life in the foreground are so brilliantly conceived that the mind's eye completes these movements in the blackness beyond, and compels one to know that its marvellous velvetyness is alive with monstrous things. After Bosch, Redon is the greatest interpreter of the 'Temptation' theme.

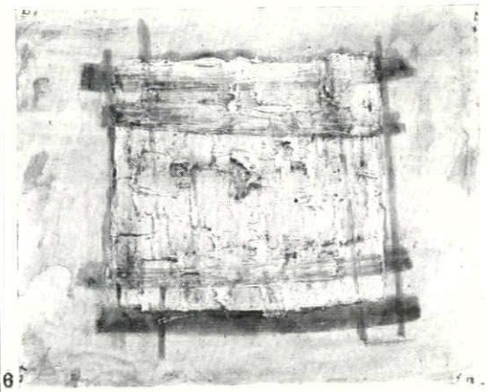
Fautrier, one of the more precious of the French adherents of informal abstraction mentioned above—and in fact considered to have had a start of several years on all the other producers of high-class belle-peinture in mud-pie form—has just held an elegant-looking show of recent paintings at the Hanover Gallery. He does not rely on size or brutality for his effects but on the charmingly confiding way in which



5

the pictures themselves seem to let one into the secrets of his procedure.

There is one earlier example of his work, 5, dated 1945, from a series of 'Hostages' which, according to the critic Michel Regon, are images of 'hostages shot before firing squads, their faces deformed by torture, punctured by bullets, faces reduced to a muddy, rose-coloured wound . . . living heads made into a paste, annulled.' The muddy rose-colour is enchanting, and as the horrible things that are supposed to have been done to the head have been annulled, the central dollop of paint where the head appears doesn't look much different from the central dollop of paint in the other pictures, except that many of the new ones are roughly rectangular, 6.



6

These areas of thick paste, delicately flushed with colour, are set on darker grounds of colour bearing lines and scribbles which still show at the edges, and these marks are continued in lighter colours across the face of the paste. It is all done with taste, and there is no doubt that this curious game does something for the eye because the gouaches which follow the same recipe without having raised and grooved surfaces are extremely commonplace.

Robert Melville

COUNTER-ATTACK

INFILL AT WALLINGFORD

Successful urban infill requires equal parts of visual courage and respect for the genius loci; that these are not mutually exclusive is proved (as if proof were still needed) by Morton and Lupton's scheme for Priory Mews at Wallingford. The site is the old kitchen-garden of Castle Priory, which—as the map shows, 1—is located close to the centre of the town, in an area that is, visually, well built up with walled enclosures. Access is by a ramped road down from the town side, and steps from Thames Street, into a

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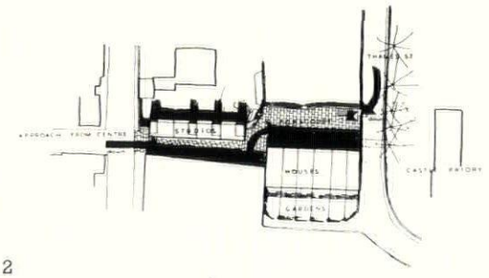

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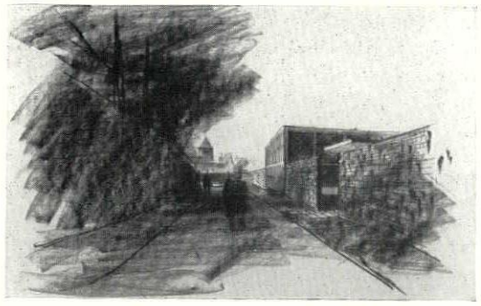
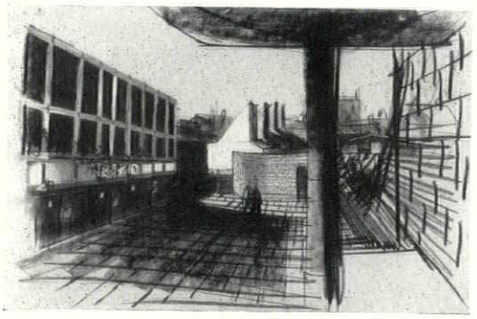
forecourt serving houses at one end, studios at the other, 2.

Passing along Thames street, which is walled on both sides at this point, one



3

sees only the blank end-wall of the terrace of houses, and a gap cut in the existing wall, 3, which provides access to the steps down into the forecourt, the actual



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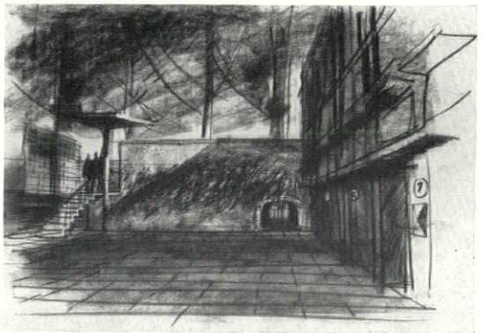
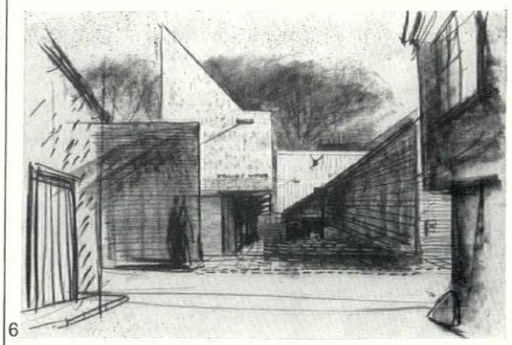
entrance being marked by the concrete canopy seen in both 4 and 5. From the top of these steps, 4, the steeply pitched roofs of the studios are seen at the far end of the courtyard, functional shapes that nevertheless pick up the characteristic



5

roofscape of the old town beyond. An existing feature of the townscape and pedestrian circulation of the Thames Street area that has been retained is the tunnel under the street, giving access to Castle Priory gardens, at the end of the terrace in 5.

At the town end, 6, the entrance is a visual continuation of Hart Street, and



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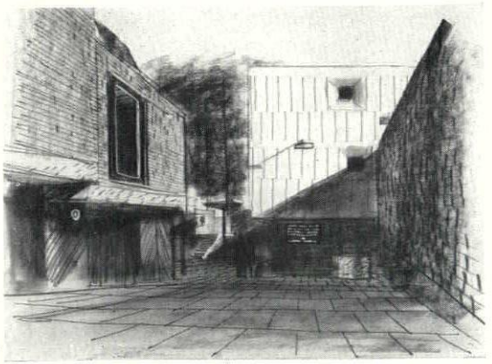
lies only 100 yards from the Market Place. The roofs of the studios stand up behind the old flint and brick wall of the garden, which has been retained, though cut back



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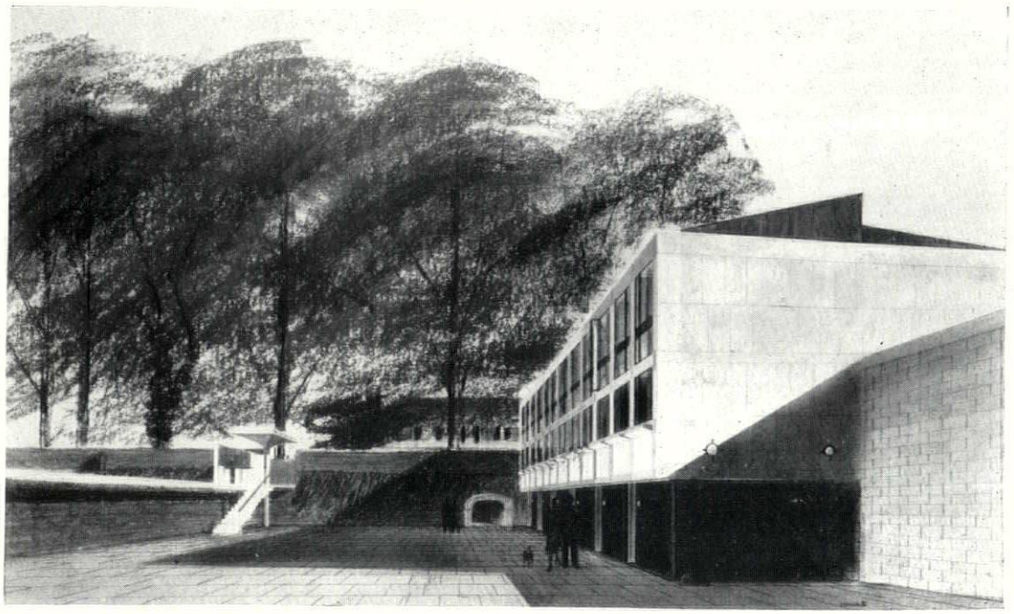
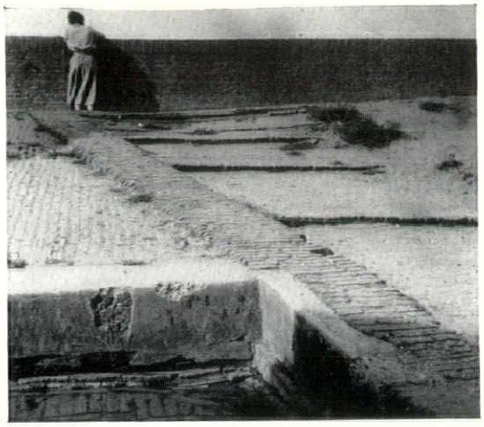
somewhat for the sake of the sight lines. The narrow part of the forecourt runs down past the studios to the key point of the whole scheme, 7, where the space with



8

new work (studios) on the left changes over to a space with new work (terrace) on the right, giving the first view of the Thames Street wall beyond. This point is a crucial one in the whole design, since the area adjoining Thames Street lies in a part of the town whose character is entirely different to that of the Hart Street end; it is, inevitably, the visual dominant of the whole, 8, but it would be bad townscape manners for it to be too visible from the town end. **C. Forehoe**



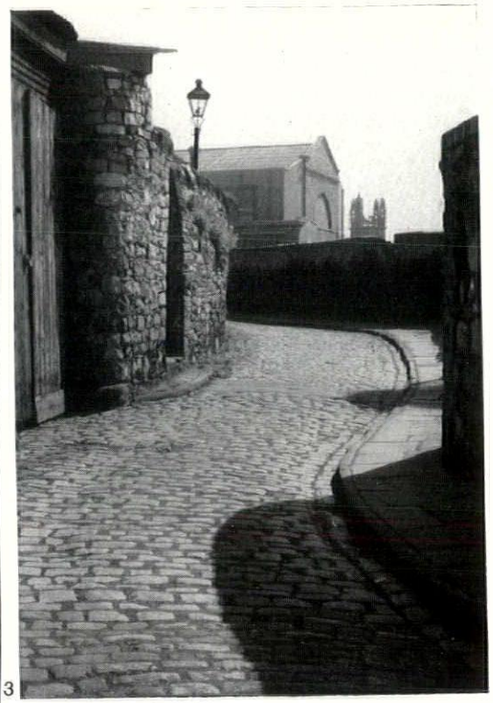
FLOORSCAPE

MEANS OF ASCENT

As every pedestrian knows, the character of the town's floor is never more important than when it isn't level. In such places not only must the texture be studied with the same care as elsewhere, but the actual conformation of the surface must be controlled.

Generally the choice is thought to lie between steps and slope. What isn't widely enough appreciated—or if appreciated, not often enough acted upon—is the fact that there are a number of solutions in between these extremes, in short that there are many *means* of ascent. One of them is shown in the photograph below, 1 (Salamanca, Spain); here we have not steps exactly, but rather a ridged slope. In the photograph above, 2 (Harlingen, Holland) we again see something between steps and slope, but this time coming closer to the latter than the former. Note that an alternative method of ascent is offered by the brick ramp, just as in the English example, 3 (Whitby, Yorks) there is the choice between ramp and steps: indeed 'freedom of choice' is no bad ideal to bear in mind when planning ascents.

1



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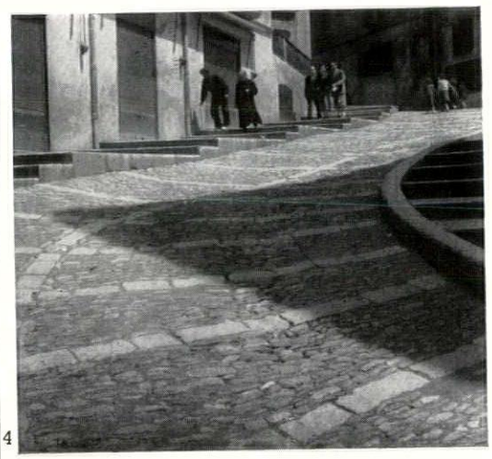


4

In 4 (Tarragona, Spain) the cobbled roadway has transverse bands of larger stones which have much of the psychological effect of steps for the pedestrian—each band achieved is that much nearer the top—while not at all incommoding wheeled traffic. Note also the pleasing variety introduced here by sinking the stepped pavement on the right below road level, while that on the left is raised above it, and by the long-short-long rhythm of the latter in contrast to the even rise of the former; altogether this is an extraordinarily happy fragment of townscape.

Nearly every old town contains some example of a change of level effected in a practical yet imaginative fashion. Yet when the same thing has to be done today instead of using imagination we take refuge, more often than not, in one of two or three stereotyped solutions. The time has come to think again, and the purpose of these photographs is to provide some food for that thought. **Marcus Whiffen**

SKILL

PITCHED ROOF COVERINGS

by Peter Whiteley

4, corrugated sheet coverings

No pitch roof covering is more characteristic of our industrial building technique than the corrugated sheet. Unfortunately its development in a period when cheapness was taken to imply visual carelessness has left it with a set of unresolved aesthetic problems. The purpose of this article, however, is not so much to consider these as to rehearse the properties of this class of product and the technical (and cost) considerations that must be taken into account when using it.

Although on grounds of appearance only, this category of roofing materials, sheet coverings, would seem to merge with the third group of semi-continuous coverings, the distinction between them is constructionally a clear one: that all the materials in this group are more or less strong in bending (in one direction) due to their properties of section, and, therefore, require only occasional support. It follows from this that the most appropriate and commonly used supporting structure for these materials is one of trusses and purlins, whether of steel, timber, precast reinforced concrete or light alloys.

Weather resistance

Comparing this group of materials with unit coverings, the causes of leaks in roofs of sheet material may be one, or a combination of, the following:—

1. Water may find its way over the heads of the sheets; if this occurs it is due to the roof having too low a pitch for the lap.

2. Water may be blown by wind pressure over the side joint between adjacent sheets; this is probably primarily due to the side lap (whether plain or interlocking) being inadequate for the degree of exposure, and to a lesser extent, the pitch.

3. In time, water may penetrate the fixing holes for a variety of reasons: corrosion of the sheet material or fixing; breakage at the fixing point due to thermal movement inadequately allowed for—or to ageing of the material, leading to brittleness.

4. As in unit coverings, leaks frequently occur where the sheet material finishes against, or joins with, the surface of another material; verges, abutments, ridges, open valleys and roof lights are such situations.

Of these four cases, the first is essentially a matter of the roof pitch, whilst 3 and 4 are connected with the pitch only in so far as, on roofs of very low pitch, water shedding takes place more slowly and, therefore, there is a greater likelihood of trouble on these two counts.

With sheet materials it is a very easy matter to increase the head lap from 6 in. to 9 in. or 12 in. if a low pitch is required or if the site is particularly exposed, as most sheet materials are available in a multiplicity of lengths (commonly in increments of 12 in.). Water entering by capillary attraction at the head lap (and to a lesser extent at the side lap) is not as likely as with unit coverings, because: (*a*) the fixings are entirely mechanical (i.e. not involving any additional material such as mortar or adhesive); (*b*) roofing sheet materials are largely non-absorbent (with the exception of asbestos-cement); and (*c*) the profiles of the sheets are so designed (in particular the corrugated profiles) that lapping surfaces are non-continuous.

With the development of manufacturing processes in this field it is now possible to obtain sheets of both steel and aluminium up to 35 ft. in length, which on roofs of 35 ft. or less from ridge to eaves, enables the problem of end lap to be eliminated entirely. In the matter of side lap there is also some degree of flexibility: with nominal 3 in. pitch corrugated sheets the side lap can be varied, 1, 1½ or 2 corrugations, according to the degree of exposure expected. It is also recommended good practice to lay sheets with their exposed side edge(s) away from the prevailing wind. The other common patterns of corrugated sheet appear to give adequate protection with one corrugation side lap. On the third factor may largely depend the effective life of the roof, and so the development of completely concealed fixing methods for roof sheeting systems is a big step forward constructionally (and visually); some examples of these are 'Fural' aluminium alloy; 'Snaprib' (Northern Aluminium Co. Ltd.); 'Multiclad' (in both aluminium alloy and 'Galvatite') and 'Kynalok' (I.C.I. Ltd., Metals Division) though the latter is primarily a vertical cladding system.

Pitch

The above factors, sheet length, efficiency of side lap, and concealed fixing, taken together, are the main reasons why roofs of appreciably lower pitch are possible with sheet materials than with unit coverings; in fact sheet coverings can be laid nearly flat.

Durability

a. asbestos-cement

As this group of materials is one of manufactured products all of fairly recent development, and one which is steadily improving in performance, it is difficult to be precise about durability. In the case of asbestos-cement the following extract is taken from CP. 143.201 (1951):—

'Asbestos-cement, on exposure to the weather, will be affected in the following ways:—

(*a*) The surface will become slightly softened owing to solution of the cement by chemical action on exposure to the atmosphere.

(*b*) Increased brittleness with age will reduce resistance to impact.

(*c*) Slight expansion, shrinkage or curling may cause breakage if the sheets are fixed too rigidly to the roof structure.

'This type of roofing is not normally suitable where the roof may be subject to impact . . . Durability depends mainly on the degree of acid pollution of the air. . . .

'Asbestos-cement sheeting may be regarded as having a life of at least 30 years. There is, at present, insufficient experience of the material to ascribe to it a life much in excess of this, and it is considered that if a longer life is required of the roofing, fixing accessories more durable than galvanized iron or steel, such as copper, should be used' . . . and later . . . 'Reinforcement in the sheeting does not necessarily justify any increase in the purlin spacing. It does, however, provide greater safety against impact.'

b. galvanized steel

As far as galvanized and/or 'protected' sheet steel is concerned, it is reasonable to expect a similar life of 30 years and upwards, dependent upon atmospheric conditions; here, again, the limiting factor is a combined one of the durability of the fixing accessories, together with the corrosion resistance of the sheet where it has been cut and pierced. Steel sheets are invariably galvanized before fabrication into sheets and 'protected' before fixing, so the adhesion of the protective coating (of whatever composition) to the sheet is critical. There has been considerable improvement in the effectiveness of the zinc-on-steel coating with the development of 'tight galvanizing,' though it should be kept in mind that zinc has a far higher corrosion rate than either aluminium, copper or lead. (Cf. Symposium on Atmospheric Exposure Tests on Non-Ferrous Metals, published by A.S.T.M., February 27, 1946.)

It is also possible to vary the thickness of the zinc coating in order to increase the corrosion resistance of the sheet; both 'Galvatite' and 'Speltafast' are produced with four different coating thicknesses for standard sheetings (in ounces of zinc per square foot). In the case of 'protected metals' where the protective coating is essentially bitumen and asbestos fibres, it is not altogether a good thing to increase the thickness of protective coating beyond a certain optimum in order to increase the corrosion resistance, because this carries with it an additional fire risk.

c. aluminium

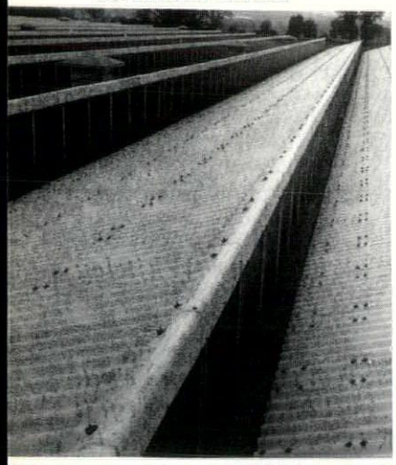
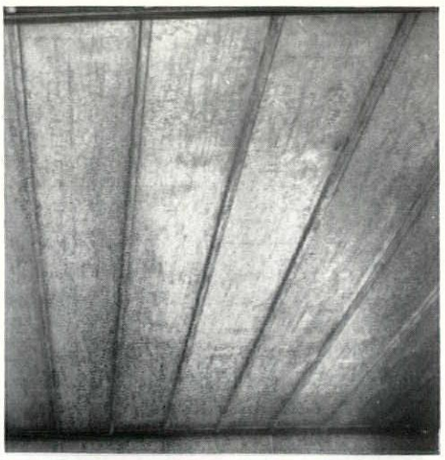
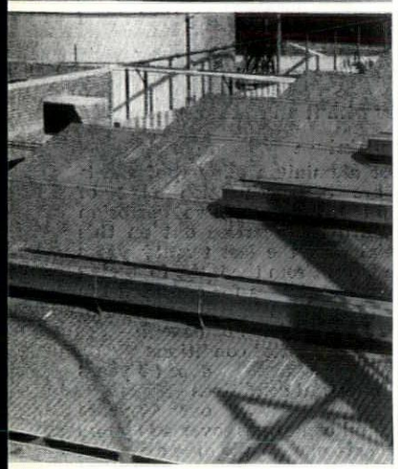
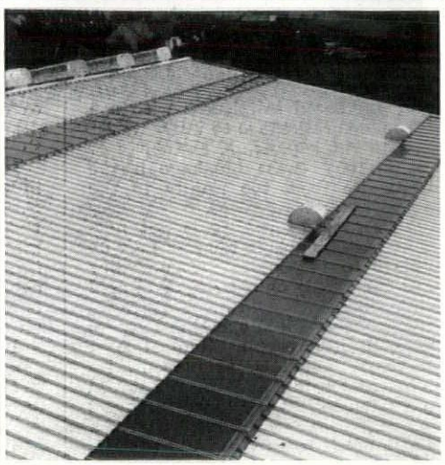
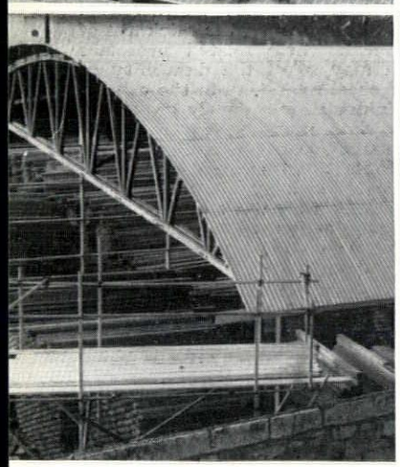
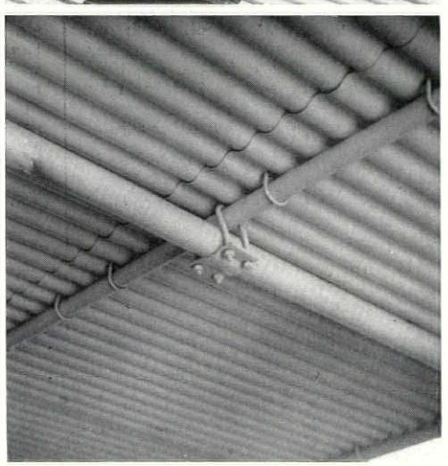
Most aluminium alloy roof sheetings are of specification NS3 of B.S. 1470 and extensive corrosion tests have been carried out on this material over the last twenty years in the USA. From them the following conservative figures for expected life of 20 s.w.g. (.036 in. thick) sheet of alloy NS3 have been obtained:—

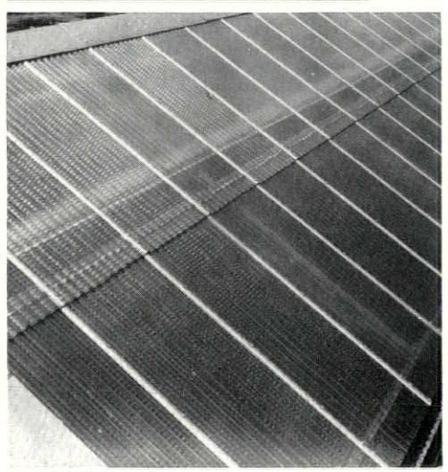
In severe coastal conditions over 50 years
In industrial conditions over 50 years
In rural conditions over 100 years

With aluminium alloy the expected life of the roof may be increased simply by increasing the thickness of the sheet. Three related processes which may affect the durability of metal sheet roofs (and in the case of aluminium alloy seriously so, unless appropriate precautions are taken) are those of electrolytic action caused by contact with another metal, chemical attack by other materials, and attack caused by the oxygen-excluding action of a water-laden substance in close contact with the aluminium. All these kinds of attack are dependent on the presence of moisture.

Contact with other metals: it is inevitable that aluminium alloy will come into contact with mild steel or wrought iron at some time; the contact surfaces of both should be painted and where possible a mastic compound placed in the joint on assembly. As far as possible aluminium fixings should be used; if steel bolts have to be used they should be cadmium plated or galvanized. Lead is normally harmless in contact with aluminium; in severe industrial or marine atmospheres, however, contact surfaces of both metals should be painted for protection. The interaction of copper and aluminium, in the presence of moisture, is so pronounced that direct contact between them (and copper alloys, brass or bronze) should not be allowed to occur. Contact between aluminium and zinc is permissible.

Contact with other materials. Contact with certain timbers, cement, concrete, lime mortar, plaster (particularly anhydrous gypsum plaster) may all cause corrosion of the metal in wet or damp conditions and should be avoided by painting one of the contact surfaces with two coats of bituminous paint (in the case of timber, it is probably more convenient to paint the timber with aluminium priming paint). Where aluminium alloy is laid in close con-



1, *standard Six asbestos-cement sheeting.* 2, *'Multiclad' tight galvanized steel sheeting on 1 ft. module.* 3, *'Kynal' troughed aluminium sheets.* 4, *'Noral Snaprib' aluminium sheet.* 5, *Curved 3 in. 'Timinium' building sheet.* 6, *'Corroplast' laminated plastic sheet.* 7, *'Filon' resin bonded glass fibre roof lights.* 8, *3 in. profile type 'Corroglaze' 'G' wired.*

tact with any substance capable of absorbing water, corrosion may take place through the exclusion of oxygen, and it is necessary to protect the sheeting by a layer of building paper or sheathing felt.

Finishes

Finishes are not the strong point of this class of roof covering. Asbestos-cement sheets, even when coloured, have a drabness when new (as have many other building elements containing cement); nor can it be claimed to improve with age, as this process is usually accompanied by greater unevenness of colour and dirt staining. If asbestos-cement is to hold its own against its newer competitors in the roofing field, the manufacturers will have to concern themselves more with improving its integral finish, without resorting to paints which require regular renewal.

A similar criticism may be made of the 'protected metal' finishes which are in effect a bituminous coating (black or coloured) of substantial thickness; the only 'weathering' which takes place is that the sheet acquires a coating of dirt rather faster than other comparable materials because of the nature of the surface and dependent on the degree of atmospheric pollution.

In the case of unprotected galvanized sheeting, the zinc soon loses its pleasant spangled appearance and becomes a matt grey to black, dependent on the degree and nature of pollution. Of course, galvanized sheeting *can* be painted, though to have to paint a roof every three years or so seems an answer born of desperation.

The only material in this category which probably retains its initial appearance over a considerable period is the opaque plastic 'Corroplast,' though as yet the colours in which this material is produced are rather conventional and uninviting.

Aluminium can be finished in a greater variety of ways than any other material in this group. Because of its high natural durability, it is normally used straight from the mill, a finish which has a fairly high incidental polish. Where sunglare and high direct reflection are undesirable, an embossed stucco finish may be applied which reduces glare and disguises accidental scratches, without diminishing the actual reflectivity of the material. Under these circumstances the aluminium will acquire its characteristic grey oxide patina in 6–18 months, dependent on the atmosphere. However, where it is desired to modify the natural colour and/or provide additional surface protection, three types of applied finish are in general use: two of these (chemical oxidation and anodizing) depend on an artificial thickening of the natural oxide film, and the third consists of the application of a paint or lacquer.

Chemical oxidation, of which there are three common methods (the M.B.V., Pylumin and Alocrom processes), destroys the initial brightness of the metal and increases its initial resistance to attack. A range of colours from grey, grey-blue to pale green can be obtained by this means.

Anodizing, an electrolytic finish, imparts a very hard oxide coating to the metal, which may be additionally dyed to produce a finish of virtually any colour. By comparison with chemical oxidation, this is, as yet, rather expensive. In highly corrosive conditions it may be necessary to paint an aluminium roof, and, if the correct pre-treatment is carried out, a paint can have a considerable life, noticeably longer than the same finish on a wood or ferrous metal base.

Thermal insulation

The Thermal Insulation provided by asbestos-cement and steel sheetings without additional insulation is low; e.g. a normal 3 in. pitch corrugated single sheeting provides a 'U' value of approximately 1.40, whilst a double skin roofing sheet (without additional insulation) provides a 'U' value of .70; in the case of galvanized and 'protected' steel sheet the 'U' value for a single skin is between 1.20 and 1.00. So that for both these types of material to reach a reasonable 'U' value of, say, .2 to .25, additional insulation must be provided, either between a double skin of asbestos-cement sheets or as a completely separate semi-rigid insulating layer. On the other hand, a bright aluminium alloy surface has a high reflectivity and a low emissivity for all radiations. These properties, which are not seriously impaired unless the surface becomes encrusted or blackened by exposure in an industrial atmosphere, are of value in reflecting solar radiation and generally reducing heat losses from buildings. An average figure for a single skin aluminium alloy roof would be a 'U' value of .40; a double skin aluminium roof with cavity would have a 'U' value of approximately .27. An incidental advantage of the high reflectivity of the internal aluminium surface (when there is no ceiling) is to improve considerably the quality of daylight inside such a building.

Condensation

The risk of condensation on the underside of all types of single skin roof sheeting is high when the weather is cold and the humidity of the air inside the building is high. The incidence of condensation is reduced by the application of 'anti-condensation' paints or (more effective) low density sprayed finishes of asbestos fibre or vermiculite composition. A surer way of eliminating condensation at the same time as increasing the thermal insulation value of the whole roof is to provide a double skin roof, with a ventilated cavity between skins, in which the inner skin is a layer of insulating material incorporating a moisture vapour barrier.

Fire hazard

All this group of materials is accepted as providing the minimum protection required against the spread of fire from an adjacent building. As regards resistance to an internal fire, however, each material as it stands has a disadvantage; asbestos-cement sheets are liable to shatter when intensely heated; most 'protected metal' coatings will melt and drip when subject to an industrial fire; the metal NS3 alloy itself melts at a temperature of approximately 1202°F. So in all cases the effective way of dealing with *internal* fire hazard is to provide an incombustible inner lining to the roof.

Expansion

All these materials have a considerable rate of thermal movement (e.g. a change of temperature of 100°F. causes an aluminium alloy sheet to alter about $\frac{1}{64}$ in. for each 1 foot length). This thermal movement must be allowed for both in flexible fixing methods and in expansion joints in the structure and roof covering at appropriate intervals. In some aluminium alloy roofing systems,

[continued on page 68

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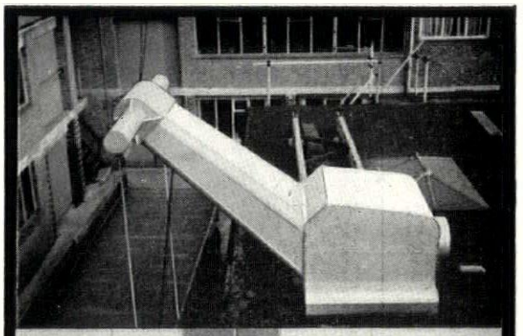

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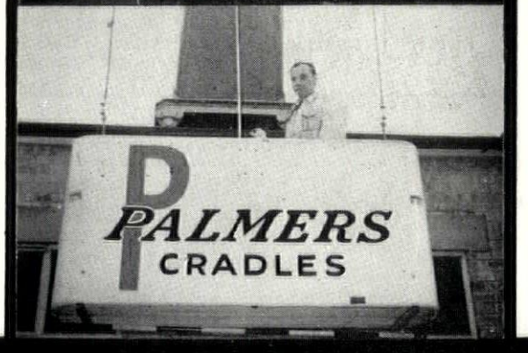

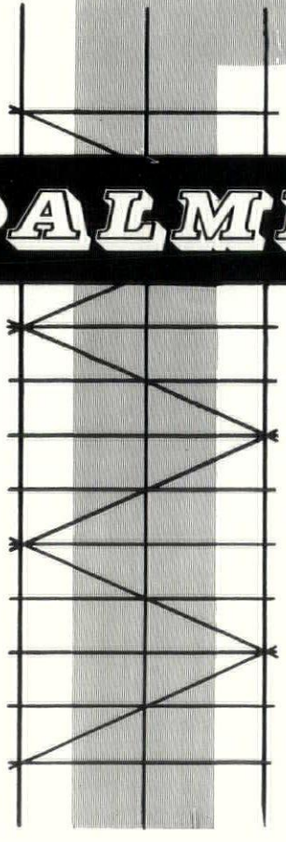

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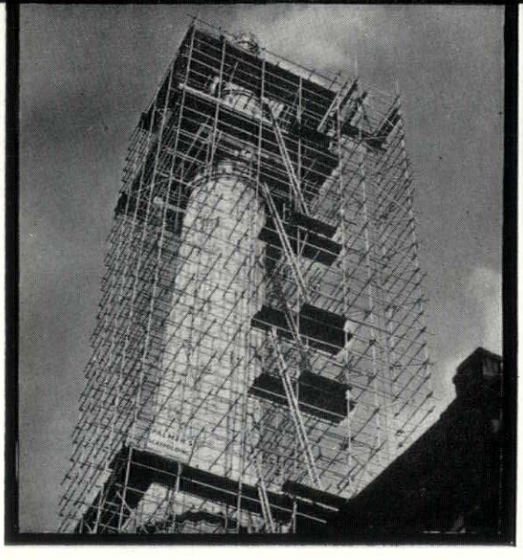


* a *PALMATIC electric travelling cradle. (This equipment is for outright purchase only.)*

b *The new Polyester Glass Cradle.*

c *Scaffolding erected by Palmers to the Monument, London.*

SKILL continued from page 66]

'Fural,' for example, expansion across the corrugations, i.e. along the roof, is taken up by the profile of each valley between corrugations changing according to the temperature, i.e. the expansion is not cumulative.

Daylighting through roof coverings

There has been a rapid development of translucent sheetings with profiles to match most of the standard roofing sheetings, which enables them to be laid as an integral part of the roof surface. The earliest method of letting light through the plane of the roof was by means of flat wired glass in conjunction with glazing bars at regular centres, i.e. patent glazing, which was in effect a secondary structure with all the attendant problems of fixing, flashing, etc. Following this there was the development of corrugated wired glass to match the usual 3 in. pitch corrugated sheet, more flexible in use and of a much stronger profile than flat sheet glazing, but still possessing disadvantages of weight, fixing difficulties and liability to fracture. The first translucent plastic material in this field was 'Perspex' acrylic sheet, a translucent/transparent thermoplastic material with great advantages of reduced weight, excellent moulding properties (it is available in a wider range of sheet profiles and rooflight shapes than any other comparable material), but still with the disadvantage of a low melting point, high thermal movement leading to fixing difficulties, and a tendency to scratch easily.

The latest group of translucent sheet materials is that of resin-bonded Fibreglass of which there are now a considerable number marketed; and which possess further advantages of extreme lightness (6–8 oz./sq. ft.), toughness, ease of fixing, good light transmission properties and more recently the development of fire retardant grades which enable them to be used in situations where previously only wired glass would have been permitted.

Conclusion

All the sheet materials possess the advantage of relative ease of handling and fixing, which is directly reflected in low fixing costs; and also in speed of erection, which is an increasingly important factor in the choice of a roofing material. In addition to these advantages aluminium alloy possesses the property of extreme lightness (compared with other sheeting materials and particularly with unit coverings) which can lead to considerable economies in the supporting structure.

Methods of fixing, with few exceptions, involve additional fixing devices such as hook bolts, straight bolts, drive screws and may be surface-fixed or concealed. The Italianized zinc roofing system, a borderline case between a 'sheet covering' and a fully supported covering, for convenience, will be described in the next issue together with fully supported zinc roofing.

One general criticism which can be levelled at the design of most sheeting materials and systems (with a few exceptions, notably 'Fural' and 'Snaprib') is the crudity of the standard accessories, which make it extremely difficult to design a crisp, elegant roof using one of these materials. However, there is no reason inherent in the materials why this should be, as a look at the wide range of carefully designed accessories in the 'Fural' system will show.

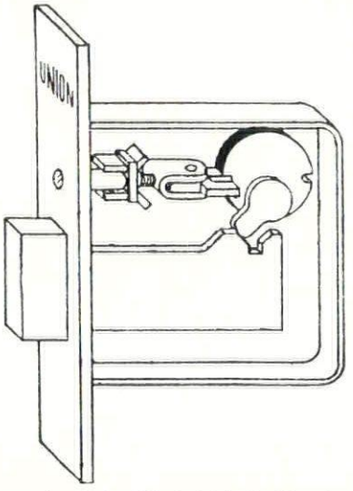
THE INDUSTRY

Locks

In 1948 Josiah Parkes and Sons produced a book called 'Locks and Builders Hardware.' It explained the working of locks and latches, gave numerous definitions of technical terms (like 'lanket hole') and delved briefly into the history of this curiously empirical industry.

The book was written by the company's chief designer, F. J. Butters, who now has revised and largely rewritten it under the title 'An Encyclopædia of Locks and Builders Hardware.' Nearly every page has delightful unsophisticated line drawings of wards, key levers, monkey tail bolts, springs and so forth. The whole book is treated as a series of definitions in alphabetical order breathing the charm and oddity of the locksmith's mystique. Are there signs that the rationalizing force of scientific technology will soon bring order and simplicity to a subject that usually baffles the architect? The American lock set is illustrated (and made by the company) and the author remarks in his introduction of the early 1930's and before that 'it was not unusual to find a thousand or more different varieties in the catalogues of numerous manufacturers'—and notes that the trade has not returned to this state of affairs. This valuable reference book ought to find use in our schools of architecture.

Josiah Parkes and Sons Ltd., Willenhall, Staffs.



American lock set illustrated in 'An Encyclopædia of Locks and Builders Hardware.'

Air Conditioning

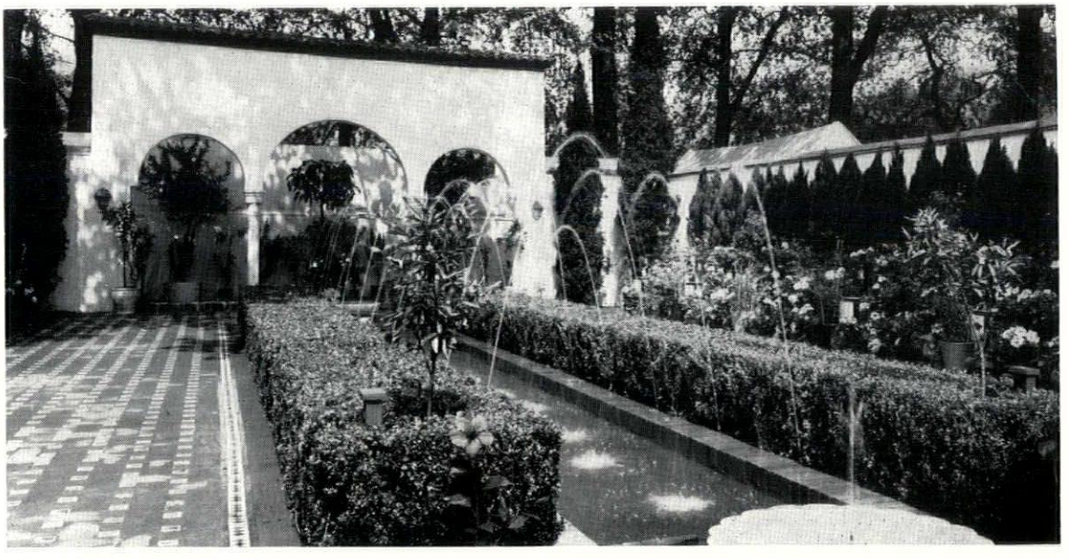
Recently, news has been trickling across from America of high pressure air conditioning of a kind new to us. Its advantages are, flexibility of local control and small space for the accommodation of ducts. One English firm now announces a trial installation in their own premises of—presumably American equipment. The literature they issue on this experiment is not easy to follow, but the essentials of the system appear to be these: There is a central blower, filter and heater unit from which two main ducts depart to circulate the building. No size appears to be given, but from diagrams one would guess the ducts to be about 10 in. diameter.

[continued on page 70

By Appointment to H.M. Queen Elizabeth II Garden Contractors and Horticultural Builders Wm. Wood & Son Ltd

By Appointment to H.M. Queen Elizabeth the Queen Mother Garden Contractors and Horticultural Builders Wm. Wood & Son Ltd

Part of the Spanish garden which was awarded the Royal Horticultural Society's Gold Medal at the Chelsea Flower Show in 1952. It was made for the Sociedad de Amigos del Paisage y Jardines, of Madrid by William Wood and Son Ltd.

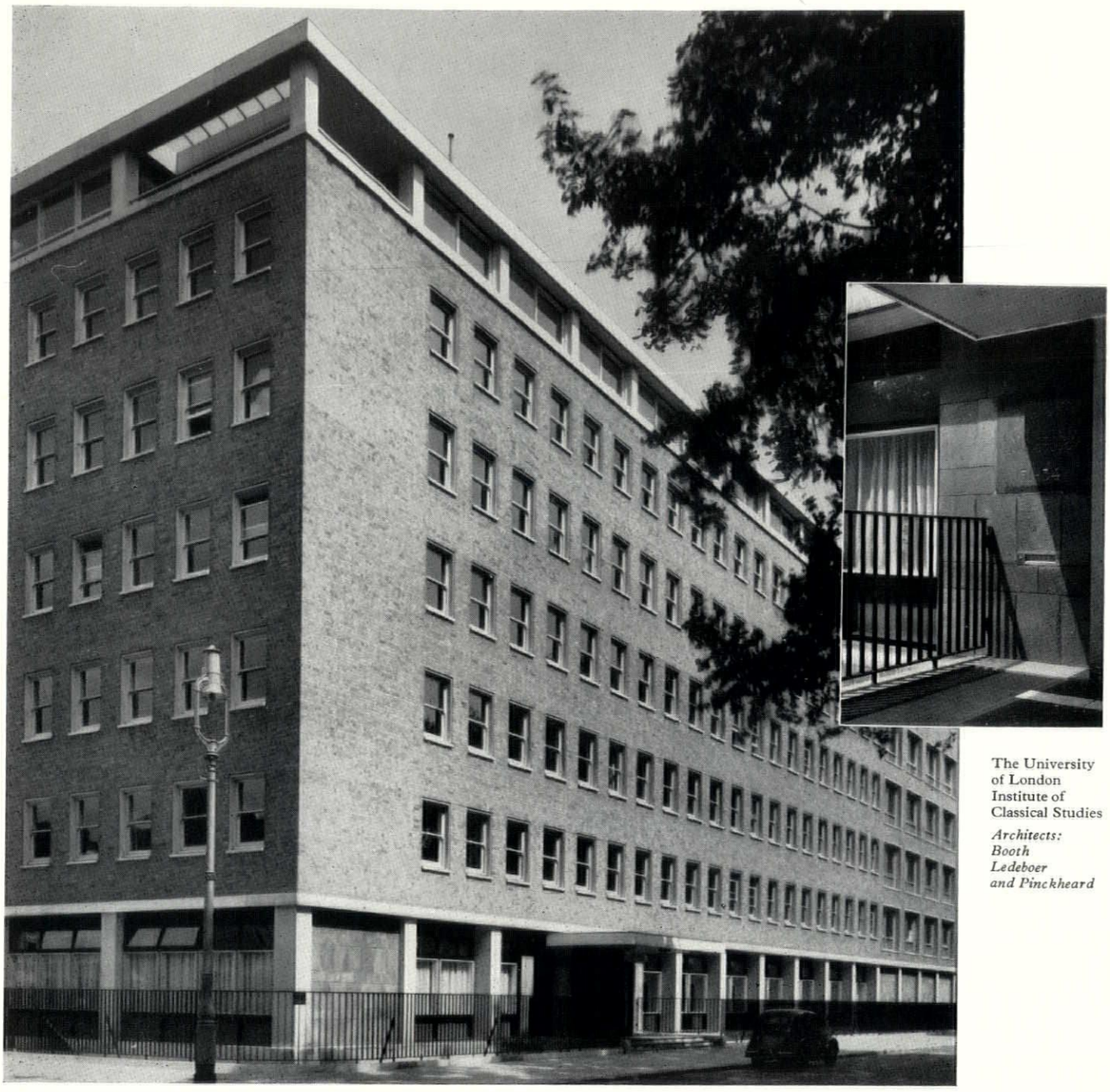


Landscape Service for Architects

The Spanish garden was designed on the lines of the famous one at the Generalife in Granada. All the main elements of the Spanish garden are represented. The water fountains, the red-tiled floor inlaid with ceramic squares, the Cypresses along the walls and, not shown in the photograph, the wrought iron gate and windows filled with flowers. This garden lived only for four days, but the high finish bore splendid testimony to the technical skill and virtuosity of its makers.

The water works included twelve fountain jets along each side of the canal beside the smaller jets in the lotus basins. The closely clipped hedges of Box or Myrtle on either side of the canal are a typical feature of these gardens.

William Wood & Son Limited TAPLOW · BUCKINGHAMSHIRE



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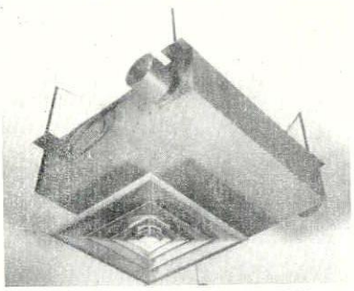


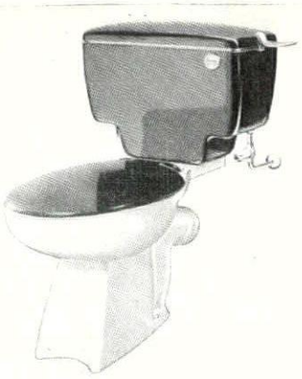
2, *dual-duct attenuation box and air diffuser.*

One of them takes air at about 130°F. and the other at about 60°F. at velocities between 6,000 and 8,000 ft. per minute. At strategic points in the building they branch off into mixing boxes which attenuate noise, reduce the air to normal velocities for delivery to a secondary local duct system discharging into rooms. The point about these boxes is that a thermostatically operated control varies the proportions of hot to cool air being discharged.

I have heard Britain's foremost heating engineer express interest in systems of this kind that he saw in the United States, so no doubt we shall see and hear (and perhaps feel) more of them.
Brightside Engineering Co. Ltd., Sheffield, 1.

Sanitary Fittings

Shires are now marketing a new w.c. pan, the Uni-Lynx. Perhaps its best claim to attention is that it dispenses with a flush pipe and separate fixing of the low level cistern to the wall. Plastic cisterns have a polythene siphon mechanism and come in three sizes—2, 2½ and



3, *the Uni-Lynx w.c. pan.*

3 gallons. Architects, doubting its flushing ability may go for the 3-gallon. Water authorities, scared of its voracious appetite may insist on the 2-gallon. If the device follows history, neither will get what he wants because the 2-gallon will require a double flush. To the makers I would say—if the 2-gallon single flush does its job, why market the other two sizes?
Shires & Co. (London) Ltd., Guiseley, Yorks.

Wall Finishes

'Uni-tile Decoration' is the title given to a colourful brochure issued by Richards Tiles. The patterns illustrate a number of different approaches to design—shadow domino, modernistic cartouche, paint brush scribbling, art nouveau 'shapes,' wet surface highlight and what might be described as corrosion patterns. For special purpose interiors there are also tiles with pictures of motor cars, fish, birds and buildings.

The more successful design approach appears to be that which treats each tile as a tile although some of the designs that essay a wallpaper result show better design ideas. Colours are widely interchangeable between tile and tile, and between background and pattern. Indeed, there is something for every taste and the firm will, of course, make to order.

The brochure is a conscientious production, giving single tiles and areas of tiling in colour, and is worthy of a place in the architect's file.
Richards Tiles Ltd., Tunstall, Staffs.

Plastic Sheeting

An unusual brochure about plastic sheeting begins with an imaginary conversation in which Louis XIV suggests to Mansart that all the floors of Versailles—particularly the Gallerie des Glaces and the Salon de Mars—should be covered with Gerflex. The brochure goes on with descriptions of how the material is made and tested, where you can use it and, in astonishing detail, how you lay it. The material appears to be of French origin although it looks much the same as the English versions and can be obtained in this country from *Gerland Ltd.*, 130 *Mount Street, W.*1.

Asbestos Products

Yet another manufacturer announces his intention to use in future the International paper size of A4 (11¾ in. by 8¼ in.) for technical and advertising literature. By some irony, the paper on which this announcement is printed is unabashed foolscap. The company also issues a most useful pocket book which is one-quarter the A4 size—covering all the company's products, asbestos deckings, sheets, pipes, panels and pitch fibre drain pipes.
Universal Asbestos Manufacturing Co. Ltd., Tolpits, Watford, Herts.

Bored Piles Brochure

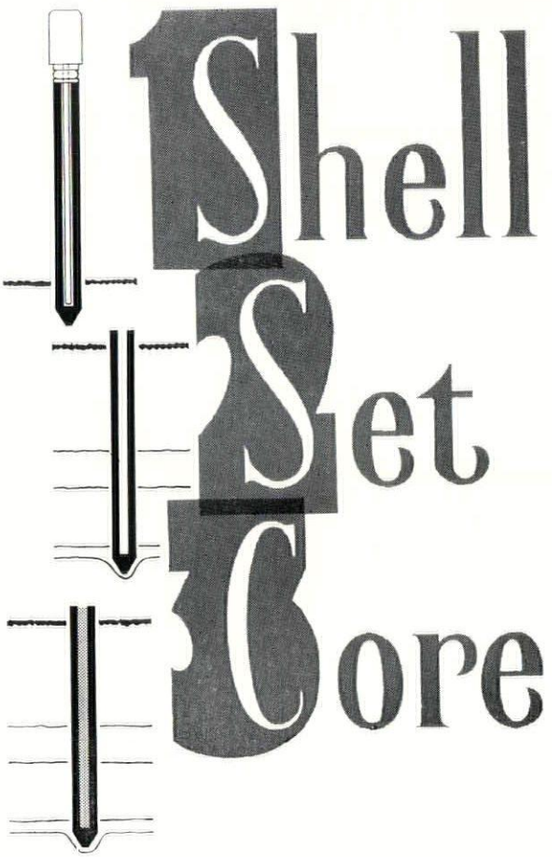
A quite informative brochure comes from the Cementation Co. on bored piles (short and otherwise). It shows numerous photographs of boring operations, lists the types of ground economically suitable for piled foundations, gives a number of test figures and describes the procedure of one particular contract. The company appears to have well organized mobile gangs who can bore from 10 in. to 36 in. diameter up to depths of 25 ft. They do not make extravagant claims for themselves.
The Cementation Co. Ltd., 20 *Albert Embankment, S.E.*11.

Pre-fabrication

A company well known for its road making activities has launched into the ready-made buildings market with a system based on the 40-inch module. Wall columns at 6 ft. 8 in. centres and spine columns at 13 ft. 4 in. centres support 6 ft. 8 in. wide floor units to give a 20-ft. span building. All this is clearly described in their brochure by good simple sketches and a succinct text free of 'advertising.' Small plans demonstrate room areas and ways of accommodating staircases, lavatories and washrooms within the column grid. A double-page perspective cross section explains the construction and a splendid street scene by Kenneth Browne extends across both covers to show a hypothetical office building in the system.

This is a brochure that architects will not automatically throw into

[continued on page 72



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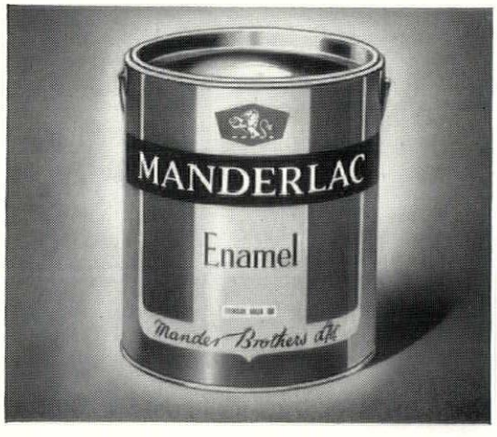
Further information will be supplied on request



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continued from page 70]

the waste-paper basket. It was designed by Herbert Spencer.
Tarmac Vinculum Ltd., Ettingshall, Wolverhampton.

Vitreous Enamel

At a press conference in London recently the newly formed Architectural Division of the Vitreous Enamel Development Council met the technical editors of some of the principal architectural and building periodicals and introduced their first manual on vitreous enamel in architecture. The greatly increased use of curtain wall construction has opened up an important new market for vitreous enamel producers and one section of the manual, most colourfully illustrated, examines current cladding techniques, recommended standards and general specification details. Copies of the manual are available to architects on request. Schools and technical colleges may like to note that the Council are prepared to supply films, colour slides and speakers.
Vitreous Enamel Development Council, 28 Welbeck Street, London, W.1.

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House at Fawley Bottom. *General contractor:* A. Brown & Sons. *Hardwoods:* N. A. Bronsten & Co. *Felt roofing:* The Ruberoid Co. *Special steel French windows:* Williams & Williams Ltd. *Sanitary fittings:* Shanks & Co. *Dome lights:* Williaam J. Cox Ltd.

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Boardroom at Grosvenor Place, London. *Architect: Basil Spence & Partners. General contractors:* Holland & Hannen & Cubitts. *Interior sub-contractors:* Gregory & Company. *Leather:* Connolly Bros. *Clock for boardroom:* Thomas Mercer Ltd. *Radio and TV in the secretary's office:* Imhofs Ltd.

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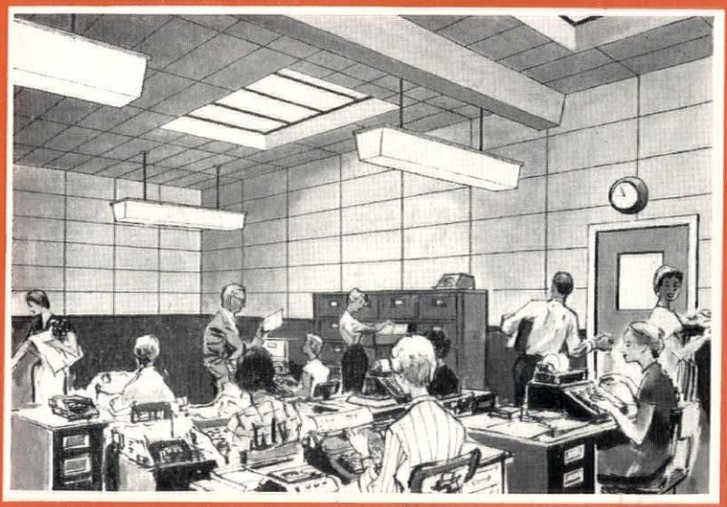

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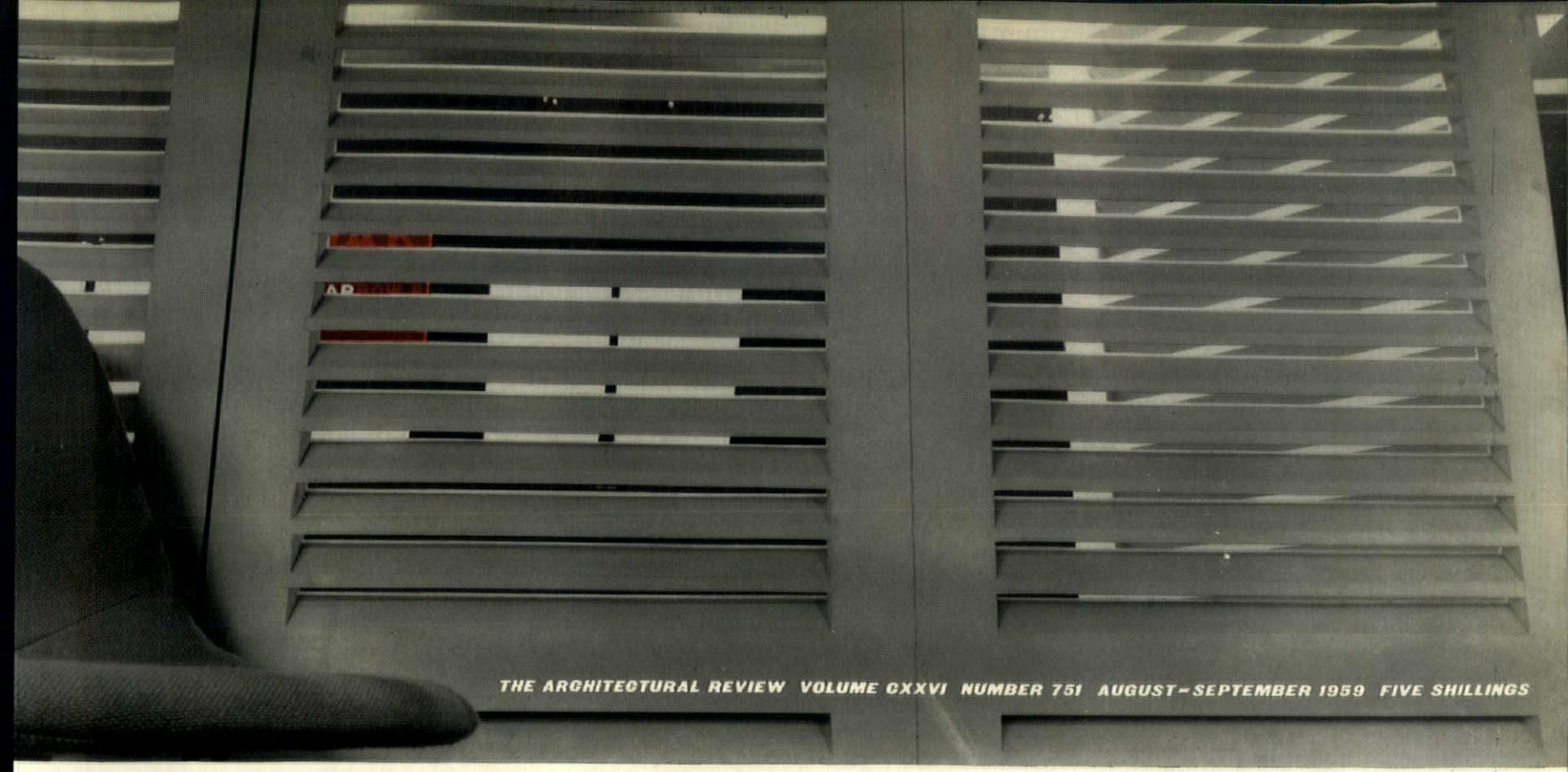

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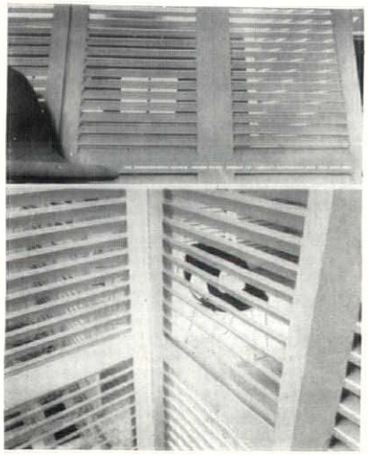

This month's cover emphasizes the use of louvred screens (commonly called Venetian shutters) as space-manipulators in the recently-rebuilt and refurnished editorial offices of THE ARCHITECTURAL REVIEW. As is described and illustrated on pages 113-117 of this issue, the low-ceilinged, under-windowed and architecturally uninteresting top floors of three early eighteenth-century houses have been given coherence and spatial interest by the systematic use of standard louvred screens and floor-to-ceiling mirrors, that suggest real or illusory prolongations of the spaces actually in use.

Directing Editors J. M. Richards, Nikolaus Pevsner, H. de C. Hastings, Hugh Casson

Executive Editor Ian McCallum

Art Editors Gordon Cullen, Kenneth Browne

Technical Editor Lance Wright

Assistant Editors production, Moira Mathieson. literary, Reyner Banham. Editorial Secretary Whi 0611-9

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THE ARCHITECTURAL REVIEW
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BOOK REVIEWS

Architects are Persons

ARCHITECTURE USA. *By Ian McCallum. The Architectural Press. 63s.*

The four presiding geniuses of contemporary American architecture are Walter Gropius, Mies van der Rohe, Frank Lloyd Wright and Le Corbusier. The impact of Gropius and Mies has been direct, through their teaching activities at Harvard and in Chicago. That of Wright is historic and exemplary, through his exact placing on the graph of history as much as through his native Americanness—Gropius and Mies having arrived in the States already middle aged and famous. Le Corbusier imposes himself in America—as in Europe, for that matter—as a prophet, a theorist, and as the creator of a very few paradigmatic constructions which often contradict his prophecies and his theories. All have been necessary and it is the first great merit of Mr. McCallum's book to show why and how precisely they were needed, and when and where their influence was maximally effective. Gropius and Mies (and by implication Le Corbusier) have conditioned, and been conditioned by, Atlantic America; but Wright belongs basically and permanently to Prairie and Pacific America. Hence Gropius and Mies continue to cast backward glances at their European home; and Wright remained a frontiersman and a pioneer, scanning the western horizon from first to last.

Frank Lloyd Wright was unquestionably a great man: his originality as a constructor was remarkable; his fecundity as a proposer of spatial problems was inexhaustible; but as an artist he suffered from an ingrained provinciality, which revealed itself in an embarrassing artiness and crankiness. A man who chooses to live like a patriarch surrounded by flocks and herds and camp followers is not likely to be a heaven sent dispenser of agreeable social intercourse; and his lack of humility and amenity fatally obtrude just where such qualities are most necessary—in his domestic interiors.

But perhaps, after all, it is less necessary to be an original architect than a good one; perhaps the most valuable lesson for an American to remember is that 'less is more'; and perhaps in consequence the Miesian aesthetic is more salutary across the Atlantic than the Frankish one. At all events, in spite of the tremendous stir made by the legend of Frank Lloyd Wright, and his unique power of terrorizing his compatriots, and his own very real gifts as an architect, American architecture in our day owes much less to his precept than might have been expected; and the influence of Gropius and Mies has been very much greater, with results which (to the European eye at least) seem entirely fortunate.

Mr. McCallum is scrupulously fair

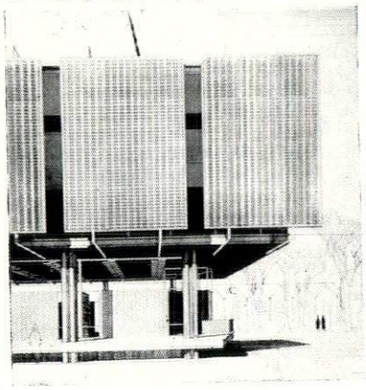
to the extravagancies and oddities of the latterday American architectural scene: to the Emmetic contraptions of Bruce Goff and Johansen's bubblegum fantasies and to the more 'legitimate' conic-section exercises of Eero Saarinen. It is true that new techniques prompt new temptations; but reason says that some temptations of the moment should be resisted in the interests of more

1, *Edward Stone's own house in New York with tiled screen.*

lasting satisfactions. Such considerations regulate the work of such inventive but non-eccentric architects as Edward Stone (with his filigree screens of tile and metal) and Paul Rudolph (with his 'kind of built-in ivy'): their buildings have a formal elegance and clarity which inspire the confidence that most people instinctively withhold from the gimmicky novelties of a Goff or a Johansen. Nothing palls sooner than quaintness; and in the end masterpieces are always preferred to monsterpieces.

Mr. McCallum's book is excellent because it is well-informed and strongminded and judicious. It accepts the contradictions of the given material, and succeeds in showing impartially how they arose. Significantly, his plan is based upon a biographical grid. Architecture is an art, and architects are persons: 'its starting point has ever been, and ever will be, the individual creative impulse. A true understanding cannot be separated from an understanding of the men who made it, their background, their training,

2, *Paul Rudolf's project for the Arts Centre at Wellesley College, Massachusetts, showing the 'kind of built-in ivy' grilles.*



the vicissitudes of their careers, their heroes, their outlook, and their inner convictions.' This is therefore a humane and a generous book, perspicacious and lucid and convincing, because focused on concrete objects made by historic persons, not doctrinaire and not tendentious —virtues none too common in modern architectural literature. At the same time, one is reminded that the screens of Stone and Rudolph's built-in ivy have a symbolic relevance to the texture of Mr. McCallum's commentary, and also perhaps to the teasing layout—through which the numbering of the pages is discontinuous (and thus the reference in future footnotes will be irksome) and the identification of the particular architect under discussion is complicated by the absence of headlines. But perhaps Mr. McCallum's intention was to constrain the reader to close attention and to discourage skipping: if so, the intention was justified by the closeness of reasoning in the text and by the unvarying aptness of the visual commentary.

Roger Hinks

Living in Sweden

NYA SVENSKA VILLOR (New Swedish Houses). *By Erik Thelaus. Published by A.B. Byggmästarens Forlag.* 1958. *Sw. Kr.* 24.

This 'survey of Villa Architecture of the 1950's' compiled by the editor of *Byggmästaren*, includes 54 examples, nine of which are in the category of summer houses. Primarily it is addressed to the would-be owner rather than the architect or builder. With a few distinguished exceptions the collection shows an approach to house building which could be paralleled in many English examples of the same period. Nevertheless, the Swedish work attains a higher standard, to some extent through the more sympathetic conditions under which the Swedish architect seems to work.

A common factor is in an apparent 'looseness' of design, or lack of formal intent. This quality in English work often implies a lack of care, but in Sweden it always seems consciously done—a certain unaffected character emerges which in some cases seems to verge on naiveté. Although regarded as a book of pictures this is an enjoyable production, as a collection of designs it is disappointing. The evocative quality of the pictures is rarely sustained by anything deeper in the buildings, many of which appear to be put together rather than conceived—occurring rather than wished—just as in the Swedish landscape large boulders nonchalantly appear in the middle of cultivated fields.

Asplund apart, the image one has of Swedish architecture is compounded of the achievements of the 'thirties: schools, housing and co-operatives, the office buildings that Grahame Greene typified in 'England made me.' The Hälsingborg exhibition showed that an inspiration quite 'out of the ordinary' survives, yet nothing of this freshness seems to have entered into recent permanent building.

It is interesting to compare this book with the series by Erik Møller on 'Small Danish Houses' (published by Høst). While Swedish work seems becalmed on a sea of understatement post-war architecture in Denmark shows an invigorating range of thought and excitement from the elegant pictorialism of Jacobsen to the vigour of Utzon and a number of other younger architects. In fact, 'Scandinavian influence' is now Danish (and to a lesser extent Finnish) rather than Swedish as it was before, and just after the war. Significantly, in London since 1945, there have been, I think, four important architecture-design exhibitions from Denmark—not one from Sweden.

Trevor Dannatt

German Baroque

BAROQUE CHURCHES OF CENTRAL EUROPE. *By John Bourke. Faber and Faber.* 36*s*.

In spite of its title, the area covered by this very useful book is confined to Southern Germany, Austria and Switzerland; but since this is the first serious work to appear in English on the subject, the author has more than enough material to cope with. And in our welcome we can easily forgive, though we must regret, the absence of any discussion of the even less known glories of Prague as seems promised by the title. It is essentially a guide book, which will be invaluable to anyone contemplating a trip to the two hundred churches described; the more so as hints are given on how to reach them.

The principal architects are also briefly discussed, and the book ends with accounts of some of the artists in stucco and fresco who worked in the churches, a list of some of the more common symbols to be found in them, and a bibliography.

Mr. Bourke has some good points to make and is obviously right to stress the vital part played in these churches by symbolism, and to dismiss the idea that they are merely 'frivolous' and irreligious. But as soon as he leaves the churches themselves and strays into wider questions of history or aesthetics his thinking becomes scrappy and inadequate. The 'healthy vitality and directness' of the Bavarian, however 'refreshing and endearing,' hardly helps to explain his architecture. The absorbing question of how far these churches reflect an aristocratic or a peasant taste is hardly touched. Many other problems are similarly side-tracked by curious and irrelevant excursions into the Renaissance. Even so, every admirer of the German Baroque who has hitherto been handicapped by the lack of any guidance in English will be deeply grateful for this pleasurable and instructive book. **Francis Haskell**

Radcliffe Bills

THE BUILDING ACCOUNTS OF THE RADCLIFFE CAMERA. *By S. G. Gillam. Clarendon Press for the Oxford Historical Society. W. A. Pantin, General Editor.* 42*s*.

This book, a model of its kind, makes generally available for the first time a valuable record, recently deposited in the Bodleian, of the construction of the Radcliffe Library at Oxford. It is a pleasure to see the source materials of architectural history so helpfully reproduced, accompanied by exactly the sort of historical and visual explanations required —the book lacks only a contents page.

The document in question is a folio volume entitled 'Workmen's Contracts and Bills for building the Radcliffe Library.' This is a complete and exhaustive record of all the work done on, and expenses incurred in, the library from 1737 to 1759, including in some cases estimates from more than one contractor. The accounts range from estimates of tons of lead for the cupola to payments to the City of Oxford for river water; from £220 to Michael Rysbrack for a statue of Dr. Radcliffe to twelve shillings for a fine hat for the porter. There are estimates for plasterer's work from Charles Stanley and Joseph Artari, 'to be done in the best manner to the well liking of Mr. Gibbs,' and detailed bills from carpenters, masons and plumbers.

This record is printed folio by folio just as it was in the original. It is preceded by a long and valuable introduction by Mr. Gillam, Librarian of the London Library, recounting the history of the building and its administration from the first idea in Dr. Radcliffe's mind until the Radcliffe Trustees handed over their last vestige of control to the University in 1927. The building record is followed by fifty pages of relevant extracts from the minute books of the Radcliffe Trustees, from 1720 to 1867; and this by thirty pages of a descriptive 'List of Architectural Drawings connected with the Designing and Building of the Radcliffe Camera' compiled by Mr. Pantin. The index is good.

The concluding section consists of 67 half-tone plates, showing drawings (both elevations and plans) and models by both Hawksmore and Gibbs, as well as some fine photographs of interior details as they are today.

Priscilla Metcalf

CORRESPONDENCE

Elementarist

To the Editors,

SIRS,—I readily share Dr. Banham's wariness concerning Theo van Doesburg's forced image of the history of contemporary architecture (in his review of my book *The work of G. Rietveld, Architect*, AR Feb. 1959). However, I do not see how he could have read Van Doesburg's vigorous propaganda and then suggest that he promoted the idea that Rietveld is a 'native Dutch genius who profoundly influenced the course of modern German architecture'. The only Dutch 'genius' recognized by V.D. was named Theo van Doesburg. This knowledge is basic to the understanding of Van Doesburg's point of view. At best he acknowledged the quality of some of Rietveld's work which, Van Doesburg implied in his writings, stemmed from his own mind. Contrary to Dr. Banham's statement, no claim was made in my book that Rietveld exerted a 'profound influence on the course of German architecture.' I said in my conclusions that 'Some of Rietveld's early work found their way into the BAUHAUS. It is certain, therefore, that his work played a role in the formation of a BAUHAUS aesthetic.' (p. 147). Both of these statements are true, and they do not add up to the extravagant claim that has been read into them. Dr. Banham's statement that an 'influence is unarguable' is, in effect, another way of saying the same thing. So I see no disagreement on that score.

Concerning the origins of the 'red-blue' chair, certainly it did not evolve from thin air. Earlier elements, 'the Berlage and Penaat tradition of the early twentieth century' (p. 17), laid the foundation. I agree that the English Arts and Crafts tradition should be added as a still earlier progenitor. The quality of the piece is not vitiated, however, by these facts. Its importance stems from the analytic dissection and creative synthesis imposed by Rietveld upon these earlier chairs. Furthermore, the red-blue chair is not a rational and functional design, as is suggested. There is nothing rational about a chair that bruises the ankles and catches the clothes of its victim, as this one does. Its value, which Dr. Banham seems to accept, is in its formal qualities, its mass-space relationship. In this respect the

object is unprecedented in Europe in 1918.

The design of the red-blue chair is particularly relevant for our conflicting evaluation, because it is a spatial and material microcosm of the Schröder House. This chair of 1918, the buffet of 1919, the Amsterdam shop of 1920–1922 and the Berlin chair of 1923 form an articulate chain leading to the house. If, in 1918, Rietveld had materialized his ideas of mass and space, it seems reasonable to assume that he was able to work out his own destiny in regard to the house. I do not claim, however, that he worked in a vacuum; and my study acknowledges the aid of other work, specifically the De Stijl projects of 1923 (p. 69). The facts, however, make it clear that the Dutch in general and Rietveld in particular evolved their own artistic destiny until at least the middle of the 1920's.

As for the 1925 Kiesler design, I did not know that it was first done in 1924. Assuming, however, that it was of the same year as the Schröder House, the historical importance of the house is not thereby affected. Maybe the Kiesler design came out of the Berlin group, but the Rietveld work certainly did not. Had the Kiesler piece pre-dated the 1918 chair—is it not an enlarged red-blue chair?—it would be historically significant and would tend to support your claim. The chair, however, is a model of both the Rietveld and Kiesler works of 1924; so an hypothesis of a German source for the house as late as 1923 or 1924 is not in accord with the facts.

Dr. Banham's description of the Berlin chair (so-named, incidentally, by Rietveld and his friends, not by me) as 'arty and unfunctionally asymmetrical' in contrast to the 'elegant rationalism' of the red-blue chair, does not stand up. Criticizing the Berlin chair from a functional point of view has little meaning; it is like criticizing a Mondrian painting for its inability to communicate a recognizable visual image. The Berlin chair, like the red-blue, was conceived primarily as an aesthetic exercise in form and space. It has, nevertheless, a functional rationale too; it was designed as a writing chair, done in two models, left and right-hand. I admit that most people have two arms, but you must acknowledge the fact that they usually write with only one of them. This is a common type of chair, found to-day in schools throughout the world.

Furthermore, the significance of the chair's asymmetry should be apparent when one remembers that the asymmetrical equipoise of our contemporary visual vocabulary came into being around this time, Mondrian around 1921, Van Doesburg and Van Eesteren in their projects of 1923, and Rietveld in his chair of 1923. The asymmetrical, planar organization of the chair is one of the essential characteristics of the Schröder House, which followed a year after the chair. And if one compares these Dutch examples cited above with their German counterparts of the same year (see, for example, *Staatliches Bauhaus Weimar:* 1919–1923, Weimar and München, 1923) one will see that this important compositional development occurred in Holland between 1920 and 1923.

Yours, etc.,
THEODORE M. BROWN.

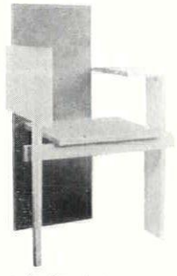
Reyner Banham replies:—

But Professor Brown *does* make sweeping claims on behalf of the Rietveld influence. On pages 72 and 73 he confronts the Schröder House with Mies's Farnsworth House, the Bauhaus, Le Corbusier's Villa Shodhan, and Oud's terrace at Weissenhof, and says 'The architectural ideas embodied in the Schröder House were of extreme, perhaps decisive, importance in the formation of European architecture.' This, in the context of the book, or of Professor Brown's remarks on 'asymmetrical equipoise' in his letter, can only be read as a large claim to influence. But if his rather provincial and purely Dutch account of the ancestry of asymmetrical equipoise is extended to include the *total* history of this style of composition, by the inclusion, e.g. of Malevitsch 1915, Arp 1917, Rodchenko 1918, Tatlin 1918, Lissitsky 1920, Moholy-Nagy 1921, then the fact that Rietveld's work has characteristics in common with German work done at the same time, begins to take on a different meaning, especially when such German survivors of the period as I have been able to consult, insist that the Russian influence was everywhere far stronger than the Dutch.

Eye-witness accounts, and the pages of *de Stijl* itself, bear witness to the mastery of the Russian influence, personified by Lissitsky, over *de Stijl* at the Dusseldorf Congress of Progressive Artists in 1922. The Russianization (or, at least, Berlinization) of *de Stijl* magazine had begun as early as 1921, almost

3, *red-blue chair of Rietveld.*

exactly half-way between the Red-Blue chair of Rietveld, and his Berlin chair. In this case it seems advisable (not to put it more strongly) to assess very carefully the manifest difference between the Red-Blue chair's attempt at a rational discrimination between the functions of different parts of the chair-structure (I did not say that this chair was either reasonable or comfortable) and the Berlin chair's



4, *Berlin chair.*

attempt to re-synthesize these functions according to an aesthetic that visibly was not present in the Red-Blue. Similarly, it becomes necessary to enquire whether the employment of virtually the same aesthetic by both Kiesler and Rietveld in 1924 may not be due to their both drawing *independently* on the same Lissitskian inspiration as the eccentric Berlin chair.

MARGINALIA

PMS at 73

Brian Housden's use of the *Architectural Association Journal* as a vehicle for studies of the pioneer phase of modern British architecture reached a salutary stage in the issue of January 1959, when he gathered together a number of the papers of P. Morton Shand. Housden speaks of Shand's virtue as a writer lying in his ability to speak of Architecture when others have had to speak of style—salutary, for a start, because Shand was not an architect. Indeed, he was the first of a succession of non-architects who have tried to make sense of the history of modern architecture, preceding both Pevsner and Giedion in the field. His study of the Pioneer and Master phases appeared, like most of his other significant writings, in THE ARCHITECTURAL REVIEW, under the title *Scenario for a Human Drama*. The seven articles of *Scenario* originally appeared in a somewhat idiosyncratic order, going backwards in time to van de Velde and Wagner, sideways to Mackintosh, and then coming forward again. One wonders what, if anything, has been gained by putting them in a different idiosyncratic order, and providing—in some cases—different illustrations to go with them (though not as different as for the articles on steel and concrete, where Housden's pictures belong to a different world of historical sophistication).

These points of scholarly method aside, this publication is a useful and valuable one, salutary again in the questions it raises concerning the effect Morton Shand may have had on other, later, historians. Not only was he the first, he is also the only one who is of the generation of the Masters, born in 1886. His European background is the background of Mendelsohn and Le Corbusier (both a year younger than he), Mies van der Rohe (born the same year) and Gropius (three years his senior) and his views must, therefore, command a peculiar respect.

Industrial Archæology

Ten years ago it would have been unthinkable for archaeologists to concern themselves about the nineteenth century; it is a sign how times have changed that not only are many of them doing so but the Council for British Archaeology is organizing a one-day conference on December 12 to stimulate interest in the archaeology of the Industrial Revolution, after which the Council hopes to draw up a programme of planned recording and research.

The conference will be held at the London School of Hygiene and Tropical Medicine. There will be brief papers on recent pieces of research (one by M. Berrill on the seventeenth-century Stamford canal and one by Prof. A. W. Shempton on the structure of early cotton mills) and on relevant methods (papers on problems of recording industrial buildings), by Dr. Peter Eden, and on the Ordnance Survey in relation to the recording of industrial archaeology, by C. W. Phillips. Other speakers will be M. M. Rix, J. M. Richards and M. W. Barley.

Inquiries about the conference should be addressed to the Assistant Secretary of the Council for British Archaeology, 10 Bolton Gardens, London, S.W.5.

INTELLIGENCE

Ian McCallum is retiring from his position of Executive Editor of THE ARCHITECTURAL REVIEW so that he may become Director of the first American Museum in Europe now being established at Bath and J. M. Richards will resume his earlier job of Executive Editor as well as remaining a member of the editorial board. Reyner Banham joins the full-time staff as assistant editor.

RIBA Secretary

C. D. Spragg retired from the Secretaryship of the RIBA on July 31. His successor is Gordon Ricketts.

Commonwealth Issues

Next month's issue of the REVIEW will be the first of two special issues devoted to giving a picture of recent architectural achievements in the British Commonwealth. It will deal with the countries in the temperate zones, northern and southern; that is, the four large Dominions: Canada, South Africa, Australia and New Zealand.

The second Commonwealth issue, to be published next year, will deal with countries in the torrid zones—in West and East Africa, the West Indies and the Far East.

ACKNOWLEDGMENTS

The colour block on page 82 appears by courtesy of Messrs. Gollins, Melvin, Ward and Partners. COVER, Toomey Arphot, Eric de Maré. MARGINALIA, page 75: 5, Sperryns. FRONTISPIECE, page 76: Snoek. SEAMEN'S HOME AT ERITH, pages 81–85: Henk Snoek. REVERBERATORS, pages 86–99: frontispiece, Conti Press; 1, 35, Dr. Salchow; 2, 8, G. E. Kidder Smith; 3, 6, Robert Hausser; 4, 5, 12, 13, 14, Foto Kessler; 7, 15, 17, 18, Ludwig Windstosser; 9, P. F. Schneider; 10, 11, Hugo Scmolz; 16, International Lighting Review; 20, Albrecht Brugger; 22–24, 26–30, Artur Pfau; 25, Foto Woscidlo; 32, 34, Eberhard Troeger; 33, L'architettura; 36, H. Heidersberger. ART NOUVEAU IN ESSEX, pages 100–103: frontispiece, Eric de Maré. SCIENCE LABORATORIES AT BRYANSTON SCHOOL, pages 105–106: Galwey Arphot. STUDIO AT CHARTERHOUSE SCHOOL, pages 107–108: Galwey Arphot, HOSPITAL AT SAO PAULO, pages 109–112: P. C. Scheier. OFFICES IN QUEEN ANNE'S GATE, pages 113–117: 1-3, 5-9, 11, 12, Eric de Maré; 4, 10, 13, Toomey Arphot. DESIGN REVIEW, page 118: Galwey Arphot. AN ENGLISH LE ROY, pages 119–120: titlepiece, 1, Colonial Williamsburg Photograph, Chiles Larson; 2, 3, the collections of the Library of Congress. CURRENT ARCHITECTURE, pages 121–124: 1–4, E. G. Patience; 5, 6, Pamela J. Barnsley; 8, 9, Colin Westwood. WORLD, pages 125–130: 5, Marc Neuhof, Arts and Architecture; 7, Jules Schick; 8, Lawrence S. Williams; 10, C. and E. Photography; 11, Andrew Reid; 13, Studio St. Ives; 14–17, Arkitektur; 18, 19, Foto Porta; 20–23, Casabella; 24, 25, Bouw; 26–28, Bauen-Wohnen; 32, Robert Bolles; 33–35, Architectural Record; 36–38, L'architettura; 39, 40, Domus; 41, Panda. MISCELLANY, pages 131–136: Exhibitions, 1, Marlborough Fine Art Gallery; 6, James Mortimer; 8, King's College, Newcastle. Popular Art, 3, 5, Else Thostrup. Counter Attack, Browne Arphot. SKILL, pages 137–139: 1, Peter H. Jones; 3, A. D. Marsden; 4, Stewart Bale; 7, Brightman and Gull; 9, W. Ralston. THE INDUSTRY, pages 140–142: 1, Troughton and Young; 2, Coventry Evening Telegraph; 3, A. E. L. Marsh and Associates; 4, Jean Kendall; 5, 6, General Electric Co.

Now that the walls have nearly reached their full height, Coventry Cathedral begins to assume an air of monumentality appropriate to its purpose and location. This recent view of the (liturgical) western end of Basil Spence's partly finished building is taken from the north-east. On the right can be seen the chequered pattern of the tall baptistery window, to be filled with stained glass by John Piper and Patrick Reyntiens. On the left is the spire of the bombed medieval cathedral.

FUTURIST MANIFESTO

The publication of Einstein's first important papers on the mathematics of physics in 1905 *is commonly taken to mark the beginning of the real life of the Twentieth Century, but as far as the visual arts are concerned, the appearance of the Foundation Manifesto of Futurism on February* 20, 1909, *was an event of more immediate—and more lasting—consequence. In honour of its half-century, the first complete English translation appears on the pages that follow.*

It is a document of extreme polemical violence; by borrowing the style and typography of politics it set the tone of aesthetic disputation for fifty years. It envisaged a complete revision of the artist's relationship with the world, rejecting the past and cleaving enthusiastically to the mechanized present; in history-crusted Italy this was a necessity of life to a younger generation aspiring to a place in International culture—the manifesto's author, Fillipo Tomaso Marinetti was thirty-two, had been born in Egypt, and largely educated in Paris.

It was the first of many manifestos issued in the ensuing five years by the Movimento Futurista, *dealing with everything from philosophy to feminism. Most of these yellowing leaflets with their brutal typography are read only by inquirers into the philosophical origins of Fascism, but the handful that deal directly with the arts are as alive now as they ever were, more alive indeed than they were ten years ago. In them, Boccioni envisaged collage-sculpture, mobiles, action-painting; Russolo fore-heard musique concrète, Sant'Elia laid down the programme for the architecture of the Twenties (and the Fifties), and Marinetti evoked the Geometrical and Mathematical Splendour of the Machine Age.*

But all these were the offspring of the foundation document; none could have been conceived until Marinetti had dropped the portcullis on the past, and opened the airlock to the future. In Boccioni's words, the age of the great mechanized personalities had begun,

and the precise point of its beginning is documented in the first, autobiographical, part of the manifesto; what Marinetti and his friends intended to do about the new age is set out in tabular form in the second part (the only part of the document that is at all well known in English), and how they felt about their new, exposed position is set out in the third and last section. This, too, was prophetic, but in a personal sense, since they did indeed prove to be expendable men, and their movement after 1918 became a comic-opera adjunct to Mussolini. But as we look back from the threshold of the space age, we see the Foundation Manifesto standing up, the farthest familiar landmark in the fog of history, the first point in which we can recognize an image of our own Machine Age attitudes.

Reyner Banham

We had been astir all night, my friends and I, under eastern lamps of copper filigree, star-dusted like our souls, for they, too, blazed with the sealed lightning of electric hearts. We had trampled out our ancestral sloth at length on rich oriental carpets, disputing to the uttermost limits of logic and blackening quires of paper with our frenzied scribblings.

Life in the Casa Marinetti about 1908—the orientalism was real, the lamps, etc., had been brought back from Egypt when the family returned to Italy.

A great pride swelled in our chests, for we felt ourselves alone in that hour, alone, awake and afoot, like proud beacons or forward guardposts against the hostile armies of the stars, spying out their celestial encampments. Alone with the stokers bustling about the satanic furnaces of great ships, alone with the black phantoms that fossick in the red-hot bellies of locomotives launched on their mad journeys, alone with the gesturing drunks flapping uncertainly along the walls of the city.

But suddenly we all jumped at the mighty rumble of a double-deck tram, rocking past in a blaze of coloured lights, like a village festival that the flooded Po tears without warning from its banks and sweeps through rapids and gorges, down to the sea.

The street in front was the Via del Senato, the ancient canal was the Naviglio, supposedly a work of Leonardo. Between the two, Marinetti had a grandstand view of an old technology being killed by a new one.

Then the silence deepened again. Yet, as we listened to the ancient canal muttering its feeble prayers, and the creaking bones of the dying, ivy-bearded palaces, we suddenly heard beneath the window the hungry roar of automobiles.

Let's go, I said, let's go, fellers, let's get away. Mythology and Mystic Idealism are licked at last. We're in at the birth of centaurs, we shall see the first angels fly. We must rattle the doors of life, test the hinges and bolts. Let's go. There on the earth is the first dawn of history, and there's nothing to match the red sword of the sun, slashing for the first time through the shadows of a thousand years.

The style, as well as the sentiment, of this passage anticipates the inflamed automobilism of Kerouac's *On the Road*.

We came up to the three snorting beasts, to lay amorous hands on their scorching breasts. I stretched myself on my machine like a corpse on its bier, but revived at once under the steering wheel, a guillotine threatening my stomach.

The wild sweep of madness whipped us out of ourselves and chased us through streets as rugged and deep as torrent-beds. Here and there a sick light in a window taught us to mistrust the fallible mathematics of our used-up eyes.

Marinetti's, presumably, was the sixty-horse Fiat that turns up in his later writings. Ten years earlier, of course, this whole passage would have been inconceivable.

I cried, The scent, the scent alone is enough to guide these beasts.

And we, like young lions, pursued Death with its black belt dotted with pallid crosses, running on under the vast violet sky, alive and pulsating.

A jibe at D'Annunzio, whom the Futurists hated; the reference could be to any of a number of his more Decadent novels.

But ours was no ideal love lifting her sublime face to the clouds, nor a cruel queen to whom we offered our bodies twisted like Byzantine rings. Nothing, this wish to die, but the desire to be freed at last from the load of our courage.

And we sped on, flattening watch-dogs on doorsteps, curling them up under our flying tyres like collars under the flat-iron. Domesticated Death came up with me at every corner, stretching out an ingratiating paw, or flattening on the ground with a chatter of teeth, making velvet, caressing eyes at me from every puddle.

Let's break out of the stuffy husk of wisdom and throw ourselves like pride-ripened fruit into the big sharp mouth of the wind. . . . Let's just give ourselves up to the unknown, not out of desperation, for sure, but to plumb the deep wells of the Absurd. . . .

The words were hardly out of my mouth before I snapped the car round in its

own length, with the same mad intoxication as a dog that tries to bite its own tail, and there—unexpectedly—were two cyclists coming towards me, confusing me by wobbling about like two equally convincing but contradictory arguments. Their stupid dilemma was staged right in my line of travel . . . what a pest . . . auff . . . I pulled up short and, to my disgust, shot wheels-in-air into the ditch. Maternal ditch! brimming with muddy water. Fair factory drain! I gulped down your nourishing sludge, and remembered the blessed black breasts of my old Sudanese nurse. And when I came up—filthy and stinking—from under the capsized machine, I felt the hot iron of delicious joy transfix my heart.

Query: where had they come from if they were so unexpected?

River Jordan, how you've changed!

A crowd of anglers and gouty naturalists swarmed around the spectacle. With patient, loving care they rigged a tall derrick and iron grapnels, to haul out the car like a huge dogfish. It came up slowly, abandoning to the depths, like shed scales, its massive bodywork of good sense, and its soft upholstery of convenience. I thought it was dead, my beautiful dogfish, but one touch from me was enough to bring it back to life, and there it was, revived and going again on its powerful fins.

It must have been Sunday morning before Mass.

The car thus became a racing machine—and a symbol of the artist sloughing off conventional culture and stripping for action.

And so, face covered with good factory effluent—plastered with swarf, senseless sweat and celestial soot—we, bruised, in splints, but unafraid we declare our prime intentions to the live men of the world

1. We will sing the love of danger, the habits of energy and temerity.
2. Courage, audacity, revolt, shall be the essential elements of our poetry.
3. Right down to the present, poetry has exalted moody immobility, extasy and repose. We shall exalt aggressive movement, feverish insomnia, life at the double, with somersaults, slaps and punches.

Anti-D'Annunzio again.

4. We assert that the magnificence of the world has been enriched by a new beauty, the beauty of speed. A racing car with its bonnet draped in enormous pipes like fire-spitting serpents . . . a roaring racing car that goes like a machine gun, is more beautiful than the Winged Victory of Samothrace.
5. We will hymn the man at the wheel, whose ideal axis passes through the centre of the earth, that is itself in full flight on the circuit of its orbit.

Live in Einsteinian space!

6. The poet must expend himself with ardour, ostentation and generosity to excite the fervour of all primitive elements.
7. There is no beauty save in struggle. No work that lacks aggressive character can be a masterpiece. Poetry must be conceived as an assault on unknown powers, to make them bow down before man.
8. We are on the highest promontory of the centuries—why must we look back when we are about to break through the mysterious gates of the impossible. We live already in the absolute, since we have created eternal universal velocity.

This could come from Bergson, a largely forgotten influence on the intellectual wildlife of the early century.

9. We will glorify war, the only hygiene of the world—militarism, patriotism, the destructive gestures of anarchists, the great concepts for which men die, contempt of women.
10. We will destroy the museums, libraries and academies of every kind, and will combat moralism, feminism and all vile opportunist utilitarianism.

These were the seeds of Fascism, obviously.

11. We will sing the great crowds stirred by work, pleasure or revolt; we will sing the multicoloured, many-voiced seas of revolt that surge through great modern capital cities; we will sing the shimmering nocturnal fever of arsenals and shipyards blazing with electric moons; voracious stations devouring smoking snakes; factories hung from the clouds by the twisted filaments of their smoke; bridges like giant gymnasts leaping rivers that glisten like knife-blades in the sun; adventurous steamers snuffing the horizon; deep-chested locomotives pawing the ground with their wheels, like huge steel steeds bridled with steam-pipes; the slithering flight of aircraft whose propellers flutter in the wind like banners, with the sound of the applause of an enthusiastic crowd.

Day Lewis, Auden and Spender were later to mine out this lode of mechanistic symbolism right down to the barren bed-rock, but Marinetti was the prospector who staked the first claim on it.

It is from Italy that we launch on the world our manifesto of disruptive and incendiary violence with which this day we inaugurate Futurism, because we

Most of them spoke German, of course, and were thus to

wish to liberate our country from its foetid gangrenes of professors, archæologists, cicerones and antiquaries.

be regarded as part of the Austrian occupation. Futurism was a patriotic movement, which thus makes it all the odder that the Manifesto should first have appeared in French.

For too long now Italy has been a Caledonian market—we will liberate her from the innumerable museums that cover the land like uncounted cemeteries.

Museums, cemeteries . . . truly alike in the sinister promiscuity of so many bodies who never knew one another. Museums: public dormitories where for ever sleep the hated and forgotten. Museums: stupid shambles of painters and sculptors slashing at one another with colour and line for disputed wall-space.

That we should make pilgrimage to them once a year, as to the Camposanto on All Souls' Day . . . that we concede. That on one day a year a garland be laid in homage before the Mona Lisa . . . that, too, we allow. But we cannot accept that we should parade our miseries daily through the museums, nor our fragile courage, nor our morbid anxieties. Why poison ourselves with dry rot?

It had not yet been stolen, but the modernists already had their sights on it as a cult-object of reaction, like the Victory of Samothrace.

For what can you see in an old picture anyhow, but the laborious contortions of the artist trying to break through the insurmountable barriers that stood against his desire to give full expression to his dream . . . to admire an old picture is to seal up our sensibilities in a funerary urn, instead of projecting them in violent acts of creation and action.

Will you then waste all your best powers on this everlasting and useless admiration of the past, from which you can only emerge exhausted, diminished and dishonoured.

In truth I say that the daily frequentation of museums, libraries and academies (cemeteries of wasted energy, calvaries of crucified dreams, registries of frustrated adventures) all this is even more damaging for artists than the excessively sheltered upbringing forced by parents on young men intoxicated by their talents and their ambitions. For the dying, the infirm, the prisoners, all right . . . the admirable past may be the balm of their ills, since the future is barred to them.

But we will hear no more of it, we Futurists young and strong.

Let them come, the cheerful firebugs with their scorched fingers. There! There! and up there! set fire to the stack rooms of the libraries . . . divert canals to flood out the museums, for the joy of seeing all the glorious old canvases floating away on the current, torn and discoloured by the flood. Picks! Hammers! Hatchets! Smash, smash the venerated cities of art.

The Augean labours of Hercules Marinetti.

The oldest among us is thirty years old, and we have, therefore, at least ten years to finish our task. When we are forty, younger and fitter men will chuck us in the wastepaper basket like old manuscripts. That's how we'd like it.

Alas for prophecy, it proved to be none other than D'Annunzio, in his last desperate throw, the motor-boat raid on Fiume, who proved the Futurists expendable, and finished them at forty, and he was almost sixty!

We shall see them coming afar off, our successors, dancing around to the winged cadences of their first songs, reaching out predatory claws, dog-like sniffing round the doors of the academies, for the ripe scent of our putrefying minds, already promised to the catacombs of the libraries.

But we shall not be there—they will finally catch up with us one winter night in open country, in some miserable hangar with the rain drumming monotonously on its roof, squatting fearfully by our aeroplanes in the act of warming our hands by the fitful fire of our early works, flaring up under the fanning of our imagery.

Antoine de Saint' Exupéry must have passed this way later; a similar sense of the terrestrial miseries of aviation informs much of his early work.

They will crowd round us panting with anguish and contempt, and all, exasperated by our proud, unstanchable daring, will rush to kill us, driven by hatred made more implaccable by the extent to which their hearts are filled with love and admiration for us.

Strong, clean injustice will blaze from their eyes—Art, in fact, can no longer be anything but violence, cruelty and injustice.

The eldest among us is thirty years old, but we have already squandered treasures —treasures of strength, of love, audacity, astuteness and good will; we have thrown them away in impatient haste, without counting, without hesitating, without pause, and at the tops of our voices. Watch out! We aren't finished yet. There is no weariness in our hearts, nourished as we are on fire, hatred and speed. We astonish you? That's logical, if you can't remember ever having lived. Standing on the summit of the world we hurl our defiance once more at the stars.

The proto-Fascist strain again, but it was not peculiar to Italy—the Vorticist connection in England took it up with enthusiasm a few years later.

You have objections? Thank you . . . and again Thank you. . . . We know them . . . we understand. . . . Our fine lying intelligence tells us that we are the summation and continuation of our ancestors. . . . Or something. . . . But suppose it's true. . . . Who wants it? . . . We don't wish to know that . . . and woe betide anyone who uses those dirty words on us.

Heads up!

Standing on the summit of the world, we hurl once more our defiance at the stars.

SEAMEN'S HOME AT ERITH, KENT

ARCHITECTS	GOLLINS, MELVIN, WARD AND PARTNERS
assistants	A. J. Hoffman, H. Prime, P. Guest and H. J. MacMaster

1, the main entrance and four storey block from the north-west.

SEAMEN'S HOME AT ERITH

The Royal Alfred Merchant Seamen Society's hostel originally occupied Belvedere House, a pioneer Greek Revival mansion designed by James "Athenian" Stuart in the mid-seventeen-seventies. The house, however, is unsatisfactory for the hostel's specialised purposes, and the new building has been erected in its grounds—the fate of the old building remains uncertain at present. The site of the new block, though not as good as that of the old house, nevertheless commands a wide view of the Thames estuary from parkland well grown with mature trees which have been preserved.

The hostel has to accommodate eighty retired merchant-seamen who are in walking trim, and fifty infirm ones who are not. The former are housed in individual cabins on the upper three floors of the Main Home (which also contains a flat for the "Mate" or warden), the latter in the Infirm Home, a single storey structure with two main, sixteen-bed wards, and six smaller wards; both the dormitory block of the Main Home and the large wards of the Infirm Home are oriented north-south. The rest of the accommodation, which is mostly at ground floor level, includes public rooms—mostly for recreation—library, dining room, a covered promenade,

2

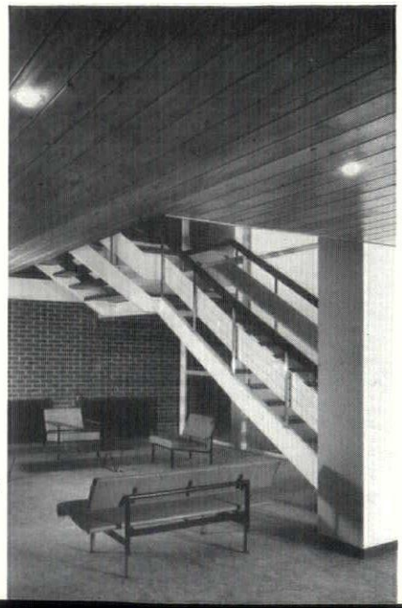
3

2 and 3. the home from the south-east, with the single storey common room wing on the left. The four storey block in the centre has administration offices on the ground floor and seamen's cabins, above; the single storey on the right is the infirm wing.

4

5

4. the four storey block from the west with the single storey common room in the foreground.
5, general view from the south-west.
6. the entrance hall and main staircase.



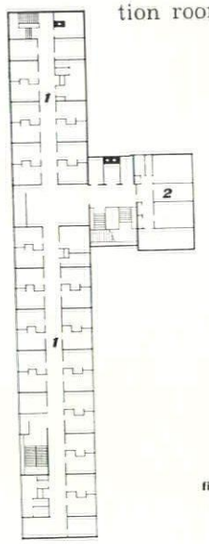
6

7, the approach to the four storey block, with the single storey House Governor's flat on the right.

workshops, offices, as well as kitchens and stores, staff and nurses' rooms and the Governor's bungalow.

The cabin floors of the Main Home are of reinforced concrete cross-wall construction, each "cell" containing two cabins, and the cross-wall loads are carried by square R/C columns on the ground floor, an arrangement which gives greater clear space and flexibility of plan for the public rooms. The long flank walls of the upper floors are clad in metal curtain wall, with white glass spandrels in front of 4in. R/C firebreaks. The single storey parts have partially exposed light steel framing, or load-bearing brick walls. The specialised nature of the buildings is reflected in the mechanical equipment, which includes a lift large enough to admit a patient in bed, and no fewer than five different kinds of hot-water heating—floor coils in the Infirm Home, radiators in staff quarters, skirting convectors in the cabins, radiant wall panels in wards and recreation rooms and a heated ceiling over the promenade.

SEAMEN'S HOME AT ERITH

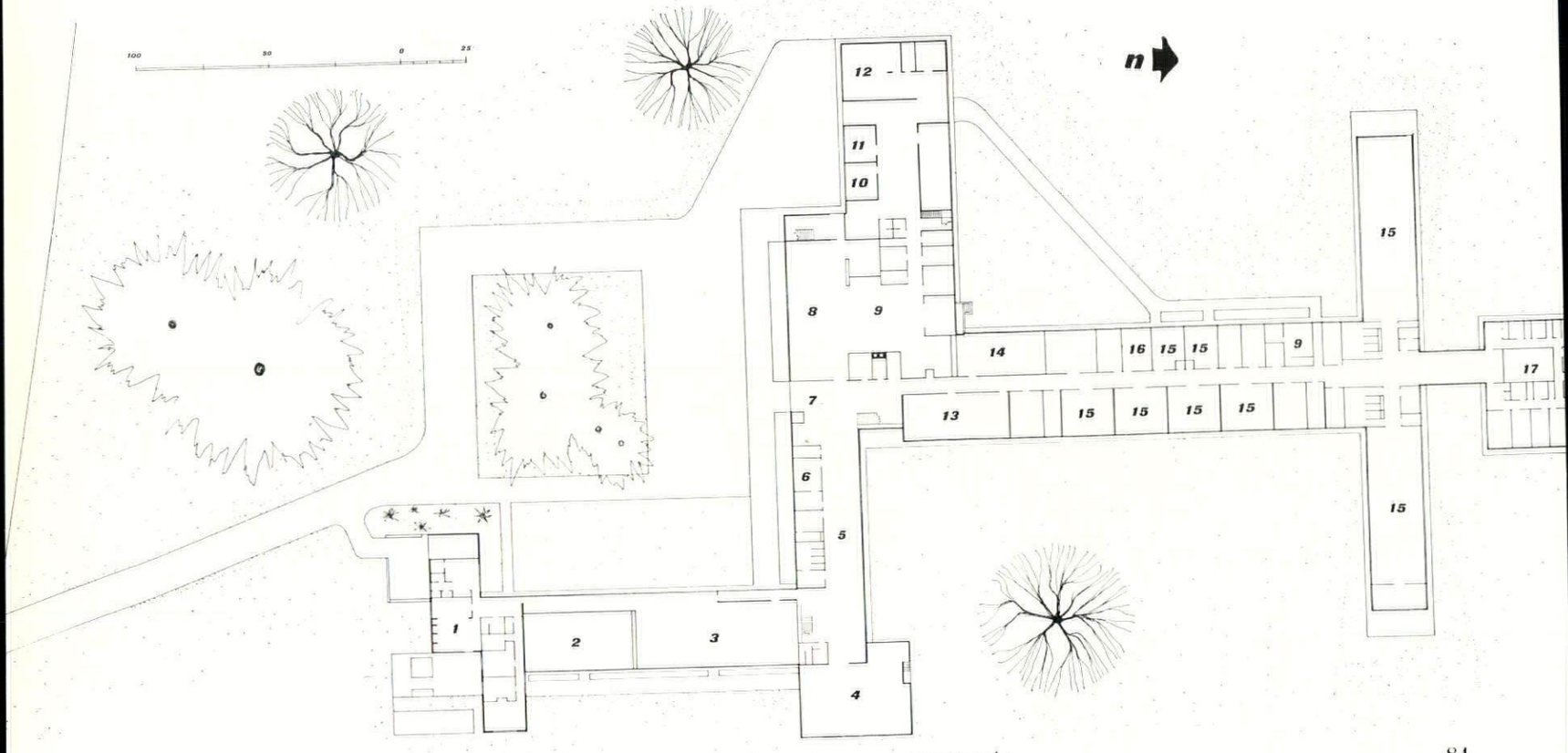


first floor plan

8, distant view from the south.

key

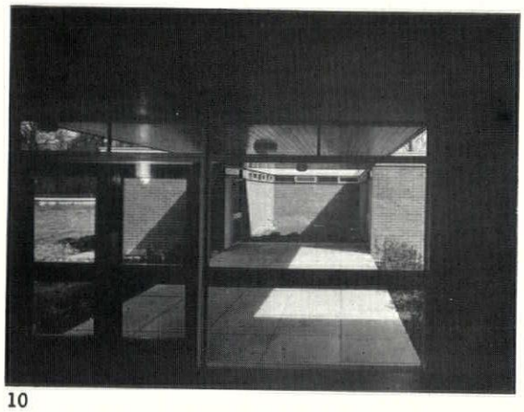
Ground floor.
1, governor's house.
2, billiards room.
3, library.
4, podium.
5, promenade.
6, governor's office.
7, entrance hall.
8, main dining hall.
9, kitchen.
10, painter's shop.
11, carpenter's shop.
12, garage.
13, lounge.
14, infirm section dining room.
15, wards.
16, surgery.
17, nursing staff accommodation.
First floor.
1, cabins.
2, mate's flat.



ground floor plan

9

9, the entrance hall and main staircase, with the lift on the left.
10, looking along the covered way from the infirm wing to the nurses' bedroom block.
11, the ground floor corridor promenade in the four storey block, with administration room on the right.



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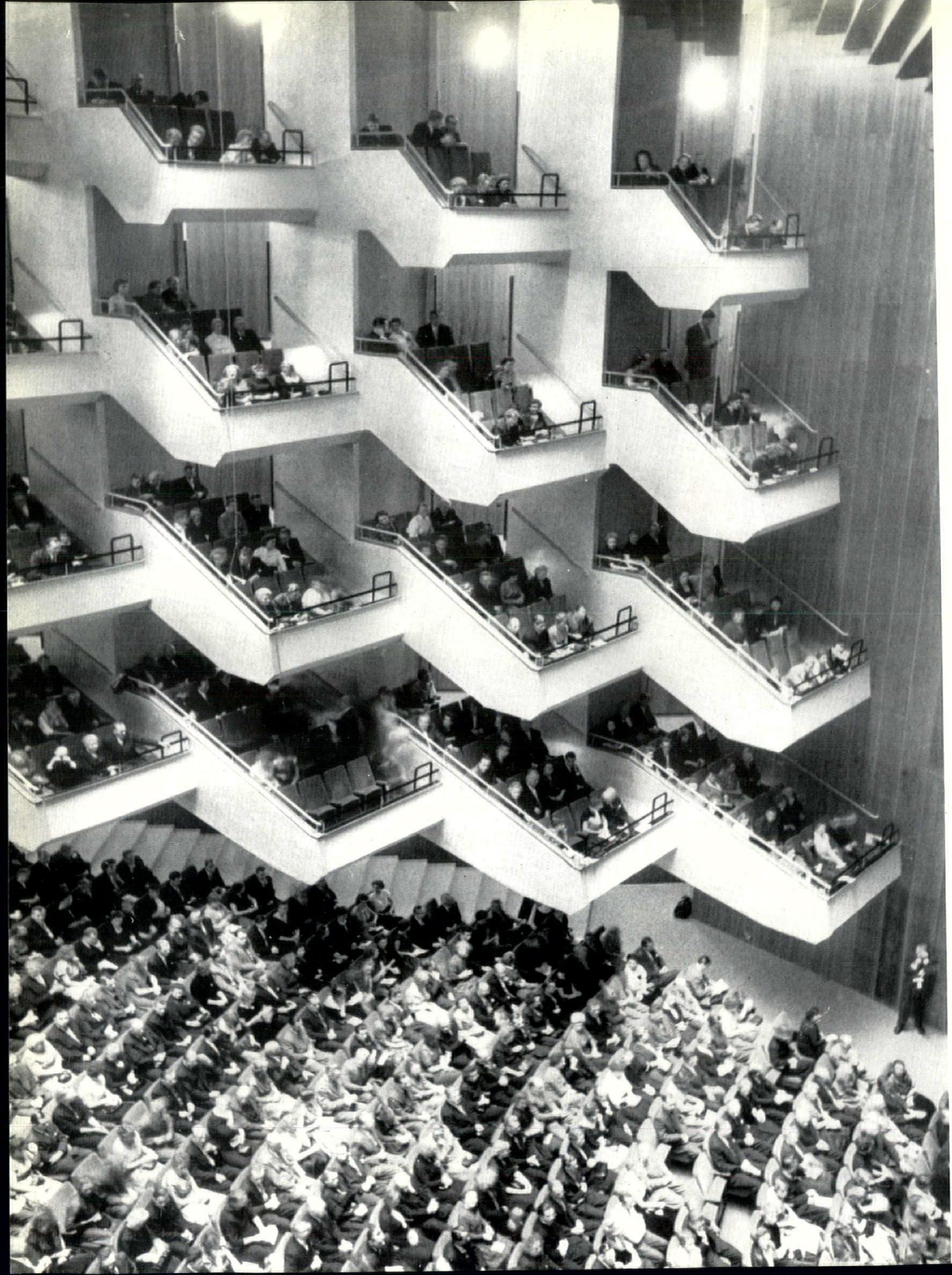


'A cello sobs, the symphony begins;
A fever flutters in the violins;
A thousand ear-rings tremble in the dark. . .'
Frederick Prokosch's evocation of the hushed moment at the beginning of a concert is a clue to sense of formal social display that is expressed in many new German auditoria, such as the Hamburg State Opera, opposite *. But this is only one of the psychological and physiological factors whose influence has helped the post-war German concert-halls, discussed in the article that begins below, to make a complete break with accepted ideas on auditorium design.*

David Shoesmith & Michel Santiago

REVERBERATORS

POST-WAR GERMAN CONCERT HALLS AND OPERA HOUSES

When the history of Modern Architecture in the last thirty years is reviewed we observe the existence of a number of privileged forms that were permitted to break the rectangular regularity of Functionalist architecture and CIAM planning. Outstanding among them were the forms of auditoria—how often was the only relief from the dead-beat regularity of some ruthless planning grid to be found in the fan, cheese-wedge or even doughnut form of something labelled, hopefully, *concert hall* or *civic theatre*? Yet did these forms really justify their privileged position in the Functionalist canon?

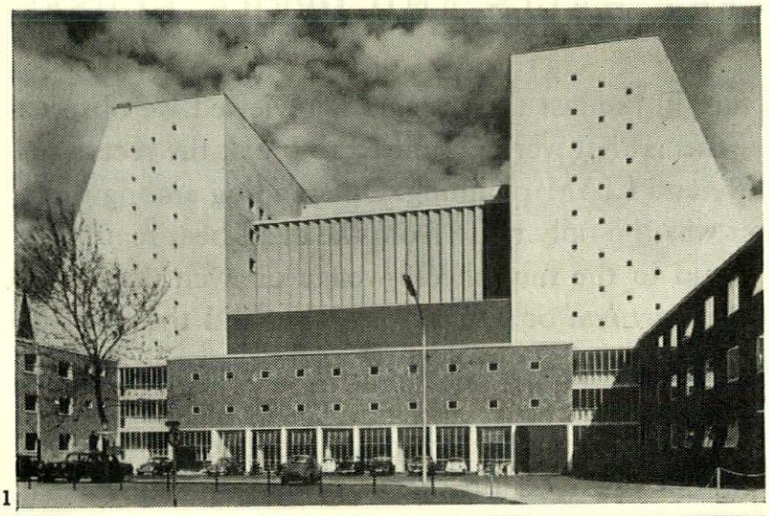
German post-war experience in the design of halls for the hearing of music suggests they did not. They were ideal shapes, designed for the hearing of ideal sounds, emanating from ideal point-sources, by ideal monaural listeners. Furthermore, like so many ideal shapes they were also conceived as serving many purposes, and were not specifically adapted to any special kind of hearing. But hearing music is a specialized activity, in which the sense of sight also plays a large part. It is also an un-ideal activity, in which sound emanates from many—perhaps a hundred—sources, pointed in various directions, and thus reaches the ear under varying conditions. Again, different kinds of music demand different acoustical conditions. Considering the matter all round, it appears that a truly functional approach to the design of halls for the hearing of music is unlikely to produce either the generalized, or the idealized, forms of the Functionalist period.

The work done in Germany over the last few years in this field is extremely instructive for two reasons. Firstly, because it has really been concentrated into the last few years—all the examples discussed in this article are more recent than the Festival Hall in London, and thus constitute an unusually compact body of work in a building type whose earlier

examples are scattered in time—where else could one find ten or more buildings of such a type executed in one country in less than a decade? Secondly, because these halls have been designed for an unusually discriminating audience—not only are the Germans traditionally a nation of music-lovers, but they are also, by more recent tradition, a nation of craftsmanly technicians, and the superb quality of the recordings put out by the great German recording-companies, coupled with increasingly available hi-fi reproducing equipment of matching quality, has trained up the German ear to a pitch of discrimination unequalled in Europe, probably unequalled in the world.

Both the proliferation of halls, and the hi-fi training of the audience that uses them, are by-products of the so-called German Miracle of the middle nineteen-fifties, the determination to make good both the economic situation, and the loss of buildings due to the war. In many towns, a new opera-house, or a new concert hall attached to an academy of music or radio-station, is one of the most visible and most visited symbols of post-war recovery, and the style of its conception and decoration both inside and out is a measure of what is new in the intellectual life of the new Germany. The split-block form of the upper parts of the Opera-house in Cologne is a dramatic shape on its skyline, and is typical of the city's adventurous approach to the mixing of new with old,

1 and 2, Cologne State Opera, above, and Münster Stadt-Theater, below; new auditoria as dominants in the urban scene, ranking equally with older landmarks.



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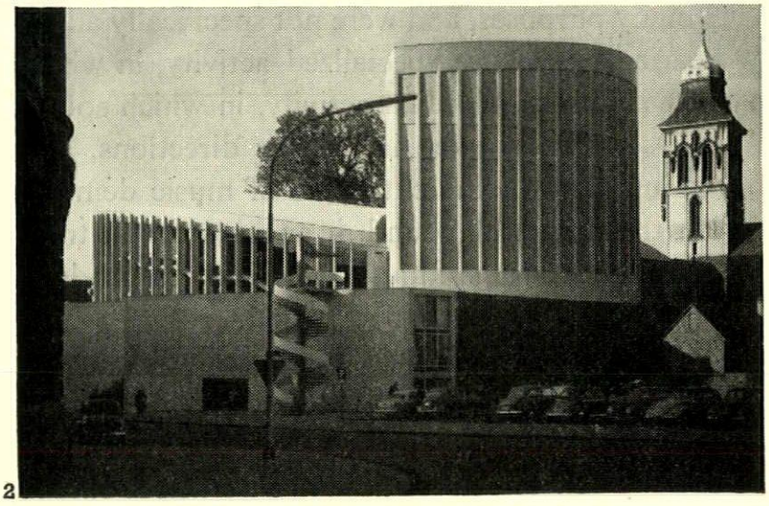


2

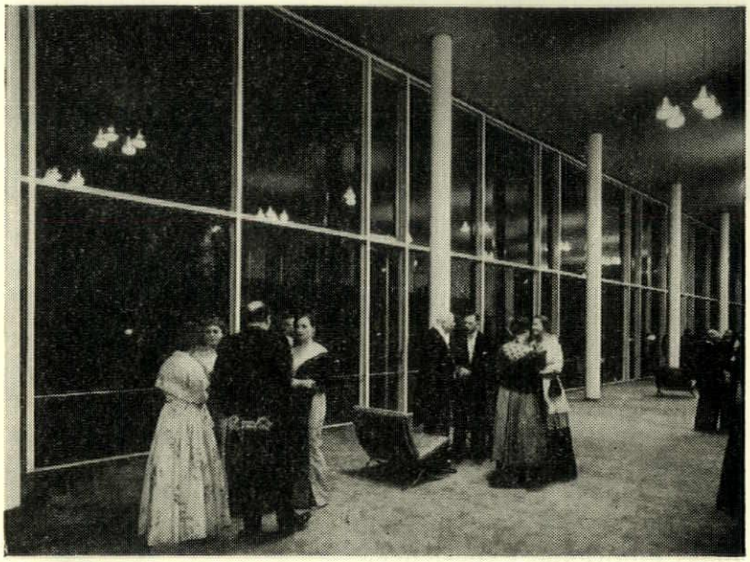
even if the forms of the opera house are open to criticism in themselves. Similarly, Professor Baumgarten's hall for the Academy of Music in Berlin, with its broadly-glazed façade, is an acknowledgment of international connections in a location where internationalism is of the highest symbolic importance. Or again, the highly original forms of the *Stadttheater* at Münster (described and illustrated in A.R. March, '57), and their sophisticated relationship to fragments of older building on or next to the site, suggest an attitude to past and present, ancient and modern whose undoctrinaire sensitivity could be of European importance.

But in the ultimate functional analysis, it is the inside that matters in a hall for music—but not merely the auditorium itself. Listening to music is an emotional experience, and the members of the audience need to be eased into the right mood before they enter the hall, and kept in that mood during those parts of the evening when they are not in the hall, but in the bar or the foyer. In spite of the relaxation of much of the stiffness of prewar protocol, the Germans tend to maintain a degree of formality in their theatre-going and concert-going, and the architect must therefore make not only spatial provision for the mandatory social promenade round the buffet or foyers in the interval, but must also make emotional provision by the creation of a suitable environment both to sustain the general mood of the evening and the mental relaxation of the interval. In all this, Münster is probably the outstanding success, both in capturing and controlling the emotions of the audience as they come in from the street and pass through the richly decorated foyer, up the staircase and into the auditorium, and in creating a just-sufficient degree of relaxation when passing in the other direction (from the auditorium to the foyers) during the breaks in the performance.

But seated, attentive and attuned, within the auditorium proper of one of these new German halls, what does the concert-goer see, what and how does he hear? One thing is certain—he will not see the traditional-modern fan-shaped amphitheatre with its ceiling curving over in a carefully-calculated acoustic loop. The immediately-striking impression from a general survey of these new halls is their astonishing variety of form, curved and angular, symmetrical or free-form, plain or fancy. The Liederhalle in Stuttgart, to take an outstanding instance, has three halls of different shapes—free-form, pentagonal and rectangular—served by a single foyer within a single building-

complex. This variety is not wilful; the three halls are to serve audiences of different sizes for music of differing kinds, the smallest having also to double-up as a practice-room and hall for receptions. In other instances, other forms are found, with equally substantial functional justifications, such as the variant on the Baroque horse-shoe plan with many tiers of boxes at Münster, primarily intended for drama, or the simple rectangular volume of the Hessischer-Rundfunk hall in Frankfort am Main, intended mainly for concert work.

Yet these halls are not to be regarded as the result



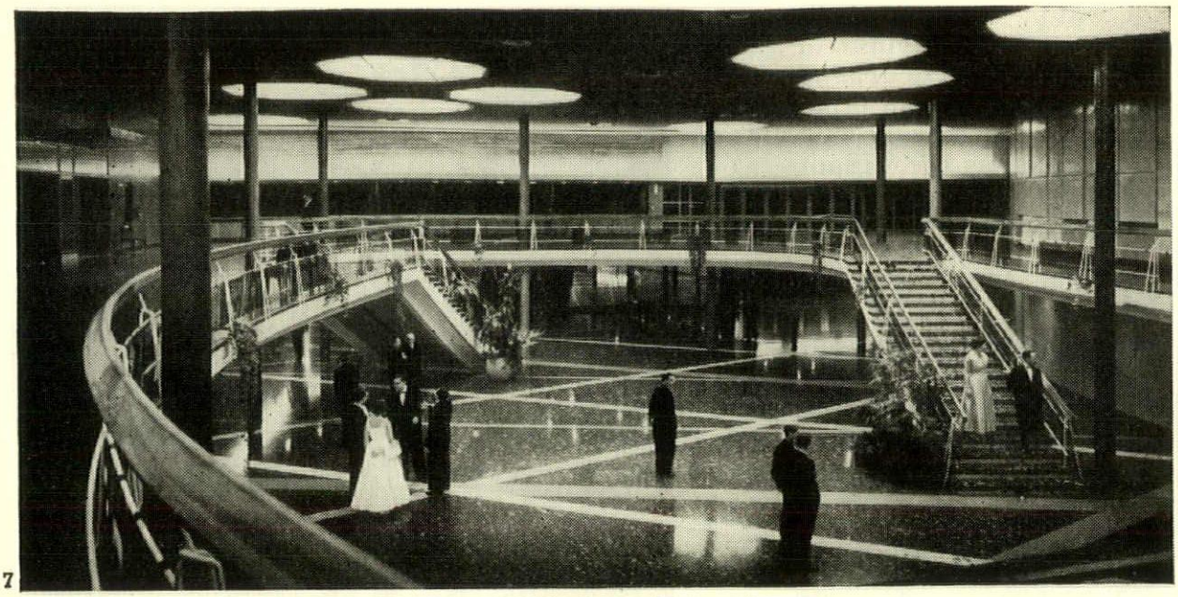
3, *foyer of the National Theatre, Mannheim, designed by Gerhard Weber, a large, simple, formal space serving the social parade which German protocol still requires, though in a less formal manner than used to be the case even in the nineteen-thirties.*

of an irresponsible attitude to acoustics, however shocking they may appear to those brought up on the formulae and rules of thumb used in architecture schools. The idea of an acoustically-perfect hall has been given up, or nearly so, partly because the importance of subjective factors has become inescapable, and partly because it is increasingly realized that acoustics can be manipulated by a variety of means. Neither of these matters is a German post-war discovery. It has long been recognized that the word 'good' applied to acoustics has no absolute or stable meaning, but varies from person to person, time to time, and according to the kind of music being performed. For these reasons, and others, provision has been made—in theory at least—for the alteration of the acoustic characteristics of halls after they have been built; the Festival Hall is a case in point here. What the German experience has to offer for study is the results of what might be termed an increasingly liberated attitude to auditorium design, in which acoustics is no longer the overriding initial consideration governing the form.

Most of these halls are of a reasonable-enough shape, acoustically, but no more than that. The basic shape once given, as it might be the plain rectangular box of the Hessischer-Rundfunk concert hall, acoustical manipulation appears at once with the slight inward cant of the side walls to assist resonance. But it should also be noted that this fairly deep rectangular form of hall, which can also

4 and 5, interior and exterior views of the entrance side of the Berlin music academy, by Paul Baumgarten. The foyers are not only part of the external display, but their decoration, 4, uses art-works as part of an integrated scheme.

6, main staircase of the larger hall, National Theatre, Mannheim. Here, again, Professor Weber uses circulation for social display, supported by large works of abstract art.



7

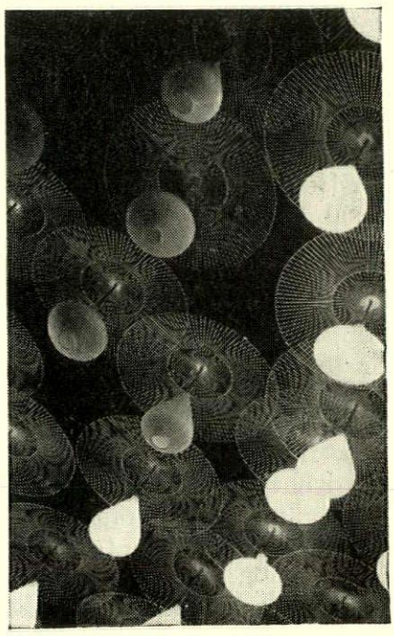
7, main foyer of the Liederhalle, Stuttgart, by Adolf Abel and Rolf Gutbrod. Most of the innovating tendencies observed in recent German concert-halls can be seen in extreme form in the Liederhalle, and the huge central foyer, with its free form planning, is no exception.

be found at Cologne, Berlin and Mannheim, may be, to some extent, a conscious reaction against the fan-plan orthodoxy of the Thirties, which resulted in the side-walls becoming so far apart that much of the sound was absorbed by the audience themselves before reaching the walls, so that an acceptable reverberation time, and smooth decay of sound, were difficult to achieve. Conversely, however, the side walls of the pentagonal *Fünfecksaal* of the Liederhalle, in Stuttgart, fan at so wide an angle, and the audience are grouped so compactly around the platform, that most hearing is of direct sound only—an admirable condition for appreciating the precision of pre-Romantic music, especially when coupled with good sight-lines and a close physical proximity to the performers.

To a certain extent, also, the forms of the halls are governed by this basic functional enquiry—is the main purpose the performance of concert-music, or of opera? In the first case, the plain hall with raked floor and possibly one balcony, but not always that, seems to be preferred, but for opera, where a greater degree of intimacy with the performance, and shorter sight lines, are necessary, then a more compact form with tiers of boxes or balconies, approximating, however loosely, to the traditional baroque opera-house, is still the first choice, as in the new opera-houses at Cologne and Hamburg. Some attempts at variability of auditorium shape and seating arrangements have also been made, at least to the extent that the balcony of the *Fünfecksaal* at Stuttgart can be screened off, thus creating a smaller and more intimate hall, while the *Kleines Haus* in Gerhard Weber's National Theatre at Mannheim, has a range of adaptability from the conventional relationship of orchestra and audience, to a condition approximating to 'theatre in the round'—which is hardly surprising since the hall was primarily intended for drama, including music-drama, though the condition where the audience effectively surrounds the musicians seems well-suited to both chamber music and small jazz groups. Another form of 'freedom' in the placing of the audience, though not involving movable seats, is seen in the halls of the Liederhalle at Stuttgart where the tendency is for the seats to be arranged in smallish, irregularly-shaped groups, often with a single seat picked out in a different colour, rather than long rows broken by straight gangways, so that the hearing of the music becomes a pleasure shared with a small group of persons sitting near at hand, rather than a mass emotional experience.

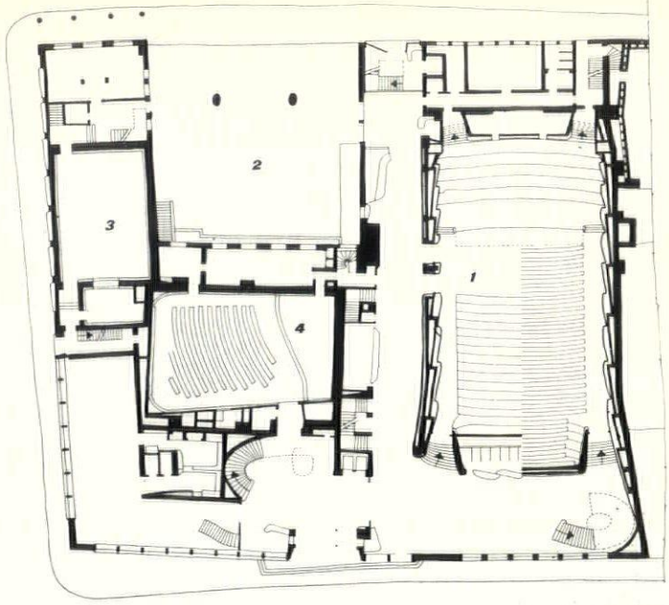
It is clear that these trends toward adaptability and irregularity will call for acoustical manipulations far greater than the simple canting of the walls at Frankfurt, mentioned above. They will call for *local* as well as general manipulation of acoustic quality, and this brings us to what is by far the most interesting characteristics of these new auditoria in Germany.

[*continued on page* 99



8

8, hanging lamps in the ceiling of the Stadt-Theater, Münster, by Deilmann, von Hausen, Rahve and Runau. Widely praised for their visual qualities, these lamps and their 'haloes' serve the important functional purpose of concealing a large volume of space which is acoustically effective, and contains services.



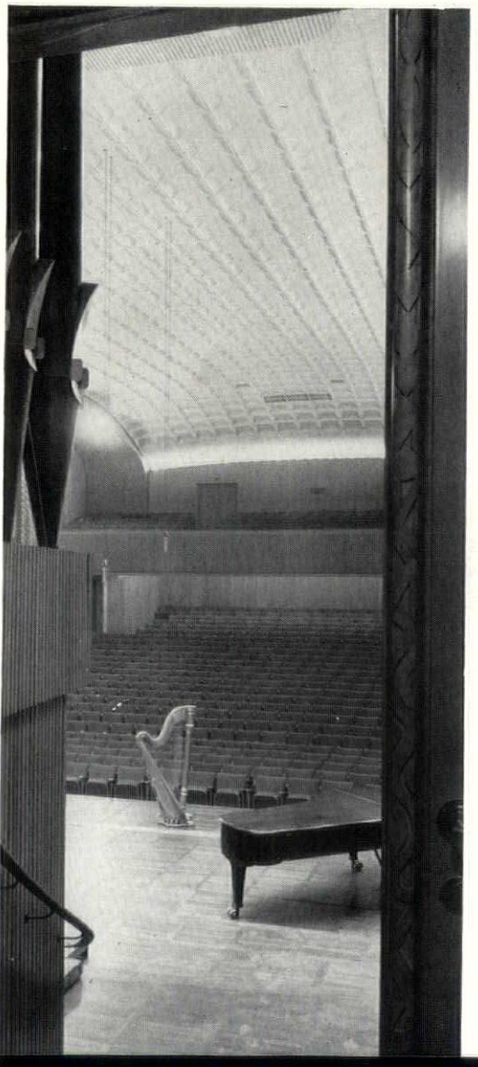
COLOGNE RADIO
Architect: P. F. Schneider

The halls and studios of the Funkhaus, *Cologne, had to be fitted into a largely pre-existing structure (AR, August,* 1955), *with consequences that are seen in the plan above.*

9 *and* 10, *the large concert hall, seen in* 9 *from the stage entrance to the left of the organ in* 10. *The hall is of rectangular form, rather high and narrow, panelled in pear wood, with projecting, ribbed, half-columns. Although there is a small reflector immediately over the orchestra, the whole ceiling is treated as a faceted reflector, faced in pre-cast hard stucco coffering.*

11, *the small hall for chamber music, though lacking the kind of elaborate handicraft detailing seen in* 9, *derives an intimate and business-like air from its plain panelling, and the acoustically waved ceiling, which is turned down to the floor at the back.*

10



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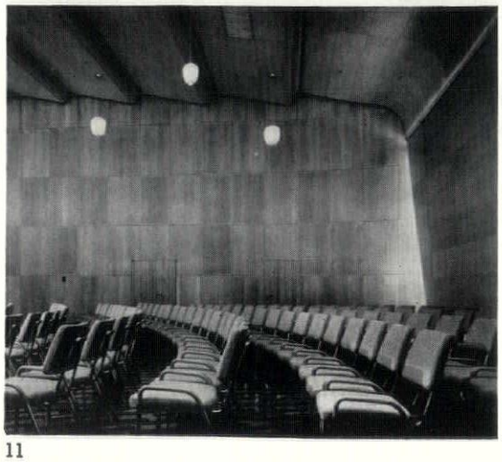

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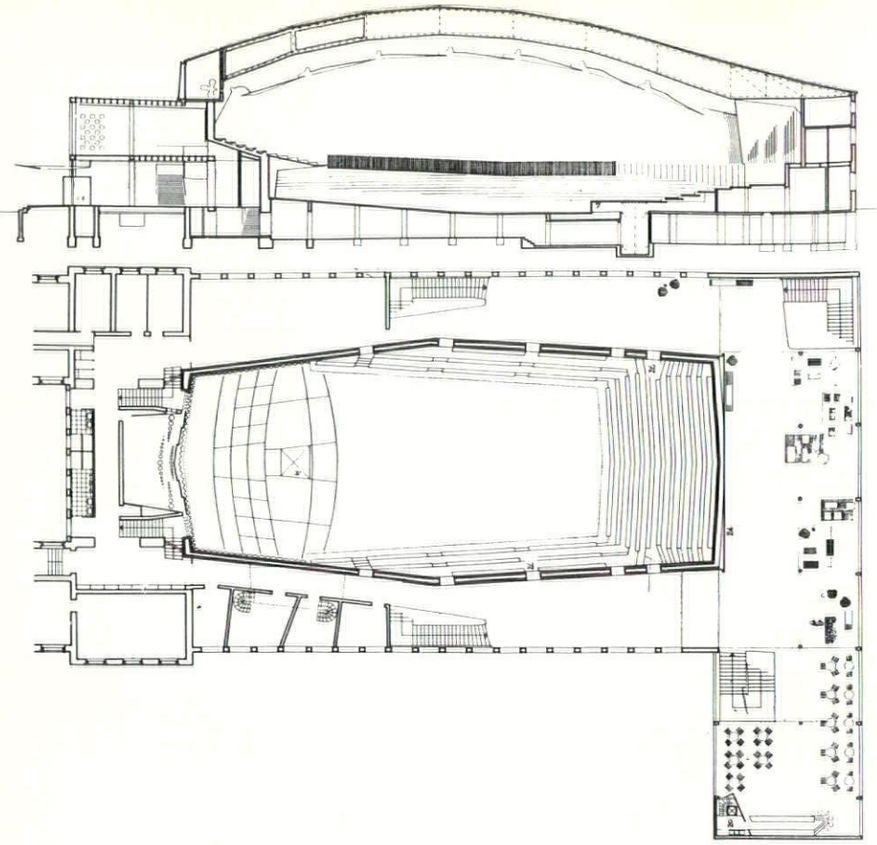


BERLIN ACADEMY OF MUSIC
Architect: Paul Baumgarten

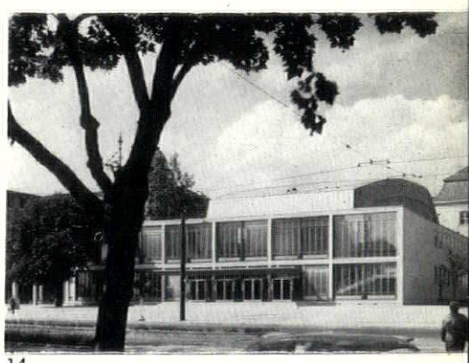
Symmetrical in plan (it shares its axis with the older building to which it is joined) the Berlin Academy with its 'coffin-form,' hump-roofed auditorium corresponds more closely in shape to the common conception of a well-designed concert-hall.

12, *a general view of the hall looking towards the orchestra platform and the louvering that conceals the pipe-work of the organ. The finned facing of the balcony will be noticed, as will the fact that the panels of the visible ceiling overlap in the opposite direction to the common practice.*

13

13, *side wall of the platform end of Berlin Academy of Music's auditorium. Although this is a far from Expressionist design, the manipulation of acoustical textures is still the visual dominant of the interior. As an academic necessity, quite apart from aesthetic preferences, the hall is designed for great acoustic precision, for which the ceiling and plastered upper walls are chiefly responsible, confusing low-level echoes being blotted by the band of perforated material that runs round the hall below the balcony, and further controlled by undulating reflector surfaces behind the higher level of perforated panelling that continues the line of the balcony behind the orchestra.*

14, *the exterior, with its glazed front and visible foyer* (see 4 *and* 5, *page* 89) *and*

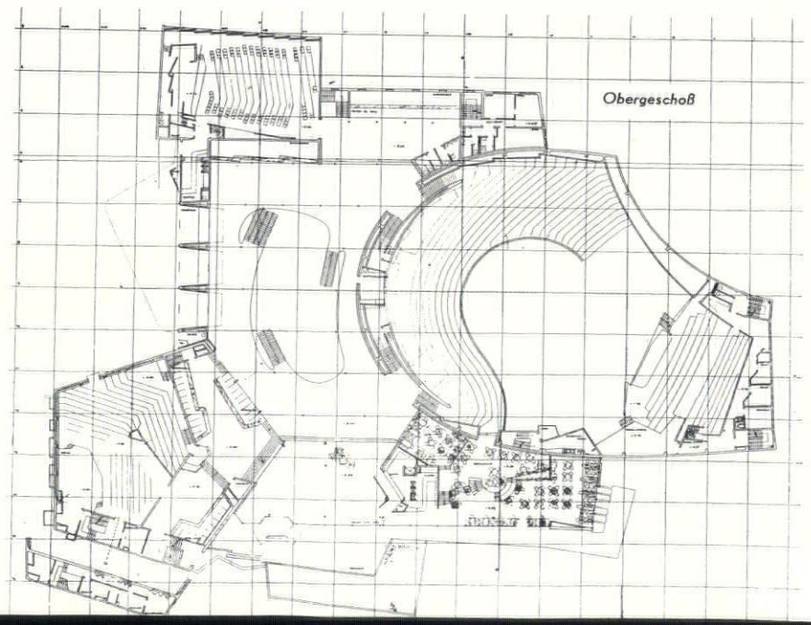


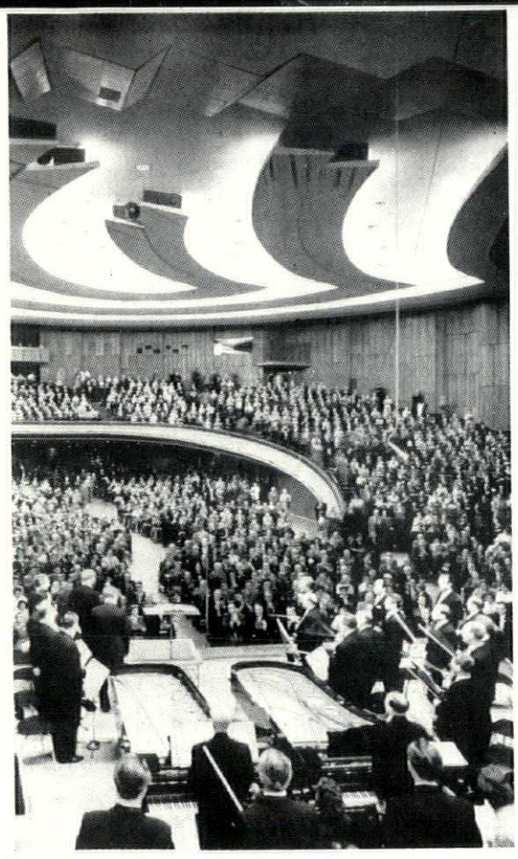
14

the roof of the hall rising above the lower block, confirms that the Berlin Academy building stands closer to international practice than other German halls.

LIEDERHALLE, STUTTGART
Architects: Adolf Abel and Rolf Gutbrod

The queen of post-war German concert halls, and the outstanding example of the Expressionist approach to their design, the Liederhalle consists basically of a vast central foyer serving three main halls as well as numerous ancillary rooms such as bars and restaurants. On the plan, right, the halls may be identified as follows: the free-form Grosser Saal, *for large orchestral concerts, etc.; the pentagonal* Funfeck Saal, *for chamber music; and the rectangular* Kleiner Saal, *for other intimate music.*





15 *and* 19, *wall and ceiling treatments in the Grosser Saal of the Liederhalle. No other recent hall has gone so far in treating acoustic control as a branch of abstract art.*

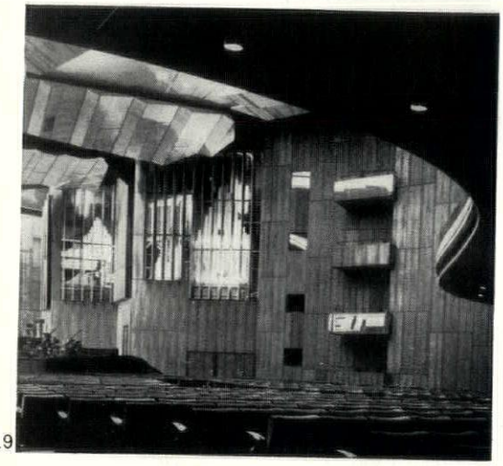
16 *and* 17, *two views of the public side of the Grosser Saal. The style of the surface treatments, which is sharp and angular over the orchestra, becomes a composition of vast free-flowing curves on the public's side, with a balcony that plunges down to stalls-level at one end. The seating is broken up into small groups to introduce a feeling of greater casualness and intimacy.*

18, *interior of the* Funfeck Saal; *as in the case of the small hall of Cologne Radio, the quality here is more plain and businesslike than in the larger hall, but widely splaying walls behind the performers give very short hearing distances.*

20 *and* 21, *air view of the Liederhalle, and a detail of the external walling, to emphasize the consistency of the abstract aesthetic that inspires the whole design.*

16, 17

18



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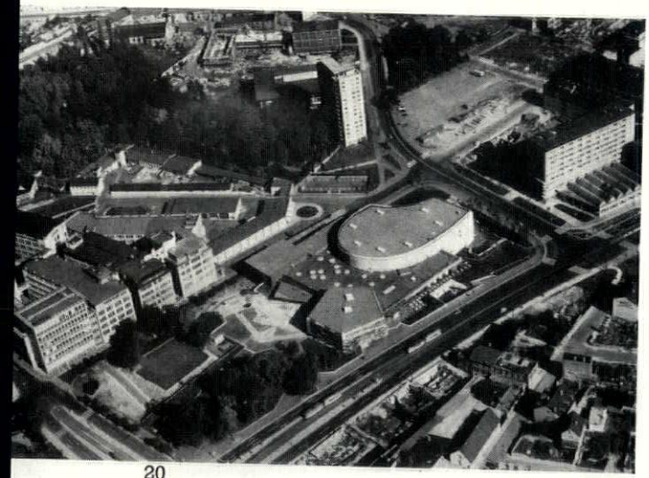

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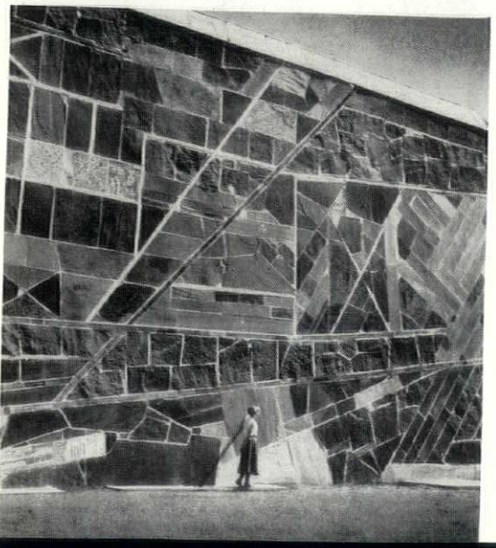

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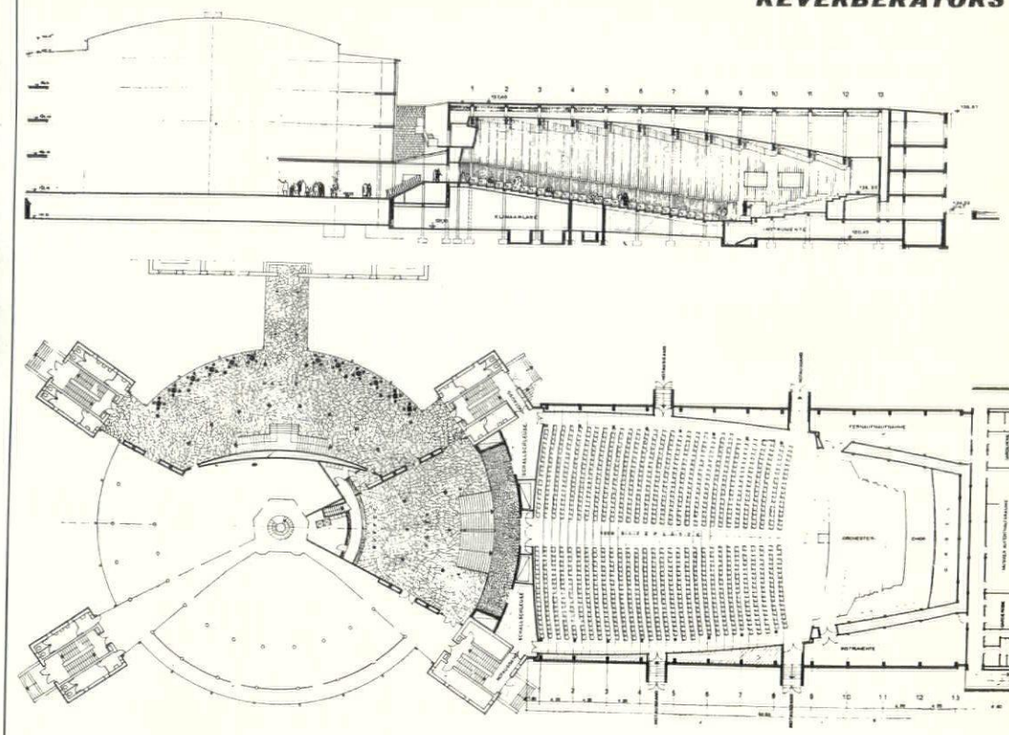

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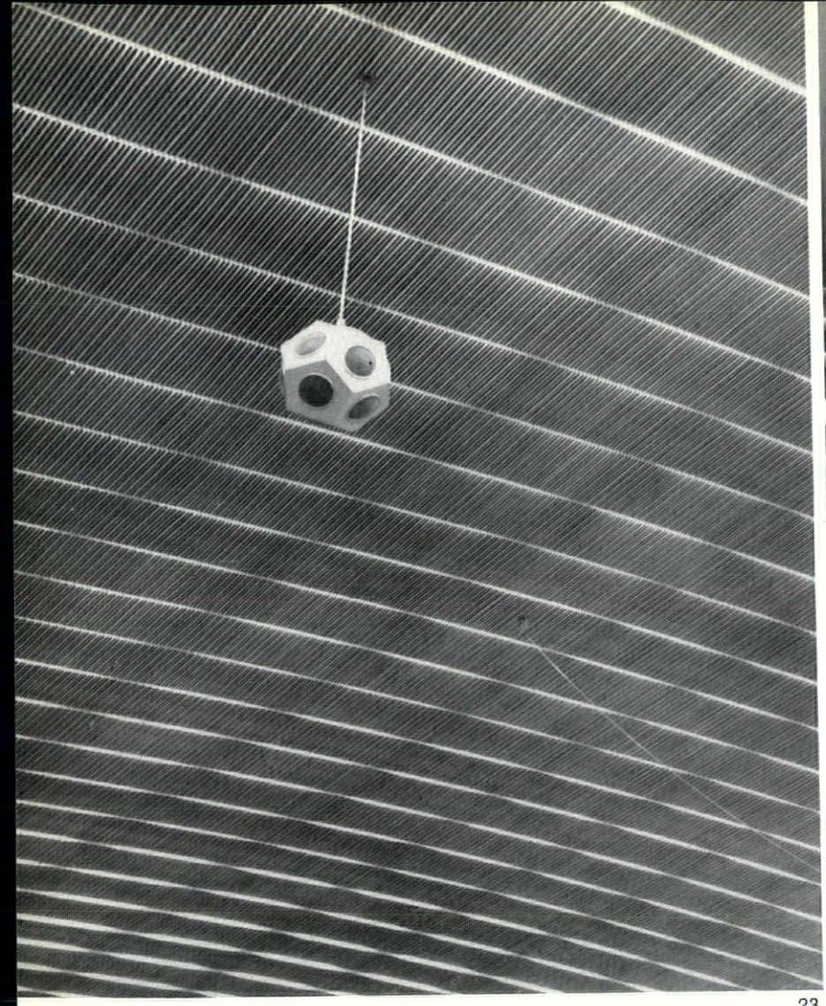
HESSISCHER RADIO, FRANKFURT-am-MAIN
Architect: Gerhard Weber

The Radio hall at Frankfurt is a plain rectangular structure annexed to the large glazed rotunda originally built for the Federal Parliament, but within the plain rectangle (see plan and section) above, the form of the hall itself is tapered down toward the orchestra end.

22, the right-hand side of the auditorium,



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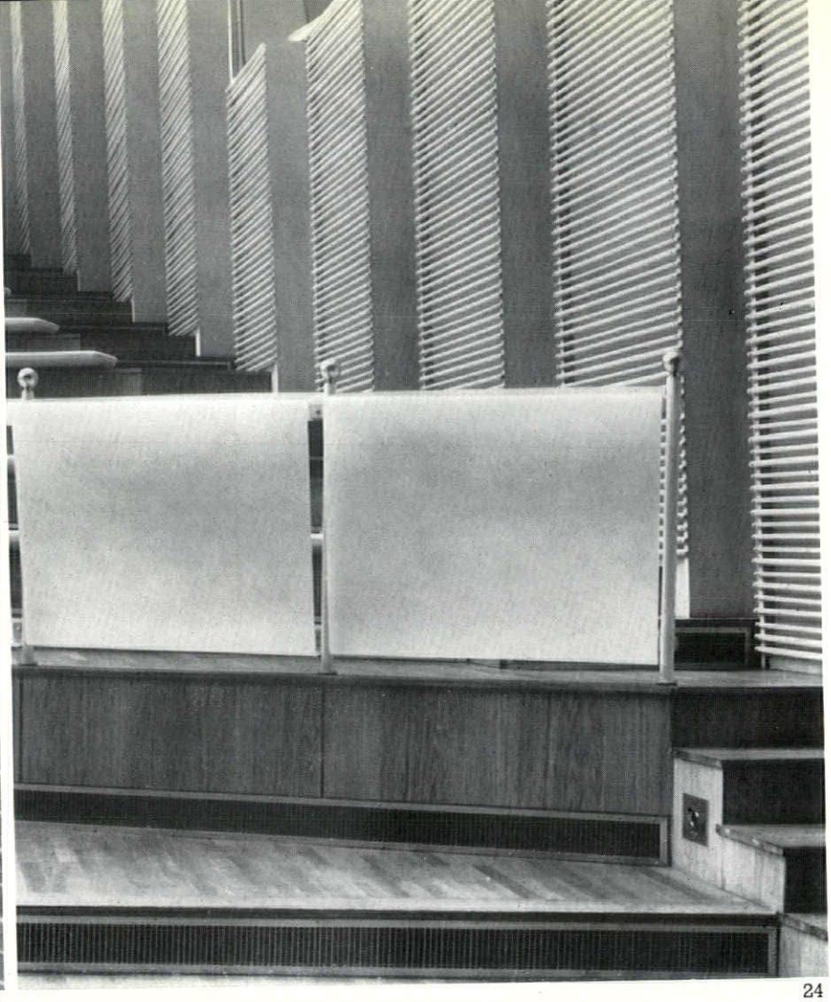

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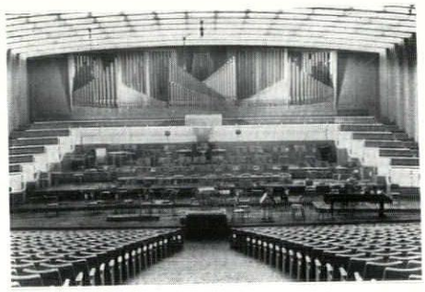
looking toward the orchestra; in addition to the curved taper on plan, the hall also has its walls, which are covered in wooden louvres, canted inwards to assist reverberation.

23, *ceiling and pendant microphone/loudspeaker unit in the Radio hall, Frankfurt-am-Main. The louvred surfaces of the ceiling and walls conceal an important, if cumbersome, technical innovation—a system of rotatable acoustic mattresses with which the hall can be 'tuned' for different kinds of music.*

24, *balustrading of plastic panels at side of orchestra. Plastics, when fully exploited, will probably prove an important extension to the repertoire of acoustic materials. For the present, however, their use is chiefly visual, and plastic music-desks can be seen in e.g.* 13, *page* 93.

25, *a general view of the interior, showing the displayed pipe-work of the organ.*



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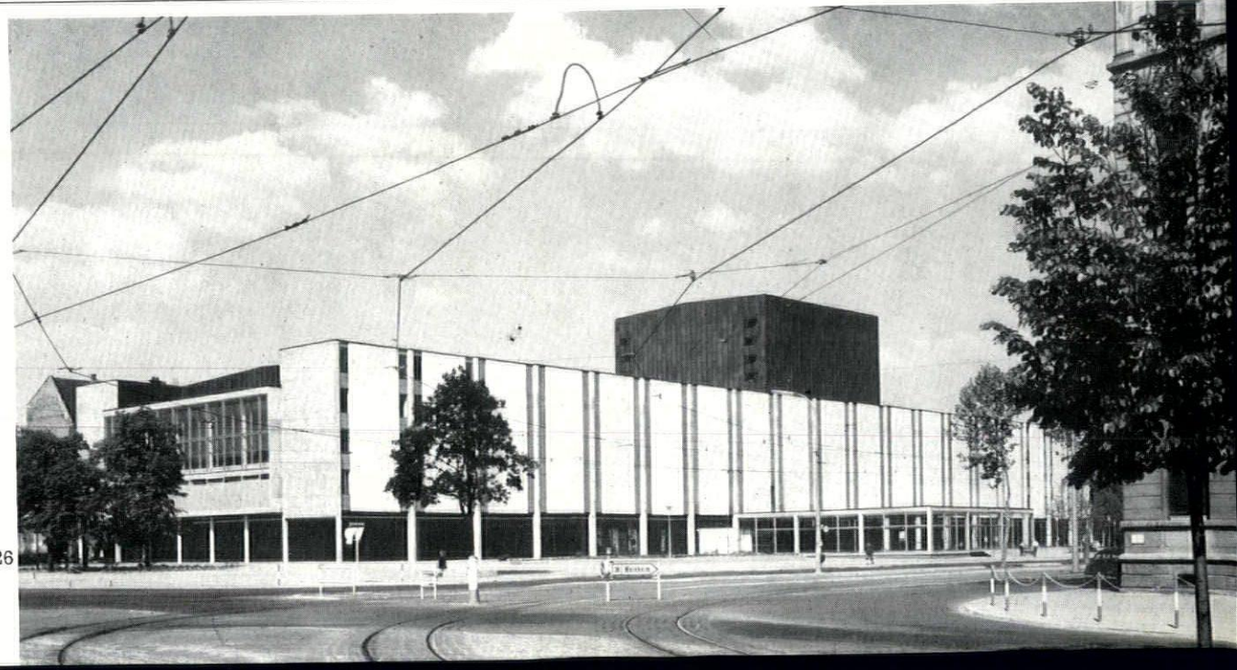
REVERBERATORS

NATIONAL THEATRE, MANNHEIM
Architect: Gerhard Weber

26, *a general view of the exterior of the theatre, which, in fact, contains two completely separate halls within its long, slightly tapering plan* (see *opposite*). *The* Grosses Haus (*lower end of plan*) *is a formal opera-house with proscenium stage, the* Kleines Haus, *at the other end of the building, is a less formal, more adaptable hall which can be arranged in various ways for arena productions, etc.*



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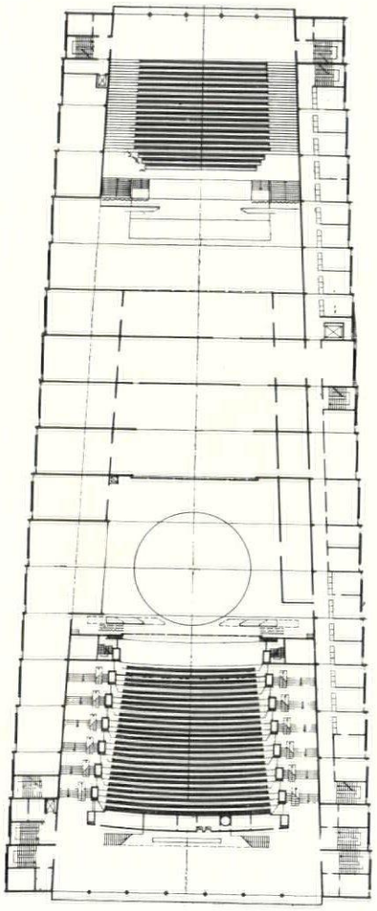
27 (*below*) *and* 28, *two views of the* Grosses Haus *of the National Theatre, Mannheim. The plan is unusually deep for a hall intended for drama and opera, and has side-boxes staggered back over almost its full depth, with a shallow back-balcony.* 29 *and* 30, *views toward, and away from, the stage-area of the* Kleines Haus, *showing the stage set for different kinds of productions and, in* 30, *the side-balconies screened off.*



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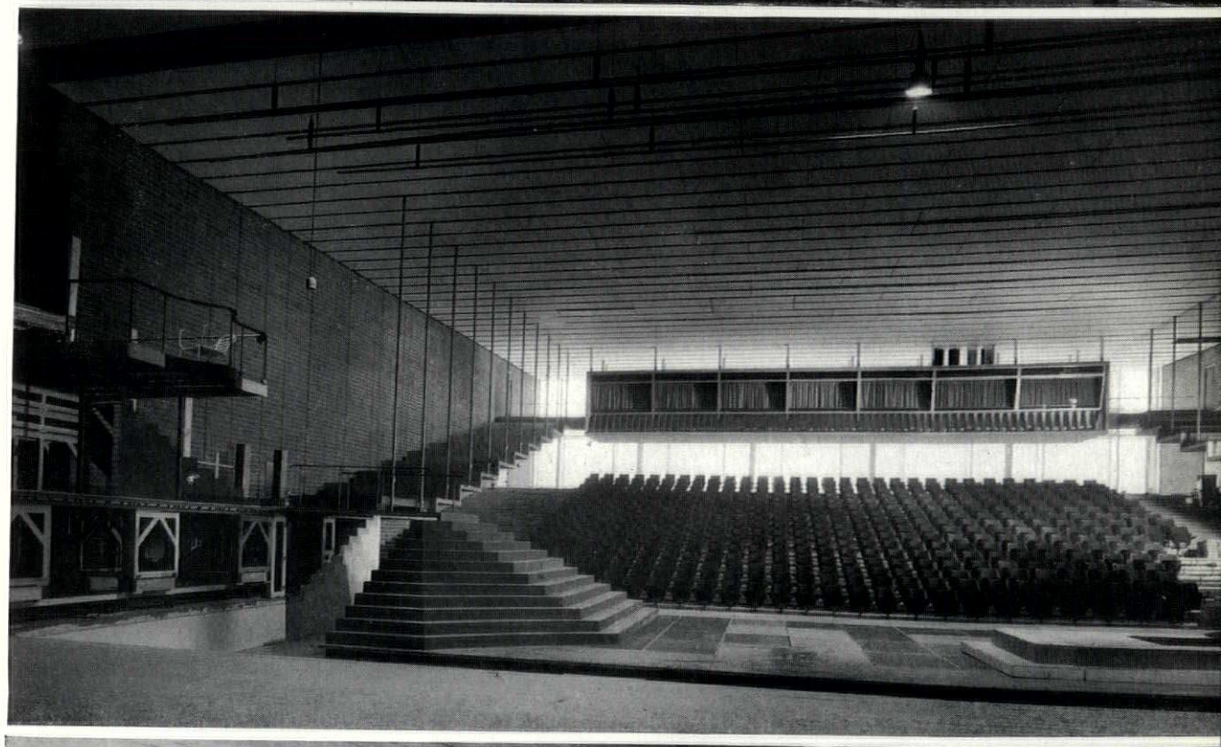

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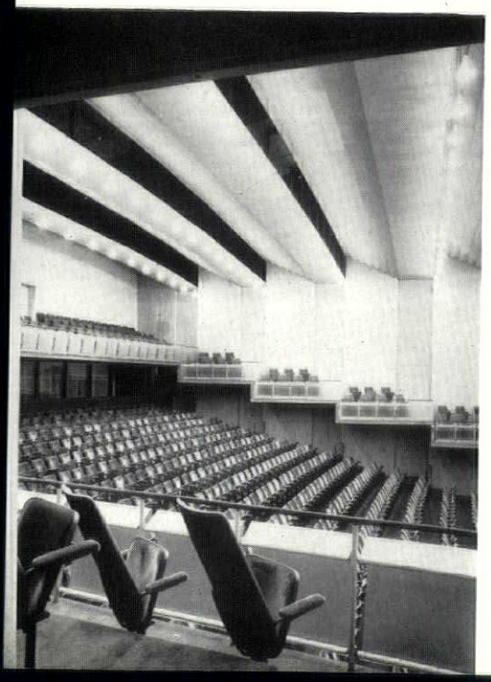
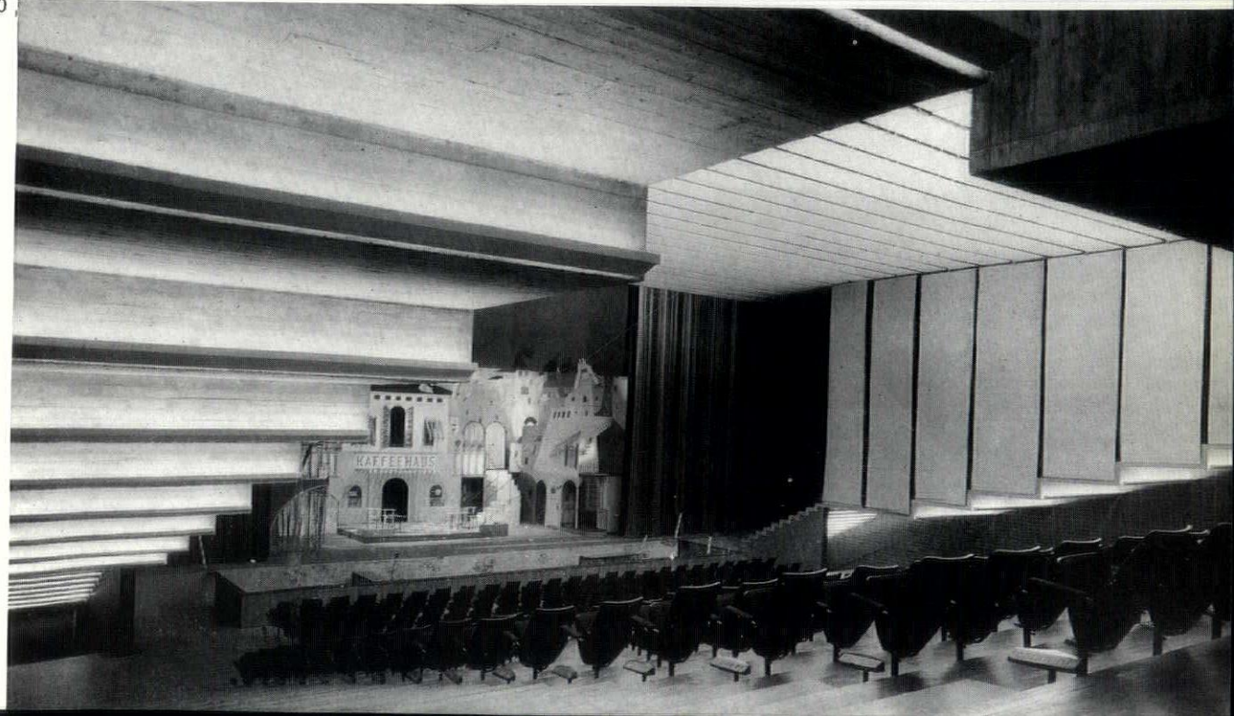




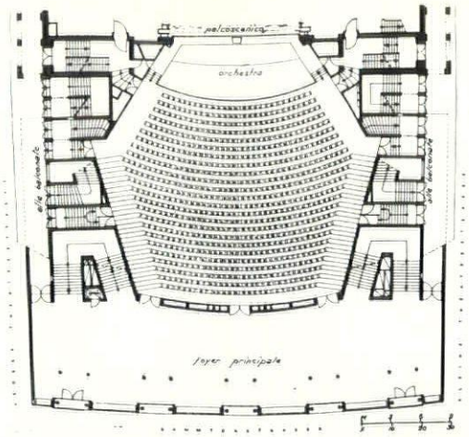
HAMBURG STATE OPERA
Architect: Gerhard Weber

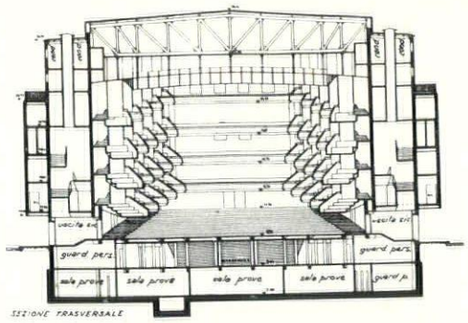
The main volume of the auditorium is compact—almost as high as it is deep (see plan and section, right) in order to give the short sight-lines and general closeness traditionally associated with opera.

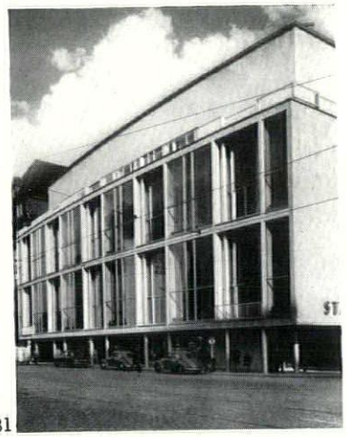
31, *the street facade—the upstand wall above and behind the foyer windows shows the full height of the auditorium.*

32, *the interior seen from the stage; this viewpoint gives the greatest impression of traditionalism in the design, the four tiers of balcony giving a close approximation to the characteristic section of Baroque opera houses.*

33 *and* **34**, *side-boxes in the auditorium; in fact these boxes are so large, each holding up to nineteen persons* (see also frontispiece, page 86), *that they no longer function in the traditional snobbish sense of 'loges'—a sign of the growing pattern of change in German protocol, though not as extreme as the forty-seater 'boxes' at Cologne, opposite.*







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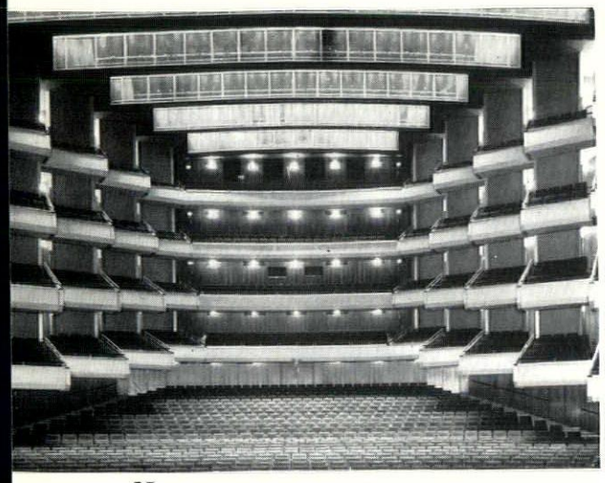

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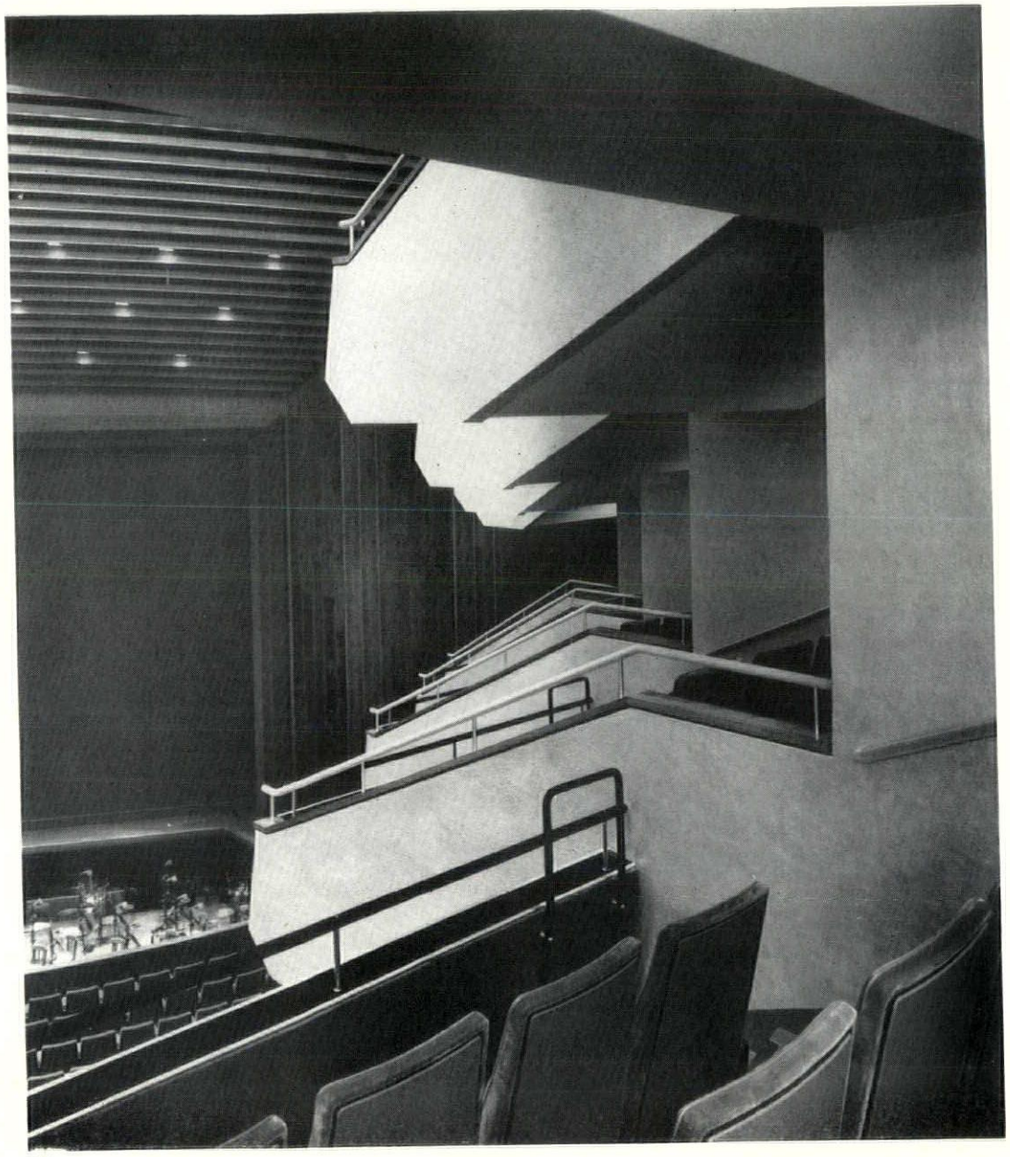

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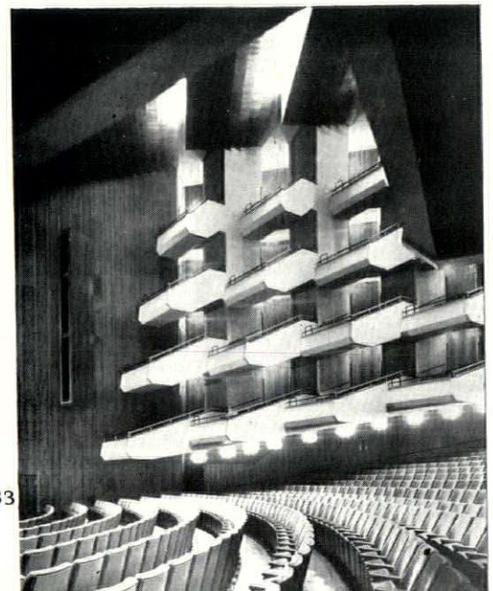

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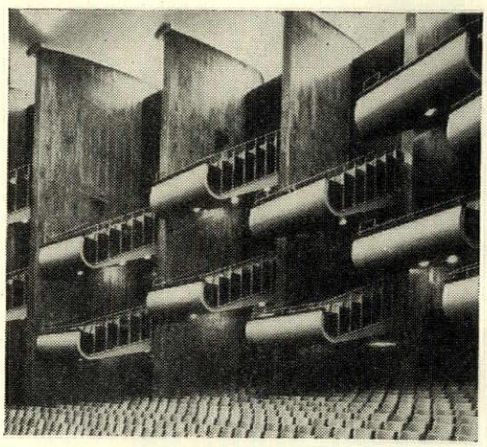
continued from page 90]

At the level of technical ingenuity, there have been remarkable attempts to provide controllable tuning of halls, so that their characteristics can be altered during performances, if the nature of the music or the size of the audience demand it. At Frankfurt the hall can be tuned by rotatable acoustic mattresses behind the louvred walls and ceiling, which can be set at different angles, or entirely reversed to present a different surface to either reflect or absorb sound. Similar devices have been used to control the characteristic sound-quality of radio studios, but the main lesson to be learned from radio technology seems likely to be the application of hi-fi itself to acoustical control. Concealed loud-speaker systems can be used not only to provide local reinforcement of the sound (or selected parts of the sound-spectrum)

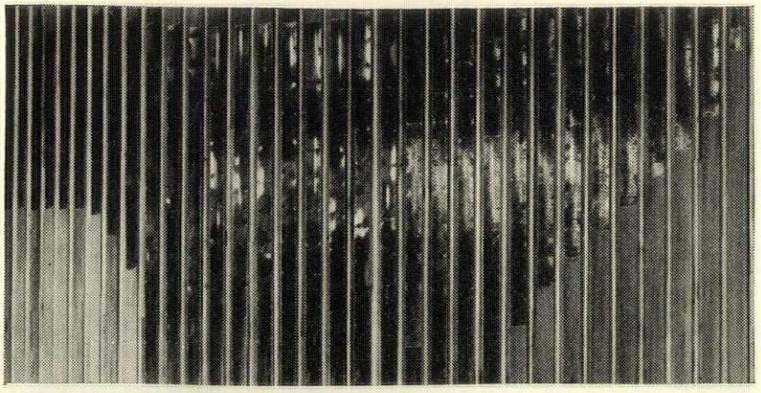


35, *boxes in the Cologne State Opera carry the tendency seen in the Hamburg Opera House, opposite, to the point where a box ceases to be the private apartment of an aristocratic family, and becomes, instead, something more democratic, though still intimate in scale.*

but also, with a suitable time lag, to control the apparent reverberation, even to make reverberation when none is present (as in the familiar echo-chamber effect used in 'pop' records).* This technique is still in its experimental stages, research being in progress at Göttingen under Professor Meyer, but its consequences for concert-hall design could be spectacular—provided that it is remembered that this is a corrective technique for 'live' hearing, not a substitute.

However, it is likely that the main work of acoustical correction and adaptation will continue, for some time, to be effected by means that are purely mechanical (of which Frankfurt is an extreme case) and also visible. In other words, it will be achieved by the shape, and the surfaces, of the walls and ceiling—to some extent by the surfaces of the floor and seats. It is in the manipulation of these visible surfaces that German designers have shown themselves most skilful and most bold, and it is in the relationship of these surfaces to the total form of the hall that their

*In concert halls, etc., such manipulation of sound depends on what is termed the Haas Effect—the reinforced or prolonged sounds appear to come from the same source as the original natural sounds, even when, in fact, they do not.



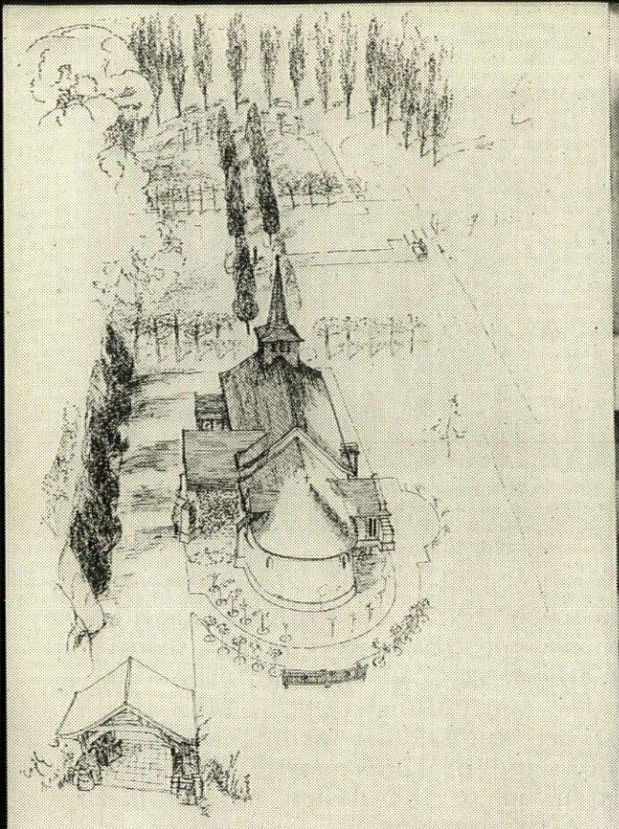
36, *wall treatment at the back of the orchestra platform, Nordwest-Deutscher-Rundfunk, Hanover. Professor Kraemer and the team who worked with him on the internal finishes here achieved perhaps the most sophisticated solution to the problem of disposing various materials—wooden boarding, plain and perforated metal—for acoustic purposes.*

work has most to teach architects in other countries.

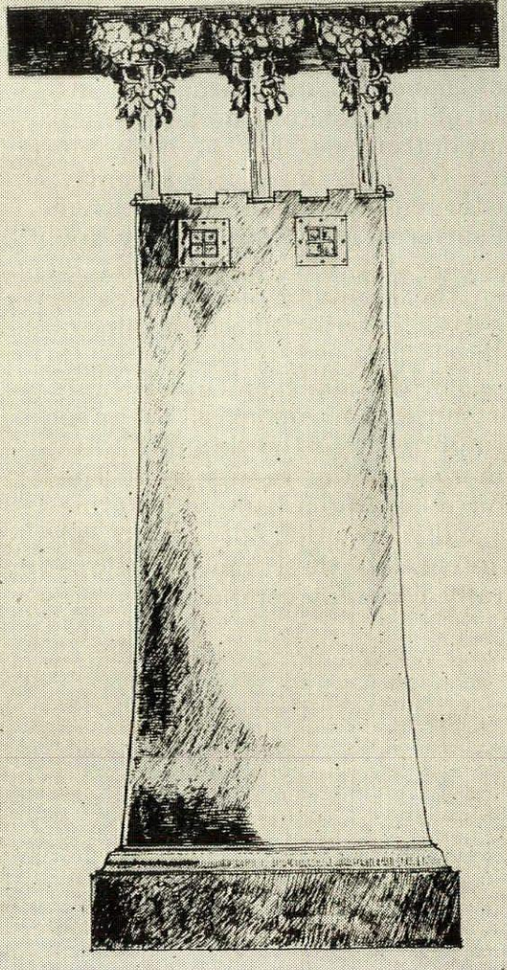
They have had conspicuous success in this field—whatever the superficial style of the auditorium, be it strongly "operatic" (as at Münster), straightforward (as at Mannheim), or Expressionist (as in the Liederhalle) there is no sense of the acoustical controls having been pasted on to the design at the last moment. There are two reasons for this: either, as in the space above the lights at Münster, or behind the louvres at Frankfurt, there is the volume available to conceal all sorts of tackle and services; or, as on the walls of the *Grosser Saal* of the Liederhalle or the Konzertstudio of the Nordwest-Deutscher-Rundfunk at Hanover, the acoustic surfaces are visible, but have been treated right from the start as part of the visual design.

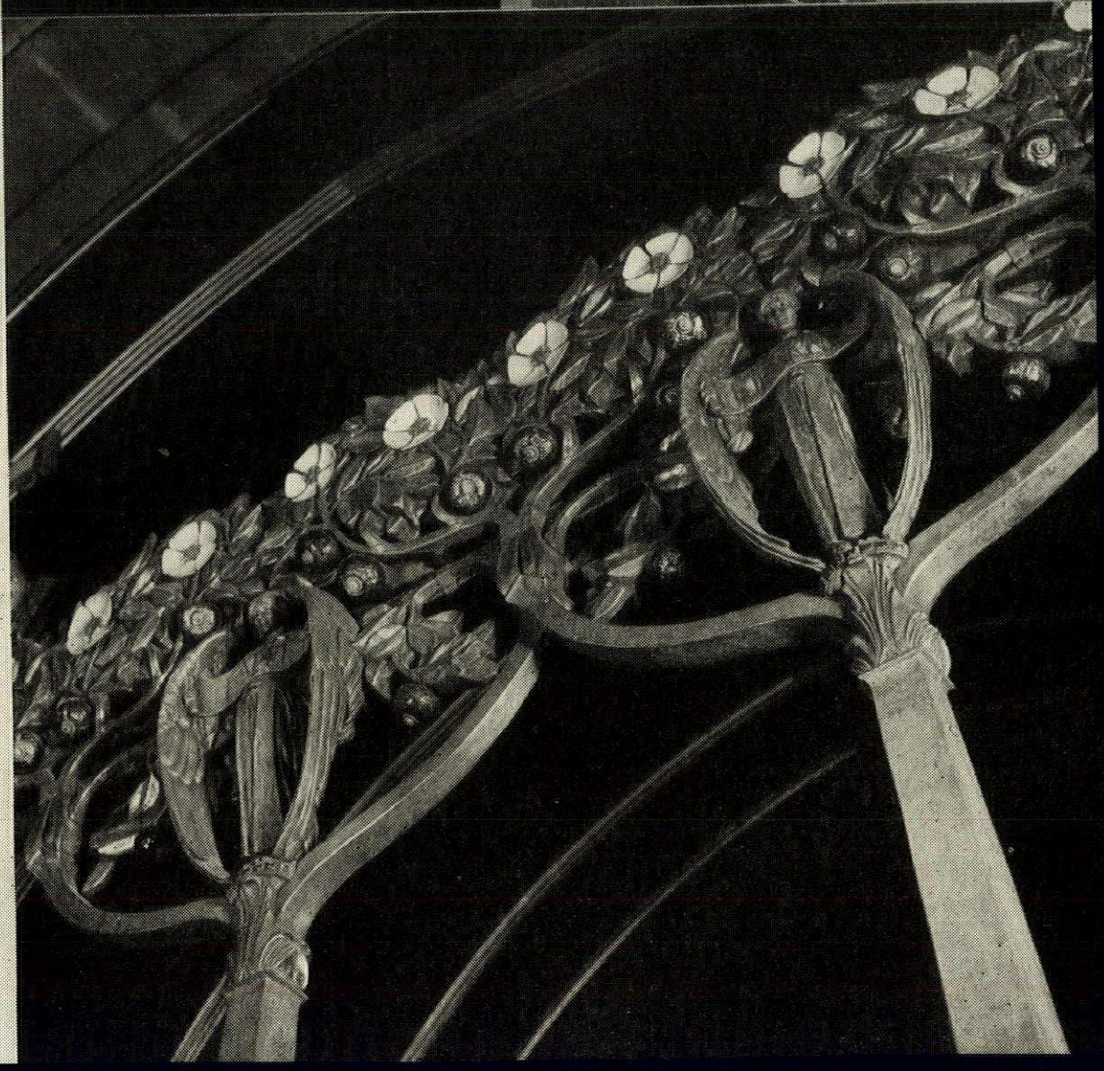
The obvious skill of German architects in this last technique, though it may create interiors that are initially startling to English eyes, probably derives much of its strength from the amount of theorizing and research that has gone on in Germany concerning the integration of architecture and abstract art. The skill in incorporating patches of different materials and different textures into a coherently designed wall for acoustic reasons has been prepared by manipulating wall-surfaces in a similar way for purely aesthetic reasons, and one often finds a family-likeness between the handling of acoustically corrected walls and, say, exterior mosaics, floor-patterns or free-standing sculptures.

Viewed as a whole, then, the achievement of these new German halls for music and opera is to have introduced a liberated approach to the design of the bulk form of the hall and to the grouping of the audience within it, to have built up a body of practice in the manipulation and correction of acoustical effects, and to have integrated these new developments into architecturally coherent compositions.



The church of St. Mary the Virgin, at Great Warley in Essex, is that rare thing, a complete Art Nouveau church, conceived all of a piece around a single theme, the Resurrection. The sketch, above, by John Malton (the author of the article on the church which begins opposite) shows that the exterior strays little beyond the local Essex vernacular, but the lectern, below, all the interior fittings and the screens, right, exhibit a fully-developed Art Nouveau style, and programme of symbolism.





JOHN MALTON

ART NOUVEAU IN ESSEX

During the first few years of this century two men, whose work was rarely conventional, were designing and executing a building of a kind normally thought to need extreme conservatism or at least conformity with precedent in design. These men were Mr. Charles Harrison Townsend and Mr. William Reynolds-Stephens. They were commissioned by Mr. Evelyn Heseltine to build a Church and Garden of Rest in the village parish of Great Warley, south of Brentwood in Essex. The building was to be a memorial to Mr. Heseltine's brother, Arnold Heseltine, who had died in 1897.

The ideas that it was wished to have embodied in every aspect of the building and its surroundings were somewhat unorthodox in their emphasis. The programme set the designers was a rigid one which controlled, but fortunately did not stifle, their originality. So that there should be no thought of dwelling morbidly on the facts of burial or thoughts of death, everything in the conception of Church and surroundings was subordinated to the purpose of symbolizing and illustrating one idea, the idea of the Resurrection. The building, when completed, was presented to the parish. When the Church was dedicated in 1904 an explanatory leaflet told the parishioners that:—

> 'The primary object of Mr. Reynolds-Stephens in his designs has been to lead the thoughts of the worshippers onward through his decorations to the glorified and risen Christ whose form in the centre of the reredos is to be the keystone of the whole scheme. He has made free use of floral forms throughout the decoration, emblematic of progressive growth in the earthly life, but still more of glorious hope which year by year is emphasized at Eastertide, the time of floral recrudescence.'

From a casual glance through the screen of trees that veil it from the road, the Church would appear to differ little from many another simple one in Essex. The two-celled building with wooden belfry and shingled broach spire is native to the more thickly wooded parts of the county. It is most probable that such a traditional external appearance was insisted on, so that there should be no risk of introducing a disturbing element into the landscape. Harrison Townsend, without doubt, could have made here a revolutionary contribution to Church design. He was, after all, building at that time his unconventional Horniman Museum at Lewisham. The small church he had built in 1893 at Blackheath near Wonersh in Surrey was a building more nearly of the character that was required of him at Warley.

On entering the churchyard at Warley it is apparent that here is no rustic church, simple because of poverty. The building has simplicity it is true, but the effect is of sophistication. In the main, it is the manner in which the surroundings of the church have been contrived that accounts for this. This is a subtle preparation for a church interior which might lose some of its impact if entered from a more conventional churchyard.

In this Garden of Rest there are areas of smooth mown grass and gravel paths and long white benches, Cypresses and pleached lime trees. All is carefully tended. It is more like the garden of a Country house than a churchyard. There is a near-symmetrical formal layout of paths. The semi-circular one in relation to the apse is lined with regularly spaced rose trees which at once recall those in Charles Rennie Mackintosh's drawing for his house for W. W. Blackie at Helensburgh.

To the west of the church and at a slightly lower level beyond, are graves with low curbs. Headstones are not allowed, being thought too obtrusive reminders of the dead. Though the view from the Lych Gate is right through the churchyard to the half circle of Lombardy Poplars on the west and the lush country beyond, not a grave obtrudes.

The walls of the Church are rough-cast rendered, but for the stone dressings to the door and window openings and the stone plinth mould. The cast-iron rainwater heads are shaped and ornamented with stylized foliage in such a way as to combine with their downpipes to resemble tall stemmed growths. The window openings are mostly plain lancets with simply moulded reveals. There is heart shaped tracery in the window of the side Chapel and in the rose window at the West End. A rose window such as this is an unlikely thing in a small country church and its presence here again hints at the sophistication of the scheme. The row of small windows below it is an arrangement typical of Townsend's work.

Pevsner calls the exterior 'modestly pretty à la Voysey.' On the other hand, Townsend's work at Whitechapel, Bishopsgate and Lewisham has been adjudged to owe something to Richardson and Sullivan. May not the model here be 'Richardson Suburban.' The treatment of the stone base walls to porch and lych gate, the form of the exaggerated bellcast of the eaves and the use of shingle siding are all elements common to Townsend and to that style and not to that of Voysey. The timber belfry, to be truly in the Essex tradition, would undoubtedly be faced with regular weatherboarding painted white. The one here, however, is faced with shingles and has three louvred openings to each face, not the usual one. On the top of the spire is a figure of the Dove of Peace with olive branch in its beak. The figure is made of wood covered with copper sheet and is about 2 ft. 6 in. long.

The church is entered through a door which, on turning the ring handle, divides surprisingly at three quarters of the way across its width.

Some of the internal furnishings of this building are described in 'The Studio' for February, 1905, where it is written:—

> 'Although the impression made by the interior of the church is at first glance one of quiet and restful elegance, although there is nothing which immediately asserts itself, and insists upon attention, the more the details are analyzed, the more satisfying is the revelation of his (Mr. William Reynolds-Stephens's) inexhaustible variety and of his cleverness in contriving fresh ways of expressing his ideas. Indeed it would be difficult to find an example of modern decoration which will better repay examination part by part and detail by detail so as to see by what thoughtful combination the whole harmonious effect has been built up.'

On entering the first view of the interior is the sight of the font, framed by the door opening. Its silhouette is somewhat eerie in effect and startles when seen unexpectedly. It does not do this because of any misshapenness of form, for on closer inspection it is found to be a pleasant example of the pedestal statuary that Reynolds-Stephens was doing at that time. It has, however, that strangeness which is inherent in the hint of Arthurian mysticism which is the essence of the whole character of the interior and which is a link between the works of the Pre-Raphaelites and of the Aesthetic Movement.

Mr. Reynolds-Stephens designed and executed nearly all the interior fittings, but Mr. Harrison Townsend, who was responsible for the structure, also designed most of the internal joinery. The pews, choir stalls and wall panelling to the nave are his work. All this joinery is in walnut and the wall panelling has, in addition, some inlaid patterning in marquetry. The shape of the flowing hood-moulds that span three panel bays at a time is similar to that of those over the tower windows of the Horniman Museum. The outstanding feature of the interior, however, is the bold and effective way in which a diversity of materials have been handled, the juxtaposition of various metals and alloys being particularly successful. In the screen which divides the nave from the chancel this delight in materials is displayed. Brass trees grasp with root-like claws low walls of dark green Irish marble from which they rise on their shaped stems of cast brass to carry across the chancel in their tightly interlaced foliage, red glass pomegranates, flowers in mother-of-pearl, figures of angels in oxidized silver and a cross. On the left-hand side of the screen is the pulpit, whose front is of oxidized copper sheet in the shape of a cross set into a backing of dark grey fossil marble and ornamented with blue pearl. The cross shape is flanked by trees in green bronze with brass flowers. On the right hand side of the screen is a lectern of shaped copper sheet with pearl ornamentation. On its top it has short flowering stems supporting a brass book-rest.

The side chapel screen, which separates it from the nave, ingeniously achieves in walnut the same effect of lightness as does the other in metal. From a low panelled screen of pew height rise hardwood shafts which are kept slim by being paired for strength. They rise one on either side of the low screen from its base. These pairs alternate with single shafts which rise from claw-like junctions with the head rail of the low screen. The shafts all carry stylized poppy leaf foliage in openwork carved walnut. This foliage carries a moulded cornice rail which resembles in its sections that of a poppyhead. Pewter plaques in the form of conventionalized poppy flowers are applied to the rail in pairs above the heads of the paired shafts.

The roof to the nave and chancel is a simple boarded wagon vault. In the nave the vault is divided into bays by broad ribs decorated with the forms of conventionalized rose trees and all covered in aluminium leaf. Between the springing of these ribs and the wall panelling below are panels each filled by three lilies rising from their bulbs, again all in aluminium. In the chancel, the vault is divided into strips by narrow aluminium ribs. The whole of the half dome of the apse above the dado line is faced with aluminium sheet on which is formed, by repoussé work, a stylized grape vine (similar to the one embossed by William Morris on the cover of his Kelmscott Chaucer). All is in self-coloured metal except the bunches of grapes which are red.

Below the dado line, the whole of the apse wall is faced in light green Swiss Cippolino marble. The floor of the sanctuary is dark grey marble.

The altar rail is of oxidized copper and is carried alternately by slabs of dark green marble and by brass wreaths in the form of crowns of thorns each flowering with three large single roses.

The Reredos was designed to contain the central motif, the figure of the risen Christ which is of copper faced with oxidized silver. The figure stands on a serpent of black oxidized copper with mother-of-pearl enrichments and red beady eye. Altar frontals were worked by the sisters Clewer. It is unfortunate that the Reredos has some resemblance to a dressing table; which brings out again the difficulties of translating elements developed in domestic work to other spheres.

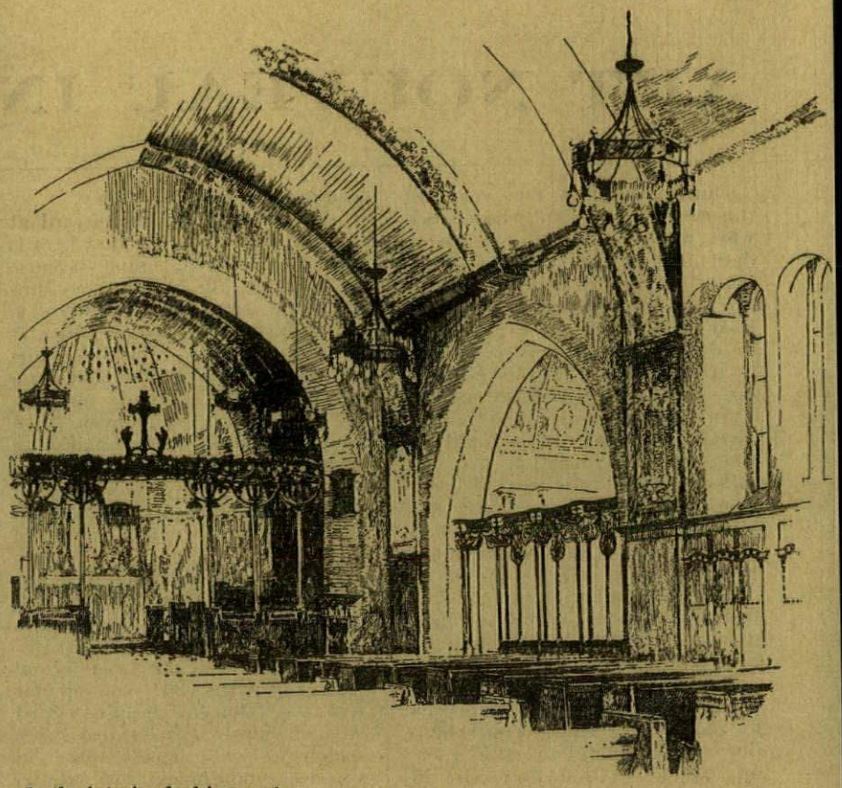
The system of ornamentation developed by the followers of Art Nouveau involved great use of natural forms out of which they tried to evolve a new language of ornament and decoration. For a scheme such as this at Warley, this symbolism of living growth was undoubtedly appropriate provided that it could be adapted to ecclesiastical requirements. In carrying out this scheme the team of designers seized the chance of demonstrating the potentialities of their idiom. In hoping to show that here was a new style capable of universal application in the new century they were due to be disappointed; for by 1906, when all was complete here, Art Nouveau was a spent force. It had been truly an international style in that Europe of open frontiers, but by 1910 we in England had returned to insularity. Its unorthodoxy had made it expensive in time and labour, both in invention and in execution. Its medium was the skilled handcraft worker (often amateur and sometimes female) to whom leisurely conditions alone were amenable. The thought of machine made approximations to their work was abhorrent to them. It was no lazy man's style, and no plagiarism, however selective, from the best measured drawings was enough to carry it on.

Trouble was had early on when it was felt that the light coming from the windows on the south side of the choir upset the balance of the scheme by reducing the dominance of the bright silver figure. To rectify this it was thought fit to block these windows. The original windows were removed and are now in the north wall of the chapel at Brentwood School. They were replaced by plain leaded lights and the window area was covered inside with a painted panel. The result is not altogether satisfactory when compared with early photographs taken before the blockage. It is not as easy now to appreciate the detailing of the chancel screen and choir stalls. The obstruction of light has, however, preserved for us the original hangings to left and right of the organ console. The design of each is a single tall stemmed growth rising from a heart. One stem is crowned with holly leaves and berries and the other with rose leaves and flowers. All is in pink, pale green and buff embroidery on a deep blue ground. The holly berries are large red beads and little white beads form the flower sepals. The treatment of the organ is, I think, one of the less successful effects in the church. There does not seem to be a unifying idea here. The organ pipes are displayed. To have hidden them behind a grille would have been too easy a solution perhaps. (Maybe there was conflict with the organ builders.) Anyway, the pipes are, as it were, held back by steel bands which have heart-shaped accents of colour in red glass applied to them. There is also one small angel, like a gilt moth, over the console. The former bright steel bands have tarnished; a rare lapse in this scheme in which such care was taken to choose materials that would last or even improve with age.

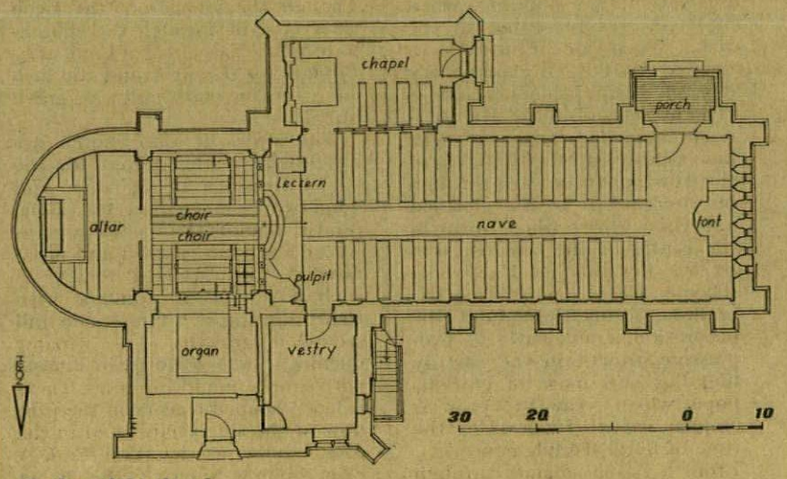
There are few painted surfaces inside or out. The surrounds to the lily pilasters are stained (green, of course), and the ceiling panels of the side chapel are painted, and that's about all. The early photographs show the ceiling panels unpainted, but I hardly think they were long in that condition. At that time the wall panelling between pilasters was not yet in place. For the time being there were hangings at the nave walls—all rather like a Baillie-Scott interior. The hangings were in blue and buff. The panels which replaced them have as their crowning mould that persistent motif which is found in all sorts of Edwardian Architecture from the Neo-Wren to the Art Nouveau. With their inlay and marquetry work, too, the panels are like the back of the chair designed by Ambrose Heal for Joan Drummond Angus which was exhibited in 1952 at the V and A in the Exhibition of Victorian and Edwardian Decorative Arts. The Bishop's chair and one of the brass Candelabra from Warley also went to that Exhibition and were in the section dealing with Edwardian Ecclesiastical Design. These Candelabra are similar in shape to the single shafts of the chapel screen, but with modelling of the feet like those of the chancel screen. Harrison Townsend's joinery is everywhere excellent, precise yet robust. The pew ends are most uncommon with billowing outline and pleasingly quirkish mouldings. The choir stalls are more angular in outline with ornament used in that taut and purposeful way so typical of his work. The brittle leaf ornamentation is markedly similar to that at the Whitechapel Art Gallery.

A principle of design throughout at Warley seems to have been to keep to the customary elements of church architecture, but to detail them in such a way as to engender surprise only after closer examination. This was a common feature of Art Nouveau work which so often appears eerie and also has a queer hint of cruelty (all quite unintentionally I should imagine). Can it be due often to the use of plant shapes assembled in an unnatural or symmetrical manner. Take, for instance, the side chapel screen, perhaps the most completely Art Nouveau item here, it has some of this quality, finely wrought, conventionalizing of the forms of the oriental poppy though we know it to be. Once the curious assemblies within the outlines of such work have been revealed, the appearance of the whole to the observer becomes transformed and what has earlier seemed no more than tracery is now seen as an assembly of grimacing faces or menacing forms in the way that overpatterned wallpapers may appear so to a fevered child. This sportive detailing within basically conventional outlines is also evidenced though not in as extreme a manner in the handling of belfry, west end, porch and lych gate.

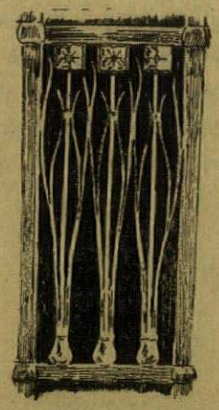
Then again, Reynolds-Stephens' pedestal statues of children, his 'Castles in the Air,' for instance, are delicate and finely wrought, if sentimental, pieces. His angels here are all that, but have a more haunted Arthurian quality. They, too, are dressed as for Rossetti's Florence. It is in their silhouettes not their detail that strangeness is apparent. The quotation from James Stetham's description of the painting 'The Wedding of



1, *the interior looking east.*



2, *plan of the church.*



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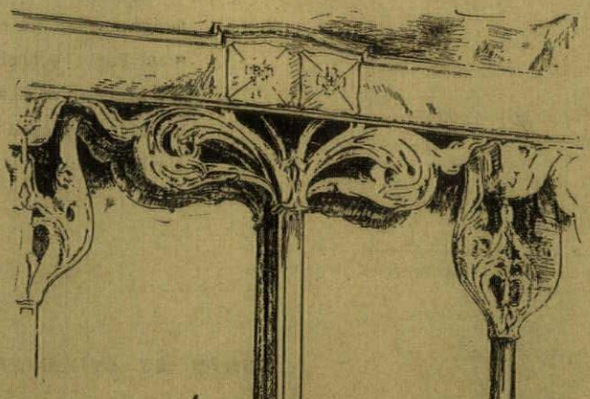

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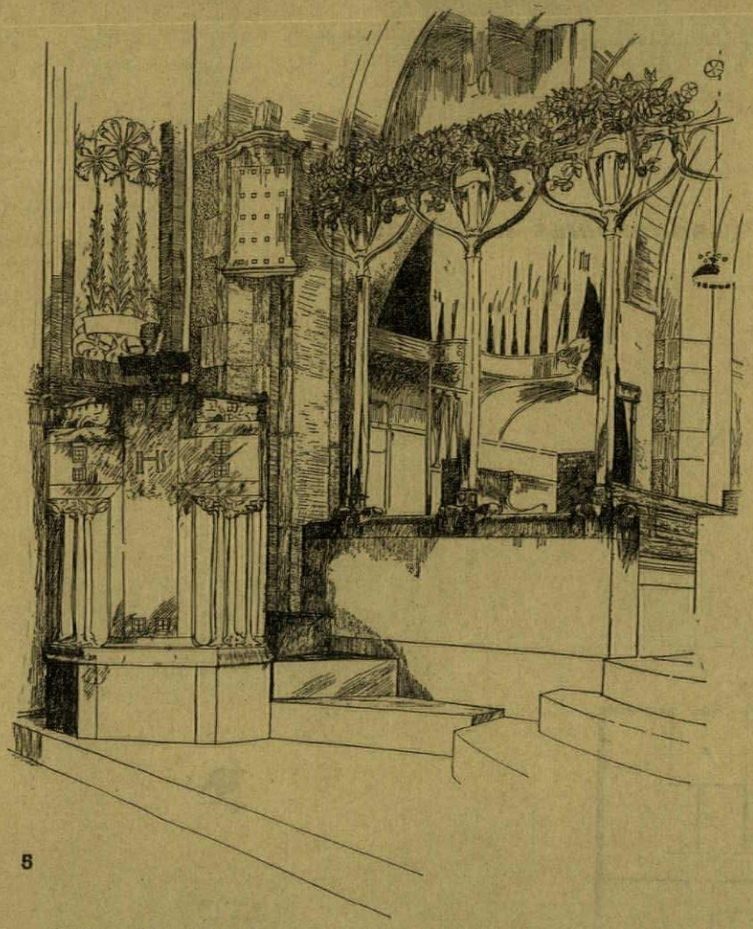
3, *detail of the organ.*
4, *detail of screen to side chapel.*



5

6

5, *chancel screen and pulpit.*
6, *embroidery on the hangings on either side of the organ console.*

St. George' quoted by Ford Maddox Hueffer in his book on Dante Gabriel Rossetti evokes an atmosphere that is present here in some measure.

> 'One of the grandest things, like a golden dim dream, love credulous all gold; gold armour; a sense of secret enclosure in "palace chambers far apart"; but quaint chambers in quaint palaces, where angels creep in through sliding panel doors and stand behind rows of flowers, drumming on golden bells with wings crimson and green.'

There is a whole choir of little angels in this church, each with six wings as in Isaiah's dream. They appear on the memorial tablet to Arnold Heseltine, on the alms box, on the hymn boards and round the dado of the apse. The belfry has a tinkling carillon. When it plays all becomes so other-worldly that the church can easily be imagined to have walls of brown bread and pineapple chunks and a gingerbread steeple.

The design of the original windows was subordinated to the theme of the whole scheme of decoration. With them, the jewel in setting principle was used, by having only incidents of colour in surrounds of plain glass. The apse windows (which have survived; and are White friars glass made by Hogan) are themselves jewels in the setting of the whole aluminium apse. The original glass in the chapel window represented 'The tree of Life' and repeated the root, tall stem, band of foliage with flowers, motif. It was all lightly handled. The replacement, full of red-robed angel figures (the designers of the replacement windows have taken up the angel theme and worked it to death) is overpowering in this setting of subtle colourings. There are robed figures, two kneeling, one erect, in the three lancet windows now in Brentwood School Chapel. They, too, are red, against a background of green foliage and blue sky with white stars; but figures and their coloured backings have been kept to small panels in the centre of each light. The rest is mostly plain glass. These windows were designed by Heywood Sumner (who had worked with Townsend at All Saints', Ennismore Gardens). Heywood Sumner also designed the apse windows, the original windows in nave and chapel and the rose window in the west gable. (None of these survive.) The original glass in the seven small windows behind the font were by Louis Davis.

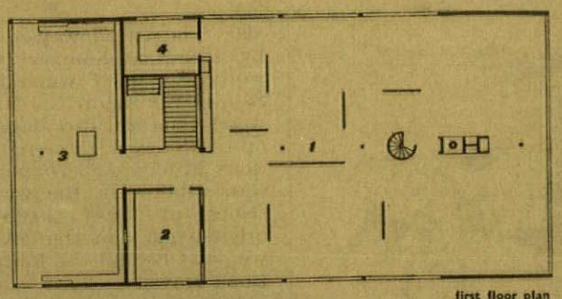
In the account of the work at Warley in 'The Studio,' which I quoted before, is written:—

> 'By juxtaposing surfaces of stone, wood and metal by relieving salient features in the architectural design with overlaying of metal and with subtle touches of colour, and by contrasting different coloured marbles one with the other, and with details in brass, steel or copper, a charming shimmer of delicate tints has been produced in which nothing is out of line or right relation and in which the necessary accents tell to their full value. Moreover, by this use of natural materials the permanence of the whole scheme is assured. There is no fear that time or wear and tear will upset a carefully devised arrangement by establishing unexpected colour relations or by dulling into invisibility what were intended to be the keynotes of the harmony.'

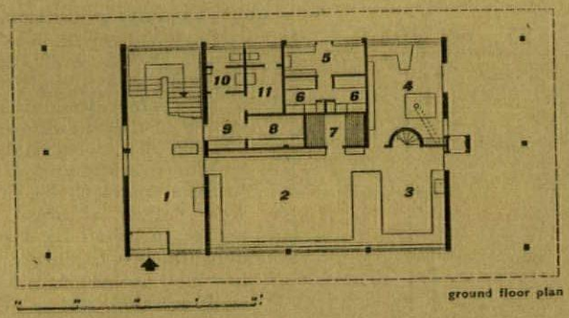
If it had not been for the wartime loss of the glass, we would still have that carefully devised arrangement. The presence of 'temporary' clear glass in some of the windows harms that arrangement little. With such a completely conceived scheme, it becomes essential that all should remain as its authors intended. Just as in its programme as a memorial it was required to emphasize life and resurrection (a mental embalming in fact), so the building, to preserve its impact, has also to be embalmed. The 'culture' in which the building is raised has to be preserved or the illusion will be shattered. Despite all the emphasis on growth and life as a theme in this building, such a complete and single-minded scheme is almost incapable of absorbing any changes. So completely of its time and so meticulously conceived as it is to express one idea, any additions of routine church art are bound to lessen its effectiveness as a work of art to an extent out of all proportion to the amount of the addition.

All this, and the fact of the inevitably limited life that a building has, makes a piece of architecture one of the more fragile forms of art. It cannot be decoded and performed by future generations as can music or poetry. A painting, being two dimensional, can be recorded by two dimensional means and in this way posterity can receive much of the original impact. With a building, not so. Like a human being, though it be carefully reared or have its maturity prolonged, it will still die.

With one or two notable exceptions, the revolution and revival of British school design has left the main repositories of the English educational tradition—the great Public Schools—completely untouched. In the last few years, however, the pressure of new or newly-important subjects, and of changed teaching methods, has begun to evoke a response, exemplified by these recently-completed blocks for science and art at two of the more progressive public schools.

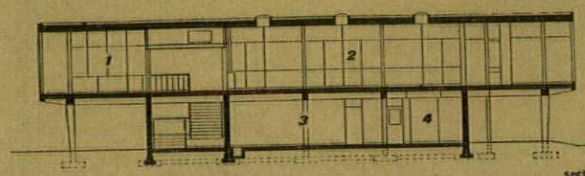


first floor plan



ground floor plan

STUDIO AT CHARTERHOUSE



section

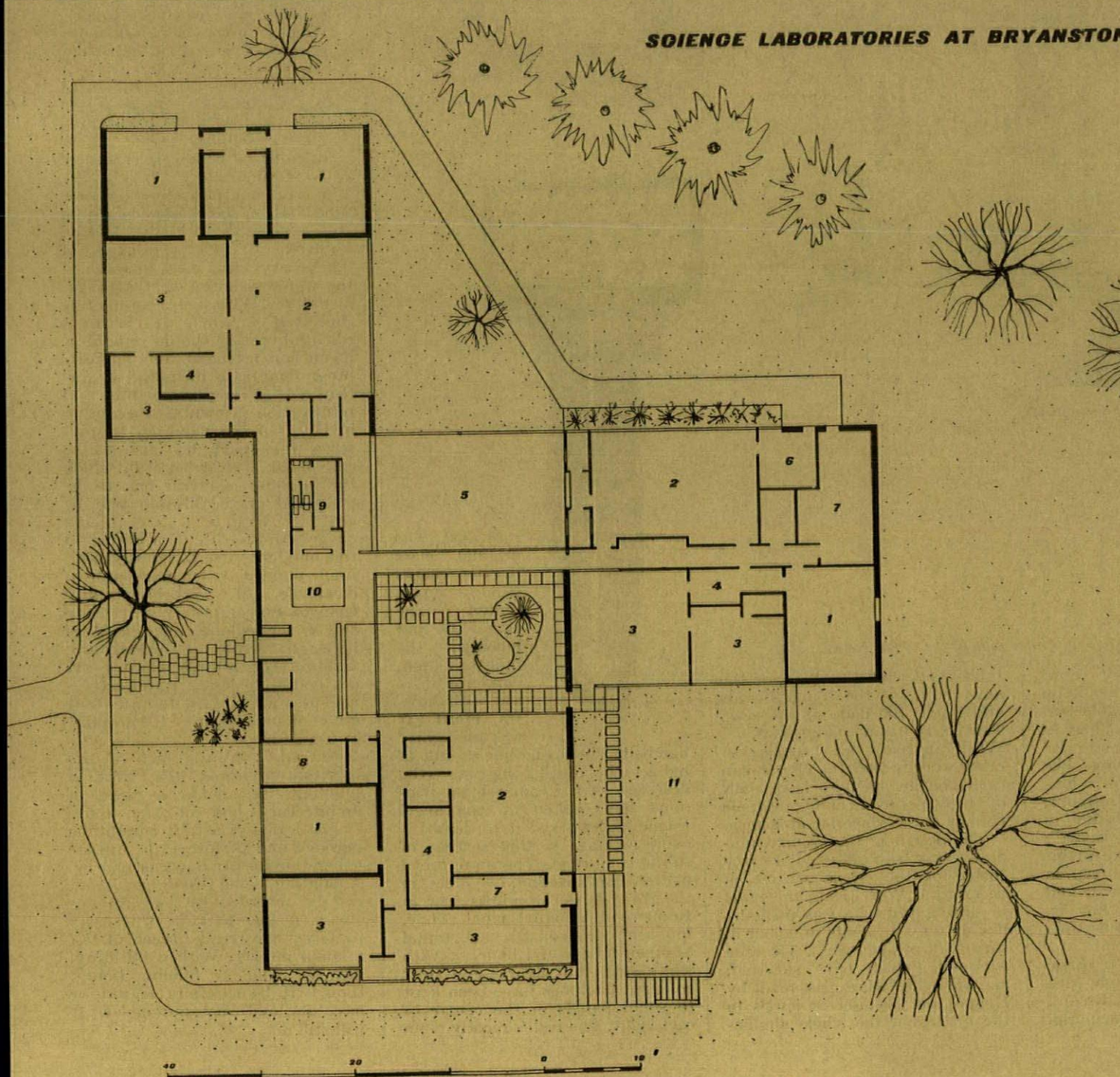
key

Ground floor.
1, entrance hall.
2, pottery room.
3, glazing bay.
4, kiln room.
5, photo room.
6, darkroom.
7, clay store.
8, store room.
9, lobby.
10, men's lavatory.
11, women's lavatory.

First floor.
1, studio.
2, art master.
3, library-lecture room.
4, assistant.

Section
1, library.
2, studio.
3, pottery room.
4, glazing bay.

SCIENCE LABORATORIES AT BRYANSTON



key

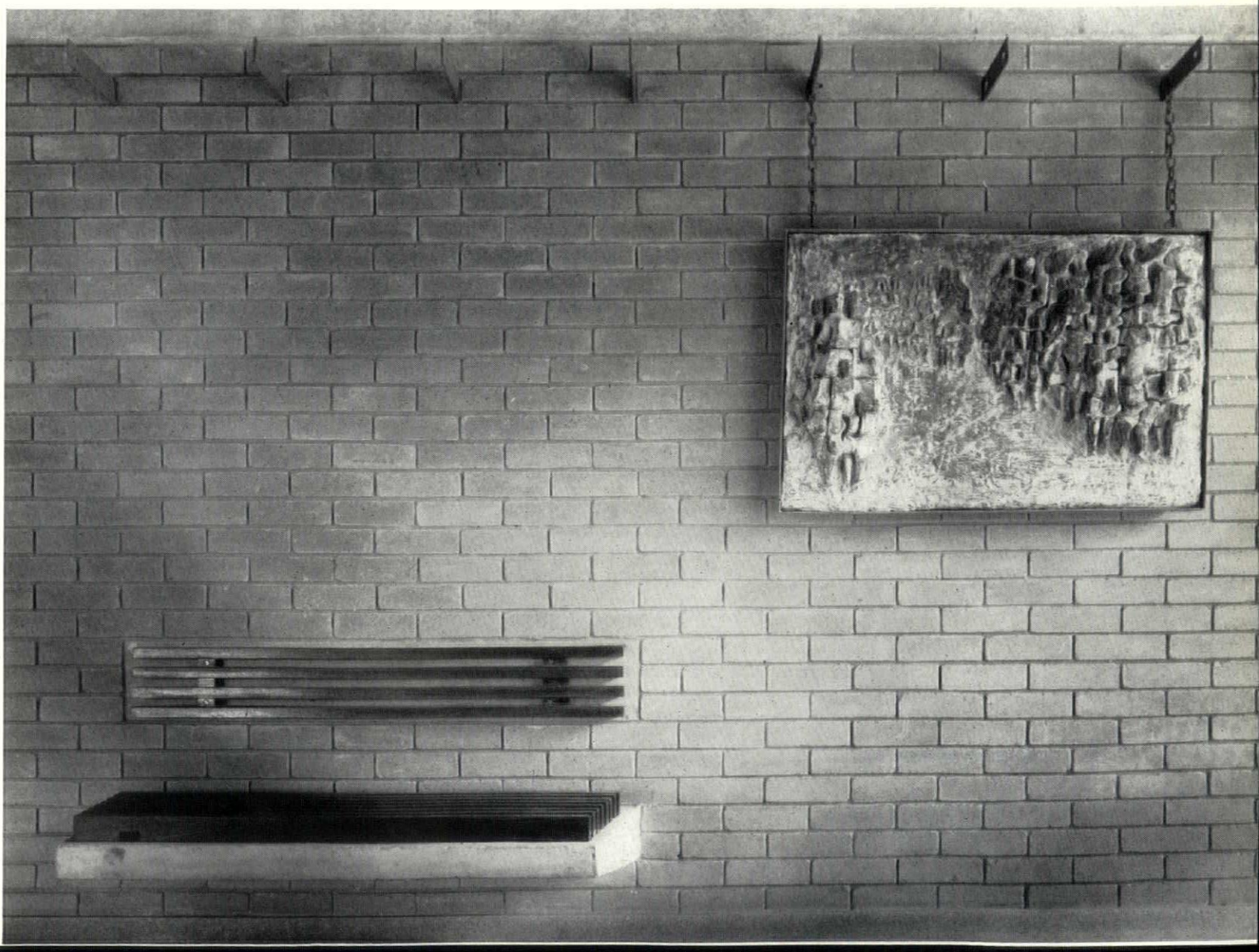
1, lecture room.
2, elementary laboratory.
3, advanced laboratory.
4, preparation room.
5, subject room.
6, classroom.
7, store.
8, staff room.
9, cloaks.
10, display.
11, experimental garden.

1

1, the entrance hall with window of art-master's room above and studio window to right. The first floor slab is faced with Welsh blue slate, the roof fascia of ribbed asbestos cement, the cladding of utile mahogany.
2, the display wall in the entrance hall ; fairface Uxbridge flint bricks with raked joints, mahogany slatted seat on cantilevered R/C slab, wrought iron stays to support pictures and other exhibits—in this case a relief by John Wragg.

STUDIO AT CHARTERHOUSE SCHOOL SURREY

ARCHITECT | **JAMES DARTFORD**



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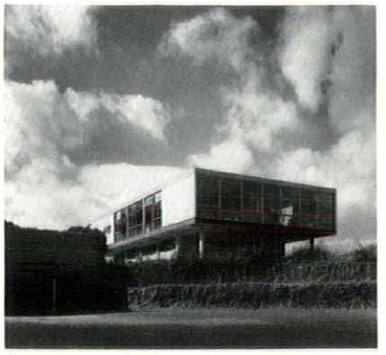

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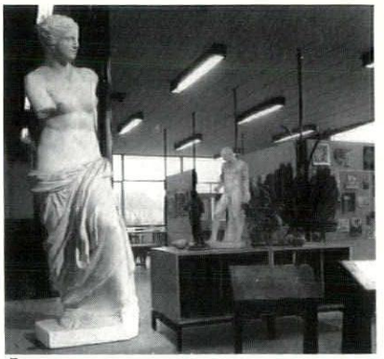
3 and 4, two views of the southern face of the block, showing the cantilever of the upper floor which, at the east end, 4, almost overhangs the playing field on the lower level.
5, interior of the main studio on the upper floor; the vertical poles on a 6 ft. 6 in. grid carry demountable screens for display purposes. One of the purpose-designed storage units for canvasses, boards, etc., can also be seen.



5

In order to free accommodation elsewhere in the school for the extension of the science laboratories, the clients required a new block to house art, photography and pottery, workmanlike in atmosphere and in acknowledged contrast to the existing dark masses of Victorian buildings. The lower floor houses the photographic dark-rooms, pottery rooms, lavatories and store, while the upper floor, which cantilevers out all round, contains a large studio, library/lecture room, and rooms for the art-master and his assistant.

The structure consists of a reinforced concrete frame, with brick infill on the lower floor, carrying the first-floor slab, on which is mounted a steel frame for the upper floor and roof; electric heating cables are embedded in both floors. The same hardwood (utile mahogany) is used for exterior cladding on the upper floor, for window and door trim and interior joinery. There are no plastered surfaces, internal brick and concrete walls being fair-faced, ceilings of natural and painted concrete or suspended fibre-board panels: junctions between surfaces are "negative detailed," i.e. with uncapped recesses.

The landscaping, which is not yet completed, will include a paved forecourt to the south of the art block, with low walls of local stone, and is intended to tie the new work into the existing surroundings.

1, general view of the main entrance side from the south-east, with the physics wing and connecting corridor to the left.
2, the central corridor, with Subject Room beyond, seen from one of the causeways crossing the biology pool in the central courtyard. The pool functions as a teaching area, housing various reptiles and amphibia.

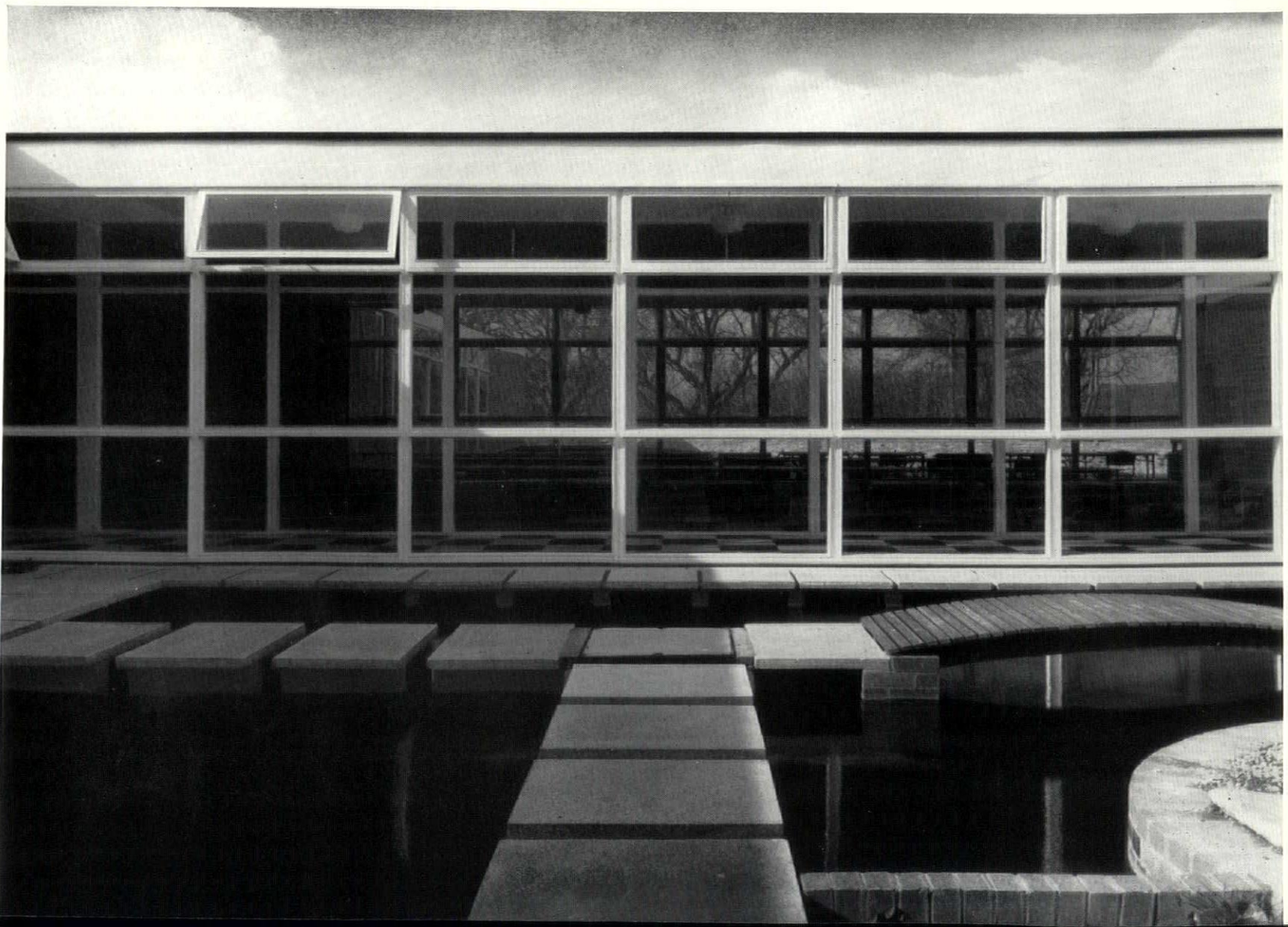
SCIENCE LABORATORIES AT BRYANSTON SCHOOL, DORSET

ARCHITECTS | **ARCHITECTS CO-PARTNERSHIP**

1

Bryanston School's science-teaching facilities were housed in unsuitable buildings originally designed as stables, and the function of the new block is to re-house the entire subject in more efficient and congenial surroundings. The three sciences taught are Physics, Chemistry and Biology, each housed in roughly similar wings of the structure, and having its own lecture-room, elementary and advanced laboratories, with ancillary classrooms, stores, preparation rooms, workshops, etc., as required. Each wing is of one storey, and the three come together at a central nucleus consisting of a main "Subject Room," used for consultations between staff and pupils (following the Dalton system which is employed at Bryanston) and an enclosed court containing a pool which is used by the Biology section (as is an experimental garden on the other side of the Biology Wing).

The structure is of load-bearing brick, but the wooden mullions of the large areas of window also help to carry the weight of the roof, which is of ply-wood trough beams. The external bricks are hand-made Leicestershire multi-golden browns; all external woodwork is painted white and the aluminium eaves angle is black. Internally the walls are fair-face brick or plastered, with p.v.c. tiles in circulation areas, p.v.c. sheet in laboratories and quarry tiles in preparation rooms and stores. The Subject Room, which is fully glazed on both sides, has sapele block floors.



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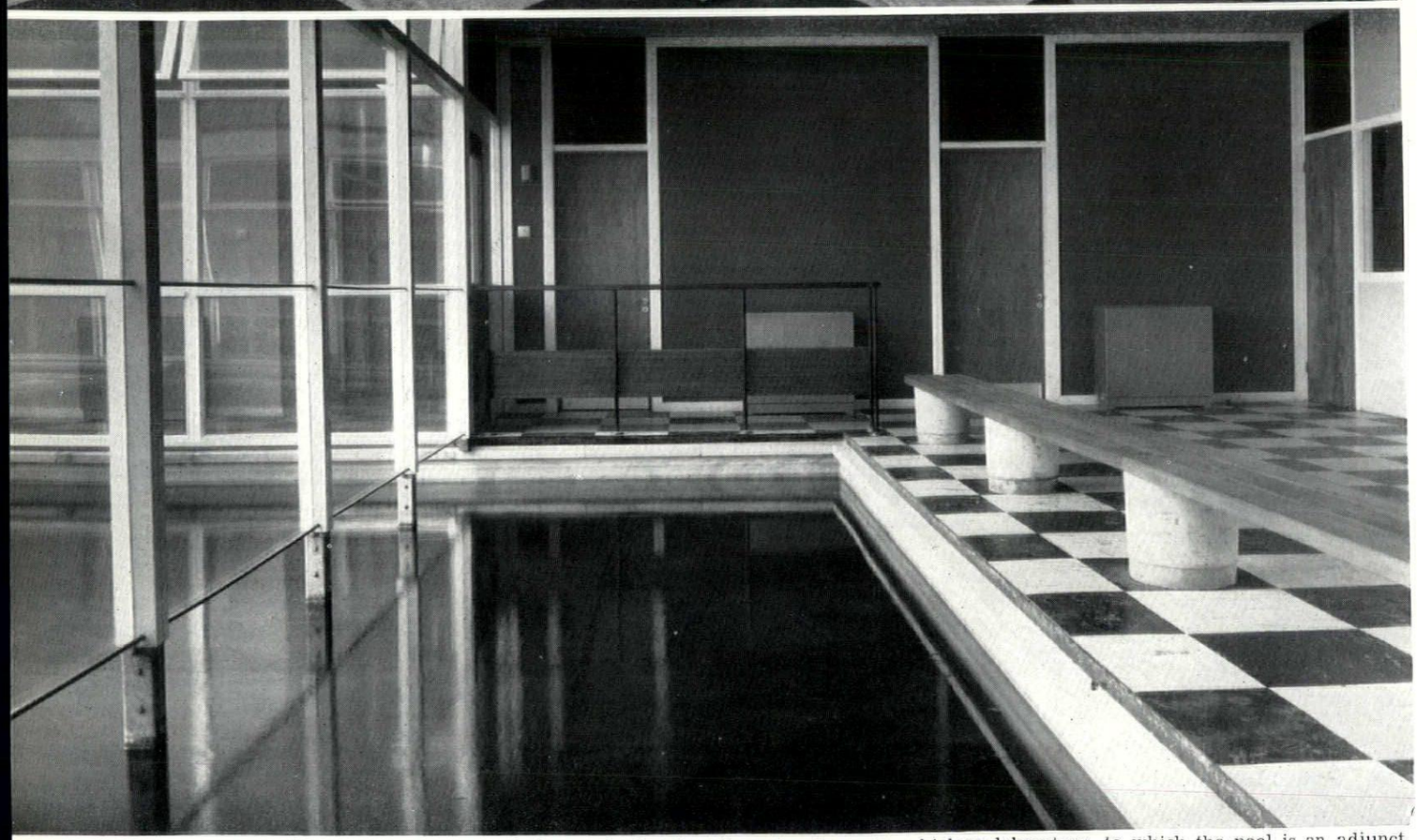

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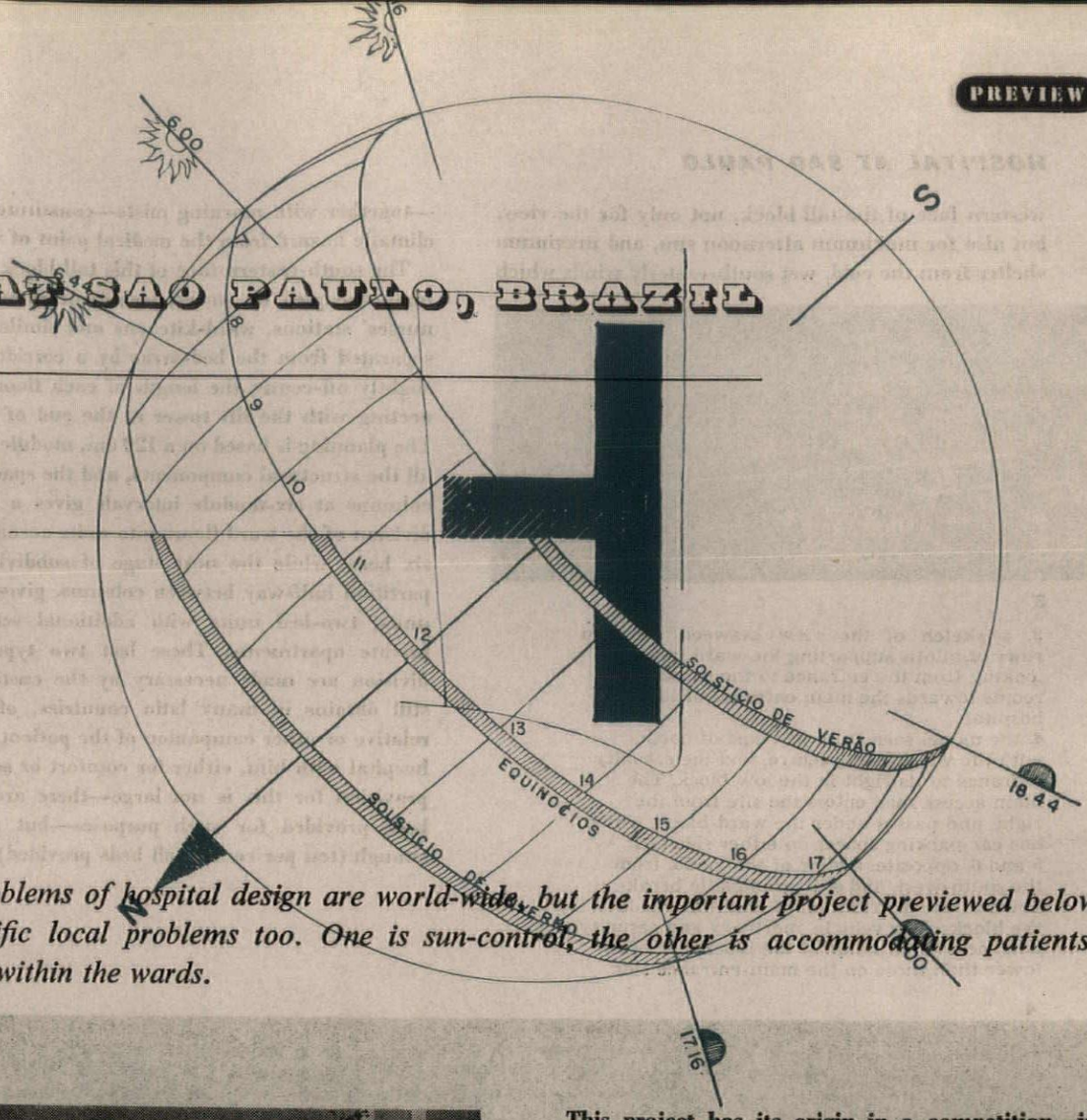
3 and 4, two views of the pool, showing its extension under the glass wall into the central hall. The corridor on the far side of the water leads directly to the elementary biology laboratory, to which the pool is an adjunct. The tree in 3 is a fine beech which it was decided to retain, thus necessitating a slight re-orientation of the building.

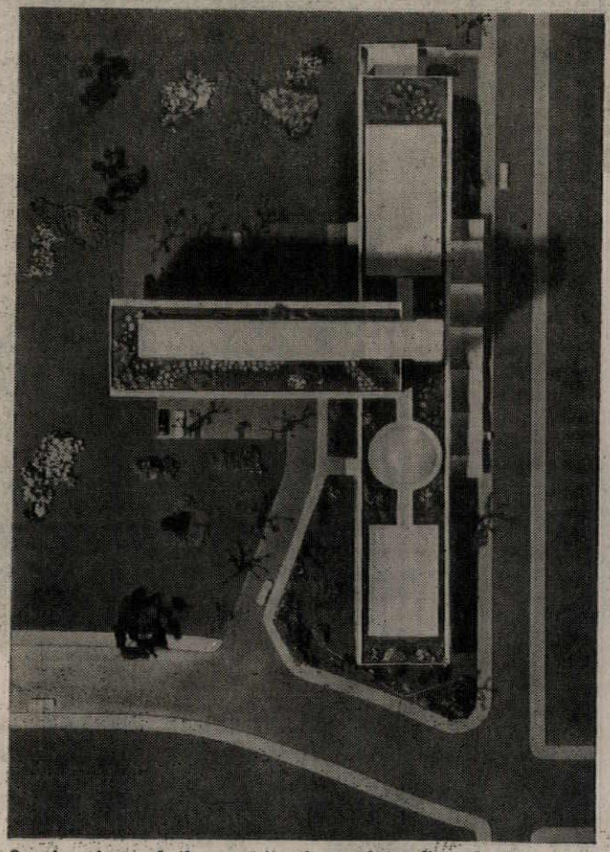
HOSPITAL AT SAO PAULO, BRAZIL

ARCHITECT | **RINO LEVI**



1. insolation diagram, giving the hours (shown cross-hatched on the time-bands) when the sun shines on the north-western face of the ward block, the side on which patients' beds are situated.

Some problems of hospital design are world-wide, but the important project previewed below has specific local problems too. One is sun-control, the other is accommodating patients' relatives within the wards.



2, air view of the architect's model: the shorter arm of the T-plan is the 13-storey block containing the wards.

This project has its origin in a competition—in which it gained first prize—organized on behalf of the Albert Einstein Benevolent Society, which was set up by the Jewish community in Sao Paulo in order to create a suitable memorial to the great physicist. It is intended to accommodate 326 in-patients irrespective of race, creed or means, and to provide out-patient and teaching facilities on a comparable scale. Particular attention was given throughout the design-process to the creation of an atmosphere propitious to the psychology of recovery. To this end, nearly three-quarters of the total site area has been left clear for gardens and planting, while within the building itself everything possible has been done to avoid creating environments that are oppressive, severe or dark. The interiors have been made as light, transparent and agreeably colourful as possible, while the wards have been designed and oriented so as to give maximum value to the fine panoramic views commanded by the site.

These fundamental intentions have affected the basic organization of the whole building complex. The ward block stands thirteen storeys high, and all the bed-areas (except those for maternity cases) are high enough to be able to see the view over the roof of the three-storey block, at right angles to the wards, which houses out-patient services, etc. In addition, the bed areas have been placed on the north-

HOSPITAL AT SAO PAULO

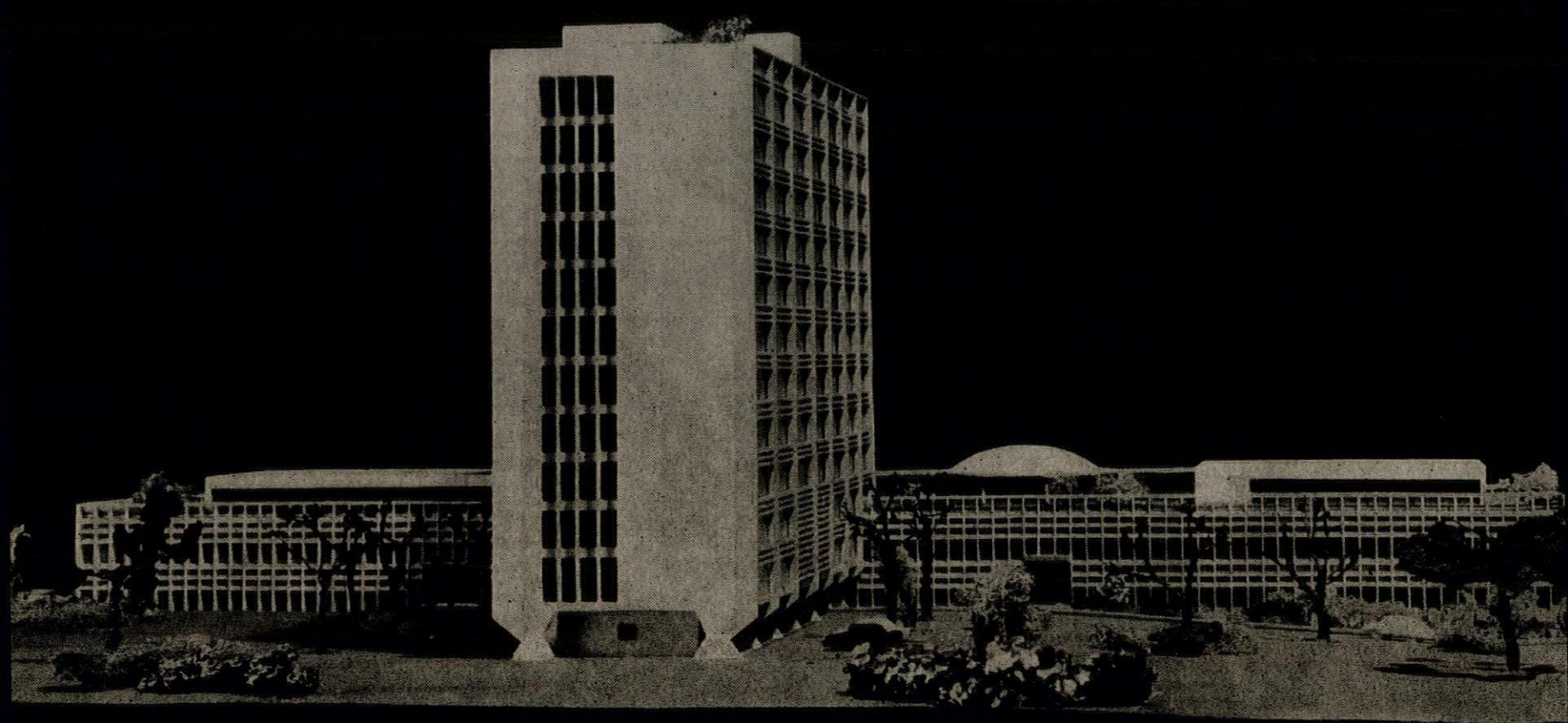
western face of the tall block, not only for the view, but also for maximum afternoon sun, and maximum shelter from the cold, wet south-easterly winds which —together with morning mists—constitute the main climatic hazard from the medical point of view.

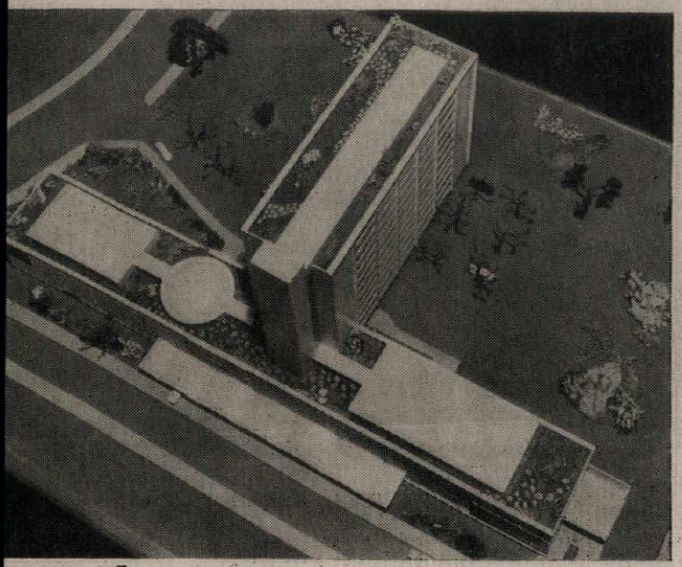
The south-eastern face of this tall block is accordingly occupied by stores, treatment rooms, sluices, nurses' stations, ward-kitchens and similar services, separated from the bed-areas by a corridor running slightly off-centre the length of each floor and connecting with the lift tower at the end of the block. The planning is based on a 120 cm. module governing all the structural components, and the spacing of the columns at six-module intervals gives a basic subdivision of the ward floors into units accommodating six beds, while the next stage of subdivision, by a partition half-way between columns, gives three-bed units, two-bed units with additional services and private apartments. These last two types of subdivision are made necessary by the custom, which still obtains in many latin countries, of having a relative or other companion of the patient live in the hospital with him, either for comfort or service. The provision for this is not large—there are thirty-six beds provided for such purposes—but it is large enough (ten per cent of all beds provided) to require

3

3, a sketch of the view between the two rows of pilotis supporting the ward block, looking from the entrance to the consulting-rooms towards the main entrance of the hospital.
4, the model seen from just east of north, with the ward-block, centre, and the casualty entrance to its right in the low block. The main access road enters the site from the right, and passes under the ward-block, which has car-parking spaces on either side of it.
5 and 6, opposite, a view of the model from the south-west, and a diagrammatic breakdown of the distribution of facilities inside the blocks. The vehicle, mortuary and casualty entrances on this side of the block are a floor lower than those on the main-entrance side.

4





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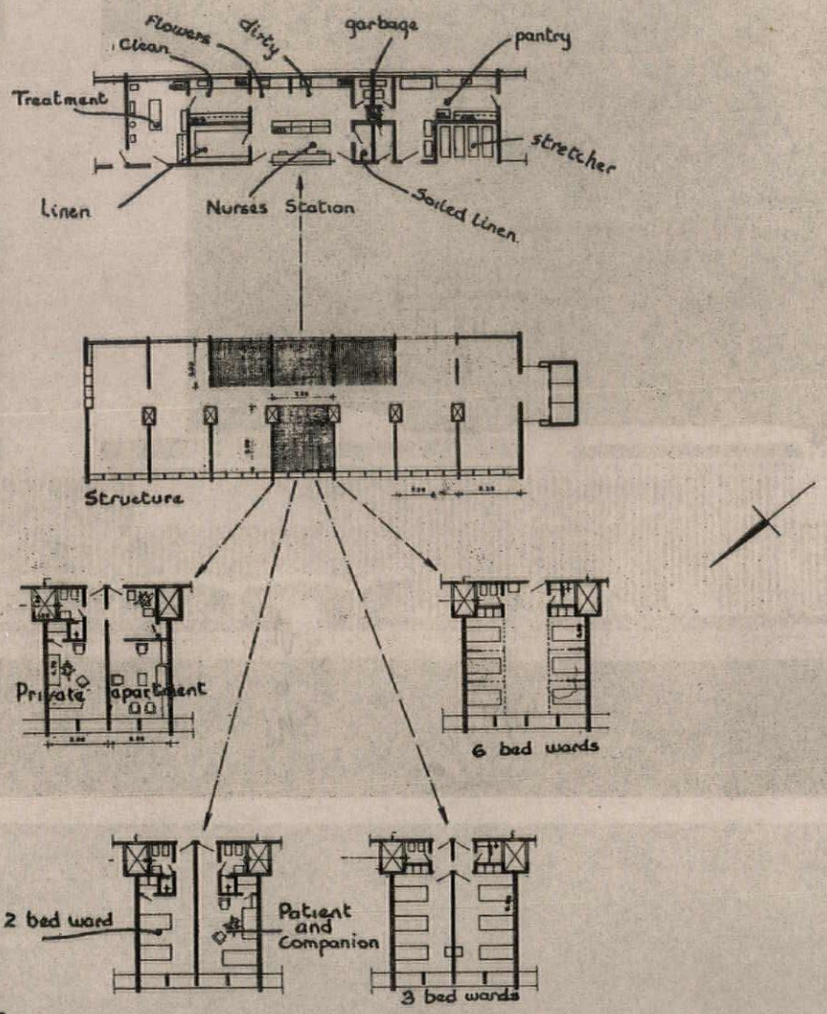
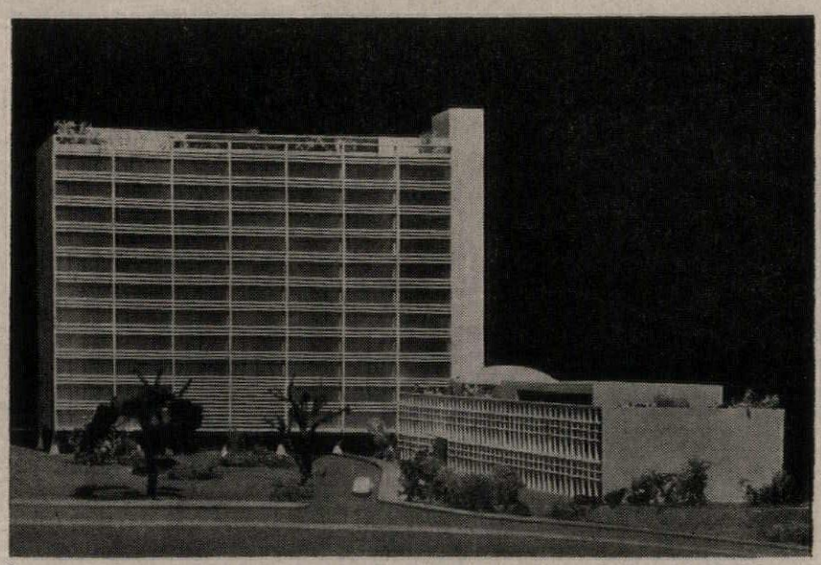


8

special attention to be paid to it in planning the ward-floors, and it is of particular interest in Britain at the moment, now that certain pediatricians are proposing that mothers should be able to sleep in when children are in hospital.

The accommodation in the lower block, which consists of two storeys clear above ground (with roof-top dormitories for medical staff and students) and one storey partly excavated, includes stores, kitchen, laundry and mortuary at the lowest level, administration and out-patient facilities above them, and diagnostic, surgical and obstetric rooms on the highest full floor. All are centred around a circulation nucleus in the middle of the block, from which point the lift-tower to the wards ascends. Private consulting rooms are grouped between the pilotis of the ward block, opposite the main entrance to the hospital.



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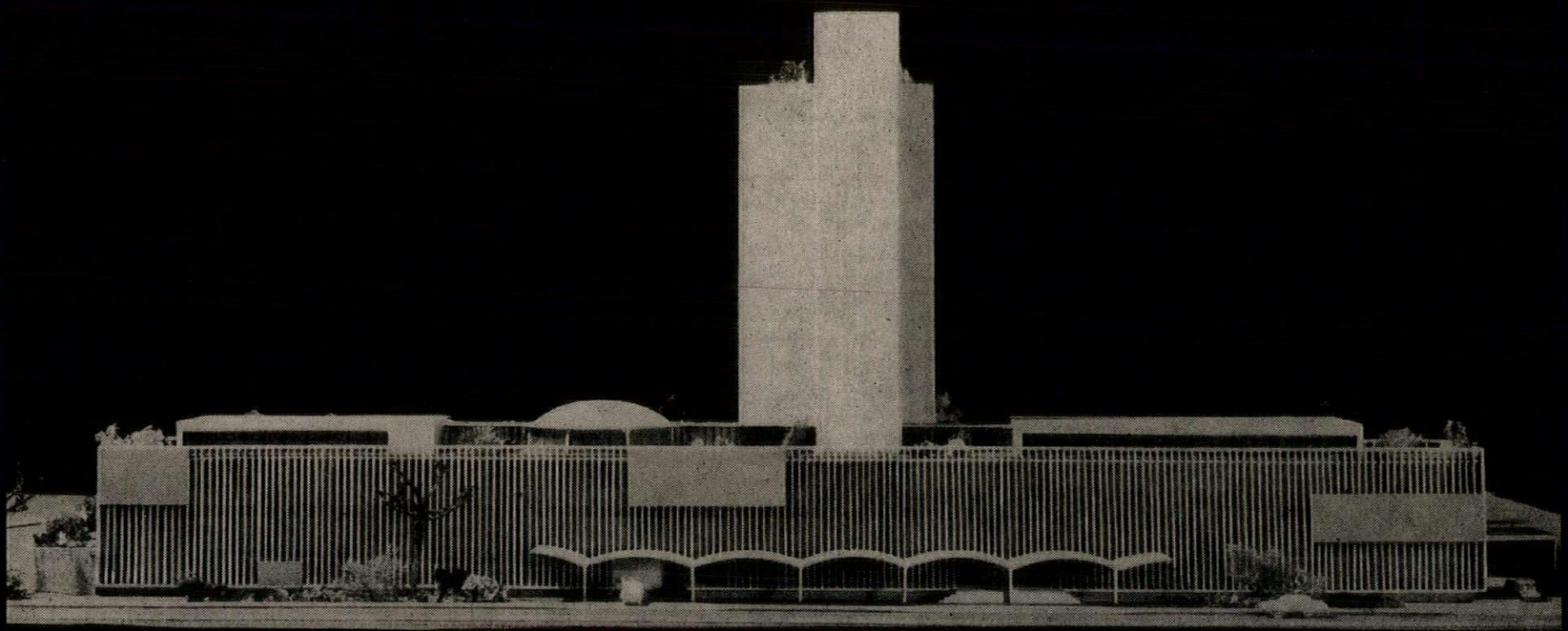
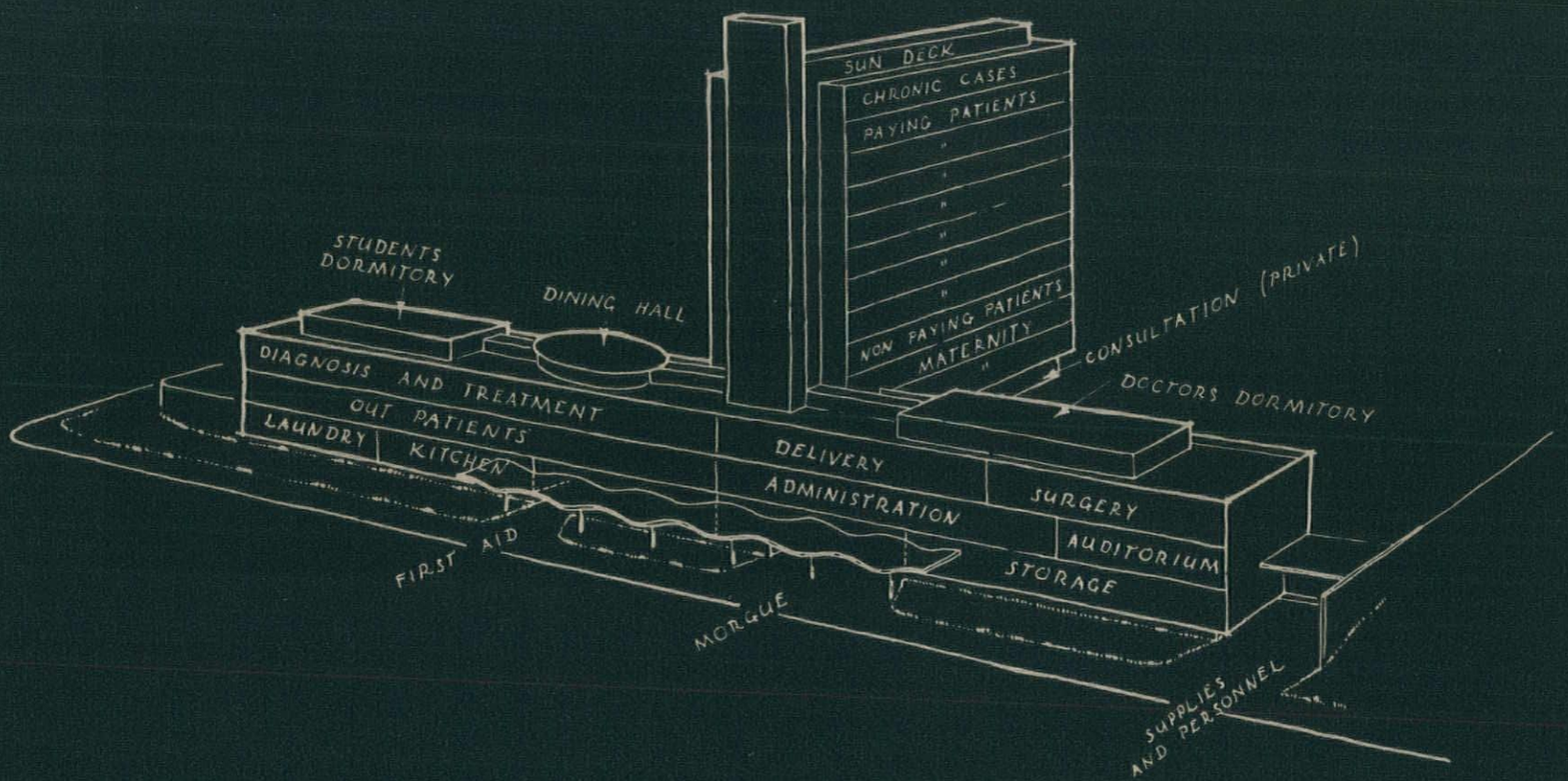
7, air view of the model from the south; the solarium running along the top of the tall ward block corresponds plan-wise to the position of the main corridors of the wards below.
8, diagrammatic breakdown of the elements of a typical ward-plan: any of the basic modular ward-units can be fitted into any structural bay, but on most floors the distribution is six units of three beds, four of two beds, and four "apartments" (one of them de luxe) to accommodate relatives staying with patients.
9, view of the model up the main approach road, which can be seen passing under the ward block. The two-bay, two-storey interruption of the regularity of the brise-soleil at first and second floor levels corresponds to the position of the nurseries for babies in the maternity wards on those two floors.




SUN DECK
CHRONIC CASES
PAYING PATIENTS
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NON PAYING PATIENTS
MATERNITY
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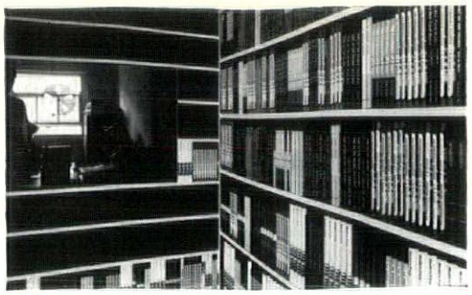
STUDENTS DORMITORY
DINING HALL
CONSULTATION (PRIVATE)
DOCTORS DORMITORY
DIAGNOSIS AND TREATMENT
OUT PATIENTS
LAUNDRY
KITCHEN
DELIVERY
ADMINISTRATION
SURGERY
AUDITORIUM
STORAGE
FIRST AID
MORGUE
SUPPLIES AND PERSONNEL

Offices in Queen Anne's Gate, London, S.W.1

architect : Ian McCallum

Offices in Queen Anne's Gate, London, S.W.1

2



These offices for the Architectural Review are part of the third floor of three eighteenth century houses, 9-13, Queen Anne's Gate, Westminster.

The ceilings are low and none of the spaces is very large so an attempt has been made by the use of louvred screens, floor-to-ceiling mirrors and a variegated and variable lighting system, to 'dissolve' the solid walls and provide an illusion of continuing space.

1, overpage, is a view of the executive editor's office. The existing room was divided into 2/3 and 1/3. The larger part is the reception and desk-work office, the smaller part the design room and workshop. On the facing page, below, is an 'attic' view of the redesigned offices.

2, entrance lobby surfaced with bookbacks of Architectural Press publications. A panel of smoke-grey glass divides the secretary's office from the looby; cut into it is a draught-excluder, speaking-panel.

4

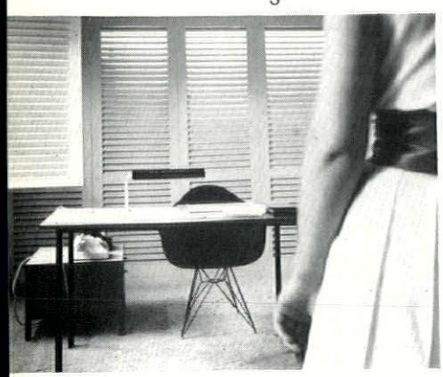
3, on the right, the workshop area of the executive editor's office; the layout table is suspended from a beam above the ceiling by chromium-plated rods; it is backed by a black-painted pin-up board. All floors are covered with fawn, grey and black linoleum, with a trompe l'oéil pattern, except for the executive editor's reception office on the left of the photograph, which has a seamless off-white Indian carpet.

4, the executive editor's office from the entrance, with double screen doors open.

5, looking towards the table desk which, with the independent drawer unit, was designed by Terence Conran. The chair in black tweed with black wire legs is by Charles Eames.

6, on the facing page, the secretary's chair of fibre glass and fawn tweed with satin-chrome legs is also by Eames. Here the 'stable-door' screens are closed across the windows in the far wall. This section of the room is ringed (behind the screens which also serve to conceal cupboards) with warm-white fluorescent tubes, providing, when all the screens are closed, an artificial environment designed to offset the sometimes depressing effects of the English climate. In slight contrast to all the other redesigned areas which employ mainly black and white for their effects, paintwork is here a 'putty' colour arrived at by mixing black, white and raw umber.

5



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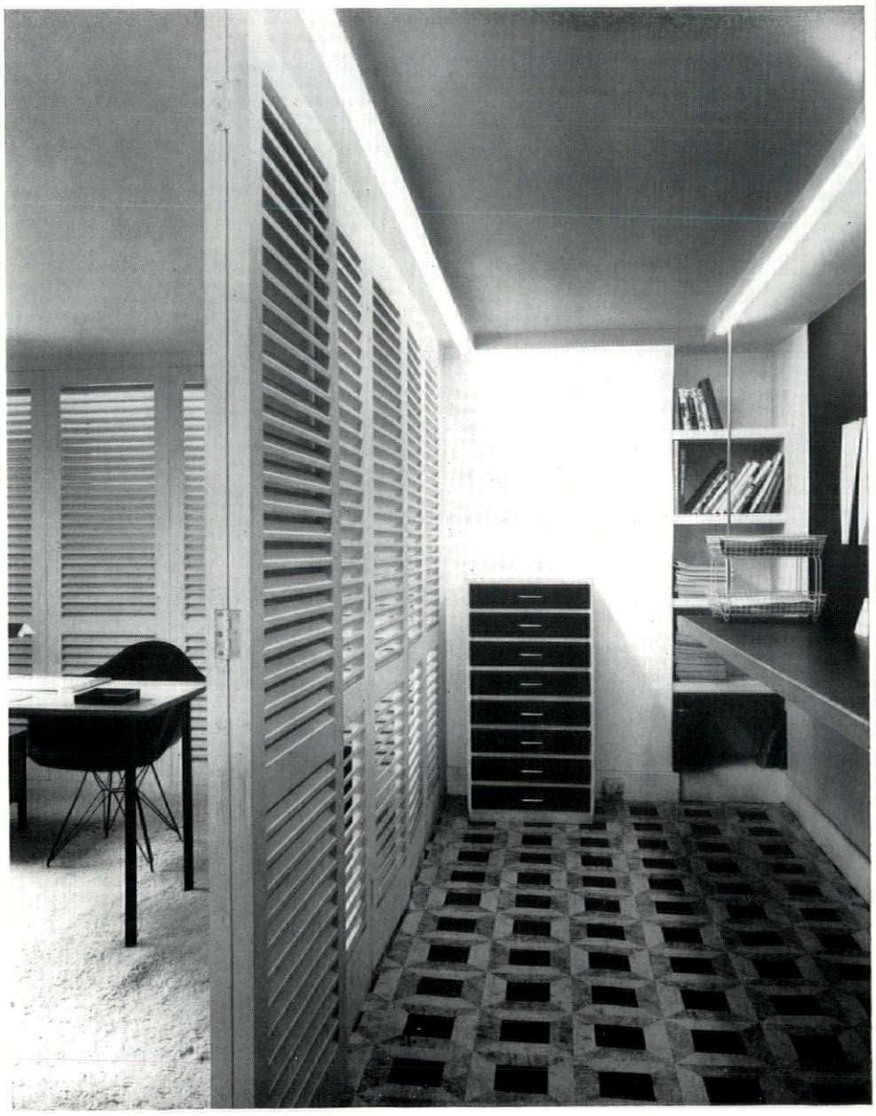

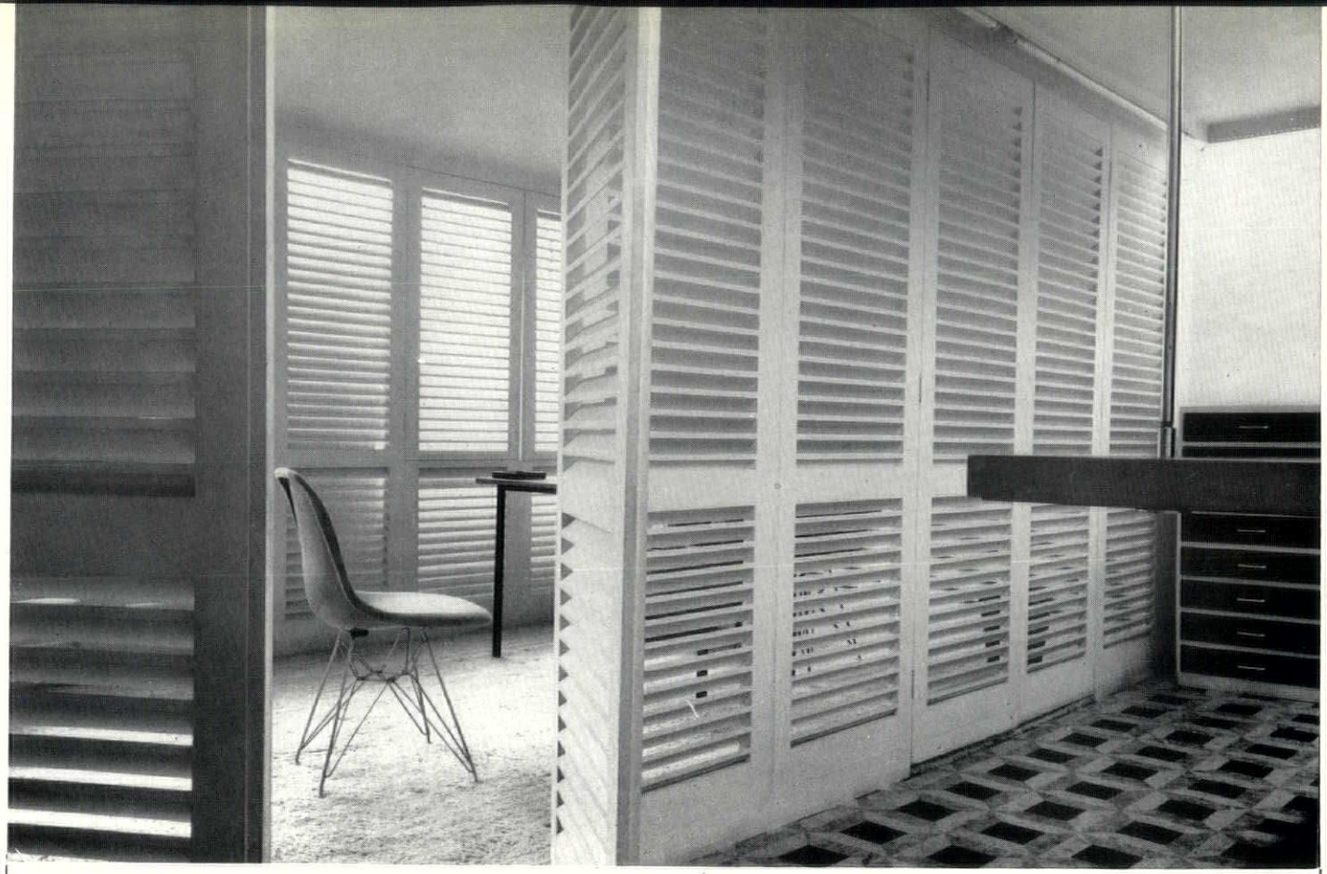

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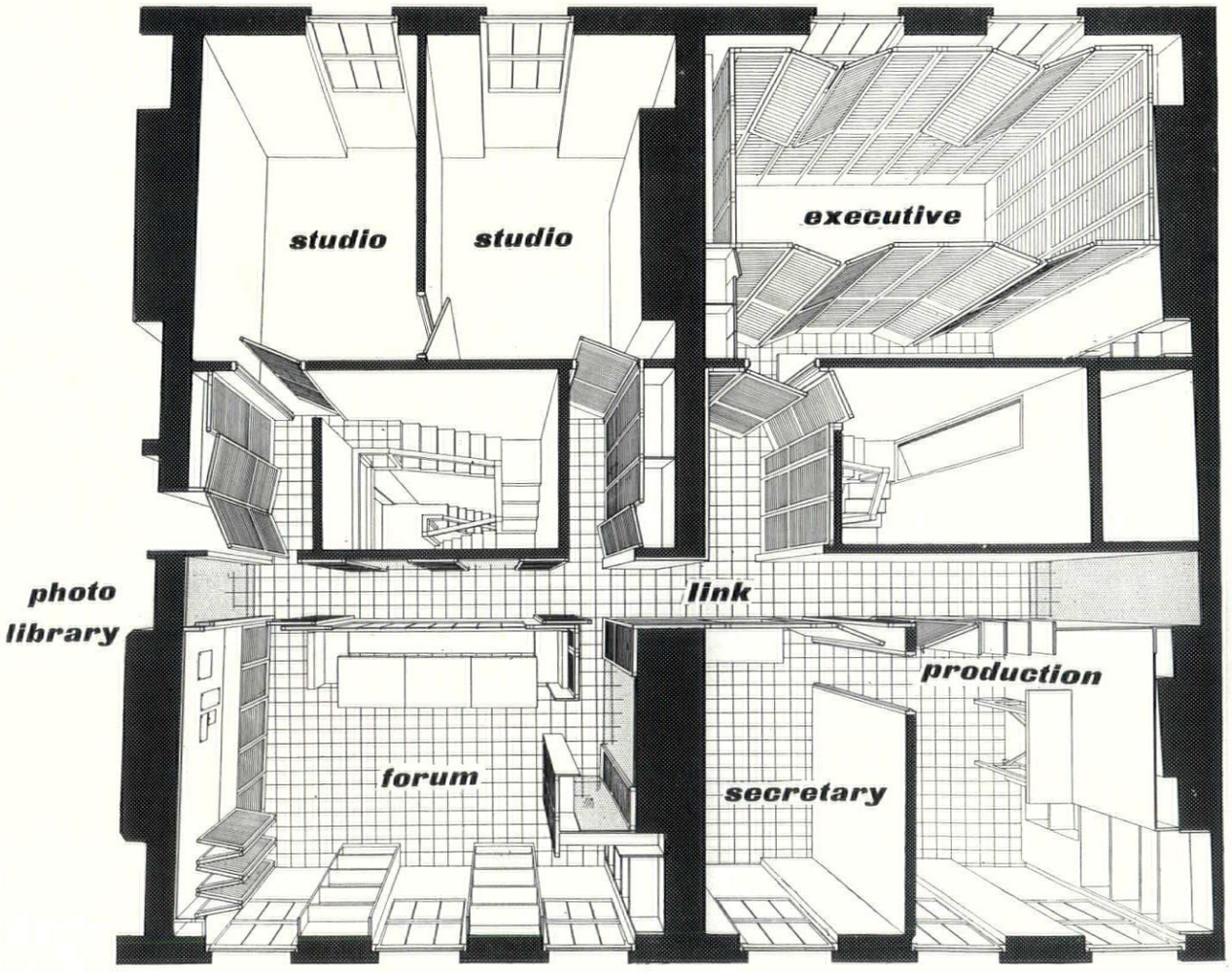
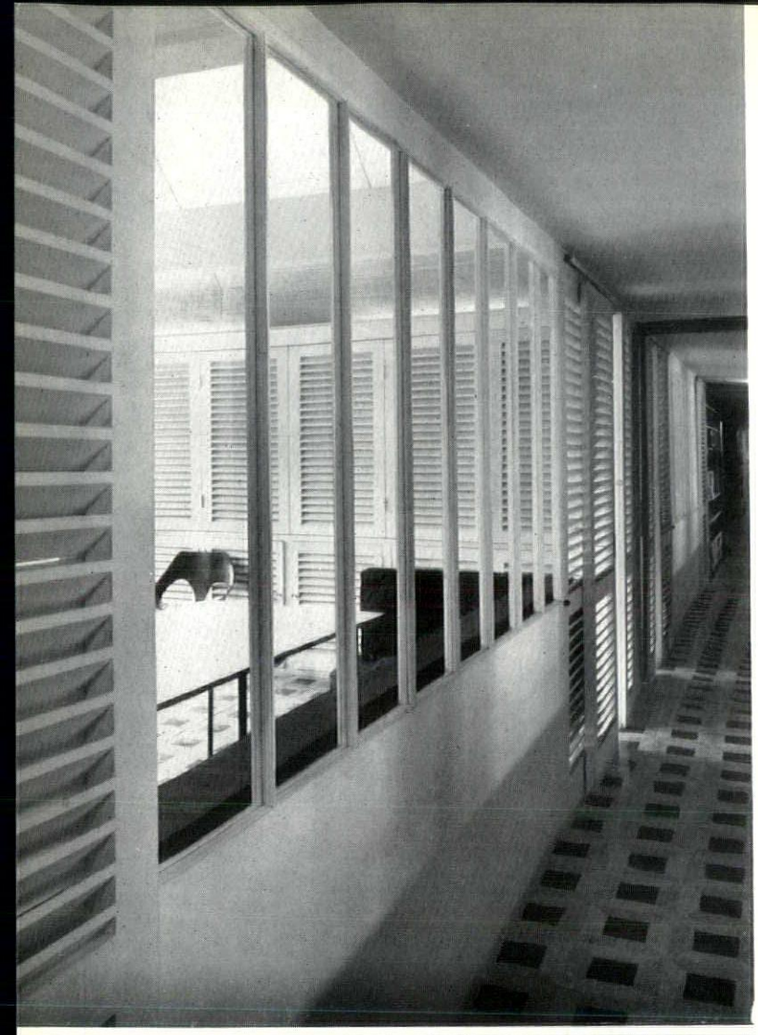


attic view of the top floor in 11 and 13 of 9 to 13, Queen Anne's Gate, London, S.W.1

areas of light dot tint indicate reflecting walls.

Offices in Queen Anne's Gate, London, S.W.1



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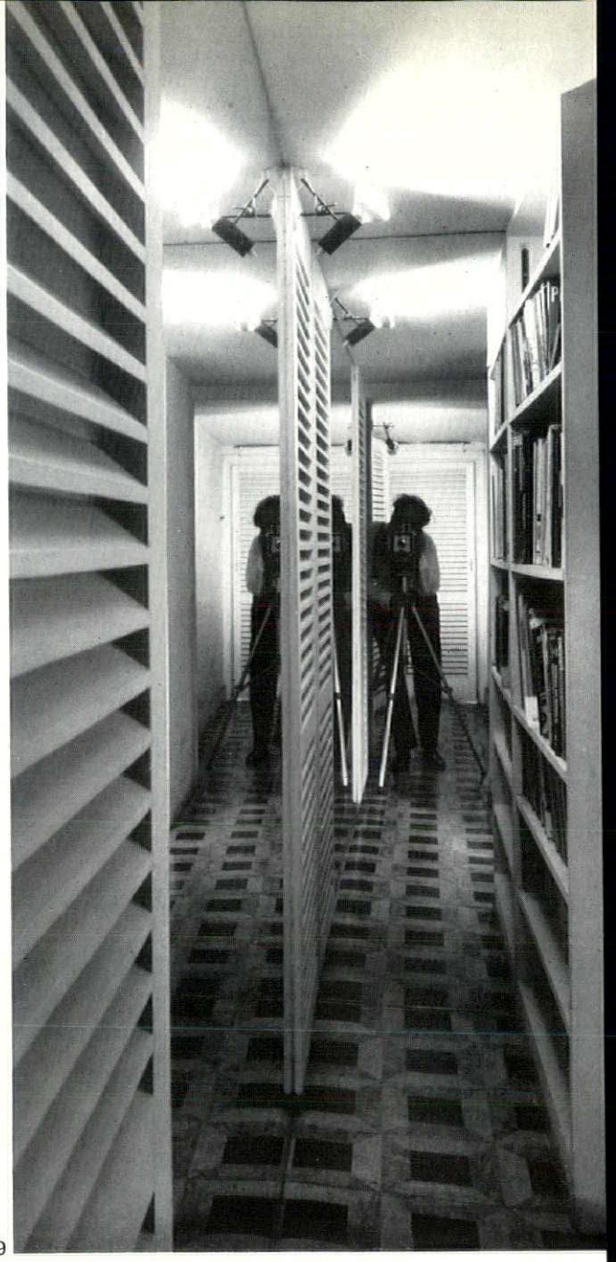
8



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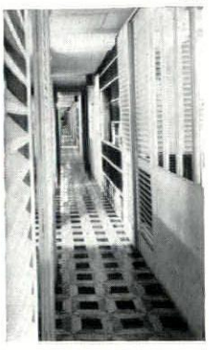


10

7, 8, 10, 11, different views of the link passage. 7, looking through the vertically-proportioned 'workshop' window into the Forum, which serves as conference, reading and projection room and magazine store.

8, that part of the link which faces the interior window-wall of the Forum. Fixed, louvred screens alternate with floor-to-ceiling mirrors that 'break into' the wall plane.

9, entrance to the Forum from the link passage is here achieved by two right-angle turns, each vista being 'closed-opened' by a floor-to-ceiling mirror. From the Forum the bookcase on the right is reflected in the mirror on the left (see also 12).

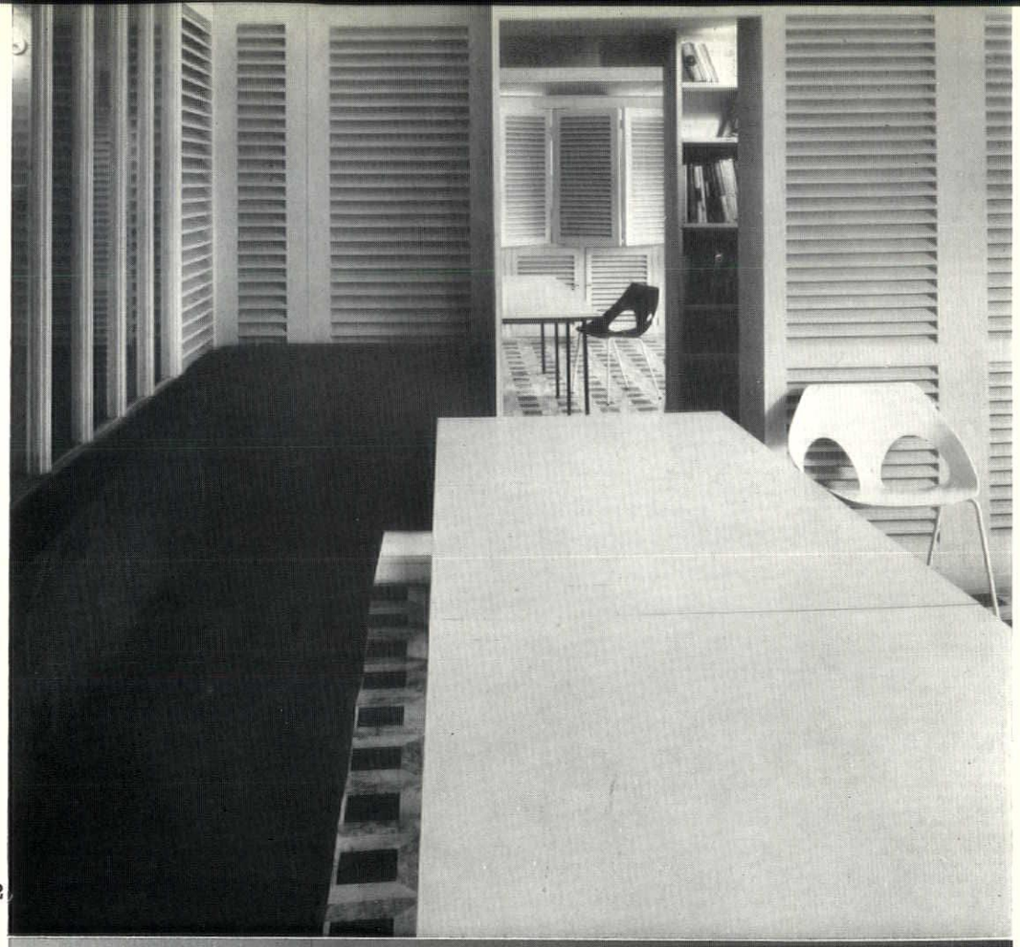
10, and 11 on the facing page, opposite views down the link passage, terminated at each end by floor-to-ceiling and wall-to-wall mirrors, providing an 'endless' perspective. On the left of 11, the louvred door leads into the production room which has a two-way cupboard (out

of view to the left of the picture) giving on to the link passage for the block-makers' and printers' messengers. The first section of the partially completed 'bookwall' beyond is a jib-door opening into the editorial secretary's office.

12, in the Forum looking towards one of the entrances; reflected in the mirror is the sliding-folding screen wall shown in 13, behind which is a pin-up board for layout meetings, and providing also a projection screen. The conference table can be separated into three parts, the outer-ends fixing into bookcases, as occasional tables. The three parts are joined together with standard brass D-plates which have been in use for dining room tables since the eighteenth century. The table was designed by Terence Conran.

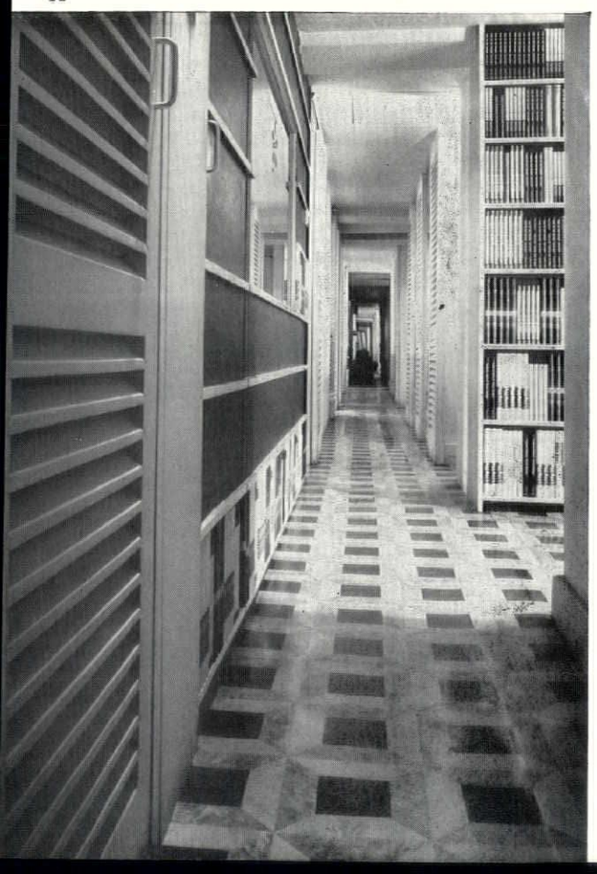
The ceiling which rises into the roof is covered with natural split-pine lit from concealed lighting troughs in the beams and along the top of the pin-up wall.

12



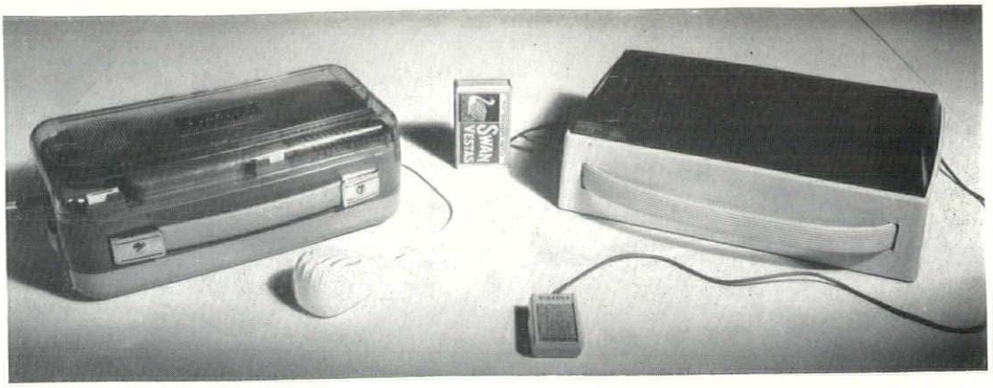
13

11



DR

design review



1

transistorized tape recorders

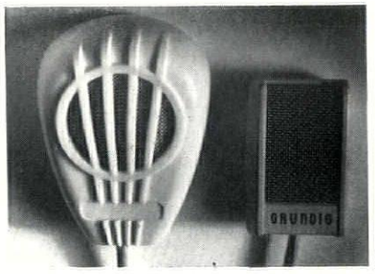
Two small German battery-operated portable tape recorders, which have recently come on the British market, provide an instructive contrast in the packaging of almost identical functions.

1 *The* Clarion, *left, is the more compact and slightly cheaper of the two, at 25 gns.; the Grundig* Cub, *right, has a slightly better performance, at the cost of being somewhat larger, more complex and a little more expensive at 26 gns. Both use standard tape at standard speed (3¾ in. per sec.) and both suffer much less than earlier machines of the same kind from unwanted speed-variations.*

2 *The treatment of the* Clarion *is a sort of workaday "Borax-vernacular," not unlike that of some electronic instruments, which it resembles also in its "feel" in the hand. It looks (and is) crammed with works.*

3 *The playdeck of the* Cub *stands closer to the accepted standards of good design. The controls are simplified and conveniently grouped, whereas those of the* Clarion *are confusingly scattered over the playdeck, the speaker fascia and the outside of the casing.*

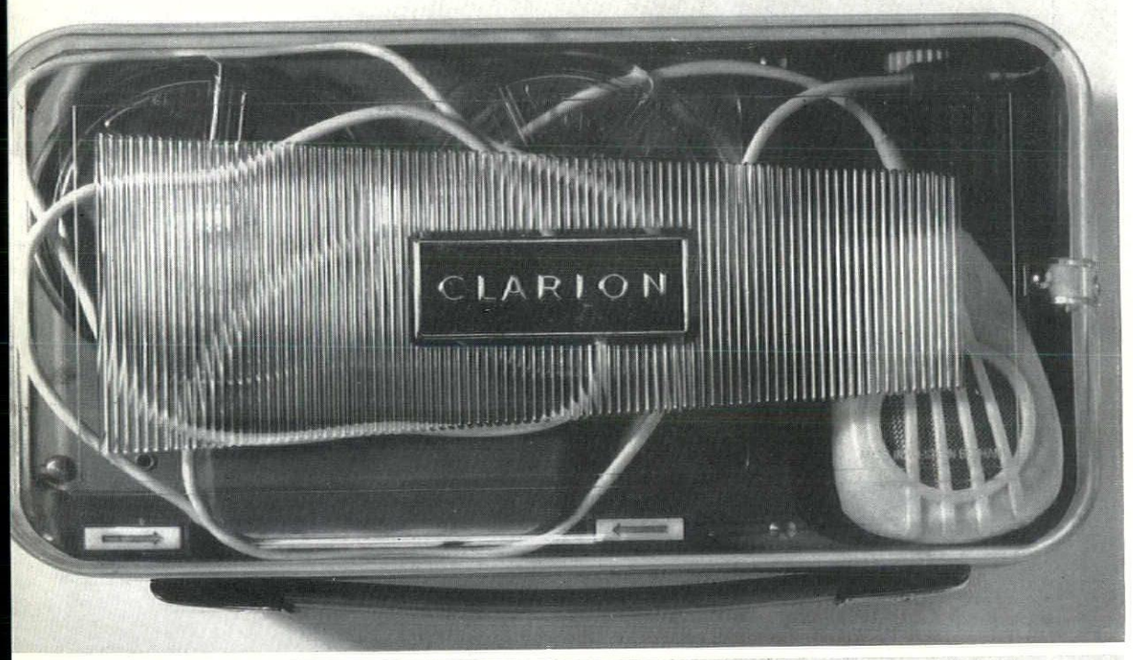
4 *The two microphones, however, show that ergonomic preference cannot go entirely to the* Cub, *whose tiny microphone (smaller than some types of cigarette lighter) is too small for large hands to manipulate*



4

easily. The Clarion's *instrument, while unlikely to win design-prizes, is much handier, though the* Cub's *microphone could not be brought up to this size without altering the lid of the casing.*

2
3



MARCUS WHIFFEN

AN ENGLISH LE ROY

The startling confrontation, above, of a "Temple of Corinth" with the Tower of the Winds in Athens, comes from what must now be admitted as the pioneer English publication in the neo-Classical movement —an opportunist plagiarization of Le Roy's Ruines *which appeared as early as 1759.*

The publication of J. D. Le Roy's *Les ruines des plus beaux monuments de la Grèce* in 1758—four years before the first volumes of Stuart and Revett's *Antiquities of Athens* appeared—was a milestone in the history of Neo-classicism because the measured drawings engraved in it were, if not altogether accurate, at least the first measured drawings of ancient architecture on Greek soil to be made available to eighteenth-century architects. No account of the movement, so far as I know, mentions that what can be broadly described as a plagiarized English edition of Le Roy's work was published in London in 1759. The fact gains significance when it is remembered that the Parthenon, included by Le Roy, had to wait until 1789 for publication in the *Antiquities*[1], and the general interest of the book may be held to justify what amounts to a belated footnote or postscript to Pevsner and Lang's study of the revolution in taste that made the Greek Revival possible[2].

Its title is *Ruins of Athens, with Remains and Other Valuable Antiquities in Greece;* the imprint reads: 'London: Printed in the Year MDCCLIX. For Robert Sayer, opposite *Fetter-Lane, Fleet-Street.*' It is a folio, and the only copy I have seen, in the possession of Colonial Williamsburg[3], is bound up with Chambers' *Treatise on Civil Architecture* and *Designs of Chinese Buildings*—a combination that would not have been pleasing to Sir William!

Sayer, a prolific publisher of architectural books[4], was doubtless moved in part by a desire to forestall Stuart and Revett's long-awaited work. The preface is a curious document. Although the unnamed author praises Le Roy and says that he 'cannot help acknowledging' that 'the Public would have less wanted this Work, had *Le Roy* returned the Compliment paid his Countrymen by the Publishers of Palmyra and Balbec,'[5] no-one would gather that the book could not have been put together without Le Roy's; he goes so far as to claim that the '*Plans, Elevations, Profiles,* and *Architectural Remarks,* are attended with that Precision . . . as even to correct Mons. *Le Roy* . . .' In the last paragraph he acknowledges an indebtedness to Sir George Wheeler, 'that learned and judicious Historian.' Since Spon and Wheeler's *Voyage d'Italie, de Dalmatie, de Grèce et du Levant* had appeared more than eighty years before, in 1678, this comes as something of an anti-climax.

The aesthetic terminology, however, is

[1] Volume II did not appear until that year, though dated 1787.

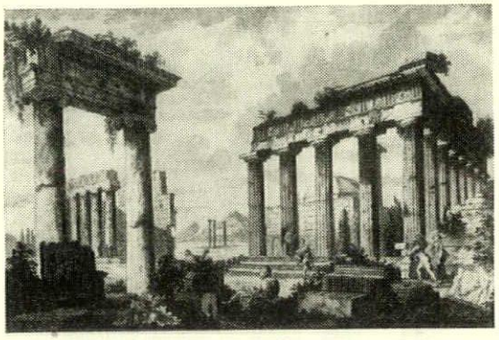
[2] N. Pevsner and S. Lang, 'Apollo or Baboon?' THE ARCHITECTURAL REVIEW, CIV (December, 1948), 271-9.

[3] It is incomplete, lacking the frontispiece (plan of Athens) and most of the measured drawings. It contains all the views.

[4] He published William Halfpenny's books and, among books by other authors, Robert Morris's *Lectures on Architecture* and William Pain's *Builder's Companion.*

[5] Wood and Dawkins published editions of both their works with French texts, and Le Roy praised them for this.

noticeably up to date. The book, it is hoped, will be 'capable of aiding the Student, and assisting the Master, even to acquire in that Science (i.e., architecture) what may be termed *the Sublime*.'[6] Happily, it is able 'to accommodate the Students in this Art' by being much cheaper than Le Roy's book—'a Difference partly obtained by reducing the Plates to half his Number; which yet, in the Views, from properly arranging the Subjects, with such Liberty as to render them truly



1, *the 'Temple of Minerva,' in fact the Parthenon, from Sayers'* Ruins of Athens.

picturesque, a more agreeable Aspect is obtained, without one single Object worthy of Note, being omitted.'

In fact the book contains a total of twenty-seven plates as against the seventy of Le Roy's, with twelve as against twenty-four 'views.' The kind of liberty taken in 'properly arranging the Subjects' of the latter is sufficiently exemplified by the two plates reproduced here. Plate 3, 1, is described as 'Temple of Minerva, with Hadrian's Aqueduct'; plate 10 (frontis) as 'Temple of Corinth, and Tower of the Winds.' In 1, the 'Temple of Minerva' is of course the Parthenon, while 'Hadrian's Aqueduct' is a monument (since destroyed) that stood at some distance from Athens at the foot of Mount Anchesmus; the liberty taken in the frontis is too obvious to require comment. Such lighthearted removal of buildings and other monuments from one site to another may seem odd to us today, especially when it occurs in what purports to be a serious work of classical archaeology. In the eighteenth century, however, the practice was indulged in not only by recognized specialists in the *capriccio*, of whom Giovanni Pannini is the best known, but even by artists as topographically inclined as Canaletto, who on one occasion removed the statue of Charles I from Charing Cross to a site beside the Banqueting House and on another transferred the horses over the west door of St. Mark's in Venice to columns in the Piazzetta.

The derivative nature of the plates will be appreciated when 1 is compared with 2 and 3, which are Le Roy's versions

[6] My italics. Burke's *Philosophical Enquiry into the Origin of our Ideas of the Sublime and the Beautiful* was first published in 1756.

2

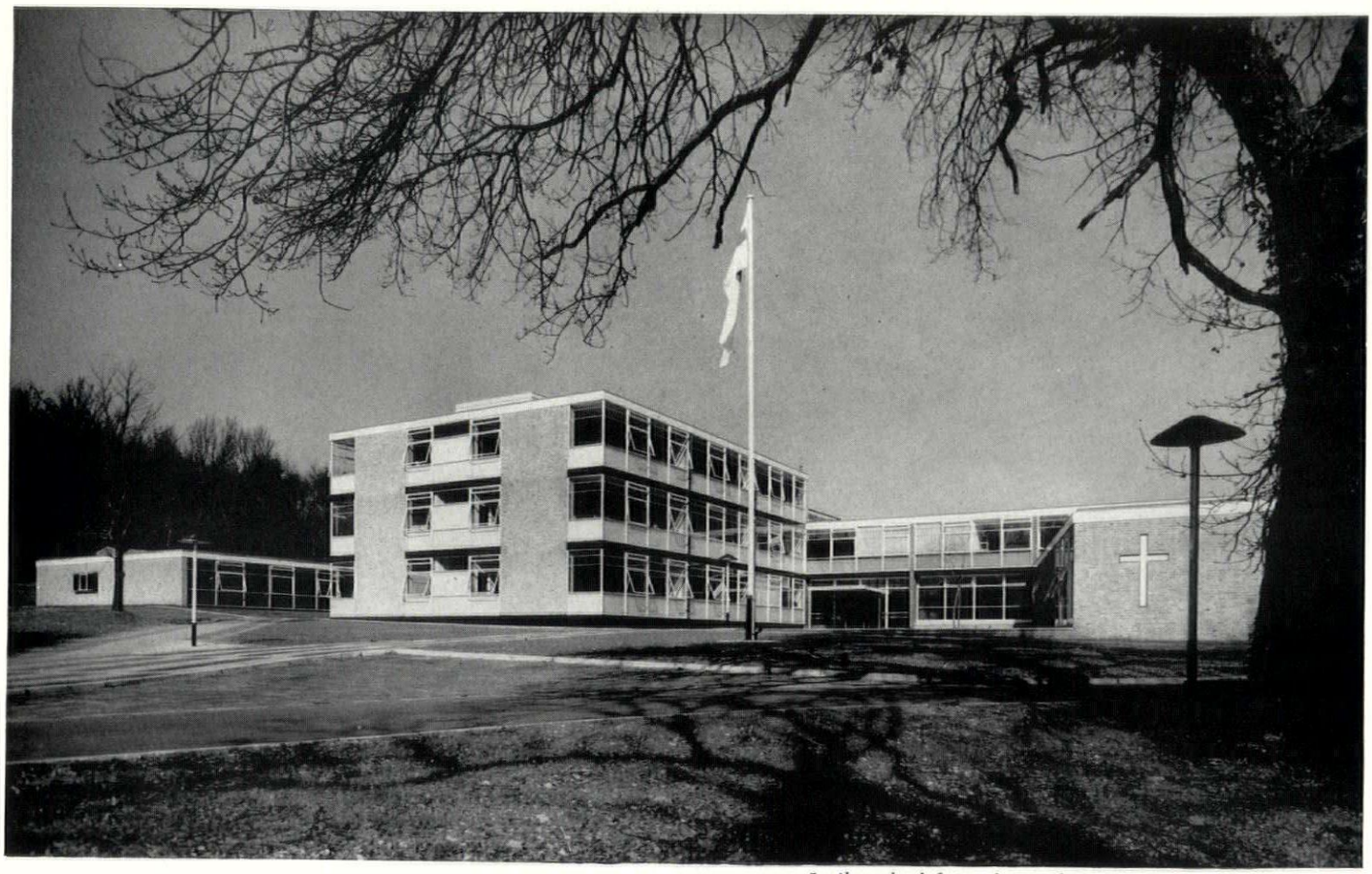
3

2 *and* 3, *Le Roy's drawings of the Parthenon and 'Hadrian's Aqueduct,' which were adapted by Sayer in* 1.

of the buildings shown in it. The text is much shorter than Le Roy's. In places it is a literal translation; where it differs it is usually for the worse. Most of the qualitative judgments are Le Roy's: for instance, his '*très-médiocre*' (of the Arch of Hadrian) becomes 'but indifferent.' But we are told that the Parthenon 'is not only the chief Ornament of the Citadel, but for Matter and Art, the most beautiful Piece of Antiquity remaining in the World,' and this sentiment is not to be found in Le Roy's account of the building.

Since this book is now so rare, one may assume that it was not very influential. However, Thomas Jefferson had a copy, which went to the Library of Congress; it was still there in 1849, when it was catalogued under Le Roy as author, but has since been lost[7]. And in the British Museum there is a volume, published in 1764 at Augsburg, entitled *Ruinen und Ueberbleibsel von Athen nebst andern merkwürdigen Alterthümern Griechenlands, herausgegeben von M. R. Sayer, mit einem . . . kurz verfassten historischen Auszuge nach dem Englischen Original verfertigt . . . von G. C. Kilian.*

[7] See E. Millicent Sowerby, *Catalogue of the Library of Thomas Jefferson* (Washington, 1955), IV, 367.



1, *the school from the south east, showing the three storey classroom block with the practical rooms beyond.*

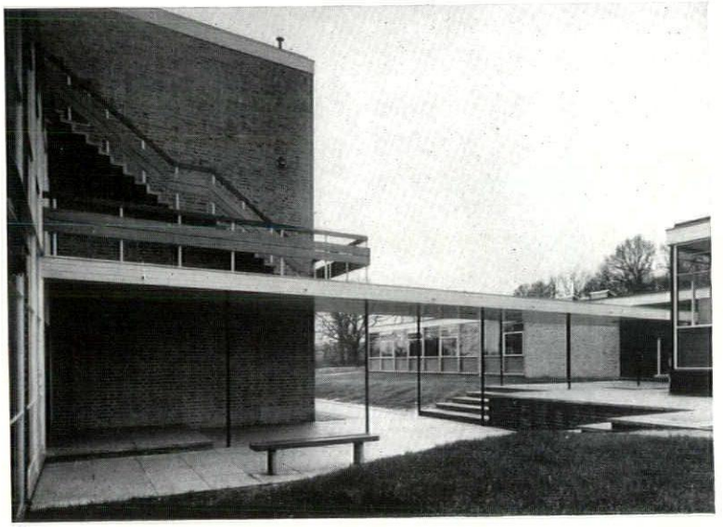
SCHOOL AT SWAYTHLING HAMPSHIRE

ARCHITECTS: RICHARD SHEPPARD, ROBSON AND PARTNERS

The site is on the outskirts of Southampton in a pleasant rural setting, although the site had been used for gravel excavation, which made foundations difficult. The school consists basically of four parts; a three storey teaching block; a two storey assembly hall block; gymnasium and changing rooms; and a single storey practical block.

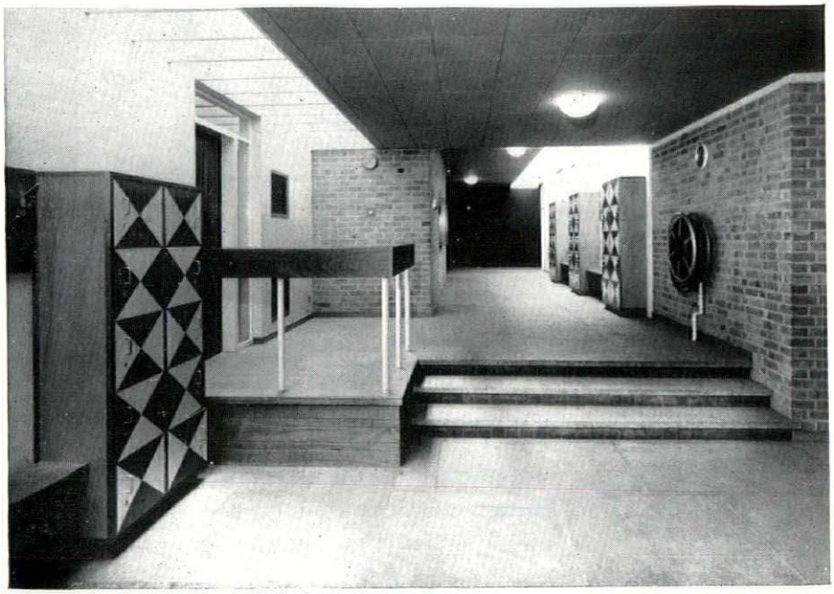
In situ bored piles were used to the three and two storey blocks and strip foundations elsewhere. Generally, superstructure has 9 in. loadbearing cross-walls with 10 in. hollow-pot reinforced concrete slabs. The roof consists of 3 ply mineralised felt on boarding on 12 in. by 2 in. timber joists with 1 in. fibreglass insulation and perforated hardboard ceilings. Steel frames are used over large spaces in the Assembly Hall and Gymnasium. External walls are metal window glazed for full height and set in hardwood subframes with rough cast glass under cills with thermalite block backing wall. Gable walls are 15¾ in. cavity brick. The panel over windows to the stage is of slates on framing. Fascias are painted timber.

2, *the main entrance, and dining area windows, with the kitchens and music room on the right.*
3, *the covered way leading to the practical block.*

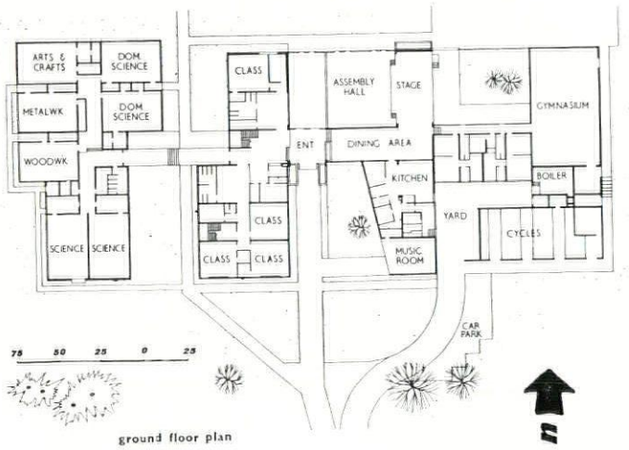


3

School at Swaythling

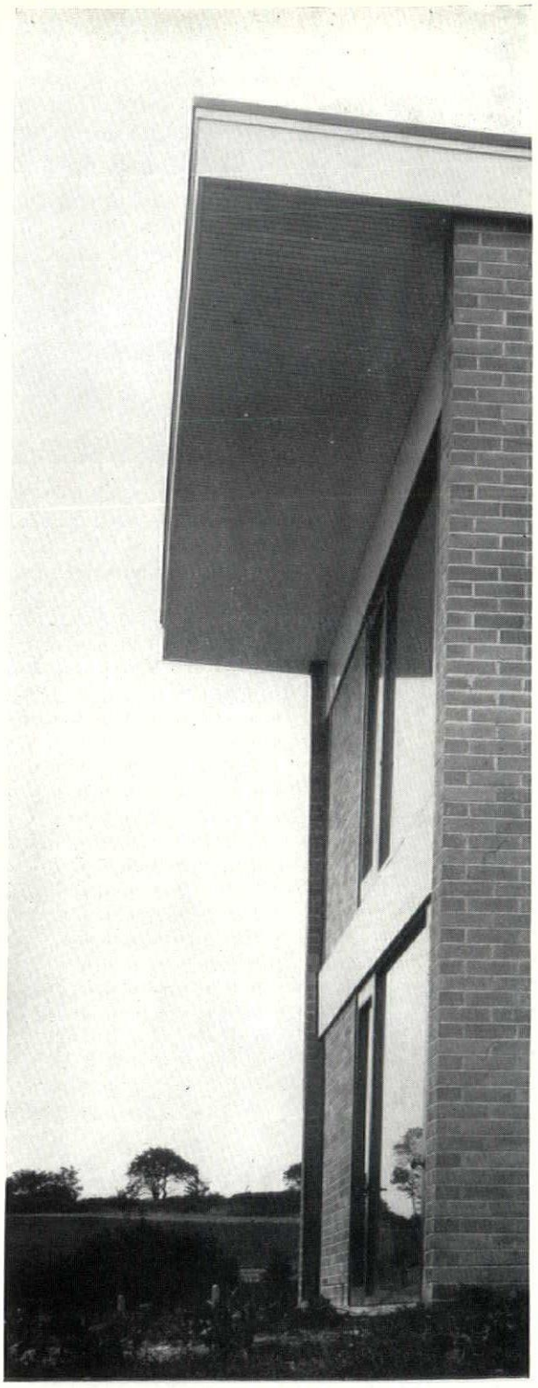


4, *corridor in the practical block.*



ground floor plan

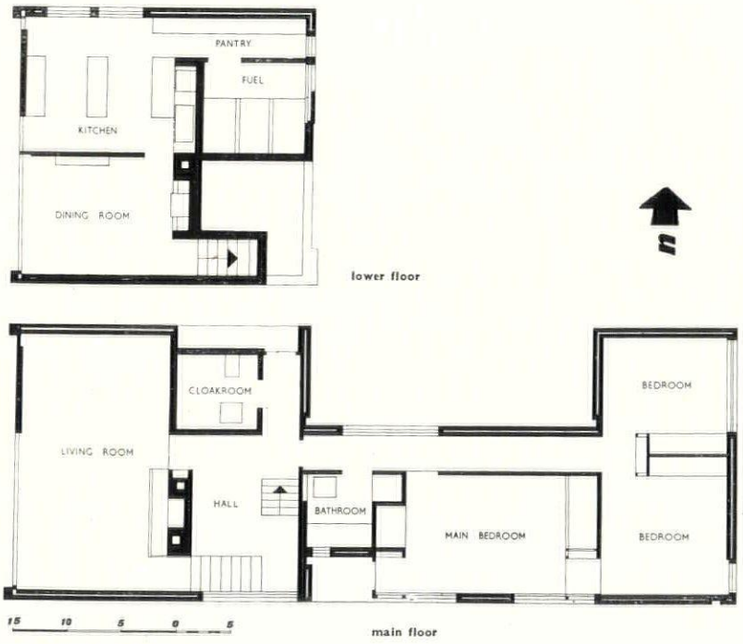
5, the windows of the living room, above, and dining room, below, showing the deeply projecting eaves.



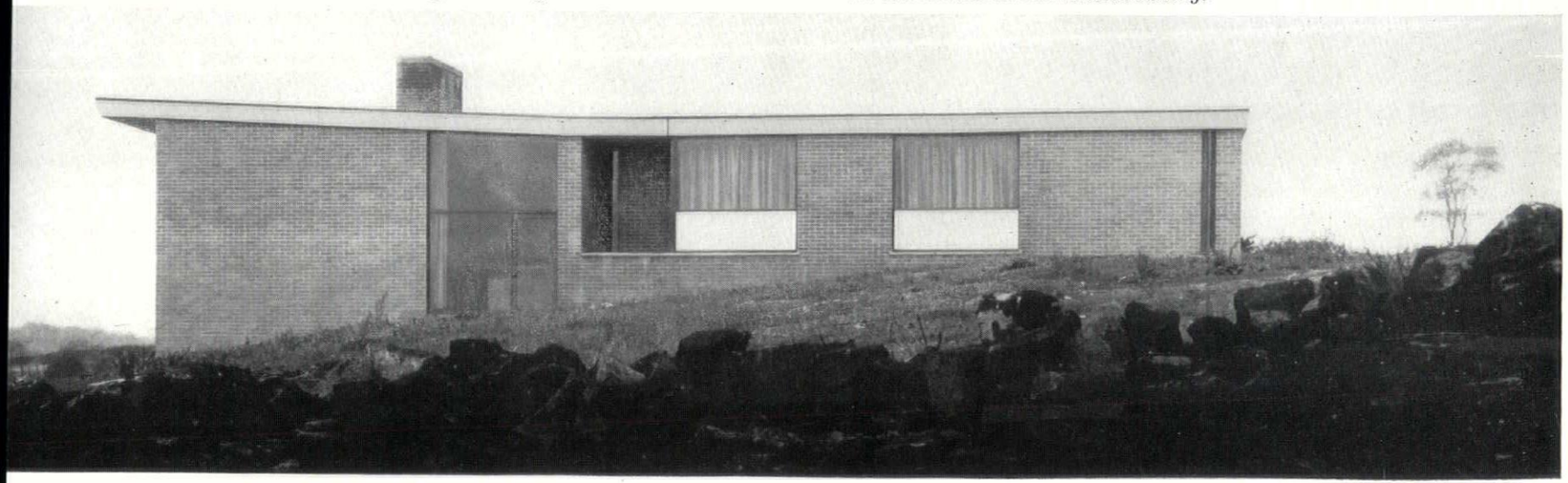
HOUSE AT HIGH HOYLAND, YORKSHIRE

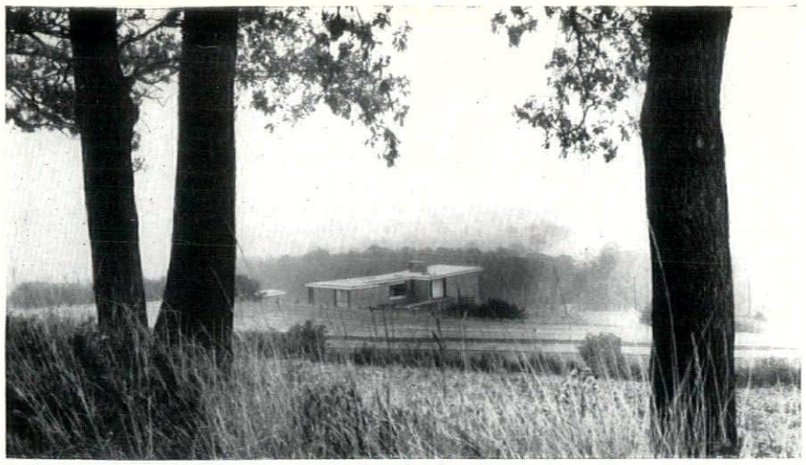
ARCHITECT: MICHAEL BURTON

The house is set on the edge of an old Saxon estate adjoining the Yorkshire moors and the Industrial West Riding. It looks out on the undeveloped valley of Cawthorne and Gunthwaite and was designed to make most use of the sweeping views to the east and south and the shorter but equally picturesque land to the west. The 15 foot long window in the drawing room faces south to frame Hartcliff Towers and Midhope Moor some 10 to 15 miles away.



6, the house from the south; the deep window lights the hall and staircase and the main bedroom has its own recessed balcony.





7, *looking down on the house from Greenland Hill with Cawthorne Park in the distance.*

House at High Hoyland

The large windows are disposed about the house to make the most of the sun's heat and the extended roof over the south window protects it from the high summer sun but allows it to catch the lower winter orbit.

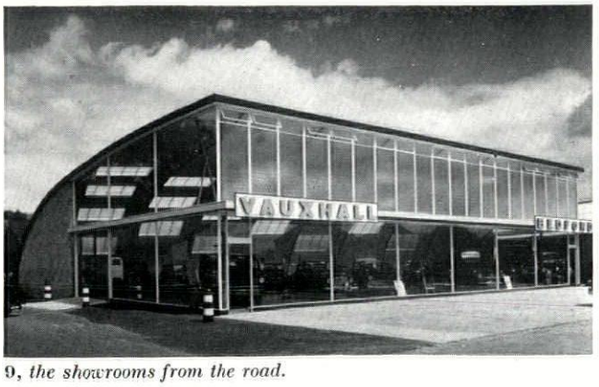
The house is built of light grey brick with a white painted eaves fascia. The cills are black quarry tiles, the frames are painted black with white opening lights.

8, *the interior of the showroom, showing the roof construction.*

MOTOR SHOWROOMS AT STAINES

ARCHITECTS: WESTWOOD SONS AND PARTNERS

Consisting basically of a curved roof and 80 ft. long window, this showroom is designed to give a clear view of the cars to passing motorists. The roof is covered with aluminium sheeting and is carried on tubular steel trusses bedded in blocks of concrete at the rear. Internally the roof is sprayed with asbestos, which gives good acoustic conditions and allows for movement in the structure. The windows are vertical, but reflections are cut down by the numerous roof lights of acrylic sheet. The external canopy acts as a wind brace and also helps to reduce reflection.



9, *the showrooms from the road.*

WORLD

a monthly review of outstanding buildings abroad, and new developments in world architecture.

First Modern Office Block in Athens

Doxiadis Associates, consulting engineers and architects, constitute a probably unique phenomenon—a design office of international size, scope and reputation, based on the eastern Mediterranean, and their new headquarters building, 2, in Athens, is also unique in being the first modern office-block of consequence in that city. The Doxiadis organization is large, with nearly half its personnel (who total 400) established in Athens, the rest scattered over the Middle East and East Africa. Its head, Constantinos A. Doxiadis, is a man of ideas and philosophy, who was overall co-ordinator of the Greek Economic Recovery Programme after the late War, has been adviser on housing problems to such bodies as the Ford

1

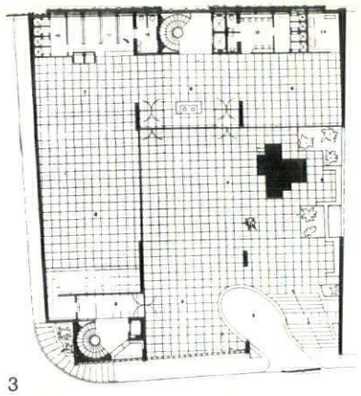
Foundation and the International Bank, and has recently evolved a theory of *Œkistics*, the combination of engineering, architecture and economics in the service of Man in a Machine Age, which was set out extensively in *Architectoniki No. 23*, 1959.

The new office block, sited at the foot of Mount Lycabettus in an area that is relatively quiet but handy for the city centre, consists of three main blocks surrounding a small court, 1, though—as the plan, 3, shows—almost the whole of the ground floor, including that of the three blocks themselves, is public or circulation space, with car parking underneath. The Doxiadis offices, properly speaking, are in the high block at the back, the lower, front block being occupied by the Athens Technological Institute, while the yet lower connecting

2

block between the two contains an assembly hall, medical rooms and other facilities common to both organizations. The structure consists essentially of floors spanning between the structural end-walls and the double row of columns down the middle of the site, seen in 3 on plan and in 2 as they appear in fact. Planning throughout is on a 75 cm. module and its multiples, the characteristic bay-width of the windows being four such modules. Because of the excellent site, these windows command remarkable views of Lycabettus in one direction, and over the city to the Acropolis, 4, in the other.

3, plan of ground floor of Doxiadis office-block: 4, interior of one of the drawing offices.



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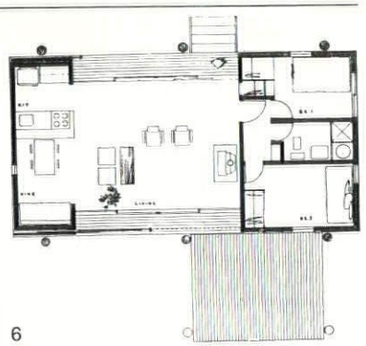
4

Post-Anchored Beach House

A building designed to take advantage of summer breezes may have to take severe punishment when that breeze whips up into a winter gale. A recent holiday house by Peter Blake and Julian Neski on the eastern coast of the US takes full advantage of summer breezes by having more than half of each side composed of roll-away windows, as the plan shows, 6. To protect both glass and house against winter gales two straightforward functional-traditional expedients have been adopted. Firstly, there are rolling wooden shutters, two to a side, to keep the wind off the windows, seen in 5. But this view also shows the expedient employed to protect the house as a whole—the creosoted telephone poles driven deep into the sand to provide an unshakably secure anchorage for the whole structure. Both the shutters and the pole-piles have a seaside, pier-and-warehouse look about them,



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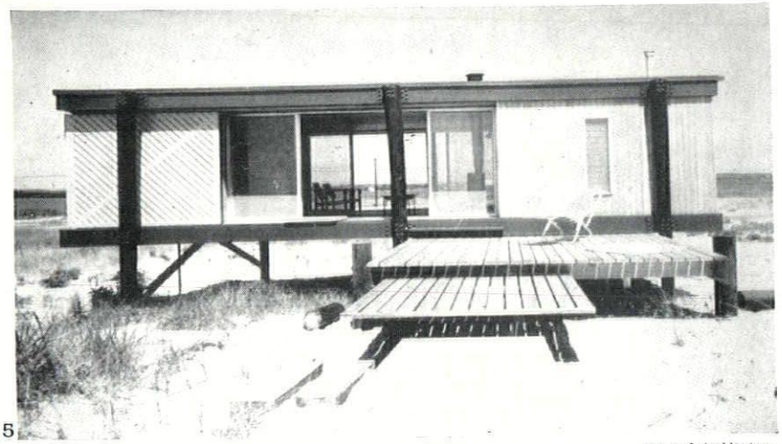
but one wonders, looking at the wavy form of the central pole, like the untrimmed tree-trunk that so often flanks the side of a *tokonoma*, and reading it with the external shutters, whether the seemingly inescapable spirit of Japan has not been at work here again.



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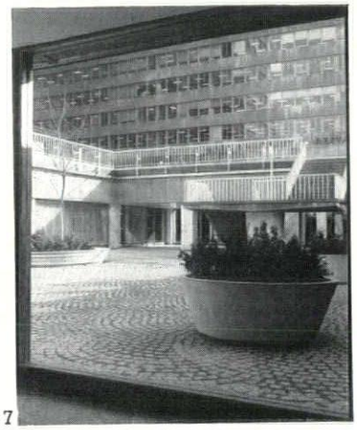
Englishry in Philadelphia

Out of the increasingly exotic US architectural scene, for which the common Anglo-Saxon tongue seems an increasingly inadequate instrument of description, there occasionally emerge works that strike a sympathetic chord in English architectural circles, either by reason of their appearance or the conditions surrounding their creation. Two such designs have lately emerged from Philadelphia. One is the new sunken garden for the Penn Center, by Vincent Kling, 7; its function is peculiarly Downtown American—to provide a light-and-air well for a five-block underground shopping centre, but its treatment, both overall, as a pedestrian concourse, and in detail,



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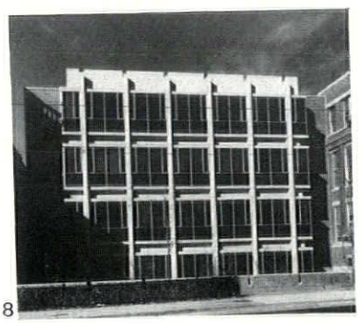
with Festival flower-tubs, patterned floorscape, and fly-away staircases, must seem strangely home-like to those who have assisted in the creation of a new English tradition, from the South Bank to Coventry and Harlow town centres.

The other is familiar by virtue of the surroundings into which it has had to be fitted. The building to the right of the Moore School of Electrical Engineering, 8, in the University of Pennsylvania, could be London University at its dullest and most pseudo-Georgian. The way in which the new



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block's uncompromising façade mates up to the surrounding work by symmetrical blank-faced brick wings is a masterly example of doing a difficult job easily, and is—no doubt—one of the features of the design that earned its architects, Geddes, Brecher and Cunningham, a place in the exhibition of Younger Architects' work at the Architectural League of New York. Also selected for the same show was another work of Kling's; the Bachelor Officer Quarters at Philadelphia Naval Base.

Rising Towers of England

The crop of new office buildings completed or on the stocks grows heavier—in more than once sense of the word—every day, and now begins to spread significantly beyond the confines of central London and the West End. At Neasden, in the north-western suburbs of London, the Radiation Company are proposing a new headquarters building to the designs of E. Dennis Pugh—the photo-montage of the model on the actual site shows, 9, that the 12-storey

9

tower will be a dramatic break with the company's earlier buildings there. Farther afield, in Bristol, the *Clifton Heights* block, designed for a difficult sloping site, 10, by Raymond Moxley, is to be a mixed development with flats in the tower block, and a penthouse restaurant on top. Both flats and restaurant should command

10

some impressive views over one of the most dramatic townscapes in England.

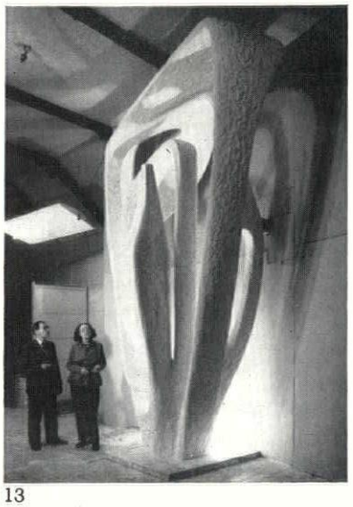
Within the heartlands of English commerce, the junction of Ludgate Hill and the Old Bailey is to be the site of Hillgate House, 11, architect Theo H. Birks. Although the scheme does not make any very imaginative approach to the development possibilities of such a site, it is practical (internal parking for 120 cars), promises to present a lively spectacle to the pedestrian (three pubs, three parades of shops, unlike so many 'dead' ground floors) and breaks with the bad old Banker's Georgian traditions embalmed at the top of the hill around St. Paul's. Farther west, and now nearing completion, is State House, High Holborn, of which a

11

model is seen in 12. Designed by Trehearne and Norman, Preston and Partners, it continues that office's tradition (albeit too often a frustrated tradition) of patronage of contemporary art, which here takes the form of a large work by Barbara Hepworth, entitled Meridian. The final plaster stage of this work is seen

12

in 13, and, when cast and installed, it will be the second Hepworth in such a building—the other is at Mullard House in Torrington Place. Both these works, it will be noted, are on the outer fringes of the University area of London—dare one suggest that there is some connection between this fact and Miss Hepworth's standing as one of the most 'intellectual' of British sculptors, especially since State House overlooks the editorial offices of the *New Statesman*.



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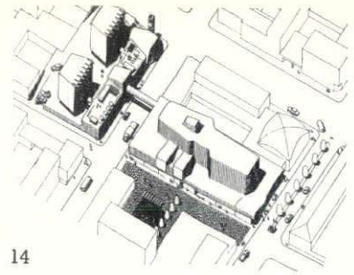
Arctic Shopping Centre

In the present state of architectural thought and communications, concepts acquire plastic form even before their functional justifications have been thought through. A shopping-centre has become, willy-nilly, an isolated piazza with a ring of car-parks round it, and it is almost impossible to make either architects or laymen conceive of it in any other terms. Hence the salutary effect of Ralph Erskine's all-enclosed shopping centre for Lulea in the arctic north of Sweden. Photography has not yet done justice to this remarkable design, except to confirm the promise of the drawings reproduced here. The bulk form of the scheme is a low rectangular block, 14, capped by an irregularly-shaped hotel which is as yet to be built, and joined by an enclosed pedestrian bridge to residential blocks currently being designed by Bertil Mattsson and Jan Thurfjell. Inside the block, the public circulation



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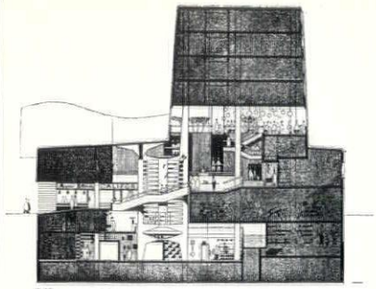

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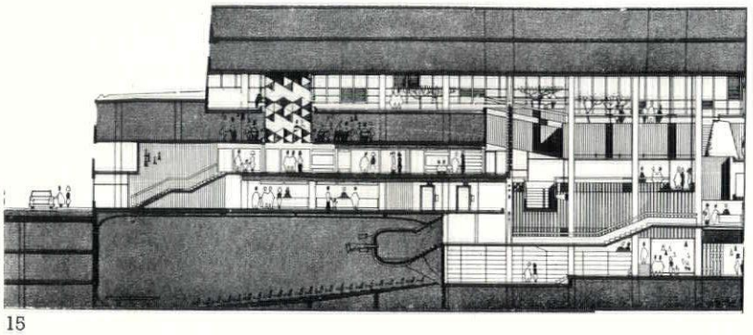

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area, shown unshaded in 15 and 17, serves a similar function to an English shopping-arcade, but is much more complex in its spatial organization, twisting and convoluting four floors up and two down from street level, around a sequence of vertical sight-wells, such as 16. Although the need for shelter from arctic climatic conditions was an obvious prime determinant in this design, the relevance of this concept to the problems of other climates when multi-level circulation comes in (as it seems its must) is too obvious to be ignored.

Brutalismo & Warehouse Aesthetics

Close students of recent English architectural polemics will know that before the New Brutalism received the name that made the Smithsons world-famous, it was called, with greater descriptive force 'The warehouse aesthetic.' In so far as these two terms mean anything different, each has appeared recently in Italy, *Brutalismo* quite consciously in the *Istituto Marchiondi* in Milan, 18, by Vittoriano Vigano. The *Istituto's* function is educational (as with the Smithsons' Hunstanton School) and Vigano's view of the morality of his architecture is quite as tough-minded as theirs—the school is for deranged children, replacing an old, prison-like structure by one dedicated to a more

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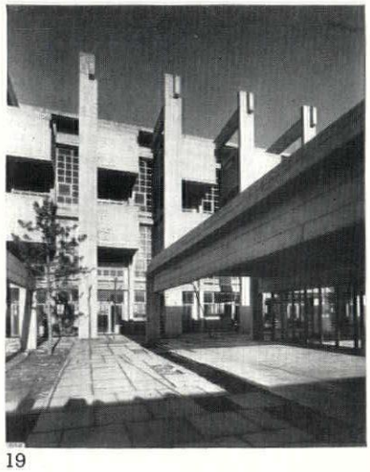
open and progressive curriculum, with the blunt seriousness of the architecture, 19, seen as part of an educational programme preparing the children for a life at once 'responsible and hard, but interwoven with strength and dignity . . . freedom and respect for oneself.'



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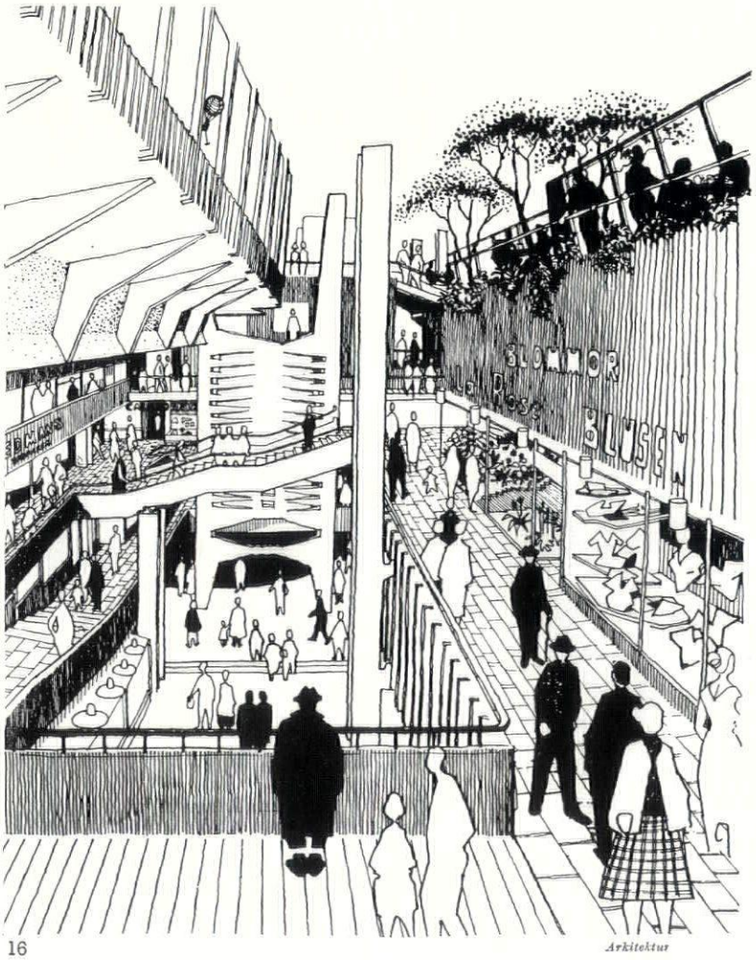
The warehouse aesthetic as it appears in Casabella No. 227, is a different and less conscious matter. Giorgio Raineri, whose name has been linked with those of the Neoliberatarians, has recently completed an extension to a school in Turin, 20, in which Neoliberty respect for the 'pre-existing surroundings' has united with the movement's passion for brickwork to produce a structure which seems to have little or nothing to do with the old work adjoining it (though the floorheights and bay-widths are in fact the same) but has an undeniable power and commonsense quality of its own.

The other manifestation of what might be termed a warehouse aesthetic is a scheme of some architectural and cultural importance—the rebuilding of the *Palazzata* in Messina, 21. This concerns the reconstruction of a thin line of buildings facing the waterfront, destroyed in the great earth-



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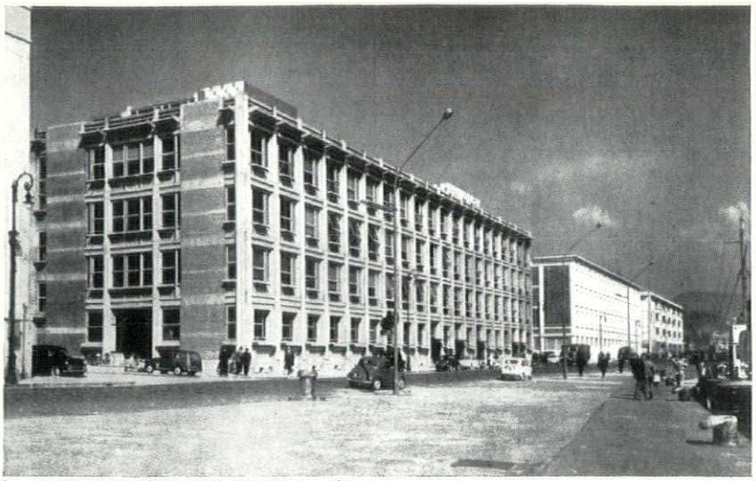

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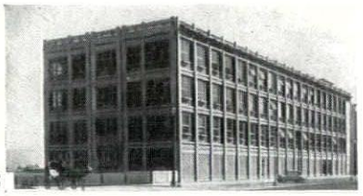
21, general view of the rebuilt Palazzata, *Palermo.*
22, 23, landward side of the INPS offices, Palermo, by Giuseppe Samonà, and a detail of the side toward the sea.



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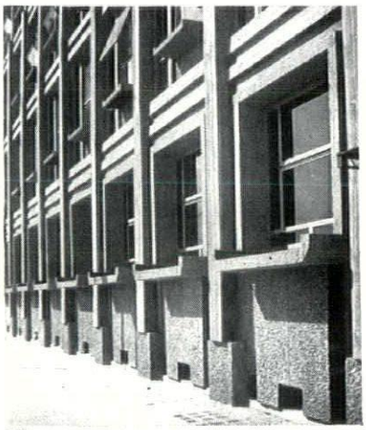

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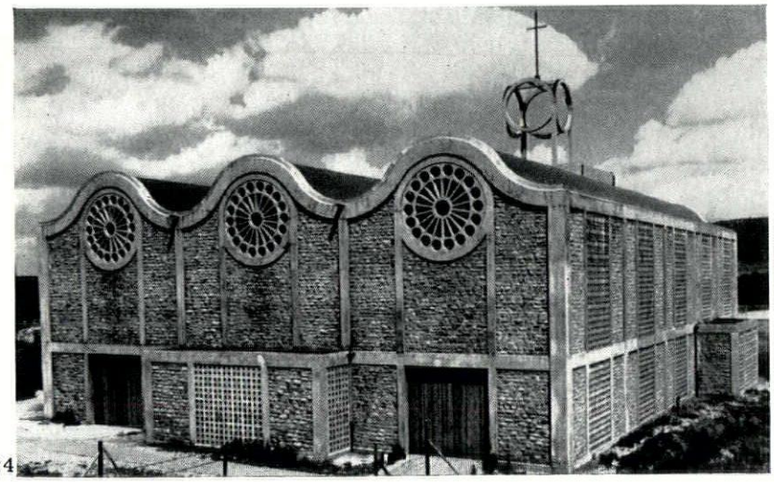
quake of 1908, put out to competition as late as 1929, and now, at last coming to completion under the supervision of the most distinguished of the winners, Giuseppe Samonà. The earthquake risk prohibits tall structures, the bias of the original competition regulations was towards monumentality, and this—in its grim Fascist sense—was imposed on the few blocks completed before the War. In the post-War blocks of Samonà's this tawdry classicism has been purged and refined into a truer monumentality that some have compared to the work of Perret's office at le Havre. However, in the most recently completed block, the INPS headquarters, 22, one is tempted to draw parallels with the better Nineteenth-century warehouses, not only because of the waterside location, but also by reason of the simplified and massive detailing of the construction, 23, the strongly repetitive grid of the fenestration and the underlying strength of an almost unconscious classical discipline that underlies the design as surely as it does the masterpieces of the Functional Tradition.

Rococo from Rationalism

Commentators on the oddities of European architecture have noted, before now, not only that peculiar 'Modern Rococo' style associated with the name of the Dutch architect, S. van Ravesteyn (AR, March, 1948) but also its curious affinities with the Doctrine of Auguste Perret. Experience 'on the territory' will also show the visitor to Holland that the style is not restricted to van Ravesteyn, nor to the Dutch Railways, for which he was long the architect, and a recent example of it can be seen in the new church of St. Joseph at Vaals, designed by J. A. Huysmans, 24. The immediate effect of its exterior could hardly be more bizarre or unclassifiable to immediate view, but, as *Bouw* says (1959, No. 20), it has *een normaal betonskelet* with stone-faced infill panels, quite safely within the rationalist tradition that descends from Perret. Similarly, the interior, which looks almost like eighteenth-century *chinoiserie* at first sight, 25, has a reasonable structure, and the roof—a waved concrete shell of only 6 cm. thickness—is reported to give excellent acoustic qualities.



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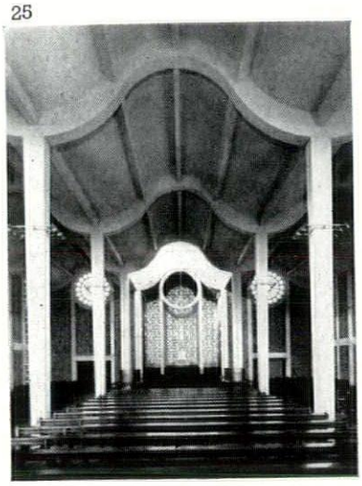
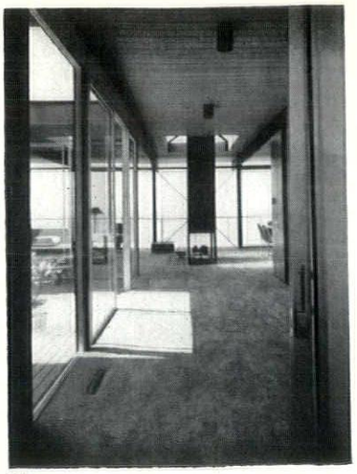


Sea-Side Symmetry

While arguments over the proper uses of formality in modern architecture proceed, modern architects continue to design formal buildings, often for what might be termed informal uses. A holiday house by the sea represents one of the more



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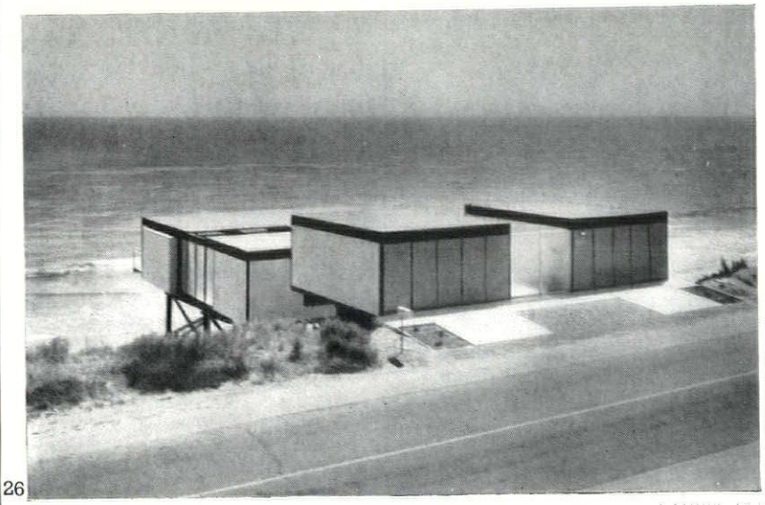
informal kinds of building in the current repertoire, but Craig Ellwood's recent house at Malibu beach, California, 26, answers this programme with a layout that is as strikingly formal as some of the so-called Palladian houses of Johansen or Philip Johnson. The two garages face the road in strict symmetry, suggesting that the new formality may have respectable functional roots in the dream of the two-car family, and the entrance steps descend between them on the main axis of the house proper. The plan, however, shows that, within the house, the symmetry is more processional, so to speak, than functional, 27. Thus, while the axis brings the visitor between symmetrical bedrooms, and delivers him ultimately to the free-standing fireplace in the centre of the living-room, 28, the kitchen lops off



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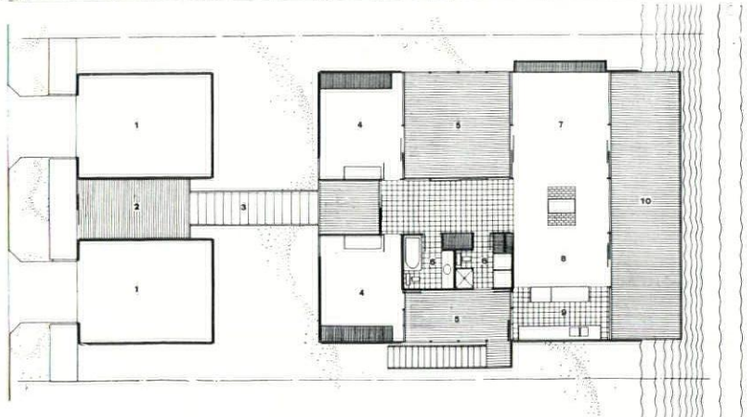

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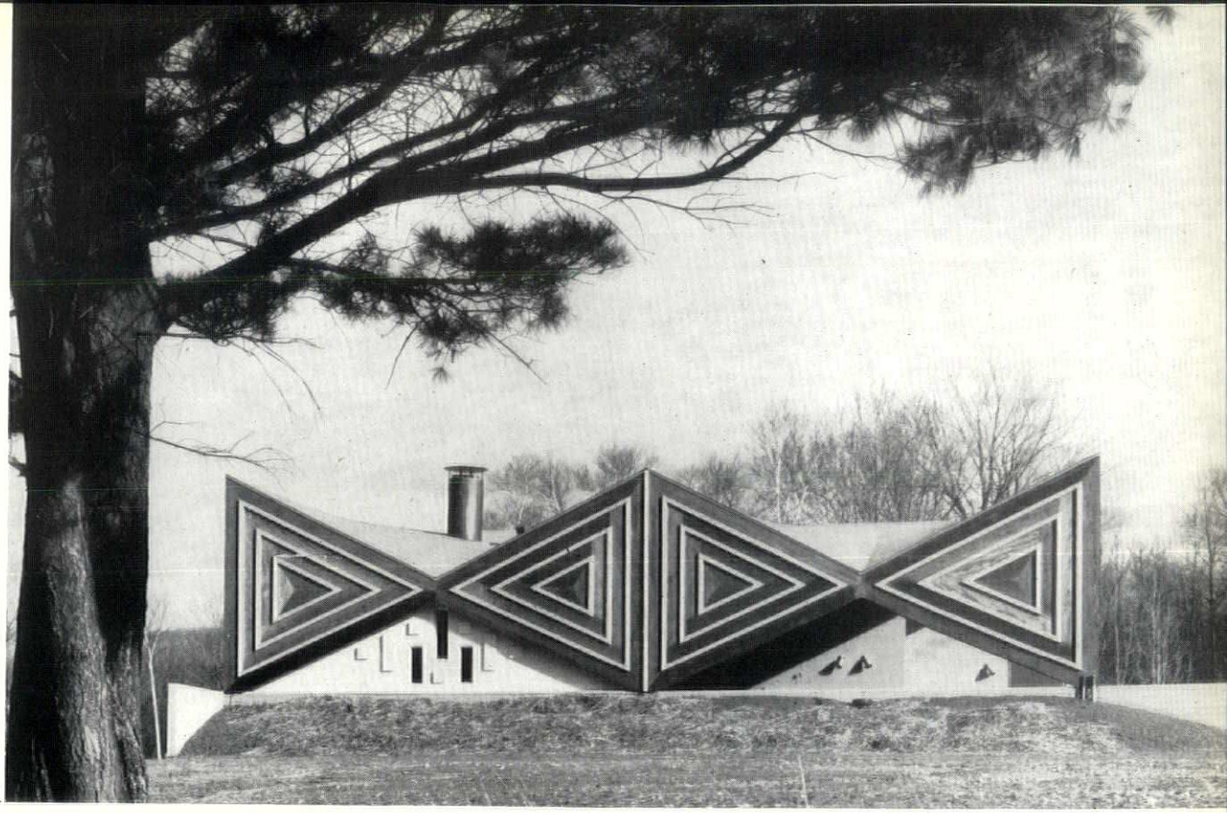
a large piece of floor-area from one arm of the living space, and the bathrooms occupy more than half the area of one of the two 'matched' patios, making it, effectively a service court, with the special function of being a cleaning-up area (note the direct access to the shower) for persons coming up from the beach.

Quadruply Warped Parasol

Most deviations from the 'normal' square or pitched-roof profile for small houses involve irrationalities of structure, but occasionally a seeming irrationality will prove to make perfectly good, if unexpected sense. Such a house is one recently built at East Dorset, Vermont, USA, to the designs of Ashok Shavnani, 31, which suggests, at first sight, one of the more formalistic followers of Wright. In fact, however, the bitter winters of Vermont (frost that reaches six feet down into the earth, violent gales, blizzards of snow) leave little room for personal fancy, and this apparently decorative gable wall is serious structure, its form arising from a double scissors-truss of light steel angles which, with a matching one on the other side of the house, carries the roof, in the form of four valleys warping out to a flat ridge-



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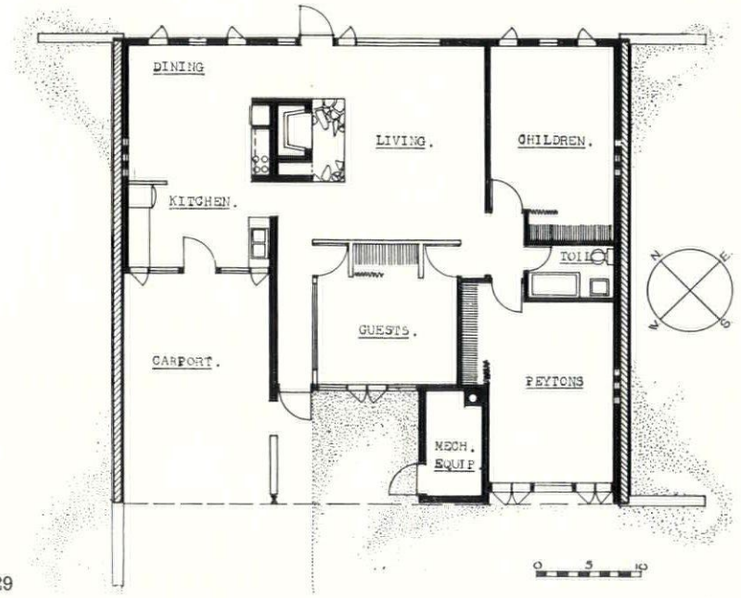

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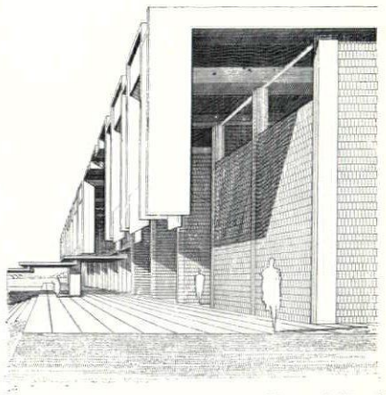
line across the centre of the house. The roof, together with the planked in trusses and the north-eastern wall of the house, make a kind of box-lid dropped over the system of concrete-block walls that enclose and divide the space of the house—the system is bitten into, on the less weather-beaten south-west, by the car-port and entrance porch, 30, and plan 29.

As might be expected, the variations in pitch of the warping roof make for dramatic interior effects, particularly when combined with the carefully worked-out fall of shafts of sunlight, 32, from the pattern of windows on the north-east wall. However, the walls of the fireplace, which give so clear an idea of the changing slope of the ceiling, are anomalous to the rest of the design, in that most of the interior walls are taken up only seven feet, with glazing (or even nothing) above, so that the continuity of the inner space under the 'box-lid' can be more fully appreciated.

Return to Florida

The foundations of Paul Rudolph's reputation were so firmly laid in Florida before he became a national figure and migrated to Yale, that it is of particular interest to see how he designs for Florida today, now that he is an International figure as well. His project for a new high school at Sarasota, where he still maintains an office, shows that he is still working on the idea of the suspended screen, which he first developed for Wellesley College. At Sarasota, 33, the function of the screen is to provide part of an elaborate system of sun-control, which in its turn is part of a closely worked-out approach to the 'micro-climatology' of the building. Thus, the classrooms are disposed



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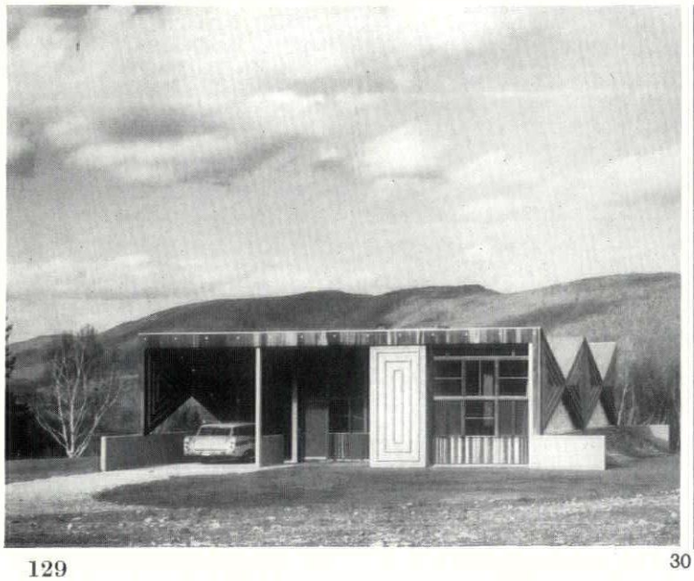
on the north and south sides of the building, on either side of a central corridor, 34, which gives optimum presentation to cross-ventilating breezes in that locality, and the screens prevent direct sunlight from entering, in spite of this orientation. The second-floor corridor is suspended clear of the classroom walls, leaving a gap through which extracted air may rise from the ground floor, while indirect daylighting finds its way down to the ground floor from the monitor on the roof. A notable



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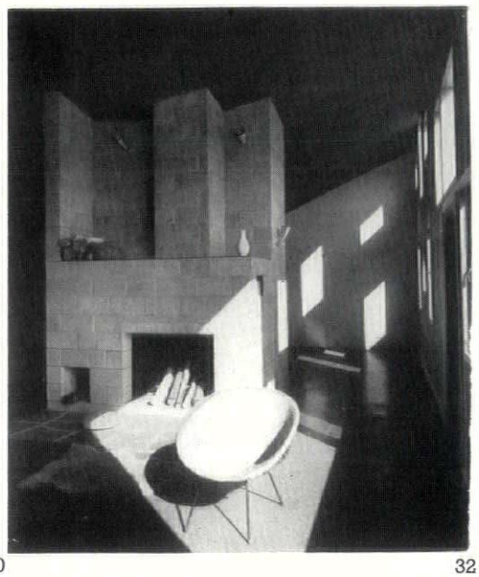

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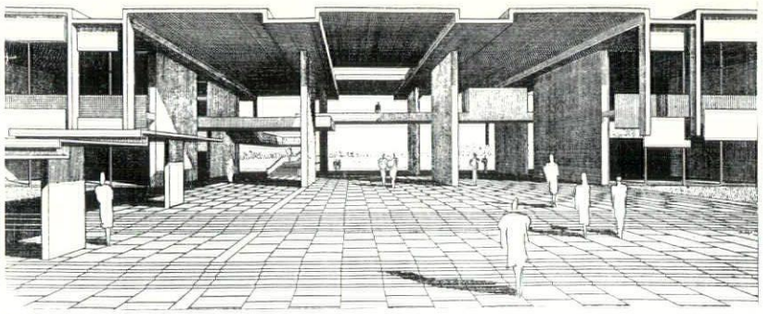

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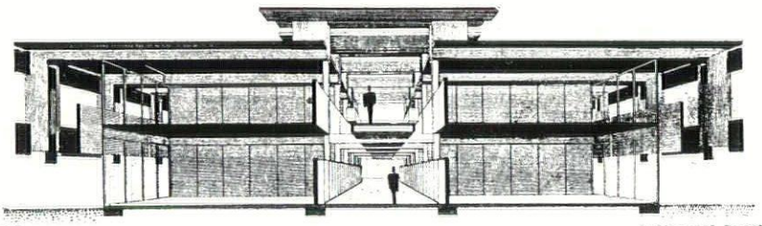
feature of the design, arising from this concern to have the microclimate right, is the systematic creation of spaces in the structure for mechanical services, such as air-extraction plant, and these 'mechanical spaces' are expressed on the exterior as the open ends of the troughs between the twinned beams that carry the screens, as in the classrooms on either side of the main entrance in 35—in the main entrance canopy, however, these troughs are purely structural.



35 *Architectural Record*

Italian Buildings out of Context

Thoughtful visitors to Como must often have been struck, as they mused on the classical and unmistakably Mediterranean geometries of Terragni's *Casa del Fascio*, with the realization that Northern, Nordic Europe starts on the hill immediately behind—indeed, *lederhosen* are in evidence as soon as one leaves the funicular at Brunate. Culturally, economically and architecturally, we hear a good deal of Italy's exotic south, much less about her equally exotic (by Italian standards) Alpine north. The Editors of *l'Architettura* (No. 44) were probably expressing something of their sense of this exoticism when they said of Eduardo Gellner's work in Cortina d'Ampezzo, 36, that 'designing for mountain areas is really a tough experience for a modern architect . . . he must guard himself against the romantic suggestions of local or anonymous architecture.' To northern eyes this building for the Italian Posts and Telegraphs, of which 37 is another view and 38 a detail, suggests that Gellner, at least, has succumbed completely to these 'romantic suggestions' although the general air of bravura and sophistication are, perhaps, specifically Italian. Nevertheless, one must agree with *l'Architettura's* verdict that Gellner has shown originality in face of his problems—there can be no other public building in Europe that even faintly resembles this.

Certainly not Gio Ponti's Italian-Swedish Institute in Stockholm, 39, which though far north of Italy's borders and relatively benevolent climate, is strikingly Latin to the eye, and calls to mind, curiously enough, some projects that Ponti made about five years ago for an atomics institute in Sao Paulo. In the small strip windows of its rear façade, and in the shuttered blankness and flatness of the main front, 40, this has very much the air of an Italian building in exile. Ponti has expressed a hope (in *Domus*, 1959, No. 355) that if this building expresses something specifically Italian, it does so by means of something more profound than mere stylistic devices. Argument on this point will doubtless proceed for some time, but it must be observed that if there are recognizable stylistic devices in use here, they are specific to Ponti personally, rather than to Italian architecture in general.

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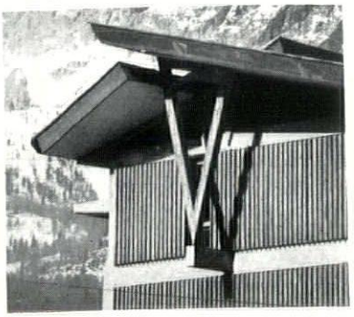

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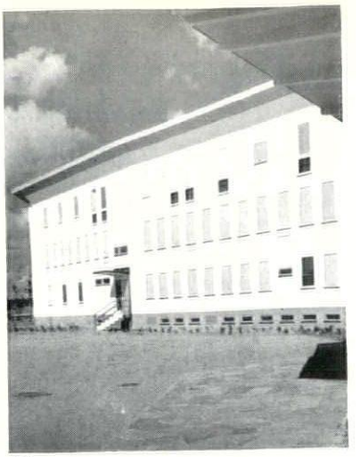

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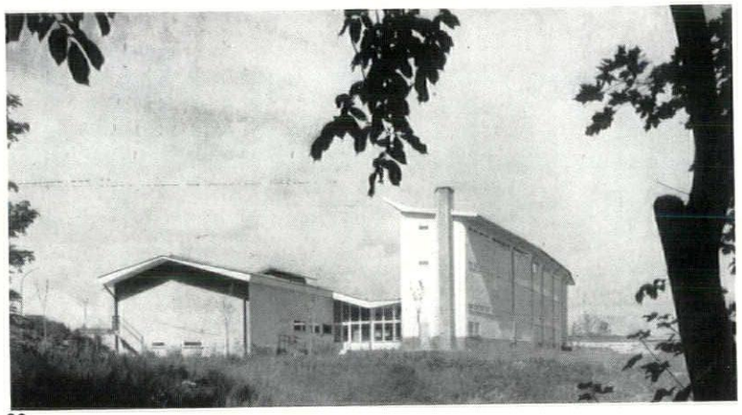

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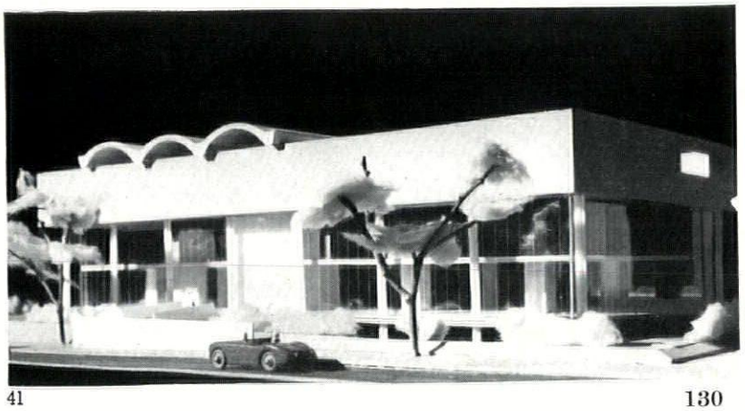
Classical and Flexible

The antithesis commonly made between classical design, seen as a closed aesthetic system, and modern needs for flexibility in plan, seems likely to be put to a severe test if used to evaluate the new Primrose Club, 41, in Toronto, designed by the well-known office of John B. Parkin Associates. Firm claims to both classicality, justified at least diagrammatically by the appearance of the model, and flexible adaptability to the changing needs of a club, are made in the preliminary notices that have been issued about the building, which should be completed late in 1960. The basic device by which these supposedly conflicting aims will be achieved are, quite simply, that the regular bulk volume of the whole is not only sub-divided by movable screens, but also has space to spare for expansion within the building envelope; in other words, more of the sun-deck behind the storey-high parapet could be roofed-in and enclosed. European readers will also detect a note of resigned realism in the statement that the basement car park has room for thirty *large* cars (AR italics).



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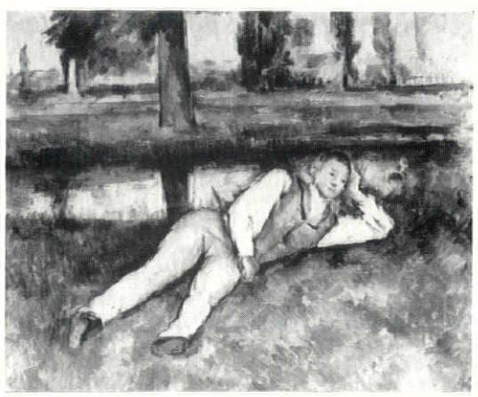
EXHIBITIONS

PAINTINGS AND SCULPTURE

The summer exhibition of paintings by 19th and 20th-century European masters at Marlborough Fine Arts is one of the most notable and fascinating displays of stock that I have seen in a dealers' gallery since the war. It must have cost the Marlborough a great deal of money to bring these works together, for quite apart from paintings by Delacroix, Manet, Renoir, Van Gogh and Pissarro which cannot fail to interest collectors who are looking for good examples of these masters, the exhibition includes works of an even rarer quality by Cézanne, Bonnard, Matisse, Rouault, Vlaminck and Klee—works in which form and colour are infused with a marvellous poetry.

A slightly uneasy relationship between the figure and the landscape gives Cézanne's 'Le Garçon Couché, 1, an unusual warmth and poignancy. The austerely composed landscape, with its rigid verticals and horizontals, bestows upon a meadow with a stream something of the formality of a private park. It is a setting for a great painting of the nude, and one can sense in the pose of the figure and the position it occupies in the composition that Cézanne had a reclining Venus in mind when he was painting this peasant boy in shirt sleeves. The boy was obviously an unwilling model, and Cézanne has not tried to mitigate the stiffness and reluctance of his pose. It is a reminder of the difficulty Cézanne had in obtaining suitable models for his 'baigneuses,' and there is enough unconscious symbolism in the invasion of the stream by the reflection of the column-like tree, and in certain anachronistic details in the treatment of the figure, to underline the fact that the boy is a substitution. Yet it is a marvellous painting, and an extraordinarily subtle instance of the use of juxtaposition and anomaly to do justice to inner experience.



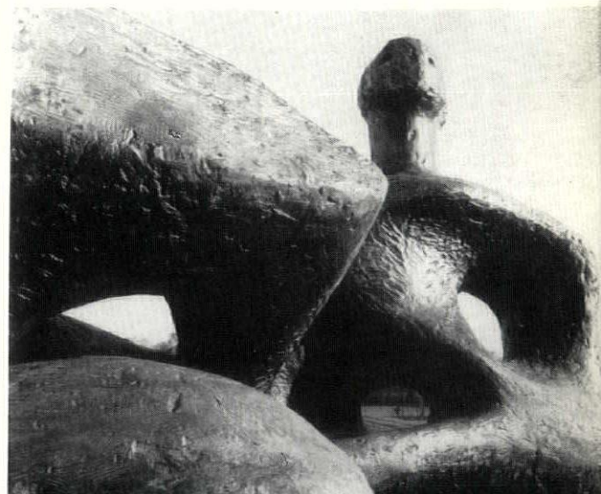
1

There is a striking contrast between this picture and Renoir's late 'Baigneuse Couchée' which hangs on a nearby wall. One has the feeling that when Cézanne was painting 'Le Garçon Couché,' the boy was not always available as a model and that there were times when the painter was alone with the landscape. The reverse seems to have been the case with the Renoir, and it is the nude and not the landscape that is, so to speak, totally with us. The model was probably posing indoors, and Renoir has been content to sketch in the landscape setting 'out of his head.' It is a deft yet desultory sample of his famous rainbow greenery; its shimmering insubstantiality exaggerates the girl's solidity to the point of grossness, and it is Renoir's effective substitute for a pictorial convention that has fallen into disuse—the convention that had allowed Titian to wrap a caressing and revealing mist of scarf round the body of Europa.

I am still horrified by a certain kind of distortion of the human head that first appeared in Picasso's work during the last war. A fearsome example of it appears in 'Femme Assise,' painted in 1941, which is another of the Marlborough purchases. The dislocations are beyond description, and the fact that they emit a grimace which is on the verge of being a cheerful grin does nothing to reduce my feeling that a human face has been subjected to a sadistic pictorial interrogation. It is almost as if Picasso were being seduced by the dehumanizing atmosphere of treachery and violence which pervaded France during the Occupation. On the face of it, one would think that Picasso could have expressed a nobler spirit in adversity by concentrating his great gifts upon the beauty and grace of the feminine image: yet if he had given up the invention of monsters it would have seemed as if he were admitting to error, and acknowledging that the Nazis were right to label such work 'degenerate.' It was, therefore, important that he should, if anything, exaggerate the violence and vitality of his inventiveness. So I am a bit mixed-up about this 'Femme Assise,' and may one day suddenly realize that it has the same majestic arrogance as the monsters that I unreservedly admire.

I find it difficult to imagine that artists who paraphrase the human figure would really like us to assume that they do so for purely formal reasons. It is an activity which springs from unconscious needs: it stirs up the mud of associations as a matter of course, and its provocativeness is inextricably involved in its impact upon us. But if we are to believe Mr. John Berger, Henry Moore, who is one of our most powerful paraphrasers of the human figure, considers most interpretations of his work to be nonsense. Yet Moore himself has not hesitated to put forward interpretations of some of his works, and his account of his own attitude to the bronze group called 'King and Queen' has had considerable influence on critical appraisal, and revealed the insensitivity of those critics who, by placing their faith in a purely formal approach, have dismissed its juxtapositions of disparate conventions as muddled and ineffective.

Critics have in general been remarkably judicious, not to say timid, in their approach to the holes, caves and hills in Moore's fine series of reclining figures. Perhaps the most notable exception is Mr. Frederick S. Wight, who discovered in the



2

chest cavity of the large wood carving of 1945–46 'a palpable image of some enormous slug (at once foetus, child and lover), burrowing with a teredo-like preoccupation in its inward feeding festival.' But the association of some of Moore's greatest reclining figures with landscape has become a critical cliché, and although most critics still hesitate to draw the inevitable conclusion that they are personifications of

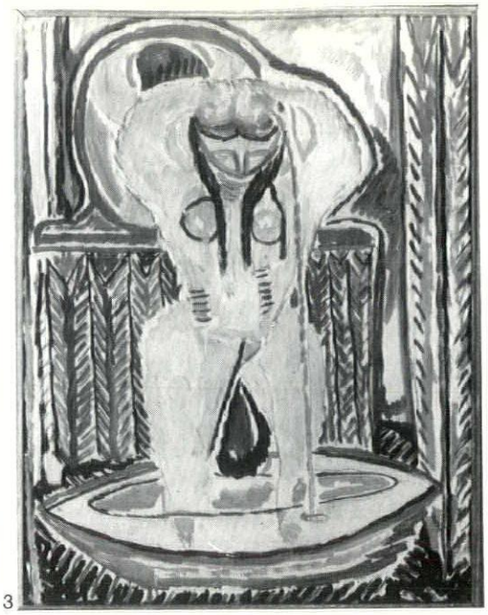
Mother Earth, they doubtless fear that if they were to do so they would be accused of treating Moore as a re-furbisher of the stock-in-trade of the academicians.

Moore is the only sculptor represented in the Marlborough show, and the bronze cast of his working model for the Unesco carving of a reclining figure, 2, once again arouses associations with landscape, though less obviously than some others. It is nearly 8 ft. long and looks colossal under the gallery's somewhat low ceiling. It is a work whose effect upon us depends on its vitality rather than anything in the nature of harmonious formal relationships, and if we consider its departures from the physical attributes of a woman as distortions, they are as radical and brutal as those in Picasso's 'Femme Assise.' It is pierced through chest and thigh and has a huge swelling between the non-existent breasts; its belly has been cut away, and the cavity bears the marks of boring and tunnelling; the nether limbs have become nightmarishly huge. It conveys the impression that it could turn its tiny reptilian head with terrible swiftness.

It puts us back among the dinosaurs. It is a version of humanity which probably laid eggs and some of these no doubt looked enough like pebbles to escape the attentions of egg-sucking reptiles. Huge and slow-moving, it snaps its food out of the air. Lacking an armour of scales, plates or spines, its only protection from its enemies is its resemblance to the bare terrain it inhabits. I would call it a chimerical image of mankind as an extinct species. It has great poetical assurance, and I think it is difficult to call such an image arbitrary in an age which is dominated by the knowledge that mankind is no more than a temporal product of the evolutionary process.

The fact that no fewer than eleven of the exhibits in the Duncan Grant Retrospective at the Tate Gallery were already on the spot, and only had to be brought in from other rooms or up from the basement, is a fascinating and ironical reminder of the attempt of a famous literary set, plentifully supplied with art critics, to turn a moderately talented painter into an English master of the 'values' it admired in French painting. The Bloomsbury writers became a pack of intolerant culture snobs at the mere mention of the art of painting, and Grant, who was tied to them by birth and upbringing, was sensitive to the demands they made upon him without having the means to fulfil them.

Three or four years before the first world war he arrived at a suitably French-looking way of marking a flat surface, and 'The Tub,' 3, painted in 1910, is one of the most attractive demonstrations of it. But it lacks vitality and inventiveness, and



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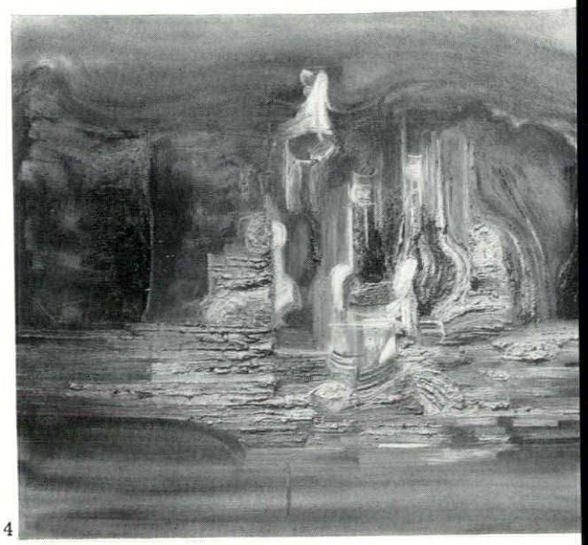
I think it can be taken as a sign that he was not on the right course, for although it shows the influence of African wood carving, the result is merely a trivial and facetious little stand-in for the human figure.

At the age of thirty-one, Jack Smith has been given a Retrospective at Whitechapel Art Gallery. It is a new kind of Retrospective, mainly devoted to paintings produced during the last eighteen months. Some of the Retrospectives of the old-fashioned kind that have been held at Whitechapel—those, for instance, of Mondriaan and de Staël—looked very untidy by comparison. They covered the developments of an entire working life and didn't produce the nice all-over effect of single-mindedness which gave Jack Smith's show its air of authority. In fact, the only Whitechapel Retrospectives that have conveyed anything like the same effect of steadfast artistic purpose were those of second-rate painters who have stuck grimly to a single formula over a long period of years.

In Smith's show, a few earlier works are used very effectively as launching sites for the main display of closely related variations on two themes: light clinging to objects, 4, and the rise and fall of the sea, 5.

The earlier works include the impressive Creation and Crucifixion previously shown at the Beaux Arts Gallery. Creation is symbolized by a creeping forth of cutlery and glasses from under a napkin, and Golgotha is represented by three shirts on a line. It is a notable demonstration of the Pathetic Fallacy, but is used in the exhibition as the terminal point of the first phase of a spiritual journey, and intended as a dramatic contrast to the very peculiar 'world of light' conjured up in the work that follows.

The paintings in which light is a nasty smear on objects are more interesting though far less pleasant than the abstracts of the sea. Some of the latter are smooth sheets of white paint broken only by narrow ridges of the same substance. They



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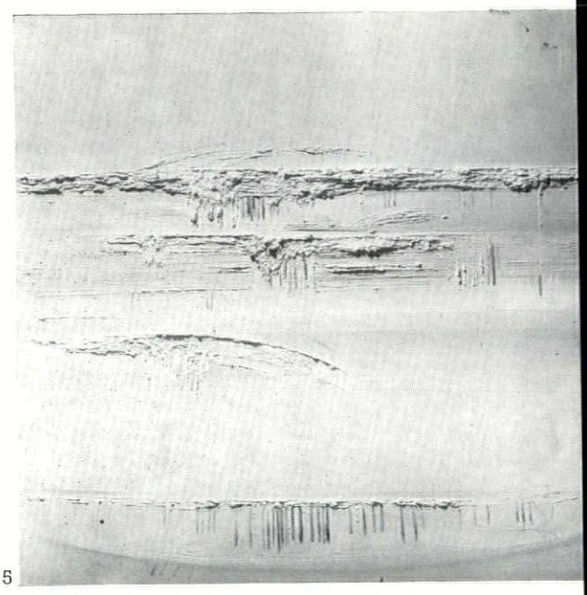
have negative good taste and would make attractively chic decorations in rooms with white walls.

Many of the paintings of light clinging to bottles are like scabby and rotting versions of 'Purist' still lifes, with light conceived as a creeping grey lava or a smear of khaki-coloured excrement or a horrible wrapping of soiled and groovy



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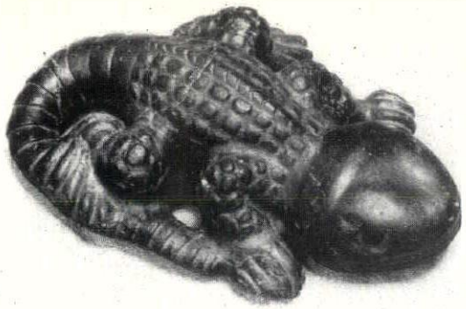
ectoplasm. They often make double images: landscapes for the most part, or dream towns in the sky; but one called 'Bottle, Vase, Light and Shadow' suggests nothing so much as a headless, semi-draped woman, with the flesh and the clothing mingling in slow corruption. The second phase of Smith's spiritual journey seems to have landed him close to the spot where Dali's experimental paranoia took an 'undulant-convulsive' turn.

The Arcade Gallery now has sculpture



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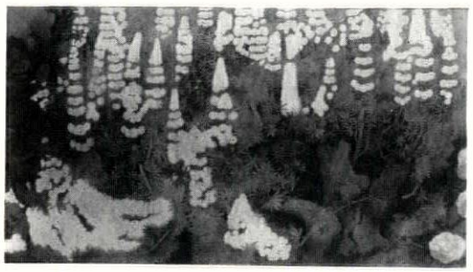
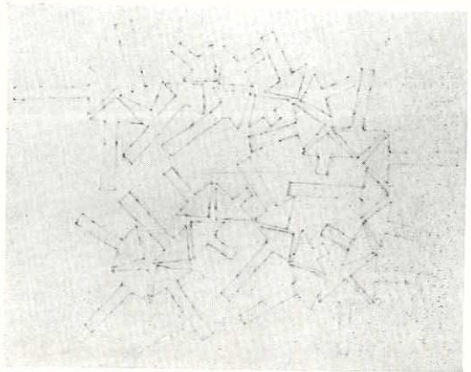
from many countries and periods permanently on view. The last time I called there I was particularly impressed by one of those Baga masks whose large, deeply-curved noses so enthusiastically embody the principle of increase, and by a pre-Columbian carving of a lizard, 6, which is less inventive but is superbly appreciative of its beady-eyed, knobbly little model.

Edward Burra has been holding another



7

show of his large, macabre watercolours of flowers and vegetables at the Lefevre Gallery. They present a sustained vision of the unholiness of living substance, and the gourds, beans and cabbages look more naked than snakes and more shameless than monkeys. The picture of lupins, 7, is a glimpse of the underworld of faery. The lupins have ceased to be flowers and are no longer on their stems. They have changed into a glutinous substance, and now appear to be half-finished gnomes, starting out on some task of interference in the midst of their own metamorphosis.



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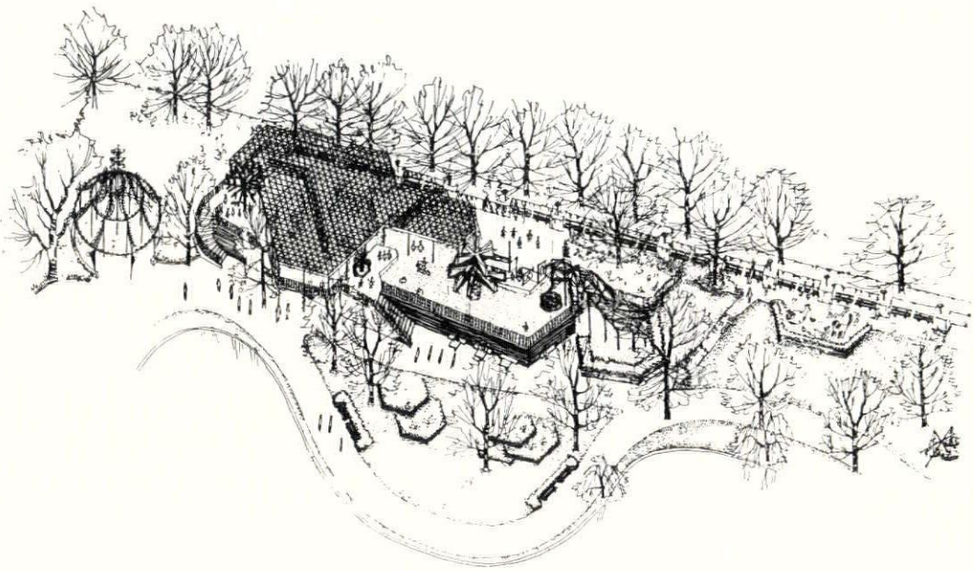
'The Developing Process in Art Teaching' at the ICA made a very pretty exhibition. The sheets of blobs and squares, and spirals and arrows and maze-like lines gave one the impression that some paintings and drawings by Klee had been taken apart and that the various elements had been distributed to deserving students intent on such tasks as proportional partitioning, space development, and irrational space-making by means of point or line development. A charming additive arrangement of arrows, 8, came under the heading of 'Form Field: Sign.'

Robert Melville

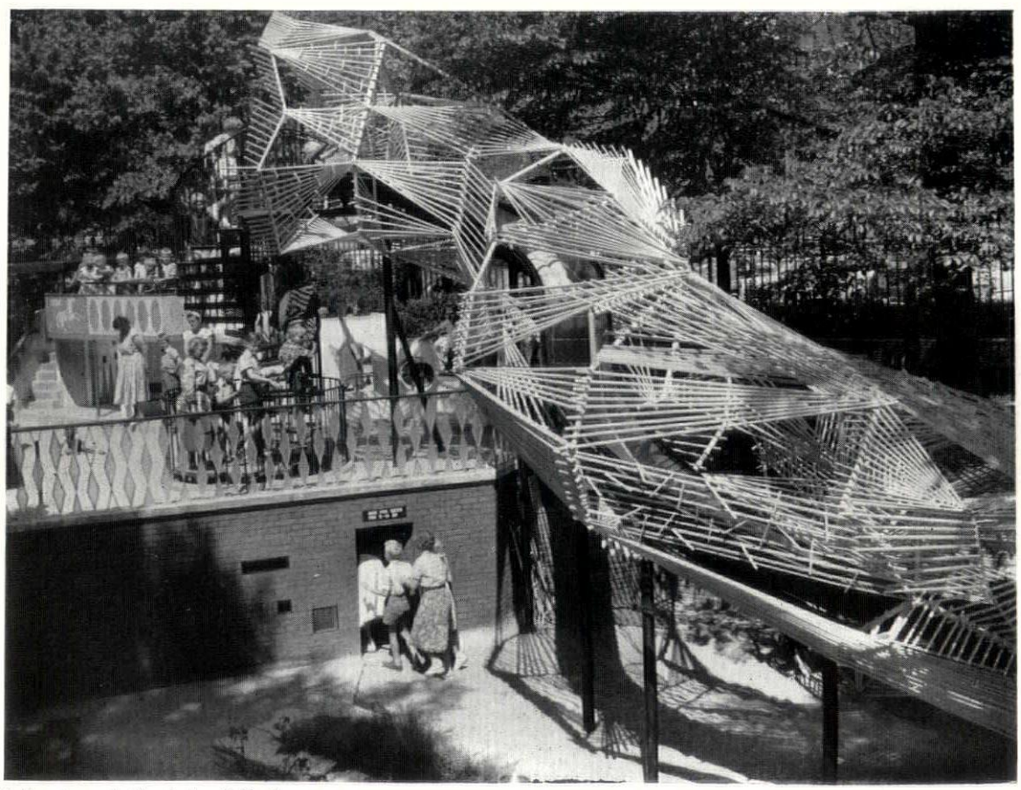
POPULAR ART

A NEW CHILDREN'S PLAYGROUND IN COPENHAGEN

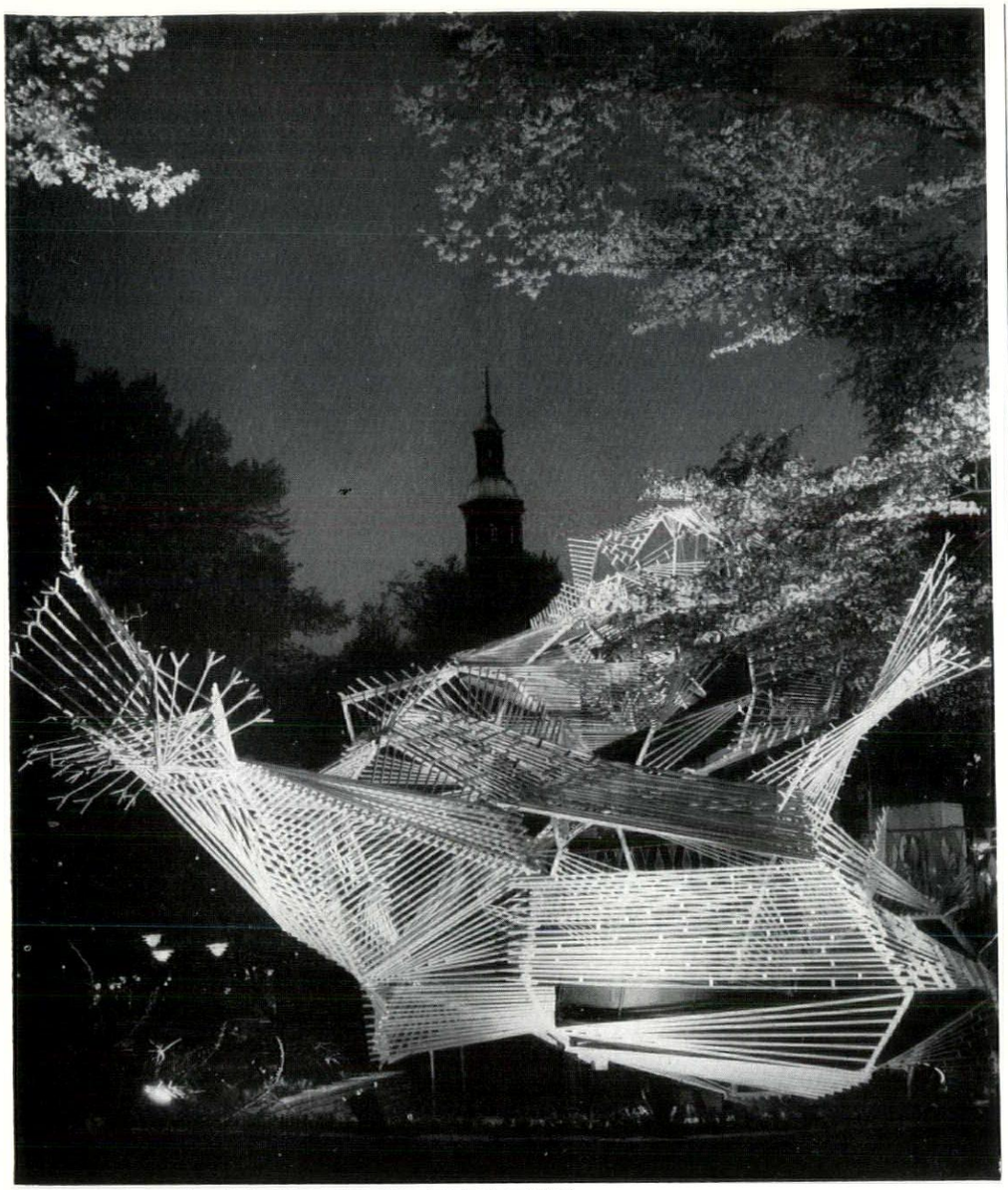
Copenhagen is already well known for the originality of its children's playgrounds, but the new playground opened last year in the Tivoli Gardens must be one of the most enchanting and imaginative creations of its kind to be found anywhere. It occupies a commanding position overlooking Tivoli's serpentine lake, and, although in no way isolated from the rest of the gardens, it is sufficiently detached to form a little world of its own where the children can enjoy themselves away from the grown-ups. Like everything else in Tivoli, the playground is laid out in a completely informal manner, with that happy blend of



1, *the architect's perspective of the whole playground.*



2, *the entrance to the giant switchback.*



3, *at night the floodlit switchback becomes a piece of abstract sculpture.*

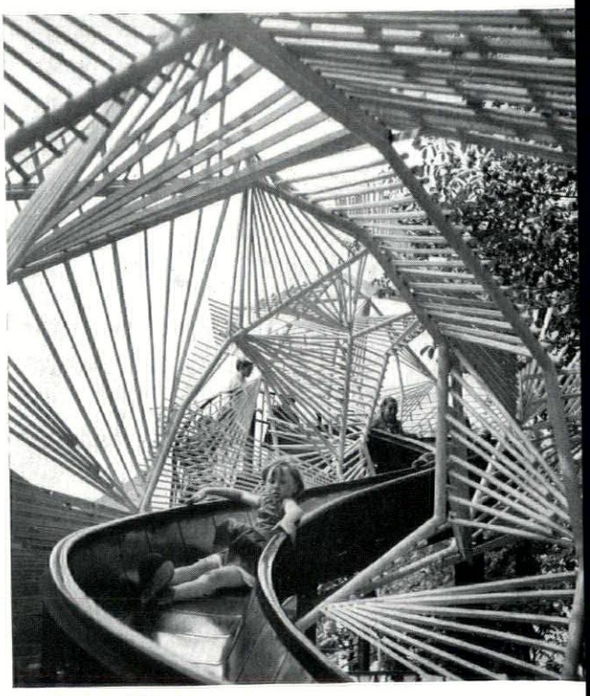
nature and artifice, bright colours and sparkling lights, so characteristic of the gardens—and again like everything else in Tivoli, it is immensely successful and popular.

The playground is a work of collaboration between Simon Henningsen, Tivoli's architect, Eywin Langkilde, landscape architect, who have been responsible for the general layout, 1, the art critic Pierre Lübecker, and six artists chosen to design the different attractions: Erik Christensen, William Fridericia, Henry Heerup, Torsten Johansson, Henrik Starcke and Gunnar Westman. About half the area of the playground is covered with a wooden pergola, which is partly roofed with glass and equipped with lamps designed to afford both light and heat, so that full protection against rain and cold is provided for the children. Underneath the pergola are scattered objects to clamber on, such as an enormous prickly porcupine made of wood, as well as a rope to climb up which is suspended from a large bird, a red rocking fish, a merry-go-round, and a see-saw on which the seats are birds that move as the see-saw goes up and down. Even the waste-paper bins round the playground are not just bins, but hippopotami whose jaws are receptacles for the rubbish! All these shapes are boldly carved and gaily coloured, thus enhancing greatly the impression of liveliness and movement already created by the very introduction of the oversize birds, fishes and animals. In total contrast to these friendly playthings is a piece of abstract constructivist sculpture, a composition of sheet-iron panels of different sizes painted alternately black and white: panels that turn out to be blackboards to scribble on. Outside the pergola and standing at one corner of the playground is a 'fireworks tree,' a tall iron construction with long gaunt arms projecting at all angles from which, at the insertion of a coin, hundreds of electric lamps flash on and off.

The other large objects are also outside the pergola but grouped at the opposite end of the playground to the 'fireworks tree.' Of these the most amusing by far is the 'House of Forbidden Games,' partly

4, *climbing frame of blue and grey reinforced concrete.*

visible on the left of 4. This is a building of distinctly open planning, decorated on the outside with patterns composed partly of mosaic and partly of waste porcelain electrical fittings from the Tivoli workshops which stand out in high relief. Amongst the attractions offered by the house definitely not permitted at home are a large-size keyhole to peep through and some well polished balusters to slide down. Above these features is a balcony with a balus-



5, *inside the switchback.*

trade to lean over and a telescope to look through: from this vantage point, suggestive of the bridge of a ship, the children can imagine themselves in command of the whole playground. Close to the 'House of Forbidden Games' is another piece of abstract sculpture, this time in reinforced concrete, a massive and severe-looking structure in sombre greys and blues which provides an excellent substitute for the joys of rock climbing, 4. And beyond this is the giant iron switchback, 2, 3 and 5, artistically the most exciting creation of all. Shaped like some fantastic serpent, with its ribs painted in bright whites and yellows, it dominates the whole playground. At night, under floodlighting, the effect is magical. Then, when all the children are tucked up in bed, the playground ceases to be just a playground, and becomes a work of art—which is the intention of the designers. Concealed lights illuminate cocks perched on the pergola, owls in the trees, and butterflies hovering over the grass and the lake.

Tivoli's new playground is a characteristically Danish creation. For it is at once practical, colourful, witty and intensely human. It is what one expects from a city where the tastes of the individual human being still count for so much, and where one of the most delightful of its many promenades and gardens has been laid out in the most unpromising of places, amongst and over harbour installations, and ends on Langelinie, where the little Mermaid is and also one of Copenhagen's smartest restaurants.

John Hayes

COUNTER-ATTACK

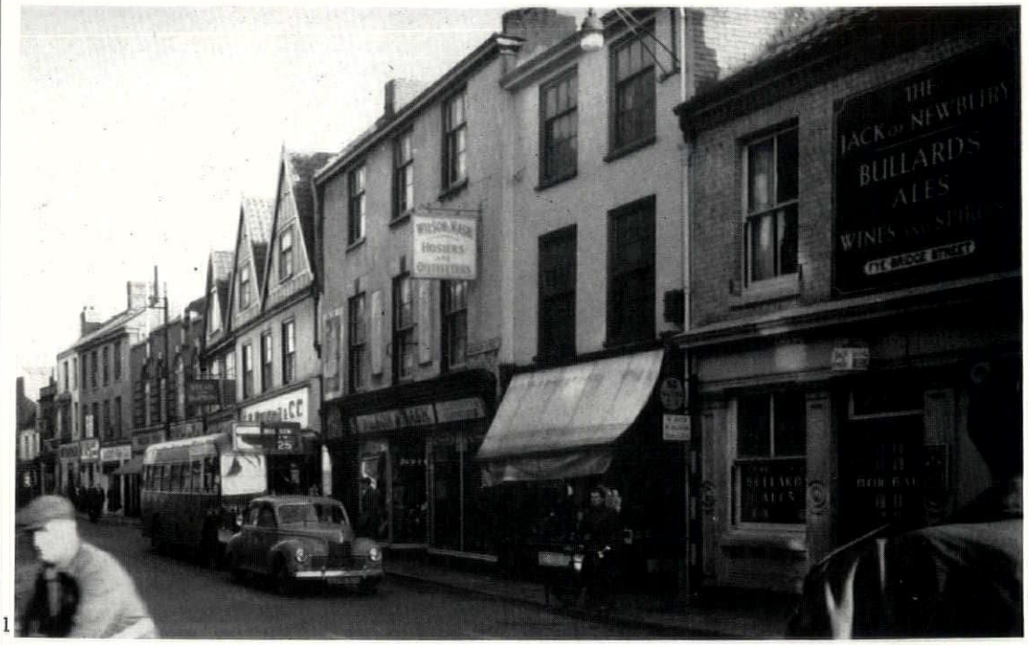
Arrangements have been made for the Civic Trust to handle in future the requests for advice, information and assistance about townscape, outrage and similar questions which have hitherto been dealt with by the Counter-Attack bureau, which was set up by the REVIEW *after publication of its 'Outrage' and 'Counter-Attack' issues. Such requests should therefore be addressed henceforward to the Civic Trust at 79, Buckingham Palace Road.*

The REVIEW *will, of course, continue to pay attention to all such problems in its pages. In addition to special features, a regular column, edited by Ian Nairn, will continue to appear under the heading Counter-Attack.*

IMPROVEMENT AT BURSLEM

Full marks must go to the Civic Trust for its decision to attack the public's apathetic attitude to civic decay, not only with words but head-on in a series of 'live' experiments. It is one thing to give general advice in the abstract and quite another to stick your neck out and try to show on the ground what should be done.

The first experiment, at Norwich (Magdalen St.—AR May 1959, page 357), an essay in face-lifting a down-at-heel shopping-street, 1, 2, was outstandingly successful. The Civic Trust, its designers, the shopkeepers and the local authority all worked amicably together and produced a good result—and on time. This experiment, completed in May, caught the public interest and the results led sightseeing councillors from other towns to ask the Civic Trust for the same treatment for themselves. Their enthusiasm was a good



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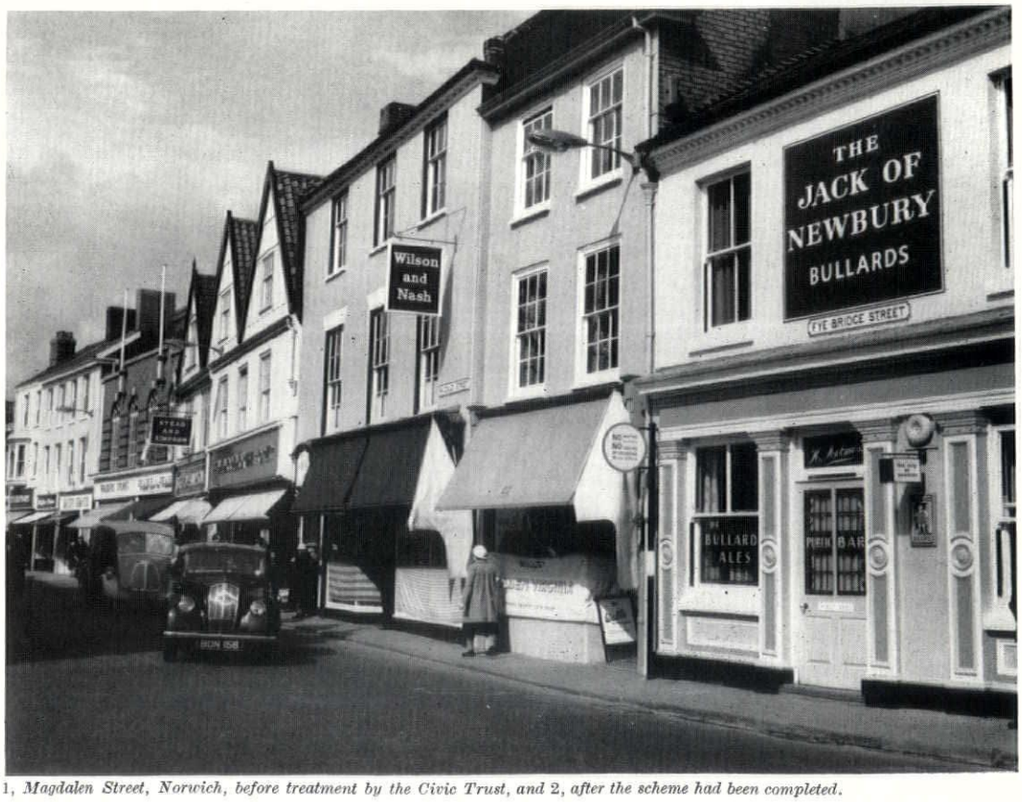

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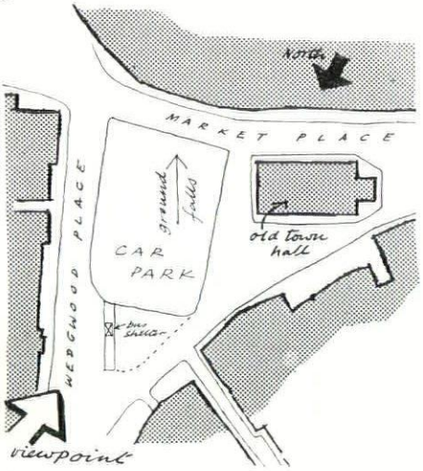
1, *Magdalen Street, Norwich, before treatment by the Civic Trust, and* 2, *after the scheme had been completed.*

3



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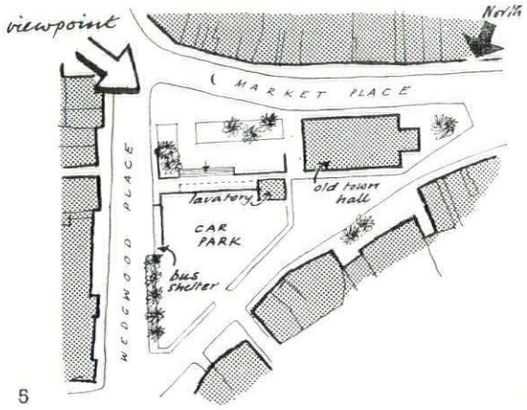
3, 4, the centre of Burslem as it is now, a disintegrated scene with the old town hall isolated on an island and the space between it and Wedgwood Place usurped by a very scruffy car park.

5, 6, the centre as it will be, with the town hall tied in to an organized layout in which the car park is masked by a screen wall which at the same time unifies the various elements.



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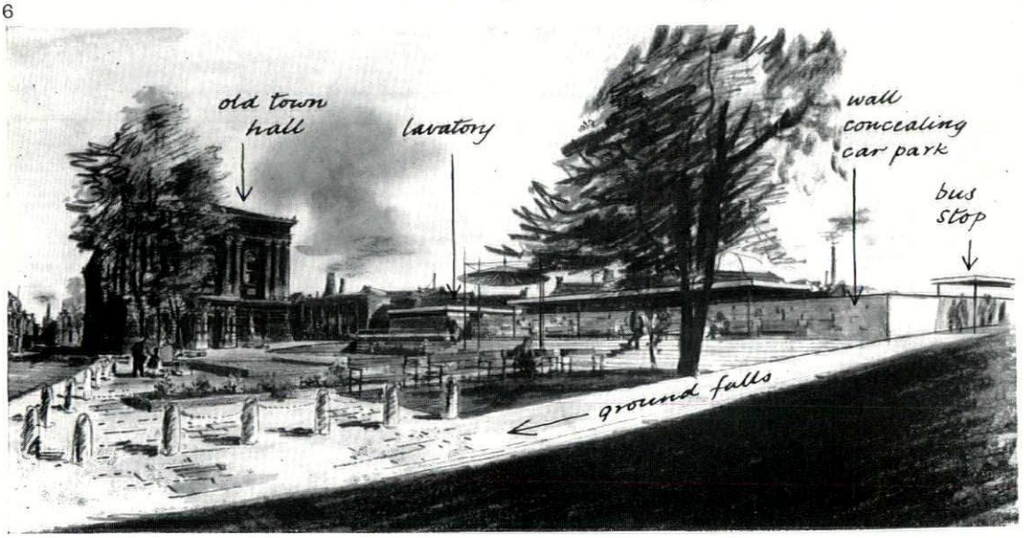


thing but it does contain a hidden danger, for what is right in one place is not necessarily right in another: each case *must* be judged on its merits. There must be a controlling hand and, more important, a controlling EYE, sympathetic to the character of the place concerned. What's right for Norwich would be wrong for North Berwick, or for that matter for grimy Burslem in the Staffordshire Potteries, the centre of which, by local request, is the scene of the second 'live' experiment now in its early stages.

This Burslem exercise presents a trickier problem than Norwich, for besides the face-lifting of shops it involves the treatment of space—derelict space behind the old town hall and once the site of the butchers' market. As it stands this is a pretty squalid area, 3, 4. It has deteriorated into a formless junction of streets, a turning area for buses and an uncommonly scruffy car park, and is quite unworthy of the very centre of a town. The cinder-surfaced car park, bounded by tatty split wood fencing, is the repository of an ill-assorted collection of signs, bins, guard rails and a hideous concrete bus shelter. Up to three years ago there was a covered market here (demolished because of the heavy cost of repairing the roof). Maybe it would have been better to rebuild it, but this is beside the point because the council had decided its requirements before the Trust was called in. They wanted a focal point for the town and somewhere pleasant for people to sit—also a car park, lavatory, bus shelter and bandstand.

The problem confronting the architects* is how to weld these together and avoid the fragmentation or pomposity which usually results in such a case. It was not possible to dispense with any of the items, much as the designers may have wished to do so.

Now, the old town hall, a fine pitch black Victorian building, is isolated on an island of its own and the first action of the designers will be to link it in by dispensing with the slipway between it and the car park. This preview sketch, 5, 6, of their intentions shows that by terracing the north-south ground-fall they will provide a paved walking space and garden at the lower level with steps leading up to covered seats, backed by a long wall. This wall will screen the car park and will be in dark engineering brick appropriate to the place. It will link a lavatory block, the seats and a bus shelter, all of which will have similar canopies, and will unify the various objects which are usually just dumped down regardless of each other. The planting of 30 ft. plane trees will bring some much-needed foliage into the centre of the town.

The scheme is due for completion in March 1960.

* Co-ordinating architect, Misha Black; associate architect, Tony Wilkinson.

SKILL

PITCHED ROOF COVERINGS

by Peter Whiteley

5, fully supported sheet materials

The author completes his series of articles on pitched roof coverings by considering fully supported sheets. To the metals traditionally associated with this purpose he adds super-purity aluminium and the substitute for metal, nuralite. And to the familiar 'built-up' roofs he adds the new class of foil-covered felt roofs and a complete newcomer made of polyiso butylene. For the table amplifying this and the preceding article see the note on page 140.

The common characteristic of this group of materials is that they are flat and have no sectional strength. They need to be fully supported. For the forming of flat sheets of limited size into an extensive roof surface there are two technically different jointing methods: the first, applicable to metals and to 'Nuralite,' for which it is essential to allow thermal movement, is the mechanical one of laps and welts; and the second, for bituminous-based felt and plastic materials, is by using an adhesive, when the roof covering becomes virtually one continuous surface. The necessary full support is usually either screeded concrete or insulation slab, or tongued and grooved boarding, but whichever substructure is provided the surface must be clean and smooth, firm and laid to an even fall. Between the supporting substructures and the surface sheet in every case there must be an intermediate layer of felt, either Indorous Felt No. 1 (to B.S. 747) a bitumen-impregnated flax felt (usual in the case of metals), or a bituminous felt of similar composition to the surface material. The purpose of this felt, if the substructure is concrete, is to reduce condensation; if the substructure is boarding, its effect will be to reduce the noise due to 'drumming.' It is important to use the correct felt for each particular covering material as, even in the hottest summer conditions, the surface of the felt must not become tacky and so inhibit thermal movement.

Weather Resistance

The causes of leaks in fully supported roofs may be one, or a combination of a number of the following:—

1. Water may find its way over the heads of the sheets if simply lapped. This is due to the roof having too low a pitch for the lap. However, of this group of materials only lead would be simply lapped and then only above a pitch of 12°–15°; below that pitch it would have conventional 2 in. to 2½ in. high drips.
2. In the case of bituminous-based or plastic materials there may be a failure of adhesion between lapping surfaces.
3. As with all other roof coverings (though probably less so than with unit coverings where there is a double change of material) leaks may occur where the sheet material changes its plane of direction or joins a surface of another material—verges, abutments, ridges, open valleys and roof lights are such situations.

Of these three causes only the first is in any way connected with the pitch of the roof and this will not occur if the roof is laid according to good practice; i.e. ensuring that the lap is the correct one for the pitch, which would be 11½ in. for a 15° pitch, 9 in. for one of 20°, and 6 in. for 30° and above. Avoiding trouble from the second cause is almost entirely a matter of choosing a reputable firm who can be relied on to lay the material correctly (the manufacturers with the best reputation in this field usually insist on laying their own materials). There is nothing inherently wrong with the principle of adhesion for roof waterproofing, but it depends very much on good practice and workmanship for its effectiveness. The whole system of mechanical jointing of metal sheets by means of single or double lock cross welts, standing seams, wood filled or hollow rolls, is an extremely effective one and, if the roof is well laid, there should be no leakage troubles from this source for the whole life of the roof.

The durability of lead, copper, and super-purity aluminium is such that they are likely to last as long as most building materials with which they will be used, so the effective life of roofs of these materials is more likely to be governed by the security and durability of the fixings, rather than the durability of the material. (See *Durability* below).

Pitch

Because this group does not rely for its effectiveness on pitch, they can all be laid virtually flat (i.e. down to pitches of about 2°) though in the case of the metals as pitches below 10°–15° drips would be incorporated in the slope of the roof at appropriate centres. This freedom allows maximum flexibility.

Durability

Metals: For the metals used as fully-supported roofings, durability could be more specifically defined as resistance to deterioration by corrosive agencies; and the American Society for Testing Materials has published some interesting figures for comparative corrosion rates, in terms of depth of pitting measured by loss of weight.

location	atmosphere	corrosion rates in millionths of an inch per year			
		aluminium	copper	lead	zinc
Phœnix, Ariz.	desert	0	5	9	10
State College, Pa.	rural	1	23	19	42
La Jolla, Cal.	coastal	28	52	16	68
New York, NY	industrial	31	47	17	190

(Quoted from the Symposium on Atmospheric Exposure Tests on Non-Ferrous Metals, published February 27, 1946, by ASTM.)

These non-ferrous metals oxidize on exposure to the atmosphere comparatively quickly in the case of aluminium and its alloys and zinc (up to two years) and more slowly in the case of copper and lead, the film or patina thus formed acting as a protective coating against further oxidation. As these patinas adhere tenaciously to the surface of the metal and are insoluble in normal atmospheres, moisture oxidation virtually ceases after the patina has formed. This is not true of zinc which, in any case, has a much higher corrosion rate than the other three metals. It follows from this that a zinc roof of maximum thickness compatible with ease of working and fixing (16 zinc gauge) will have a longer effective life than one of minimum thickness (14 zinc gauge). The life of all types of metal roof can be seriously affected by electrolytic action with other metals, or the corrosive effect of other materials which are in close, unprotected contact with them. Materials of this kind are new concrete and cement, mortar, plaster and certain woods notably oak, elm and Western Red Cedar, all of which should be suitably insulated from the metal, particularly where there is likely to be moisture present.

The finish of a metal roof will be that of the natural patina, a matt silvery grey in the case of lead, aluminium and zinc, and the characteristic viridian green of copper; these colours may be darkened or modified in other ways as a result of atmospheric impurities.

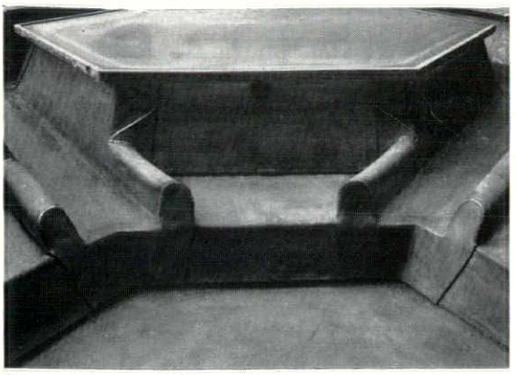
From the evidence available it seems reasonable to expect a minimum life of 100 years for a roof of the correct weight of metal (laid according to good practice)—of lead, copper and super-purity aluminium, and considerably more if the conditions are especially favourable. The ZDA estimate that for zinc, a life of approximately 40 years can be expected for a roof of No. 14 zinc gauge.

'Nuralite': This is a thermoplastic laminated asbestos fibre and bitumen substitute for roofing metals, and is laid using the same technique as for zinc, i.e. with square roll caps, in this case spaced approximately 2 ft. 9 in. apart. It has not been in use for long enough for its effective life to be known, but, because of its composition, it would probably be safe to expect a similar performance from it as from a 2-ply built-up roof of asbestos based felt. When new, 'Nuralite' has a smooth black surface, but it weathers very quickly to a matt mottled grey colour.

Built-up roofings: of the 'built-up' roofings based on bitumen there are three types of material, each with slightly different properties in use, which provide a pitched roof finish of reasonably attractive appearance. These three materials are: (1) fibre felt based, (2) asbestos based, and (3) glass fibre based roofings. All are available in different thicknesses (measured in lb. wt. per roll of 24 yds. length), as an underlay and in a variety of finishes. All are laid in hot bitumen which bonds the first layer to the substructure and subsequent layers to each other. Broadly this group of materials is intended for use on roofs of 5°–30° pitch, though there are other combinations of base material and finish which will effectively waterproof roofs down to 1° pitch.

All that can be said about their durability is the observation that there are 3-ply fibre felt based roofs laid prior to 1914 which are still effectively waterproofed; and it is fairly certain that the comparatively recently introduced asbestos and glass fibre based roofings will have a longer life because of the greater durability of the base materials. Built-up roofs are available in a variety of mineral finishes, the natural stone or ceramic granules being incorporated into the surface of the sheet during manufacture; these in addition to providing an attractive finish, increase the solar reflectivity of the surface and help to protect the bitumen from ageing.

A recent development of this particular group of materials by two manufacturers is the use of a surface finish of fully soft copper foil and aluminium foil (42 s.w.g. .004 in. thick) bonded to a backing of glass fibre felt. In the manufacturing process the metal receives multiple indentations, which allow for thermal movement of the metal surface when fixed. This composite material is bonded with bitumen compound to an underlay of glass fibre based felt in the same way as other bituminous felt materials. The manufacturers say that side joints may be formed as standing seams or batten rolls if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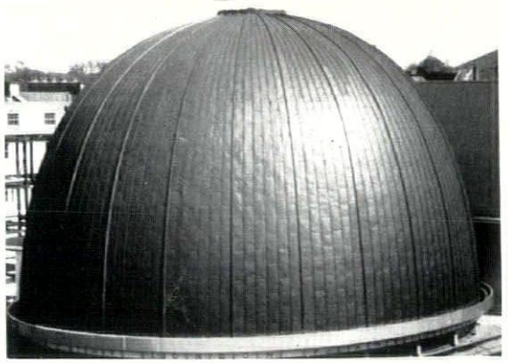
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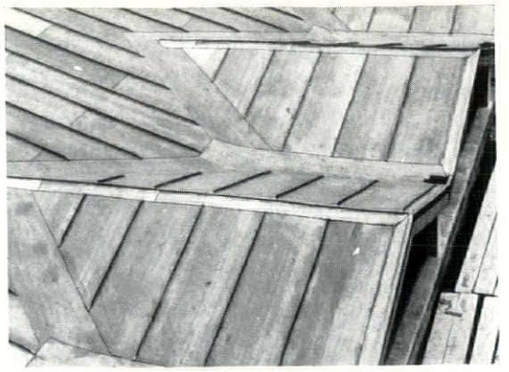
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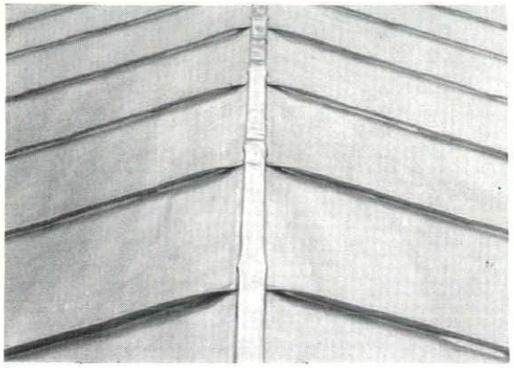
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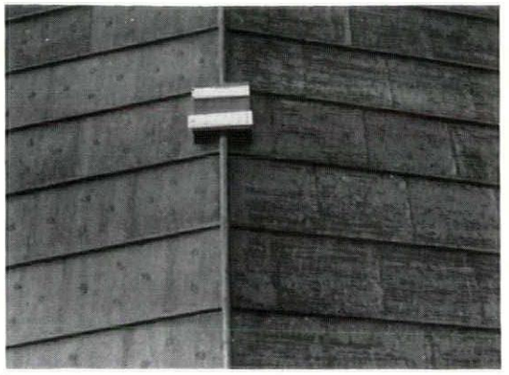
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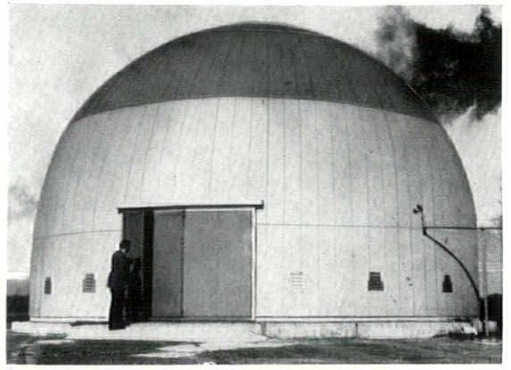
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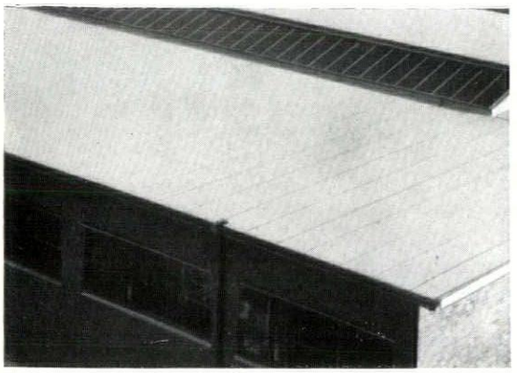
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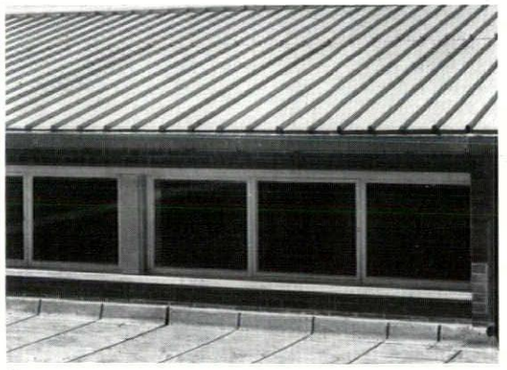
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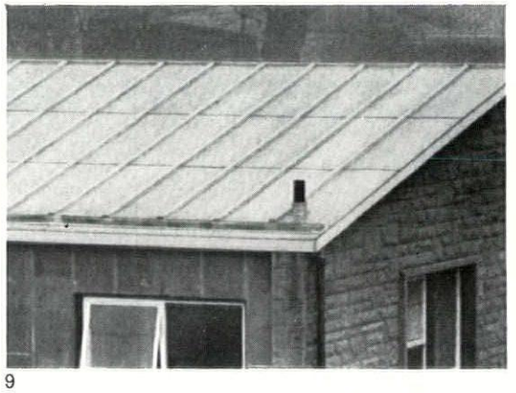
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Examples of the various types of roofing mentioned in this article. 1, lead; 2, copper; 3, copper; 4, super-purity aluminium; 5, asbestos and bitumen, nuralite; 6, built-up roofing, Ruberoid; 7, built-up roofing, Ruberoid; 8, aluminium, noral snaprib; 9, aluminium, British Aluminium.

desired, though this would not serve any functional purpose but would merely simulate the effect of a copper (or aluminium) roof laid by the traditional or 'Economy' methods. It will be interesting to see what durability these materials prove to have, as they combine the advantages of a metal roof appearance and, at the same time, the metal acts as a protection against ageing of the bituminous base material.

The last type of roofing in this category is represented to date by one material only—'Oppanol,' a plastic sheeting imported from West Germany. When combined with a woven glass fibre base reinforcement the same material is known as 'Roofanol.' 'Oppanol' is suitable for pitches from 1° up to about 30°; over 30° (including vertical work) 'Roofanol' is more suitable because with it there is no danger of creep or plastic flow. Both materials are laid on an underlayer of bituminous felt roofing bonded with hot bitumen; the 2 in. laps between adjoining sheets being 'swell welded' with a special solvent. 'Oppanol' (Polyiso butylene) is stable to oxygen, unaffected by exposure to light and sun, and completely impervious to water and most chemicals (including polluted atmosphere) and, therefore (unlike all bitumen-based materials) will not age on exposure.

'Oppanol' was first developed and marketed as an impervious membrane for application in buildings below ground—tunnels, mines and similar situations—and it has not yet been extensively used as a roofing material. However, there is evidence of its extreme durability in some of the situations quoted, where it has been in use upwards of 20 years without any observable change in its appearance, mechanical properties, or effectiveness as a waterproofing membrane. The smooth top surface of the sheeting (black in colour) is normally finished with an aluminium Oppanol dressing (a paint manufactured from the same basic material). These paints will shortly be available in a limited range of colours.

Thermal Insulation

The thermal conductivity of all the roofing metals is high, especially that of aluminium and copper; however, the reflectivity of the surface of aluminium to radiant heat is also high and must be taken into account when calculating the total thermal resistance of the roof; this does not apply to lead, copper and zinc, and so their insulation value is negligible. This same advantage of reflectivity applies to 'Roofanol' when treated with the aluminium surface coating, and to a lesser degree to those bituminous roofings which have a light-coloured mineral granule finish.

Generally, well seasoned tongued and grooved boarding is a better supporting substructure for this group of materials than concrete, because movement in the timber due to temperature changes will be slight and any additional insulation required in the total roof construction can be easily placed below the substructure. To obviate any possibility of dry rot in boarding in this situation it is advisable to ventilate the roof space.

Condensation

It is good practice to have an underlay of felt with all the metals to prevent the possibility of condensation forming on the underside of the metal, particularly where the roof structure is of concrete; but it would be even more efficacious to provide a moisture vapour barrier immediately above the ceiling finish.

In the case of these materials which are stuck to their substructure, it is essential to provide a dry structure initially, when the roof finish is laid; and also to prevent subsequent condensation, otherwise there is a likelihood of failure of adhesion leading to blistering.

Fire hazard

Model Byelaws Series IV (1953), Byelaw 49 (3) states '. . . the roof shall be covered so as to afford adequate protection against the spread of fire into the building or to adjoining buildings.' All the roofing metals are incombustible, and although lead in particular has a comparatively low melting point it is regarded as acceptable under the above Byelaw.

'Nuralite' and two layer (minimum) asbestos base felt roofs gave approximately the same protection as 6 lb. lead sheet, when tested by the Joint Fire Research Organization.

Fibre base felt roofs on the other hand in order to conform to the Byelaw have to be laid directly on a base of non-combustible material not less than ½ in. thick.

Conclusions

It will be seen from this and the foregoing articles that each roof covering material has its own limitations and restrictions in use, either of price, appearance, pitch or dura-

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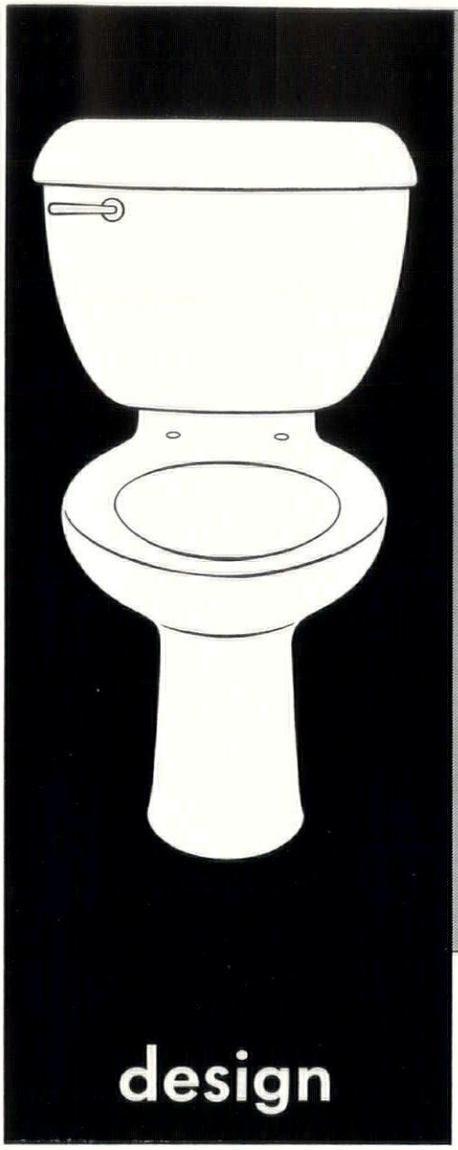

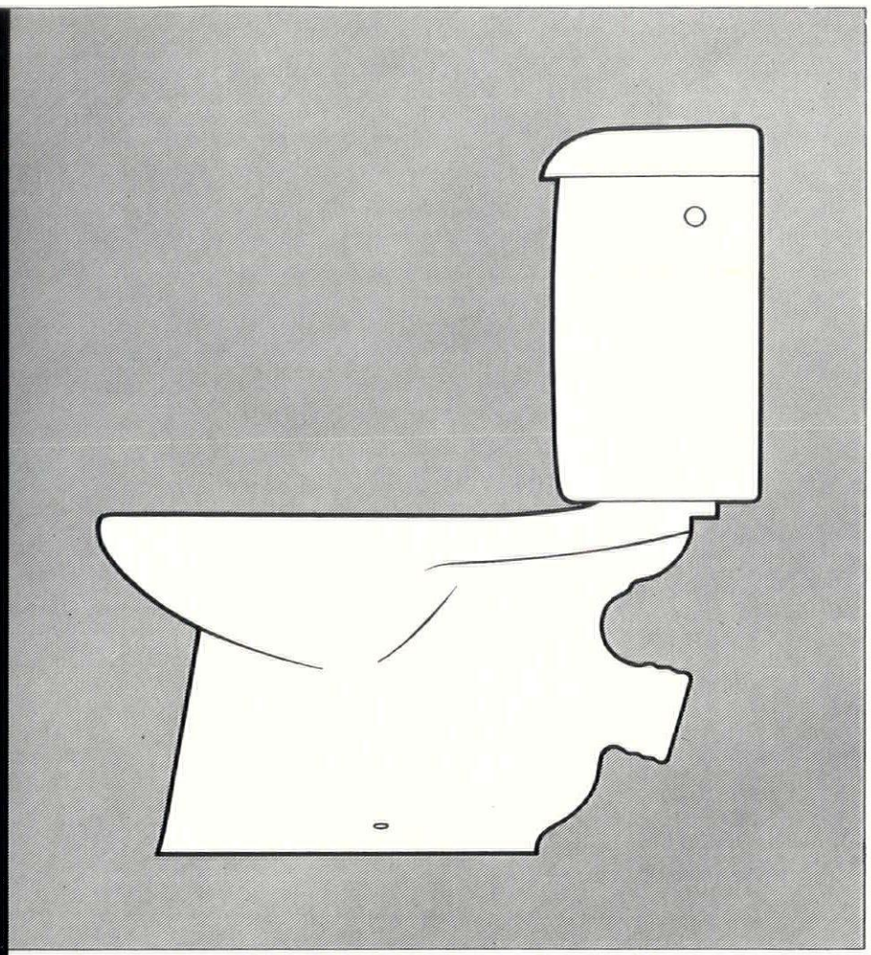

design

material

Fine design and a double-trap siphonic action are significant features of the new Kingston closet by 'Standard'. But just as important is the material from which it (like the matching lavatory basin) is made. 'Standard' vitreous china is non-porous and hygiene does not depend solely on the glaze. This, together with its great strength, makes it the most suitable material for sanitary ware. For good design in the right material, specify 'Standard' vitreous china.

vitreous china by **Standard**

4-4

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 continued from page 138]

bility. If these design limitations can be clarified before the covering is chosen, it will be much easier to see what the valid alternatives are for any particular set of roofing circumstances.

There is, of course, no easy answer to the question of price and economy. Popular opinion (and much architect opinion, too) tends to assume that there is an ascending order of price starting with the corrugated sheetings, passing through traditional slates and tiles and finishing with fully supported roofings; but a glance at the tables which have accompanied these articles* shows that this is not so. Admittedly there are two factors in the tables which tend to even out differences in the first price of the actual roof coverings. The first is the inclusion of enough insulation to give a U value of 0.2–0.18 for the roof. This accounts for an average of £11–£12 on the finished roof price. The second is the assumption that corrugated roofs will be used with a steel frame (i.e. will be to wider spans). A glance at the tables shows that prices within each class vary between such wide limits that the three groups overlap almost to the point of coinciding. Thus the cheapest of the corrugated roofings gives a price for the finished roof of £29, but the most expensive in this class gives a price of £41 15s. The range for tiles and slates is £31 10s. to £60. The range for fully supported roofings is from £31 to £70. One reason for this similarity in price range is the manufacture of high quality components in the corrugated sheetings class. Neither aluminium sheet at £40 5s. per finished square of roof nor protected metal sheet at £41 5s. can be accounted a 'cheap roof.' The range for clay tiles is £34 16s. 6d. to £43 5s., for Welsh slates from £37 17s. to £46 15s. The interesting newcomer in this 'unit' class is the reconstructed stone slate. Though the material itself is comparatively cheap (£6 12s. per square), it is heavy and, therefore, requires a fairly substantial structure, giving a finished roof price of £32 11s. Its interest lies in its weight, for weight in a roof, particularly when apparent, has a connotation of quality. We have, therefore, another example of a factory made product which aims at producing an effect of quality.

At the traditional end of roofing, there have been moves towards greater neatness in detailing some of the materials. One example is 'economy' copper roofing which with its system of fixing clips allows considerably longer sheets of metal to be used than hitherto. The fully interlocking tile allows a roof of lower pitch than any other form of tile (though not so low as some manufacturers encourage architects to believe) and is seen at its best in roofs composed of simple flat planes.

These three factors—the similarity in price range, the move towards quality in large manufactured components and the move towards simplicity of profile in traditional components should make it possible for the architect to set aside the false dichotomy of 'traditional' and 'modern' and to make his choice of roof material—and thence of roof form—on a rigorous and impartial investigation of fitness. One word in conclusion: it is always better to choose on the evidence of an actual roof than any representation in a catalogue.

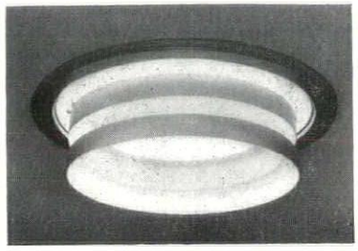
This concludes the series of articles on roof coverings. Tables to supplement this and the previous article, giving sizes, weights, costs, etc. have been prepared on the same lines as those printed with the first article, and a complete set of all three articles and tables is being published separately. It can be obtained from the office of the *Review*, price 1/6d., postage free.

* As explained on this page, the tables to 2 and 3 have not been published in the AR, but a complete set of articles and tables may be obtained from the publishers, price 1/6d., and will be ready by early October.

THE INDUSTRY

Lighting

To the Mondolite range is now added three new recessed ceiling fittings, all using the same reflector bowl and holder, but with different systems of louvring. Prices range from £3 19s. 8d. to £4 16s. 10d. (including purchase tax).



1, *recessed ceiling fitting.*

Troughton and Young (Lighting) Ltd., 143 *Knightsbridge, S.W.*1.

New Addresses

Concrete Ltd., the makers of 'Bison' floors, announce the opening of a new sales office at Winchester House, 5 Victoria Square, Birmingham.

Plyglass Ltd. have recently opened a northern office and showroom at 8 Eldon Terrace, Leeds.

The Cathedral

A Warwickshire tile firm proudly announce their development of an $8\frac{3}{4}$ in. hexagonal tile, made from the same clay as 'blue staffords' for use in the undercroft of Coventry Cathedral. The tiles were 2 in. thick. Other architects may be interested in the use of these for paving.

2, 2 *in. thick flooring tiles.*

The Haunchwood Brick & Tile Co. Ltd., Stockingford, Warwickshire.

Heating Installations

The sixteenth list of approved solid fuel burning appliances comes out in the new A5 (pocket) size,

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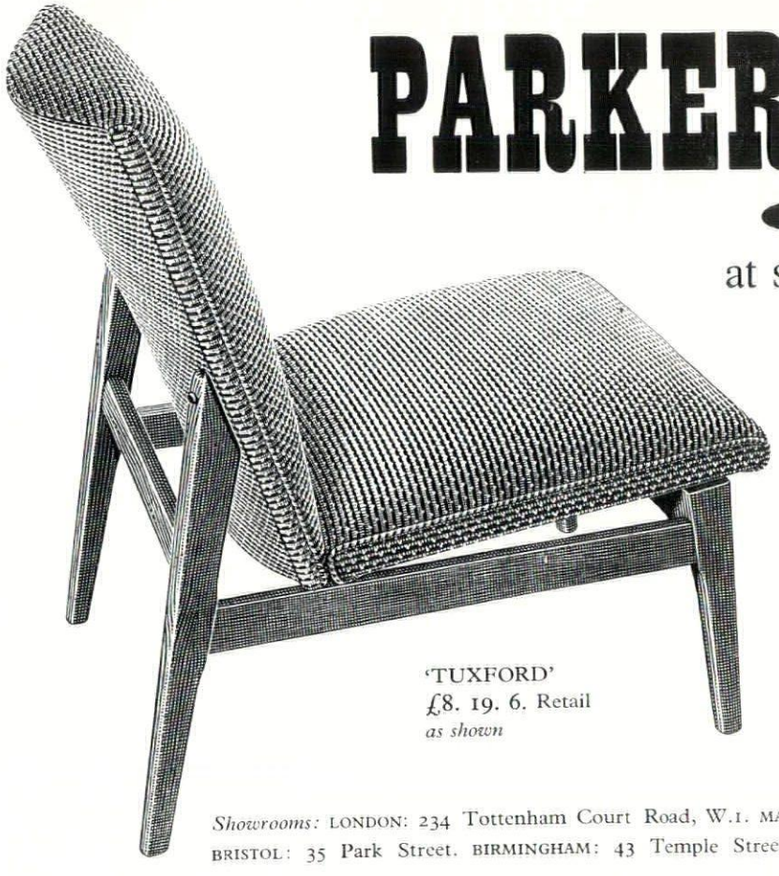

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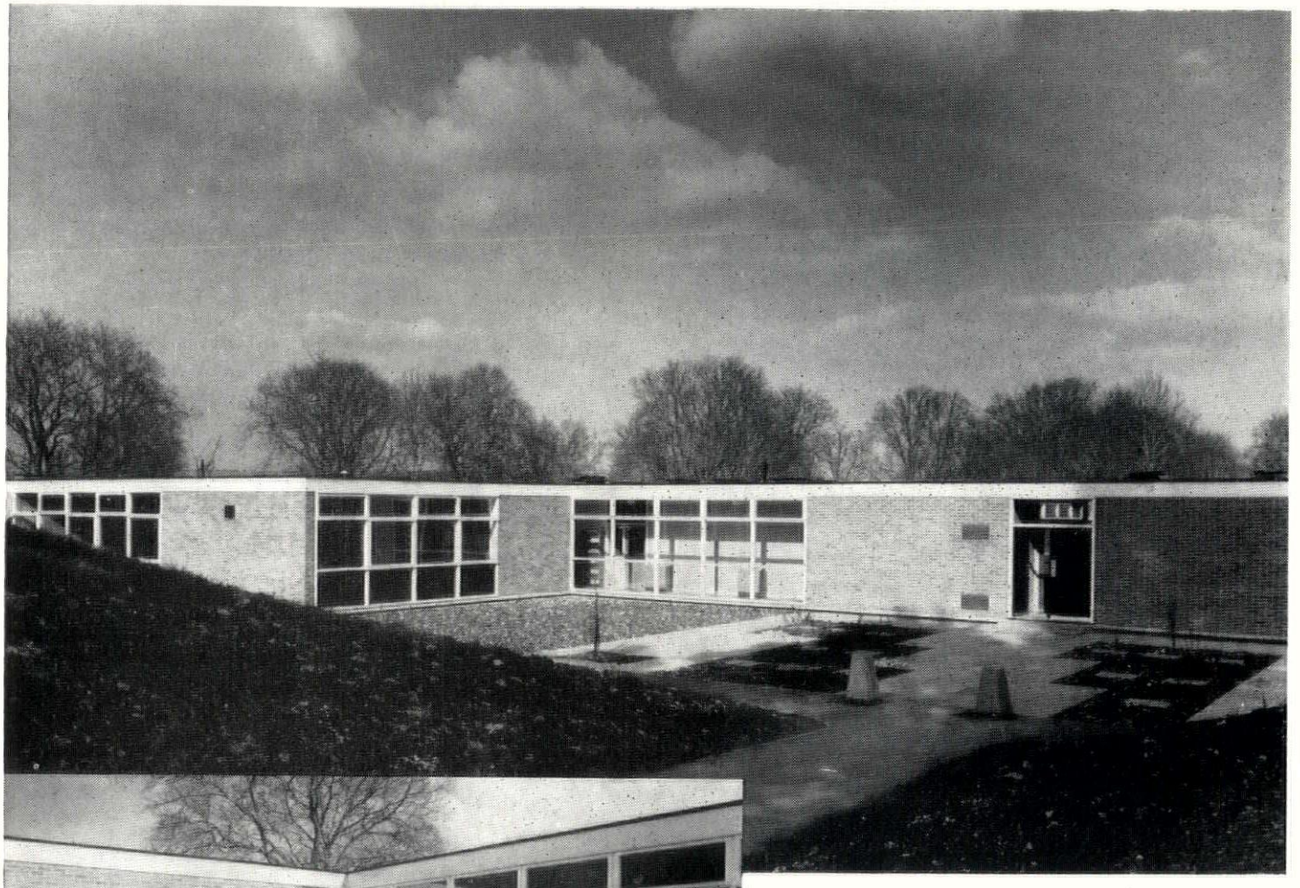
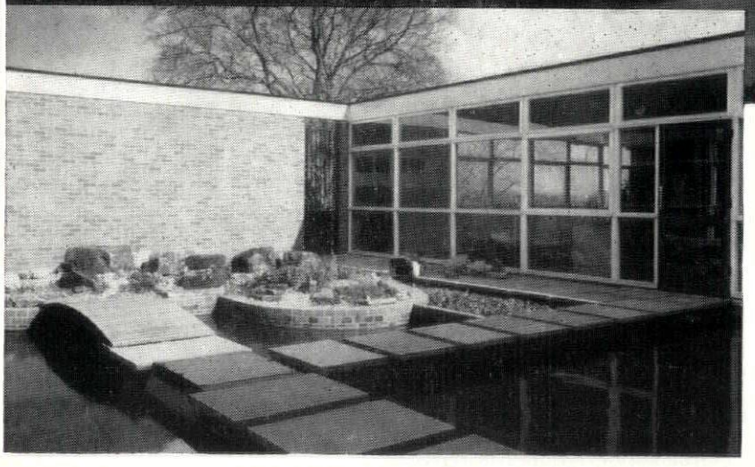
CVS-406

Ibstock Facing Bricks

were used for the new Science Extension at Bryanston School, Dorset





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continued from page 140]

8¼ in. by 5⅞ in., and announces that 'approval,' formerly given by the Ministry of Power, is now in the hands of a Council representing the various interests—coal, coke, gas, ironfounders and the MOP.

The booklet gives names, outputs, fuel types, etc., for scores of appliances and the addresses of manufacturers, but it is unfortunate that the introductory notes are not more explicit about the basis of approval. The notes against classes of appliances reveal that there is no standard test method. What we need are clear criteria by which to compare.

Since the last issue of the booklet a standard method of rating openable stoves has been agreed—in the past some makers assumed optimistic operating conditions to improve their figures. The warm air section (only two makers) contains a curious little note: 'It must be appreciated that central heating by hot water radiators . . . is a well-established form of whole house heating.'

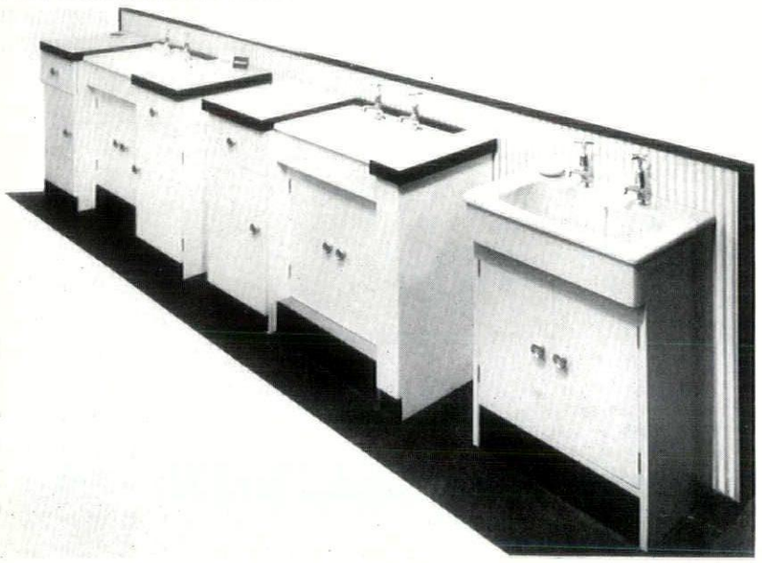
Coal Utilization Council.
Solid Smokeless Fuels Federation.

Wash Basins

The wash basin-dressing table which recently made its appearance is now joined by the wash basin-cabinet. Three types are offered: basin with cupboard under, with cupboard under and to one side, with cupboard under and both sides. They are available in white, the inescapable pink and other colours at prices from £12 to £31. The plinth which can be seen in the photograph, pulls out to form a raised platform for children to stand on and reach the basin. 'Draining boards' are covered with rigid plastic.

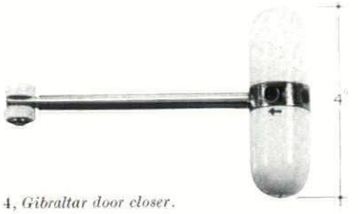
Bilston Foundries Ltd., Highfields, Bilston, Staffs.

3, *three designs of wash basin-cabinets.*



Internal Doors

At least one maker has made a commendable effort to design a pleasantly neat spring door closer of the smaller type, suitable for the domestic door, and has received the approval of the Design Centre. The de luxe model of the Gibraltar closer has concealed fixing screws, chromium arm and costs 27s. 6d. The standard model costs 17s. 6d. The spring casing is 4 in. long and



4, *Gibraltar door closer.*

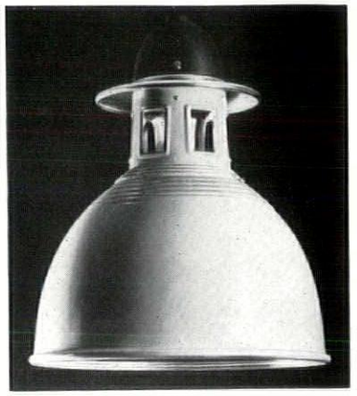
tension is simply adjustable. It is to be hoped that the makers will be able to extend the range of finishes; at present these are limited to black or cream, although they do offer colours as specified for bulk orders.

C.G.L. Engineering Co. Ltd., Wheathampstead, Herts.

Lighting

When an industry continually surprises the market with new designs it is a sign that there are some recent fundamental discoveries, or that the industry is in low water or that the company directors are very active men. In lighting, the second reason hardly seems to apply. GEC have announced a new range of fittings under the watchword 'comfort lighting,' which they say can provide general lighting up to 100 lumens per sq. ft. without discomfort glare (presumably without disability glare either). The solution appears to be

5, *single tube lighting pendant.*



6, *comfort lighting unit.*

[continued on page 144

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continued from page 142]

that of maintaining a low cut off angle (55–60 degrees from the vertical) and making sure of a low surface brightness on the illuminated part of the fitting still visible outside the cut off. A 'stepped louvre' does this for some of the fittings. The designs shown are plain and good.
*General Electric Co. Ltd., Magnet House, Kingsway, W.C.*1.

CONTRACTORS etc

Seamen's Home at Erith, Kent. *Architects:* Gollins, Melvin, Ward and Partners. *General contractors:* A. E. Symes Ltd. *Sub-contractors: Structural steelwork to single-storey buildings:* Bracketing, Centering & Lathing Ltd. *Curtain walling, windows, metal closers and gearing:* Mellowes & Co. *Electrical installation, lighting protection and television installation:* A. H. Cornwall & Sons. *Lift installation:* J. & E. Hall Ltd. *Steel stairs and balustrading:* H. & C. Davis & Co. *Heating, ventilation, hot and cold water supply, gas and fire fighting installation:* Barratt & Wright Ltd. *Steel framing to entrance canopy:* Banister Walton & Co. *Pre-cast terrazzo lavatory and in situ terrazzo floor finish:* Alpha Mosaic & Terrazzo Co. *Sliding folding partitions and doors and cupboards:* Symes (Joinery) Ltd. *Roller shutters:* Shutter Contractors Ltd. *Staircase balustrades:* C. A. and A. W. Haward. *Metal venetian blinds:* Tidmarsh & Sons. *Facing bricks:* R. Parton Ltd. *Glass dome lights:* Haywards Ltd *Cubicle pattern switch board:* Varilectric Ltd. *Bed head radio equipment:* Marconi Marine Co. *Bed head units:* Veritys Ltd. *Sanitary fittings:* John Bolding & Sons. *Ironmongery:* G. & S. Allgood. *Curtain track:* W. A. Hudson Ltd.

Studio at Charterhouse School. *Architect:* James Dartford. *General contractors:* F. Milton & Sons. *Sub-contractors: Steelwork:* W. Dibben & Sons. *Terrazzo:* Zanelli (London) Ltd. *Flooring (tiles and chipboard):* Aladdin Services (London) Ltd. *Roofing:* H. Newsum, Sons & Co. *Roofing felt:* Ruberoid Co. *Drainage:* Kaymat Ltd. *Aluminium windows:* Quicktho Engineering Ltd. *Blinds, library curtain:* Tidmarsh & Sons. *Precast flue:* True Flue Ltd. *Uxbridge flint bricks:* Cape Building Products Ltd. *Slate cills and fascia:* Bow Slate & Enamel Co. *Asbestos:* G. R. Speaker & Co. *Wood windows:* H. C. Janes Ltd. *Flush doors:* Thames Plywood Ltd. *Electric heating cables:* Thermodare (GB) Ltd. *Dome lights:* W. J. Cox Ltd. *Box gutter:* G. A. Harvey & Co. *Sanitary fittings:* Shanks & Co. *Fibreboard ceilings:* Walter Fry Ltd. *Spiral stair, window grilles and screen poles:* T. W. Palmer & Co. *Sliding door gear:* Coburn Engineers Ltd. *Door furniture and ironmongery:* A. G. Roberts Ltd. *Miscellaneous hardware:* W. N. Froy & Sons. *PVC skirtings and handrails:* Marley Tile Co. *Light fittings:* Merchant Adventurers Ltd. *Lightweight concrete blocks:* Thermalite Ltd. *Chipboard floor tiles:* Airscrew Co. & Jicwood Ltd. *Clay floor tiles:* Tondu Flooring Tile Co. *Paints:* I.C.I. (Paints). *Flashings, etc.:* Expandite Ltd. *Furniture and special fittings:* Andrew Bentley Ltd.

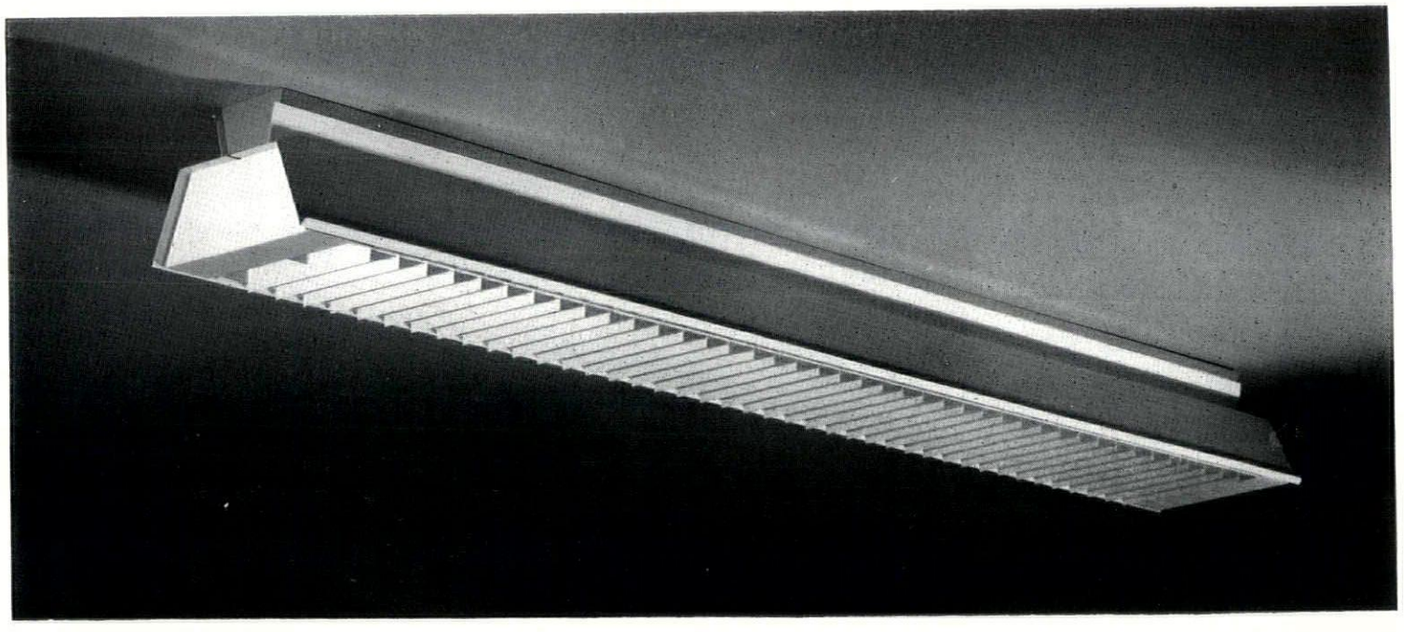
Science Laboratories at Bryanston School. *Architects:* Architects Co-Partnership. *General contractors:* D. Singleton & Son. *Sub-contractors: Timber, window and door units:* East & Son. *Timber roof:* H. Newsum, Sons & Co. *Felt roofing:* Wm. Briggs & Sons. *Wood block flooring, 'Crestaling' flooring:* Gabriel, Wade & English Ltd.; Balastic Ltd. *Laboratory furniture and fittings:* Spencers Joinery Ltd. *Blinds:* London Blinds Ltd. *Roller shutter:* Haskins Ltd. *Bricks:* Ibstock Brick & Tile Co. *Ceiling:* Cape Building Products Ltd. *Concrete partition blocks:* Lignacite (Fordingbridge) Ltd. *Rooflights:* Quicktho Engineering Ltd. *Fire-fighting equipment:* Harry Broughton; Pyrene Co. *Louvres:* Williams & Williams Ltd. *Ironmongery and sanitary fittings:* William Dibben & Sons. *Night storage heaters:* Tyrad Electric Ltd. *Light fittings:* Merchant Adventurers of London Ltd. *Extract fans:* Vent-Axia Ltd. *Paint:* Docker Bros. *Doors:* Gliksten Doors Ltd. *Chalk boards:* Wilson & Garden Ltd.; Tabula Chalk Boards Ltd. *Shelving:* Savage & Parsons Ltd. *Furniture:* Avant Galleries Ltd.

Offices in Queen Anne's Gate, London, S.W.1. *Architect:* Ian McCallum. *General contractors:* Allen Fairhead & Sons. *Suppliers: Heaters:* E. K. Cole Ltd. *Furniture:* Conran Furniture; Kandya Ltd.; Hille of London. *Light Fittings:* Troughton & Young (Lighting) Ltd.; Thorne Electrical Industries Ltd. *Flooring:* Catesby's Ltd. *Upholstery:* Bentalls (Kingston) Ltd. *Coloured glass:* Faulkner, Greene & Co. *Mirrors:* F. C. & R. G. Turner Ltd. *Paint:* Hond & Langer Ltd. *Hardboard:* Wiggins-Sankey Ltd. *Formica:* C. F. Anderson & Son. *Sliding door gear:* Charles P. Moody. *Plywood:* McFarlane Burchell & Co. *Plasterboard:* Wiggins-Sankey Ltd. *Door furniture:* James Gibbons Ltd.

School at Swaythling, Hampshire. *Architect:* Richard Sheppard, Robson & Partners. *General contractors:* Brazier & Son. *Sub-contractors: Piling:* Soil Mechanics Ltd. *Dampcourses:* The Ruberoid Co.; R.I.W. Protective Products Ltd. *Asphalt tanking, roofing and felt:* General Asphalte Co. *Precast flue:* True Flue Ltd. *Structural steel:* William Dibbens & Sons. *Tiles:* Builders Merchants Ltd. *Slates:* Manchester Slate Co. *Terrace roofing:* D. Anderson & Son. *Partitions:* Thermalite-Ytong Ltd. *Glass:* Clements Bros. (Haslemere) Ltd. *Patent glazing:* S. Warner & Sons. *Woodblock flooring:* Gabriel Wade & English. *Plastic flooring:* Armstrong Cork Co. *Central heating:* Weatherfoil Heating Systems Ltd. *Electric light fixtures:* Frederick Thomas & Co.; The Merchant Adventurers Ltd.; G.E.C. Ltd.; S.L.R. Electric Ltd. *Ventilation:* Greenwoods & Airvac Ventilating Co. *Sanitary fittings:* Adamsez Ltd. *Door furniture:* A. G. Roberts & Co. *Metal windows:* Metal Casements Ltd. *Clocks and bells:* Gent & Co. *Doors:* Gliksten Doors Ltd. *Sunblinds:* J. Avery & Son Ltd. *Stage equipment:* G.B.-Kalee Ltd. *'Saivo' mosaics:* A. Elder Reed & Co. *Plaster:* Tellings Ltd. *Wallpapers:* Wallpaper Manufacturers Co. *Paints:* I.C.I. (Paints) Ltd.

House at High Hoyland, Yorkshire. *Architect:* Michael Burton. *General contractors:* Elvey & Steel Ltd. *Sub-contractors: Bricks:* Stonehenge Bricks Ltd. *Structural steel:* Firth Bros. Ltd. *Special roofings:* Limmer and Trinidad Lake Asphalt Co. *Sanitary fittings:* W. N. Froy & Sons. *Door furniture:* James Gibbons Ltd. *Garage folding doors:* Westland Engineers Ltd. *Iron staircases and metalwork:* Victoria Forge. *Joinery:* Broadheads. *Marble:* A. Andrews & Sons.

Motor Showrooms at Staines. *Architects:* Westwood, Sons & Partners. *General contractor:* George Jarvis & Co. *Sub-contractors: Steelwork:* R. Smith (Horley) Ltd. *Roofing, ceiling:* Carter-Horseley (Engineers) Ltd. *Flooring:* Jaconello Ltd.



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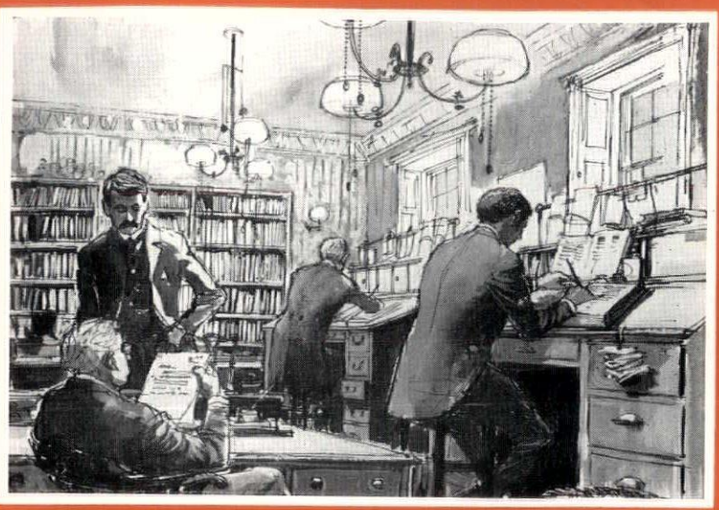

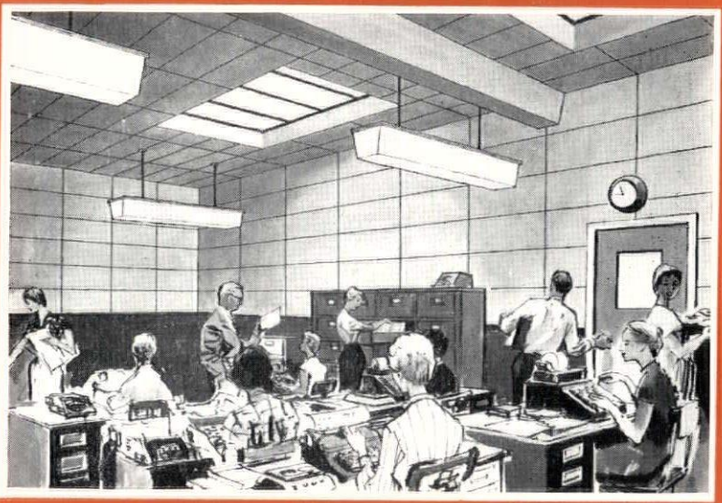

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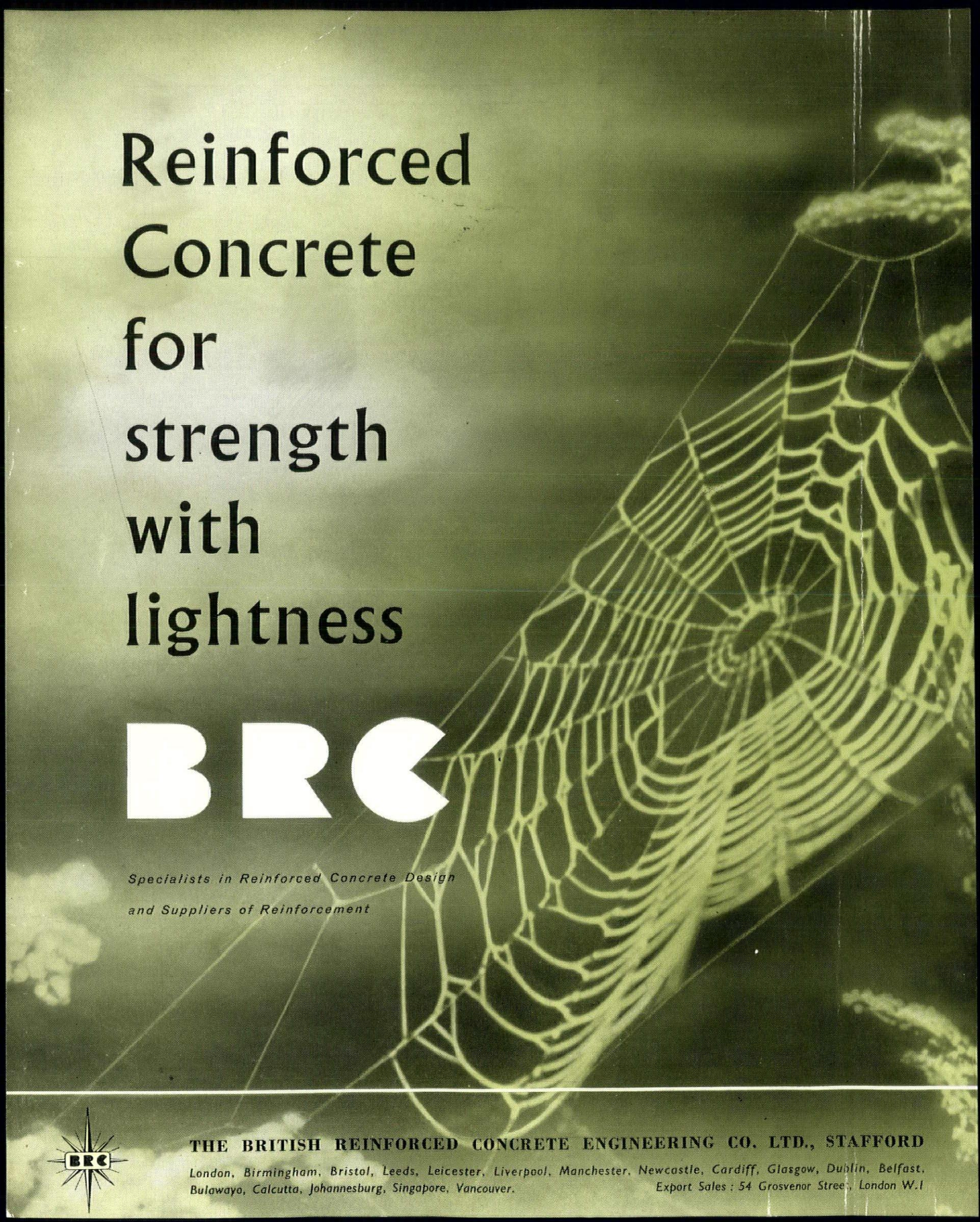
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MARGINALIA

BOOK REVIEWS

The Classical Ideal

THE IDEAL CITY IN ITS ARCHITECTURAL EVOLUTION. *By Helen Rosenau. Routledge & Kegan Paul* 1959. 30*s*.

The Ideal City can mean two things: a plan on paper as to what, not *a* city, but *the* city, should be, or an existing city which one calls ideal—'Siena or Harlow or Cambridge to me is almost an ideal city'—because of size, situation, visual qualities or for other reasons. Occasionally *the* ideal city was built, and then it may become *an* ideal city or it may not.

Dr. Rosenau's programme is expressed in a sentence on one of her last pages: 'It is a common experience that in order to reach the possible the impossible has to be attempted, or to put it in other words, a society lives on hope.' That is a fine programme, but Dr. Rosenau does not fulfil it, being drawn away all the time by ideas, allusions and asides. Why, for instance, should the pages dealing with Georgian England discuss Soane's style, Telford, Pugin, Wyatville and designs for cottages by Gandy and Plaw? Or why the (admittedly specially interesting) pages on Quatremère de Quincy? Bath is duly given a page, though without the crucial observation that it is the first planned town on the principles of asymmetry and informality.

Up to the eighteenth century Dr. Rosenau concentrates (except where she digresses) on symmetrical and formal plans, and she runs through Greece and Rome, stresses very convincingly the medieval monastery and the images of the Heavenly Jerusalem, and goes on to bastides, to Alberti and Filarete and so to Mannerism and the radial towns actually built. Our old friend Palmanova duly appears, but not the earlier Zamosc and Philippeville. Leonardo da Vinci's brilliant *aperçu* of two-level communication is illustrated, though it is neither part of an ideal town nor of consistent urbanistic considerations.

So far there is a scheme which one can follow. With the Baroque the scheme is lost sight of for whole pages. Wren's plan for London is hardly mentioned, but Fischer von Erlach gets half a page; of Piranesi's records and visions it is said that to him 'ancient Rome was truly an ideal city'—*a* city, it will be noticed, not *the* city—and Poussin is called 'truly a planner,' since 'for him the ideal town was part of the ideal landscape.' That can do no good to anybody.

Dr. Rosenau comes into her own, of course, with Boullée and Ledoux, though Boullée after all did not design an ideal city. In the chapter dealing with them and their influence in Germany and England it becomes increasingly patent that she is a Classicist and a Grand Mannerist herself. 'Neo-Classical Art,' she says, 'is slowly coming into its own again.'

Hence, when it comes to the nineteenth and twentieth centuries, she has no illustration of Howard's ideal garden city which ought to have had at least as much prominence as Chaux's, for Howard, in spite of the schematicism of his city on paper, said: 'Plans cannot be drawn until site selected.' Dr. Rosenau has also not a word on Letchworth and Welwyn and Radburn, which is unpardonable, and she is out of sympathy with Frank Lloyd Wright's Broadacres. There is no plan of Garnier's informal *Cité Industrielle*, and only a scathing reference to Sant' Elia's elements of a metropolis. Le Corbusier on the other hand is appreciated, because he 'still reflects the classical tradition.'

The situation today Dr. Rosenau sees in terms of 'two contrasting elements, the garden city and the mechanized town.' Her programme is not precise, as indeed precision in formulating is not her forte. She is against urban spread; she is for enclosure, for the redeeming of city centres—hence Rotterdam is illustrated and gets good marks—for the mixing of classes and the mixing of housing with smokeless factories, and she pleads in an illuminating paragraph for symmetry as 'a basic human urge.' The cross of axes at Brasilia appeals to her. Other aspects of Brasilia are neglected, and neither Canberra nor New Delhi appear. Chandigarh is given a bare line, and the English New Towns and Vällingby get not a word, nor does Ina Casa.

In short Dr. Rosenau's book is strongly idiosyncratic. It is full of suggestive and tantalizing pieces of information and hints at ideas beyond town-planning, but it lacks both direction and consistency.

Nikolaus Pevsner

Islam Built

TURKISH ISLAMIC ARCHITECTURE, SELJUK TO OTTOMAN. *By Behcet Unsal; Tiranti.* 30*s*.

The Turks were great builders, and with their limited vocabulary of structural form achieved a very high degree of perfection. This, coupled with a longstanding tradition of decorative ability, produced buildings in which structure and decoration combine to create vast spaces whose massive elements glow with a mystic radiance. Form rarely follows function; rather a variety of functions find their place simply and easily within a continuity of form. (One might easily mistake the plan and section of a mosque for a Turkish bath or royal pavilion). It is our loss that our authors and publishers have tended to neglect this great tradition, and here, when a book comes to be written and published, it is disappointing to find it dull and academic with woolly old-fashioned illustrations of magnificent buildings that are highly photogenic.

This is a book by an ardent Turkish nationalist (as all modern Turks are), and therefore tends to isolate the Turkish contribution from the influence and inspiration of its neighbours. It would be foolish to deny Turkey its true national characteristics, and the regional conditions and local genius that came to determine the architectural form and character that is peculiarly Turkish. But the great wealth of ideas that flowed into the country are too coolly acknowledged in this book to give a clear picture of Turkey's place in the architecture of Islam.

For the traveller to Turkey this book will be very useful because many buildings are documented and brief (too brief) descriptions given, but for someone who reads it in order to become familiar with a great architecture unknown to him, it dwells in far too little detail on far too many buildings so that the overall picture is hard to follow.

There are numbered references in the margins to plans and photographs so that as you read the line of thought is continually interrupted while you thumb your way through the relevant notes, captions, pictures and plans in an attempt to grasp a reasonably total picture of a building. The plans are simply black and white silhouettes so that the uninitiated might easily confuse a building with its adjacent courtyard. This is a shame because many plans are shown and, were the functional relationships indicated, would be useful indeed.

There is nevertheless much information to be gleaned from the book. In Islam, we learn, schools and hospitals were constructed as part of the complex of religious buildings and at a time when mental disease was wholly misunderstood in Europe, '. . . the sounds of the fountain blended with the sounds of music to assist the cure of mental disorders.'

John Donat

Provincial Powers

SMALL TOWN POLITICS. *By A. H. Birch. Oxford University Press.* 25*s*.

Having read this book I have come to the conclusion that I am even less interested in politics than the people of Glossop. This is perhaps to be expected if Glossop is representative of the provinces from whence I came, where local government—I have always thought—should be conducted on non-party-political lines.

I imagine interest would only arise if the book had related local politics to the outward form of the town, e.g. does better townscape or architecture or environment result from small towns than from big cities; does aristocratic government produce these more easily than democracy—or technocracy; is Glossop less subsubtopian than other places (what *is* Glossop like to look at?).

In this respect the book is useful in starting such a train of thought but conclusions will depend on where the thoughts lead. Will, for instance, the new financial arrangements with local authorities reduce subtopia; did good townscape die out with the old ruling classes; is universal suburbia inevitable with present day local government; should national administration be encouraged rather than regretted; is this latter the only way that brilliant provincial minds can be redirected for the benefit of the provinces?

Raymond Spurrier

Triennale 1960

With the reassuring reliability of Greek messengers announcing the recurrence of a great festival, the programme of the next *Triennale di Milano* has just appeared. This one, the twelfth in the series, which will be held in the Parco Sempione from July to November, 1960, will have as its theme the Home and the School, 'considered as the basis of every organized society . . . the two hinges on which all other political, social, cultural and economic issues must turn if they are to find a pondered solution.' Other sections of the exhibition will 'compare glass and steel production' at both craft and industrial levels, will deal with the history of plates and cutlery, and include personal exhibits of the work of individual architects. There will also be temporary exhibitions within the frame of the main programme, and competitions concerned with school design, of which details will be announced later.

English readers will hardly fail to notice that the main theme of *Triennale* 12 is one that strongly favours a major British exhibit at an official level, in view of our post-war record in both fields, and the news that once again, in 1960, there is to be no official British participation, in spite of efforts by the COID to persuade the Board of Trade and the Treasury to show some initiative, is therefore more than a matter of regret in progressive design circles; it is an insult to a devoted body of men whose labours have contributed to one of Britiain's greatest achievements in design and social progress.

Greek meets Goth

In his study of Alexander 'Greek' Thomson (AR, May, 1954), Graham Law mentioned, but did not quote, Thomson's attack on Gilbert Scott's design for Glasgow University's new buildings, the Gothic heart of the present University complex. It now appears, however, that a complete text of the lecture given by Thomson in May, 1866, was published at the very same time in the Glasgow University *College Courant*,* reconstituted from the cut version that was published in 1867, and from Thomson's manuscript notes. The text proves to be one of the loudest, as well as one of the last, shots exchanged in the Battle of the Styles.

Thomson's argument has three main heads: the first, dealt with quickly and damagingly in the introductory remarks, is that 'the Professors' had done the University a disservice by going to a man as busy as Scott, who would never have the time to work on the scheme personally, and had obviously handed it down to a less accomplished assistant. With this out of the way, he proceeds to the main heads on which he speaks at length—the failings of the Gothic style in general, and the failings of the Scott design in particular.

On Gothic in general, he speaks with his own Attic prejudices, but often in terms that suggest the structural rationalism of the latter end of the century. It is the style of European civilization at a low ebb, unlike the Greek, which is the style of one of its high points. Alternatively, it is the style of unreformed Christianity (and therefore a poor compliment to the Scots!). Then he settles down to the structural and aesthetic failings of Gothic. On the former point he observes that all Gothic architecture depends on vaulted construction which is inherently unstable—'There can be no doubt that the introduction of the arch into architecture has strewed Europe with ruins'—and must therefore be braced. But the buttresses with which this bracing is achieved are inefficient and wasteful and 'an enormous cost of material; for a modern engineer would for the same purpose make a pound of wire go as far as a ton of stone.'

On the aesthetic side his arguments

* 1954 Vol. VI, Nos. 12 and 13.

are the familiar ones that Gothic, being picturesque, lacks 'the ideal quality' and he argues, in the next paragraphs in a manner that anticipates Le Corbusier 'the fact is, that the laws that govern the universe . . . are the same which govern architecture. We do not contrive rules; we discover laws. There is such a thing as architectural truth. One man may make an endeavour to embody an idea in form . . . and so on from generation to generation, until, purged of every particle of useless material, and adjusted in all its portions, it becomes for all time a typical form . . .' This makes Gothic architecture, by contrast, resemble the lower forms of life, and the argument proceeds by detail contrasts of Greek and Gothic solutions to similar architectural problems, illuminated by *obiter dicta* such as: 'Small Gothic buildings are not impressive unless begrimed with dirt'.

From this ground, Scott is an easy target whom he faults successfully right from the start, for having applied the irregularities of Gothic to a symmetrically planned building. Aesthetically, Thomson shows this to be a mistake, because Scott does not know how to compose a symmetrical façade; functionally a mistake 'because it does not allow the exploitation of the much-vaunted 'flexibility' of Gothic planning. There is a good deal in this strain, but Thomson's most telling stroke is on the subject of the actual style of the detailing, which Scott claimed 'succeeded in recovering what was the early architecture of Scotland.' To which Thomson justifiably retorts 'Granting that it is both interesting and useful to know what style of architecture prevailed in Scotland at a particular period, he has merely taken a most expensive mode of illustrating his archaeological discoveries, by building in stone and lime, at a cost of two or three thousand pounds, what might have sufficiently well been done by a series of woodcuts for a very small sum.'

CORRESPONDENCE

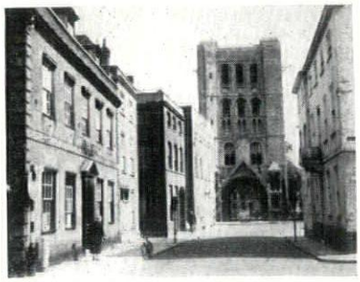
Bury St. Edmunds

To the Editors,

SIRS,—It was a pity that in his admirable note on Bury St. Edmunds Mr. Nairn passed so quickly over one of the most alarming of the proposals—the threatened demolition of the north side of Chequer Square to open up the view in front of the Bell Tower.

The demolition would mean (*a*) the loss of one of the best Georgian town houses in the country; (*b*) the destruction of a charming domestic enclave, 1; (*c*) the wrecking of the rhythm of buildings as one moves northwards along Crown Street past the two churches—at present one of the happiest architectural features of the city; (*d*) perhaps worst of all the disruption of the visual unity and physical closeness of church and town, which is as essential to us now as to the designers of a great medieval plan like that of Bury, and which is beautifully preserved in the relation between Chequer Square and the Bell Tower, 2.

1, Chequer Square from the south.



2, the Bell Tower seen across Chequer Square.

All this would be lost in order to provide an axial approach to the church, which, *pace* the architect, was never a prominent medieval motif, and which—as my third photograph, 3, shows—is in any case substantially realized by the view along Churchgate Street.

3, the Bell Tower on the axis of Churchgate Street.

Mr. Dykes Bower supports his proposals for Chequer Square by arguing that a dangerous traffic junction would be improved. But at the moment the corner of Chequer Square and Crown Street is such that any motorist can't help seeing that he must take care: an *easier* corner would almost certainly be a more dangerous one.

This is not any Georgian bit of any English town. Bury St. Edmunds is probably the finest town of its size in the country; and the surroundings of the cathedral one of its most precious and beautiful parts.

Yours, etc.,
ANDOR GOMME.

Cambridge.

High Pavements

To the Editors,

SIRS,—I would like to suggest an idea to you.

One possible way of overcoming the problem of motor vehicle parking in built-up areas would be to elevate the pavement. The space under the 'walkover' could be used for parking by motor vehicles, thus leaving the carriageway clear, at least for two-way traffic.

I envisage the walkover at normal first floor level—many problems for shopkeepers and others would arise—none, I suggest, insuperable.

Pedestrians could go up to and come down from the walkover at stairways, beside which there could be simple lifts (like those in use on buildings sites) for prams and bath chairs.

I wonder if you would do me the favour of letting me know what you think of this suggestion? Does it sound to be too cranky to be considered seriously?

Yours, etc.,
G. E. TWELLS.

91 Belgrave Road,
S.W.1.

Raymond Spurrier (author of the article, 'Caution—Road Works,' in the April, 1959, AR) replies.

Mr. Twells asks a simple question and the simple answer is: No, it is not too cranky to be considered seriously. In fact it has been. C. D. Buchanan explored the idea at some length in 'Mixed Blessing.'

The idea of vertical separation is not new; there is historical precedent in the Rows of Chester and the high pavements of Bath and Bristol and a number of other places. In Royal York Crescent, Clifton, I believe there were coachhouses under the pavement.

But Buchanan's main purpose was to resolve the pedestrian-vehicular conflict whereas Mr. Twells suggests it as a (no doubt partial) solution to the parking problem.

This raises the whole philosophy of the use of motors in towns. Increased parking facilities—or for that matter wider carriageways—do not necessarily relieve traffic congestion; in the long run they probably increase it and put more pressure on parking space.

A parking survey of 6¾ sq. miles of inner London (including Pimlico and Belgravia) showed 6,300 vehicles parked/square mile in 1955. It has been suggested that improved roads might raise the demand to 18,000/sq. mile. So to oversimplify with rough and ready arithmetic:

say 16 ft. length required to park and manoeuvre=about 270 cars/mile run
× 2=540 cars/mile run using both sides
Deduct at least ⅓ for bus stops, side streets, private entrances, etc. =360 cars/mile run

$$\frac{18{,}000}{360} = 50$$

miles of convertible main roads with business frontage required in 1 sq. mile of central London.

If you could find this and convert, it might meet the average demand. But Central Area demand is how many times greater than Pimlico?

Multiply by this amount, 5? 50? (Hyde Park Corner to Piccadilly Circus is approximately ¾ mile).

All this presupposes longitudinal parking, i.e. parallel to the traffic stream—wasteful of space when you consider what it would cost to lift the pavement. Parking at 90° or 60° to the kerb might double capacity, but traffic would be seriously disrupted every time anyone wanted to unpark.

Structural columns would get in the way. Cantilevering would mean major amendments to existing buildings. Equitably, every building owner would expect vehicular access to his own ground floor, further disrupting traffic flow (and losing parking space) though this might be offset by off-street loading, and occasional private parking space (2s. 6d. an hour?)

So a rough summary might be: expensive and doubtful as a car parking measure; a good idea for pedestrians, if it were carried out on a comprehensive and large enough scale.

INTELLIGENCE

The Prize of the Sao Paulo Prefecture, the major award at the Sao Paulo international biennial exhibition of modern art, has been won by Miss Barbara Hepworth, the British sculptor. This is the first time that the prize has been won by a British artist.

The seventh congress of the International Federation of Landscape Architects will be held in Amsterdam on June 20, 21 and 22, 1960. Speakers will include Professor Lewis Mumford, of the U.S.A.; Professor Cabral, of Portugal; Mrs. Gollwitzer, of Germany; Professor Tono, of Japan; Professor Glikson, of Israel; and Jhr. Sandberg, of Holland.

An award worth $10,000 is to be made each year to a person or group who has helped the development or appreciation of visual design in the useful arts. It is to be known as the Kaufmann International Design Award and will be given by the Edgar J. Kaufmann Educational and Charitable Foundation of Pittsburgh.

A competition for new designs for the Roman Catholic Cathedral at Liverpool has been announced. Details may be obtained from the Competition Secretary, Liverpool Metropolitan Cathedral Committee, 152 Brownlow Hill, Liverpool 3, before December 15, 1959, on payment of a deposit of 2 guineas. The closing date is August 3, 1960.

ACKNOWLEDGMENTS

MARGINALIA, pages 145–146: 1–3, Andor Gomme. Frontispiece, page 148: Photographic Survey Corporation. CANADA INTRODUCTION, pages 153–156: 1, National Film Board; 2, Arnott and Rogers; 3, Canadian Pacific Railway. CANADIAN BUILDINGS, pages 157–172: 1, Thompson, Berwick and Pratt; 2, 3, 18, 20–22, 24, 31, 32, 34–38, 40, 41, 43, 44, 45, Max Fleet; 4, 7, 12–17, 19, 30, 33, 48–50, Panda; 5, Alberta Government Photograph; 6, Photographic Survey Corporation; 8, 25, 29, Svarre Cantlon; 9, 10, Wells Studio; 11, Brian Shaweroft; 23, Studio Alain Enrg.; 28, Belair; 39, E. W. Cadman; 46, 47, Leonard Frank Photographers. SOUTH AFRICA INTRODUCTION, pages 173–176: 1, 3–6, Director of Information, South Africa House; 2, Aircraft Operating Co.; 7, Satour. SOUTH AFRICAN BUILDINGS, pages 177–188: 1–3, Samuel Haskins; 4–6, 34, E. Robinow; 7, Monte Bryer; 8, 9, 16–23, Studio Wesslo; 10–15, 25, 26, 30, Alan Yates; 24, 32, 37, J. G. Boss; 28, James White and Partners; 29, W. W. Wood and Partners; 31, Herman J. Hahndiek; 33, Dolman Pretorius; 35, S. H. Wellman; 36, University of the Witwatersrand. AUSTRALIA INTRODUCTION, pages 189–192: 1, 3, 5, Australian National Travel Association; 2, Australian News and Information Bureau. AUSTRALIAN BUILDINGS, pages 193–202: 1–3, 15, 23–25, 29, 30, Max Dupain and Kerry Dundas; 5, 17, 18, 19, Wolfgang Stevers; 6, 26, Australian News and Information Bureau; 7, Douglass Baglin; 8, D. Darian Smith; 13, Corke and Clabburn; 14, Herald Sun Photograph; 16, Risco and Kos; 20, Ronald H. Armstrong; 28, Gordon F. De'Lisle. NEW ZEALAND INTRODUCTION, pages 203–206: 1, 2, National Publicity Studios; 3, Barry McKay; 4, National Publicity Studios; 5, High Commissioner of New Zealand. NEW ZEALAND BUILDINGS, pages 207–217: 1, 17, Sparrow Industrial Pictures; 3, 4, R. A. Ayton; 5, R. V. Francis Smith; 6, Bruce Watt Studio; 7–9, M. D. King; 12, 22, 23, Martin Barriball; 18, 20, G. H. Burt; 27, Hi-Light Studios; 29–31, Mannering and Donaldson.

Illustration 4 on page 191 anticipates an article on Nineteenth Century Ironwork in Australia by E. G. Robertson which is to be published in the REVIEW shortly.

THE ARCHITECTURAL REVIEW

COMMONWEALTH I: SPECIAL ISSUE

Volume 126 Number 752 October 1959

On this month's cover, the familiar "Red on the Map" identifies the four Dominions whose recent architecture is discussed and illustrated in this issue—Canada, the Union of South Africa, Australia and New Zealand. All four share a more-or-less temperate climate, and their architectures therefore present certain general features in common. These are not shared with the architecture of the Commonwealth countries of the tropics, which will be the subject of another special issue next year.

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NEW ZEALAND

The Editors are indebted to Mr. Walter Manthorpe in Canada, Mr. Duncan Howie in South Africa, Mr. Robin Boyd in Australia and Mr. Lewis Martin in New Zealand for invaluable help in collecting the material for this issue, as well as to all the architects who provided illustrations of their buildings.

This, the first of two special issues on the British Commonwealth, deals with the most recent architecture in Canada, South Africa, Australia and New Zealand. These four Dominions are still widely thought of as consisting of wide open spaces on which the works of man are only beginning to make a substantial impression. This remains to some extent true, but they also now contain thriving and dynamic cities, providing opportunities for architecture as stimulating as any in the world. The picture above is of Toronto, Canada (looking away from the lake-shore, up University Avenue), but it might equally well, in the impression it gives of activity, growth and change, be Johannesburg, Melbourne, Wellington, Montreal, Sydney or Vancouver.

Nikolaus Pevsner

COMMONWEALTH I

It is patently impossible to present recent architectural developments in the Commonwealth between the covers of one issue of THE ARCHITECTURAL REVIEW. The material will therefore be divided in two, this number treating the Dominions with temperate climes, a later number the Dominions and Colonies in the tropics and sub-tropics. The four dominions which will appear in the following pages are Canada, Australia, New Zealand and South Africa. Even their temperate climes have to be taken with some latitude. Their territories include the icy wastes of Labrador, the parched steppes of the Karroo, and the desert of the Australian north from which miraculously rises Mt. Isa with the ant-like business of its miners. Their human population includes Eskimos and Bantu, their animal population the polar bears and the white whales of the Hudson's Bay and the hippos and giraffes of the Kruger National Park. However, where modern architecture goes up, climatic conditions are no different from those of Europe and the United States. That leaves still enough variety, and it is indeed the differences of climate between the four dominions, and the corresponding differences in historical growth, in the resulting ethnological situation and in social circumstances, which must be appreciated in order to understand why architecture in Canada, Australia, New Zealand, South Africa is what it is.

Sizes first: The United Kingdom is 93,000 sq. miles in size, New Zealand 104,000, South Africa, 472,000, Australia nearly three million, Canada nearly four—that is more than the United States. Usable space, however, reduces these figures to a fraction, in all cases but that of New Zealand.

Population second: Canada has 16 million inhabitants, South Africa 12½, Australia 9, New Zealand less than 2¼. These populations are mixed, between aboriginal inhabitants and immigrants. In Australia there are no more than 50,000 aborigines, in Canada no more than 166,000 Red Indians and Eskimos, in New Zealand 137,000 Maoris, but in South Africa the Native, Asian and coloured population is over 12 million, the white population not much more than 2½. Only the Maoris are fully integrated, but even they play no part in the designing of buildings. The white population of Canada then is greater than that of the other three dominions put together.

Modern building goes on chiefly in cities. If we take cities of over 300,000, over a third of the population of Canada lives in such cities, half the population of Australia and over

a third of the white population of South Africa (that includes Pretoria with 275,000 white inhabitants). New Zealand has only one city larger than 300,000 (Auckland), and we must go down to 150,000 to arrive at a ratio of town to country and country town dwellers similar to that of the other dominions.

Finally cities. Sydney, Melbourne and Montreal have more than a million inhabitants, Toronto comes next with 660,000. The others are below half a million, including Johannesburg, if one considers its white population only. This is 360,000; the total is 885,000. Similar proportions apply to Cape Town and Durban. Sydney is about the size of Detroit, Montreal of Glasgow, Toronto of Cologne, white Johannesburg of Florence. If the latter two to the European eye appear far bigger, that is due to architecture.

The Commonwealth is the most improbable federation. It is welded together by imponderables and yet seems to hold firm. A member may not recognize the Queen or abhor the National Anthem, a population may be more English than the English (or more Scots than the Scots) or may sing: 'For all her faults I love her still', or may be frankly anti-English, large groups may speak languages other than English—Afrikaans in South Africa, French in Canada—and architects may look for their inspiration steadfastly to another country rather than Britain—and yet they are all coloured pink in the atlas.

What then can be the point of assembling in an architectural publication the new buildings of States and peoples, just because they belong to the Commonwealth, or, in the particular case of this issue, because they are dominions? One answer is that in all four dominions it is the population of British origin that builds in a twentieth-century fashion. The Dutch Reformed and the French Catholic and Protestant churches are a special case and keep with their respective mannerisms on the margin of developments. Another answer is that in all four the architecture that matters is almost without exception the work of resident architects, whereas Chandighar is a mixed Franco-English affair, and the best in the West Indies, West Africa and Burma is the work of British architects.

Even historically much allows for comparison between the four dominions. The architectural story starts Dutch in the Cape and French in Canada. Groot Constantia with its shaped gables is of about 1690, the Fort de Ramesay in Montreal of about 1710. The finest houses of Cape Town are still Dutch, and retired South African merchants, farmers and civil servants build in Cape Dutch in England. Quebec is purely a French town, with a rampart and bleached shutters, and the churches on the Ile d'Orléans are unmistakably derived from those of France. The British appeared gradually in the great decades of Empire building, and their seal of Georgian red brick was set on Sydney, on Toronto, and with the Anglican Cathedral even on Quebec. Such churches as St. James's, Sydney, or the Anglican Cathedral of Cape Town, wantonly destroyed a few years ago, such houses as The Grange at Toronto might be in England or in New England. The architectural beginnings of New Zealand and Natal are Early Victorian. The Canadian Pacific Railway reached the west coast in 1885, Vancouver, its village terminus, was destroyed by fire in 1886. So the present Vancouver was only begun in 1886, to the year contemporary with Johannesburg which started with the discovery in September, 1886, of gold on the rand. Johannesburg reached its first 100,000 in 1901, Vancouver in 1911. They are the *parvenus* of the dominion cities, Vancouver wearing her wealth and architecture more elegantly.

That for such cities as Johannesburg and Vancouver the establishment of a twentieth-century style raised no sentimental problem must be obvious. Where there was no tradi-

tion the new could be acclaimed with ease. Nor was the situation much different where traditions did exist. They were nowhere as deeply rooted as in England. The mentality of the pioneer, the settler, the emigrant favours novelty. So the soil ought to have been well suited to an early and a complete victory of modern architecture. As things turned out in reality, the victory was not earlier than in such hesitant countries as England and America, and though it was in the end as thorough as in America and far more so than in England, modern architecture was not always what the architectural magazine would illustrate with approval.

A few dates can serve to illustrate the coming of the modern style, a style which had been created in Europe and America between 1900 and 1914 and had left its mark by 1930 well visible at least in the more go-ahead countries. In England by 1930 there were no more than a handful of buildings which had taken notice of the European architectural revolution, in the United States scarcely any. In South Africa, the first were houses of 1932-4 by Rex Martienssen, John Fussler and Norman Hanson, much influenced by Le Corbusier; in Canada the first house was equally Corbusierish. It is by Robert Blatter at Sillery, Quebec, and also dates from 1932. Roy Grounds designed his own house at Mount Eliza, Victoria, in 1933. Mr. Plishke's first 'Continental Modern' house in New Zealand dates from 1939, but he had, of course, built in the same style in Austria before.

The vast area of modern architecture which the survey of the following pages will leave unrecorded is spec builder's housing. This, which in England still looks to Neo-Tudor and in England and America to Neo-Georgian disease, grows in all four dominions in a modernistic vernacular, bright, neat and fairly acceptable if it were not for the almost total absence of planning. Exclaves of planning such as Vanderbijl Park in the Orange Free State, the bit of civic centre at Lower Hutt near Wellington, the much larger and more consistent use zoning of Don Mills outside Toronto are so rare that one takes them more seriously than one would in Europe. The standard is the never-ending suburb of bungalows, widely spaced in well-to-do, crammed together in poorer districts. Never do they make visual sense. They look gay and are well looked after, with their ice-cream shades and their streamlined windows. Modern clichés have been absorbed naturally and vulgarized with disarming success. Only the native housing of the South African cities stays outside this development. It ranges from the sordid shanty town to the regimented estate and is as objectionable mentally in the latter as it is physically in the former. The one thing it has in common with the houses of the whites is that nothing rises above the single storey. Only in Canada is two-storeyed low-price housing an accepted form. The detached dominates everywhere, and that again defeats any attempts at visual planning. Public housing is rare. These are countries of free enterprise. New Zealand, proportionally speaking, has most governmental enterprise in housing. Hutt was developed, not too successfully, on garden suburb principles, and groups of three-storeyed flats also built by the Government Architect's department appear in many places. Of late even high-rise residential blocks have been undertaken. High blocks of flats in South Africa and Canada mean high rents, and Johannesburg and Toronto have some where it also means a high quality of architecture. But vertical accents in horizontal estates are absent everywhere. There is opposition to the mixed developments which England has in the fifties developed so successfully. Where high flats appear, too many appear in one area, and the high office block which in the large cities has become a matter of course can also rise pretty well unchecked. The standard dress is the curtain

wall, a minimum solution as unreasonable in the cold of Montreal as in the heat of Durban or the cold and heat of Toronto. Little independent thought has gone into the problem of marrying modern form with conditions of climates. But little has also been done about this in the United States. Air conditioning is an unimaginative answer, and, moreover, the curtain wall has more often been copied in the dominions than the air conditioning.

That Toronto should look to Detroit and Chicago, and Vancouver to Seattle, San Francisco and Los Angeles is nothing surprising. But that throughout the four dominions England as a source of inspiration has been eclipsed by America calls for some thinking. Sentimental ties with the homeland have not snapped anywhere. When it comes to juries, to a fair judgment on national or international matters of architectural design, the best English experts were called to Canberra, to redress the damage done to Walter Burley Griffin's plan and to Sydney and Toronto to decide who should build the Opera House and the City Hall, and Robert Matthew was commissioned to build New Zealand House in Pall Mall. Moreover, the professors of architecture in Cape Town, Melbourne, Sydney, Toronto, Auckland, to name only a few, were trained in England. One would expect that they would determine the direction in which their students would look. But that is not so and perhaps could not be so.

Once again, for Canada the proximity to the United States was too close to be resisted. The Canadian speaks of gasoline not of petrol, of high school and sidewalk, of highway and subway. As for Australia and New Zealand, it ought to be remembered that their world is centred in the Pacific not the Atlantic. California is nearer than England and in climate and ways of life more akin. That leaves South Africa, where Johannesburg is the architectural centre. What could be expected of so new and booming a town other than to be attracted by a new and booming country. This applies to commercial architecture primarily, but the architect of private houses also is attracted by a country of wide spaces and baffled by so close and intimate a scale as that of the English countryside.

So here is a situation which allows for the four dominions to be seen together. The architects who now lead are their own, not as a rule immigrants. Their roots are in Britain, but their eyes are on the United States. They are not hemmed in by tradition, by the preservation of worthwhile older buildings, and so they enjoy a mental and material freedom which may well be envied. Have they then succeeded in absorbing a style created and developed by others, in making it their own and in creating work that can stand by the side of the best abroad? The following pages present the material to answer this question; but any answer must remain personal. If on the strength of this introduction certain names may be put forward as candidates, I would propose John Parkin and Charles E. Pratt in Canada, Roy Grounds and Walter Bunning in Australia, and H. W. E. Stauch in South Africa. But South African work is on the whole too anonymous to qualify and work in New Zealand too small. But the houses by Norman Eaton and Werner Plishke and the high slabs by Gordon Wilson, late Government Architect of New Zealand, can all the same not be left out.

The buildings illustrated in the album which follows are selected for aesthetic reasons. In many cases one would have wished to be able to give them more space. Planning and structure had to be neglected. Plans, it is hoped, will speak for themselves. As regards building technique and building conditions four supplements are added, starting on page 218, which deal with the building industries, and native and imported products, in each of the four dominions.

CANADA

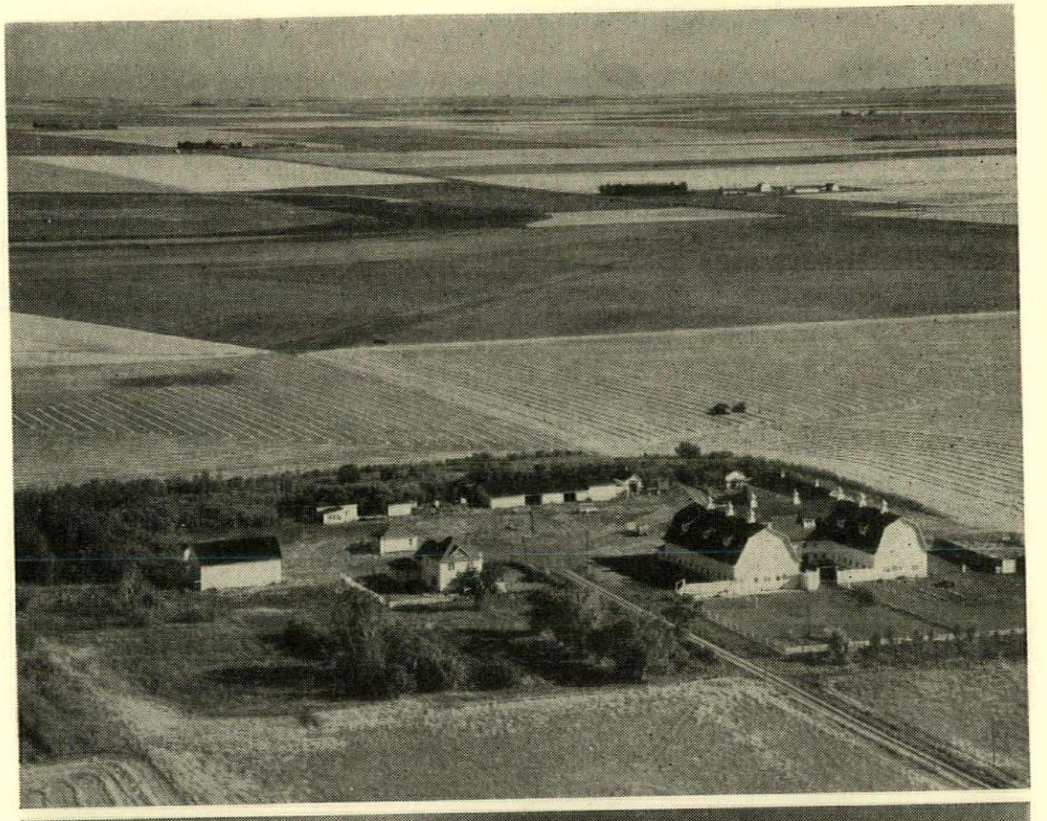
To define the nature of Canadian architecture is to embark upon the definition of a mirage. It flitters in the landscape. As you approach it, as you stretch out your hand to touch and open your mind to comprehend it, the phantom vanishes. In its place the landscape reappears, a landscape which has all the variety one would encounter travelling between Bordeaux and Vladivostok. Can one visualize clearly a Canadian architecture with such a kaleidoscopic background?

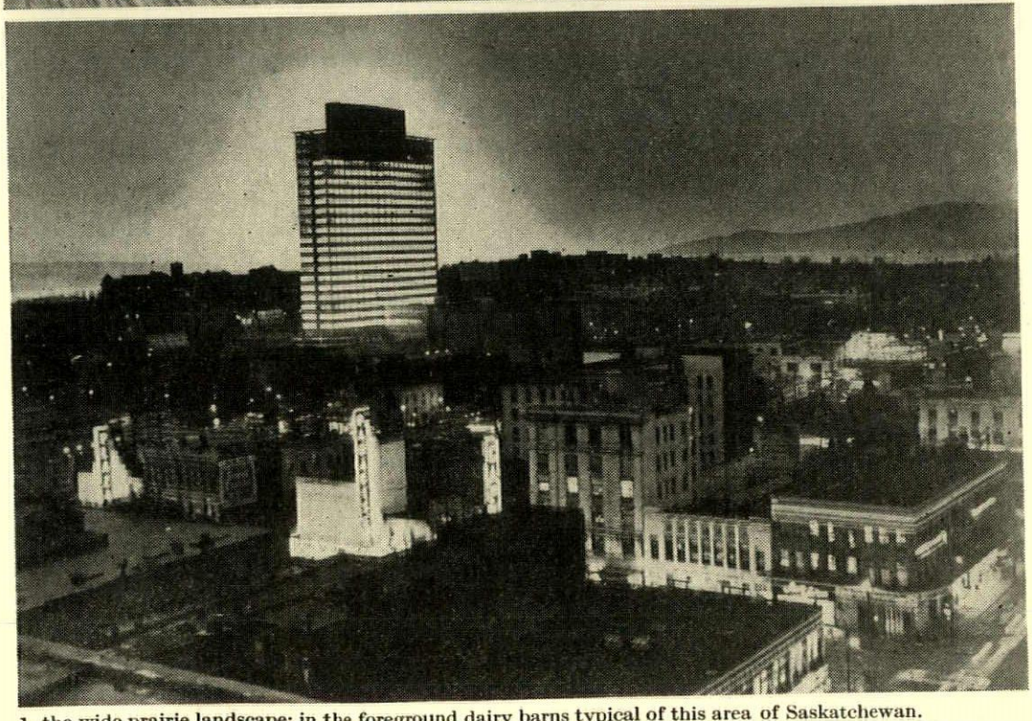
The country's history, its geographical position, north of the United States, west of Britain and France, and east of the Orient, its pattern of multi-racial settlements, its economic and social dependency are all factors contributing to a blurring of outlines, a conflict of motives, and indecision as to what is right for Canada, the whole of Canada. Nevertheless, in this architectural penumbra, certain clear statements are being made. The merging of these will perhaps result, over the years, in an architectural expression which can be defined as 'Canadian.' What are some of these architectural statements?

With a powerful country such as the United States sharing 4,000 miles of boundary, and being the only country with which Canada shares an active boundary, it is inevitable that the influence of this colossus should be quite considerable. This has been evident ever since the war of 1812–14 between the two countries. Since that war a growing friendship has linked them in many forms of joint enterprise and exchange of ideas. Economic rivalry and, eventually, domination and exploitation has not hampered this exchange. On the other hand, the many American-owned enterprises in Canada have brought very definite architectural influences. The vast amount of printed material, trade literature, architectural magazines and books or other cultural works which come to Canada from the USA have made the Canadians

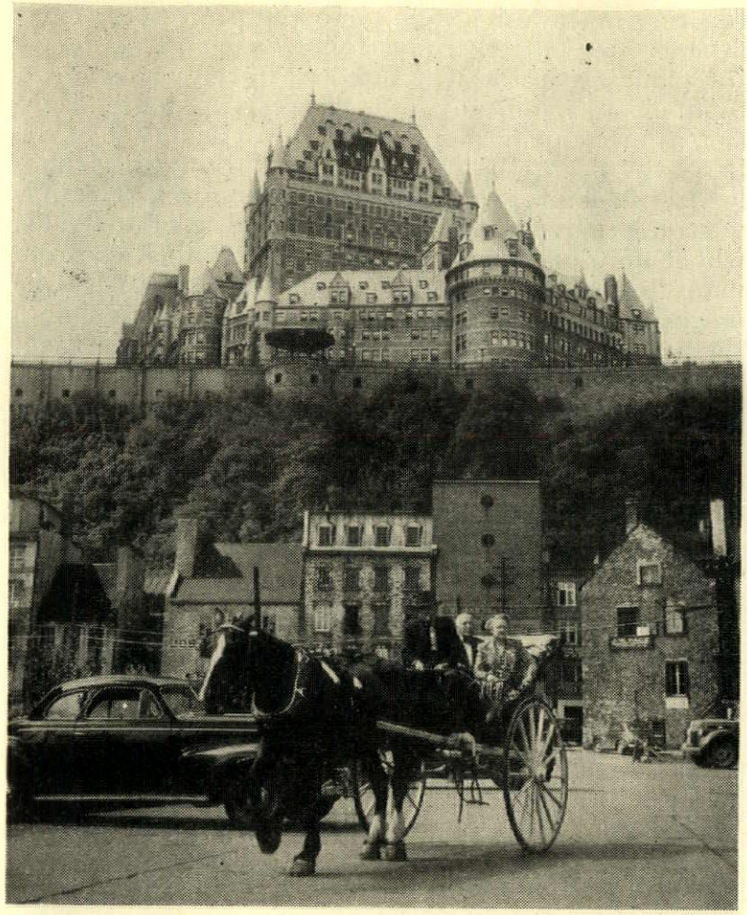
conscious of developments in that country as they are conscious of developments in no other country. Also the good expressways which link Canada to the United States are crowded with sightseers. Canadians form the largest national group of visitors to the United States. It is therefore not surprising to find, since the middle of the last century, an increasing number of buildings the designs for which have either originated in the United States or have been derived from American examples. The work of Richardson in the Boston area had a great influence at the end of the nineteenth century and the beginning of this one, when many buildings throughout eastern Canada, and even some in the west, emulated a large-paned type of romantic Romanesque, amplified with turrets and bay-windows. Today, Skidmore, Owings and Merrill are exerting a similar influence.

As to Canada's own architectural history, one period should be mentioned especially. This was the period of the great pioneering barons who were developing their financial and political empires. This was the Canadian Victorian era and it was a good





1, the wide prairie landscape; in the foreground dairy barns typical of this area of Saskatchewan.
2, a night view, showing how the newest architecture is beginning to dominate the fast-growing city of Vancouver.



3, the strong period-revival tradition in the older Canadian cities: the Chateau Frontenac Hotel in Quebec, perched above the ancient lower town.

reflection of the same era in the home country, England. Only, in Canada it gained a greater zest and vitality. It was an eclectic period, but also a creative one, when any building was considered as a historic challenge, resulting in more exaggeration, greater lustfulness. Unfortunately these buildings are impossible to live in today, and they are fast disappearing from Canadian cities to make way for blank-faced intimidated curtain-walled boxes, reflective of the current spiritual poverty.

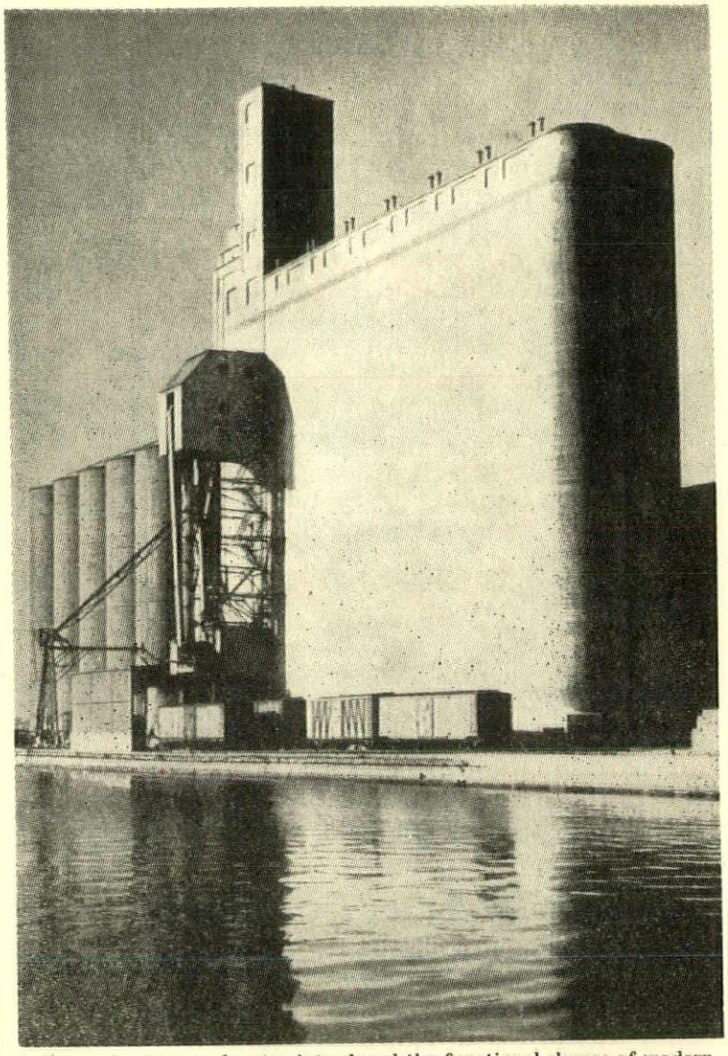
At the height of Canada's expansion westward at the turn of the century, especially during the years immediately prior to World War I, immigration was encouraged and up to over 400,000 people a year came to settle there. While the majority came from the British Isles, continuing the importation of British culture, great numbers came from other countries, especially from northern Europe and the Ukraine. Across the land, in every city and on many a farmstead, a bit of Europe was transplanted; an onion-shaped dome or cupola, a bit of Polish fretwork, a Dutch gable, Scandinavian reds and ochres and their flat trim-surrounds, Germanic precise window rhythms, Swiss chalet balconies and Ukrainian farm porches. Out of this melting pot, combined with the original French and subsequent British cultures, a native architecture is perhaps in the making. But the giant to the south is also a multi-nationality boiling pot of ideas, influences and traditions. So again it is natural that the architectural paths of these two countries should be similar.

On the far west coast, in British Columbia, particularly in its magnificently set major port city of Vancouver, a somewhat more independent development has taken place. Predominantly British, this area has also long felt the influence of the Orient. It has been ready to accept ideas in the use of wood from Japan, in fretwork decoration from China and in modular and open planning from both. This region has led Canada in exploring new architectural ideas as it has in painting, and its contemporary houses and other buildings have a distinction which has induced the 'BC style' in eastern Canada. Some office buildings and numerous residences in the Vancouver area are as fine as can be found. The BC Electric Company's head office building is considered by many critics to be the most gracefully handsome office building erected anywhere, a building which has a full integration of the work of artist and architect.

The years following the second World War have seen the emergence of a younger group of architects who are little different from young architects in any country. They revolted from eclectic and Victorian architecture. They became contemporary eclectics. Others tried desperately to be different and unique, but the curtain-wall and sheer façade, with little or no relief, gradually became insidiously pervading and the dominant trademark of modern architecture. But revolt is now setting in.

The country's largest firm, J. B. Parkin and Associates, which patterns itself after Skidmore, Owings and Merrill with a little more of Mies van der Rohe's influence, has moved towards a greater plasticity in the exterior treatment of its buildings and greater formality in its plans. This firm's influence on architectural thinking is considerable. In a similar style, and with equal influence, Green, Blankstein Russell

4, in a prosperous Toronto suburb: the favourite traditional style of brick and timber houses.



5, the grain storage elevator introduced the functional shapes of modern buildings into Canada before the arrival of the modern architect.

and Associates of Winnipeg, Thompson, Berwick and Pratt of Vancouver, and Lebensold, Affleck, Desbarats, Dimikopoulos, Michaud and Sise, of Montreal, have been blanketing the country with competent, well-designed buildings. They are not as technically perfect and impressive as their American counterparts. They are, perhaps, softer in appearance with a greater human content as a result of a lesser degree of industrial fabrication of their parts.

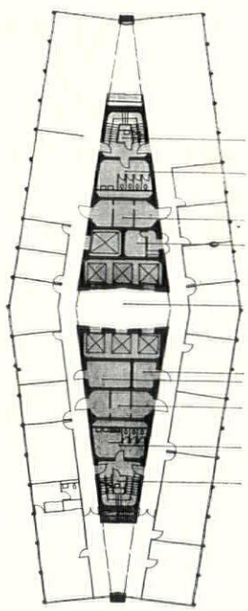
Besides and beyond these large firms are a number of small firms and individuals, too numerous to name, who are the conscience of the profession and who are primarily the products of the schools of architecture since the war. These architects are trying to bring back design dignity to the profession. Their designs are controlled and follow a simple order in the planning, in the structure and in the visual effect. Symbolism, significant form, is receiving more attention as are some basic precepts: the articulation of the base, the body, the cover, and of the major components, structure, entrances and windows. There is a strong move away from the arid curtain walls, which may unfortunately cause its elimination from many logical uses. The move is not a purely negative one, as it emphasizes human reaction to the building: the need for man to find visual and emotional contact and pleasure as he experiences the building. This approach lays more stress on the aesthetic solution than on technical achievement, and herein lies the potential for a major difference between Canadian and American architecture.

In Canada there are five schools of architecture: in Montreal, McGill and the French l'Ecole des Beaux Arts; in Toronto, in Winnipeg and in Vancouver. They all follow the usual pattern of a five-year professional course following senior matriculation or first year of Arts and Science. The standard is high and comparable to the best schools in the United States. The youngest school, at the University of British Columbia, Vancouver, is, however, breaking rank. It will require at least three years of Arts and Science, or normally a Bachelor's degree in Arts or Science, prior to entry into a professional course having a minimum of three longer-than-usual academic years.

In conclusion, the North should be mentioned. This vast lake-studded frozen area of rock, tundra and scrub trees is offering tremendous industrial opportunities. Currently it is a vital part of the North American defence system. Modern science is invading this lonely primitive land. It may be that in solving the unique building problems of this area a truly Canadian form of architecture will emerge, re-shaping the modern-eclectic forms of the southern populated belt of the country.

The many trends of the country, a country of many national heritages and of many geographic regions, needs a catalyst. That catalyst may come from the north but it will act differently in Canada's various regions, in the maritime Atlantic provinces, in French Canadian Quebec, in industrial Ontario, in the flat spacious and rigorous Prairies and in the mild-weathered and scenic Pacific Coast area. A Canadian architecture is unlikely. A Canadian architectural contribution is much more of a possibility.

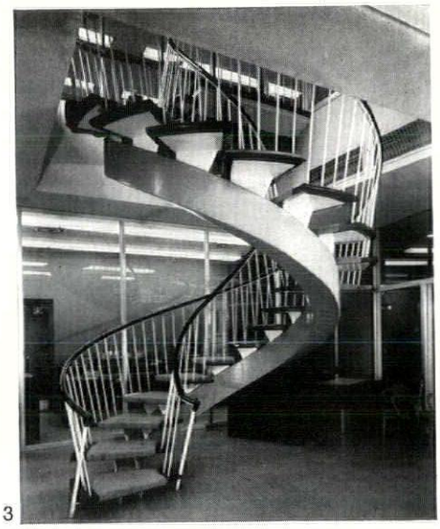
CANADA



typical floor plan

Offices in Vancouver (architects, Thompson, Berwick and Pratt), 1, for the BC Electrical Board, who already had a sub-station by the same architects on part of the same site, which had to be fitted into the scheme. The twenty-four storey steel-framed tower, which has been widely praised, has a double-tapering plan, above, in order to secure the most compact possible planning of the service core and circulation spaces, but all the office areas are rectangular in plan (except for the ones behind the angles of the two main façades) even at the end of the block, thus producing the re-entrants seen in the illustration. The cladding is of enamelled steel and double-paned glass.

2



3

4

Office block, Toronto (architect, James A. Murray), 2 and 3, a straightforward curtain wall design—no advertising is allowed in the largely residential area where it is sited—on a reinforced concrete frame. Unusually for such a building, the lower part is a club, with restaurant in the basement, and lounge bar on the ground floor. The staircase, illustrated, is carried on a single spiral beam supported only at top and bottom.

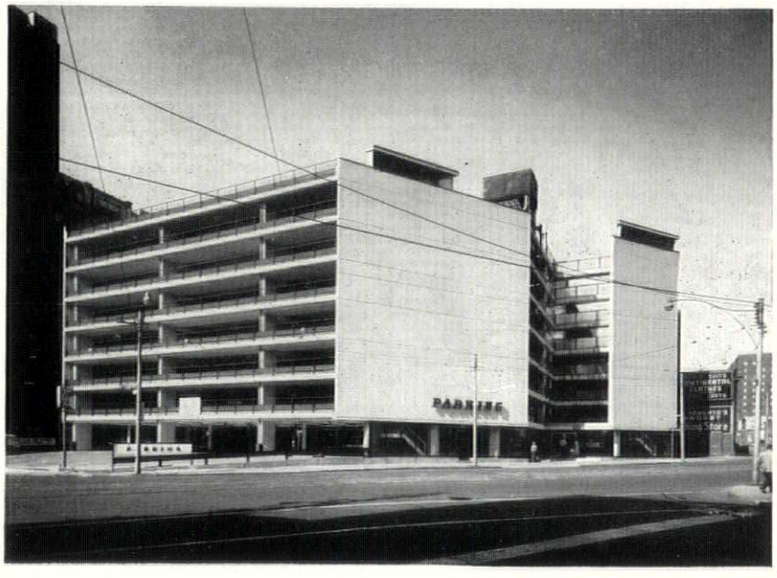
Office Block, Toronto (architects, Marani and Morris), 4, for the Shell Oil company, on the avenue linking the business centre of the city with the Ontario Parliament Buildings. The main, twelve-floor tower rises from a T-shaped ground floor whose arms, parallel with the street, conceal Car-parking areas. Maximum flexibility of partitioning and services was a primary design consideration, while extension of the block upwards by adding more floors is also envisaged, when the service floor containing mechanical equipment at the top of the present tower would remain as an intermediate distribution floor. At the client's wish, extensive use has been made of native Canadian materials for finishes. The building is air-conditioned.

5

Highway bridge, Belly River, Alberta (designers, Toronto City Roads Department), 5, in four pre-stressed, pre-cast concrete spans, each of eighty feet.

6

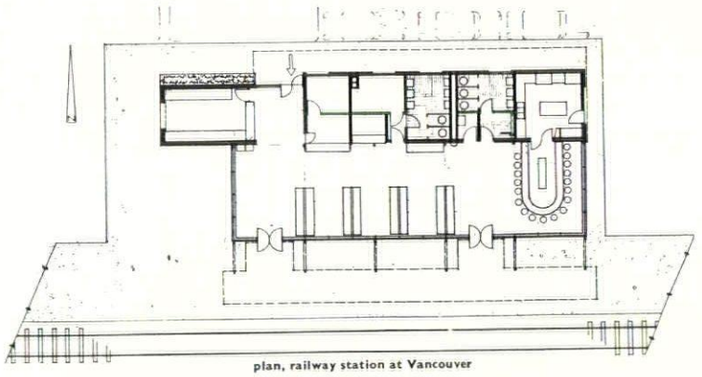
Highway Intersections, Lakefront and Humber River, Toronto (designers, Dept. of Roads, Municipality of Toronto), 6. From left to right, the Queensway, the Canadian National Railway, the Frederick C. Gardner Expressway, Lake Shore Road. The added complications of mating a tramway system with express motorways will be noted.



7

Parking garage, Dundas Square, Toronto (architects, John B. Parkin Associates), 7, one of two such garages built for the Toronto Parking Authority. Both are somewhat alike in plan, with parking accommodation disposed on either side of the lifting gear that raises the cars, and moves them horizontally to their allotted bays. Economic considerations, coupled with an awkward triangular site at Dundas Square, called for great ingenuity in securing a workable ratio of structure to cars accommodated, and the very small tolerances on levels permitted by the mechanical equipment made it necessary to carry the foundations of the concrete structure down some 48 feet in order to avoid differential settlement.

8



plan, railway station at Vancouver

Railway Station, North Vancouver (architects, Hale Harrison Associates), 8, built to handle the small, but probably increasing, passenger traffic on the Pacific Great Eastern since its final link-up with Vancouver. The steel-frame passenger building has therefore been planned with expansion in mind. The concourse/waiting area has a bar as well as the usual facilities, and is completely glazed on the side toward the tracks, to afford maximum view of railway operations.

City Hall, Edmonton, Alberta (architects, Dewar, Stevenson and Stanley), 9, occupying a site between 99th and 100th streets, whose lack of parallelism is echoed in the angles chosen for the 'lenticular' plan of the main office tower, and the splay, on plan, between the projecting council-chamber and the lower public block to the right.

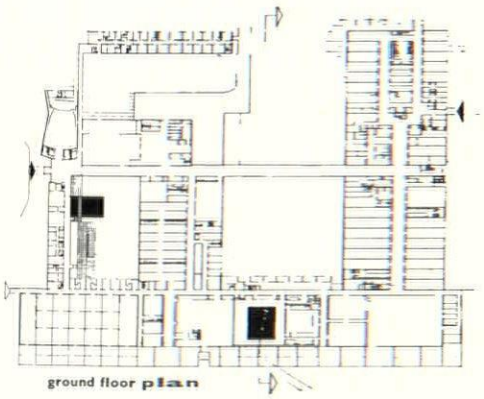
9

Alberta Jubilee Auditorium, Edmonton, Alberta (architect, Ronald Clarke), 10. *Erected, at the same time as a similar building at Calgary, to commemorate Alberta's fiftieth anniversary in* 1955, *the main auditorium has a seating capacity of over* 1,500 *people and is designed for orchestras, operas and road shows as well as for presentations by local groups. In addition to the auditorium and its ancillary spaces, there are large promenades, club rooms, an exhibition area and a main social room with flanking smaller activity rooms. The structure is steel-frame with six three-hinged steel arches spanning the auditorium. The exterior is finished with precast concrete panels and brick except for the main entrance which is faced with polished travertine.*

Hospital and Rehabilitation Centre, Weston, Ontario (architects, Page and Steele), 11, *planned as far as possible on one level, to facilitate the movement of the patients, who are workmen injured in industrial accidents. The plan encourages walking, which is part of the cure, and the occupational therapy wing has a deliberately industrial atmosphere. Structure is steel for the single-storey wings, reinforced concrete for higher blocks for* 500 *patients.*

10

11



ground floor **plan**

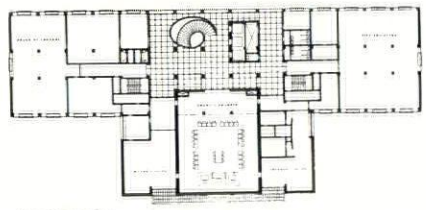
Municipal offices, York Township, Ontario (architects, Shore and Moffat), 12, 13. *Set back from a main avenue, and placed at an angle, to give the best natural lighting and take advantage of a view up the valley to the north-west. The various departments occupy two floors and basement, with those requiring most contact with the public on the ground floor. The Police department is in a separate block, with a car park between it and the main building. The offices are openly planned with the public space along the south side of the building separated from the working space only by counters or low partitions. On the first floor of the main building are the council chamber and committee rooms.*

12

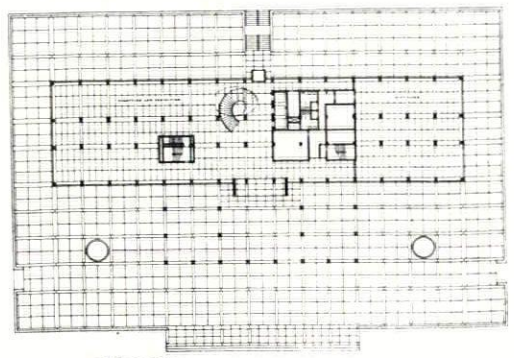
13

14

City Hall, Ottawa (architects, Rother, Bland and Trudeau), 14-17. The site is on an island in the Rideau river at the head of the Rideau Falls, which drop into the Ottawa river eighty feet below; two major roads cross the island and link it to the town. There is an eight-storey administrative block with a staff cafeteria on the top floor, and a three-storey legislative block. The main public spaces are on the ground and first floors. The structure is a steel frame on concrete caissons taken to rock fifteen feet below ground level; a paved platform, slightly above street level at the front of the building, is the roof of a parking garage for 150 cars.



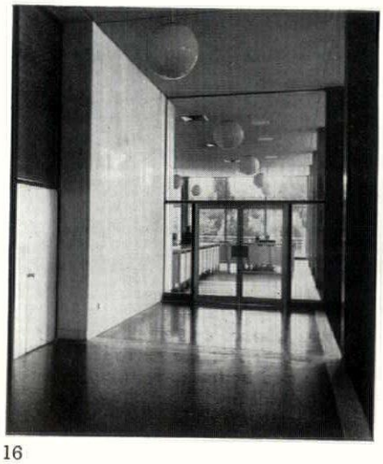
first floor plan



ground floor plan

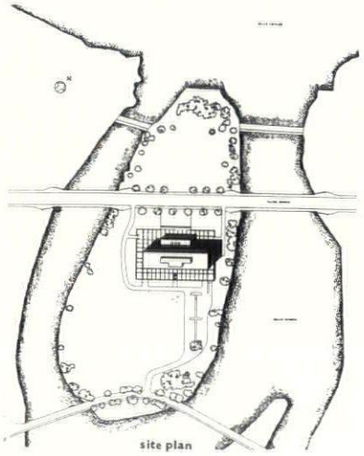
15

The curved main stair, 17, leading from the ground-floor reception area to the council chamber is of polished reinforced concrete, supported only at its ends; the treads are of white marble. The exterior of the building is faced with Canadian limestone and the interior finishes in the public areas are white marble and honed Canadian limestone. The council chamber is panelled with walnut. The building is fully air-conditioned.



16

17



site plan

18 | 20
19 | 21

Shopping Centre, Don Mills, Ontario (architects, John B. Parkin Associates), 18, a group of small shops served by a pedestrian mall with planting and covered ways, part of the cluster of commercial and merchandising blocks on Lawrence Avenue East.

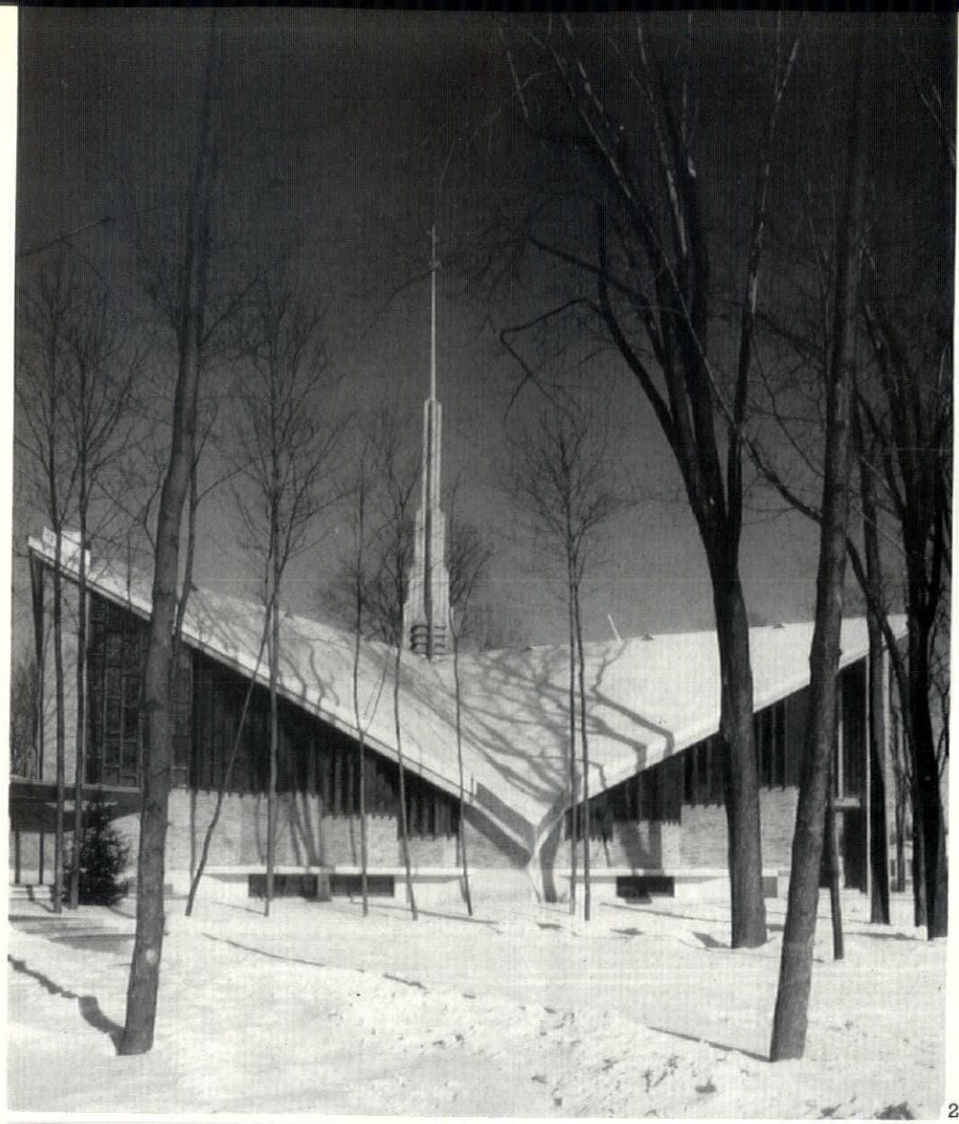
Banking Group, Don Mills (architects, John B. Parkin Associates), 19, also on Lawrence Avenue East; a standardized architecture, related to that of the shopping centre, applied to a group of drive-in banks.

Pharmaceutical Factory and Offices, Don Mills (architects, John B. Parkin Associates), 20, a two-storey concrete framed block (the illustration shows the office entrance) with most of the offices at first-floor level and laboratories and work-spaces behind.

Housing, Don Mills (architects, James A. Murray and Henry Fliess), 21. 120 houses in blocks of four to six, each with its own garden. Houses are mainly of two types: a two-and-a-half floor type with a well-lighted basement, L-shaped living-dining room and three bedrooms above, and a split-level type with dining-room and kitchen at the entrance level and a sunken living-space and bedroom opening into the garden; other bedrooms and bathroom are up a half flight of stairs from the entrance level. The houses are grouped round common landscaped spaces, with car-parking out of view from the windows. They are in brick with shingled roofs and white painted door and window frames.

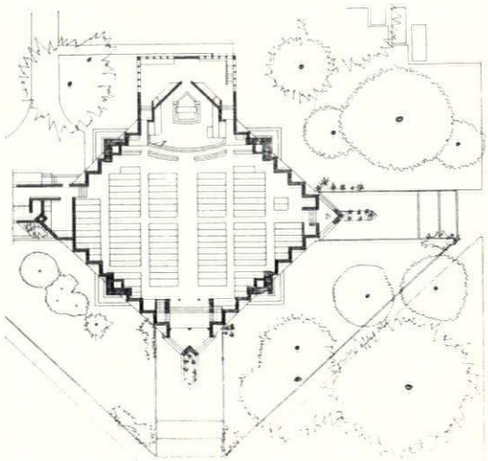
22

Federal Building, Don Mills (architects, John B. Parkin Associates), 22, a square block, not unlike a larger version of the banks in 19, above. The public hall for the post office lies across the front of the building, set back from the columns carrying the roof (the other walls are flush with the structure) and one of its entrances is seen in this view.

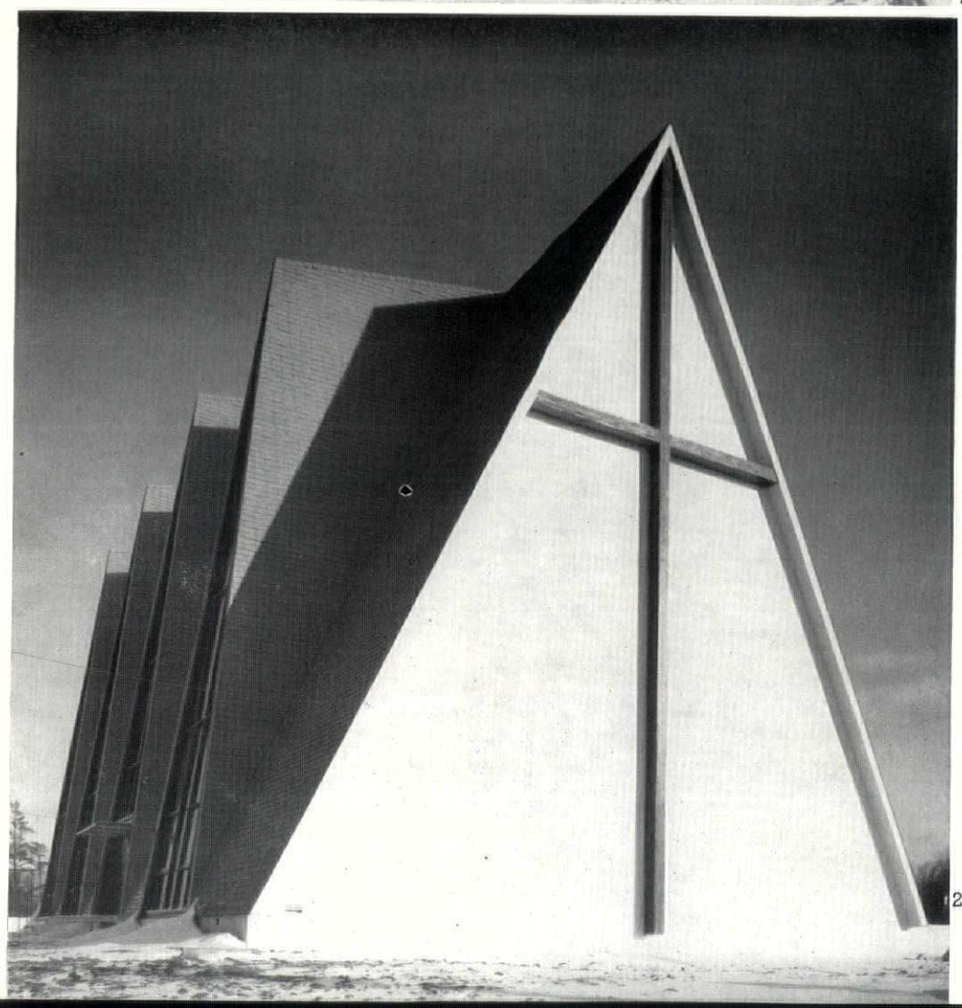


23

Church of Notre Dame du Bel Amour, Cartierville, Montreal (architect, Roger D'Astous), 23. Planned on the basis of a square whose diagonals are the ridges of a star-shaped vault. Eight triangular reinforced-concrete slabs rest on four piers. A continuous pleated strip of redwood window breaks up direct sunlight and helps to diffuse interior sound.

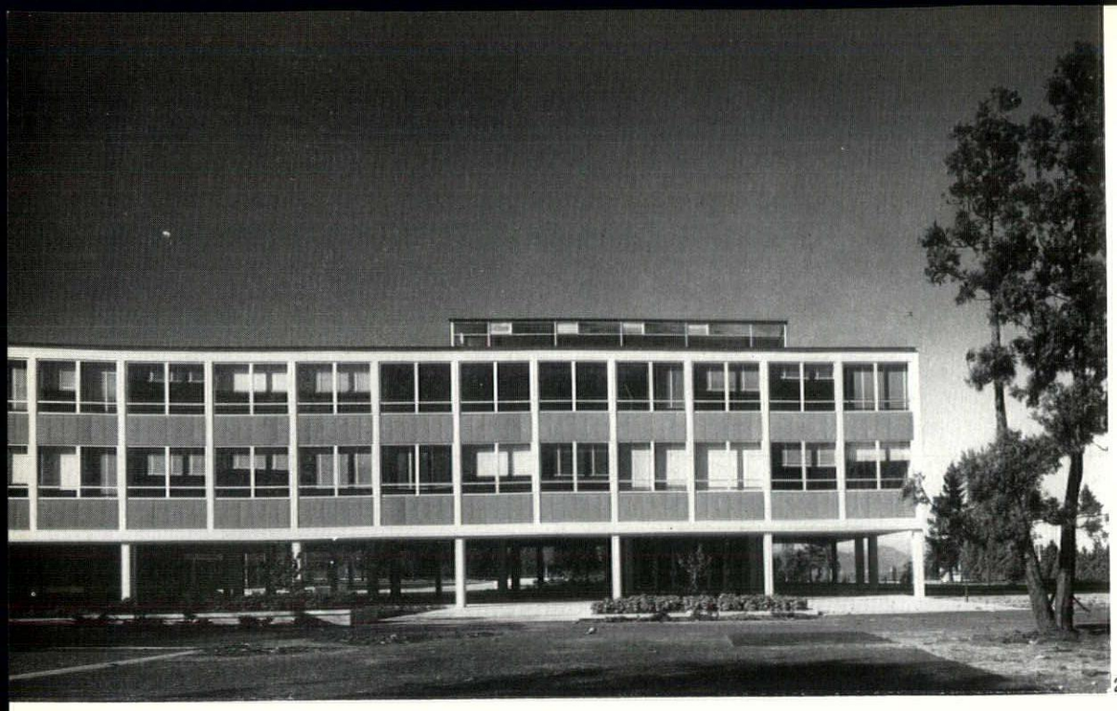


Church at Cartierville



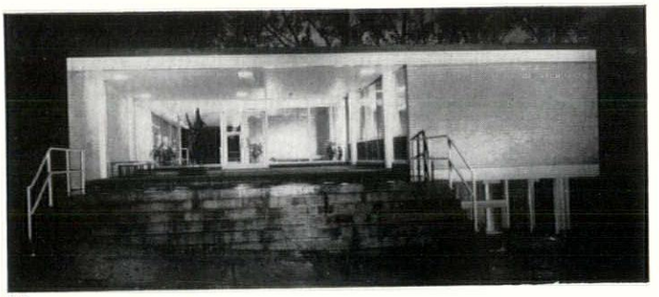
24

Church at Toronto (architect, James A. Murray), 24. Called the Yorkminster United Church, it is planned for a congregation of 500 with accommodation for social activities and Christian education. The approach from a main trans-Canada highway, with cloverleaf intersection which sets the scale, is by covered way alongside a sunken garden. The church hall and kitchen, which are at a lower level, are in reinforced concrete and the main floor is supported on steel beams. The superstructure is timber, with a frame of laminated members.



25

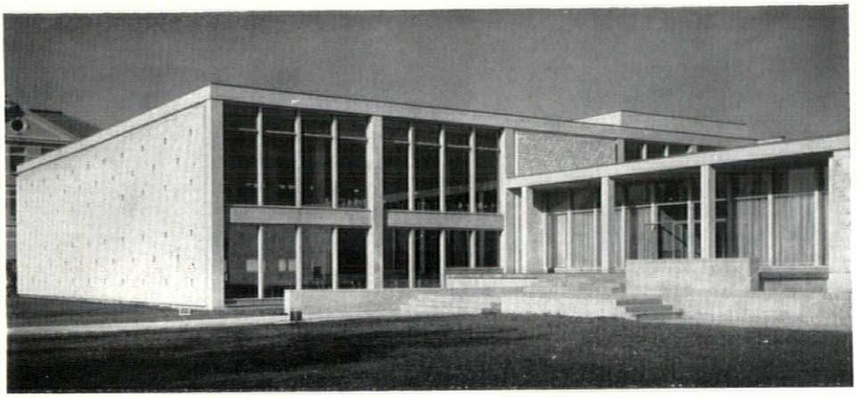
Arts Buildings, University of British Columbia, Vancouver (architects, Thompson, Berwick and Pratt), 25, a complete collegiate unit, comprising a class-room block with open ground floor giving on to a court flanked on one side by an office wing, and on the other by a block of acting-studios and class-rooms; between this last and the main class-room block is a link unit with entrances, foyer and staircases.



26

Headquarters building, Toronto (architects, John B. Parkin Associates), 26, for the Ontario Association of Architects. This competition winning design for a building to house one of the oldest architectural bodies in North America was fully illustrated and described in AR, May, 1955.

Library, University of Manitoba, Winnipeg (architects, Green, Blankstein, Russell and Associates), 27. The library building which includes a 75-seat theatre, exhibition space with a lounge opening off it and a small serving kitchen, is connected by a tunnel to the adjacent Arts Building to the south. Control of the library is split between two main desks, one on each of the ground and first floors; a book lift runs directly from these to the stack spaces. The structure is a reinforced concrete frame with hollow-core columns through which air is distributed to the stack areas. Exterior walls are of Manitoba Tyndall stone, random ashlar pattern; interior surfaces are oak and walnut panelling and plaster-sand finished.



27

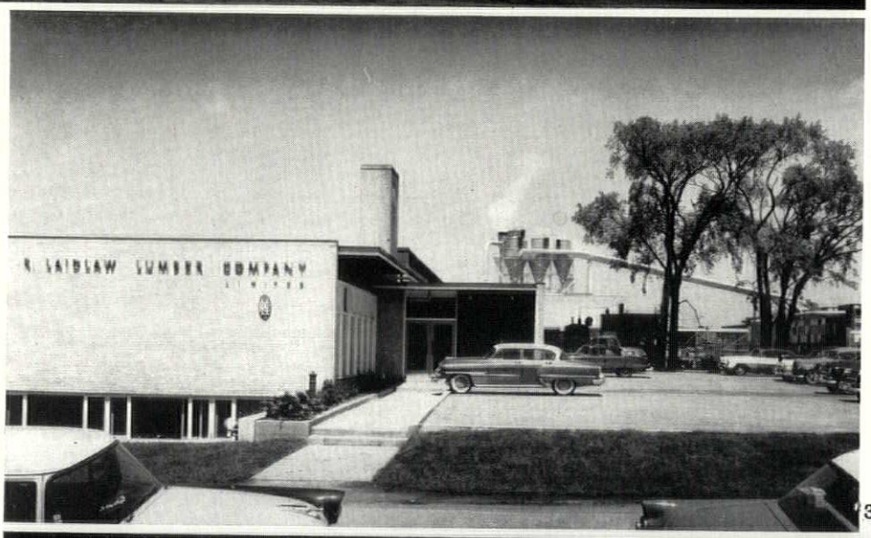
Secondary School, Kitchener, Ontario (architects, Barnett and Rieder), 28, a steel-frame building of more or less cruciform plan to house Eastwood Collegiate Institute, a secondary school. The long arm of the plan consists of a two-storey class-room block with a double-gymnasium at its head, but at a lower level because of the fall of the site. The cross arm contains the administrative block (visible in illustration) on one side, and the auditorium on the other.

28

29

Construction Plant Depot, Burnaby, British Columbia (architects, Thompson, Berwick and Pratt) 29, *a display and service centre for earth-moving equipment, etc. Workshops, spare-parts store, and canteen are at ground floor level, together with open-air display areas that are partly sheltered by the steel-framed office floor, with its last eight bays cantilevered, above them.*

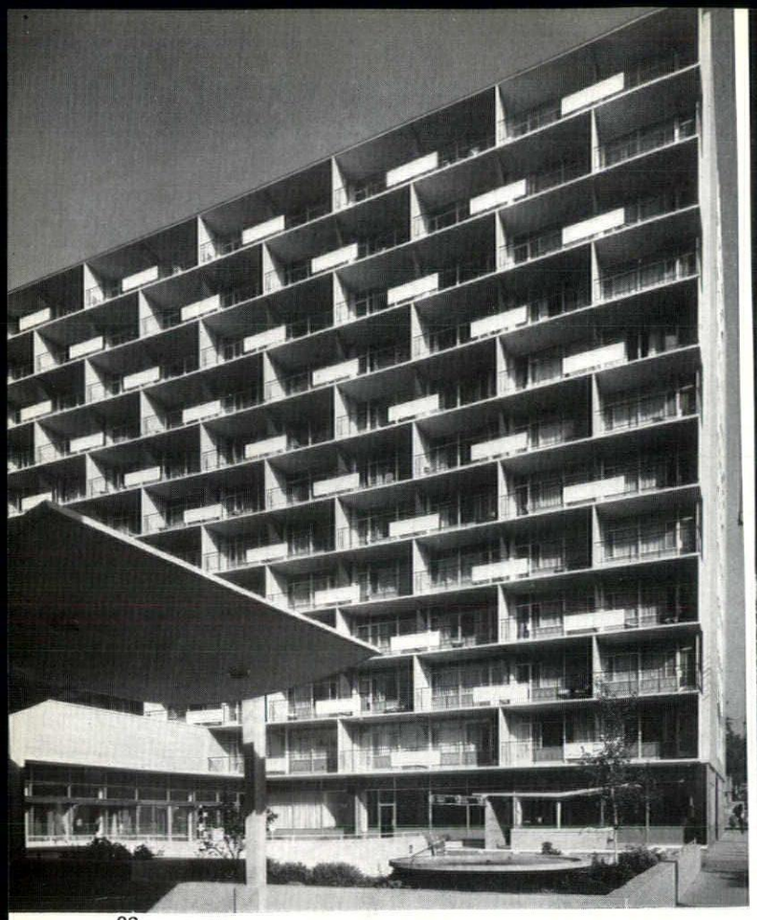
Racecourse, Etobicoke, Ontario (architect, Earle C. Morgan), 31. *With a view to future expansion the Director of the Ontario Jockey Club purchased* 800 *acres for this new racecourse. The present* 1,100 *horse stalls can be increased to* 1,400; *parking for* 16,000 *cars can be increased to* 40,000; *the stand which now seats* 8,000 *can be enlarged to seat* 22,000. *The Grandstand has four seating levels and the clubhouse three, the fourth level being the director's floor. The main betting ring floor is at the top level of the apron, approximately* 15 *feet above grade at the rear entrance side of the stand, thus freeing the grade level area for the many ancillary requirements of a race track. The grandstand roof is in the form of a huge truss supported at back and centre, and cantilevered over the racecourse side.*



30

Lumber Factory, Weston, Ontario (architects, Pentland and Baker), 30. *The site is on the outskirts of Toronto's metropolitan area. In addition to the factory, warehouses and lumber yard, there is a general office building designed as two blocks linked by a main stairway. Timber and glass are the materials used throughout. A bay size of twenty by forty feet was chosen as the one best suited to the eighteen foot maximum lumber length and the four by four palletted packages and four by eight plywood sheet. The only exception being the millwork factory, where, because of the process, eighty foot spans were necessary ; these support open trusses, glazed on the exterior face, on a ten foot module. The exterior walls of the factory and warehouse buildings are of three inch tongue-and-groove western Canadian cedar. Structural framing is glue-laminated beam and post. The office building is sealed and fully air-conditioned.*

31



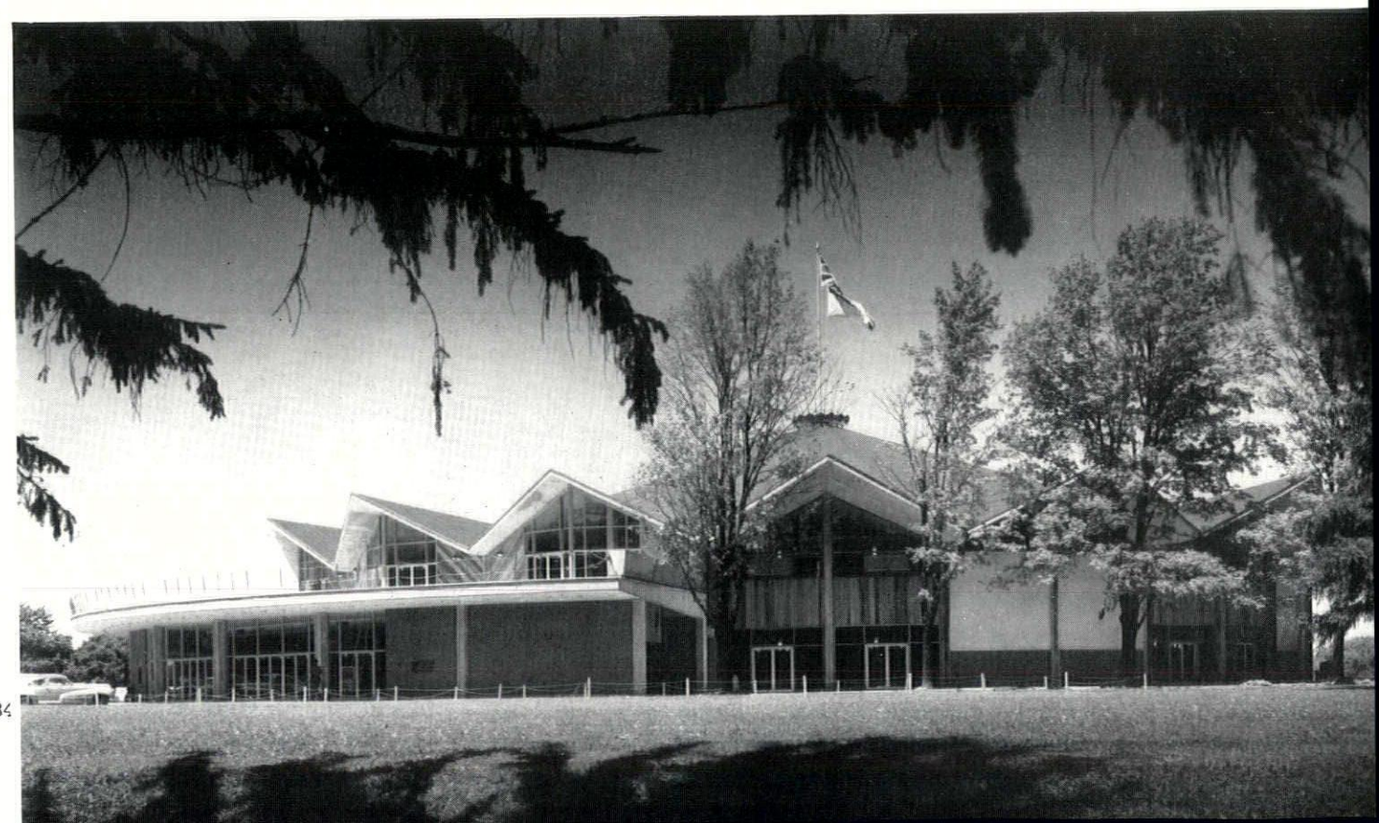
32

33

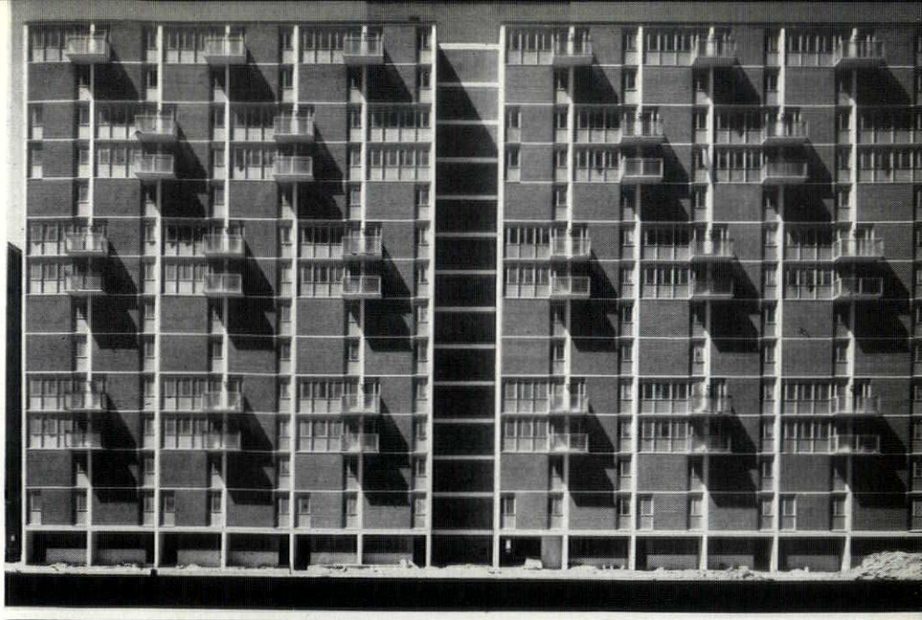
Hotel Extension, Toronto (architects, Page and Steele), 32, *a new wing added to the existing structure of the Park Plaza Hotel, and joined to it by way of a foyer and communicating public rooms. The first floor of the concrete column-and-slab structure has staff and reception rooms, the ground floor a dining room, lounge and rentable space. A drive-in court, underground car-park and loading-bay also help to relieve traffic pressure on surrounding streets.*

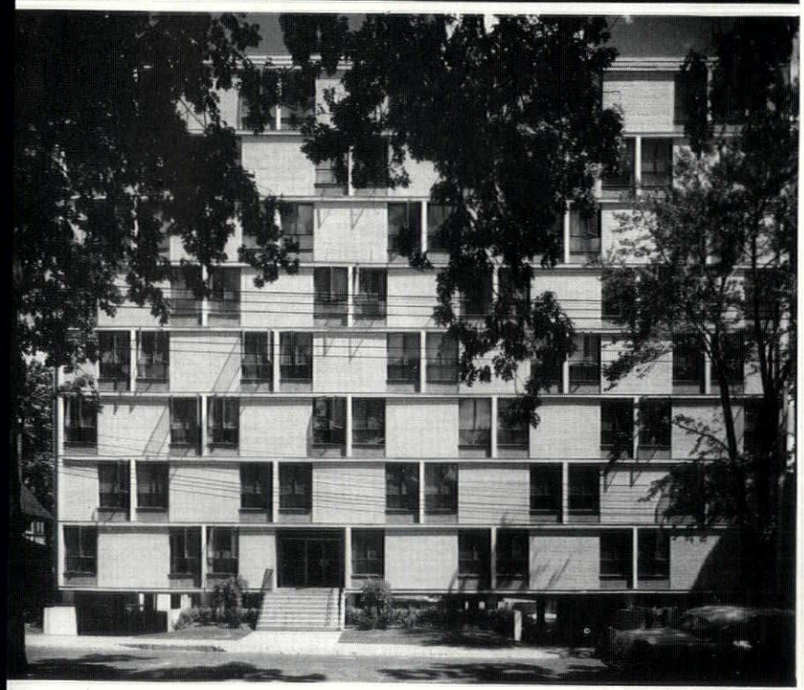
Seaway Hotel, Toronto (architects, Elken and Becksted), 33, *at the western approach to the city, on made ground between Lake Ontario and the railway. It has* 111 *rooms on four floors, all facing the lake with a corridor on the other side. At the east end, nearest the city, is a two-storey block containing restaurant and convention and banqueting hall. It has a concrete frame, with end walls of red brick.*

Festival Theatre, Stratford, Ontario (architects, Rounthwaite and Fairfield), 34. *The site falls* 17 *feet from south to north, and the auditorium seating, the stage and most service facilities are below ground level. The building is a* 200 *foot diameter circle in plan with a* 40*-foot foyer extending* 160 *feet along the south-west side. The arc of the audience area in the main auditorium occupies* 220 *degrees and each member of the* 2,192 *audience has a view unobstructed by any vertical supports. This is achieved by a 'parasol' roof of* 34 *steel beams carried by a concrete ring resting on the inner columns of the promenade. The beams are locked together at the top, and stiffened by struts at two-thirds span, while the concrete ring is buttressed by the folded slabs of the promenade roof.*



34





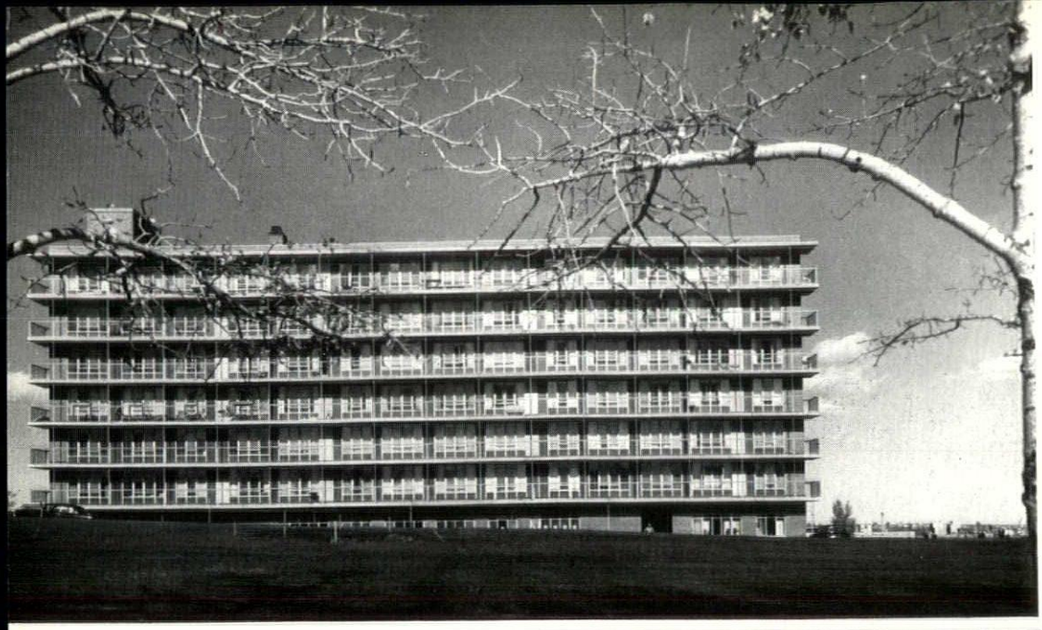
37
38

Flats, Toronto (architects, Page and Steele), 35, at 500 Avenue Road, a newly developing area of high quality apartment buildings. The reinforced concrete structure accommodates eight large apartments on each of twelve main floors, with car-parking in the basement to clear all the rest of the plot for landscaping.

Flats, Toronto (architect, James D. Murray), 36. The building is raised half a floor above ground to provide a car park beneath. The structure is of reinforced concrete, and there are eighty flats in the building which is on a high-density city site.

Re-development housing, Toronto (architects, Page and Steele), 37, Regents Park South, a mixed scheme of terrace-houses and high-rise blocks such as that shown here. The tall blocks have, effectively, cross-wall construction and skip-level sections, with maisonettes opening up and down from the access corridors, as the elevation clearly shows.

Flats, Toronto (architects, Page and Steele), 38, at 561 Avenue Road, an earlier part of the development illustrated in 35. The fourteen-storey reinforced-concrete structure has six flats per floor, each with a balcony, basement car-parking, ground floor lounge and dining room. On some floors the standard flat-plans have been varied to tenants' requirements.



39

Flats at Calgary, Alberta (architect, Peter Caspary), 39. The six separate buildings (set in 14 acres of gardens) comprise eight basic types of flat, from 2 to 4½ rooms, though two of the types can be combined to produce 7 and 8 room flats. All flats above the ground floor have balconies running their entire length with views over the Rocky Mountains. The scheme includes a neighbourhood store. All windows are double-glazed and there are automatic laundries for the use of the tenants.

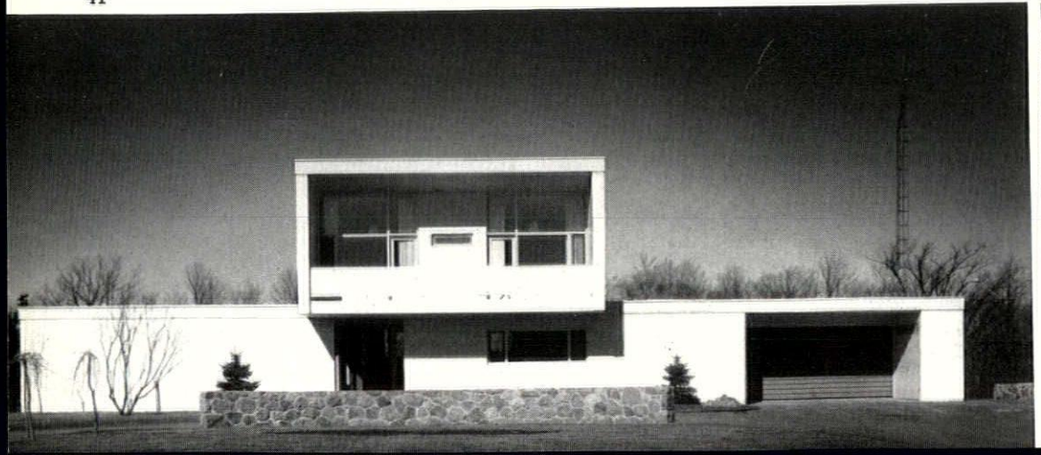
Flats at Toronto (architect, Peter Caspary), 40. Situated in the centre of Toronto, on a four acre site, there are three fifteen-storey blocks with five different types of flat, ranging in size from the bed-sitting room to the two-bedroom flat. Each, above ground, has a full width balcony. The structure is of reinforced concrete; the main entrance hall, which has murals in Italian mosaic, has floors of green, and walls of yellow, marble. All windows are wood-frame, double-glazed, screened and have bamboo curtains provided inside. There are three underground garages and a surface park, providing facilities for 550 cars.

40

House in Toronto (architect, Irving Grossman), 41, in a newly developed suburb. The entrance is through a small sheltered court with a pool and fountain. Most rooms face the back where there is a view of a wooded ravine. There are no windows at the sides. The sloping site allows the lower level to open on to a terrace, which is sheltered by the living room balcony above. The cross-section, with secondary bedrooms on an upper floor, arose from local by-laws requiring two-storeys for part of the house. Construction is load-bearing brick with stone external walls and timber floors and roofs.

House in Ottawa (architect, C. B. Greenberg), 42, a three-bedroom timber house on a wooded site, the bedrooms lying across the house behind the blank wall to the left in the illustration. The rest of the house, which is glazed almost down to the floor on both sides, consists chiefly of a very large living room containing a kitchen area backed up on a bathroom/toilet core which separates it from the bedrooms.

41



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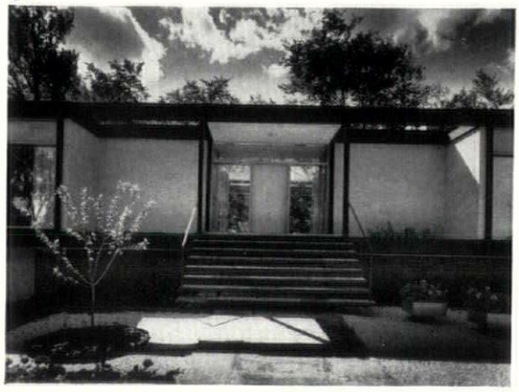

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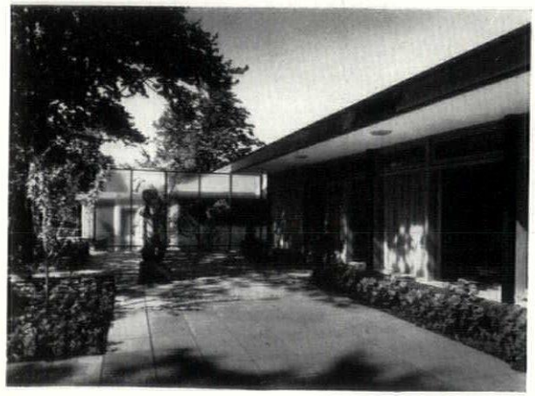
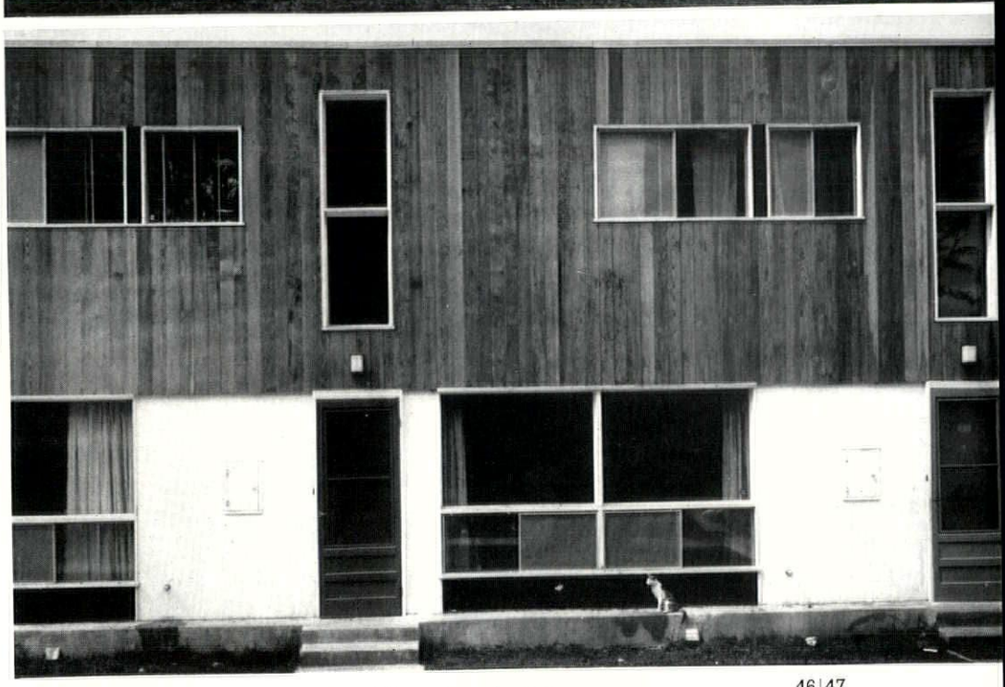


House, Hamilton, Ontario (architect, Jerome Markson), 43-45. The structure is of steel box columns and exposed steel beams with walls of American beige brick. Inside floors are white terrazzo or broadloom on a concrete slab supported on open welded steel joists; the roof is a wood deck on open-welded steel joists. Panelling and trim throughout are of walnut and the window frames of natural fir with insulated double glass. Bathrooms are lined with Italian mosaic tiles.



House, Vancouver, British Columbia (architects, Leon G. Dirssar and H. Peter Oberlander), 46, 47. Standing in a large meadow facing south across the Straits of Georgia, the house is virtually a box on a table, the first floor being a conventional wooden frame structure supported on wooden posts and beams. All the living accommodation is on the first floor and a balcony across the south living room wall leads down to a sitting-out area which, with the rest of the ground floor, provides a sheltered space for open-air activities in a climate which, though mild, is often very rainy. Windows and doors are aluminium frame and slide horizontally. Housing, Stanrock Uranium Mine, Elliot Lake, Ontario (architect, Jerome Markson), 48, 49, 50. Elliot Lake has a population of 25,000 though its development began only three years ago. The houses had to be economical to build and operate. The foundations and retaining walls are of poured concrete, finished with white rendered concrete and cedar siding; the asbestos-cement on the two-storey row houses is painted in different shades of brown. The double-glazed fixed and sliding windows are in pine frames.

46 | 47
48 | 49
50

SOUTH AFRICA

The Union of South Africa is situated at about the same latitude as Australia. In size the Union is only one-sixth that of Australia. In climate the variety is no smaller. The greater part of South Africa is on a high plateau, some 4,000 to 6,000 feet above sea level. There are mountain ranges along the periphery, and they fall to the narrow coastal strip in spectacular grandeur. Of the whole of South Africa only one-third has more than 25 inches of rainfall a year (as against 30 inches for Norfolk and 60 inches for Wales). The rest is arid. Except for a small region of winter rains in the western Cape and a smaller one along the south coast with rain all the year round, the country has summer rains, that is, regular six-months' droughts.

The Drakensberg, which borders Natal and rises to peaks of 11,000 feet sends rivers down swiftly to the Indian Ocean, but sparsely and sluggishly to the Atlantic.

Yet the differences in the architectural character of the various parts of South Africa, as far as urban areas and their surroundings go—the only areas on the whole where modern architecture is to be found—are due to differences in history and in population rather than climate. The differences are remarkably great, much greater than those between Sydney and Melbourne, Adelaide, Perth and Brisbane.

The Cape has a Dutch Baroque and a Huguenot tradition which are felt to this day. The Cape Dutch monuments are cared for and have had their revival in South Africa and Britain on the drawing boards of Sir Herbert Baker and his school. The Castle at Cape Town goes back to the seventeenth century, houses in the town to the eighteenth. In 1806 the town became British, and its white population is now largely English. Half the population is coloured, i.e. mixed white and dark. The town is magnificently placed below Table Mountain and has near and far surround-

ings of exquisite beauty. With a July mean of *c.* 55 and a January mean of *c.* 70 the climate is a delight. Durban is hotter. The corresponding figures are *c.* 63 and *c.* 75. The latitude is about that of Brisbane. Instead of Table Mountain there are green hills behind the town dotted with the wealthier houses. The history of Durban is considerably younger. It started as a town only about 1850. It is now the most English of the cities, though its population is only one-third white, the second being Asiatic, the third African. Johannesburg is one of the youngest of the greater cities of the world. Nothing existed on the site until in 1886 gold was found on the Witwatersrand. The boom which followed was enormous, and the city has some aspects of a boom-town even now. The tempo is strikingly different from Durban and Cape Town. Even the climate is sharp and stimulating. The city lies 5,750 ft. up. Mean July temperature is 50, mean January temperature 67. Winters are remarkably dry. The population of Johannesburg is about 350,000 white, about 525,000 black. Only Pretoria of the larger towns has more of the white than of the dark race, and Pretoria is predominantly Afrikaans.

The division into English and Afrikaans in the Union can only be compared in the British Dominions with that between English and French in Canada. In the census of 1936, 53 per cent of the population were registered as English-speaking, 41 as Afrikaans-speaking. In Canada the corresponding figures are 42 per cent English origin, 28 per cent French origin. The Canadian French may have their grievances against the Canadian English, but there is nothing like the animosity of the Afrikander against the British, and, of course, the Afrikander rules the country.

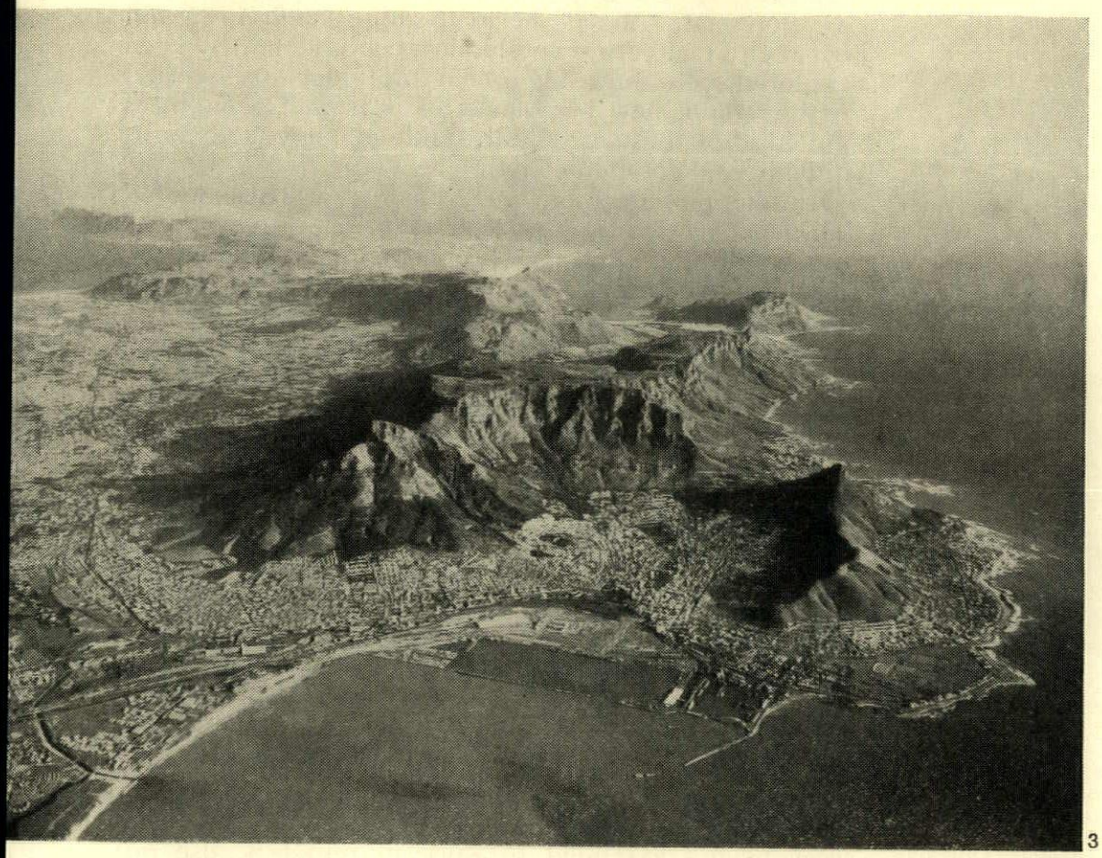
That is one thing which distinguishes South Africa from the other dominions with which this number is concerned. It results in a state of tensions trying to experience. The other tension is that between the thinking African population and the whites of either origin. Two-thirds of the population of the Union are black, ten per cent coloured. The tension which this is creating, largely owing to mismanagement by the Nationalist government, is infinitely more dangerous than that between the two white races, though connected with it. It may well one day blow up all that the following pages illustrate. So, while emigrants to Canada, Australia, New Zealand go to countries of greater safety than their own and to prospects steadier and more ample, the equally optimistic building activity of South Africa strikes one as precarious. South Africa is a rich country, rich in produce in the Cape and Natal, rich in gold and diamonds and recently also steel. It could be as optimistic as the other dominions, if it were not for the dark future the Union is preparing for herself.

Architecture, however, does not reflect that aspect, though it does reflect the cleavage between English and Afrikaans idioms. Nearly all that is worth illustrating here is English, though one of the best architects, H. W. E. Stauch, comes from Germany. His telegraphic address is Bauhaus. Otherwise the move from the relaxed Neo-Cape-Dutch and some Neo-Georgian to the modern style was conditioned by Le Corbusier. The young architects who established the new idiom between 1932 and 1934—a remarkably early date—fervently believed in him and tried to get him out to the Transvaal. They were chiefly the late Rex Martienssen, John Fassler and Norman Hanson.

The Transvaal, that is Johannesburg, has remained the centre of modern architecture in South Africa. Anything prior to 1910 is ancient; nothing at all qualifies seriously for preservation. Flats built in the 'twenties are decidedly old-fashioned. New buildings go up at a startling rate, in the commercial centre as well as in those residential areas in which flats have established themselves. Visual planning is totally absent. The centre is a grid with a minimum of open

1, Johannesburg from the air, showing the densely built-up centre and the surrounding landscape of spoil-heaps.

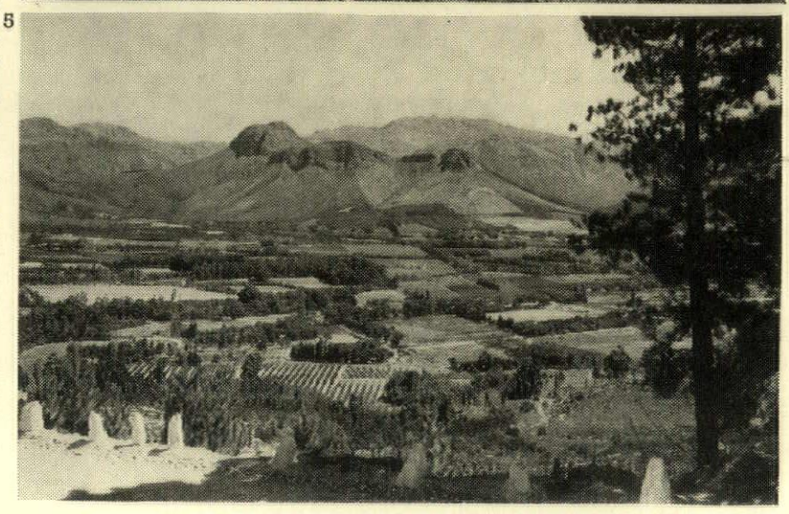
2, the shapeless sprawl of new native housing on the edge of Johannesburg: Orlando from the air.

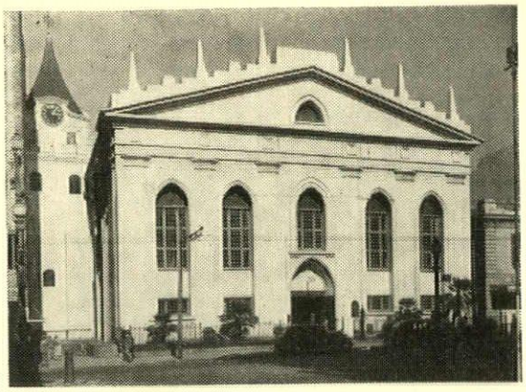


3 (left) aerial view of Cape Province.
4, (below) Central Durban: a typical big-city mixture of period-revival and modernistic.
5, typical Cape landscape of vineyards and mountains: French Hoek valley.

space simply spared out of the grid. The spectacular white mine dumps immediately south of the centre, a great temptation to any visual planner, are left as deserted and barren as mining operations made them. Suburbs extend for miles, the rich ones with lush gardens requiring much care, the poorer with bungalows on small sites. Nowhere can one have the feeling of being in surroundings contrived to make sense aesthetically. Native housing is a disgrace where it is left alone, depressing where it is specially built. The new native estates are reminiscent of prefabs outside English cities hurriedly put up in the war to house the bombed-out.

In spite of the great differences in altitude, climate and population, most of what has been said about Johannesburg applies to Cape Town and Durban as well. The architectural style is on the whole one, though the leading schools of architecture, Witwatersrand and Cape Town, differ a great deal in character. The one is conducted by Professor Fassler, the other by Professor Thornton-White. All that can be said is that the Transvaal offers the most undiluted expression of this South African style. It has to be examined in office buildings, flats, and private houses. In the former two, which can be taken together because both are generally speaking high blocks, two things are striking: the number of architects engaged on them and the anonymity of the results. Young architects get a chance quickly, and a chance that pays. They are nearly all the products of the South African schools, and they have adopted the clipped rhythm established by the buildings of ten years ago. If there is more elaboration, it tends to go jazzy. Sensitivity and delicacy are not the qualities one should look for,





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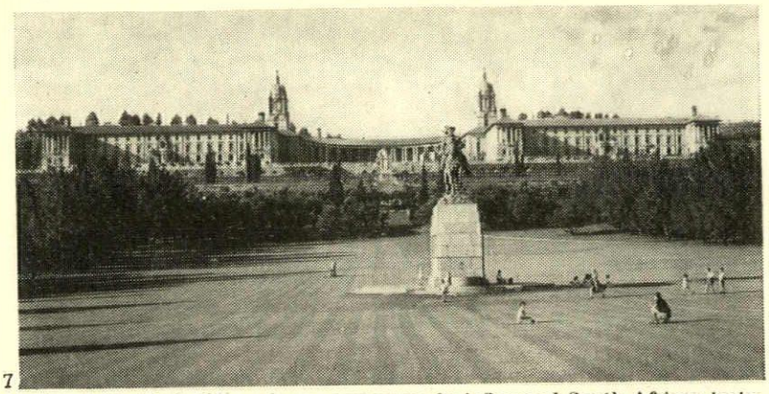


7

6, Early Dutch buildings have most strongly influenced South African taste: the Groot Kerks in Adderley Street, Pretoria.

7, a reminder of the days when major buildings were the work of British architects: the Union Buildings, Pretoria, by Sir Herbert Baker.

nor is there on the other hand much of experimental work to be observed. The visual advantages of mixed development, mixed between high and low and between architecture and landscape, have hardly been explored yet. New big office buildings are needed without end, new big blocks of flats find tenants as quickly as they are built, and so they are built, quickly and competently.

Public buildings have no chance in their midst. The vast new railway station at Johannesburg is the one exception. Churches are being built frequently, but hardly ever influence townscape. The Dutch-Reformed churches have a style of their own, patently influenced by a recent romantic trend which one can meet as freely in Holland as in Canada. It is characterized by excessively steep pitches of the roofs and other excessive angularities—a kind of Caligari-Gothic.

The most interesting work at present is in private houses, and the most interesting domestic architect is Mr. Norman Eaton of Pretoria. South African houses are single-storeyed, and they are planned more loosely than those of, for instance, Australia. The principal source of inspiration is no doubt the West Coast of the United States, but the running of houses in a country without servants and a country with plentiful native servants is so different that it is bound to be reflected in plan and elevations. The servants' quarters form part of the whole composition yet must remain separate, and this leads to a variety of solutions worth studying. Apartheid, as it is for cynical reasons not extended to work in mines is also not extended to domestic service. This more than anything shows up the double-facedness of the Nationalist policy and the vulnerability of European civilization in South Africa.

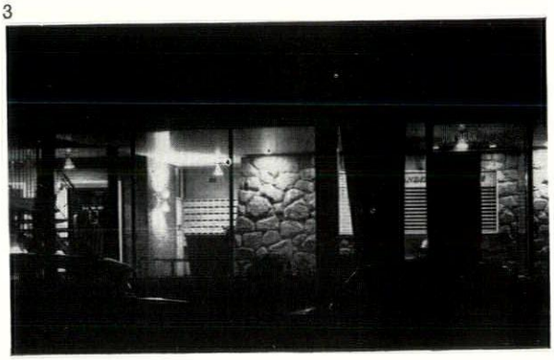
SOUTH AFRICA

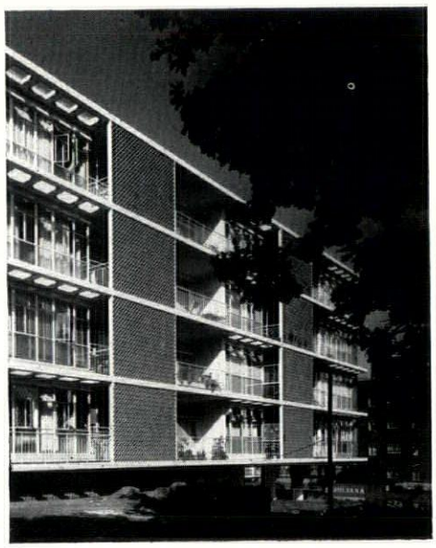
Flats, Von Brandis Heights, Johannesburg (architect, H. H. le Roith), description overleaf.

2

Flats, Von Brandis Heights, Johannesburg (architect, H. H. le Roith), 1 (overleaf), 2 and 3. Advantage has been taken of a steep site, overlooking the city centre, to provide, on the mezzanine, a restaurant and changing-rooms. Above, the living accommodation takes the form of eight floors of bachelor flats and four floors of two-roomed flats. The structure is a reinforced concrete frame supported on the solid rock. To give a greater air of spaciousness to the small flats, glass walls separate the living rooms from the private balconies, while solid internal partitions are taken to door height only, with glass above.

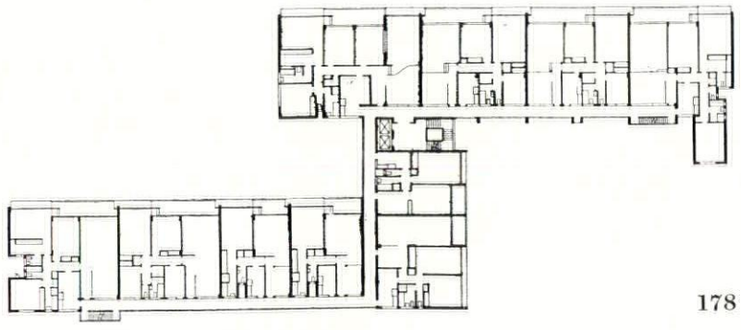
3





4

Flats, Princess Place, Johannesburg (architects, Abramovitch, David, Pinshon and Schneider), 4, 5 and 6 (facing page). The site is of 1⅛ acres in one of the old residential suburbs of Johannesburg. The flats are large with several different types of plan. All of them have sliding glass walls between living-room and balcony, and the part of each balcony which extends across the bedrooms is treated as a sleeping porch, screened from view and glare by light terracotta grilles. There are servants' rooms on the roof. General construction is a reinforced concrete frame with brick and glass infill.

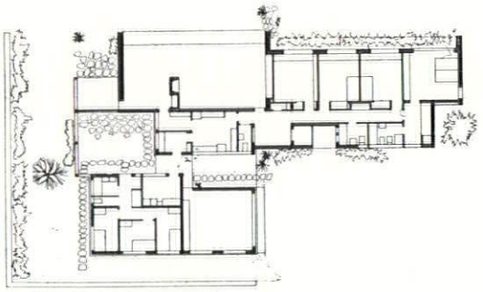


typical floor plan, flats at Princess Place

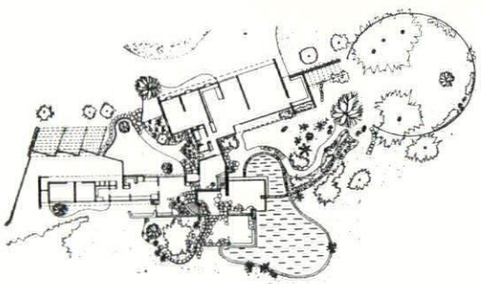
5

6

House, Atholl, Johannesburg (architect, Monte Bryer), 7-9. On an acre site approximately square in plan, bounded on the north and east by avenues of pine and on the south and west by neighbours' gardens, this house, for the architect's own occupation, consists of two main elements. One contains space for the family's group activities and the other space for the private use of the individual members, designed for living as well as sleeping. North and south walls are of stock brick, colour-washed pale shell-pink; east and west walls are of random kopjie stone.



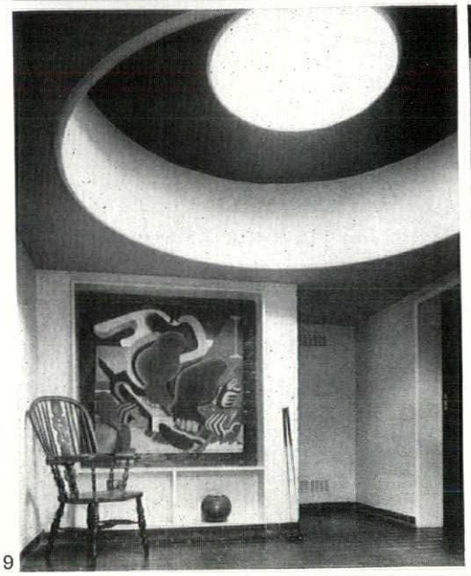
ground floor plan, house at Atholl



site plan, house at Pretoria

House, Pretoria (architect, H. W. E. Stauch and Partners). This house was built by the architect for his own occupation. 10 shows the raised bedroom wing from the north-west; beyond can be seen the T-section metal struts which support the dining-room roof from the outside. 11, the south-east corner of the studio looking north to the courtyard and the upper pool. 12, the dining-room from the kitchen door; the raised bedroom block penetrates the glass wall, outside of which can be seen wood flaps that protect gauze ventilators.

7



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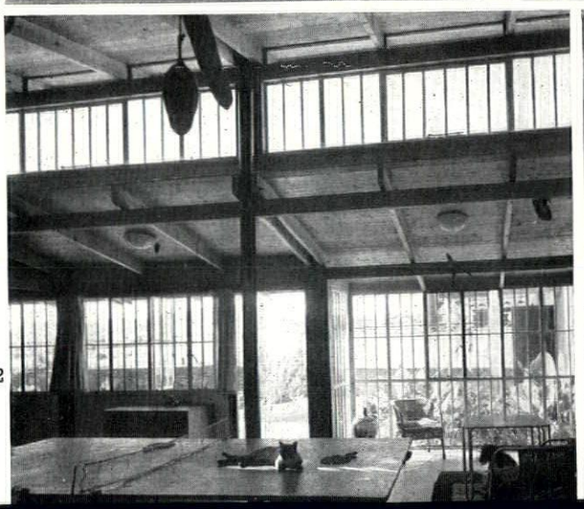

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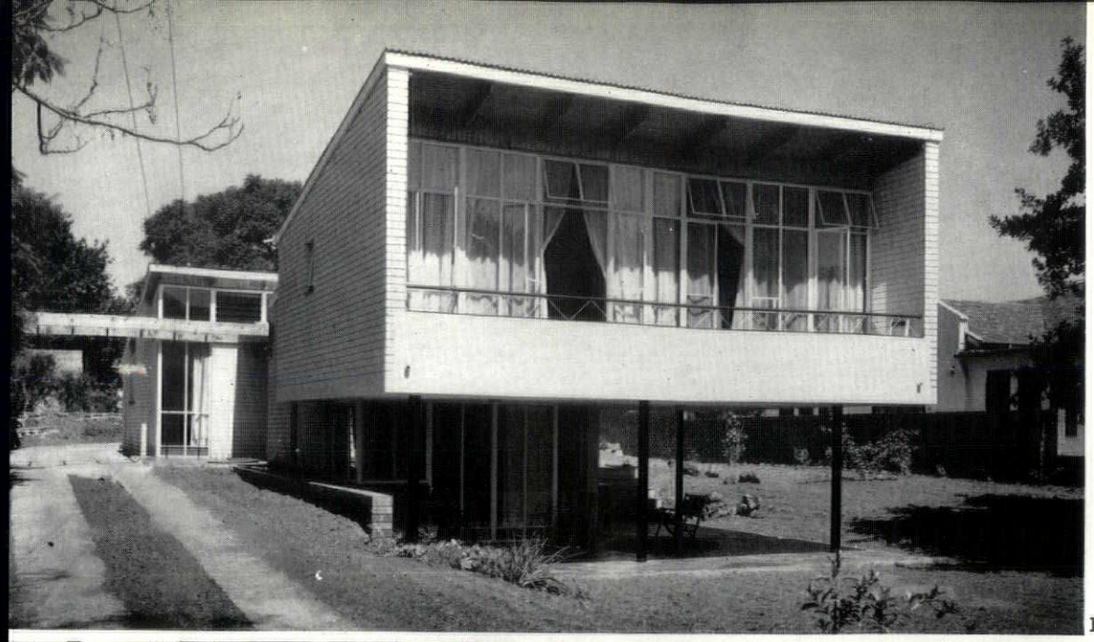
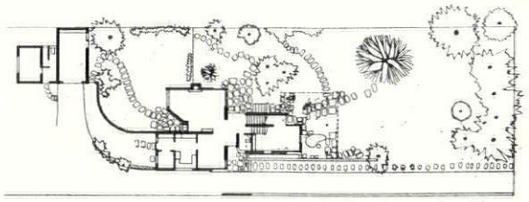


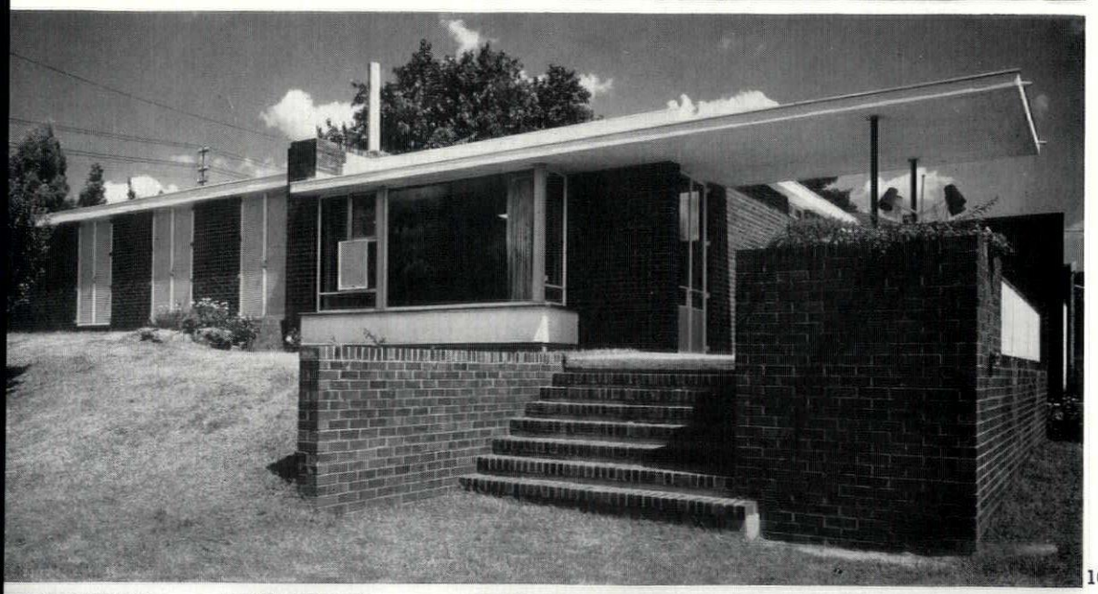
13

House, Brooklyn, Pretoria (architect, H. W. E. Stauch and Partners). The site is narrow and deep and slopes to the north, from where it is approached. Living-rooms and bedrooms have been arranged in two separate blocks, one behind the other. There is a monopitch roof over the rear block, 13, *and this combined with the low link allows a continuous clerestory light which provides the living- and dining-room with the desirable northern aspect,* 14, 15. *A large outdoor living-space adjoins the study. The brickwork has ruled and whitewashed joints; the first floor is a concrete slab on tubular steel supports; the roof is of corrugated iron and the ceilings of deal matchboard. Living-room floors are surfaced with slate and bedrooms and service rooms with asphalt tiles.*

14 15

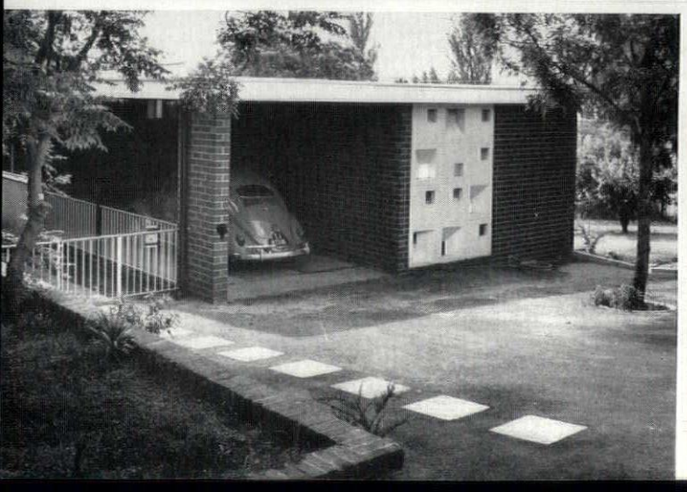


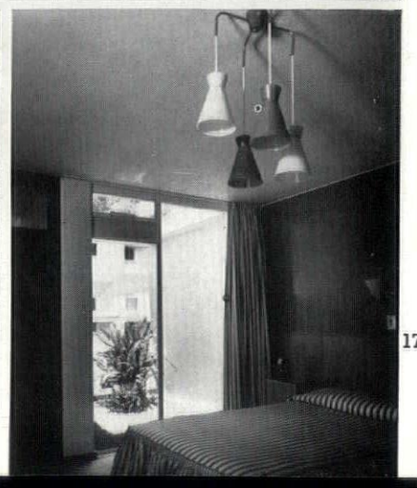
site plan, house at Brooklyn



16

House, Bramley, Johannesburg (architect, Gilbert Herbert), 16-18. *Built by the architect for his own occupation, the house stands in* $\frac{3}{8}$ *of an acre on a sloping site. In the planning, separation was made between day and night zones; in the latter a corridor bay serves as a night living and working area. Because of the fall in the ground the living-room is three feet six inches below the level of the dining room. Below living-room and kitchen is a playroom which also serves as a studio for the architect's wife. The house is built of plum-coloured semi-rustic bricks, carrying a flat hollow tile concrete roof supported on precast prestressed beams.*





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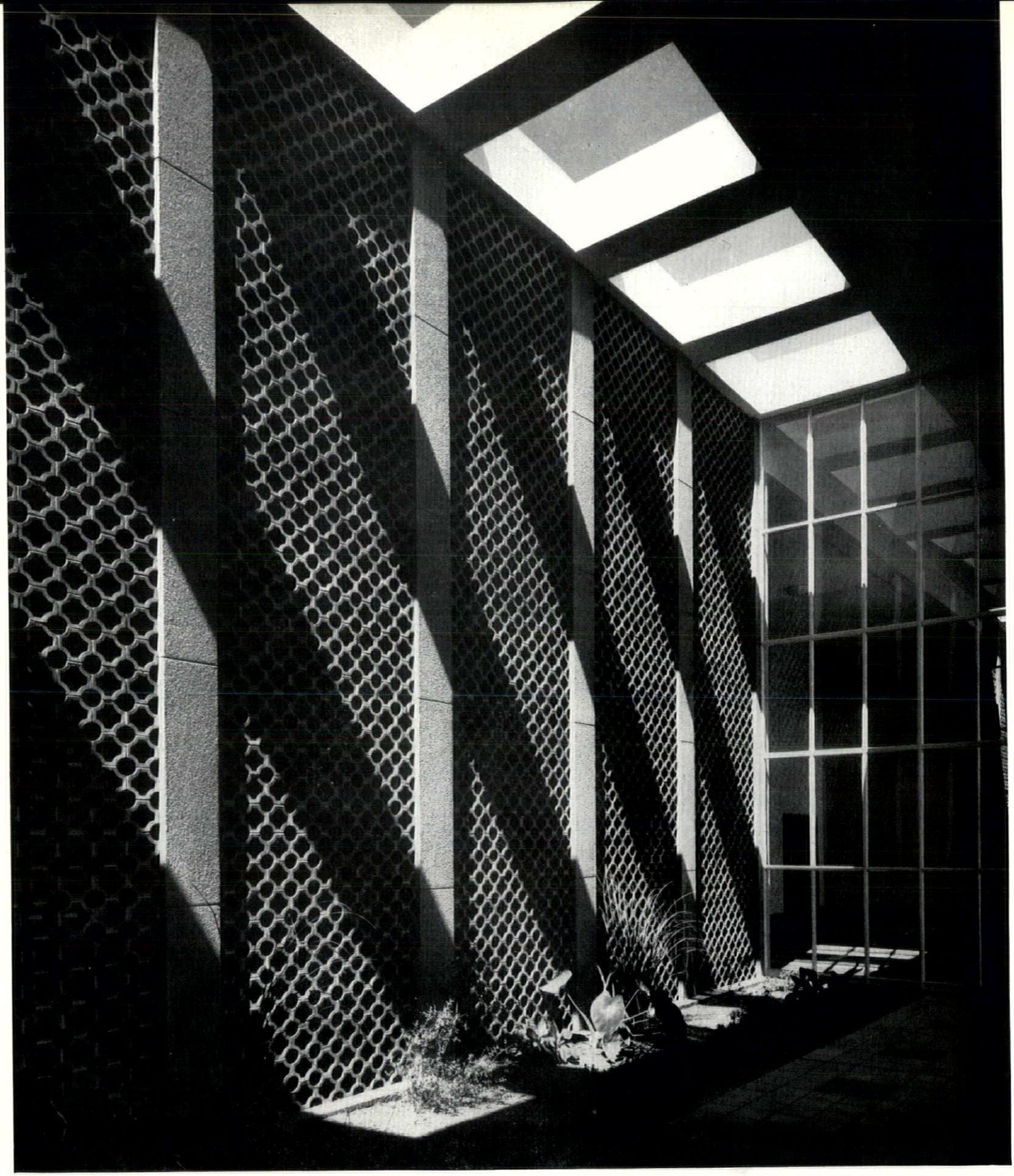

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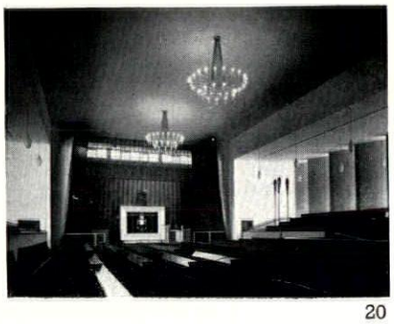

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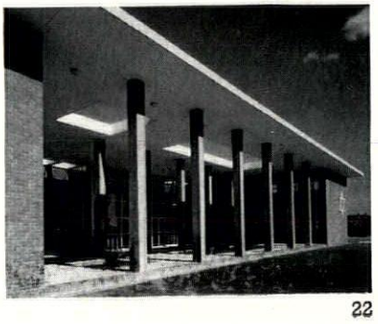

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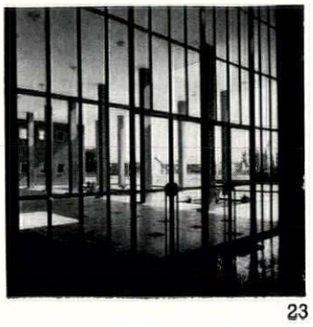
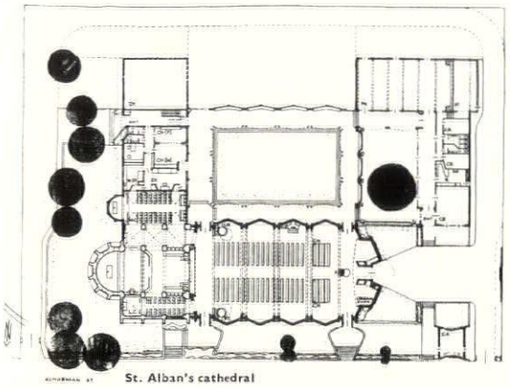


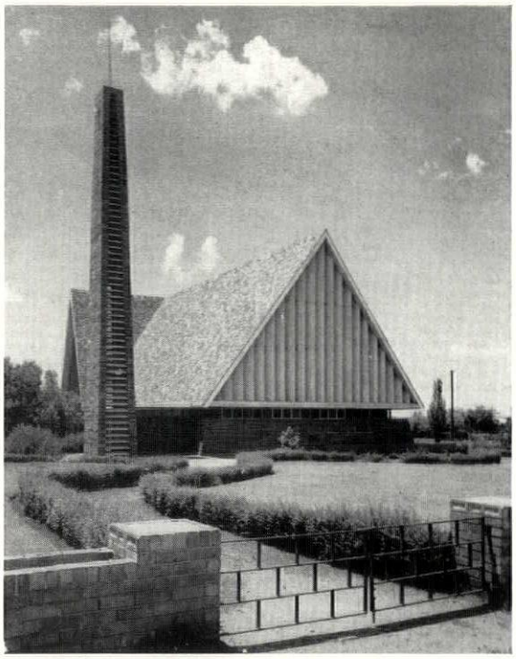
23

Religious Centre, Randfontein (architects, Abramovitch, David, Pinshew and Schneider), 19-23 (facing page). Built in three units round an entrance forecourt, this centre for the United Hebrew Institutions of Randfontein, is set on a five acre site half of which will be used as playgrounds and car park. The synagogue seats 500 with the women accommodated in slightly raised galleries on either side of the centre area where the men sit. The central unit is a large hall equipped for theatrical productions. The third unit is a school with two classrooms, committee room, and an office.



St. Alban's cathedral

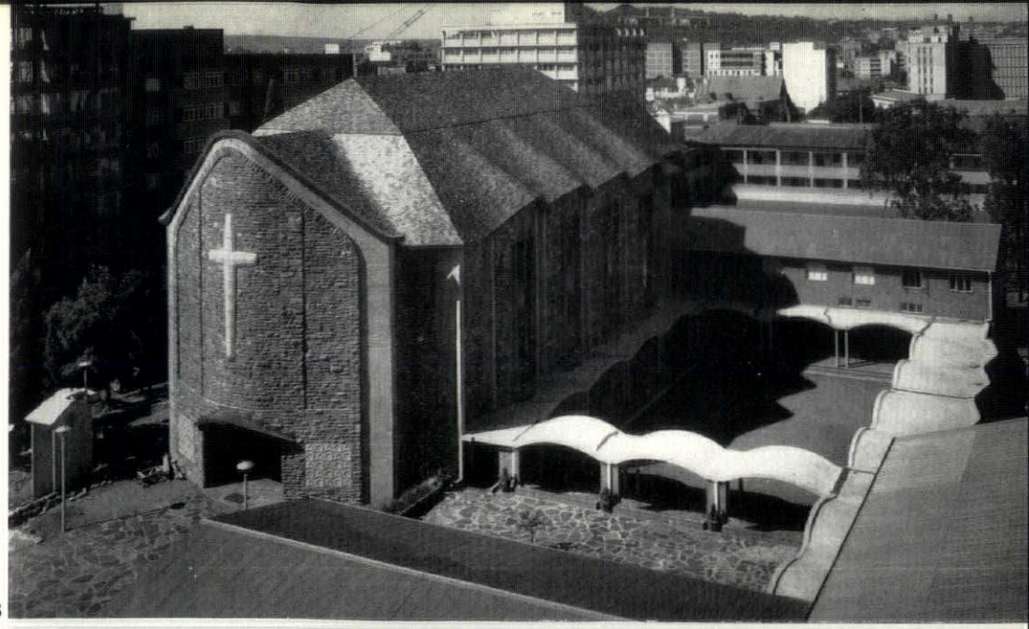
St. Alban's Cathedral, Pretoria (architect, E. W. N. Mallows), 25, 26. The Chancel of the church, built to the designs of Sir Herbert Baker in 1909, is incorporated in the now completed church, along with a new chapel which seats 60. In addition ancillary buildings have been provided for both the Cathedral Parish and the Diocese. These include: Sacristies, choir vestries and parish office; diocesan offices; priest's flat; parish hall, two committee rooms, club room and kitchen. A campanile and a deanery will be built later.



24

Church at Alberton, Transvaal (architects, Verhoef Smit and Viljoen), 24, designed for a Dutch Reformed congregation, with an interior incorporating two galleries, a large one to the west, and a smaller one (for Sunday school) at the east, behind the pulpit, which is under the crossing of the roofs. External surfaces are mostly slate, with a narrow window-strip under the eaves, and fixed asbestos louvres in the western gable (seen in this illustration).

St. Barnabas on the Bluff, a suburb of Durban (architect, Leslie T. Croft), 27. For financial reasons the building of the permanent church has been delayed, so the hall, illustrated here, has been designed to serve a dual purpose, with a temporary sanctuary at the west end and the dressing rooms connected with the stage in use as vestries. When the hall is not in use for services, the altar is concealed by a pair of doors which match the panelling on the west wall.



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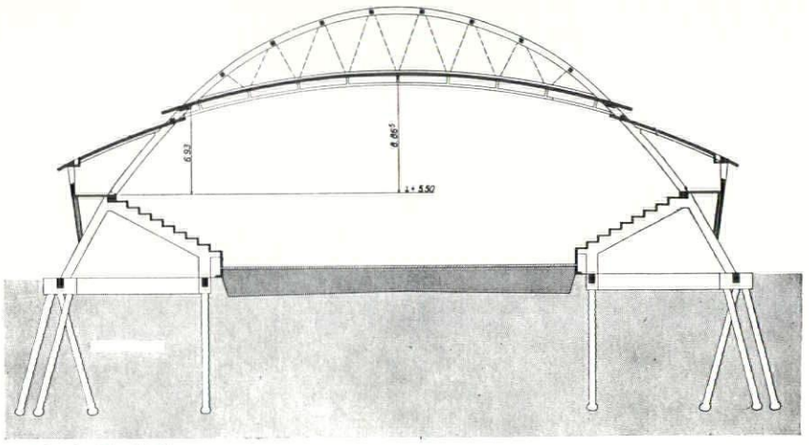
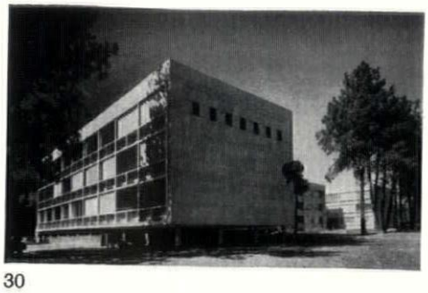


section: ice rink at Durban

Ice Rink, Durban (architects, Hermer and Carrington), 28, situated near the beach with a fluctuating ground water level near the surface, the treatment of the ground under the ice pad needed careful consideration; the whole area was excavated to a depth of 6 ft. and filled with graded gravel finishing with sand below the floor. The area of the ice pad is 185 ft. by 85 ft. and it is surrounded on four sides with stadium-type seating. The twin carrying arches (37 ft. centre to centre of each pair), which are independent of the roof, get their shape from the natural thrust line; they are of reinforced concrete and the arch ribs are 21-in. square in cross section, giving a depth span ratio of 1 in 80; the roof hangs from these on thin steel ropes encased in concrete 5-in. square, the roof itself is of pre-assembled terracotta hollow tiles held together by steel reinforcement embedded in cement mortar. To cope with Durban's high humidity an air-change system supplements the 'chimney' in the roof.

Airport Building, Windhoek, South West Africa (architects, W. W. Wood and Partners, 29. An extensible group of terminal and control buildings for the second-busiest airport in South Africa. Stringencies of site-utilization made it necessary to orient the terminal block's air-side façade, seen here, toward the setting sun, which in Windhoek can be very bright, and the necessary sun-control has been effected by adjustable louvres, hand-operated for the restaurant on the roof terrace, pneumatically-operated by a time-switch for the concourse below. The control tower is a separate structure, standing away from the terminal building, but the intervening space may be built over as traffic increases.

29



30

Science Block, University of Pretoria (architects, Meiring and Naude), 30. The building forms part of a new campus which the architects have designed for the university. It had to have a plan-pattern and system of finishes relating to the other buildings which have since been erected round the campus; each of them had to be of simple and economical design and capable of extension. Sun control in the Science block is by movable asbestos fins; external finishes are of terrazzo, painted plaster and a patent terrazzo wall covering.

31

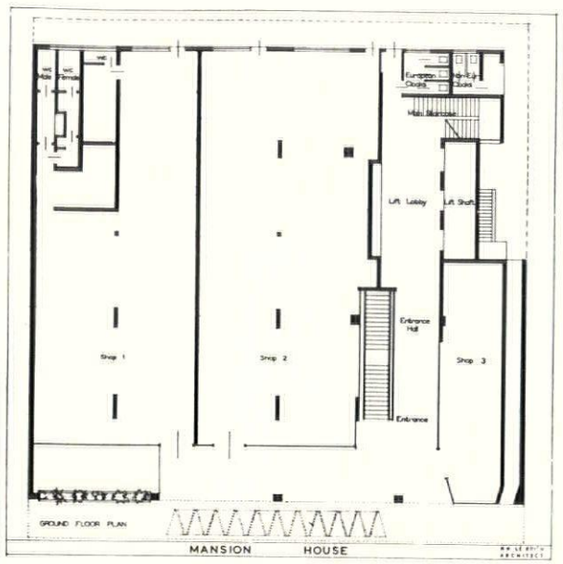
32

Women's Hostel, University of Pretoria (architect, C. Strauss Brink), 31, forms part of a hostel precinct set in parkland; the precinct will eventualy accommodate 800 women students. At present 150 students are provided for in 78 single and 36 double bedrooms; there is a staff of five. The bedroom block with reception rooms, a library, lounge and recreation room and staff quarters on the ground floor, is a reinforced concrete frame structure with hollow clay tile floor slabs; walls are of brick, faced externally with stone chips set in plastic emulsion. Steel windows with adjustable glass louvre casements are set flush with surrounding wall cases. Dining and kitchen blocks have a prefabricated steel portal frame structure, roofed with insulated steel deck.

Headquarters Building, Johannesburg (architects, Charney and Margoles), 32, the seat of the Chapter of South African Quantity Surveyors in the Institute of South African Architects. A complete society headquarters from archive store in basement to caretaker's flat on roof, with bar, lounges, committee rooms, boardroom, and offices for Registrar and secretaries on the two main floors.

33

Offices, Pretoria (architect, C. Strauss Brink), *for the headquarters of the Peri Urban Areas Health Board,* 33. *The Board's functions are municipal with jurisdiction over urban and rural areas in twenty magisterial districts covering* 10,000 *square miles and controlling urban townships housing over half-a-million Africans. The building contains a rates hall, board and committee rooms, reception areas and office accommodation for* 250. *The structural frame is of reinforced concrete with brick infill; the external finish is of black stone chips in plastic emulsion, precast white terrazzo grille blocks to cloakrooms and fire escapes; floors are of hollow tile. Windows are aluminium with adjustable glass-louvre casements and baked enamelled steel sunhoods and vertical louvres are fitted on the west elevation.*



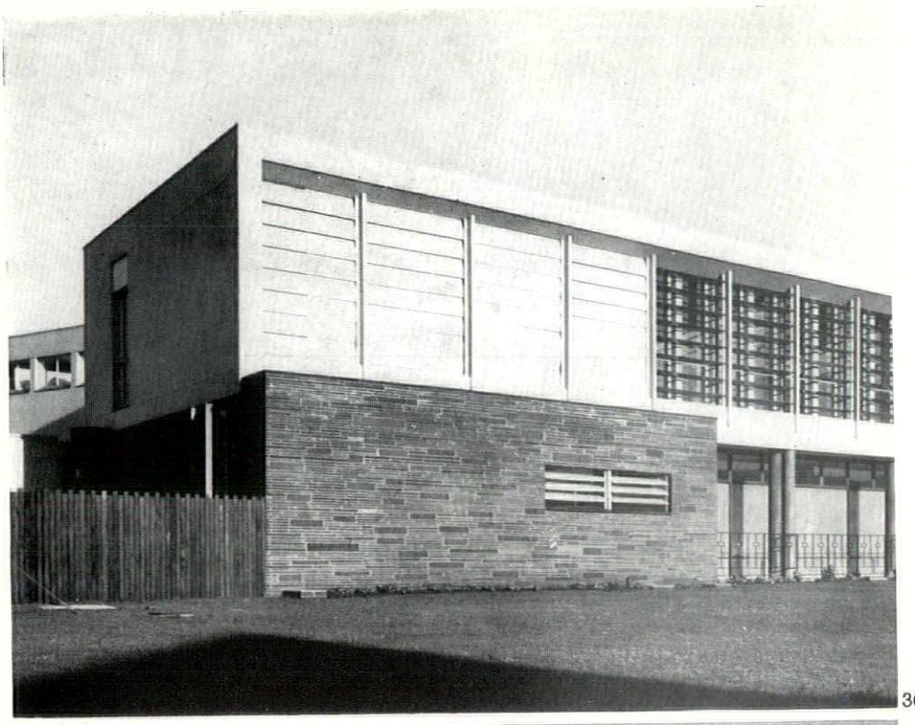
plan of offices at Johannesburg

Offices, Johannesburg (architect, H. H. le Roith), 34. The site is a typical 100 by 100 foot plot in the heart of the commercial centre of Johannesburg. The accommodation is in two wings, planned to permit the maximum flexibility of internal subdivision. The main elevation is faced with three-dimensional baked enamel infill panels.

34

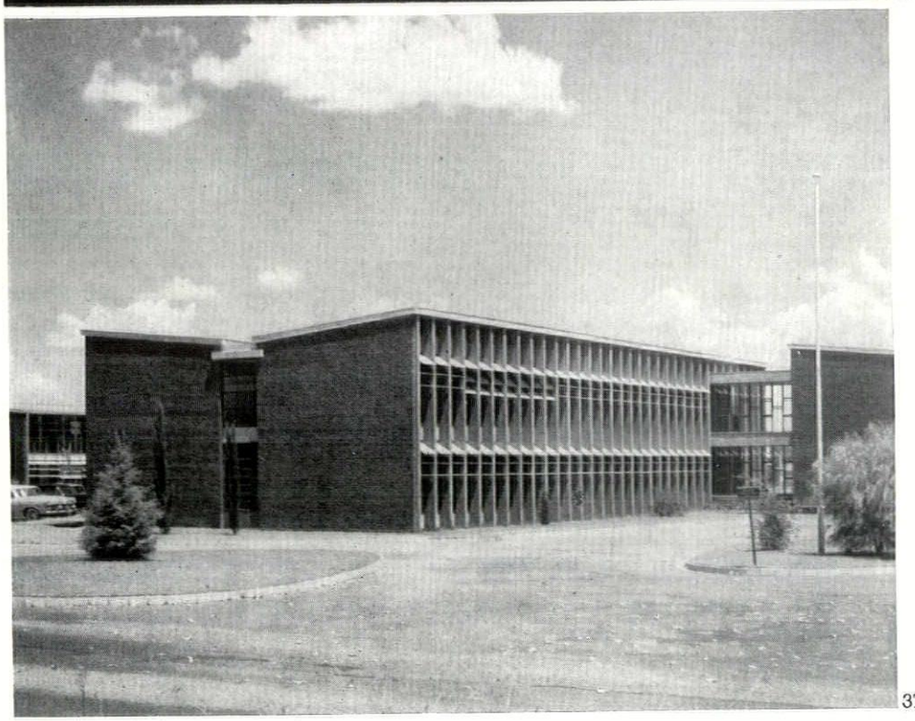
35

Medical Centre, Cape Town (architects, Tribelhorn and Sons, N. F. Lubynski), 35, forming part of the New Foreshore development—with the van Riebeeck statue in the foreground. This eleven-storey block continues a growing South African tendency for doctors in practice in the larger cities to concentrate their consulting rooms and offices into one building offering a comprehensive, centralised medical service.



36

Offices, Durban (architect, O. L. Pretorius), 36, situated directly across the road from an existing rope and matting factory with which they are associated. The building contains a workers' canteen, directors' dining room, a caretaker's flat and a large general store, all on the ground floor; above are offices and a boardroom. A library and a sound-proofed accounting room are at the back. The building is a framed structure designed to carry two more floors at a later date. The west façade has aluminium sun-louvres along its full length; the solid surfaces are all faced with terrazzo with the exception of the entrance canopy and the side wall of the caretaker's flat which are faced with slate.



37

Offices, Sasolburg (architects, H. W. E. Stauch and Partners), 37. These offices for the South African Coal and Gas Corporation are in the form of two two-storey blocks joined by a corridor link. Exterior walls are composed of fins 31 ft. long and 2 ft. 6 in. by 6 in. in section, placed at 3 ft. 5 in. centres; these were pre-cast in one piece and erected by crane. Floors are supported on precast and pre-stressed 'planks' spanning from the fins to the centre corridor columns. The roof is of timber and corrugated asbestos built up on the concrete flat. Movable partitioning is of timber and wall-boarding.

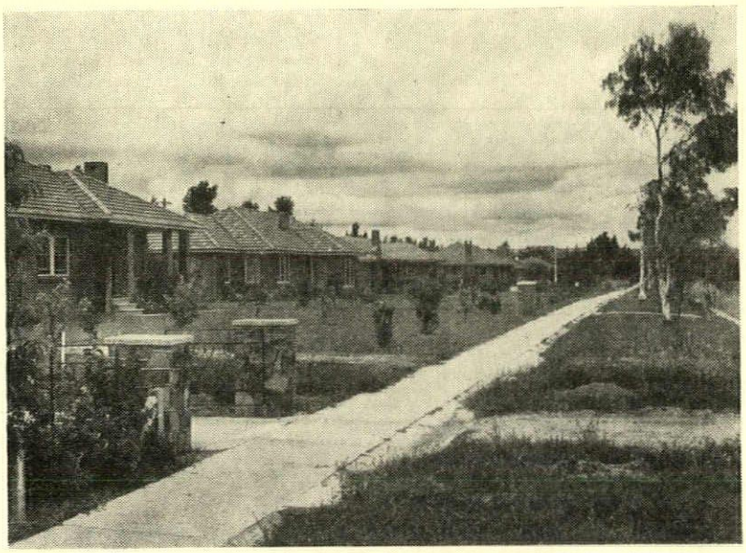
AUSTRALIA

Australian culture is something like a sturdy little boat battling across lonely waters surging with cross-currents from Europe and America. The boat is equipped with a strong thrashing screw but as yet an ineffectual rudder. In the case of modern architecture the three propulsive elements in the culture are conveniently if atypically represented by the three men, all now dead, who struggled to bring the movement to life shortly before the first World War. Firstly, the Englishman, Robert Haddon, a Romantic-functionalist inheriting a little from Morris and Mackintosh: a scholastic man, fond of his new land but always nostalgic for the Old Country. Secondly, the quiet American, Walter Burley Griffin, direct from Taliesin, radiating gentle warmth, organic theory and democratic New World idealism. Thirdly, the Australian, Harold Desbrowe Annear, who was born in Ballarat in 1866 when it was still hardly more than a gold-rush canvas town. Annear never left Australia. He was impatient with such tuition as he could get in Melbourne. He was an experimenter, improviser, inventor of architectural gadgetry. He was self-confident and rebellious. He ridiculed 'good taste' and traditions, preferring what he imagined were his own answers, whatever their faults. He was inconsistent, unstable and not altogether reliable, but among his best works are some which deserve passing recognition alongside the European and Chicagoean pioneers of the movement. (Not that Annear, working in isolation from hearsay and first principles, would have known the others' names or expected recognition outside the smarter streets of Toorak or Portsea where he worked.)

The antipodean isolation has since been modified by radio and jets, but still the three elements are to be found separately, each in a fairly pure state. The Old World is now represented architecturally by a persistent, if slowly shrinking, streak of conservatism

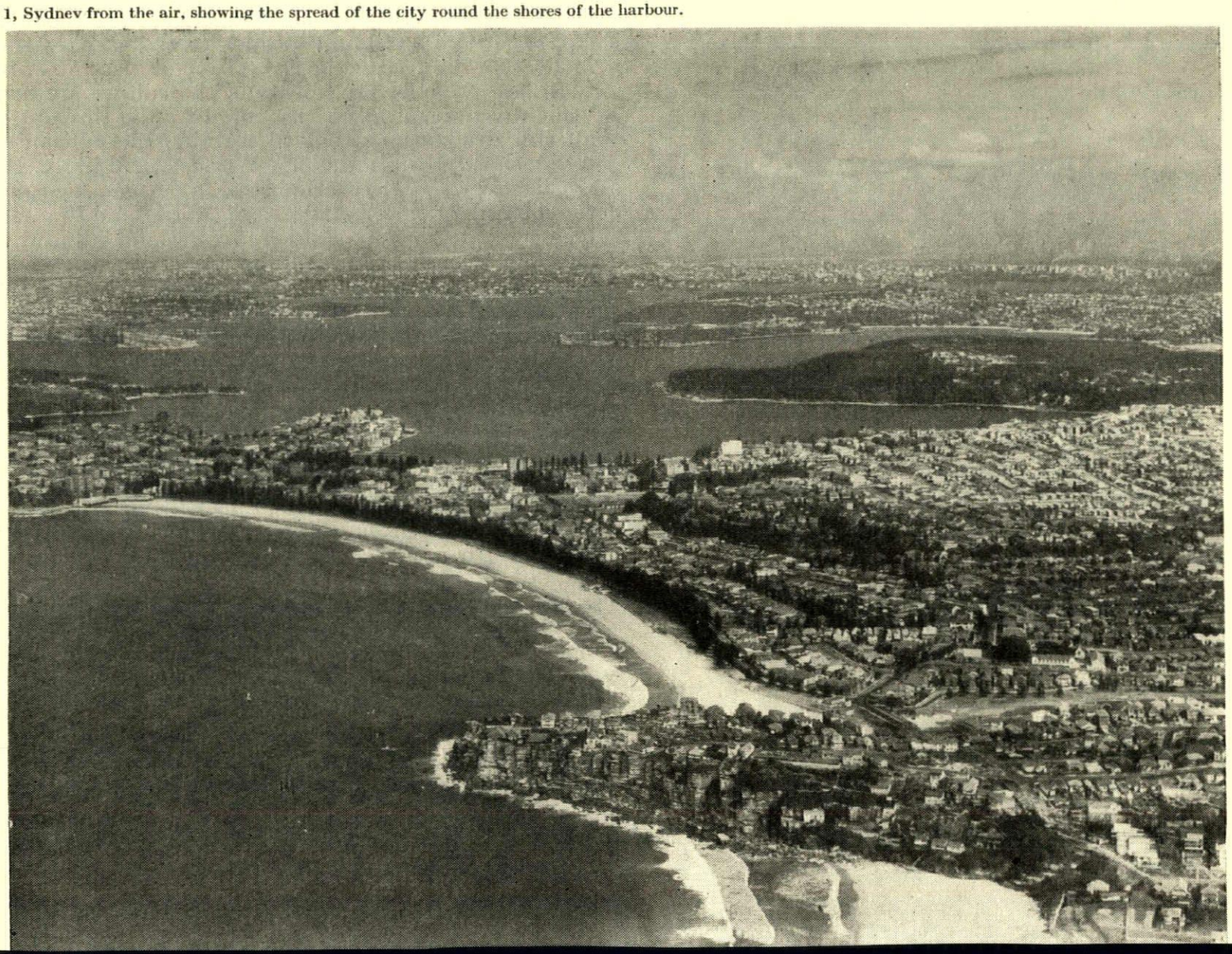
that diverts attention from form to detail. The results of this are never exactly academic, but on the other hand not quite as dowdy as Europe at her stodgiest. The New World is represented by a more than usually hysterical worship of the American image: 'Austericanism,' it has been called. This leads to violent primary-hued delinquency—not clever enough to be fashionably smart, but on the other hand never quite as mad as Miami. The physical isolation of Australia from her spiritual sisters of the West is not in fact felt strongly enough to be valuable. It is not sharp enough to free architects to work out their own solutions. The oceans have worked as a valve permitting only a one-way passage of ideas: inwards always from the higher-pressure areas, continuously inflating feelings of inadequacy or frustration among the local practitioners of all arts. The supremacy of the importation is a popular concept against which the Annear spirit of indiscipline has rebelled at intervals and has produced one vital strain of modern Australian building.

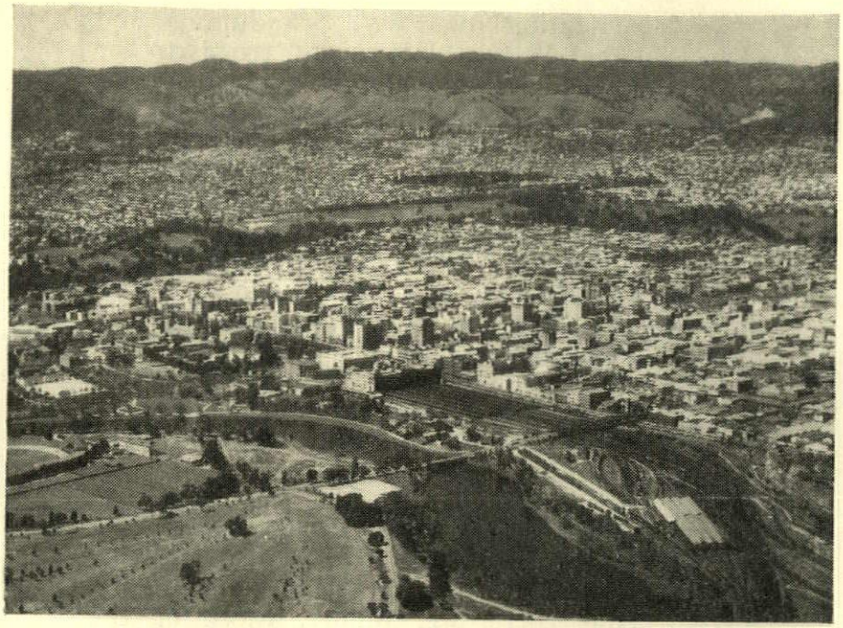
But the average unintrospective Australian architect and his client are not, of course, disturbed by the action of the valve. There is no serious suggestion of aggressive artistic nationalism. Any Australian flavour in everyday building appears to be involuntary, in some obvious ways related to the qualities which visitors usually discover in the Australian human character. He is (observers often say) easy-going to an extent which exasperates urgent North Americans and exact Central Europeans. 'Near enough' is the national philosophy: a deliberate cult of anti-finesse, of outbackmanship. But (they admit) he answers up to challenges. He is resourceful, an ingenious improviser, a born mechanic, the sort of fellow you like to have close by in an emergency. These qualities colour to



2, typical suburban-style houses in the low-density capital city of Canberra.

1, Sydnev from the air, showing the spread of the city round the shores of the harbour.





3, Adelaide, South Australia, from the south-east, laid out with unusual foresight in 1836. A belt of parkland separates the centre from the suburbs.

some extent all the styles of Australian building. They help to produce a background that is practical, unstylish, technically advanced, casual in detail and often hideously garish. And they produce the opposite: buildings that recognize the existence of a challenge, of an artistic emergency for a rich and lazy young nation which could quite easily be swamped entirely by imported mass-produced ideas.

Sensitive Australian laymen, aware of this general danger and searching architecture for a 'National Style,' look hopefully to the colonial building of the early nineteenth century. Here was a displaced, delayed, diminutive Georgian with all the charm of diminution and anachronism and just enough subtle peculiarities to mark it from other and earlier Georgian work. The domestic variant was quite distinctive: a low, hipped shingle roof, later corrugated iron, pulled down all round a white house like a wide hat brim shading the long evenly-spaced windows. Australians can see—though it is less perceptible to visitors—a continuing tradition based on this relaxed and random form. The uncrowded single-storey, wide sun-shading eaves, and extroversion, combined with the peculiarities of the kiln-dried native timbers and the cheapness of Australian steel, still produce in unselfconscious construction a sort of adopted indigenous character.

Australia has many things in common with Sweden and California, including a filial feeling for the twentieth century. Thus a fairly accurate idea of modern Australia may be gained by imagining an underpopulated California. It is hardly surprising that the buildings of both regions have been similar for more than a hundred years. The climate, colouring and social background are similar, and both discovered gold and galvanized iron about the same time. On the other hand Australia may be pictured even better by thinking of Sweden and then imagining the extreme opposite. Australian taste is all peaks and valleys. No landscapes have been outraged more wantonly than the untidy olive and ochre sites of most Australian towns. The first move of the land exploiters still is to remove all trace of native growth. Fevered advertising, frank or subconscious, almost submerges architecture in the commercial areas and every sensitive building is all but smothered by its neighbours. The one architectural vice Australia need not fear is monotony.

But the mess on the surface does not convey the whole activity and gives no indication of the individual soul-searching which accompanies a young nation trying earnestly to know its own mind. If the outrage is wilder than usual so is the outcry against it. Protest and criticism is at least as lively as anywhere, and architecture is a popular art. It is popular because patronage of it is within reach of almost everyone sometime in his life, if not in his business then in the separate suburban cottage often shaped individually for him in defiance of technical advances or business efficiency. The designs of big public projects are widely discussed, architectural criticism is given space in the daily press, and the intricacies of contemporary domestic architecture are a standard butt of television comedians.

The people look to the architect for stimulation and excitement, and at the present time the architects are as uncertain as they are in any other country as to

4, among the most agreeable survivals from the past in Australian cities are the examples of rich imported ironwork: a typical roofed and cantilevered balcony in Sydney.

5, Alice Springs, Central Australia, typical of the appearance of low-density towns mostly composed of single-storey buildings.

how they should respond. The younger architect still clings to the faith that there is rational justification for his modern eclecticism. He absorbs the influences of Europe and America separately through the magazines and in travel taken as soon as possible after graduation. His first trip takes him to Europe, concentrating on Italy, Scandinavia and Great Britain. His second trip is to the U.S.A. He is looking for practice rather than theory, and on returning home he finds the *Forum* more helpful than the REVIEW and both more rewarding than any of the local architectural journals. Thus numerous curtain walls are rising in the bigger cities from fifteen towards thirty floors—as clean, conformist and comfortable as ever they were in New York. Then there are Australian versions of all the mid-century mannerisms from Brutalism to Edward Stone, and eager young men who imitate early Wright convinced that they are original, constructive humanists. There are also some quite free-thinkers and those whose first trip overseas is to Japan and Australia's northern Asian neighbours. And there are, finally, those of the Annear spirit: the architectural bush-rangers. It would be fun to think that these last are growing in number, strength and maturity, but the truth seems to be the contrary. The rebels are fading away as Australia gets more populous, prosperous, industrialized and confident. The exciting things in Australian modern architecture were until recently isolated experiments done with little more than sticks, wires, space and unencouraged enthusiasm. But already the last continent is losing its innocence.

AUSTRALIA

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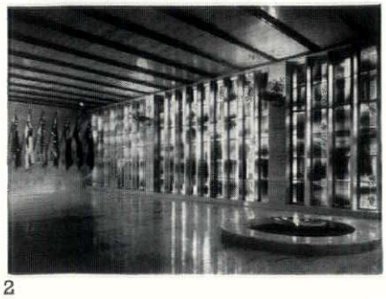

2

3

Anzac House, College Street, Sydney (architects, Bunning and Madden), a five-storey office building serving as headquarters for returned soldiers' organisations and as a memorial for two world wars. It was the result of a competition held in 1948. The ground floor contains an auditorium seating 350, a large foyer and a war-memorial hall. Above are offices either side of a central corridor on an L-shaped plan. Balconies 5-ft. deep provide shade on the west façade. The structure is steel-framed with reinforced concrete floor and roof slabs. External cladding is travertine with grey terracotta panels under windows. 1, exterior, 2, the memorial hall, 3, auditorium.

Office building, Sydney (architects, Stephenson and Turner), the headquarters of Unilever in Australia, 4 (facing page), in Macquarie Street, between Government House and the harbour, and the last large building before Benelong Point, the site of the future opera house. It is a 16-storey rectangular block with its two long faces slightly curved. Services and lifts are concentrated at the southern end, leaving the remaining floor-space free except for one staircase near the north end. The floors are cantilevered outwards from two rows of reinforced concrete columns. The glass panels between windows being etched on the inside to match the floor-slabs. No windows open, the building being air-conditioned by four plants which can be separately operated to deal with the irregular concentration of sunshine on the four façades.

Office building at Melbourne (architects, Bates, Smart and McCutcheon), 5 (facing page), the Australian headquarters of Imperial Chemical Industries; an 18-storey block at the eastern end of the city. Above ground the building occupies less than half the site area, leaving room for a garden and car-park at ground level, but the whole site is excavated to provide two basements containing stores, services and a 65-car garage. Construction is lightweight steel frame with curtain walling of aluminium and blue-grey, heat-toughened glass. The building is fully air-conditioned.

4
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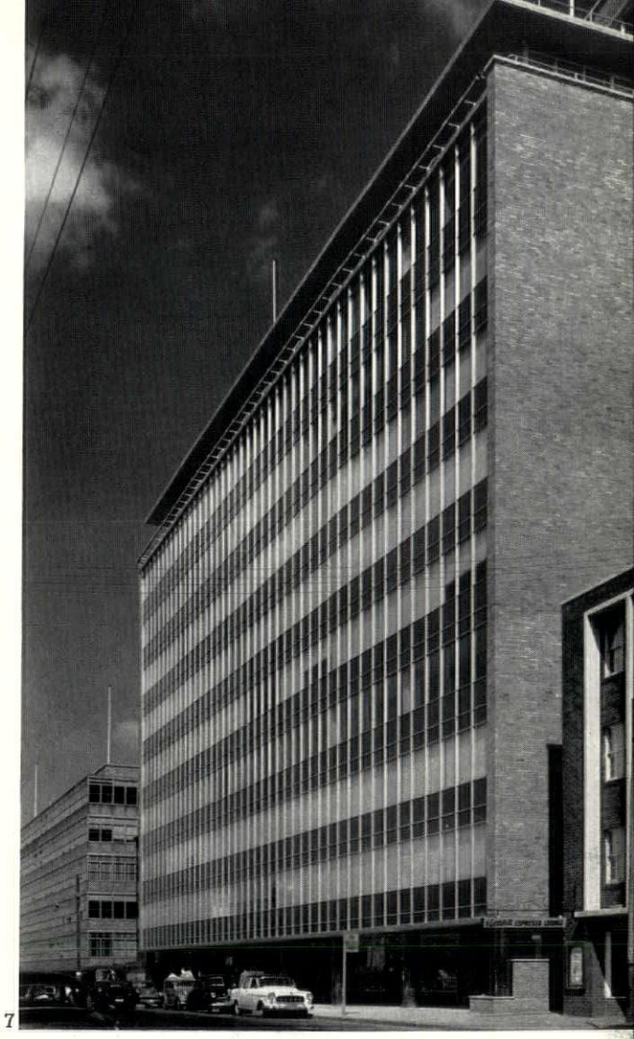
6

Insurance offices, Sydney (architects, Peddle, Thorp and Walker), 6, for the Australian Mutual Provident Society: a 26-storey block (the tallest in the city) in Sydney's ancient Circular Quay area, dominating the waterfront. At ground level there is a large public area sheltered by the overhanging first floor. The ground floor contains an auditorium seating 260. Car-parks are in two basements. The air-conditioned office space is uninterrupted by columns.

Office building, Miller Street, North Sydney (architects, Stephenson and Turner), 7, an 11-storey block for commercial letting with lock-up shops on the ground floor. The office space is planned round a central service core and is air-conditioned. The structure is steel frame with concrete slab floors giving flush ceilings. The east façade consists of an aluminium curtain wall with fixed windows and porcelain enamel panels. The other three façades are in light coloured brickwork with continuous aluminium windows.

Insurance offices, Adelaide (architects, Bates, Smart and McCutcheon; associate architects, Lawson, Cheesman and Doley), 8: for the Mutual Life and Citizens' Assurance Company. The building overlooks a large city square and is set back on its side to admit daylight on three sides. It is air-conditioned to a special design to meet the high heat-loading on the long east and west façades. It has a lightweight steel frame, steel deck floors and fire-proofing of lightweight concrete. Curtain walls are of glass in aluminium frames with aluminium brise-soleil.



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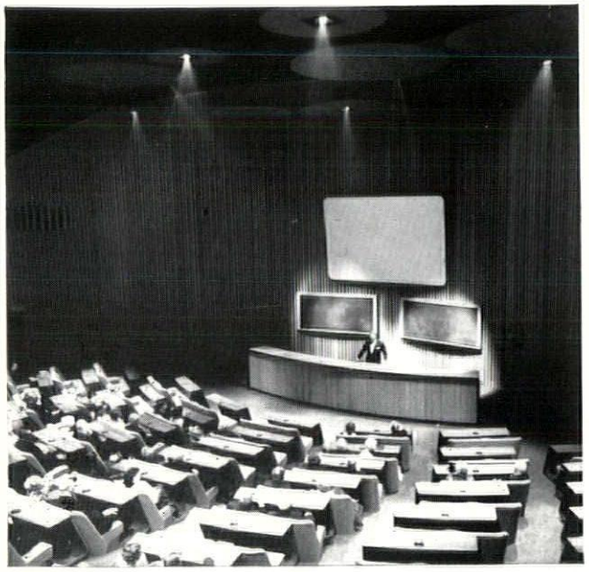
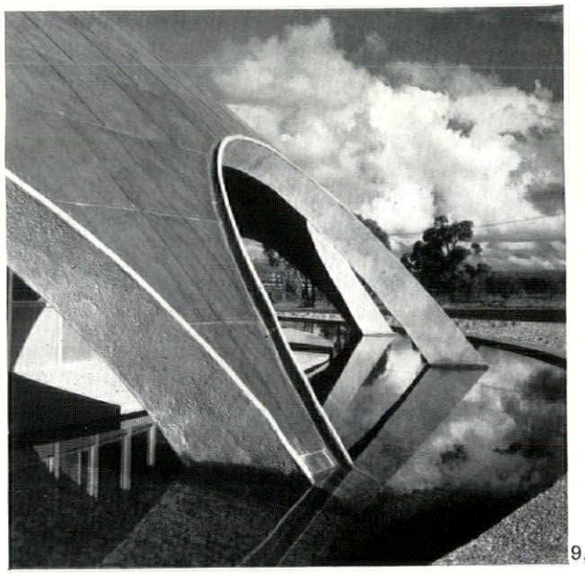
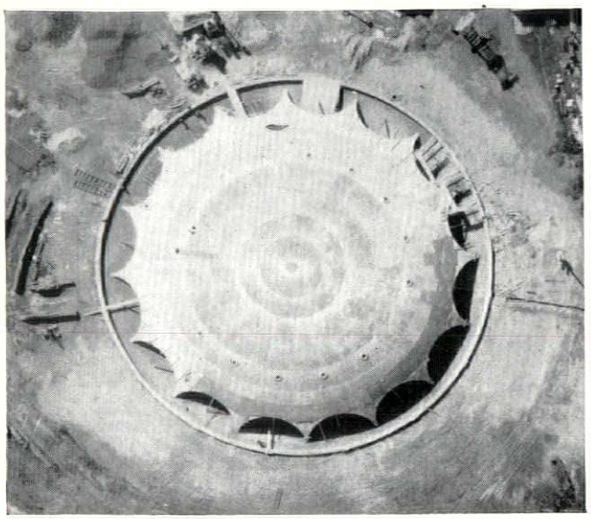
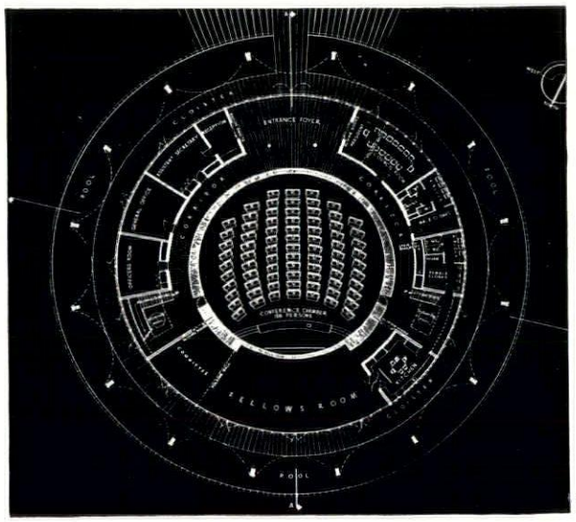




9, 10

Academy of Science building, Canberra (architects, Grounds, Romberg and Boyd), 8-12, a headquarters for the representative body of Australian scientists. The circular building contains a conference hall, reception rooms, reading room, exhibition gallery and offices. The air-conditioned conference hall, 64 ft. in diameter, is in the centre, with the other accommodation arranged on two floors round it, separated by a circular corridor on the ground floor. The main entrance and foyer are at the north and the large Fellows'-room at the south. The overhang of the dome shields the windows from direct sunlight. The structure is monolithic shell concrete, 3-in. thick, resting at sixteen points on a concrete ring which forms the base of a water-filled moat surrounding the building. The dome is sheathed in copper.





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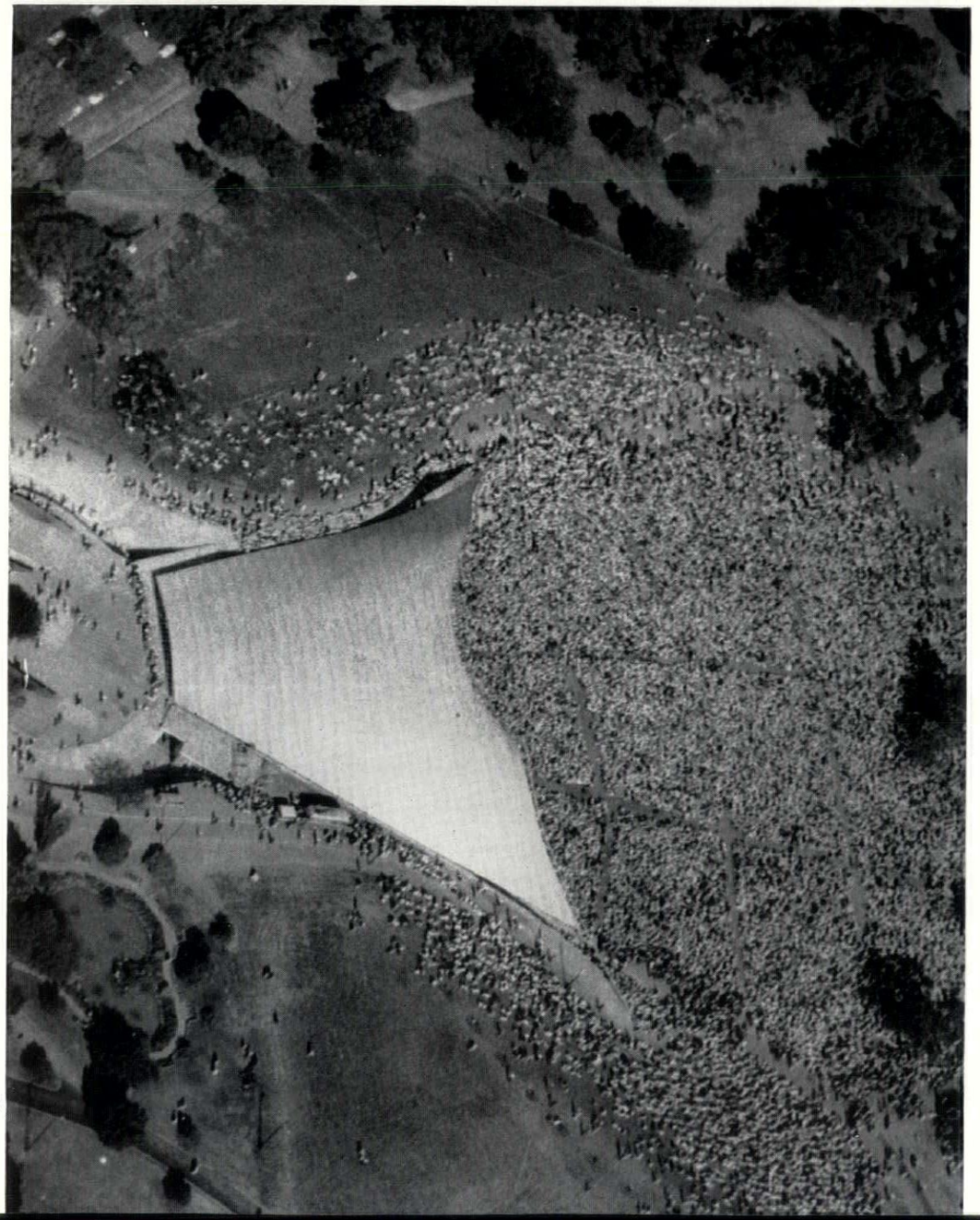
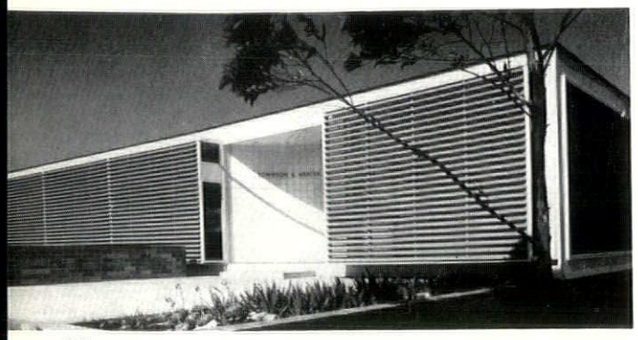


14

Music bowl, Melbourne (architects, Yuncken, Freeman brothers, Griffiths and Simpson), 13, 14. The roof, which covers stage, orchestra and the front rows of seats, was not designed primarily to give shelter but to deflect the sound of nearby traffic. It is supported by twin steel masts, cased in glass fibre with ball-and-socket joints at the foot to permit movement. The main cable passing over the tops of the masts is 568 ft. long and weighs 40 tons. The roof-covering is ½-in. plywood, faced with aluminium, bolted to secondary transverse cables. The joints have polythene and nylon washers to suppress sound caused by movement of the structure. Dressing-rooms are fitted in below the stage.

Factory offices at Lane Cove, an outer suburb of Sydney (architects, Edwards, Madigan and Torzillo), 15. The offices occupy the main ground floor with staff amenities in the basement. They are steel framed on a reinforced concrete raft slab with timber roof covered in asbestos felt and aluminium foil.

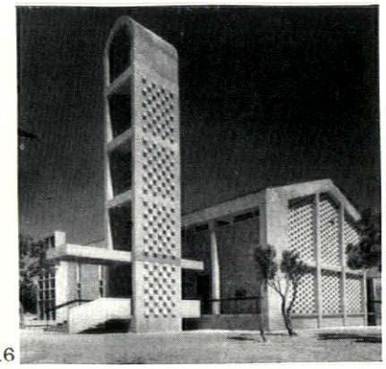


15

Wilson Hall, Melbourne University (architects, Bates, Smart and McCutcheon), 17, 18, used for conferring degrees and other university ceremonies. It replaced a Gothic-style hall burnt down in 1952. The main floor seats 1,000, with a further 300 seats in a gallery sloping back over the entrance foyer. Construction is steel frame: the eastern wall heat-absorbent glass in aluminium framing; the other walls largely brick.

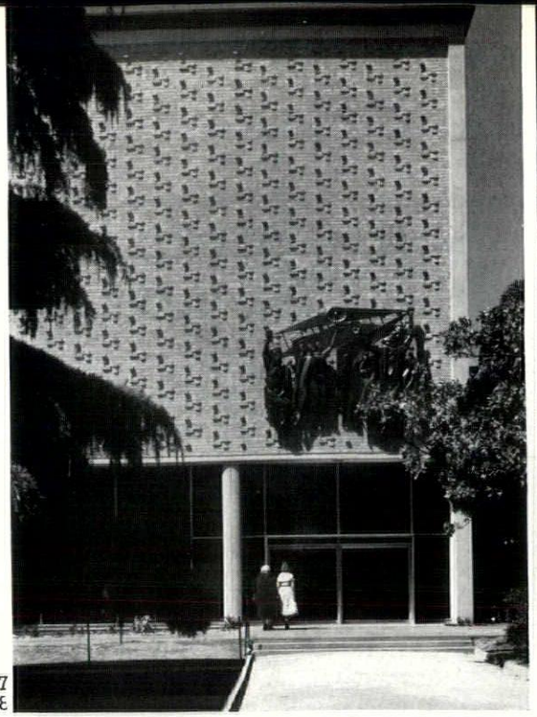
Olympic Pool, Melbourne (architects, Borland, McIntyre, Murphy and Murphy), 19, built to house the swimming and diving sections of the 1956 Olympic Games. 6,000 spectators can be accommodated on two tiers of seats whose outward-sloping beam-supports are tied together across the pool by diamond-shaped roof trusses—the only external structural elements are stabilising guy-rods.

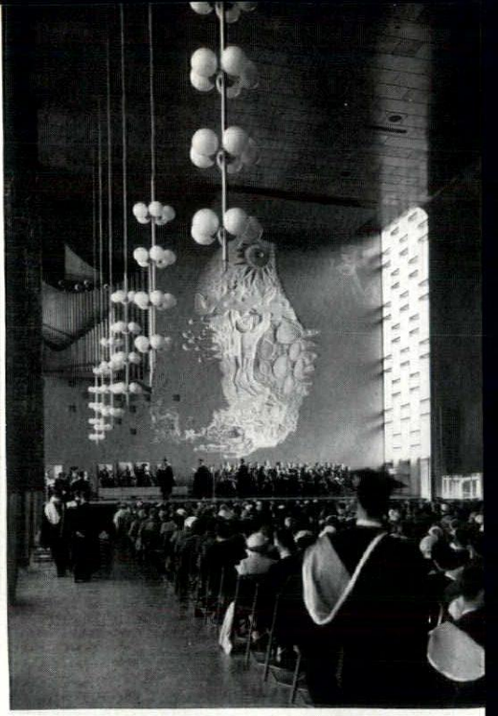
Church at Dalkeith, a suburb of Perth, W.A. (architects, F. G. B. Hawkins and Desmond Sands), 16. It seats 340. The floor of the nave has a slight slope to improve sight-lines. Walls are brick and concrete and the roof steel and timber covered with tiles.



16

Restaurant at Dalkeith, W. Australia (architects, Forbes and Fitzhardinge), 20. It is covered by a domed roof in shell concrete, supported at three points forming an equilateral triangle with 61-ft. sides and rising to 16 ft. at the crown. The shell was poured continuously in ten hours. The underside of the dome is sprayed with asbestos. The restaurant and outdoor terraces together seat 40, and adjoin a swimming-pool.





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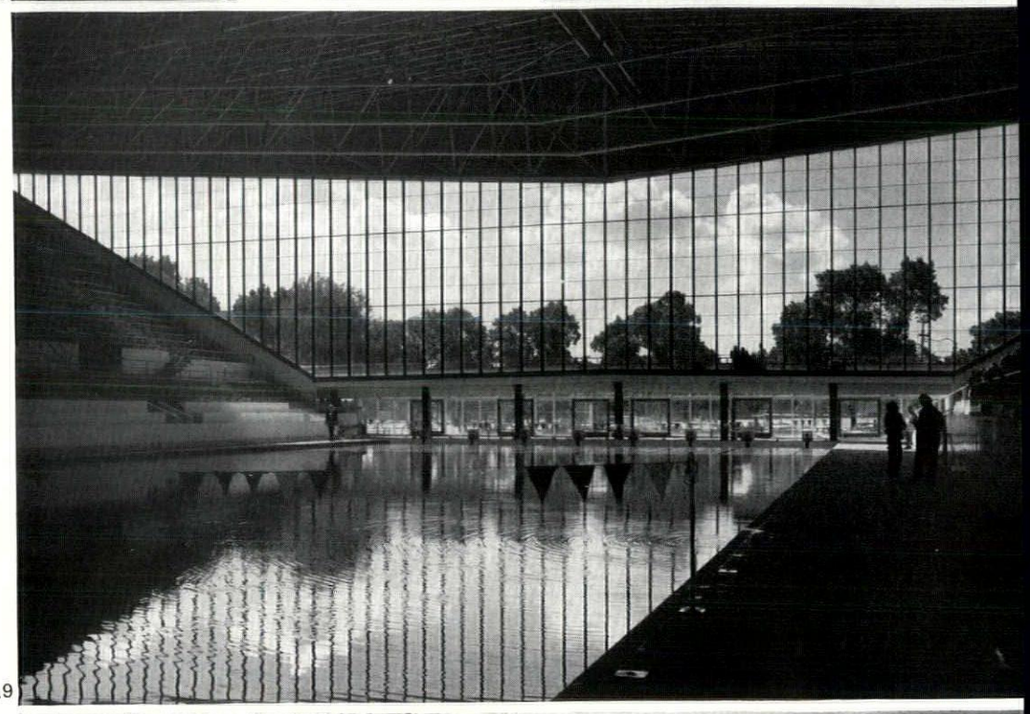

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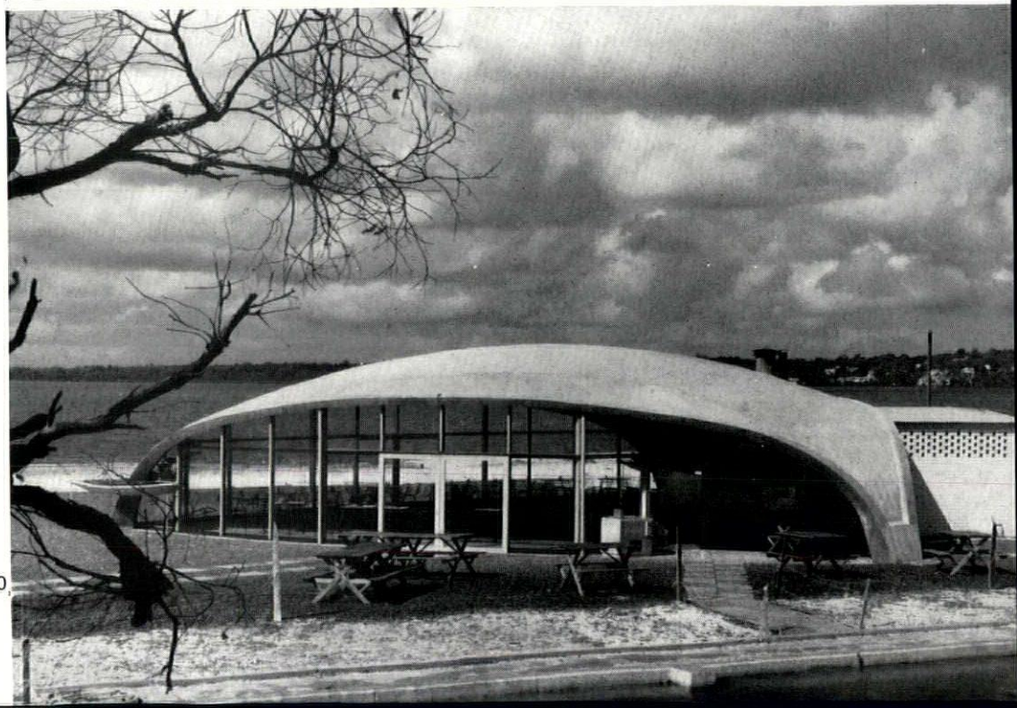

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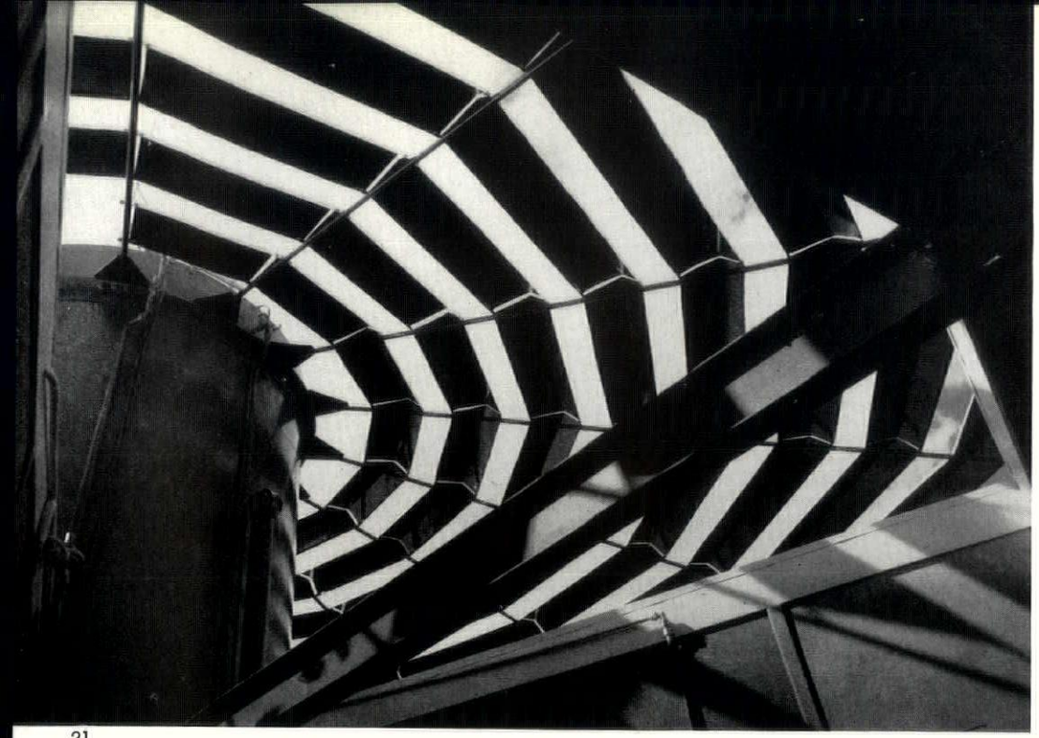
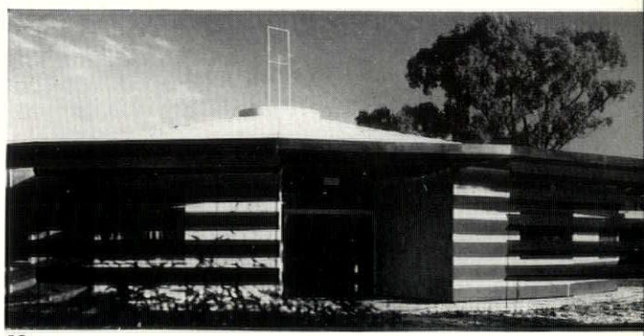


21

Bush Hospital, Beulah, Victoria (architects, Peter and Dione McIntyre), 22, a small, six-bed hospital designed for almost desert climatic conditions. The structure is designed around the central mast supporting the rain-water tank, from which also radiate the aluminium slats of the umbrella-shaped false roof, which protects the main roof from sun-heat yet permits air to flow over it. Aluminium slats also shade the side walls, with a four-foot air-space between walls and slats, 21 shows the construction of the roof louvres from the "service court" in the centre of the building, with the rain-water tank on the left.



22

House at Turramurra, N.S.W. (architects, Archer, Mortlock and Murray), 23. This is a typical bush-land site on Sydney's fashionable North Shore and the house is designed to fit into the natural landscape as unobtrusively as possible.

23

House at Wahroonga, N.S.W. (architects, John Allen and Russell C. Jack), 26, for the latter's occupation. The site is rock-covered and heavily wooded with eucalyptus trees. A small watercourse crosses it diagonally. The house has a timber-framed structure with twin columns supporting main beams at floor and roof level. Internal and external brickwork is painted a sand colour; other internal and external walls are vertical mahogany boarding. Windows are Queensland maple.

House at Templestowe, Victoria (architect, Kenneth McDonald), 27; a small hillside house for a doctor and his wife and occasional guest, planned round a central service core with internal bathroom lit and ventilated through a window above roof level. Construction is timber and brick with roof covering of aluminium foil.

House at Pymble, N.S.W. (architect Harry Seidler), 24, 25 (facing page). A sloping 3-acre site with a view to the south determined the split-level plan with superimposed living and bedrooms both facing the view. The single-slope timber roof has a white mineral surface visible from the approach side. Walls are brick or local sandstone with extensions acting as retaining walls and giving privacy to outdoor spaces. Floors are flat concrete slabs. Living rooms are lined internally with vertical timber boarding. The house has underfloor electric heating.

24
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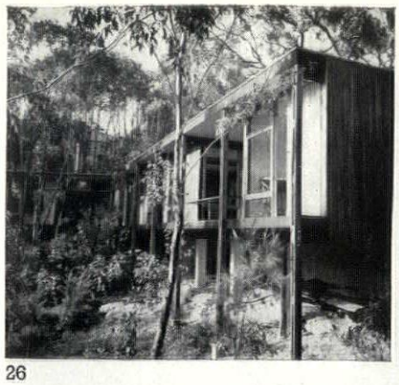
25

House at Vermont, Victoria (architect, Kenneth McDonald), 28; a low-cost house of 900 sq. ft. for a couple with one child. Sited among gum-trees to make the most of distant mountain views, it has an open living area, completely separated from the sleeping sections. Construction is largely timber with roof covered with aluminium foil. Internal walls are cypress pine running vertically.

House at Roseville Chase, N.S.W. (architect, Maurice Morrison), 29, 30. Sited in a natural hollow, back from the highway, with views in the opposite direction, the living-room therefore facing north and east over a pool. There are two bedrooms. It has a steel frame resting on a concrete floor-slab suspended over the rocky slope. Walls (non structural) are concrete externally and painted plywood internally. Ceilings are boarded. The bathroom is top-lit.



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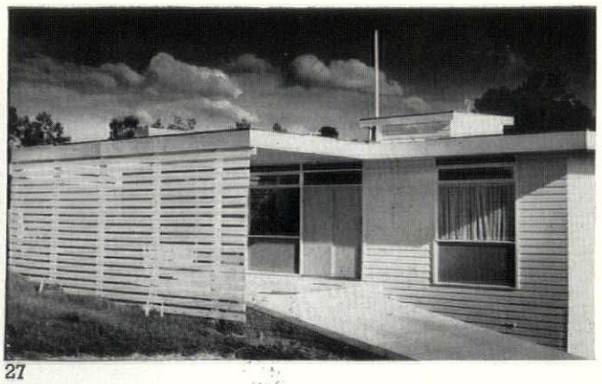

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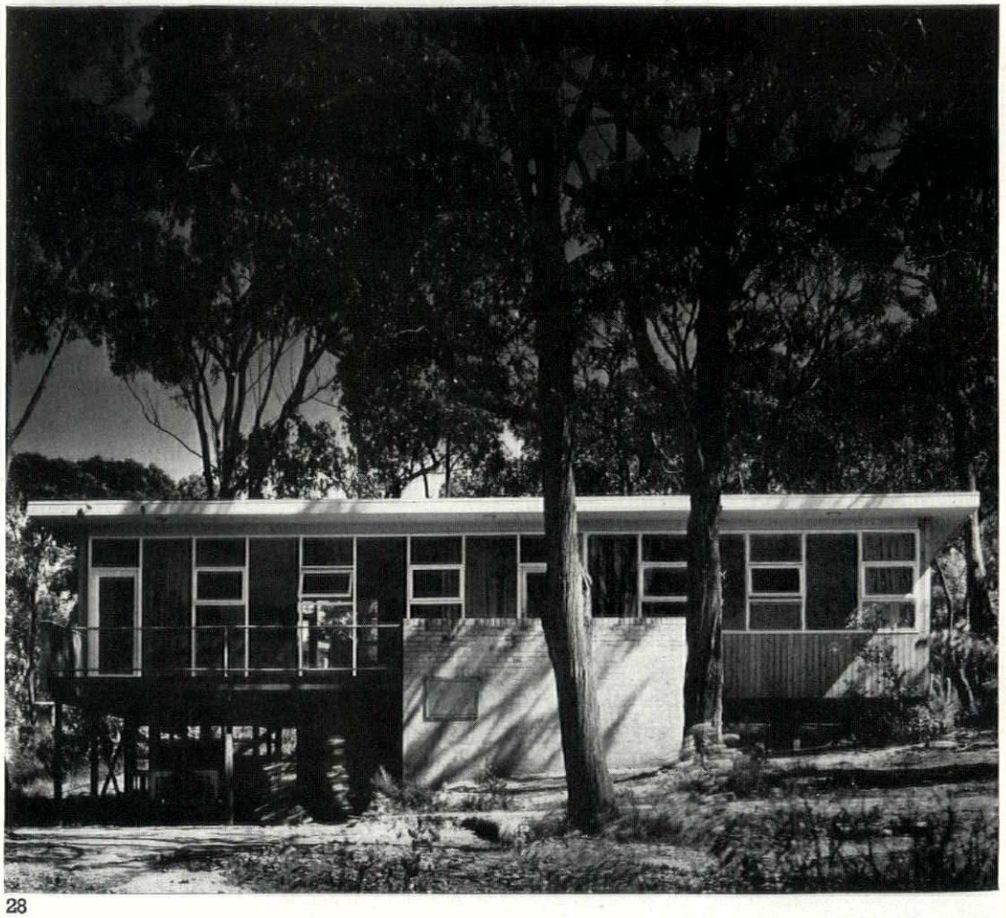

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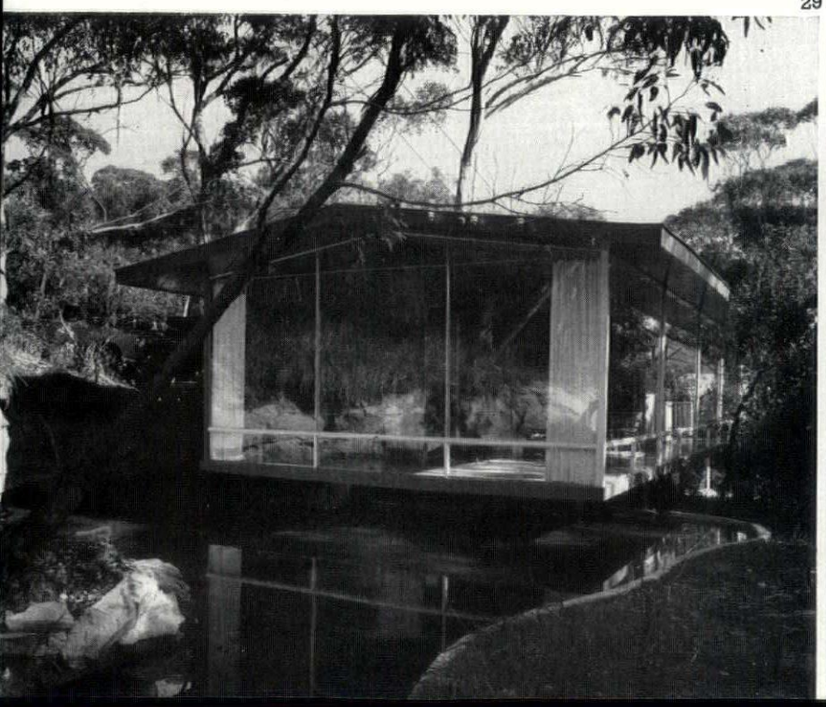

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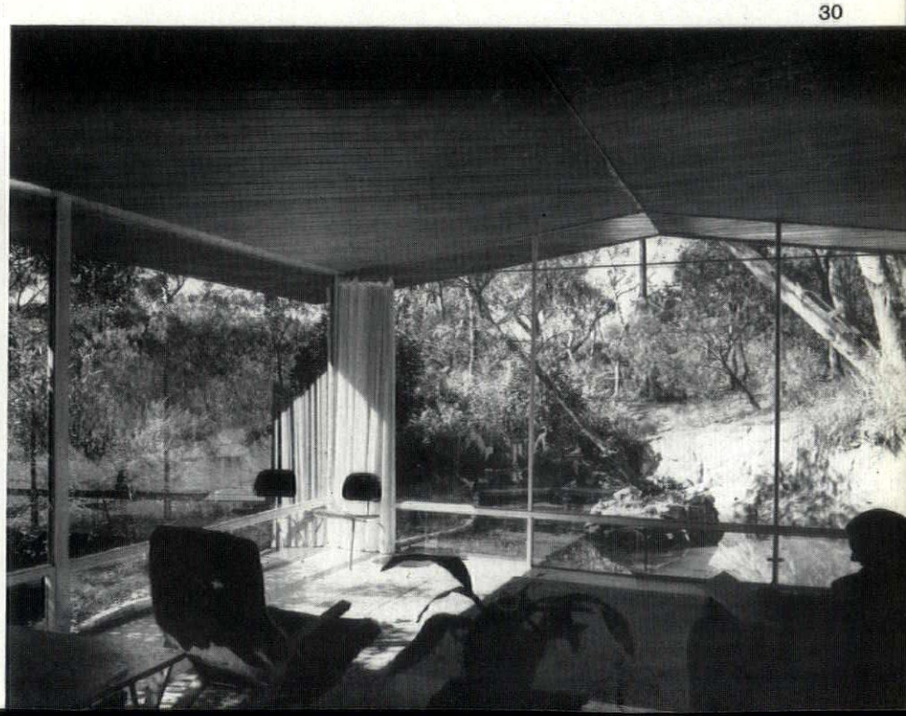


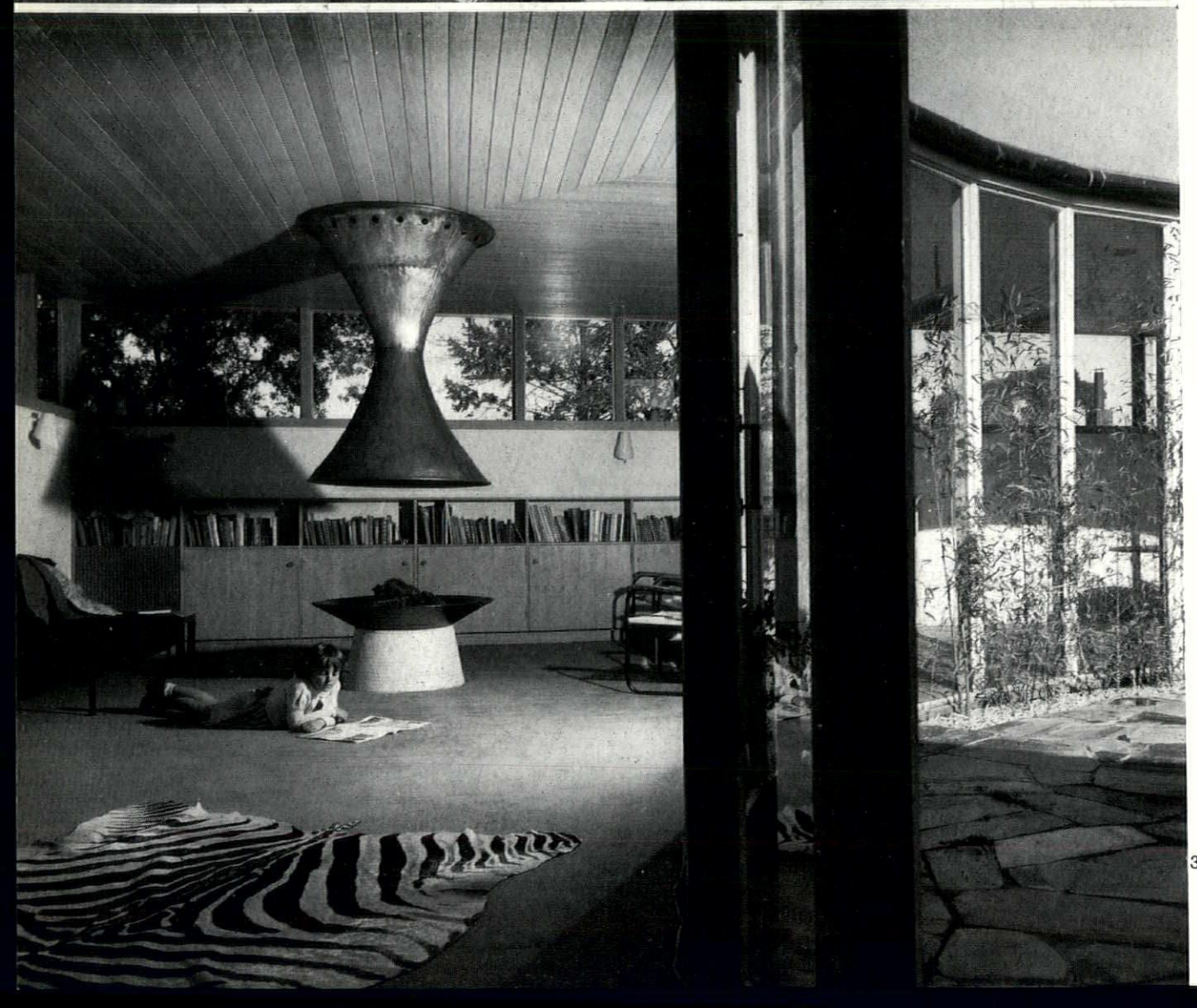
31

Flats at Toorak, Victoria (architects, Grounds, Romberg and Boyd). This development in a suburb of Melbourne comprises four flats and a house for Roy Grounds. The flats, 31, 32, *are*

32

built down the slope of a hill and are planned to provide privacy. The living-room of each flat faces on to its own enclosed courtyard. The architect's own house, 33, 34, *is square in plan with a circular courtyard in the centre. Construction is load-bearing brick, concrete slab floors, which are heated, and timber framed flat roofs. Window sashes are aluminium set in a structural frame of Victorian mountain ash.*

34



33

NEW ZEALAND

New Zealand is one-thirtieth the size of Australia; but that figure is deceiving; for whereas Australia has immense wastes within her boundaries, New Zealand is on the whole cultivated throughout, even if Central Otago carries only one sheep in every five (and sometimes ten) acres. The country lives on agriculture, cattle-breeding and sheep-rearing, and it lives comfortably on that—comfortably in the sense that everyone has enough and few have too much. There are no riches and there is no poverty, and there is a welfare organization only matched in Britain, and certainly of longer standing than in Britain. All these conditions find their reflection in architecture. Climatic differences are curiously little represented, although the range goes from areas of sub-tropical rain forest by way of moderately rainy areas much like England and Scotland to alpine and fjord areas. The bush is not what it is in South Africa; it is dense growth of forest, with or without tangled undergrowth according to latitude. In the forests down in the south-west corner of the South Island, south of Milford Sound, there are still unexplored patches. But mostly the countryside is inhabited, sparsely, of course, and houses—except for some small Maori holdings—are clean and well looked after. Urban population amounts to over 40 per cent, if inhabitants of towns of over 100,000 are called urban. There are no slums; there is only overcrowding of the same small, not at all neglected, bungalows which, not quite so densely sited, make up other suburbs as well. New houses are bungalows almost without exception. They are of timber, with a veranda, brightly painted and as a rule as innocent of architectural values as are spec-builders' houses at home. But they are never imitation-Tudor, or indeed imitation-anything, except, of course, imitation-modern-clichés. If they could recently be called an 'ingratiating chaos' (Pevsner)

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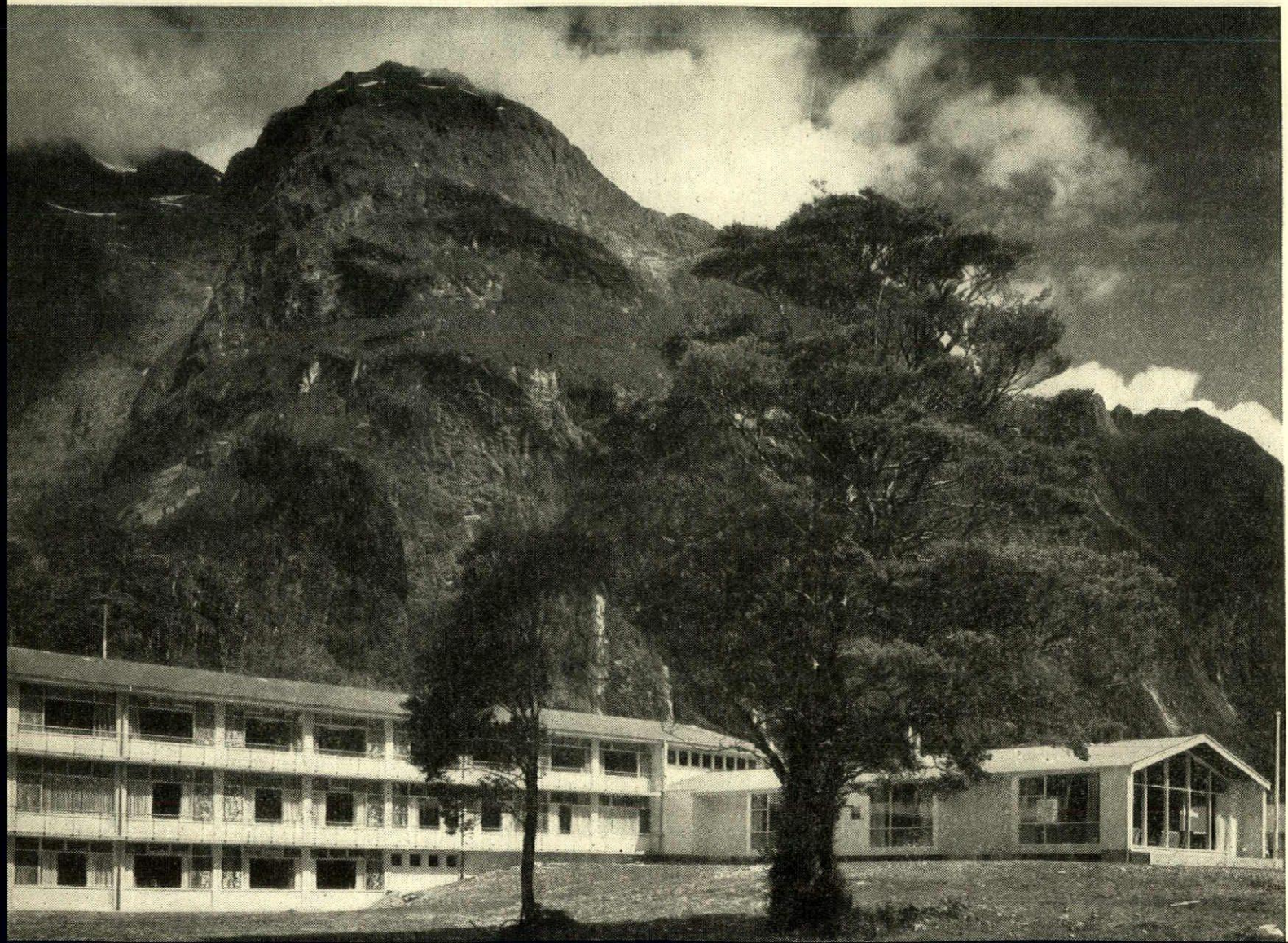


2

the adjective refers to their appearance individually, the noun to their siting and placing. There is no town-planning worth speaking of, either in central or in suburban areas. In central areas in fact there is none, in the suburbs the Government Architect has occasionally tried to group bungalow housing by means of winding streets into a kind of garden city pattern (Hutt near Wellington). But the bungalows, his building components, defeat him. Auckland, the largest town, is only the size of Nottingham. Wellington and Christchurch correspond about to Aberdeen; Dunedin is no bigger than Luton.

Everybody wants a house of his own, and after a few years the new immigrant can afford one. New blocks of flats are exceedingly rare and almost exclusively built by the Government Architect, either in groups of three and four storeys, or here and there in high slabs looking as well as most of their European patterns. Of these high slabs one was built at Wellington before the war; a second at Wellington and one at Auckland, both taller and more exciting in appearance, are recent.

High buildings are all but absent in the centres of cities too. Auckland has one slab of Government Offices recently completed, and Wellington is going to have a fifteen-storey point block of Government offices for which excavations are going on. That is all. It is perhaps the most characteristic feature of the architectural situation in New Zealand that the Government Architect's Department is responsible for nearly all the major work in the country, and that in addition the department, under its head, Gordon Wilson, who died prematurely a few months ago, represented the spearhead of modern enterprise instead

4, Wellington, the capital: looking across the busy commercial centre to the distant encircling hills.

of being safely in the rear as one would expect in Europe and as is, for instance, the case in South Africa. Office buildings which fall to private architects are never as big as they can be in Australia, nor are factories. The biggest office buildings were built between the two wars and are a minor variant of American manners. Of work of the last few years Mr. Plishke's Massey House at Wellington is an exception in scale as well as careful detailing. The same applies to Mr. Plishke's house for Dr. Sutch, an exception in New Zealand private houses. This loving pursuit of the refined detail may well be the architect's Viennese heritage.

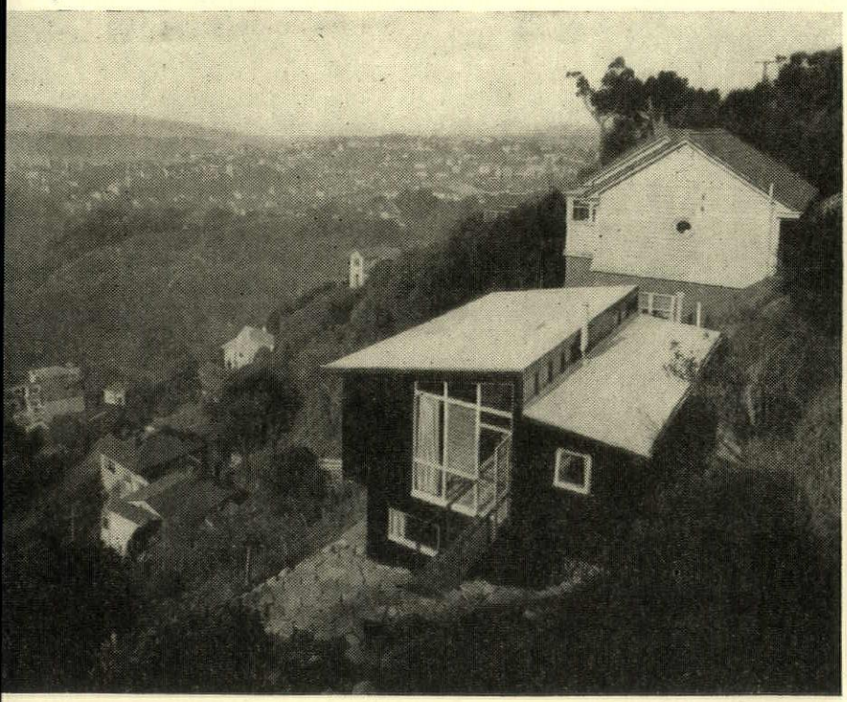
Most of the other modern architects are New Zealand-trained or have gone through English or American schools. Those who have not, try to travel, but scholarships and grants are too costly to be possible and private travel naturally even more so. The respect for England is great, and emotional ties are as a rule admitted, but the relations are platonic. The majority of the work of the younger architects is small private houses of timber, and for these England has nothing to offer. Looking across the Pacific pays better, and Californian houses in the journals are pondered over with more profit than English ones. A good deal of ingenuity goes into planning, and this ingenuity is needed; for the client is never rich. In England without any doubt he would buy himself an old house and redecorate it; he would never be a client. Old houses in New Zealand have not yet acquired a period value. Preservationism is completely absent; too much so, one is inclined to say. Apart from such historical monuments as Maori meeting houses,

1 (facing page), Dunedin, showing typical period-style architecture that provides the setting for modern building: on the left the railway station; on the right the police station.

2 (facing page), an hotel by the Government Architect at Milford Sound, seen against typical rocky, well-wooded scenery.

3, below, small brick and timber houses perched among the hills containing the suburbs of Wellington. In the foreground is a house by Anthony Treadwell.

3



5, Wellington: Government housing introduces a new scâle into a typical residential scene composed mostly of two-storey dwellings.

some Maori Christian churches and the early mission buildings of Bishop Selwyn nothing is accepted as worth keeping. None of the extremely pretty farmhouses surrounded by verandas with fretwork or cast-iron trim is excepted. So architects have work, but they don't grow rich on it. Lack of means is often apparent in the detailing although a certain crudity is called straightforwardness and, at least by some of the most thoughtful young architects, set up as a new-country feature in opposition to the old-men's fussiness at home. It sounds convincing at first, though California is not all that old and yet is quite capable of taking its details seriously.

Of public buildings, schools and universities are usually served by the Government Architect. Several major jobs are in course of construction, such as the Dental School at Dunedin and the Department of Engineering at Christchurch. Some of the new hotels of the semi-governmental tourist organization on the other hand have been handed on to private architects. Those at Milford Sound and the Hermitage just in front of Mount Cook, the highest mountain of New Zealand, are excellent jobs, light and fresh and well furnished and perhaps more inspired by Italy than by America. Inspiration from England in this field is, alas, out of the question. The new airport at Christchurch is also privately handled, by Mr. Paul Pascoe, and promises equally well. Ecclesiastical work is on the whole disappointing, except for the famous pre-war chapel of Waiho, where the Southern Alps behind a glass wall make an unforgettable reredos, and its progeny, and except for Mr. McCoy's Roman Catholic buildings in Otago and further south.

There is only one school of architecture in New Zealand, at Auckland. It has recently established a town-planning department, with English staffing. The department is going to have an uphill fight. Physical planning is a latter-day activity. It is also a matter of subtlety. Pioneers don't need it. It follows after you have settled down for good and accepted conditions as stable. This not even the United States has done yet, if one excepts road planning which is not town-planning. How could it have established itself in New Zealand, where the countryside is vast in comparison to population and the towns are without exception not vast? So town-planning would be primarily visual planning, and visual planning would be viewed with misunderstanding and even suspicion by the laymen and might well be looked at by architects themselves as an old-man's game just as much as sensitive detailing.

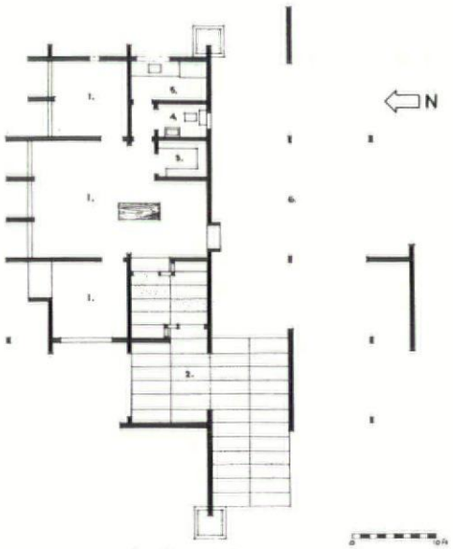
Flats, Auckland (F. G. F. Sheppard, Government architect), 1, facing page. The site is in Auckland city and the building, which has 89 flats (75 two-level, two-bedroom maisonettes and 14 bed-sitting rooms on the ground floor), is of reinforced concrete wall and slab construction, without beams or columns. The use of concrete for domestic work is new to New Zealand, and great trouble has been taken in these flats with the use of fairfaced concrete to provide a smooth finish with true alignment and free from blemishes.

NEW
ZEALAND

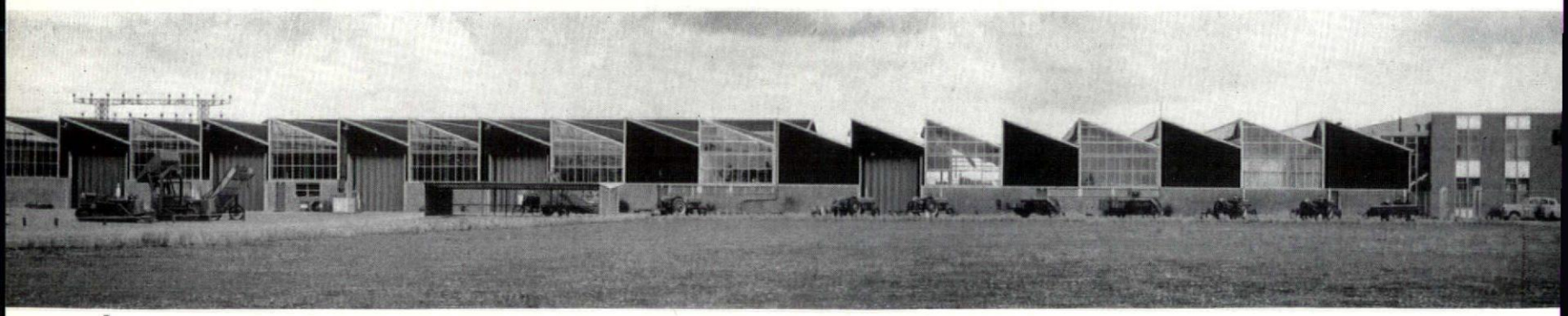
2

Showroom, Napier (architect, Maurice Smith), 2, a complex structure for a concrete company, housing offices and services at one end and becoming (without any defined point of transition), a display of materials and techniques at the other. The part illustrated, while largely a display structure also serves as a car-port, and the flooring is 'on view' as well as in use.

Brewery, Palmerston North (architect, Ronald J. McMillan), 6 (facing page). The Brewery tower is one element in a group of new structures which are gradually replacing an existing brewery. The influence of seismic loading on the structure with respect to large liquid masses together with the combined effect of soil pressures were major considerations in the design. Two elevations are complete glass curtain walls, one of which hinges open for maintenance work; glazing bars are white with centre mullions of stainless steel; surrounding frames are terracotta and the remainder of the exterior is pale green. 6 →



plan of concrete showrooms



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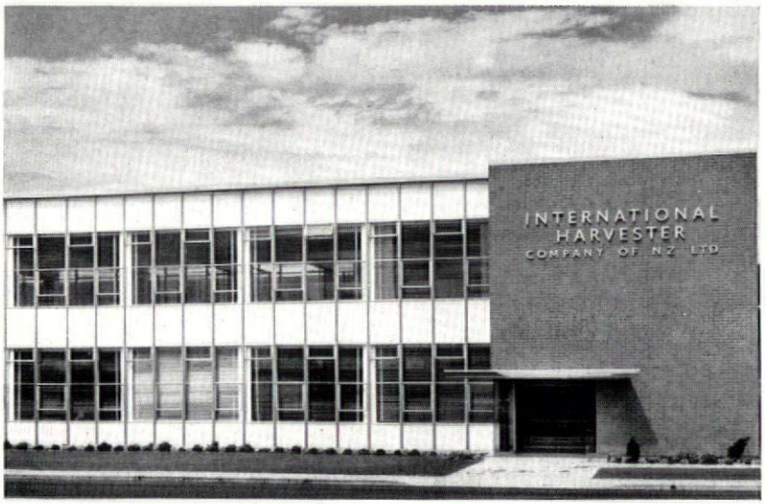
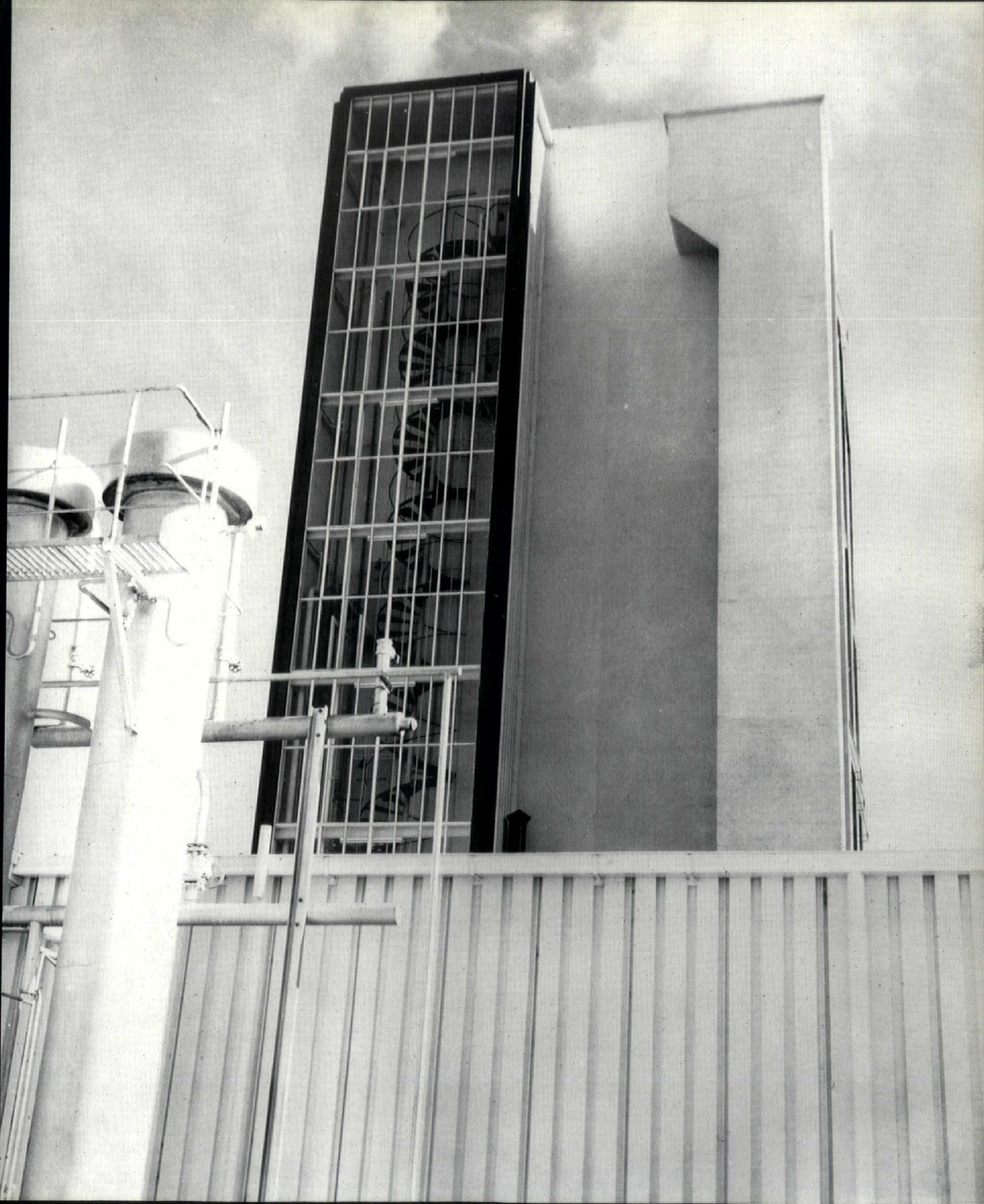
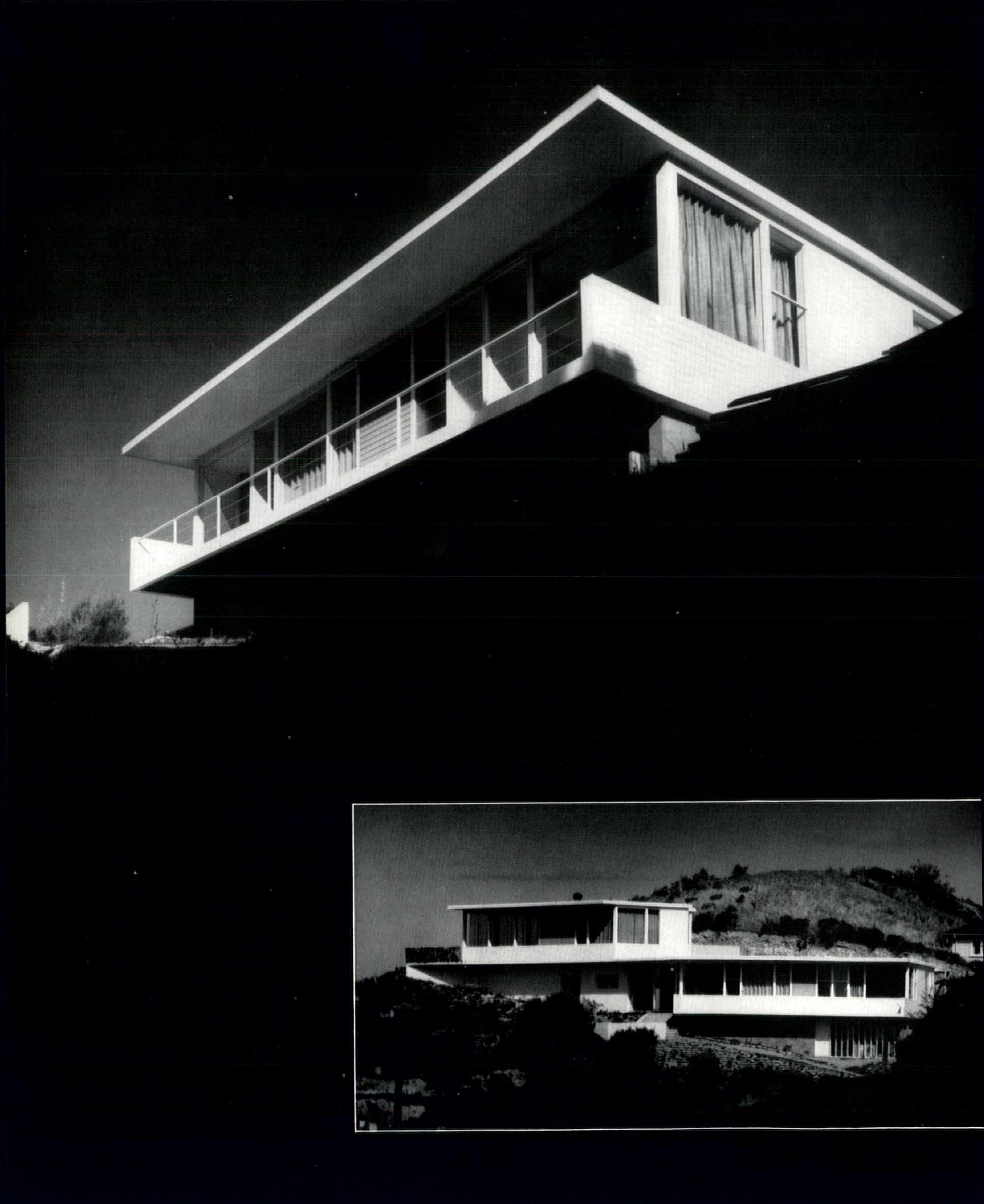


4

5

Offices, Christchurch (architects, W. H. Trengrove, Trengrove and Marshall), 3-5. This office block and warehouse for the International Harvester Company consists of three basic units; a crane bay housing a 15-ton crane and a south-lit sawtooth structure, 3, housing the assembly and parts department, both of steel frame construction; a two-storey block of executive and administrative offices, 4, 5, which has a reinforced concrete frame with brick veneer and panels except to the front which is aluminium curtain walling with white glass infill panels. The entrance canopy fascia is stainless steel and the entrance doors are armourplate glass. Central heating is by convectors which form an integral part of the window design.



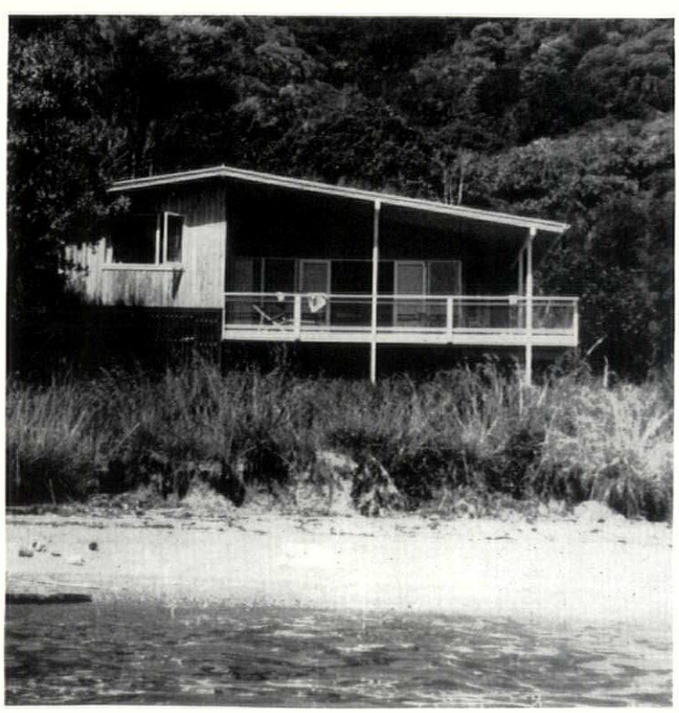


House, Wellington (architects, Plishke and Firth), 7, 8 (facing page) and 9. On a steep hill overlooking Wellington Harbour, planned on different levels in order to get the maximum benefit from sun and view. Courtyards and terraces are closely related to the living areas to provide outdoor living protected from the wind. The structure is a wood frame; the dark stone for the east terrace was brought 500 miles from Auckland, while the golden sandstone which paves the patio and continues into the gallery and hall, 9, was brought 2,000 miles by sea from Australia.

7 ← 8

9

House, Queen Charlotte Sound, near Picton (architects, Porter and Martin), 10. A holiday house built on a slope in a cup of the hills. The section follows the slope of the hill, making possible a boat-shelter on the lower level. The external sheathing is of vertical shiplap pine boards which were run through boiling tar oil before being fixed; living room walls are covered with the same boards with a satin clear varnish.



10

Demonstration house, Titirangi (architect, Gerhard Rosenberg), 11, built to demonstrate economy in the use of timber, of which about 2,500 board feet are used, and the value of some new structural ideas and materials. The outside is of block veneer which takes care of earthquake stresses, leaving the framing to carry only the roof load. The roof has exposed rafters of Oregon pine.

11

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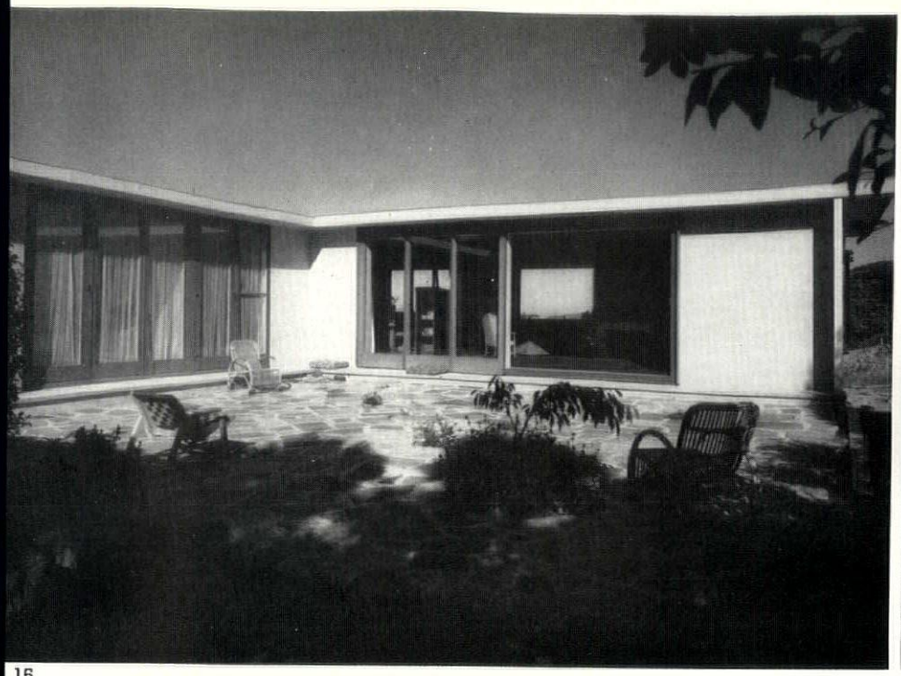
Flats, Dorset Street, Christchurch (architect, F. M. Warren), 12, 13. The building comprises eight flats, four on each floor. The four ground-floor flats each have their own private garden surrounded by high walls. Walls are of load-bearing concrete block, painted white inside and out; the roof is timber-frame covered with corrugated iron, with ceilings following the pitch of the roof. Heating is by free-standing Norwegian stoves, set on quarry tile bases.

ground floor plan: house at Raumati

House, Raumati (architects, Plishke and Firth), 14. This house, of 2,000 square feet, has separate bathrooms for parents, boys and guests, a factor above the average in standard for New Zealand, though in view of the lack of domestic help, the highly-mechanised kitchen is not. Timber is used for the structure since it provides greater elasticity in case of earthquake. The system of electric ceiling heating was used here for the first time in New Zealand.

14



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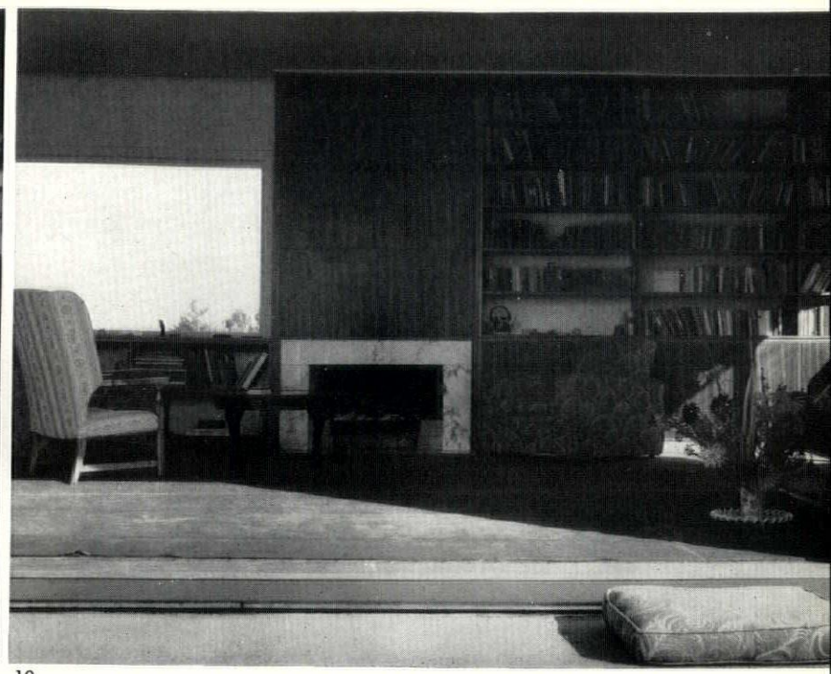
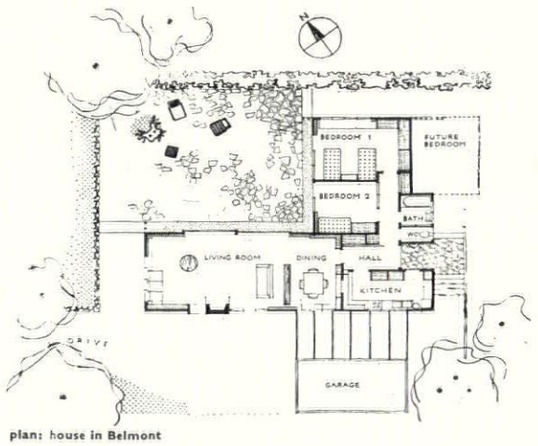


16

House in Belmont (architects, Plishke and Firth), 15, 16, an L-plan villa with provision for enlargement at the back of the bedroom wing (see plan). All the main rooms face on to a paved court to the north-west, the sun-trap orientation for New Zealand.

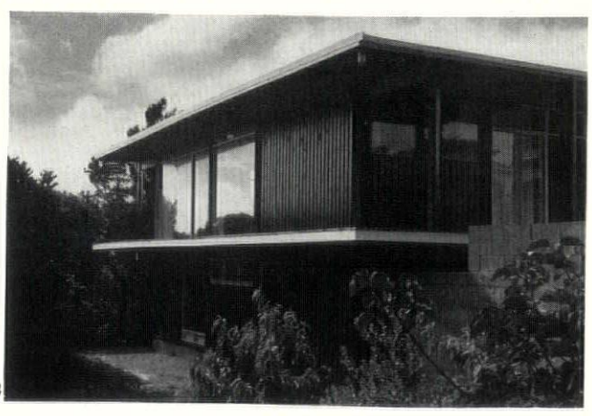


plan: house in Belmont

17

House, Milford, Auckland (architects, Juriss, Penman and Wilson), 17. On a flat site 100 yards from the beach, the house was designed for a yachtsman owner with two children. The exterior walls are of hollow concrete block painted inside and out. Waxed matai ply is used for furniture and panelling. Roof framing is all of Oregon pine. Heating is by a coke-burning space-heater.

House at Wellington (architects, Gabites and Beard), 18. Situated on the bush-clad slopes of Mount Johnston, it was initially built up on columns and bracing walls and occupied on the upper floor only; as the family has grown the bedrooms below have been put into use. The structure is of Douglas fir posts and beams, bolted with Heart Rimu floor joists, Pinus Radiata ceiling joists and sarking and Heart Matai decking. Weatherboards are red stained and oiled, with black painted vertical facings and window frames and fascias painted white. Inside there are Pinus Radiata close-boarded ceilings with a clear finish, the beams and columns of Douglas fir are stained red.



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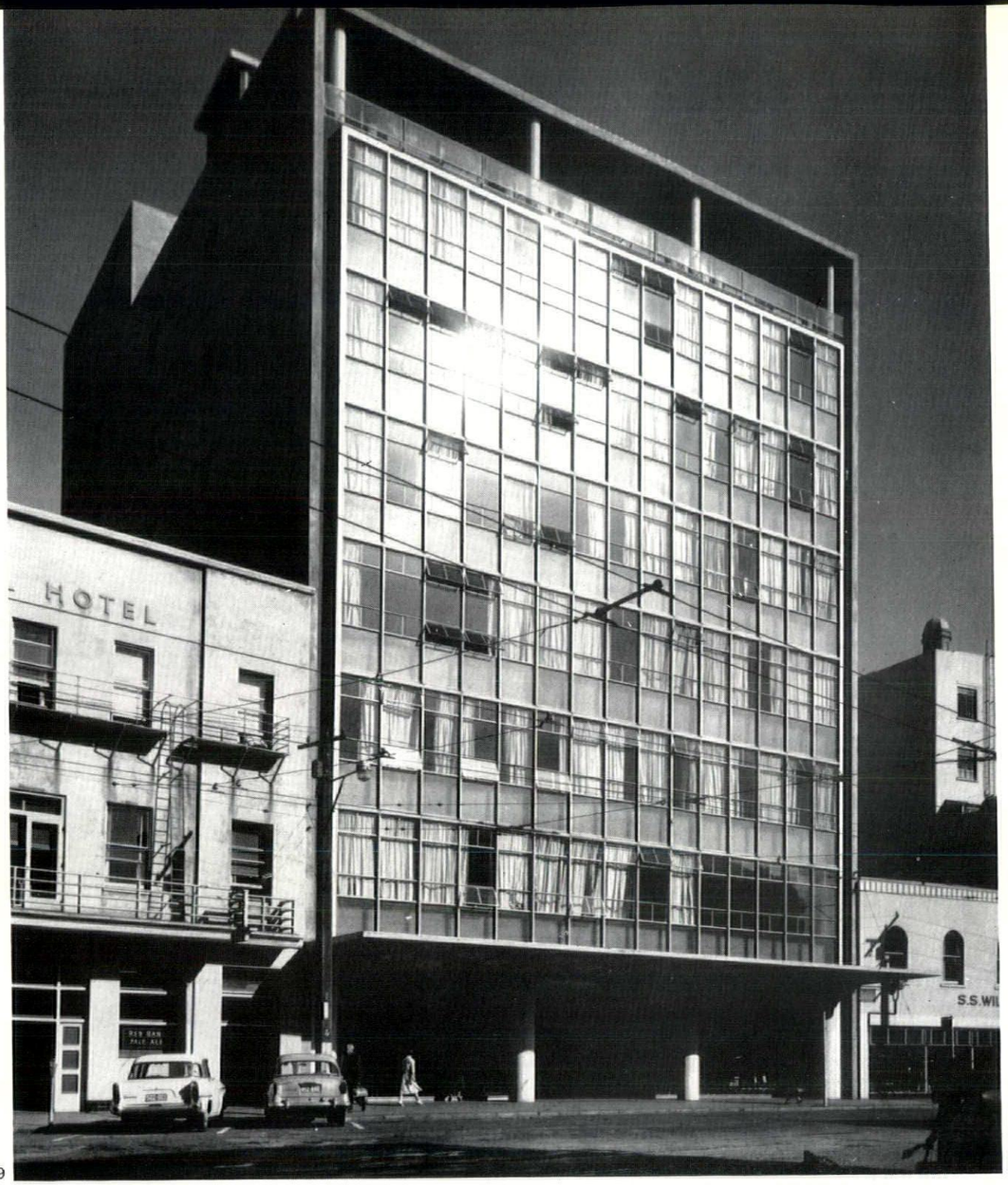

19

Offices, Wellington (architects, Plishke and Firth), 19, 20. *Built for the New Zealand Government Boards for meat and milk, which represent the main industries in New Zealand, apart from that of wool. The building, facing Lambton Quay, is seven storeys high. The structural framework has been kept free of the enclosing curtain walls which have deep mullions to give texture and depth to the façade. A curved wall in the Dairy Board room is panelled with totara burr veneer, obtained from the root of the now rare totara tree; it is made up of 390 individual pieces. The photograph on the right is a detail at the head of the main stair and the lift machine house on the roof.*

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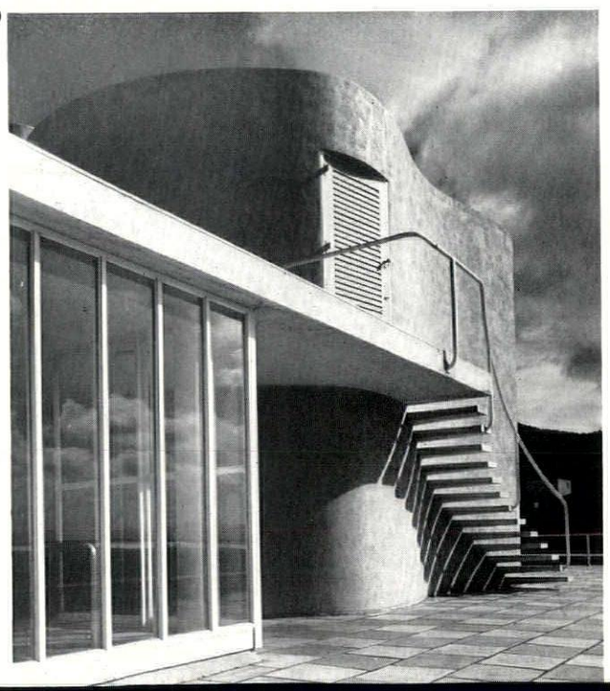
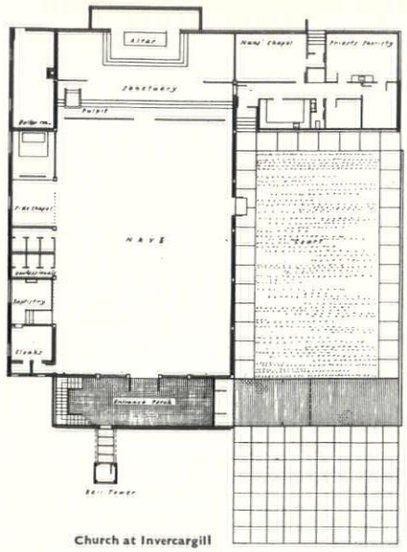


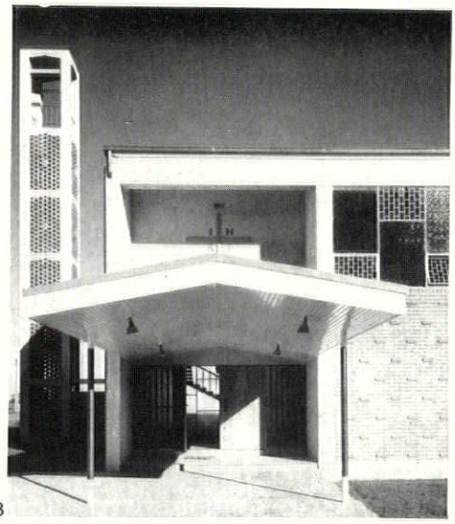
Church at Invercargill (architect, E. J. McCoy), 22, dedicated to St. Therese of Lisieux, this concrete-framed church has a straightforward hall-like interior, flanked on one side by baptistery, confessionals, and side-chapels. On the other side is a grass court (to the right in photograph) at whose head is a subsidiary wing containing the sacristy and nuns' chapel.

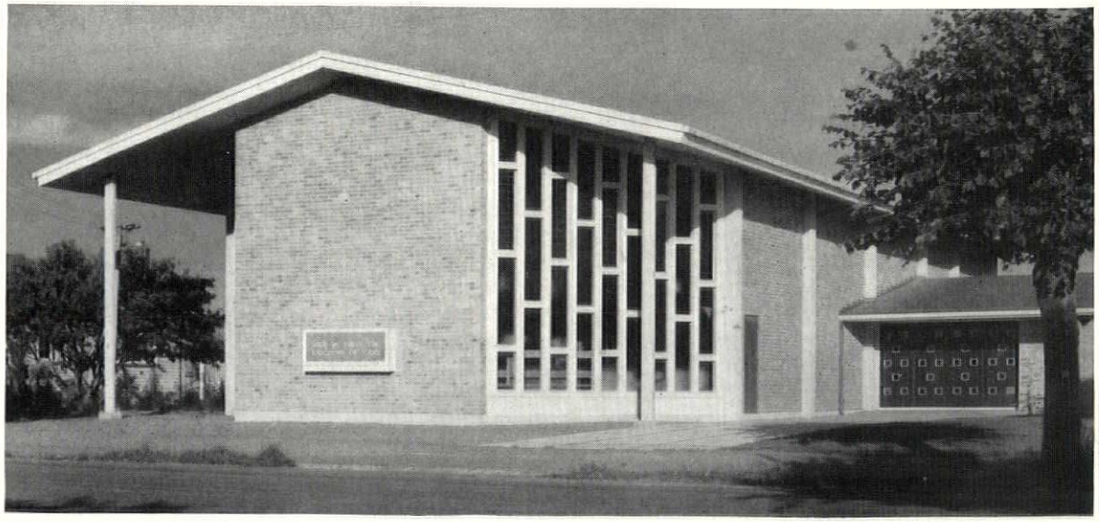


Church at Invercargill

St. Martin's Presbyterian Church, Christchurch, New Zealand (architects, Plishke and Firth), 23. The church, which stands in a suburban area, is designed both for worship and as a social centre, and for this purpose the rear block of seating can be partitioned off from the main body of the church. The structure is composite, the free-standing exterior columns are steel, the rest of reinforced concrete; infill panels are brick; rigid steel frames carry a timber roof. The exposed frame inside the church is painted white and the brick panels a golden yellow. Exposed purlins are painted white and the boarding between them light blue.

22, 23





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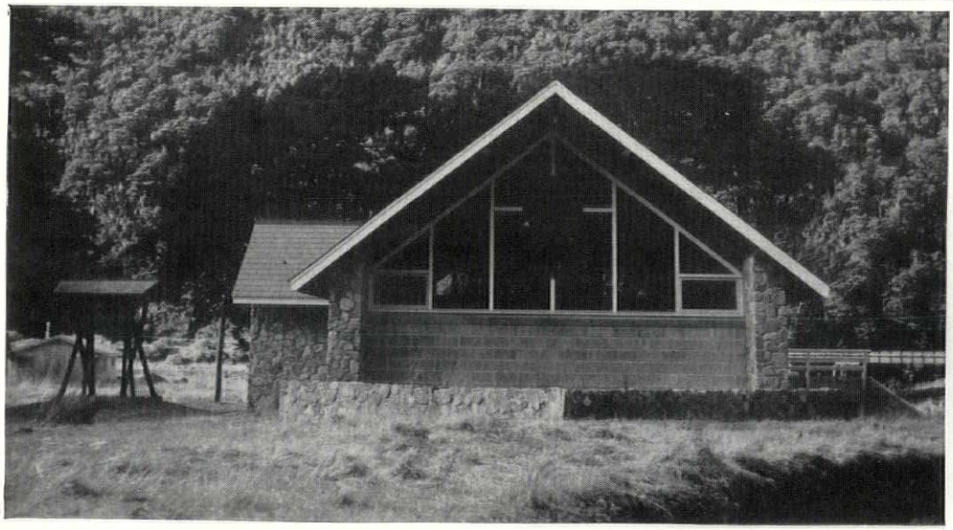
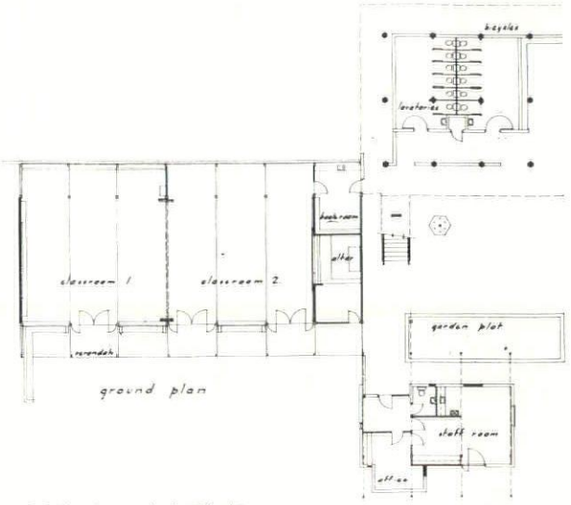


Chapel, Arthur's Pass, Southern Alps (architect, Paul Pascoe), 24. The design of this interdenominational chapel embodies a triple influence, the mountain hut (tent-like in form), the Maori meeting house (c.f. entrance and main porch) and an alpine chapel. Walls are a reinforced concrete core faced with alpine boulders and concrete blocks. The font is formed of three children's skis, crossed to hold the wood bowl.

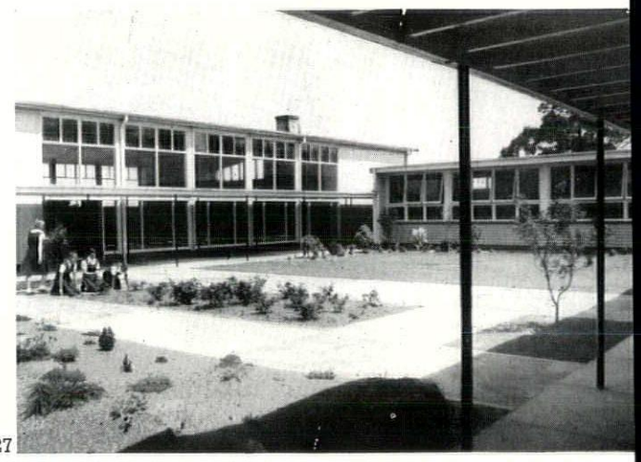
Church, Alexandra, Central Otago (architect, E. J. McCoy), 25). A Roman Catholic church seating 350. The structure is of steel columns and portal frames; the side walls are of concrete masonry with coloured glass squares 8 in. x 8 in. set into block courses and the end walls of reinforced concrete. A 12-in skylight strip runs along the ridge of the roof above the nave to a larger skylight over the altar.

26

School, Napier (architects, John Scott and Hammond Hastings), 26. This Catholic primary girls' school was built on a clear flat 2 acre site to accommodate 200 pupils, with facilities for 400 when extra classrooms are built. The plan is based on the open corridor or verandah system; three separate buildings are grouped to form an open court; the two elevated classrooms cover sheltered play areas. Screen walls of concrete block wander and infill between columns. Roofs are of scissor type, self-supporting timber trusses.



Catholic primary school at Napier



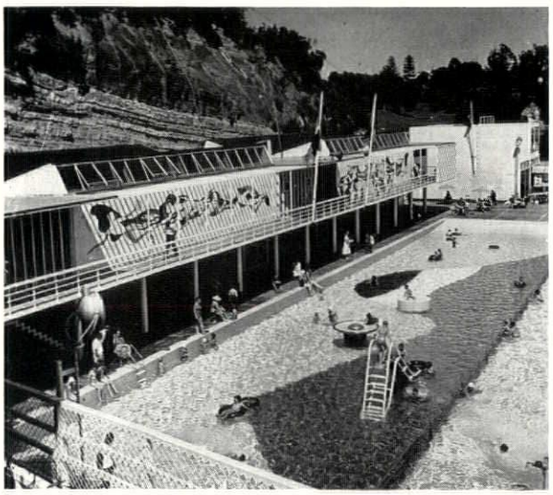
27

Prototype School, Napier (architects, NZ Ministry of Works), 27, a 'cluster' layout, adaptable to differing sites and to expanding communities, composed of a number of independent blocks, each serving a related group of teaching functions—the illustration shows the Assembly-Hall/Administrative block. Other blocks house, e.g. library, arts and academic teaching, or craftrooms and laboratories, and the number of blocks can be increased as the number of pupils increases and the curriculum grows in complexity.

Memorial Hall, Napier (architects, Natusch and Sons), 28, a civic hall and beach pavilion, incorporating a war memorial in the form of a roll of honour inscribed on granite slabs around a pool with fountain and flame of remembrance (this lies behind the right-hand end of the curving tea-terrace, and flanks the entrance to the hall). The screen-wall of the terrace has load-bearing wooden mullions, concealing the counterweights of the windows, and the hall has an exposed reinforced-concrete frame, with prestressed roof-beams.

28

Parnell Baths, Judges Bay, Auckland (architect, T. K. Donner), 29. Part of a comprehensive plan of redevelopment by the City Council; it is bounded on the eastern and southern sides by a cliff which shelters it from the prevailing winds. The main building is a two-storeyed reinforced concrete structure providing facilities for 3,000 people. Dual access is by pedestrian ramps on the east and west sides reached by a 6 ft. 6 in. wide cantilevered accessway which starts from a common point of entry on the north. The murals, executed in opaque glass chips set in white cement on asbestos cement panels, are by James Turkington, and are designed to harmonize with the painted floor of the pool.



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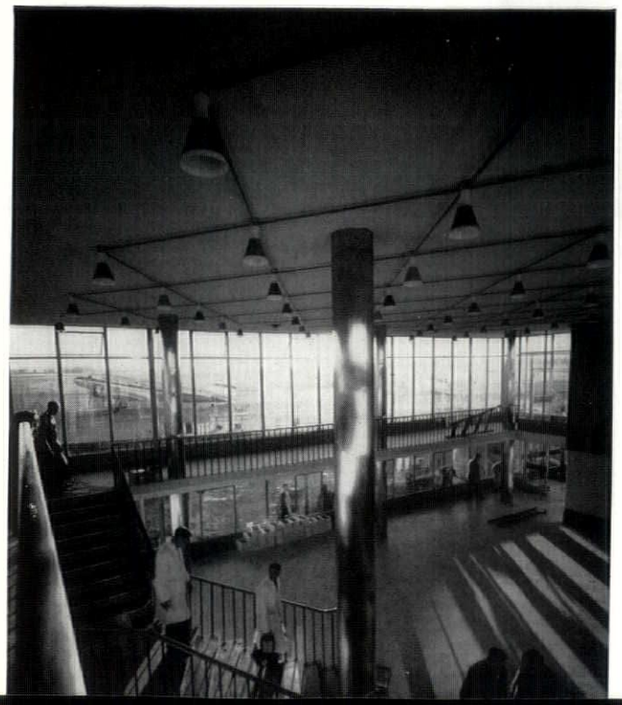

Hotel, Southern Alps (architects, Hall and Mackenzie), 30, 31. In 1957 the mountain hotel known as the Hermitage was destroyed by fire. It was necessary to rebuild quickly and in spite of the difficult and remote terrain and the exceptional rainfall (260 inches during the period of the contract), the building was completed within 26 weeks. The construction is damp-proofed double concrete slabs for the ground floors, timber framed walls and roofs; exterior sheathing is of oiled sawn cedar weatherboards; interior, Gibraltar board and fibrous plaster. Stone walls and fireplaces are random coursed split glacial moraine boulders. There is an oil fired low pressure hot water heating system.

Air Terminal, Christchurch (architect, Paul Pascoe), 32. The photograph shows the concourse of the passenger block, looking toward the airside apron from above the baggage-checking and ticketing area.

BUILDING INDUSTRIES

The following articles, each contributed by an architect resident in the Dominion concerned, describe the building industries of the four Dominions covered by this issue, making special reference to the export opportunities offered to British manufacturers. The series of articles is summed up at the end, and their implications discussed, by a British economist, Dr. Marian Bowley, Reader in Political Economy in the University of London.

CANADA

Canada is likely to provide a large and ever-increasing market for building materials for several decades to come. During the ten years ending in 1957, the construction industry nearly doubled its volume of production. In the second half of that period, the average annual expenditure on construction was over $4,000 millions. During the last year there has been a falter in the rate of galloping expansion, but no one doubts that the long-term view is one of continuous and rapid growth.

The Royal Commission on Canada's Economic Prospects has forecast a total population increase from 15½ millions in 1955 to 26½ millions in 1980. Canada's birth rate is now the highest of any industrial country in the world. The average family unit numbers four persons. The number of children in elementary schools will soon be between two and three times the population of these schools in 1939. Enrolment in secondary schools will soon be between three and four times, and the university enrolment will be between four and five times, the figures for 1939. These children ensure the projection of the present market into the future on an increasing scale.

The long-term outlook in the Canadian constructional industry is, therefore, very favourable. Whether British manufacturers are able to supply a larger share of Canada's imported building materials will depend primarily upon an open-minded appraisal of the ways of doing business in Canada. Canadian manufacturers will themselves undoubtedly meet a large part of the demand. American manufacturers already supply about 90 per cent of Canada's total imports of this kind and they possess obvious advantages as compared with other countries which enter into competition with them. There is, therefore, no great chance of success for British manufacturers if they regard exports to Canada as a matter of simply getting rid of more of the things they happen to manufacture in England. Canada is a very different place, and practically every assessment of North America made by a person who has not stayed there for at least several months is completely wide of the mark. To the visitor from Britain the differences are particularly difficult to identify because they are often concealed under the cloak of similarities in language, racial origin, form of government and social organization.

In Canada it is unlikely that you would do business with anyone without being on Christian name terms. This air of informality has a counter-part in the general flexibility which characterizes most commercial and professional relationships. Many of the rules and procedures which are accepted so readily in England that few people notice their existence, do not occur at all in Canadian business life, with the result that the newcomer can easily confuse his scale of values. But in the long run it is action which counts. Although there are very strong conservative streaks (and you must discover those which affect your own particular activities), precedent plays no great part in Canadian life.

Canada is also a lot of different places. Eastwards of Ottawa it is important to use the French language, and it is probably of equal importance not to use the language of France. A Parisian was one of the most lonely persons encountered on a recent visit to Quebec. Toronto and Ontario are probably the most American parts of Canada, although they will seem to be very British when approached for the first time by way of the United States. From Toronto, it is over a thousand miles of wilderness before the lights of Winnipeg appear and you will cover almost 1,500 additional miles before reaching Vancouver. Here, and in Victoria on Vancouver Island, the atmosphere is subtly more British than that in Britain, although the closest geographical link is with Seattle, just over the border to the south.

The very great barrier of distance is no doubt one reason why the Delegation of the Dollar Exports Council, which visited Canada last year in order to assess the prospects of increasing UK exports of building materials, confined its tour to Ottawa, Toronto and Montreal. The implication must be accepted that exports to points further west are not feasible on any substantial scale at the present time. The report of the delegation is of considerable value and extensive reference has been made to it in compiling these notes.

In the construction industry itself, there are many aspects which are quite different from British practice. There is a National Building Code (1953), which is a set of minimum regulations as to the safety of buildings with reference to public health, fire protection and structural stability. It is an advisory document only, and has been adopted in only limited areas. This code is very close to American codes, but American codes, as such, are not used in Canada. British standards are not used at all, either directly or indirectly. There is a list of 'Acceptable building materials, systems and equipment' specified by the Central Mortgage and Housing Corporation which is a Federal body, set up to underwrite the mortgage investments of lending institutions for the construction of new housing. In practice, this list is often used as a guide by local building inspectors so far as it is applicable. It is clearly of importance to establish the acceptability of a particular product by the different levels of government which may be involved: Federal, Provincial or municipal, with most emphasis on the latter since the municipalities have full power to regulate building in their own localities.

Delivery schedules are of vital importance in a country where speed of construction surprises every visitor. Pre-planning of site operations is necessitated by high labour costs and everything is arranged to get each tradesman on and off the site in the shortest possible

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time. It is not unknown for a builder to complete a development of 500 houses in three months. Construction must be pushed ahead during the limited building season and it must also be remembered that transport by water ceases throughout the Great Lakes during the winter freeze-up. Adequate stock-holding in Canada of all standard items is an essential in providing the service on which customers rely. In some cases the problem has been met by setting up local manufacturing plants for standard items, importing only components and custom-built items.

Many materials and components manufactured in Britain have been developed as the result of shortages. Although these alternatives often have advantages above those possessed by the original, they are likely to be doubtful starters in a country where everything is freely available. Timber is an obvious example. Steel is plentiful, so there is little reinforced concrete construction. The price of steel has dropped about 25 per cent in the last two years and delivery of the frame of a large building can be expected in about six weeks from the date of order. In August, 1957, a tender for steel in a bridge was accepted at $430 per ton. In July, 1958, a comparable contract was let at $230 per ton for supply, fabrication, erection and painting of steel.

In domestic building, there is very rarely a damp-proof course—standard wall construction consists of 4 in. brickwork lined with 4 in. concrete blocks. Aluminium foil is then held vertically to the blocks by means of wood lathes to which is nailed plasterboard finished with a skim coat. There is invariably a large basement, which is left unfinished, and every owner of a new house exercises his skill in completing this to his own do-it-yourself satisfaction. There are still many areas in which the frontier spirit remains, and a man is expected to build his own house. The masonry, or fire-resisting, construction described above is required in only limited areas and in most places framed timber construction is acceptable. Clay or concrete roofing tiles and slates are practically unknown; bituminous felt tiles are universal, even on the most expensive houses. Additional items of equipment not normally met with in the United Kingdom are involved in the spring ritual of removing the storm casements and replacing these with the fly screens. These examples illustrate the point that building in Canada can be quite radically different from British practice. You can export a Jaguar to North America and it will function well, in spite of a general speed limit of 55 m.p.h.; but a ship-load of well designed smokeless grates would be a highly speculative venture.

The following notes, under a few simple headings, indicate products which are already being supplied by UK firms in Ontario and suggest other products which might be the subject of investigation for export trade:

Steel and steel products

UK firms are supplying: Steel partitions and shelving. Scaffold fittings, trestles, trench struts and shores. Steel windows and double glazing units. Steel pallets, racking and flooring. Slotted angle bars and accessories. Curtain walling.

Present information suggests that this market is very competitive.

Further opportunities appear to be limited to specialist items such as: an adjustable steel column for use in house basements to support the ground floor; joist hangers and bridging; high tensile bolts; steel stringers for basement steps; pre-fabricated stairs; high tensile wire for pre-stressed concrete.

Hardware

UK firms are supplying some hardware, but exports in bolts, screws, floor hinges, double acting hinges, tubular locks and friction hinges might be increased. American lock sets are used exclusively.

Bricks, tiles, etc.

Already Britain exports: ceramic tiles; sewer pipes; porcelain and vitreous enamel tiles; cements; quarry tiles.

Expansion of trade might occur in: High quality bricks (to Canadian sizes); glazed hollow partition blocks; sanitary ware: on the West coast Japan is making a strong bid for the market.

Electrical products

Certain specialist fittings are now being supplied, but opportunities are thought to exist for: cheap, well designed fixtures and fittings; mercury vapour lighting equipment; steel conduit and electric cable; air circuit breakers; elevators (in a limited field against strong US competition); air conditioning equipment—also against strong competition; compressors.

Metal products

UK firms or their subsidiaries now supply architectural metal-work, pipe fittings, bends and aluminium window frames and sashes. There may well be a market for metal doors, kitchen cabinets, aluminium wall cladding and tiles, and office partitions.

Plastic products

At present business is being done in plastic and rubber floorings and tiles, and in plastic pipe. Export of these products might be increased and interest has been expressed in poured plastic flooring material.

Furniture

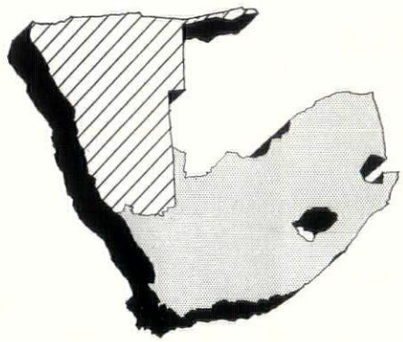
Showcases, fixtures, display fittings and store furniture are being handled by UK firms. High quality office furniture may offer further opportunities.

Miscellaneous

UK manufacturers already offer the following: folding garage doors; marine glue and roofing pitch; pre-fabricated buildings, including houses; steel rolling shutters; concrete form equipment; insulating boards; pre-fabricated bridges; mobile concrete mixers, tractors, dumpers and rollers; reinforced plastic window material; bulk cement plant, weigh batchers and concrete block machines; space heaters for temporary buildings.

There appears to be a market for insulating materials such as fibre glass, cork and foam materials. Roofing and wall cladding materials of good design might well make an appeal.

To sum up, the Canadian market is a large and growing one, but the competition of the USA in the building materials field is tough, particularly in areas such as Ontario where the general business climate has a strong American flavour. Nevertheless, the present Canadian government is sympathetic to improved trade relationships with the UK and the long-term opportunities are such as to encourage well-conducted enterprise. The importance of personal investigation, personal contacts and personal service cannot be over-estimated.



SOUTH AFRICA

Some comment on the geography and the climate of South Africa has been made in the introduction to the section dealing with South African buildings. These conditions naturally affect the material situation of architecture as much as the aesthetic.

Owing to the contrast between the elevated dry plateau and the narrow moist littoral, with the chain of the Drakensberg between the two areas, agriculture and forestry are in a precarious position throughout most of the country. The irregular distribution of rainfall in season, the intensity of precipitation and the high rate of evaporation, all combine to erode and denude the soil, lowering an already low fertility due to lack of phosphates. The rivers are thus neither navigable nor suited to large scale hydro-electric power generation. Irrigation of land is possible over restricted areas, amounting to some 8 per cent of the total, while not more than 15 per cent is capable of cultivation.

Farming is thus for the most part suited to animal husbandry, while in different parts of the country grain, fruit and vegetables provide the basis of the farming industry.

Timber is extremely scarce, only some 2 per cent of the total area being covered with forests and plantations, which are confined to the small well-watered region of Knysna in the south, and portions of the Eastern Cape, Natal and the Eastern Transvaal, along the Drakensberg foothills.

The transition from rural to urban communities, triggered off by the discovery of diamonds and gold in the 1860's, has been consistent and rapid, and has led to the urbanization and expansion of the hinterland

to an extraordinarily rapid degree, to the extent that the Witwatersrand area, with Johannesburg as its centre, is the most densely populated urban area today. This urban development has initiated the industrial and economic growth of the land, which in turn has stimulated the development of the Union's few deep-water ports.

Recent industrial developments have seen the creation of new towns to house the communities concerned. Vanderbijlpark with its steel works, Sasolberg with its oil-from-coal plant, and the new towns in the northern part of the Orange Free State centred on the new deep level gold mines, as well as those growing up about the gold mining enterprises now centering to the east of the historic Reef. The natural corollary of this urbanization has been the rise of manufacturing industries, the gross value of output of which was about five and a half times as great in 1952 as in 1939 and is still increasing.

This has contributed to a spectacular advancement in building methods. Before 1940 the building industry was still geared to the essentially craft basis of building, with a large, mostly unskilled, labour force, having a range of materials—bricks, concrete, etc.—capable of forming only the carcase of the building. For the completion, all forms of mechanical equipment, plumbing accessories, ironmongery, steel window, and most other components, including timber products, had to be imported. Some interesting facts are contained in the contemporary reports of the construction of the two Roadsaals, that in Pretoria in 1889 and that in Bloemfontein in 1890. All joinery for the former was manufactured in the workshops of the contractor's father in the Orkney Islands, shipped to Durban, railed to the Transvaal border, transported to Pretoria by ox wagon, and built into the structure. The importations for the latter are both illuminating and extensive and included ironmongery, McFarlane's castings, zinc work from England and Holland, fibrous plaster decoration, painted and clear glass, parquet flooring, marble mosaic pavements, mantelpieces, ventilators, acoustic tiles, wallpapers, Parian cement, polished granite steps, cupola lights and heating apparatus, all from England.

Since those days, both the natural resources which have been uncovered and the industrial expansion which has occurred, has made the Union self-sufficient in the majority of both the basic materials and finishings, together with the greater proportion of mechanical and electrical components required. At first the transition from rural to urban communities was epitomized in the ubiquitous corrugated iron structures. This material has proved outstandingly successful in sheltering the floating population of the early mining towns, and is still a standard roof covering of the interior provinces. In the more sophisticated urban settings it is now being challenged by locally produced materials like asbestos cement, clay and concrete tiles and slates, as well as imported natural asphalte and asphalte sheeting.

Bricks have from the earliest times constituted a basic material, and to a limited extent natural stone has been exploited. For many years buildings were finished with plaster and paint or colour wash, but local climatic conditions caused rapid deterioration of such surfaces, and to reduce maintenance, unsightliness and to increase durability, other solutions have been sought. While much domestic work still exploits the cheaper finishes, large structures utilize mainly face bricks, precast terrazzo or concrete facing slabs or reconstructed stone. Natural stone, while it has played its part in important buildings, has a varied history. Many excellent granites are available at a price, and sandstone quarries have provided some good stones. But quarries have proved extremely variable, and since the demand has fluctuated so greatly, have seldom been consistently worked. Today there is scarcely a building mason to be found, and as the cost of using natural stone is so high, its exploitation is generally to be found in the form of decorative veneers. Some local marbles are used, but the better grades are usually imported.

The steel window, which achieved such popularity in the 1930's, is in general use, and this was one of the first components to be fabricated locally. At first imported sections were used; now a high proportion of sections are manufactured in South Africa. Much of the local manufacture of building components was undertaken in the first place by subsidiaries of well established British and European organizations. Not only did they provide a locally produced article at a competitive cost but they stimulated the establishment of locally sponsored manufacturing organizations. One interesting development is in the manufacture of lifts by a subsidiary of an important principal in the United States of America. The South African built article is now being exported in world markets.

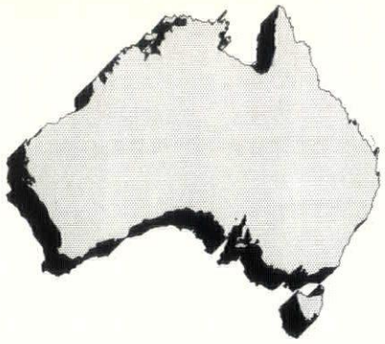
An important branch of the manufacturing industry making hard and soft boards is also exporting on a large scale. Until comparatively recently all plumbing was imported. Today a large proportion, including vitreous ware, is locally made and is competitive in both quality and price.

South Africa has not been well endowed with natural timber. The forests that existed and which produced the famous Cape Yellow wood and Stinkwood have been denuded—what remains of the Stinkwood production is found in limited quantity in special furniture. Practically all timber used in building and joinery has to be imported, most of the hardwoods coming from Central Africa and softwoods from Scandinavia and the United States. The timber industry is, however, turning its attention to the production of locally grown structural timber in which the 'patula' and 'caribea' pines are playing a major role. These plantations mature in from 35 to 40 years, giving a characteristically open grained wood which, with proper care in growing and conversion, is proving eminently suitable for structural purposes. It is anticipated that within a period of some ten years or so, the local industry will be able to supply all structural requirements. As a result, much attention is being focused on the development of timber framed buildings for domestic and similar purposes.

The local manufacture of steel has progressed to the stage where export has begun, and in rolled sections, plates and sheets, local requirements can be met. Non-ferrous metals are for the most part still imported. Recent developments in plastics have stimulated local industry, and much of this material now finds its way into the fabric and finishes of buildings. The advent of the window-wall and other proprietary forms of wall cladding, while drawing on overseas experience, has resulted in the further establishment of local factories. Sheet glass is manufactured in the Union, but special glass and plate glass is imported, while in ceramic tiles and fittings local production can meet most demands.

Both the National Building Research Institute of the Council of Scientific and Industrial Research and the South African Bureau of Standards have recently contributed important research and investigation to the standards of building and performance of materials. The former has carried out basic research on minimum standards pertaining to dwellings, in all aspects including construction. It has realized much of its work in the development of townships for the urban Bantu population, in which a great deal of money and effort has and continues to be expended. The township has not only benefited from the work of the NBRI in housing, but in schools, clinics and the layout as well. Much work has been done on primary and secondary schools for the white population, and basic research is now proceeding on hospitals. The SABS has produced a large number of specifications pertaining to building materials and where such specifications have not yet been drawn it is customary to utilize those of the British Standards Specification. Moreover the SABS has produced a number of Model Building Regulations and Codes of Practice which are gradually being assimilated into by-laws promulgated by local authorities.

It will be seen from this brief review that the position regarding the supply of building components has undergone a vast change since the 1930's, and with the exception of recently introduced special and patented components and special items including hardware and electrical, the Union is rapidly becoming self-sufficient. On the other hand the mechanization of the building industry is still embryonic and an economic balance in favour of increased mechanization in general has still to occur. There are, however, signs that the transition is taking place, particularly in relation to large scale contracting organizations, and the trend is being encouraged by the mechanistic façades and aesthetic experiments which recent developments in America and Europe have presented. Traditionally and for economic reasons the bulk of large structures have been erected with reinforced concrete frames. There are few cases where structural steel has been used, other than for roof construction, and there is little evidence to show that the position is likely to alter much in the future. It is in the cladding and finishing of such frames that the more spectacular variations are likely to occur, with due consideration to performance, durability, maintenance, and the varied climatic conditions to be met with in the Union.



AUSTRALIA

At each of the four corners of one intersection in the business district of Melbourne deep holes are being excavated behind builders' hoardings. To the west along Bourke Street a racket of rubble and wreckers' dust, steel skeletons and rising curtain walls suggests a city bravely recovering after some major disaster. But there has been no major disaster (none can be found in Australia's brief history); there has been only a comparatively stagnant and dispiriting phase of building development. The stagnation was of course the result of the second world war, with its subsequent shortages and controls which directed 80 per cent of the building industry's resources into housing. These were drab years spent making cottages with a limited range of home-grown building materials. About 1954 industrial and commercial building revived and in 1956 there came a boom which threw the industry into the greatest activity since it made the grotesque stucco palaces of the late nineteenth century. Building expenditure for the year 1956–57 amounted to £361,000,000—more than a quarter of the total investments in Australia for that year. In 1957–58 buildings costing more than £100,000,000 were completed in Sydney alone. Since then the boom has become less exciting and more of a habit. The industry is now merely fully employed and expecting to participate with reasonable profit in the unlimited future which Australia nowadays pictures for herself (all going well in Asia).

The new confidence has concrete foundations in big public works, the most impressive of which is the enormous project in the Snowy Mountains where coastal rivers are being diverted through the range back into the dry interior. And it is ornamented with non-utilitarian buildings, like Sydney's opera house and Melbourne's music bowl, which would have been politically impossible a few years ago. With the lifting of restrictions on 'non-essential' buildings, the construction of private houses meanwhile has dropped from the record 83,000 built in 1951 to an estimated 70,000 this year. Social workers and Opposition politicians warn with good reason of an impending calamitous return of the housing shortage, even though the number of separate houses under construction per head of population must still be close to a world record. The shortage cannot be estimated very scientifically. It is measured not by the number of homeless but by the number wanting more comfortable homes and the main obstacle is not a shortage of builders, labour or materials, nor of money in the weekly pay envelope. It is a shortage of capital, a chronic condition of Australia. There seems no limit to the dribs of money available for non-durable goods, but continually the flow of money for building investment strikes blockages. However, the Government, the insurance companies and the banks do contribute their money to the building industry in another way: by commissioning some of the most elaborate of the new curtain-walled office blocks which are transforming the recently-moribund central areas of the capital cities.

The decline of housing to little more than half the total output of the building industry has re-animated the architectural profession which was never greatly concerned with the cottages. It is not unusual for a man to be operating a satisfying little private practice five years or so after graduation. The Royal Australian Institute of Architects now has 2,600 members. The drift from housing has also caused a reshuffling in the builders' ranks. The once-crowded field of 'little' builders—the family teams and the random spec. builders—is thinning out. The only way to make a success of housing speculation now appears to be the big way: a hundred 'executive's villas' at a time, a 'package deal' with finance arranged for the furniture as well, a multi-coloured marquee, and the Minister for Housing flown to the site by helicopter to launch the parade.

In bread-and-butter building materials Australia has always been self-sufficient if not opulent. Today the production of bricks, steel, cement, terra-cotta and hardwood is steadily if unevenly on the rise, keeping pace with the rapidly growing population. The most obvious deficiency of the land is in softwoods. For all practical purposes Australia has no native softwood. The ubiquitous eucalyptus grows in hundreds of regional varieties of texture and colour, from the deep rust red of the western jarrah to the sun-bleached northern silver ash—an albino wood as light as an ocean beach. Some, like jarrah, is practically impervious to dampness and rot. Much of this is exported as railway sleepers. Other varieties, like the straight yellow mountain ash which climbs to 300 feet in the south-eastern highlands, do almost any indoor job beautifully and well: framing, flooring or furniture. All of this wood is hard, and unstable while carrying any moisture, requiring diligent kiln-drying, which was early developed in Australia. It supplies about 80 per cent of the timber requirements of the building industry. The remainder is made up of imports, mostly softwood. More than half of this is Douglas Fir, or 'Oregon,' from the USA and Canada. Some is 'Baltic'—Scandinavian pine ready-milled into flooring and weatherboards, and some is Radiata Pine from New Zealand's plantations. About one-quarter of the timber imports, to the value of some £3,000,000 annually, is spent on figured timbers from Borneo, Malaya, New Guinea.

While the local bread has been wholesome, Australia developed a habit during a century and a half before 1950 of reaching abroad for the marmalade or peanut butter. While she made her own roof tiles and floor tiles, she imported the decorative tiles for the walls from the UK, Italy or Japan. While she makes now two-thirds of her sheet-glass requirements she still imports all her plate glass, mostly from England. No plate glass is made locally because nobody has yet considered that the local demand—two to three million pounds-worth yearly—justifies the expense and trouble of setting up the machinery. In view of the international entanglements of the glass industry it just seems easier to buy the stuff ready made. This typifies the Australian attitude before the Second World War, but since then a new concept of Australia as an industrial power and a factory for Asia has grown. Now there are proportionately more factory workers in Australia than in America and the ever-increasing load of refrigerators, power lawn-mowers, television sets, room-conditioners, and labour-saving devices which burden the working man is almost entirely made in Australia. The economy still rides on the sheep's back but exports of industrial goods, including iron and steel products, aircraft, vehicles and electrical equipment are rising continuously. Manufactured goods now amount to more than one fourth of the export trade. There is even the faintest hint of an architectural device emanating from Australia with these products. The adjustable glass-louvre window—which is one of the country's three contributions to domestic technology along with the development of fibrous-plaster sheeting and stainless steel sinks—is being exported in sizable quantities from Queensland. Mainly these airy windows go to Asia, but others to the value of £30,000 annually are imported by the USA and double this quantity is bought by Great Britain. Galvanized iron sheeting worth some six million pounds is exported each year to New Zealand and Asia.

All the time the Australian content of building is rising. About three-fourths of all hardware, light fittings and sanitary ware used are Australian-made. The remaining fourth is welcomed for variety rather than to make up a shortage. Most of the gas and electrical stoves and virtually all refrigerators and air conditioners are made in Australia, and quantities are exported. About 97 per cent of the 140,000 tons of structural steel consumed yearly by the building industry is locally produced. The remainder is mostly giant sections which are not rolled because the manufacturers consider the demand is limited. A few prefabricated aluminium buildings are imported and about the same quantity of steel prefabs is exported. Plastics of all kinds are made and used with an enthusiasm which suggests there might be a special appeal to Australians in the smooth, cheap, intricate precision of the moulded product. On the other hand, no wallpaper is printed in Australia. The little that is used comes from England or Japan.

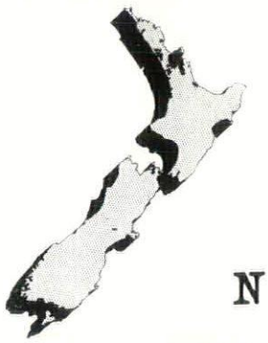
Practically all the millions of gallons of paint used on new buildings and in gingering up old buildings with 'contemporary' fashion hues are produced in Australia. The sources of the paint industry, with its £30,000,000 annual output, are significant. Nearly all the companies which desperately compete in

this field are dutiful sons of absent parent companies in Britain. The term 'Aust.' in parenthesis, as in Joe Smith & Co. (Aust.) Pty. Ltd., is familiar to Australians, a constant reminder that most of the industrial boom is founded on initiative and ideas from abroad and as much as twenty-five per cent of it on outside capital. There is no real resentment of this. Australians know they need outside money. They invite it and welcome it. All the same, they are impatient to be independent of it.

A company from overseas, however established and distinguished it is elsewhere, needs more than 'Aust.' in its name to be ensured of success. Manufactured products usually need some adaptation to the Australian market. Most success stories of the industrial race surround those products which have somehow subtly flattered the new Australian pride in her own progress. The outstandingly popular car, for instance, is not the ponderously chromed automatic V-eights of the Ford Motor Co. of Aust. Pty. Ltd. or Chrysler Aust. Ltd., nor the thrifty four cylinders of the British Motor Corp. (Aust.) Pty. Ltd., which somehow look apologetic on a bush road. The car which has practically cornered the market with about 48 per cent of total car sales is the only car claiming to be 'designed especially for Australian conditions': the Holden, by General Motors-Holden's Ltd. This medium-sized six is not only as fast and tough as an Australian Rules footballer, it also has a cynical appreciation of the nuances of Australian taste in every line from its two-tone plastic upholstery to its moderate chromium tail-fins: not too big, not too small.

Not every European or American has the ability to convince the Australian public that his product will make life more delightful. The waste-paper baskets of architects and builders are seldom entirely empty of direct-mail advertising pamphlets from England and the Continent. Some of these announce excellent and proved products with a potential future in Australia, yet sometimes they seem inapplicable because the presentation is out of touch with realities as well as the psychology of the time and place. The British bathroom, to give a minor example, is a different sort of room from the three-compartment Australian infernal machine for bathing, and sanitary or ceramic ware designed for one sometimes looks out of place in the other. The Australian buyer appears unmoved by a nice sophistication in a finely-drawn pattern on a tile; at the same time he or she is well aware of the potentialities of efficiently designed built-in fittings and usually can be relied upon to fall for any bold, vivid colour contrast or anything labelled 'pressomatic.'

It is not easy but by no means impossible to define Australian tastes and demands in every field. Usually they lie somewhere along the line between the English and the American, never quite coinciding with either. Any product which can catch these subtleties and present itself to the Australian public with a convincing promise of brighter living—anything in the way of tasty marmalade on buildings—can feel assured of a wide, secure and rising market.



NEW ZEALAND

Geology, topography, climate and earthquakes all distinctively affect building in New Zealand. Geologically, New Zealand is very young. The land is so recently raised above the sea that natural erosion is in its earliest stages. Little durable stone is exposed and foundations are commonly poor; right down to a value of a quarter of a ton per square foot in areas of recent volcanic deposition. Topographically, much of the country is very steep. Settlements begun on flat lands a hundred years ago have long since climbed the sides of flanking hills, providing excellent views but conditioning much of the planning.

Within these limits, the climate varies widely from the semi-tropical humid north, through windy wastelands, to snowlands of the Southern Alps and the parched plains of central Otago, but generally speaking the populated areas are rich and green. The very highly actinic quality of the atmosphere allows intense solar radiation, posing acute problems in curtain walls, paints, bituminous roofs, exposed woodwork and the like. The combination of high winds and heavy rain demands great care in weathering of joints and permeable materials. Consistent winds expose weaknesses in window frames and wall cladding. The clear atmosphere allows considerable temperature differences between day and night, inducing condensation problems.

All New Zealand is subject to earthquakes; many heavily populated districts are built over known faults. Despite fairly frequent destructive earthquakes, it was not until some twenty years ago that a standard code of by-laws was established covering the earthquake resistance of buildings. Until then construction was largely rule of thumb: timber-framed buildings were known to be fairly safe; reinforced concrete was known to be safer than masonry. Nonetheless after the memory of earthquakes had weakened in any locality, even such simple rules were disregarded.

The first code, which is still in force, laid down the horizontal loads to be carried by various elements in buildings. The code was required urgently, giving no time for research. Japanese and American codes were studied and amended and the New Zealand code was made more rigorous for good measure. It is now considered that the code is unsuitable in many respects. It does not control the separation of buildings, so that buildings having differing natural frequencies can damage or destroy each other. It takes little account of the effects of flexure or of the reduced stresses in flexible buildings. It does not lay down requirements against vertical ground movements. It takes no account of the varying probabilities of shock in different parts of the country. It is to be expected that a new code will be produced in the next few years.

The effect of the present code was, initially, to encourage the use of timber, steel or reinforced concrete framed buildings and to render such frames very heavy and clumsy. Engineers are now thinking more deeply into the problems and are solving them increasingly in terms of the 'shear wall': concentrating seismic loads in certain walls and freeing the remaining frame to take normal loads only. In general, this is reacting in the same direction as international aesthetic trends—towards the heavy core and the light perimeter. In certain instances the conception of the frame is abandoned completely and all loads are taken in box-shaped structural elements.

Brickwork has proved quite unsuitable unless reinforced and tied back to other structure capable not only of taking all seismic load, but capable also of being sufficiently rigid to avoid cracking of the vulnerable brick wall. Probably as a result of these factors, bricks are not extensively manufactured and are very expensive. Such small quantities of stone as are quarried are mostly used in the form of small decorative areas of rubble walling. Stone as an ashlar facing material is uncommon, expensive and generally imported.

Timber is New Zealand's maid-of-all-work in building construction. In the form of a light frame, it is the basis of most houses, schools, community centres, small churches, and even small hospitals; and its importance is steadily increasing in engineering. In almost every building the partitions and suspended ceilings are of timber; in many concrete or steel buildings, the roofs, and floors are still of timber. Tradition has rendered the techniques of timber use so automatic that the phrase 'according to the best trade practice' could almost completely specify the construction of a normal house.

As the Europeans found it, New Zealand was almost completely covered in forest. For many years trees were the enemy of the settler. The prodigal use of timber, which was thus encouraged, extended on into the period when supplies were dwindling. For many years Kauri has been almost unobtainable; now Totara is nearly exhausted and Rimu, Matai and Kahikatea are becoming scarce. All these timbers are softwoods having a singularly wide range of virtues—strength, ease of working, good appearance, freedom from defects, resistance to weather and decay.

In this century enormous pine forests have been planted and pine is gradually gaining acceptance as a building timber. As at present milled, it lacks many of the virtues of the native woods, but it is perforce employed more and more for framing or for painted interior dressed timber. To render pine

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acceptable to an industry accustomed to lavish supplies of native heartwoods, timber preservation techniques have been developed further and used more generally than elsewhere. Traditionally, New Zealand imports Mahoganies for veneers, Douglas Fir (known as Oregon) for heavy structural members, redwood and cedar for very high quality external joinery.

In-situ concrete is the other commonplace building material. Widely used before, its employment was boosted by the earthquake code. The standard of concrete-making is high—reputedly higher than in England—but precast and prestressed precast work has been slow to gain favour. It has been felt that structural continuity—necessary for earthquake resistance—is difficult to obtain with them. The growth of use of these elements is now, however, rapid, because in-situ post-tensioning techniques are solving problems of continuity, and prestressed work is competitive in cost and it absorbs a smaller quantity of imported material. The whole basis of the use of concrete may thus be changed within a few years.

Although New Zealand is a land of corrugated iron roofs, concrete roofing tiles are common. Their production seems to have swamped that of clay tiles and they are invariably of the Marseilles pattern. Curiously enough, in a country where precast concrete is uncommon, excellent concrete shower trays, drainpipes and washing-tubs have long been available, all with a very high finish. Concrete blocks are also fairly common, although their use in the form of unreinforced walls has been limited in the same way as bricks. They are, however, much more readily used in conjunction with reinforcement and in some parts of the country their use is so common as to constitute a local vernacular. (This reflects the fact that, although the country is so small, its topography is such that transport is very expensive. Most materials are produced and used everywhere. Those produced only in certain areas are equally limited in their use.)

Traditionally, the bulk of the area of external walls in fire-resistant buildings has been in concrete, covered in cement plaster. It has been no more successful than would be expected. Although New Zealand's atmosphere is clear, staining does occur. Coloured plasters have been extensively used without great success. Brick and stone facings have been uncommon on account of cost. Curtain walling offers one solution, and others which are increasingly used are faience, glazed tiles, mosaic tiles, terrazzo and precast or in-situ concrete with a finished face. But basically, even today, in the economical building there is no substitute for plaster.

There are thriving industries manufacturing gypsum plasterboard, fibrous plaster, asbestos cement, hardboard and softboard, other linings of all sorts, insulating materials and acoustic materials. Practically all paint is locally manufactured, as are limited ranges of light fittings, electrical equipment, sanitary ware and plumbing fittings. The manufacture of articles in stainless steel sheet has been widely developed, to a point where it is used far more freely than in England. Metal windows are in common use and those imported can so far compete economically with the products of New Zealand factories.

The country has no developed resources of iron, but the possibility is being investigated of establishing an iron and steel industry based on local ironsands. All steel is imported, mainly from Britain and Australia: this tends to raise the relative cost of steel-framed buildings, but nevertheless the steel portal frame is the norm for wide-span roofs.

New Zealand's trade difficulties in maintaining a balance of payments lead to recurrent periods of drastic import restrictions, and redoubled efforts to exploit products of local origin or manufacture. A side result is the increasing manufacture under licence of British and U.S. designed articles. For political or economic reasons there are occasional periods of relative respite, leading to stockpiling of imported goods and thus softening for a time the full impact of the next round of restrictions. On grounds of ready availability as well as economy the advantage remains with depending on locally-produced components. Nevertheless many building needs can be met only by the use of overseas products, by reason of the impracticability of local manufacture, or to permit techniques of proven advantage, or else to avoid uneconomic use of costly local labour. Instances are metal sheets in all forms, specialized equipment of buildings, and site mechanization plant.

It has been estimated that in normal conditions imported goods represent about 12 per cent of national building costs. Were local products to be substituted wherever possible, the imported content might be reduced to about 5 per cent. Imports are the sole source for steel and all other metals, for bitumen and many mechanical fittings, for lifts, boilers, radiators and major electrical gear, as well as for such everyday essentials as window glass, plumbing pipes, door locks, resilient floor coverings and corrugated metal roofing sheets. The country is partially dependent on imports to maintain adequate supplies of many items also made in New Zealand, such as baths, metal windows, builders' hardware, sanitary fittings, mechanical equipment and appliances, roofing materials, putties and mastics.

In a rapidly expanding population (expectations are for a 35 per cent increase to 3,000,000 people by 1975), the building industry provides, directly and indirectly, the largest source of employment apart from the primary industries on the land. It is, however, less of an industry and more of a trade than in Europe or North America, although the same trend towards industrialization is evident in New Zealand as elsewhere. Mechanization is moderate, labour and materials costs are both high; so speed of construction is modest and building costs are high. The one way in which mechanization has really taken charge is in the use of ready-mixed concrete which has become commonplace in jobs of all sizes. The standard of workmanship is about as variable as in England but there are today not very many demands for refinement and craftsmanship—there is always so much more to be built than there are men to design, organize and build it.

SOME ECONOMIC ASPECTS OF BUILDING IN THE DOMINIONS

by Marian Bowley

The four preceding articles may leave the reader somewhat bewildered by the complexity of the differences between building practice in the four Dominions. They illustrate indeed the way in which building reflects diversity in social organization and cultures as well as in economic development and resources. Interesting though the issues raised by such general reflections are, it would be inappropriate to discuss them here. The object of this concluding article is less ambitious; it is intended merely to try to indicate the economic significance of some of the differences between building in the four Dominions as well as to show what similarities exist. In this way it may be possible to provide some idea of the character of the potential markets in these Dominions for the building resources of Great Britain.

One of the most marked differences between the Dominions is in the sizes of their populations. The most recent figures are as follows:

Canada (1958 est.), 17,000,000; South Africa (1951), 12,700,000; Australia (1957 est.), 9,700,000; New Zealand (1958 est.), 2,300,000.

The population of New Zealand is thus about the same as that of the county of Middlesex in 1951, while that of Australia is about the same as the counties of London, Middlesex, Essex and Surrey added together in 1951. Even the population of Canada is only about a third of that of the British Isles. Actual size of population, though important, does not of course offer more than a very rough guide to the size of the market for building resources. The extent to which population is increasing is also a factor to be taken into account, as, for instance, in Canada, for if the standard of accommodation is to be maintained, increases in population provide automatic increases in demand.

These demographic facts are among the most easily identified influences on the demand for buildings, but wealth and the extent to which the population is aggregated in towns are also significant. In general the wealthier and the more urbanized the population, the more elaborate and complex are its building requirements, and the more buildings it requires besides those for domestic purposes. The demand for public buildings of all sorts usually increases with rapidity; not

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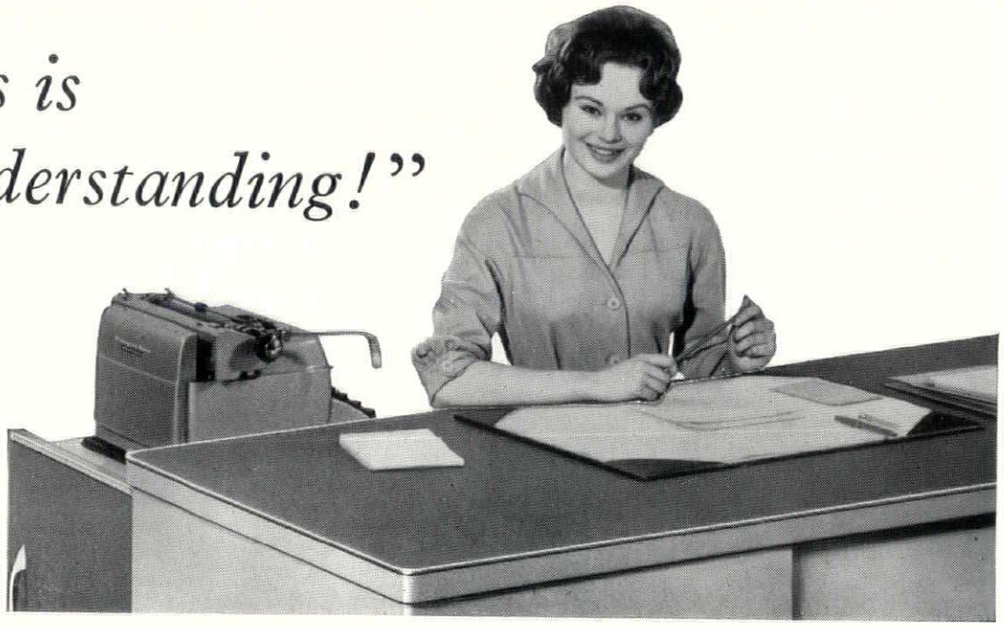

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only churches and schools, but places of entertainment, shops and government and commercial buildings are needed. Industrialization creates its own demand for buildings, frequently of types differing from those required for the ordinary process of living in towns. If increases in wealth, urbanization and industrialization all occur together, the increase in demand for building resources in general will be accelerated and, also, the demands for specialized materials and techniques of building. There can be little doubt that in Canada this type of development is proceeding rapidly and that it is significant also in Australia. In South Africa, where about five-sixths of the population is classed as non-white, the outlook is somewhat more obscure owing to the possible effects of the policy of Apartheid on building requirements. New Zealand, on the other hand, seems likely to remain a predominantly agricultural country with a rural population. In 1957, for instance, only about one-third of the value of the national product was derived from manufactures and mining, while in Australia the proportion was more than half.

Urbanization and industrialization have, however, other consequences which are particularly relevant to this article. A great variety of building materials locally available have proved suitable in the past for the erection of the small domestic and farm buildings of mainly rural populations. Indeed the possibility of using local materials has been important in facilitating the settlement of the new countries. The technical requirements of buildings needed in large towns and for industrial installations, as well as to provide for considerations of prestige, are not so easily satisfied. The types of buildings required and the materials suitable for them are much more restricted, and are therefore more uniform between countries. If they cannot be produced locally in sufficient quantities they have to be imported. Iron, steel, cement, asbestos-cement, various building boards and glass, for instance, as well as innumerable fittings and components, have all entered into international trade during the spread of urbanization and industrialization. Although the main effects of this have been most conspicuous in towns, rural areas have not been wholly unaffected. Rising standards of living, improvements in communications and transport and the gradual elimination of local characteristics, typical of modern civilization, have opened up rural markets which had previously depended on locally produced building materials. In some areas this process has been accelerated by the exhaustion of indigenous materials. It is noteworthy that all the articles on the individual Dominions draw attention to such changes.

From the point of view of producers of materials and components in this country, however, the practical significance of these developments tends to be limited by a number of factors. As the Dominions have increased in population and wealth and have become more industrialized, it has become economic, or at least commercially possible with the aid of protective tariffs, to produce many of the major modern building materials locally. South Africa used to import all her glass and plumbing requirements; now she produces her own sheet glass and a large proportion of her plumbing requirements, and these are regarded as competitive in quality and price. Similarly both Australia and Canada now produce large proportions of materials and components which used to be imported. Even New Zealand is producing rather more of her own requirements. The establishment of these local industries has in many cases been facilitated by the setting up of subsidiary companies by large producers with headquarters in this country.

Development of local production is naturally more important in the case of those materials whose transport costs are high in relation to their value, and especially so in the Dominions farthest from this country. Nevertheless it will be appreciated that the establishment of domestic industries is not always the only alternative to importing from Great Britain. New Zealand, for instance, is nearer to Australia, and both are accessible to Asia and America, while Canada, being geographically a part of the North American economy, can easily supplement her own resources from the United States.

It appears evident then that although the total market for building materials in the Dominions discussed in this survey is likely to continue to expand, so is the capacity of

[continued on page 228

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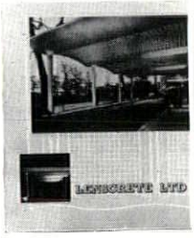

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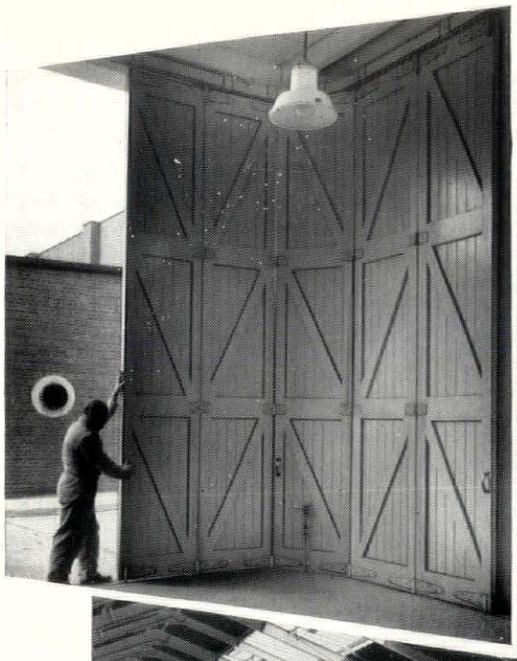

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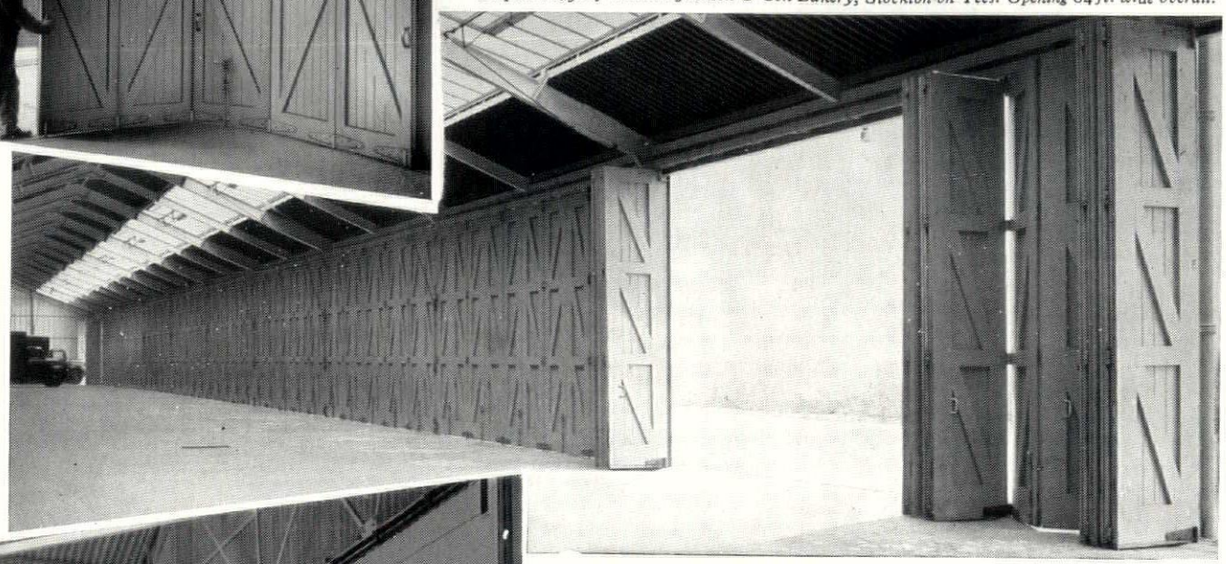

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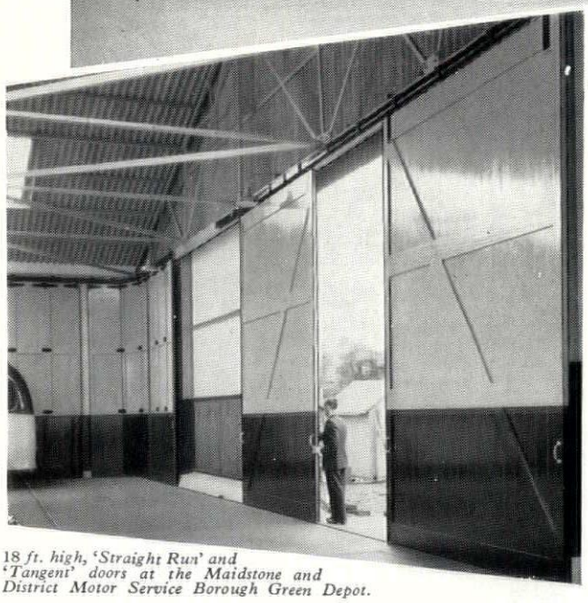

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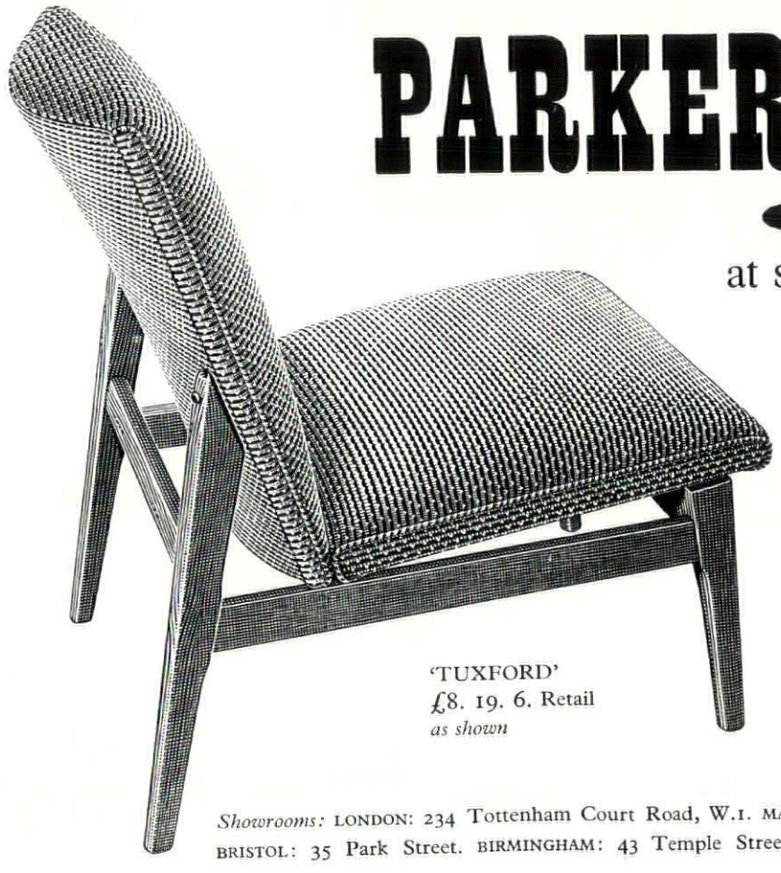
the Dominions to supply themselves, while in any case Great Britain is not necessarily the most convenient source of supply for imports. It is, moreover, just those items which are of major importance in modern buildings which tend to be affected by these developments. Only in New Zealand is local production unlikely to develop far and growing Australian industries may well compete successfully with Great Britain.

There may well nevertheless be a future for the development of exports of building resources of a rather different type. It is evident from the articles on the individual Dominions that though they differ in many ways, they resemble each other and differ from Great Britain in several important respects. They are all in varying degrees short of capacity to produce a wide variety of highly specialized materials, components and equipment. Even Canada, which is undoubtedly the best equipped industrially, has been shown to have a potential market for a considerable number of such goods, ranging from steel components and fittings to prefabricated houses.

Again, all the Dominions are short, judged by standards of this country, of skilled labour and also, particularly the smaller ones, of technical and professional personnel. This suggests that there are openings for the export of these skills. This can take place in various ways. Building components can be designed for use by unskilled labour and complete prefabricated buildings can be developed for export. Designing, technical and supervisory staff and key skilled workmen of contracting firms with headquarters in this country can be exported for special work. Since the war interesting developments have taken place along all these lines. Some of the firms which developed prefabricated buildings for use in this country have turned their attention to export. Sometimes such ventures are controlled directly from headquarters in this country; in others subsidiary companies are established which make use of the production and experience of the parent company. In effect these companies are exporting the technical knowledge and building skills more plentiful in this country than in the Dominions, and also taking advantage of Britain's more varied engineering and building material industries. The size of the home market as well as the longer period of industrialization of Great Britain are, from this point of view, important advantages facilitating the creation of a great variety of specializations in knowledge and production capacity. These developments, it will be observed, are similar to those which took place last century in the civil and structural engineering industries.

None of these openings for trade with the Dominions, however, can be exploited solely on the basis of experience in this country. All the articles on the Dominions stress the difference in requirements of the different areas. Some of the differences are the result of local traditions and tastes, but others arise from differences in technical needs and of climate. In Canada, for instance, the building season is short, in New Zealand the earthquake risk has to be taken into account. In South Africa and New Zealand local transport problems are particularly difficult and so on. A further complication is created by the fact that building regulations differ both between the Dominions themselves and between them individually and this country. Success under such conditions must depend to a substantial extent on detailed knowledge of local conditions.

This problem of the local diversity of requirements necessarily raises the question of how far Dominion markets are worth cultivating. If the market for a particular product is small and uncertain and requirements much different to those in this country, the special adaptation of the production processes involved may not be worth while for producers with thriving markets in this country. This suggests that the prospects for a thriving export trade in building resources might be improved if there were some agreement to reduce the non-functional differences in requirements for particular materials and components. Important work is done by the Building Research Station and the British Standards Institution here in defining technical requirements and properties of materials and components for particular purposes. It might, for instance, be extended in co-operation with the Dominions to help provide a scientific basis for rationalization of requirements.



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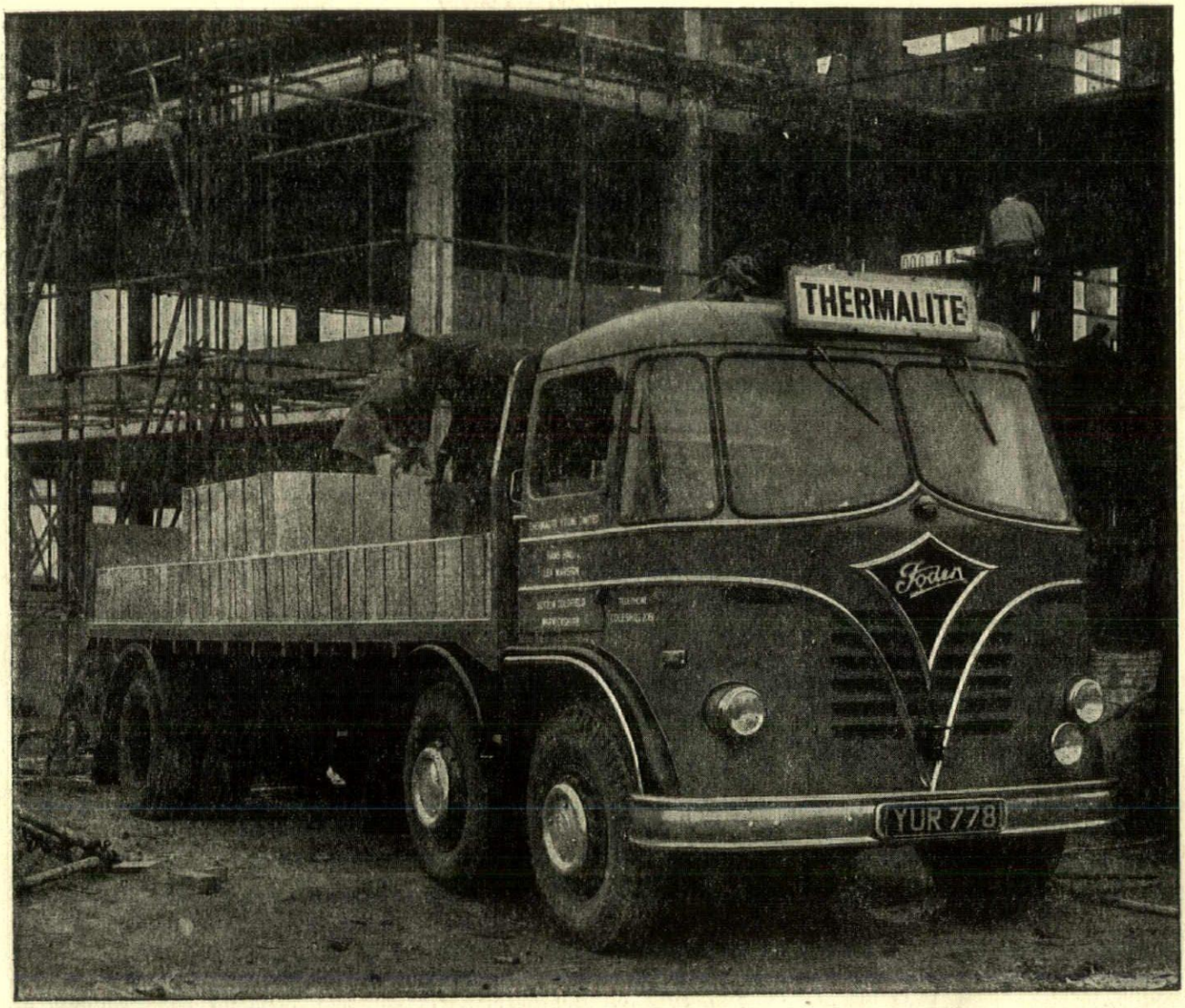

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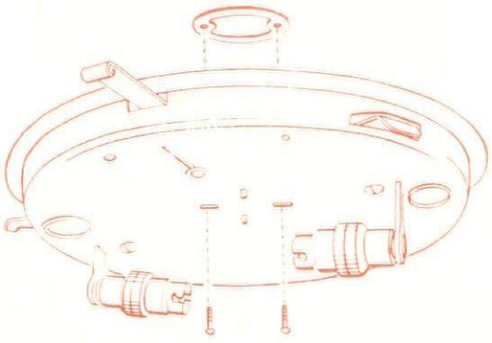

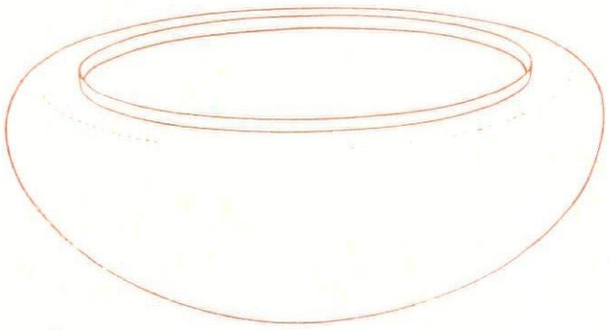

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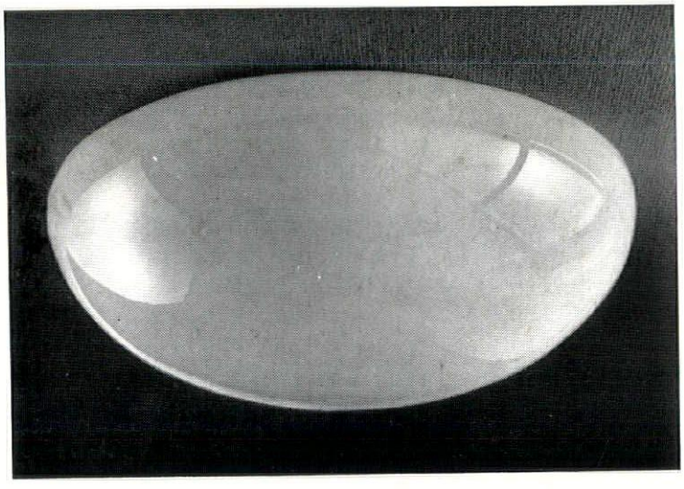

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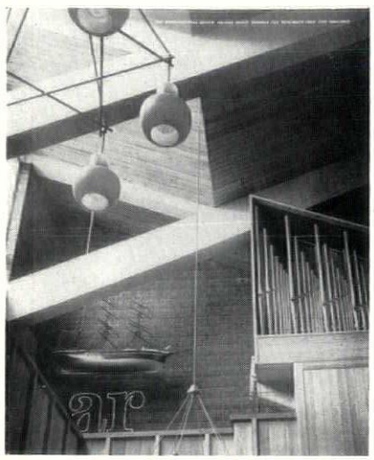

This month's cover shows an unmistakably Scandinavian interior—in the East End of London. The new Danish Seamen's church in Commercial Road, built to replace the earlier one destroyed during the war, is the work of the Danish architect Holger Jensen, in collaboration with the English firm of Armstrong and MacManus. Its unusual, well-detailed interior is described and illustrated on pp. 261-264.

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BOOK REVIEWS

Magnificence Abroad

THE PUBLIC BUILDINGS OF WILLIAMSBURG, COLONIAL CAPITAL OF VIRGINIA, AN ARCHITECTURAL HISTORY. WILLIAMSBURG ARCHITECTURAL STUDIES, VOL. I. *By Marcus Whiffen. Colonial Williamsburg, distributed by Holt.* $12.50.

Cries of 'Varsity Four,' 'American Four,' struck the gentleman from *The Times* as new on June 9, 1869. The first Oxford-Harvard four-oared race was to be rowed in August; but this 'unexceptionable' June morning marked the two-hundred-first Encaenia since the Sheldonian Theatre opened. Wren's partly-flat roof (rebuilt) shook to the 'uninterrupted din' as the Undergraduates proceeded to shout down the Vice-Chancellor, the Public Orator and the Prize Men. Nobody but John Andrew Doyle heard his recital of his Arnold Prize Essay on the unusual subject set for 1869: 'The English Colonies in America before the Declaration of Independence.'

Less raucously greeted is to-day's book on a segment of American history seen through British eyes. Marcus Whiffen has won for it from the Society of Architectural Historians the Alice Davis Hitchcock Medallion for 1958. May it live as long as Mr. Doyle's writings. It is a study of the fulfilment of architectural needs in a new seat of government: the capital of Virginia next after Jamestown, named for William III. and built during the years between Wren's late work at home and Jefferson's early architectural efforts in Williamsburg itself. Depicted in a tenth and last chapter is the fate of the little city (population 1,800 at most) after removal of the capital to Richmond in 1780, and its restoration-reconstruction since 1926 by generosity of John D. Rockefeller, Jr.

Mr. Whiffen, resident in America as Mr. Doyle was not, left none of his knowledge at home and found abroad much unexploited material. Combining these assets, he has dovetailed the documentary edges as neatly as an eighteenth-century joiner. The significance of dispatches to London is sharpened by news from the Islands. Both are matched against Virginia manuscripts (four reproduced as appendices), archaeological reports, and a variety of pictorial records. Even Wren's Sheldonian roof shows up among the ninety-five illustrations (figs. 25 and 26, not 22—one of the few printing mishaps, the worst being the confusion of a 'Thomas' with Gilbert Leigh [*fl.* 1756–1792] of North Carolina and [1764] King William County, Virginia, joiner).

With a detachment seldom achieved by local historians anywhere, Mr. Whiffen maintains proper colonial scale. He concludes that the College, the Capitol, the Palace, Bruton Parish Church, the Gaol, the Debtors' Prison, the Magazine, Indian School, Playhouse, Courthouse, Mental Hospital, and all the rest 'belonged,

as many buildings of their time in the English provinces belonged, to an older tradition' than English Baroque and owed their composite effectiveness to axial placement *à la française*. But he feels for the prideful citizens and dazzled travellers to whom the 'Publick Buildings' of Williamsburg were unquestionably 'Magnificent.'

Mr. Whiffen's detachment tends, nevertheless, to obscure the obvious now and then. For example, he would like to know more of Thomas Hadley, 'engaged in England' as surveyor to the College. Some British reader, with wills at hand, may supply this want. American readers, noting the wife's name, will recall the portrait of Maj. Thomas Savage her father (*D.N.B.: quaere* origin; 1635 certificate from St. Albans, Herts.; reputed brother, The Rev. Arthur Savage from Sussex [M.A. Cantab.], Prebendary of Carlisle 1660–1700); and the activities of Capt. Samuel Ravenscroft her first husband, a founder of Puritan Boston's Anglican Church, 1686, and in 1689 (New England's version of the Glorious Revolution) a prisoner for adherence to the very Governor Sir Edmund Andros who in Virginia laid the College foundation on August 8, 1695. No wonder Hadley was 'pretty well in favor' with Andros! Precisely when was Hadley 'advanced £40 in England'? The intriguing fact is that on May 8, 1696, 'Thomas Hadley of James Citty County in Virg[a] Gent.' gave power of attorney to his 'Dear and Loveing wife Dyonisia' to recover money due him in *New* England. Due him for what? All the unattributed houses in Boston rush to mind. The question is open.

Louise Hall

Empire Builder

LOOKING AT ARCHITECTURE IN CANADA. *By Alan Gowans. Oxford University Press, Toronto, 1958.* 3 *gns.*

Canadian architecture starts French on the one hand, English and New-English on the other. Is it Canadian now? Mr. Gowans whose book on *Church Architecture in New France* (1955) and also papers in *The Art Bulletin* and the *Journal of the Society of Architectural Historians* have established him as one of the few experts on Canadian architecture of the past (Prof. Eric Arthur is another, M. Morisset a third, Dr. Hubbard a fourth) answers in the positive, but illustrates few and not the best recent Canadian buildings. Did he perhaps exclude Mr. John Parkin's work because it is not specifically Canadian? If so, that would dispose of one of the few criticisms readers may raise against a book which is by and large an undiluted pleasure, easy to read and easy to handle, amply illustrated and, as the bibliographical notes prove, based on a far from parochial knowledge of architectural history.

Readers in this country ask themselves primarily what in Canadian architecture qualifies for interest outside Canada. The answer is a number of pretty French-Provincial churches around Quebec, a number of Martello towers just like ours, the fine Province House (of 1811–18) at Halifax, Nova Scotia, of which Halifax, Yorkshire, might well be proud, the church at Niagara, which could stand at New Haven or Salem, and then, of growing size and pretence, the Paroisse at Montreal of 1824–9, which can seat 12,000, University College, Toronto, and the Parliament Buildings at Ottawa, the former Norman of 1856, the latter —before the fire of 1916—a virile Gothic of 1859. Either of these two, to repeat it, would be an ornament to any provincial British city. They are in any case the one by W. F. Cumberland born in London, the other by Thomas Fuller born at Bath.

But then Mr. Gowans deserts us. He still points out correctly that certain buildings of McGill University and the imposing City Hall of Toronto (by the Toronto-born E. J. Lennox) are Richardsonian, and that Bruce Price, the architect of the Château Frontenac at Quebec was a Boston man, but he is not explicit on the omen which these facts spell and he is all but silent on the acceptance of the skyscraper in Canada, although the skyscraper has completed what Canadian Richardsonians and Bruce Price had begun: the turn of Canadian architecture from England to the United States. If we are asked today —and mostly in vain—whether there is something specifically Canadian in contemporary Canadian architecture, we don't mean something to distinguish it from English but from American buildings. That surely is the greatest change in direction so far undergone by architecture in Canada, and it ought to have been commented on in Mr. Gowans's book. After all, Canadians—that is Anglo-Canadians—don't like being labelled Americans. Franco-Canadians are in no danger. Their identity is unmistakable. What then distinguishes Toronto from Detroit and Vancouver from San Francisco? We over here may be excused for not having an answer. Mr. Gowans should have one, but the one he has—certain recent churches in the province of Quebec and in British Columbia—is neither wholly convincing on the strength of style nor of quality.

N.P.

Detailed Reference

ARCHITECTS' WORKING DETAILS *No. 5. Edited by D. A. C. A. Boyne and Lance Wright. Architectural Press.* 25*s.*

One might say that the design of a building is only as good as its detailing, but it is often a neglected facet of design, partly due to the practice, in this country, of leaving the detailing until the contract has been signed and building commences, by which time it is detached from the design process and the architect loses interest. Again it often suffers from belated attempts to regain lost time or to make savings to counteract extras.

Architects' Working Details No. 5 is the latest in a well established series and should stimulate the interest of students as well as architects. Its principal value, however, is as a reference book for practising architects and their assistants, to provide inspiration for those already interested in imaginative detailing and to inject enthusiasm into those whose interest is lukewarm. It is not intended as a compendium of stock solutions to tricky or unusual problems of detailing but, by illustrating a number of good solutions, it aims to underline the relevant issues and the many possibilities inherent in any problem.

G.T.

Joiners' Handbook

THE DESIGN AND PRACTICE OF JOINERY. *By John Eastwick-Field and John Stillman. Architectural Press.* 42*s.*

One of the most objectionable features of present-day publishing is, to my mind, the pseudo textbook which, hoping for popularity, fails to trouble the reader with enough technical matter to be of any practical use, or in which the author allows himself to be carried away by what some public relations officer has told him about a new material. This book is innocent of these sins. I have been trying to fault it on some minor point, by remembering some fact likely to be missed—such as the effect of leaving timber which has been kilned specially to withstand excessive central heating lying around on a damp site. Sure that at last I have scored, I have rushed to the book, only to find the matter clearly explained (in this instance on pages 44 and 45). I consider it as clear and compact an introduction to a technical subject as one could wish.

I cannot do better than quote Professor Robert Matthew's introduction: 'When sections of this book appeared in serial form a year or two ago, in *The Architects' Journal*, it was evident that a new standard in textbook writing was about to be attained. This promise has been amply fulfilled.'

Frank Austin

CORRESPONDENCE

The Picture Wall

To the Editors,

Sirs,—Mr. Brawne's interesting article on 'The Picture Wall' has focused attention on some of the problems of displaying works of art in the highly artificial and exhausting conditions of the museum.

There is a further aspect of this problem which is likely to become even more serious in the future: that of catering for large numbers. Anyone who has tried to enjoy pictures at any popular Temporary Exhibition at the Tate Gallery during recent years will appreciate the point.

If more and more people are going to look at pictures—and increasing educational opportunity makes this likely as well as desirable—some radical changes will become essential. Either museums and art galleries will have to be considerably decentralized or some new way of showing pictures will have to be adopted. Bardi's exciting scheme at Sao Vicente seems to have wider applicability and would surely not only be 'a useful technique where a spoken commentary has to be illustrated with examples.' One can imagine a series of small auditoria placed around a revolving stage so that many groups of people could view at the same time—talking if they wish, or being talked to sometimes, or just looking.

The drawbacks the author mentions in some such scheme would surely be less serious than having to look at a painting over the shoulders of a burly man or through the feathers of a woman's hat. And one would be seated and therefore relaxed and more perceptive.

Yours, etc.,
Molly Harrison.

London, E.2.

Churchyard Outrage

To the Editors,

Sirs,—On a recent visit to the old church at Scarborough I took the enclosed photographs of 'improvements' which are being carried out there. I think that they merit the attention of the REVIEW.

In John Betjeman's 'Guide to English Parish Churches' the old headstones in Scarborough churchyard are described as magnificent. Now all those in the area west of the

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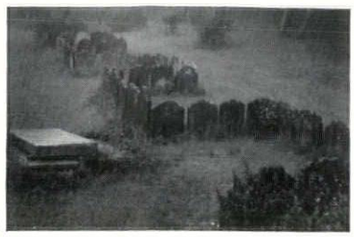


2

1, *broken urns and tombstones in Scarborough churchyard.*
2, *the zigzag row of the gravestones which have been preserved.*

church have been uprooted and piled up by the pathside like dominoes. It is apparent that no care whatsoever has been taken to preserve the splendid carving on many of the headstones. They have been stacked up with the face of one grinding into the back of another, and in many cases the slabs appear to have been deliberately destroyed. Fragments of urns, anchors, and inscriptions are piled by the pathside. About half of the headstones have been 'saved' and arranged in a neat depressing pattern at one end of the churchyard. They form a dead little museum.

So far the graveyard south of the church has not been touched and is still in its original 'untidy' state. In it there are many beautifully carved headstones decorated with sextants, anchors, rudders, urns, etc. I think it probable that unless steps are taken to prevent it, the qualities of this area will also be destroyed.

Yours, etc.,
Graham S. Hudson.

Leeds.

Housing Societies

To the Editors.

Sirs,—I am making a study of the early housing societies which were providing lodging houses and family dwellings for the workers in the period from 1840–1860, and I am anxious to obtain more information about Henry Roberts, the architect who designed some of the earliest 'model' dwellings. Apart from the notice in the Dictionary of National Biography and an article in your issue of May, 1943, and another in *The Builder* of January, 1952, there is very little material, and I should be grateful if any of your readers could let me know of any other references, letters, etc., which would help me in my research.

Yours, etc.,
(Mrs.) E. M. McWilliam.

65 Vineyard Hill Road,
Wimbledon, S.W.19.

MARGINALIA

Most Ancient Monuments

The Fifth Annual Report* (1958) of the Ancient Monuments Boards for England, Scotland and Wales is notable in that the first two monu-

* HMSO 1*s.* 6*d.*

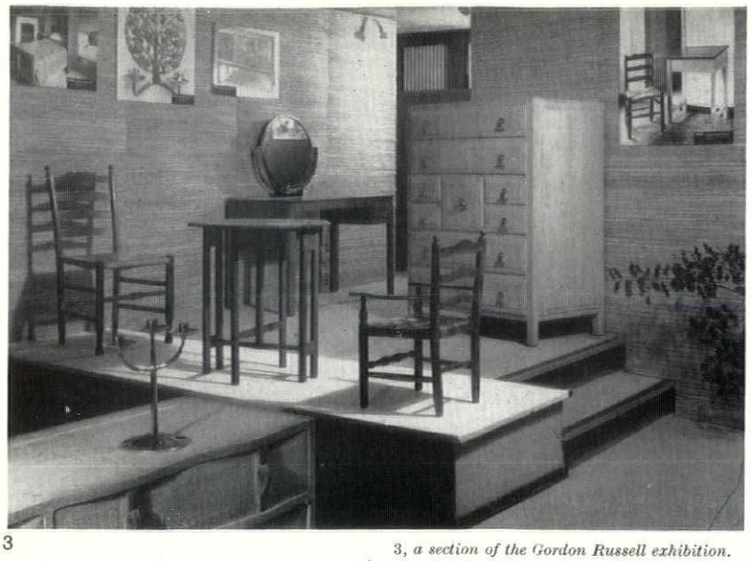
ments on which it reports are the oldest architectural works of any size in England—Stonehenge and Avebury. At the former, as is well-known, a major piece of restoration was undertaken in 1958, the re-erection of stones 57, 58 and 22 to reform the trilithon visible in eighteenth-century prints of the henge. Viewed in terms of its proportion of the total bulk of the monument, the re-erection of this trilithon must be the most drastic piece of restoration practised on any monument in England for many years, and raises some nice points in the morality of Antiscrape, Pleasing Decay, and the extent to which the Picturesque Mode of Vision is—or is not—tied to eighteenth-century scenery.

However, while this major work was going on, ancillary operations brought up two matters of technical interest bearing on the age and construction of Stonehenge. When Lintel 122 was moved, it was found to have two sets of mortise-holes on the underside. This has been interpreted as meaning that the lintels of the Outer Circle, at least, were 'prefabricated' to standard size and mortise-spacing, and that 122 had to be altered to accommodate a closing error due to inaccuracies in the setting up of the circle. The other matter was the exploration of the ramp leading down towards the base of Stone 56 (Great Trilithon), which produced a number of antler fragments among the earth with which the ramp-cutting had been backfilled. A radio-carbon dating of these should help establish a certain date for the building of Stonehenge as we know it to-day.

The report on Avebury is as brief in its essentials as it is welcome in its implications—that excavations should be resumed there, beginning with the elucidation of the so-called 'North Setting,' a smaller circle within the main ring of stones.

A Half Century of Gordon Russell

If ever there were need of living proof that modern design is rooted in the Arts and Crafts Movement, the furniture produced over the years by Gordon Russell at Broadway would furnish it. The recent exhibition at the Tea Centre, London, to



3

4

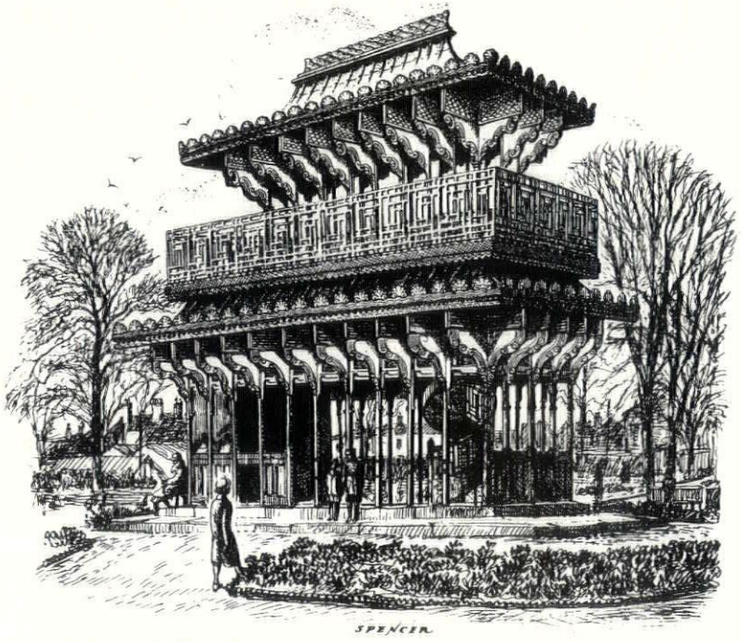
3, *a section of the Gordon Russell exhibition.* 4, *oak sideboard with laburnum handles made in* 1926.

celebrate Sir Gordon Russell's fifty years in cabinet-making, beginning with a school-boy piece of 1909, gave a remarkable picture of the continuity of development from late, but pure, Arts and Crafts designs, done under Gimson's influence in the early twenties, through to the Mainstream Modernism of his work of the present day. The crucial phase of this development was the very late twenties and early thirties, a period ushered in by Russell's literally epoch-making contract for mass-produced Murphy radio cabinets. However, this excursion with craftsmanly standards into the world of serial production, had been preceded by the refinement of those standards to the point where the transition to modern would be almost imperceptible—the illustration, 3, shows chairs of 1927–8, a table of 1925, a chest of 1928, and a 'modern' dressing table of 1930.

But the Arts and Crafts phase of Sir Gordon's output should not be regarded merely as a precursor to modern. It had the positive—even idiosyncratic—virtues of the movement in full; its products often deserve Nikolaus Pevsner's accolade 'the best of (them) now belong to the classics of the Arts and Crafts.' A case in point at the exhibition was the oak sideboard, 4, from the threshold of the modern phase, 1926, which has much of the gaunt grandeur one associates with Gimson's larger pieces, or the extraordinary furniture Mackintosh designed for the Bassett-Lowke house in Northampton.

Peacock Room

As a postscript to Peter Ferriday's article, 'Peacock Room' in the June AR, Mr. Noel Spencer, headmaster of Norwich Art School, sends the drawing on the left, of Jeckell's Pavilion in Chapelfield Gardens, Norwich, made by him a year or two before its demolition. Constructed entirely of wrought and cast iron, it was designed in 1876, shown at the Philadelphia Exhibition of that year and at the Paris Exhibition of 1878 and bought afterwards by the Norwich Corporation, who demolished it about 40 years later.



5, *Jeckell's pavilion in Norwich.*

INTELLIGENCE

Brian Hackett, Senior Lecturer in Landscape Architecture in the University of Durham, has been invited to fill the Chair of Landscape Architecture of the University of Illinois for a period of two years and will be taking up the appointment at the end of this year.

At its meeting in Lisbon on September 24, the Sixth Ordinary Assembly of the International Union of Architects elected the executive committee for 1959 to 1961. The President will be Hector Mardones Pestat, of Chile; Vice-Presidents, Robert H. Matthew of Great Britain, Yang Ting-Pao of China, and Carlos Ramos of Portugal; Secretary General, Pierre Vago of France, and Treasurer, Willy Van Hove of Belgium.

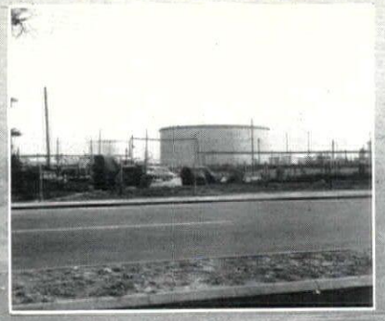
The 1961 Congress of the International Union of Architects, to be held at the Festival Hall in London, will have the theme 'new techniques and materials: their impact on architecture.' There will be three subdivisions of the subject; 1, historical survey of architectural change caused by new techniques and materials. 2, the influence of reinforced concrete on architecture, present and future. 3, the impact on architecture of industrialized building methods. Proposed speakers include Lewis Mumford, Nikolaus Pevsner, Bruno Zevi, Luigi Nervi, Verne Ketchum, Kryniewiecki, H. van Kuyck and R. Llewely nDavies.

A tripartite conference is to be held at Sunridge Park from December 2 to December 5 to discuss a number of the problems facing the building industry.

A Building Centre is being formed in Manchester, in affiliation with the London Building Centre. It will provide an unbiased information service and space for lectures and visiting exhibitions. Enquiries should be sent to the Director, Mr. John P. Griffiths, at the temporary office in the Department of Building, The College of Science and Technology, Sackville Street, Manchester, 1.

ACKNOWLEDGMENTS

COVER: Sport and General Press Agency. CORRESPONDENCE AND MARGINALIA, pages 229–231: 1, 2, Graham Hudon; 3, Gordon McLeish; 4, Gordon Russell. FRONTISPIECE, page 232: AR Aerial Unit. HOSTEL AT HOLLAND PARK, pages 236–241: 7, Holland and Hannen and Cubitts; remainder, Henk Snoek. OBJECT ON VIEW, pages 242–253: 1, Corning Glass Works; 4, Denys Lasdun; 9, Comfotos; 10, Foto Studio Casali; 13, 15, Fotogramma; 16, Casabella; 17, 18, Wolfgang Siol; 20, Hamlyn Silverstone; 23, 24, Cutty Sark Society; 25, Eric de Maré; 26, Byggekunst; 27–29, 31, Carlo Scarpa; 32, Japan Architect; 33–36, Foto F. Maurer; 37, Alexandra Georges. FACTORY EXTENSIONS AT DUXFORD, pages 254–260: 1, 13, C.I.B.A.; 2–8, 10–12, 14, 15, Colin Westwood; 9, John Pantlin. INTERIOR DESIGN, pages 261–265: 1, 2, 9, 10, 12, 13, John McCann; 3–8, Galwey Arphot; 11, Sport and General Press Agency; 14, 15, Unesco/Claude Bablin. DESIGN REVIEW, page 266: 1, 2, Sam Lambert; 3, 4, Henk Snoek. SUISSE-ROMANDE, pages 269–274: pages 269, Dariush Borbor; page 270, C. Schmidig, G. Klemm, Dariush Borbor, Photo Hofmann, G. Klemm; page 271, Yvan Butler, V. Bouverat, G. Klemm; page 272, G. Klemm; page 273, G. Klemm; page 274, V. Bouverat, L. Bacchetta, G. Klemm. UNIVERSITY OF THE PANJAB, pages 275–278: Michael Boys. CURRENT ARCHITECTURE, pages 279–282: 1–5, Toomey, Arphot; 8, Cement and Concrete Association. WORLD, pages 283–284: 1–3, Foto Levi; 4, 7, 8, Bauen-Wohnen; 5, 6, L'architecture d'aujourd'hui; 9, Architectural Record; 10, 11, Look; 12–14, Byggekunst. MISCELLANY, pages 285–290: Exhibitions, 1, Wildenstein & Co.; 2–4, Arts Council of Great Britain. Art in Use, Leicester Evening Mail. Counter Attack, Dungeness, Nairn, Arphot; Tenby, Raymond Spurrier. Townscape, Associated Press.



For many parts of the British Isles all the separate urbanizations we have been practising are beginning to coalesce. This was the moral of Outrage, and the proof is in this air photograph of part of Southampton Water. Not only does it show the end of Portsmouth-Gosport (foreground) and the beginning of Southampton (background) separated by less than a mile of countryside; on the left-hand side is Fawley refinery, and in the centre was the site for the proposed Caltex refinery, now postponed but liable to be taken up again at any time. The Hampshire County Council are the first in the country to take serious account of this running together, in their 'green mantle' proposals described below. The final irony is that part of the very thin designated green strip between Southampton and Portsmouth is occupied by yet another kind of urban colonization: the airfield at Lee on Solent, whose runways form the main feature in the air view.

Ian Nairn

GREEN MANTLE

Four years ago the Ministry of Housing sent out a now famous circular on provincial green belts. In terms that it is probably fair to say were kept deliberately vague it suggested that the green belt idea could be applied to any large town. It did not say which towns, and it did not suggest how big the green belt should be; the interpretation was left entirely to the recipients, which meant the County Councils.

Most counties took this to mean an equivalent in size and shape to the London Green Belt, applied to the bigger conurbations. Some of the conurbations proved amenable; most showed that their councillors were still living in the 1920's, convinced that a bigger city must be a better city. One of the more flagrant examples was Birmingham's recent application for 2,000 acres of Warwickshire and Worcestershire which went to public inquiry in July, accompanied by a fine selection of aldermanic baby talk: 'land only supporting cows and sheep' and so on. Other counties, such as Durham, tried the reasonable and logical step of establishing green belts around all the larger towns in the county—e.g., Darlington and West Hartlepool—only to find that the elected representatives thereof had somehow never conceived of such things as applying to *them*.

One county went much further than this. Hampshire took the Ministry's circular in its widest sense, saw that its whole coastline was running together, partly in a sort of second degree sprawl from London (the principle being that if you have to jump the green belt you then might as well jump as far as the coast), partly because it was a natural place for people to retire to, partly through the growth of Portsmouth, Southampton and Bournemouth, partly through the drift to the South. It would be difficult to find a better place to show all the elements of unplanned decentralization brought together. The county council treated the area from Havant to the Dorset border as a potential conurbation and designated an expanded version of the green belt—what might be

termed a green mantle—over the whole area, about ten miles deep (see map) leaving a little land for expansion round each of the big centres. They selected a number of rural or semi-rural villages therein as suitable for limited expansion (in each case providing town maps) and provided for the other villages to be enlarged only in cases of proved local need. The proposals went on the Ministry last October, closely followed by protests from Portsmouth and Southampton* (who both actually said, of the proposals for a belt between them: yes, a very good idea, as long as it starts at Titchfield Haven. As this is a creek exactly halfway between them, it would have been the thinnest green belt on record). In February the Ministry replied saying that these proposals were a major enlargement of green belt ideas and asked the county council to justify them to the extent of showing that the land set aside for expansion would meet any foreseeable requirements until 1971.

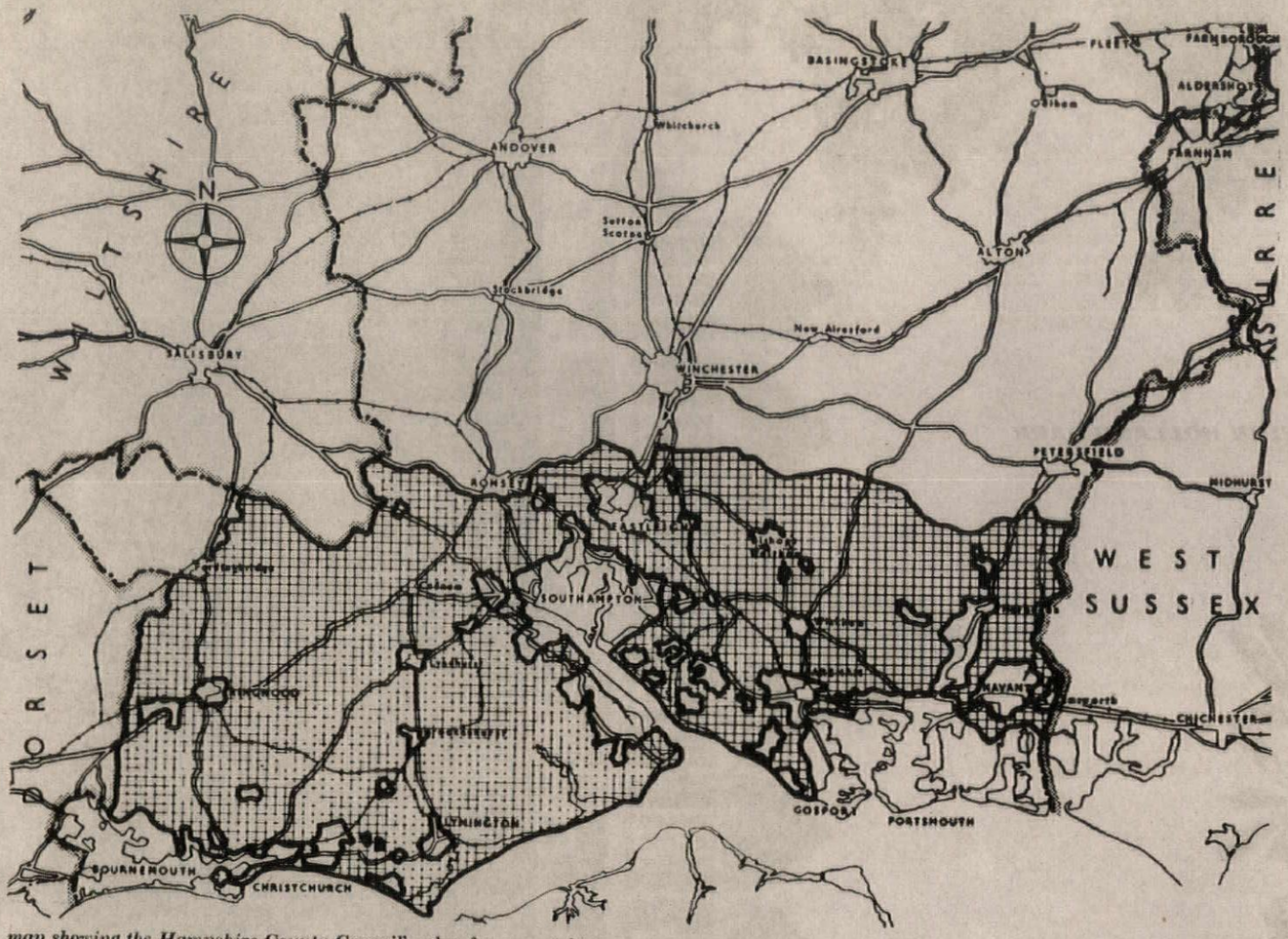
In other words, Hampshire was to be the nation's guinea-pig: overspill and growth figures were for the first time to be made the subject of a really painstaking calculation; a calculation which surely should have had the assistance of a research team at the Ministry, as the whole nation would benefit from the result. Instead, the onus was thrown entirely on an already overworked county planning staff. In three months they did exactly what was asked for, and they did it the hard way. They assessed the number of vacant acres in each area, they assessed where possible (from rejected applications) what the average builder thought he could get on to these acres; then they computed the number of people that could be housed, using a mixture of 3.2 persons per dwelling where dwelling plots could be guessed at, and unexceptionable net residential densities averaging about 18 persons per acre for the remainder. The population increase from all causes was obtained by projecting the 1951–57 trends as far as 1971 (allowing for the increase in immigration since licensing restrictions were ended in 1953). In eleven out of the twelve areas concerned these results showed that the land allocated would provide for more than the estimated increase in population, by amounts ranging from a few hundred people to twenty-five thousand. Only one district—Havant—showed an estimated deficit, of six thousand people or approximately ten per cent of the estimated surplus in all the other areas.

Put very briefly, what this marathon survey showed was that even applying stringent green belt proposals to the whole of an area there is still enough land available, in the undeveloped plots or immediately next to existing villages, to cope with any demand at least to the 1970's (there is really no point in planning further ahead than this). It is a conclusion which common sense and common observation forces on anyone who goes about the countryside with open eyes, but that is a very different thing from proving it in cold figures in one of the most vulnerable areas in the country.

The public inquiry was held in July; the chief objectors being, as expected, Portsmouth and Southampton county boroughs. Southampton's objections were to some extent disagreements in detail between friends, as in fact a green belt had been agreed with the county council in 1954 before the Ministry circular ever came out. But Portsmouth proved to be a copybook case of the bone-headed county borough unable to think in any other terms but peripheral expansion and bigger and better rateable value. At one stage it actually proposed a green belt which would begin at Butser Hill, twelve miles from the city, which for those who know Hampshire is occasion for quiet mirth. It wanted to build on the Southwick estate, just north of Portsdown, which is true countryside, well farmed, high grade agricultural land, and a blessed relief to inhabitants of the Portsmouth byelaw streets and council estates, which are as dreary as they could be. The county council proposals for Portsmouth's problem were crisp and constructive: no new incursions into rural areas, proper building up of the weird satellite at Leigh Park, north of Havant (it is unfortunate for the Portsmouth city fathers that the county council could show that there is still sufficient corporation land at Leigh Park to take another 2,400 houses, and that contracts there had been suspended at the very same time as Portsmouth were wanting to build on the Southwick estate), and in particular the building up of Hayling Island which seems the natural solution to any of Portsmouth's overspill problems. Hayling Island has been left out of the green area entirely; with one new road bridge from Eastney it could make Portsmouth into a twin-island city with room for everyone. These proposals are combined with eloquent comment, directed at Southampton also, on the need for proper city redevelopment and urban renewal at the centre, which anyone who has walked around the centre of Portsmouth can endorse.

In fact, the county council sees the green mantle as only the first step, the next being proper renewal in the city centres and careful control—which they think they can maintain—over the villages selected for expansion, so that they become or remain real places, not just collections of separate building units. And the actual list of these villages,

* But not from Bournemouth, which realized the basic sense of the proposals, even if only on the ground that the surrounding countryside was a big part of Bournemouth's amenity and hence had a cash value. Roughly speaking the County's proposals have been agreed outside the Bournemouth boundary and the County have agreed to raise no objections to Bournemouth doing what they wish inside their boundary. This seems a fair working compromise.

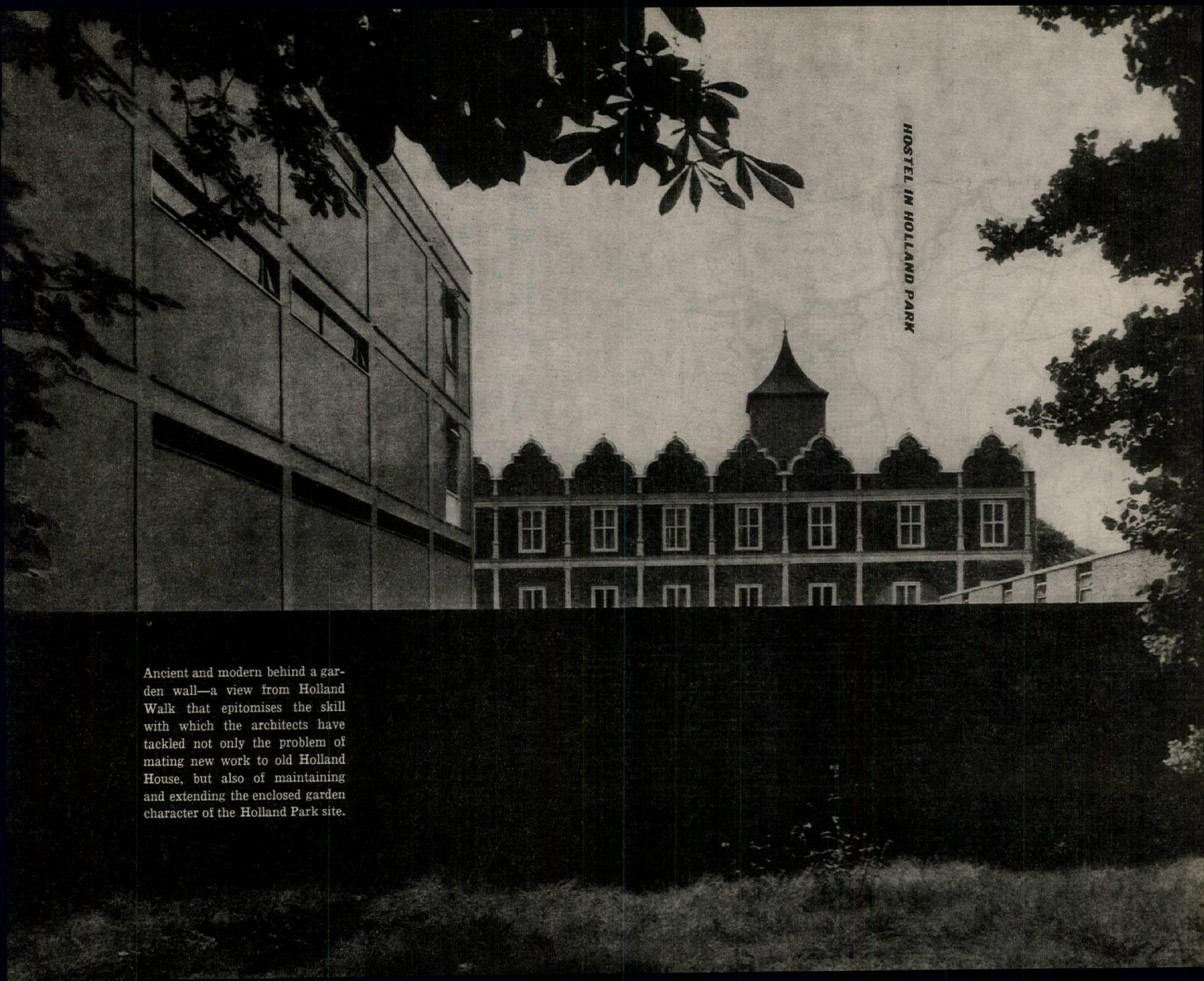


map showing the Hampshire County Council's plan for a coastal green area.

to one who knows the county, makes one very hopeful about the county council's ability to achieve this: they are either shrunken small towns, which Hampshire has a lot of and which need more people to stay viable—Ringwood, Wickham, Romsey—or else existing areas of sporadic building which can only benefit from infilling and enlargement—Colden Common, Denmead, Bransgore. The compact nucleated villages like Hambledon or Beaulieu are to be left alone and will be subject to conditions of consent as strict as apply to the villages in the London Green Belt.

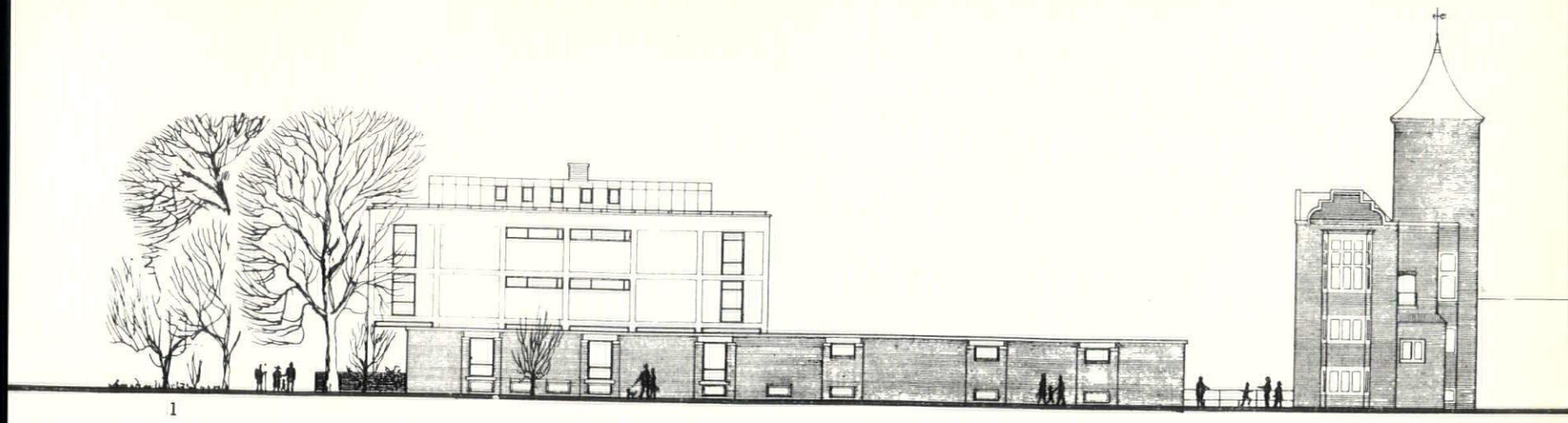
This in fact is the only solution for large areas of Great Britain if we are to keep any real countryside at all and not descend to a complete mixing of all the landscape elements, however well designed, which is foisted off as a new type of landscape in the USA mainly because its protagonists can't think what on earth to do with it or how to stop it. What has happened to southern Hampshire ought to be applied in every area where the natural town-country rhythms are breaking down: northern Cheshire, the Lothians, at least half of the West Riding, the Vale of Glamorgan. The map of the Green Belt shows that Hampshire was only just in time. If the proposals are not substantially confirmed regional planning as a whole in this country might as well go and pack its bags. If they are confirmed the way is clear for a dozen other counties to go and do likewise, and as soon as possible.

There is a double reason for this haste. The rapidity of urban growth is the obvious one, but the other came to light slyly in the summary of objections tendered by Portsmouth at the public inquiry. This suggested that the green belt proposals should be suspended until the local government Boundary Commission has announced its findings on the Portsmouth area (Portsmouth having gone to them recently with a request for another large slice of rural cake). This Commission has been sitting all over the country, and there is no way of telling what it will recommend, but if it suggests that the County Boroughs take in more land from the Counties—which heaven forbid—there is nothing on earth which will prevent that land being built on if it is not already scheduled as green belt (a determined council and its lawyers could probably build on it, green belt and all, but at least the business would have to come out in the open). There may only be a few months left; if the counties affected would put in the time and trouble to designate equivalent green belts the nation as a whole would be in their debt. It is already in debt to Hampshire for its courage in making these proposals in the first place and then for its energy and enthusiasm in carrying them through. Perhaps for the first time a county planning office is living up to the positive and comprehensive spirit in which the planning machinery was originally conceived.



HOSTEL IN HOLLAND PARK

Ancient and modern behind a garden wall—a view from Holland Walk that epitomises the skill with which the architects have tackled not only the problem of mating new work to old Holland House, but also of maintaining and extending the enclosed garden character of the Holland Park site.



1

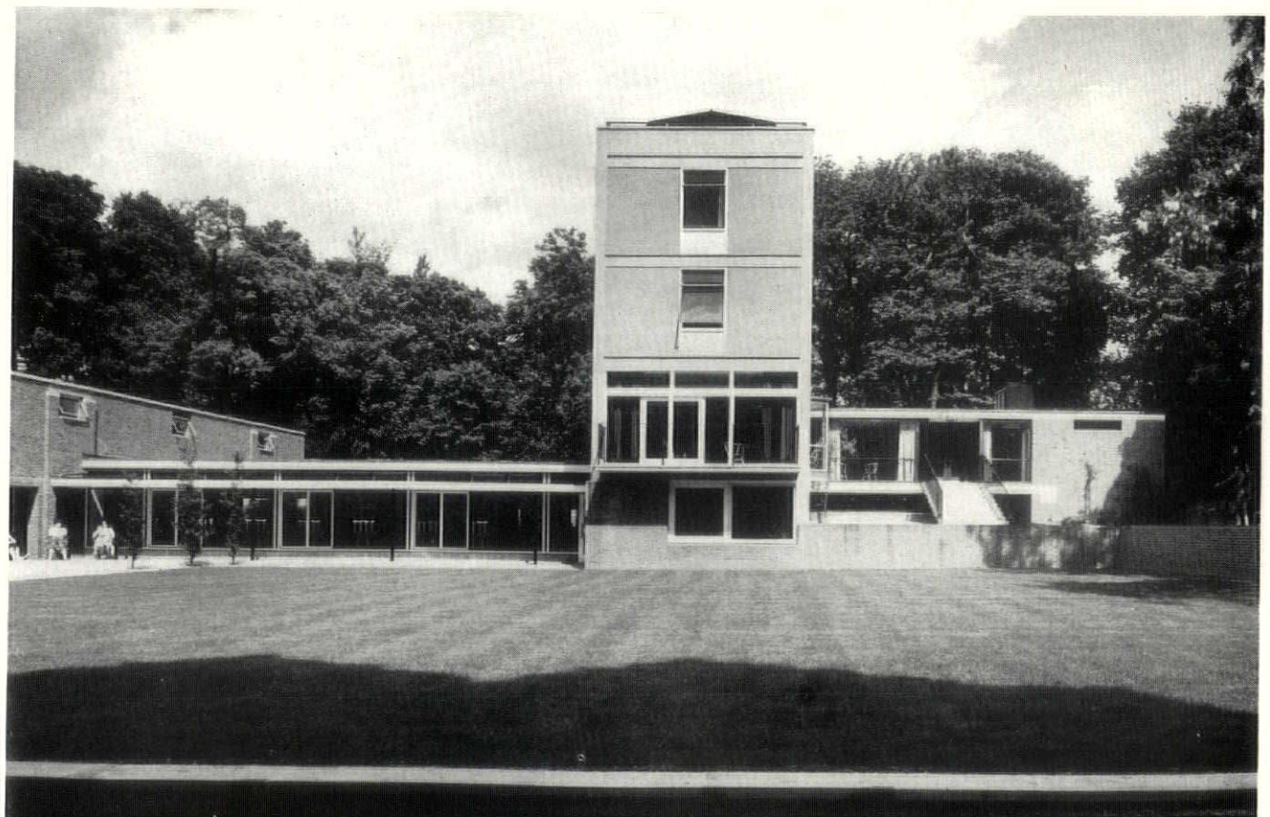
HOSTEL AT HOLLAND PARK, LONDON

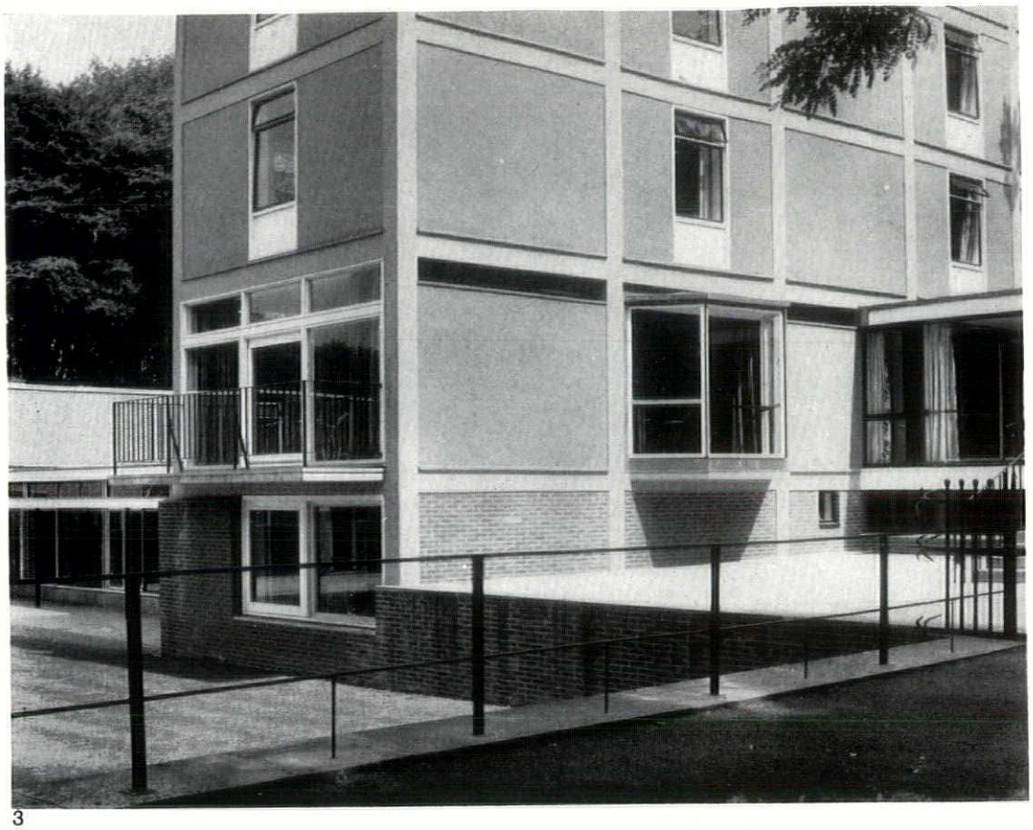
ARCHITECTS | **SIR HUGH CASSON AND NEVILLE CONDER**

The new buildings and the surviving wing of old Holland House together make a hostel accommodating 200 persons, commissioned by the Youth Hostels Association as their King George VI Memorial Hostel. The old work was in a poor condition structurally, and the new plan bears little relation to the old layout, though one ground-floor room survives in its original form. The two ends of this wing were completely rebuilt, under the guidance of the L.C.C.'s Historic Buildings section, to stabilize the long walls.

1, the architects' drawing of the north elevation, showing the high and low dormitory blocks, and the end elevation of the surviving east wing of old Holland House.
2, the new buildings seen across the courtyard: in the centre, the gable wall of the high dormitory block, with the entrance block to the right, dining block and two-storey dormitories to left.

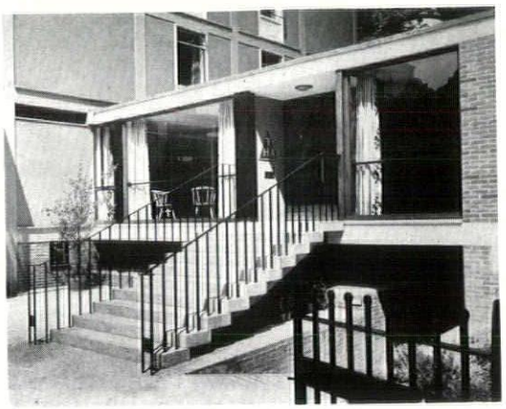
2





3

3, courtyard end of the high dormitory block, showing common-room windows at ground and first-floor levels, and the depth to which the court has been excavated on this side.
4, entrance block and steps, with underpass to service court.



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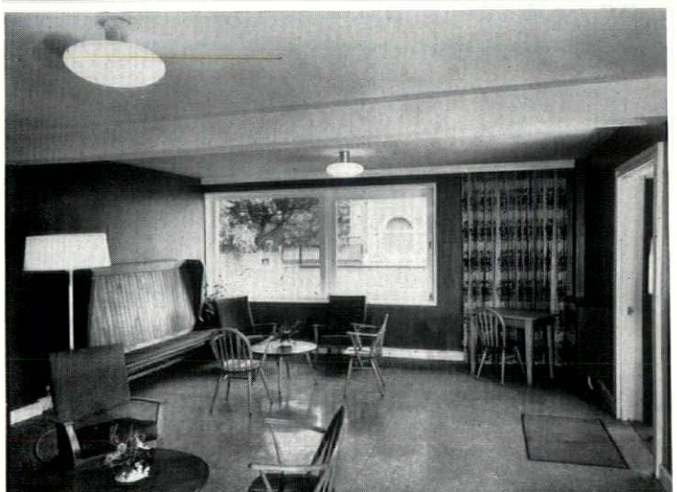
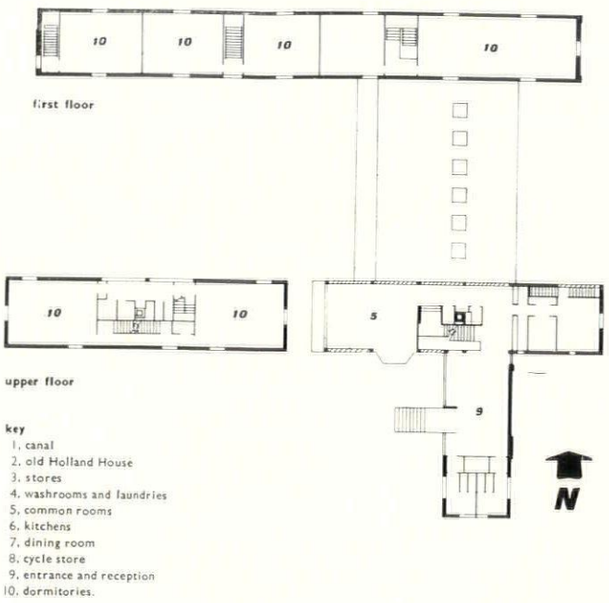


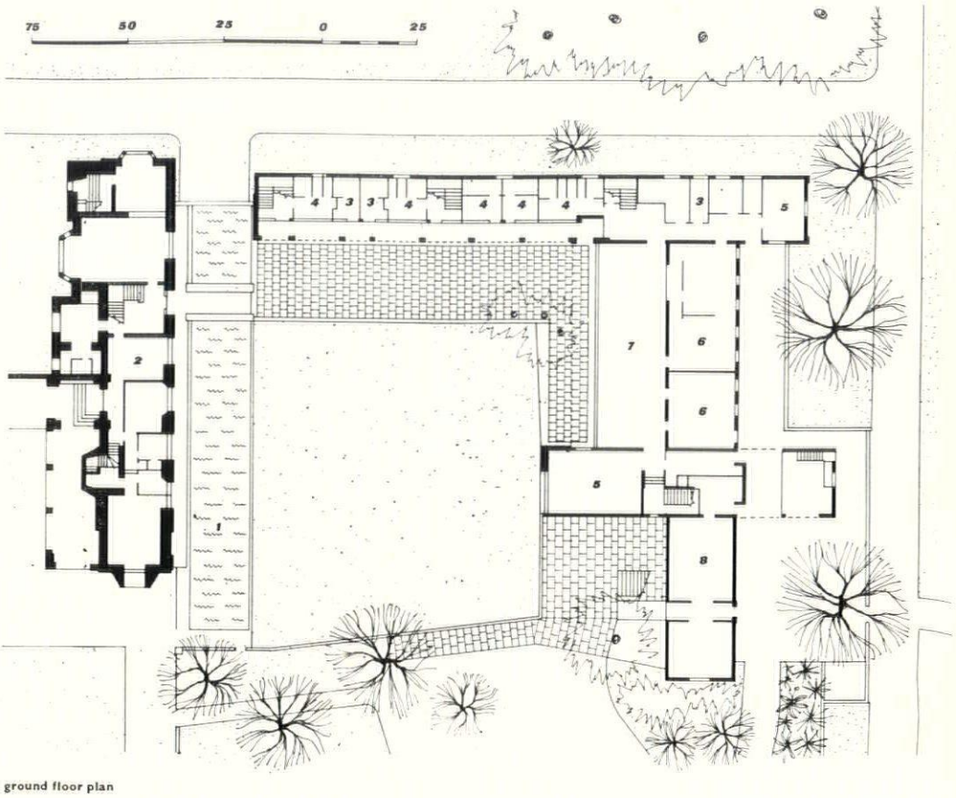
The new work does not touch the old wing, being separated from it by a reflector canal, and it has been designed to involve the least disturbance to the existing landscape of Holland Park. The buildings form a court, in the collegiate tradition, and have been grouped so that their heights can be arranged in such a way as to keep the old wing as the visual dominant of the composition—an intention which has been furthered by sinking the court and keeping most of the new work as low as possible.

Thus the two-storey dormitory wing on the north boundary has the colour and—when viewed from outside—the height of a garden wall, the flat-roofed dining block and walls to the service court continue this walled-garden theme, which is in keeping with the general nature of the site (there are terraced gardens and an orangery on the other side of the old wing), while the main exterior materials used in them, and for the entrance-block, echo the older structures by being two-inch red brick.

The five-storey block of dormitories and common rooms, etc., which presents its narrow end to the courtyard on the south-east, has a reinforced concrete frame, and is stucco-faced for contrast, painted two shades of

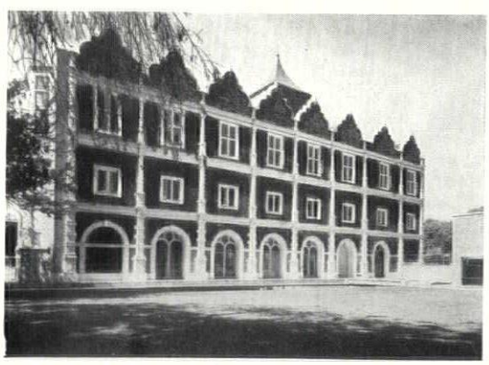
5, the entrance/reception area, seen from the central hall of the high dormitory block.
6, the lower foyer, at courtyard level, with





ground floor plan

HOSTEL AT HOLLAND PARK, LONDON



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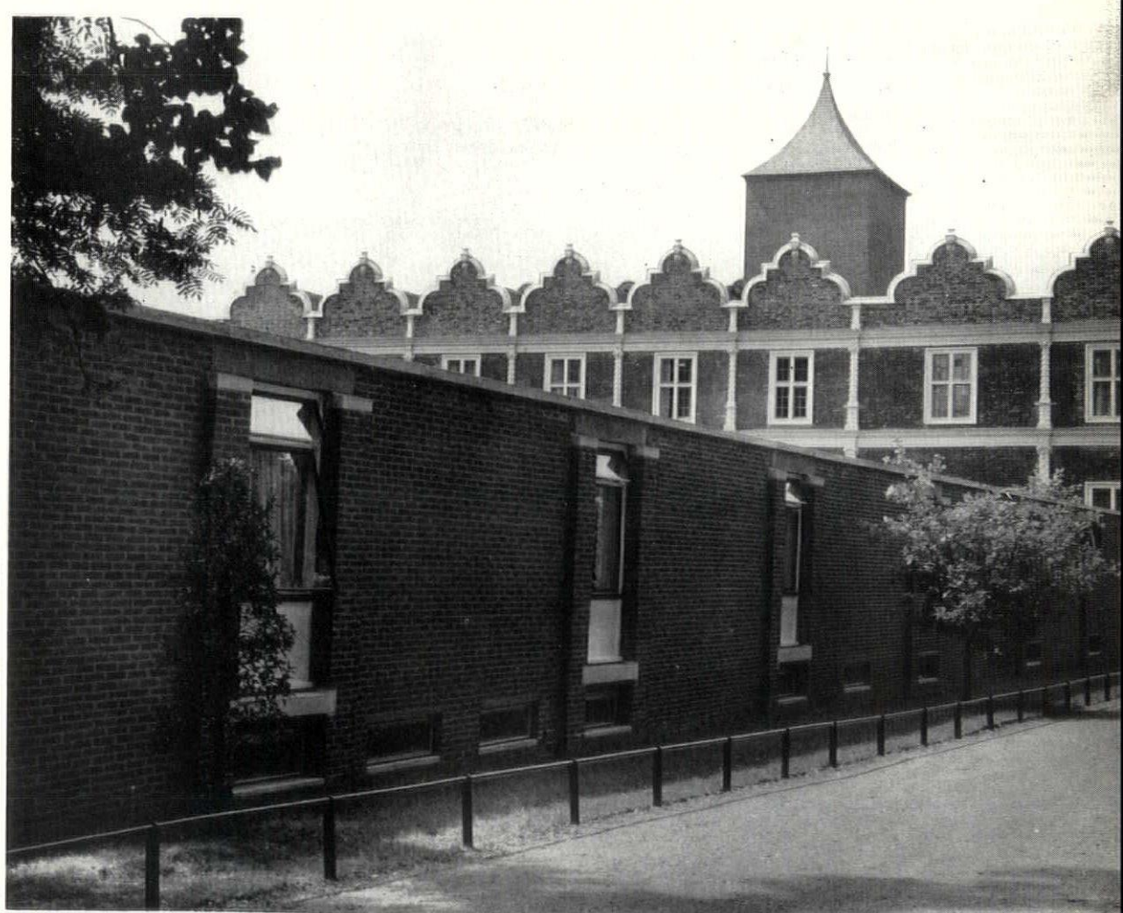
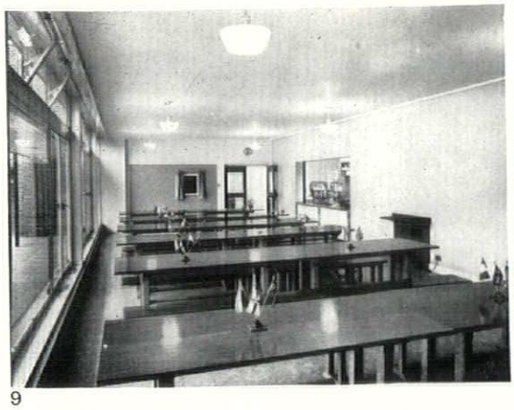


8

7, the surviving wing of old Holland House after restoration.
8, outer wall of the two-storey dormitory block on the north side of the court, treated as a 'garden wall' in scale with similar structures in the park. The small strip windows near ground level on this side are just below the ceilings of the service rooms on the courtyard side (*see* 11, over page).



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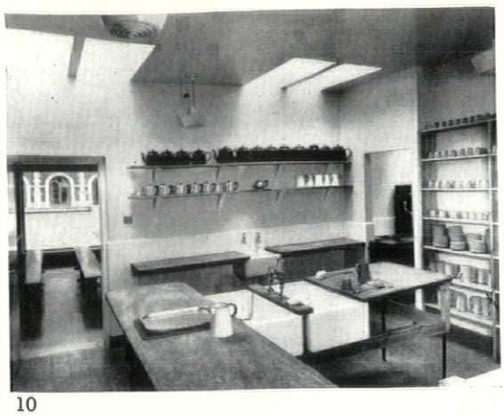

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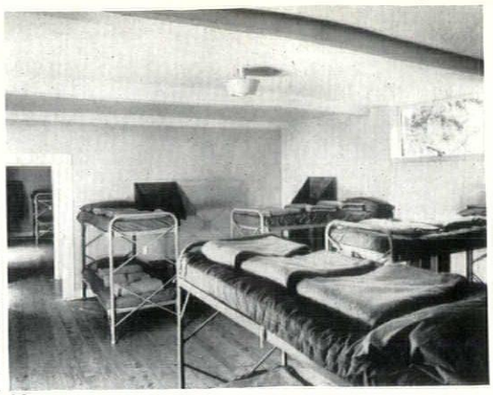

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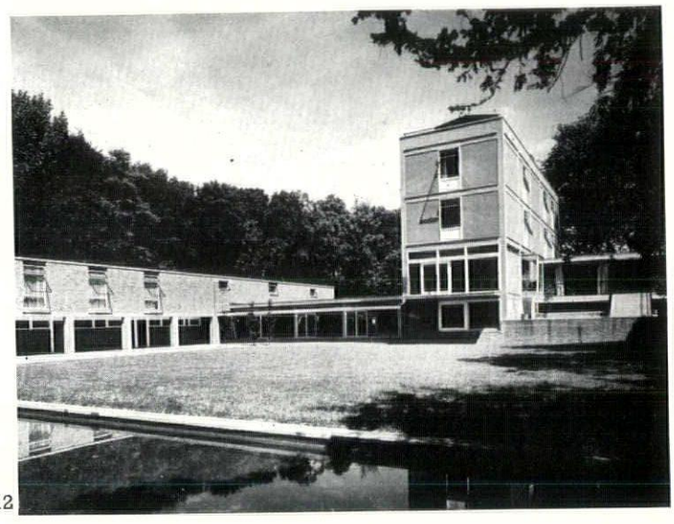


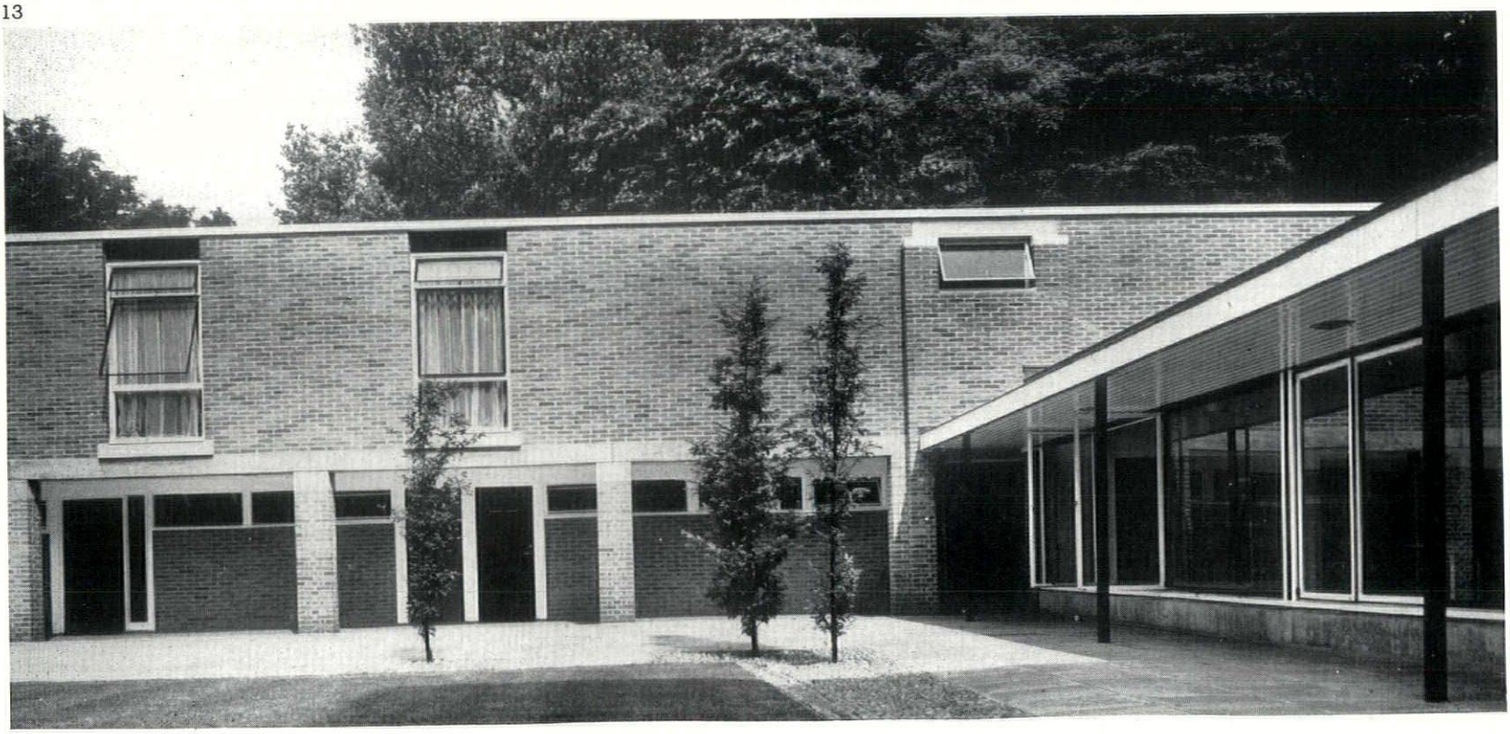
12

greyish green. The excavation of the court has made it possible to site this block low enough for it to be sensed as little more than three storeys, to prevent it competing visually with the old—the fifth storey, which contains the warden's flat, is considerably set back, and barely visible in some views.

Internal finishes and services are simple and economical, as is normal for youth hostels, and considerable attention has been given to external landscaping, planting and the manipulation of levels. In this connection it is worth noting that the fuel-feed pipe for the oil-fired heating boiler is taken to a delivery point outside the park proper, so that tankers do not have to enter.

9, dining room, with servery in far corner.
10, wash-up area of kitchen, with dining room beyond.
11, interior of dormitory in two-storey block.
12, diagonal view across the courtyard, with canal in foreground.
13, north-eastern corner of courtyard, with dining-room windows on right, dormitory block at back, and covered cloister serving both blocks.

13



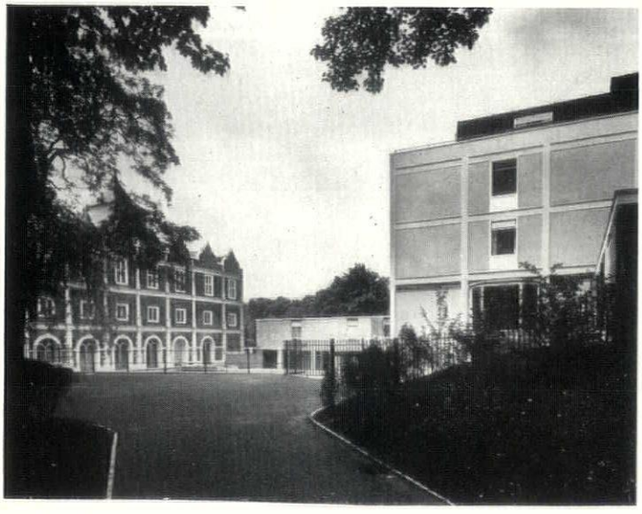
14, the rebuilt northern end of the old building; the gap between it and the first of the new buildings on its left corresponds to the position of the canal, and is the viewpoint for 17, below.
15, looking down the paved area on the north side of the courtyard from the dining room, with dormitory block on right. The bridge over the canal can be seen in line with the second arch of the old building.

15

14

HOSTEL AT HOLLAND PARK, LONDON

16, general view of the whole group of buildings from the approach path, showing how the high dormitory block reads as much less than its five storeys, although, in this view, the warden's flat on the top floor can be seen.
17, view down the canal from the public path flanking the north side of the hostel group, showing the access bridge and restored east face of old Holland House.



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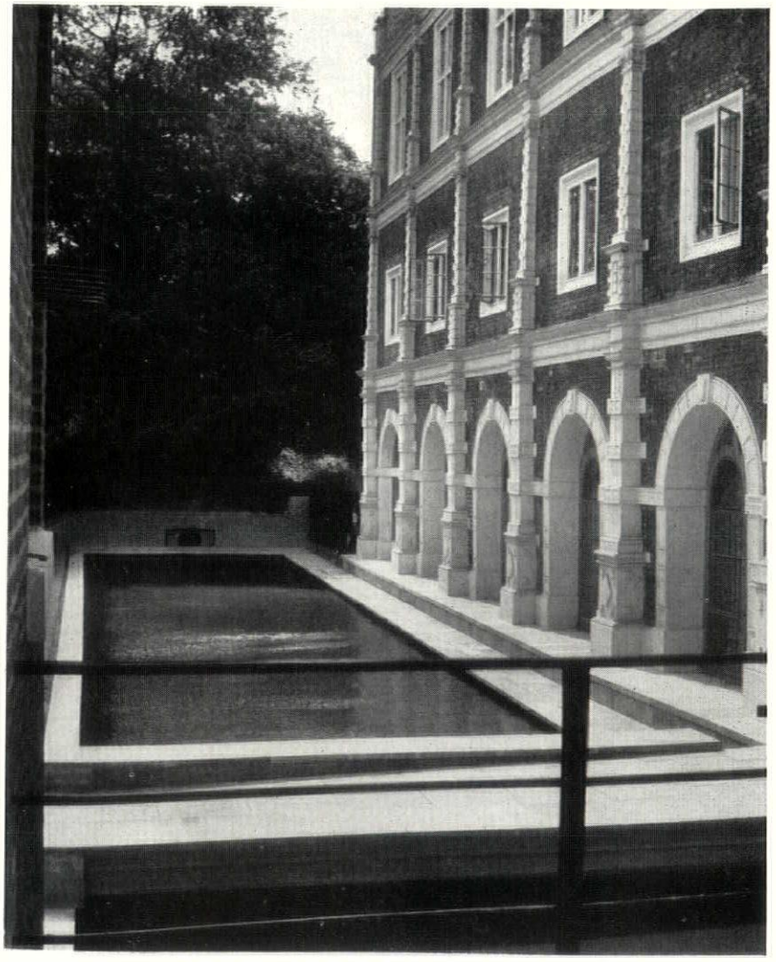


17

The museum has ceased to be the crowded trophy room of the culture hunt; the object on view is being liberated so that its visual impact may be as direct and as forceful as possible. This changed and vigorous attitude towards museum design was pioneered in Italy and is clearly apparent in the section at the XIth Triennale di Milano devoted to Museum Display in which the two stone forms have been isolated on metal supports which have, in terms of this century, a sculptural quality in their own right. Further illustrations of this exhibit appear on p.247

Michael Brawne

OBJECT ON VIEW

The museum, like the picture gallery,* is a medium of visual communication; in the main, though by no means exclusively, between the past and the present. All other museum functions—storage, preservation, research—are subservient to this basic task. Like the cinema or television, the museum is also a mass medium if by mass one means, irrespective of actual numbers, an audience with no specialized knowledge or exclusive interest. Unlike the cinema or television though, the museum does not deal with reproductions but with the artifact itself. It is this sense of immediacy, this direct relation between object and observer, which all museum display must exploit and all museum architecture must make possible.

It was the French National Convention which by a decree of August 30th, 1792, made museums the property of the community and so, as it were, officially established them as a mass medium. This official revolution had been preceded less formally and perhaps more realistically by the opening of the British Museum in Old Montague House in 1759, following Sir Hans Sloane's bequest. Until then the deliberate acquisition of the rare, the curious and the pleasing was the most vaunted form of private conspicuous consumption. It thereafter became very largely—despite a Gulbenkian or a Mellon—a matter of national or municipal prestige. In both instances it was necessary to display the accumulated treasury to the full rather than to communicate the meaning of the object. The emphasis was on wealth, not on communication.

The sense of immediacy must be made apparent through the display. It provides that form of communication which only the museum can give and which is, in fact, its real

* See the same author's article under the title 'The Picture Wall': A.R. May, 1959.

justification. Only in this way can it compete with the photograph or the film. Yet little museum display has been organized with that aim in view. The legacy of crowded riches is still too strong.

Recent attempts at creating a close relation between viewer and object have led to the isolation of the object in space: it is articulated as much as possible from its support, its mounting, its protective cover, so that it may become a free and dominant entity. The best of these attempts have been startlingly successful. Most have occurred in Italy and have been the work of Scarpa, Albini and the BBPR Studio. These have, both in their new work and their reconstructions, set the works of art amid a sparse and powerful architecture. This method need not, of course, be confined to art collections.

The isolation of the object in no way presupposes a negative attitude towards the architectural setting. On the contrary, having articulated the display from its surroundings, it becomes all the more necessary and possible to provide an architecture which will be as positive, as much a part of the communication, as the exhibits themselves. For it is the complete museum environment which, after all, makes an impact on the visitor. Some aspects of it, like the courtesy of museum guards or the food in the restaurant, are outside the architect's control. Most others, however, are not.

It is control, the deliberate manipulation of the object's setting, which characterizes the museum. A row of eighteenth-century houses on a London street is not a museum. The deliberate preservation of them and their furnishing with eighteenth-century objects so as to show some aspects of eighteenth-century life, would, on the other hand, make them into a museum. The emphasis, even in this rather obvious example, is in the intention of these houses to display in order to communicate. The more erudite the preservation, the more correct the reconstruction, the more does it acquire the characteristics of the museum. One cannot be fooled by the period rooms of almost any museum or a complete reconstruction like the 'Old Town' in Aarhus or Colonial Williamsburg into believing that one has stepped back into the past. Perhaps it would be as well not to try quite so hard.

The period room, of course, neatly illustrates one of the dilemmas of museum display, and thus of museum architecture. Should objects which are functionally related, like the furniture of a room or the fauna and flora of a particular ecology, be shown together or should they be seen grouped by classes, chairs arranged historically, let us say, butterflies by species? Not that these are the only two alternatives. It may, for example, be equally instructive to juxtapose a butterfly and a Limoges enamel. There are, evidently, no rules and no criteria by which to judge correctness. It depends entirely on what is to be communicated.

It is this which, of course, makes museum design so complex. Put at its simplest and most extreme, there are two choices: a large indeterminate space suitable for virtually any arrangement and a series of spaces designed with specific arrangements in mind. The difficulty as far as the first choice is concerned is that a museum may want to show anything from a ship to a jewel. The economics of designing for the largest likely exhibit will make a rigorous application of the principle difficult, particularly as a good deal of additional internal organization will be needed to create some relation in scale between the exhibit and the setting. The problem as far as the second choice is concerned is that it may be difficult to rearrange the museum at a later date within the previously defined volumes. And every age tends to reinterpret the past in a new way and to alter its museums not only in the actual methods of display but also in the emphasis it may give to particular aspects of its collection. The frequent compromise of this dilemma—a dilemma by no means peculiar to museums—is to have some rooms large and some small. There may, as in Yamasaki's design for an addition to the Detroit Museum of Fine Arts, be a kind of emotional justification for having a great space, in that case two courts each 200 feet by 160 feet, yet it is doubtful whether the grouping of sculpture within those courts merely because they are large objects will always be meaningful. Display by size seems as unhelpful as the arrangement of books on shelves by format. This is particularly true of museum exhibits since the eye needs the variety given by near and distant vision.

The process of viewing is basic to all museum arrangement and far too little considered by most curators who are interested in the object in its historical or scientific sense rather than in its communication to the public. The principles of display on the other hand are on the whole unrelated to the

1, *a demonstration of glass blowing at the Corning Glass Center, Corning, N.Y., designed by Harrison and Abramowitz. Museum going may encompass many experiences and museum design must always be aware of the likely range.*

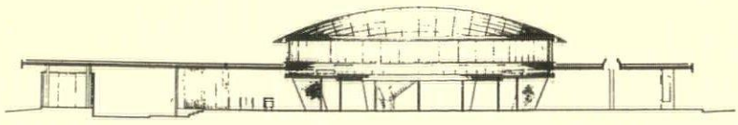
object; they apply as much to stuffed giraffes as to totem poles.

One of the highly important considerations is that vision is limited to a relatively restricted cone but that within this cone the eye, unlike the camera, has very great focal depth. Giraffes and totem poles, to be seen in their entirety, need therefore not only headroom but distance. On the other hand it will be difficult to concentrate on viewing them if within this distance there are a large number of objects competing for attention. The conflict will after a while be felt as a stress. There is no problem in seeing a sculpture across a lawn because there is no competition between the two. This will be especially true if the lawn is in shade and the sculpture in sunlight since the eye is drawn towards the brightest area in view. There was, however, considerable difficulty in seeing exhibits in the American pavilion at Brussels, to take an extreme example, because the competition between objects in view simultaneously was far too great. To make concentration on viewing easier the field of vision has to be either constricted still further or the number of objects within it reduced. In either case seeing will be easier.

Both methods, separately or together, have been used in some of the successful museum arrangements. Museums have been laid out so that only part of the space is visible at a time and exhibits become a series of related groups which are seen sequentially. There has also been a general tendency to display only part of the collection and to make the rest available to students. The percentage of storage area has continually increased and may in some cases be equal to the display space. Exhibits are often stored on sliding racks or similar space-saving devices. Such a division of the collection makes it, of course, simpler for the museum to perform its different tasks more effectively.

The articulation of the space by screens, walls or other visual barriers makes it all the more important that the objects as seen in sequence have some meaning and that the spatial punctuation is related to that of the exhibits. The great skill of some of the recent designs has been in just this placing of objects in progression with controlled marginal comments, as it were, by others seen through openings or partly hidden around corners or remembered afresh by a deliberately devised association of ideas. Many of the devices of the cinema, which is also very much concerned with sequential viewing, are in fact applicable to the museum. The stimulus given by the movement from a close up to a long distance view, let us say, can be created as much with a moving observer and a fixed object as with a fixed observer and a moving representation.

Lighting obviously plays a very important role in such an arrangement. Most museum exhibits, unlike those of the picture gallery, are three-dimensional. They need the sort of lighting which will make their depth apparent. This means that the bulk of the light has to be direct with only some of it reflected to make details visible, to lessen the contrast between highlight and deep shadow. It is the sort of lighting principle which a photographer will use as much for an architectural as for a fashion model. It is, however,



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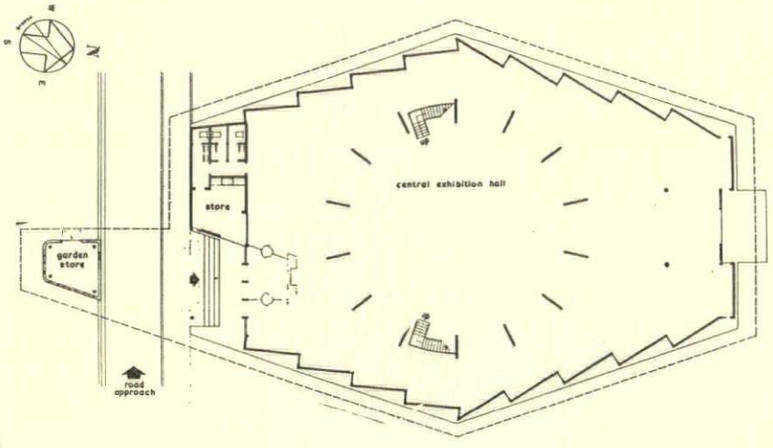

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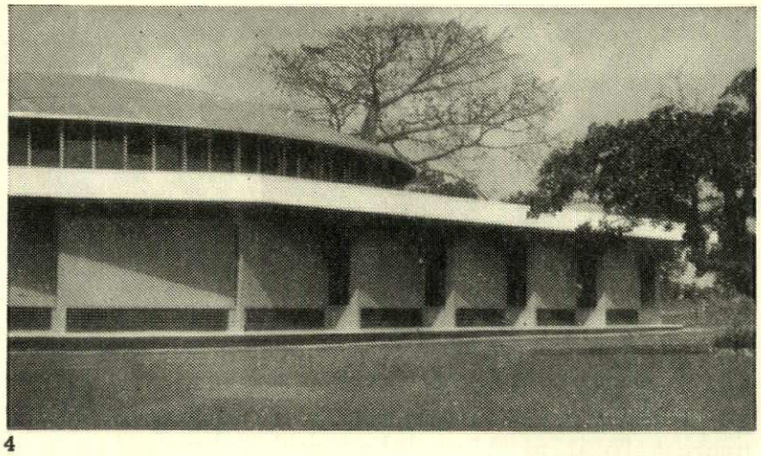
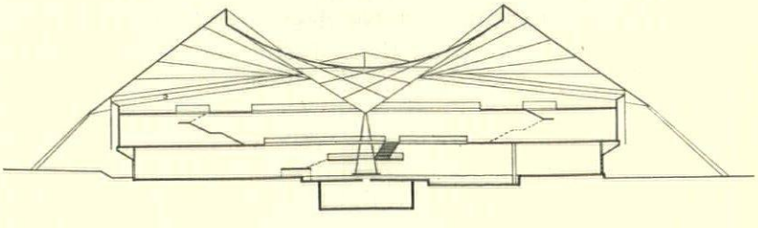


4

The drama of the circular space—the feeling of control when at its centre—may be apparent in the Commonwealth Institute in London, now being built to the design of Robert Matthew and Johnson-Marshall; the visitor stands on a platform at the centre immediately after entering and chooses from there the exhibit he wants to see, 5. The names of the countries will hang like banners at the edge of the galleries. When the centre is itself an exhibition area as in the Museum at Accra by Drake and Lasdun, 2, 3 and 4, the display tends to destroy the form of the building. This is particularly true when there has been an attempt to screen objects so as to lessen the distraction caused by a large number of exhibits simultaneously on view. 6, the lighting of the gallery which forms part of the Commonwealth Institute is an interesting example of a flexible arrangement of both artificial and natural lighting depending on the nature of the exhibit; within each deep coffer the lighting can be manipulated, or excluded by a blackout blind.



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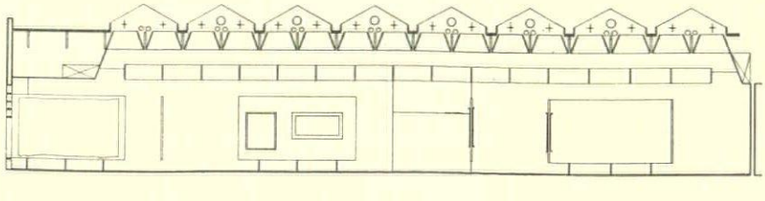

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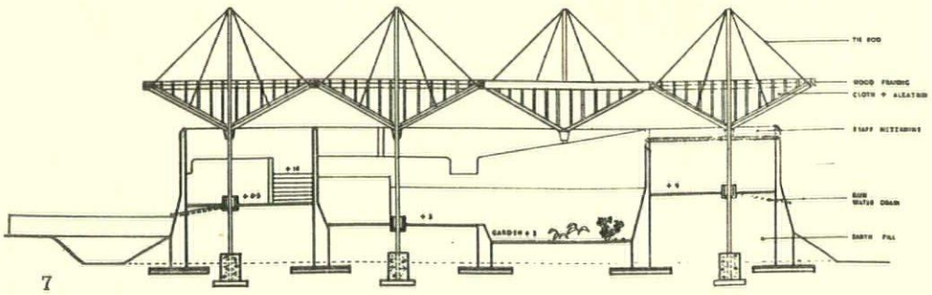

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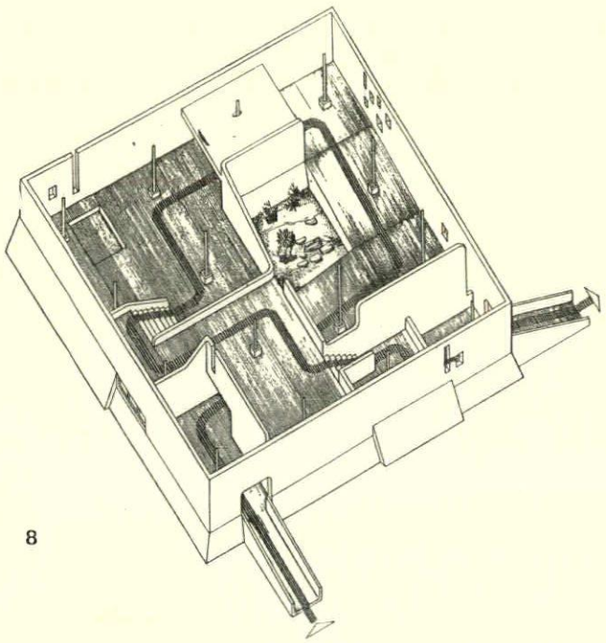
Charles Correa's imaginative pavilion for handloom fabrics at Delhi places brilliantly coloured cloth against rough earth walls. White and gold saris hang in the dark covered passages of the lower portion, magenta, red and orange fabrics in the shade of a canopy of cotton and plastic stretched over dark wood framing, 7. *The circular route,* 8, *pivots about an open garden,* 9, *seen from a number of levels. Space and exhibition come together to form a complete museum experience.*



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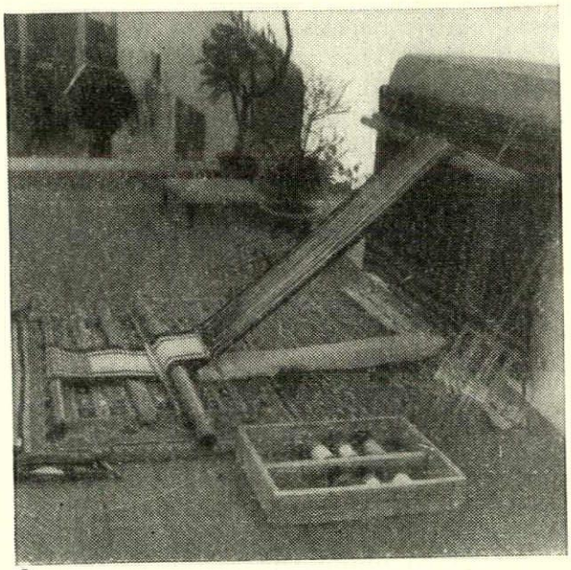


9

difficult to re-create within the museum the paraphernalia of spots, floods and reflectors which a photographer uses in the studio. Le Corbusier has come nearest to it at Ahmedabad and Tokyo. The usual problem is to provide this lighting without making the illumination more important than the exhibits. At Tokyo Le Corbusier has provided a special gallery to take the equipment, 32, 34. Often it is within a suspended ceiling or part of the mounting or cabinet of the exhibit. The trend is in fact towards providing specialized lighting for each object. It is now possible to take this trend to its extreme and localize the illumination to such an extent that each display can be a bright glowing object in a virtually dark room, 11. This technique is most applicable where, as in the case of jewellery or gold embroidered vestments or certain rock samples, the luminous quality of the material can be dramatized by such lighting.

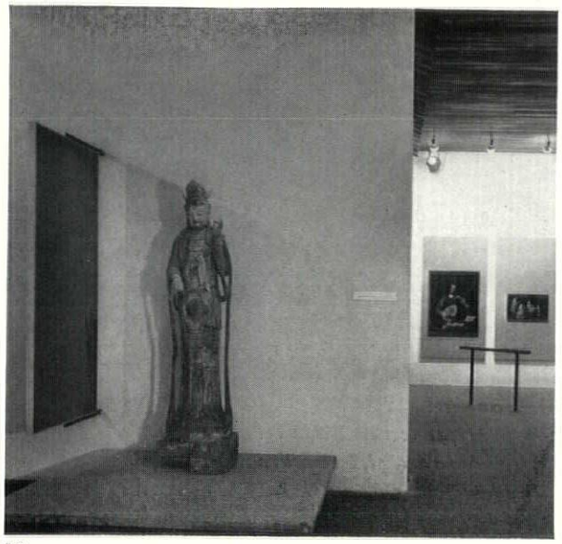
Not all lighting need be designed to enhance the three-dimensional qualities of the museum exhibits. Special conditions demand their own imaginative treatment. The back-lit stained glass in the Gothic section of the Victoria and Albert Museum was an obvious case for such specialized illumination. More frequently, however, the lighting design is forced into a pattern where it is to deal with a wide variety of situations. Whether such a highly flexible and workable system has yet been evolved is debatable. The scheme now being designed by the architects of the Commonwealth Institute and the Building Research Station, 5 and 6, may provean extremely interesting experiment. It will be some time, however, before it can be tested in use.

Lighting will in many cases be made easier if the display is not enclosed in glass cabinets. These are often thought necessary to safeguard the exhibits from the public, although less apparent protection can frequently be devised, as in the Royal Mint Cabinet of the Historical Museum in Stockholm, 21. More often, however, cabinets are merely a shield against dust. Cleaned air may thus be as important to the communication, as to the storage function of the museum.

A common air cleaning system removes pollution by depositing it on electrostatic precipitators. If their field becomes too strong in an attempt to reduce running costs, ozone may be given off. This is a destructive oxidizing agent and such systems should, therefore, not be employed. The heating and ventilation plant must be capable of maintaining constant temperature and humidity conditions for rapid changes, particularly of humidity, may seriously damage certain materials. The desirable limit is between 50 per cent and 65 per cent relative humidity with a dry bulb temperature of 65°F. These relatively stringent conditions do not apply to all the objects found in museums; they are particularly critical for wood, especially marquetry, for canvas, paper, paint, for corrosive metals, for botanical and zoological specimens, for clothes, tapestry and similar perishable organic substances.

A good many items normally kept within a museum can, in fact, also be shown out of doors, either under

[*continued on page* 253



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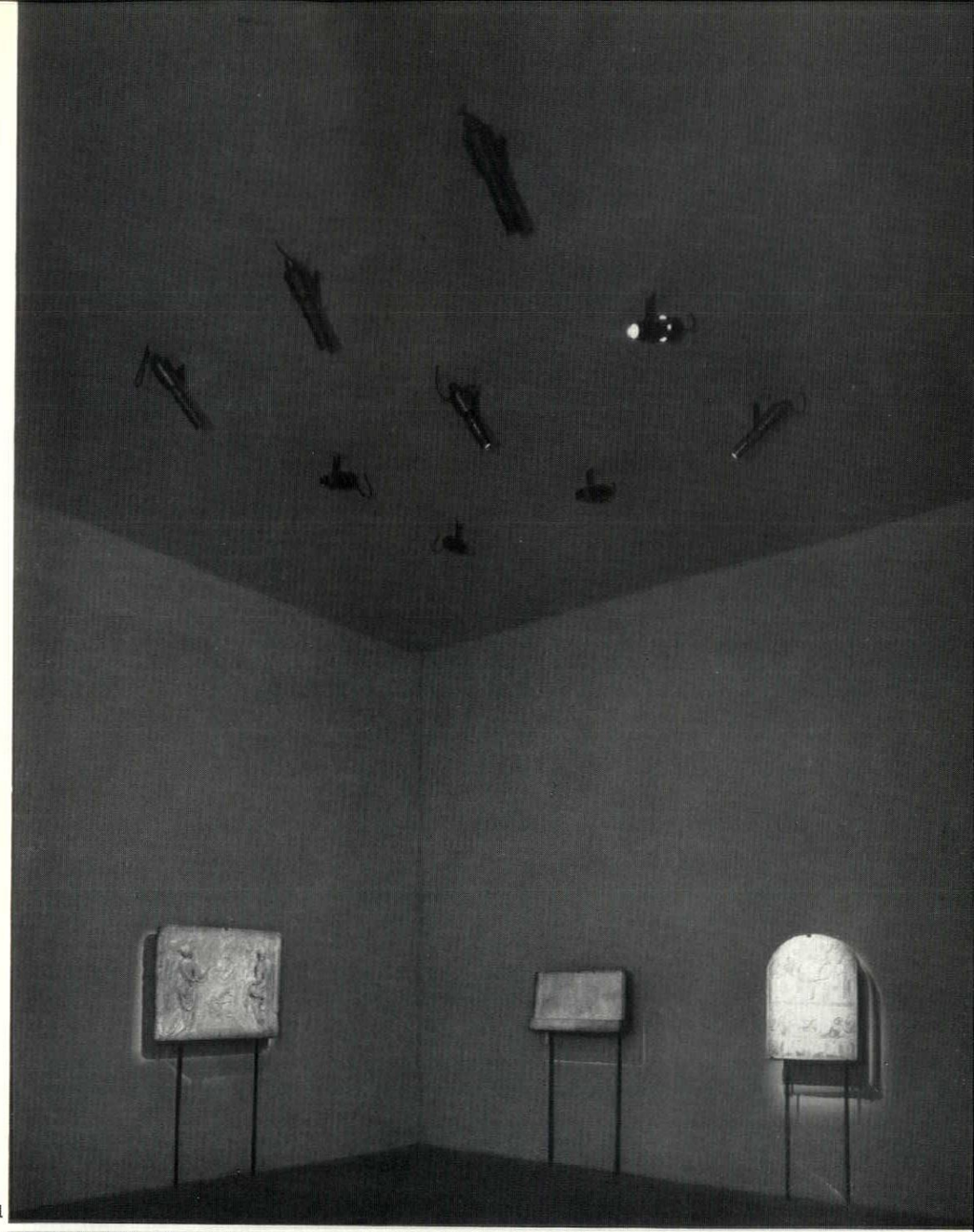
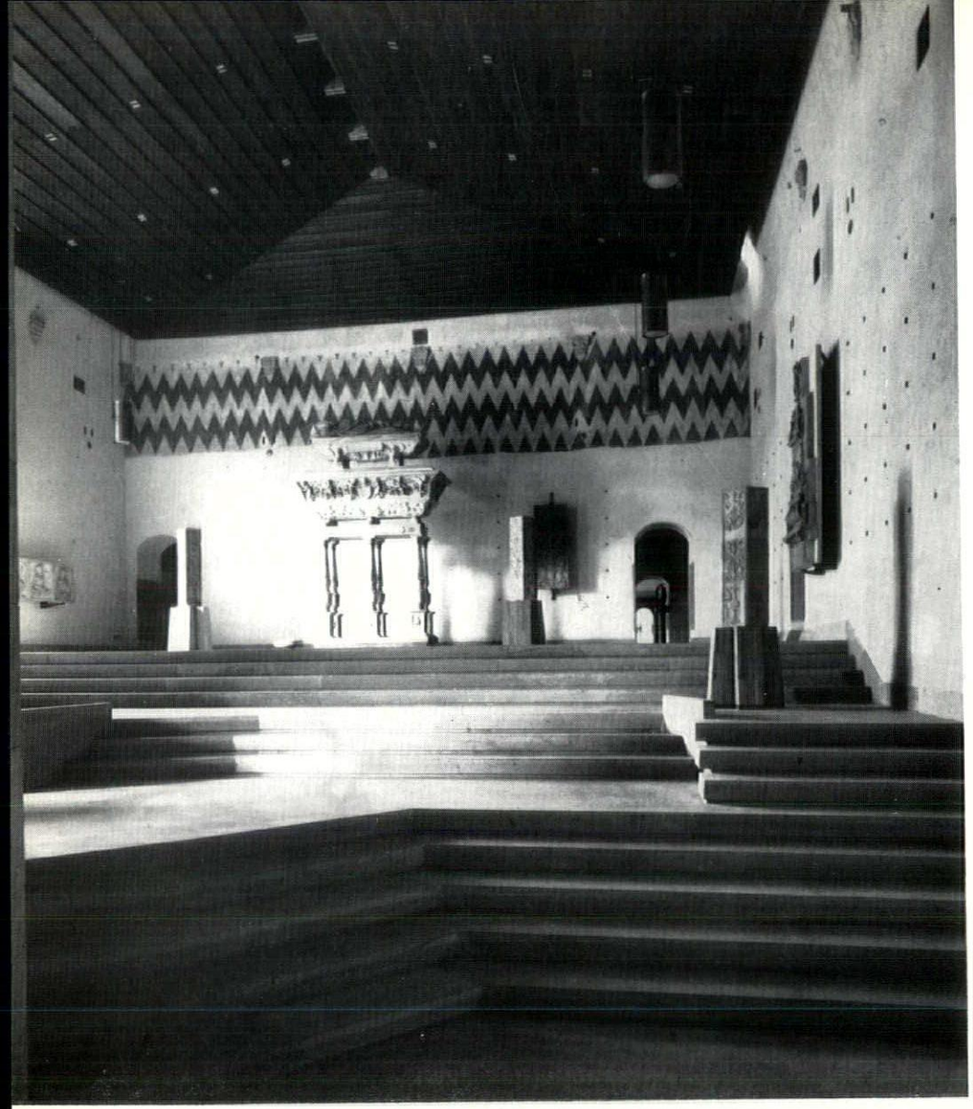


11

10, 11, 12 (*also page* 242) *the Museums Exhibition of the XIth Triennale at Milan designed by a team of architects, curators and a painter provided, with very simple means, a varied setting. The fifteenth century Bodhisavatta,* 10, *is shielded and emphasized by a screen, itself reminiscent of an oriental scroll; bas-relief sculpture glows in a darkened room lit by spotlights on the ceiling, each projecting a beam of light shaped to illuminate the exhibit and nothing else,* 11*; a thirteenth-century crucifix stands, illuminated from below, against a white church-like wall,* 12. *The design accepts that the museum has uprooted the object from its setting and it therefore turns that individuality and isolation into a visual asset. If the nineteenth-century museum adopted the methods of the department store, that of the twentieth century seems to follow the display technique of the boutique.*

12



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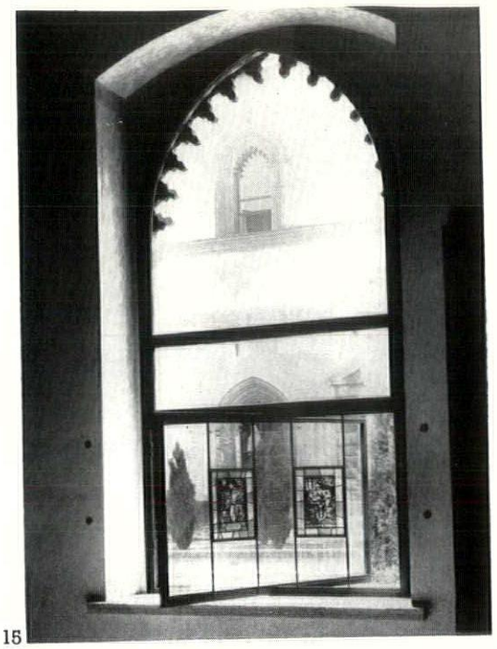

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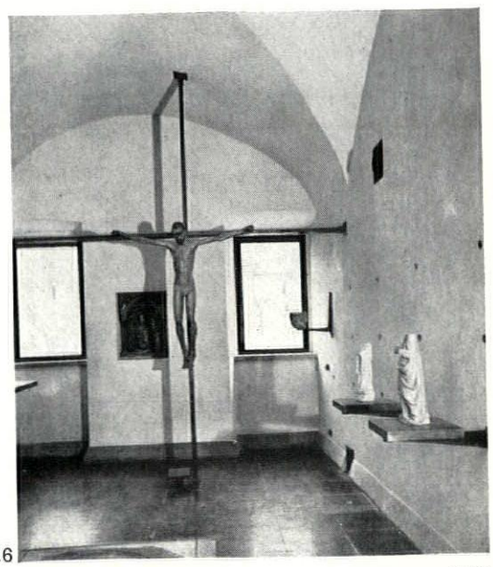
13, 14, 15 *and* 16, *the conversion of the Castello Sforzesco in Milan by BBPR (Belgiojoso, Peresutti and Rogers) is among the great recent Italian contributions to museum design. It clearly demonstrates that a vigorous display makes possible a new and enhanced appreciation of the exhibits. Both the Scarlioni Room,* 13, *seen from the steps to Michelangelo's Pieta Rondanini, and the wall next to the thirteenth-century carving of Christ,* 16, *incorporate cast bronze pegs to take wrought iron brackets as part of the deliberate pattern of the room. The twelve tapestries representing each month of the year are hung as in a triumphal procession down the long Cancellaria,* 14, *and the bright brass trestles rest on shaped blocks of marble rising out of the floor. Though the stained glass,* 15, *is part of a window, it is still obviously in a museum, in a consciously manipulated setting.*



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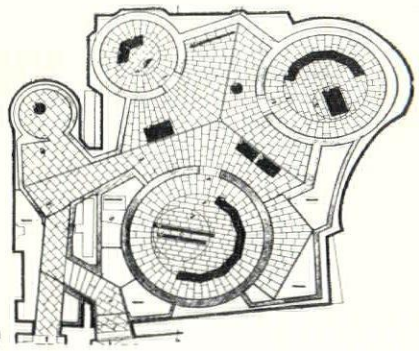
17

OBJECT ON VIEW

17 *and* 18, *the town museum of Ulm is in three converted seventeenth-century houses. The arrangement has a simplicity and sparseness which is the result of a great deal of effort; nothing could be more deliberate than the relation of figure and shield under the vaulted ceiling.*

19, 20, *Franco Albini's Mycenae-like Treasury of San Lorenzo in Genoa is built around a small number of unchanging exhibits and is thus fully justified in its use of complex enclosures related to specific objects. A full description appeared in AR March,* 1957.



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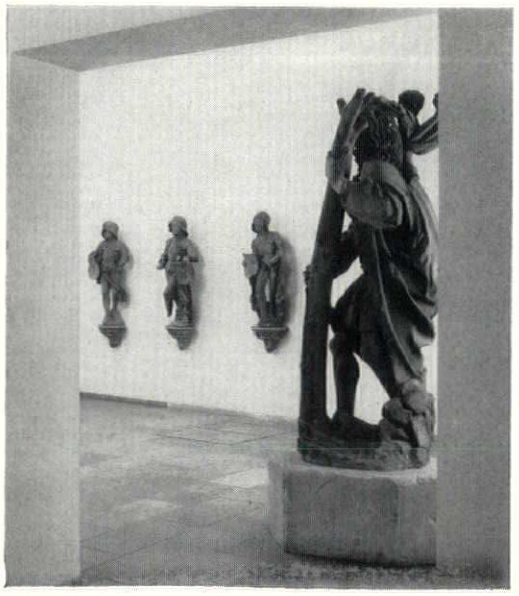

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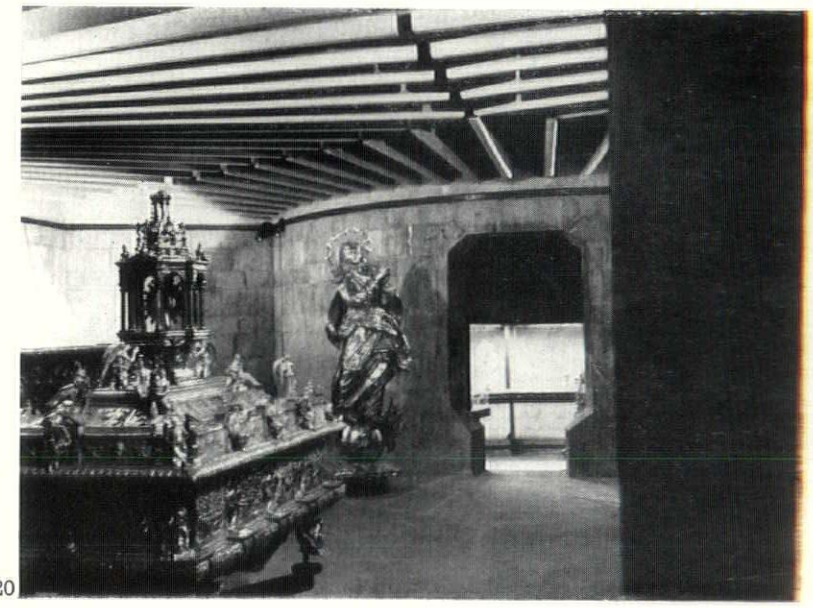

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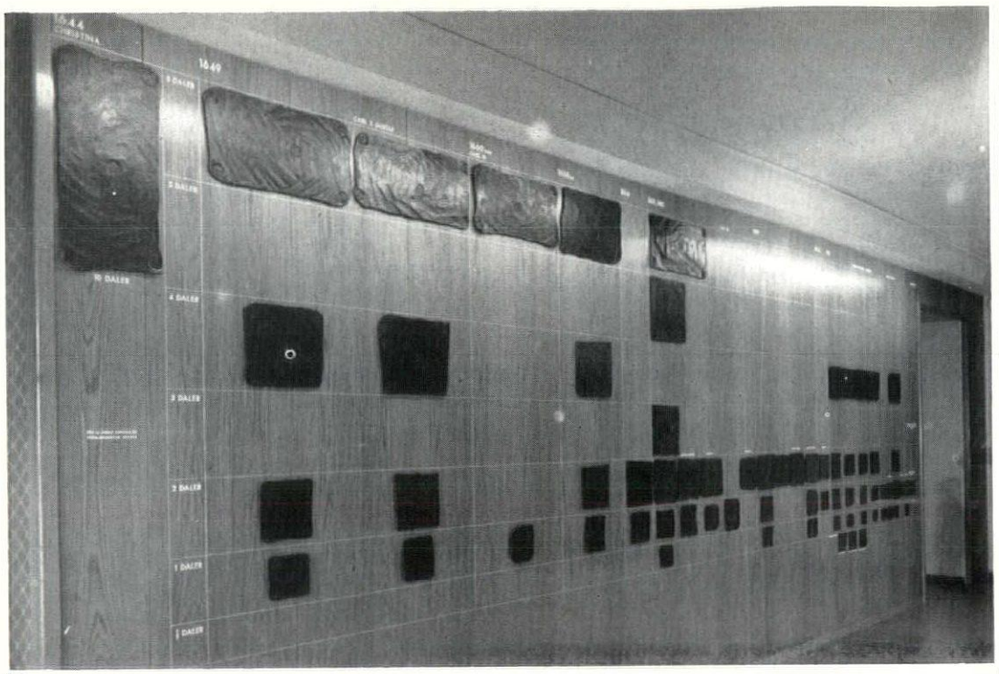

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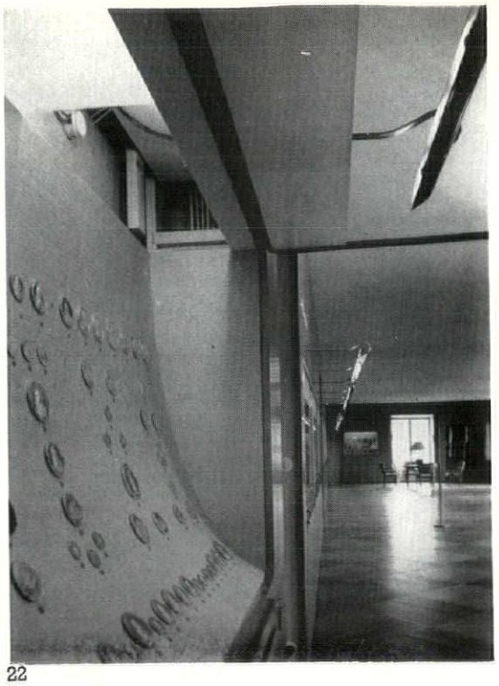

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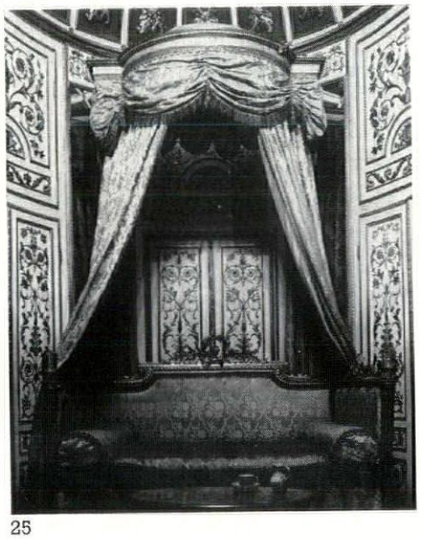
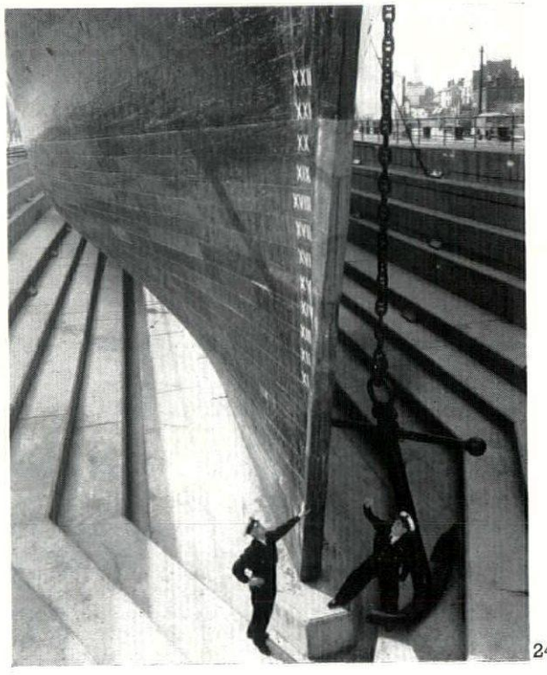


25

21, Swedish copper-plate money in use between 1644 and 1776 is on show in the Royal Coin Cabinet in Stockholm fastened to the wall with metal hooks linked to a burglar alarm. 22, a showcase in the medal hall of the same exhibition with the glass window open. The mirror effect on the glass is reduced by having lighting on both sides of it. 23, 24, museum design may be concerned as much with clippers as with coins; the new setting of the 'Cutty Sark' at Greenwich next to Wren's Royal Naval College has something of the forthrightness of the sailing ship itself. 26, it may also, as in Sverre Fehn and Geir Grung's museum at Maihaugen in Norway, have to deal with sub-arctic climate. 25, some individual items may be difficult to show in a museum environment; the eighteenth century panelled room at the Victoria and Albert Museum is an environment in itself.



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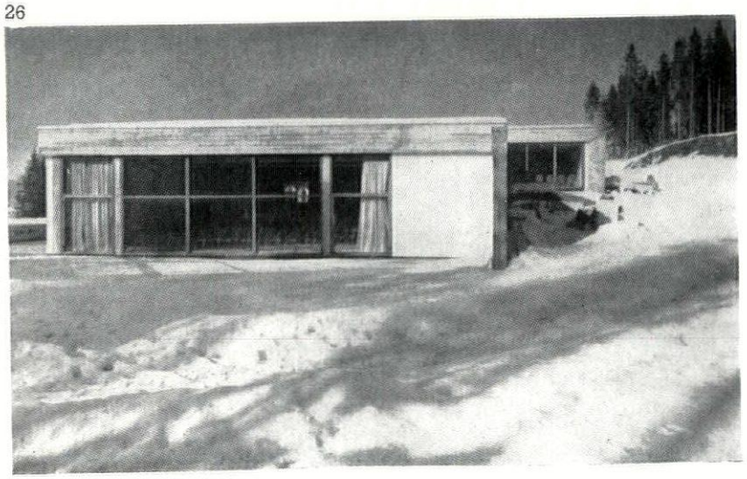

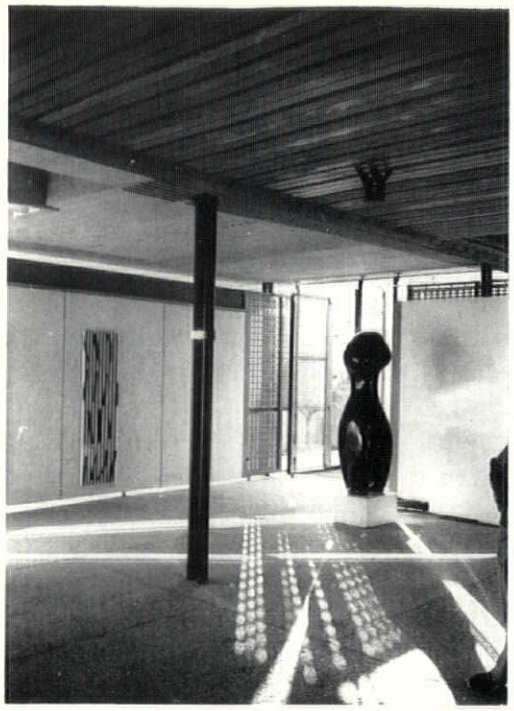

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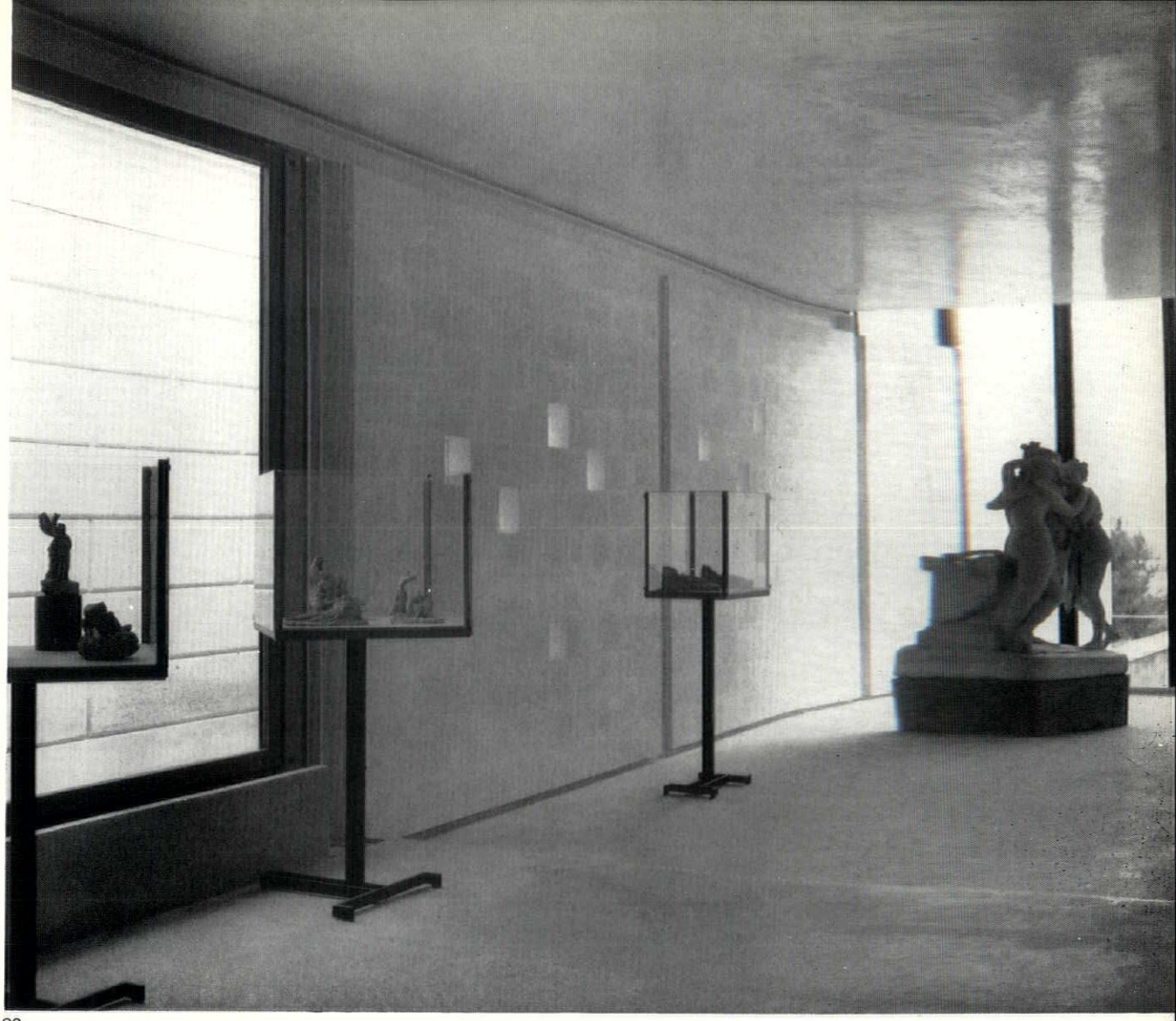

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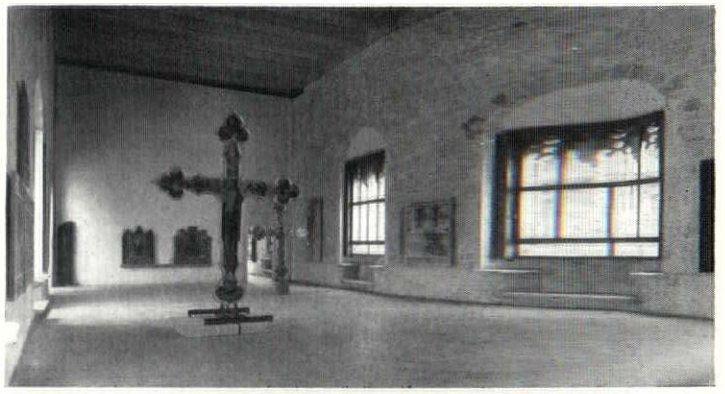
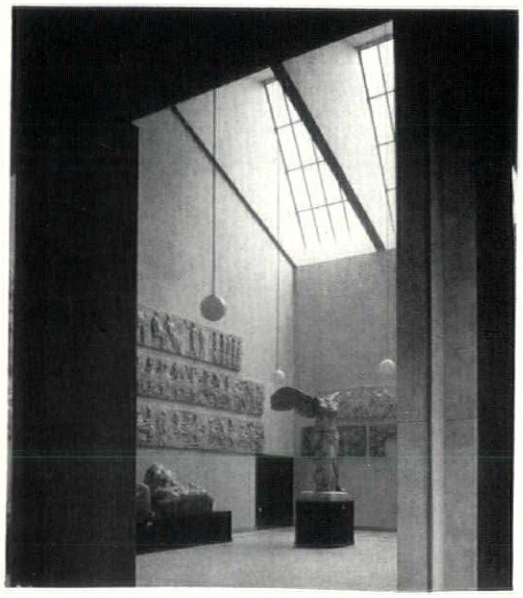


29

27, 28, 29 *and* 31, *the work of Carlo Scarpa has been extremely influential in museum design. Both the general arrangement and the minutest detail are given the same scrutiny and are each developed in relation to the objects to be displayed. The Venezuelan Pavilion,* 27, *in the wooded setting of the Venice Biennale, has with its latticed doors and seemingly unenclosed spaces the right atmosphere for a summer exhibit. The positioning of the plaster casts down a narrowing room at the Canova Museum in Possagno,* 28, *and of a crucifix in the museum at Palermo,* 29, *is as considered as the metal work of their supports. Groups of exhibits are isolated and thus emphasized by the saw-tooth wood panelling and the two level shelves of the Chinese Art Exhibition at the Doge's Palace,* 31. 30, *Pietro Belluschi's addition to the museum at Portland, Oregon, is like a sculptor's studio and captures some of its scale and delight.*



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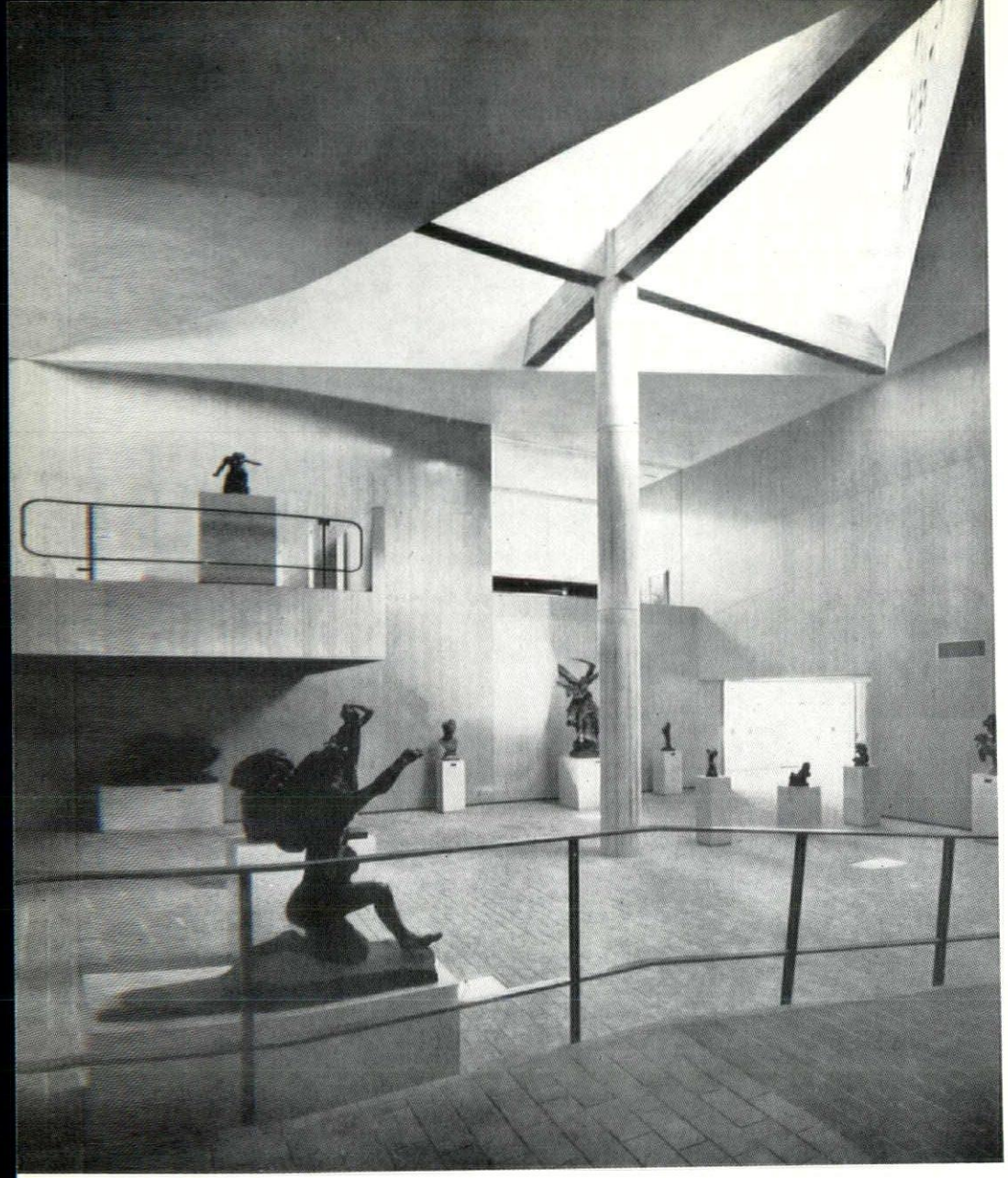

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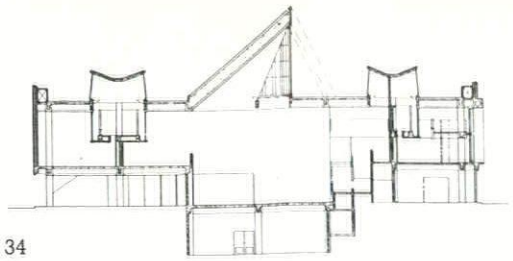
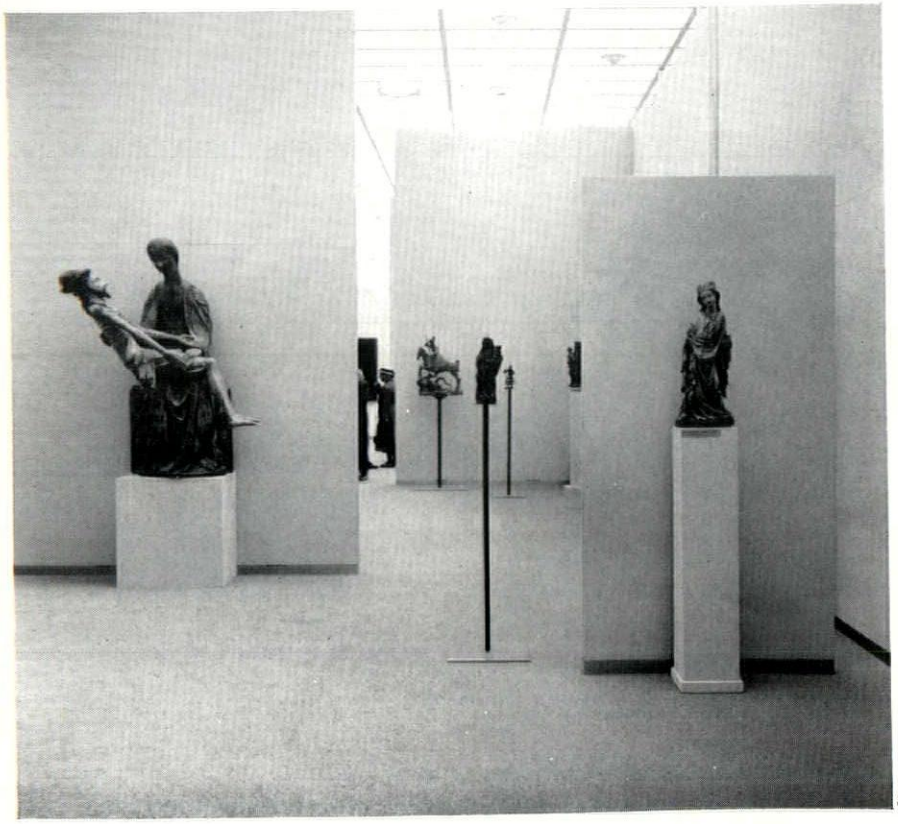


34

32, 34, the National Museum of Western Art in Tokyo, based on a design by Le Corbusier, makes only too clear that the architect's responsibility cannot end with the design of the enclosure whose section is seen in 34. *The mounting of the sculpture and its placing in space are as important as the drama of the skylight. Each is part of the total museum environment.* 33, 35 *and* 36, *the new wing of the Zurich Museum of Fine Arts by the Pfister brothers is among the most successful designs for a highly flexible layout divided by movable partitions. The deceptive simplicity of the exhibition hall,* 33, *is made possible by an intricate system of ducts, cables and acrylic louvres occupying the space between the glass roof and the visible ceiling,* 36.



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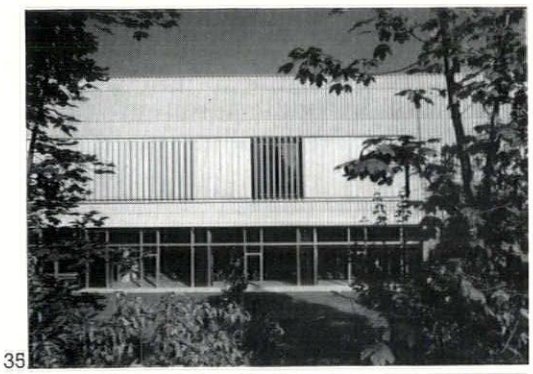

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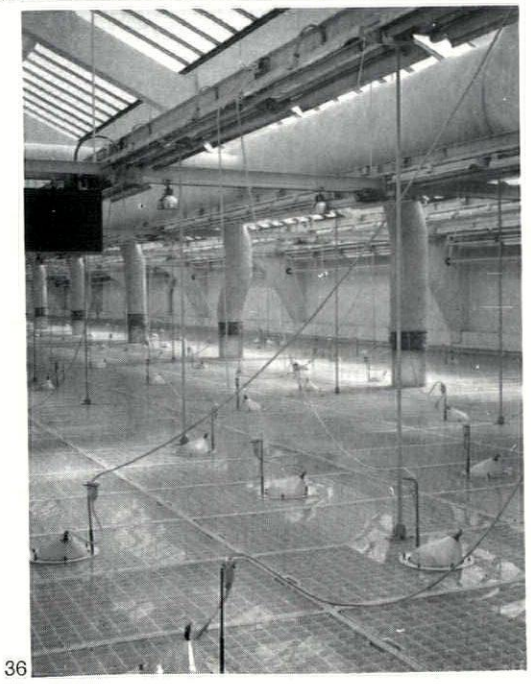


36

continued from page 246]

cover or completely in the open. This provides a new and visually stimulating setting and may often give better viewing conditions, particularly in terms of space. It is a pity, for example, that the Tate is not able to display some of its sculpture in the open, like the Museum of Modern Art in New York, 37, instead of within its unsympathetically vast central hall. Outdoor display has to be considered as architecturally as that indoors. It has also to be related to the indoor area of the museum so that the two function together and the transition between them is devised as effortlessly as, for example, in Scarpa's Venezuelan Pavilion at Venice, 27. In this connection half open spaces, like Rietveld's brilliant construction at Arnhem, may be especially appropriate.

Such a transition is relatively easy in a pavilion used only during the summer. It becomes more difficult in the ordinary museum, though there is no reason, of course, why there should not be some seasonal changes in museum layout, why some pieces should not be taken out in the summer like plants from a conservatory. In either case the outdoor display may, by a controlled view of it, provide that marginal comment in the indoor sequence of viewing which is both a visual rest and an additional piece of information. The same holds true in the reverse case of looking in from the outside. It is the sort of spatial organization suggested by many a quattrocento painting: indoors the Archangel Gabriel presents the Virgin with an arum lily in the Annunciation; outdoors, through an opening in the cloister, an angel hovers in the garden. There is no visual conflict between the two scenes, the eye moves from one to the other. Studio BBPR have used just such a compositional group in their Castello Sforzcesco.

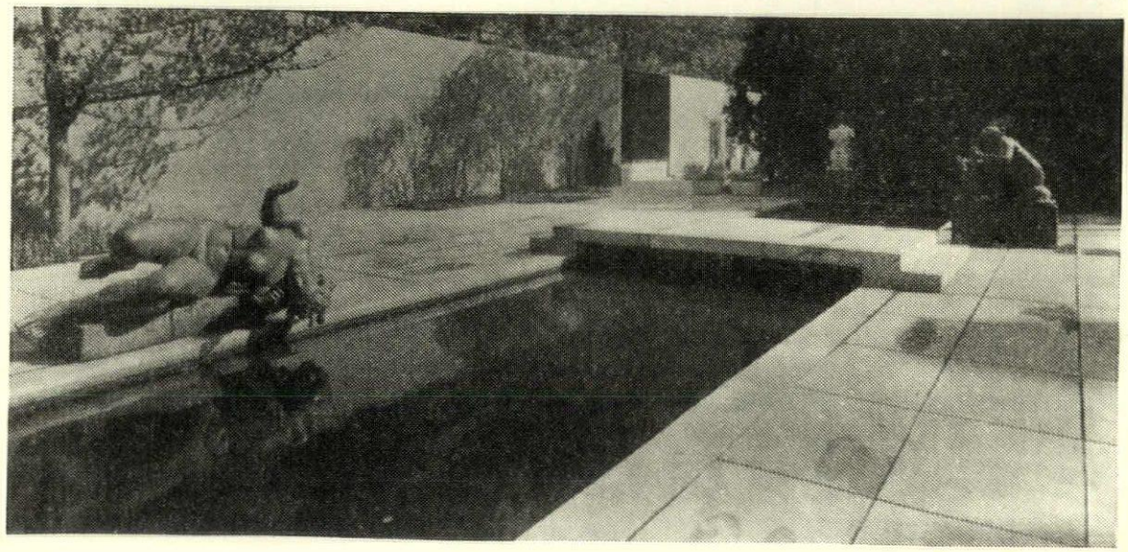
Outdoor display may also be a kind of temporary extension of the museum into the community. The Munson-Williams-Proctor Institute at Utica, N.Y., for whom Phillip Johnson is now building a new home, has an annual open-air show which draws a large attendance. Museum design—building as well as layout—should make such arrangements possible. There are other kinds of extension, like the travelling exhibit of the Warsaw Museum or the so-called 'Artmobile' trailer of the Virginia Museum of Fine Arts, which have, however, fewer architectural implications except in so far as they may lessen the need for a large permanent display.

The extension of the museum into the activities of the community may have considerably greater repercussions on museum planning than any other consideration. Not all communication need, after all, take the relatively passive form of viewing a collection. This is as true of natural history as of art, though most experiments in participation have taken place at art museums. It has probably been thought easier to arrange for school children to model clay in the museum workshop than to dissect frogs in the museum laboratory. The Museum of Modern Art in Sao Paulo was designed by Lino Bo Bardi with a great variety of possible activities in mind. In future other types of museum may follow a similar pattern.

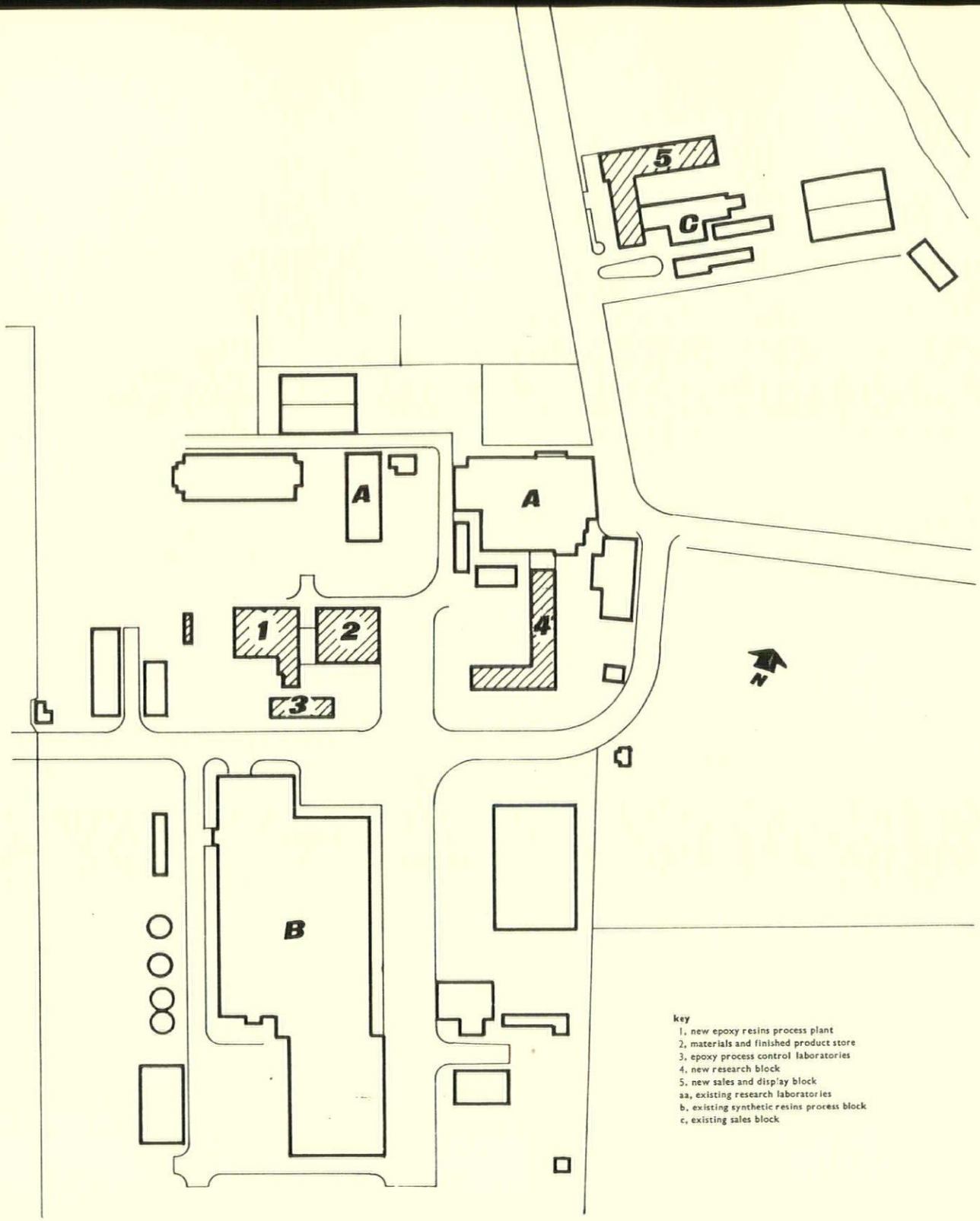
The planning of such a building will have to consider a diversity of spaces: libraries for books, magazines, gramophone records, films, slides; libraries lending works of art so that these may be appreciated in the every-day surroundings of the home; rooms for the projection of films and transparencies; workshops, laboratories and studios designed for public use; lecture and meeting rooms for talks, discussions and musical performances; restaurants indoors and out. The museum becomes part of what, for want of a less compromising phrase, can only be called a cultural centre. This is a trend fully in keeping with the new social role of the museum. It may be, what is more, its primary justification.

It has been usual to plan such cultural centres as part of open spaces, to set the buildings in parkland. Whether this divorce of the museum from the working centre of the city is always valid is open to question. It may be that in our intensely urban society there is a place for a museum which opens as much on to the public square as into the public park. The Loggia dei Lanzi Florence is, perhaps, a not unworthy precedent.

At the beginning of this year the British Treasury announced an increase in the purchasing grants of certain museums and art galleries. The increases were unspectacular yet they will make a difference. They may also, though this is a slender hope, be the beginning of a less parsimonious attitude. It is important that with the additional money available there is now not only an increase in the collections but an improvement in their presentation. The attitude, so long prevalent, of considering the museum, in Mumford's phrase, as a kind of cultural department store, fails to exploit the great impact which the immediacy of imaginative display makes possible. The great nineteenth-century museum mirrored the acquisitive society which fed it. A radically different attitude is needed toward visually communicating the meaning of objects in a society of leisured abundance.



37, Phillip Johnson's sculpture garden extends the Museum of Modern Art, New York, into an outdoor room.



key
1, new epoxy resins process plant
2, materials and finished product store
3, epoxy process control laboratories
4, new research block
5, new sales and display block
aa, existing research laboratories
b, existing synthetic resins process block
c, existing sales block

FACTORY EXTENSIONS AT DUXFORD

Ove Arup and Partners' first process group at Duxford, b on plan above, was illustrated in AR, March 1951, and has since become established as a text-book example of structural ingenuity and functional planning. Their new work includes another process group, equally ingeniously planned around a vertical, gravity-fed plant, and an extension to the research laboratories. At the same time, Westwood, Sons and Partners have been responsible for the design of new sales facilities located near the top of the plan above.

1

1, the sales block, with display space in the glazed area below.
2, a corner of the research laboratories, with new plant, store and control laboratories (far left).

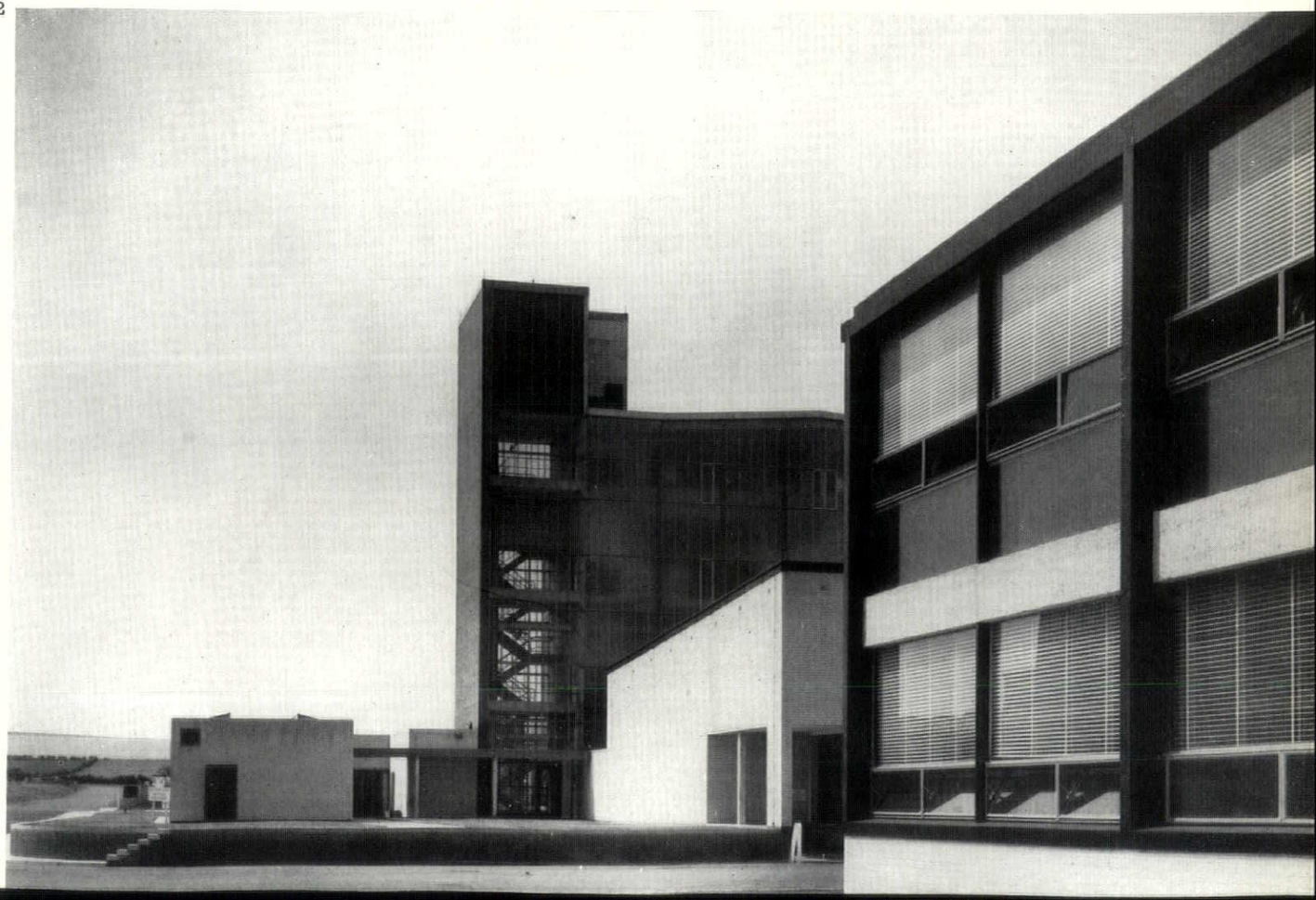
FACTORY EXTENSIONS AT DUXFORD

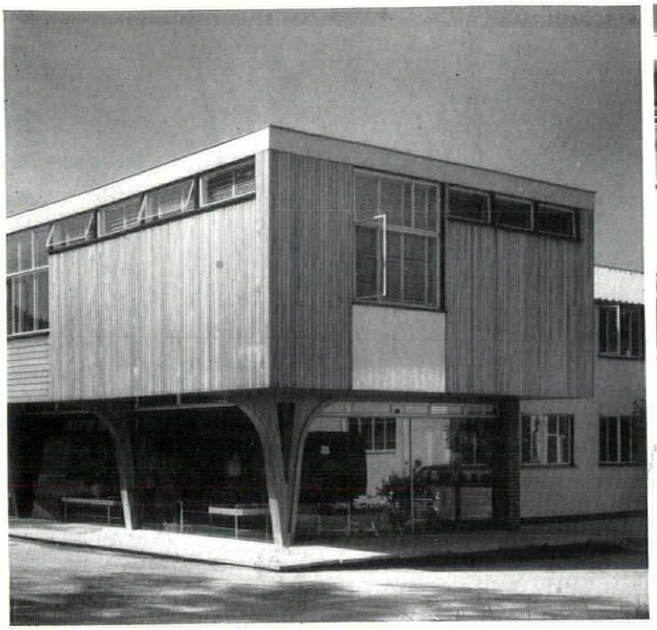
DESIGNERS — ***OVE ARUP AND PARTNERS***

Architectural Associate — ***Philip Dowson***

ARCHITECTS FOR SALES AND DISPLAY BLOCK: WESTWOOD SONS AND PARTNERS

2





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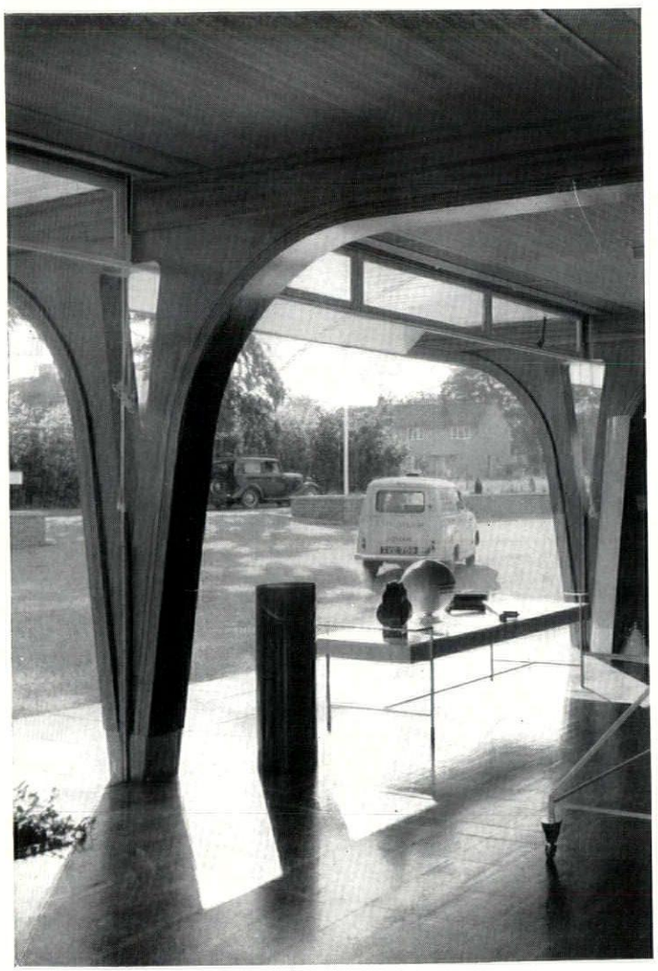
4

FACTORY EXTENSIONS AT DUXFORD

The new works comprise extensions to the sales and display block, a new block of research laboratories, and plant, storage and control laboratories for a synthetic resin process—the clients are a leading chemical concern and the Duxford factory, near Cambridge, manufactures resins for such purposes as the bonding of wooden laminates.

The sales block, 3, 4, 5, designed by Westwood Sons and Partners, is an L-shaped structure whose two wings partly conceal an older building, and partly combine with it to form a three-sided courtyard, which has been landscaped. The three-storey part of the new work, which faces the old, is of load-bearing brick construction with patent lightweight timber roof. The two-storey wing which joins this to the old building, which it also masks, is a timber structure whose upper floor, faced in western red cedar boarding, is supported on a ground floor structure consisting of laminated timber frames—alternate plies of Douglas fir and meranti bonded together with glues made by the client. This lower floor is glazed for most of its perimeter to form a showroom and enquiry area.

The research laboratories which, like the process group, are the work of Ove Arup and Partners, occupy two sides of a hollow square, and are joined by a low link block to an older laboratory block which forms the



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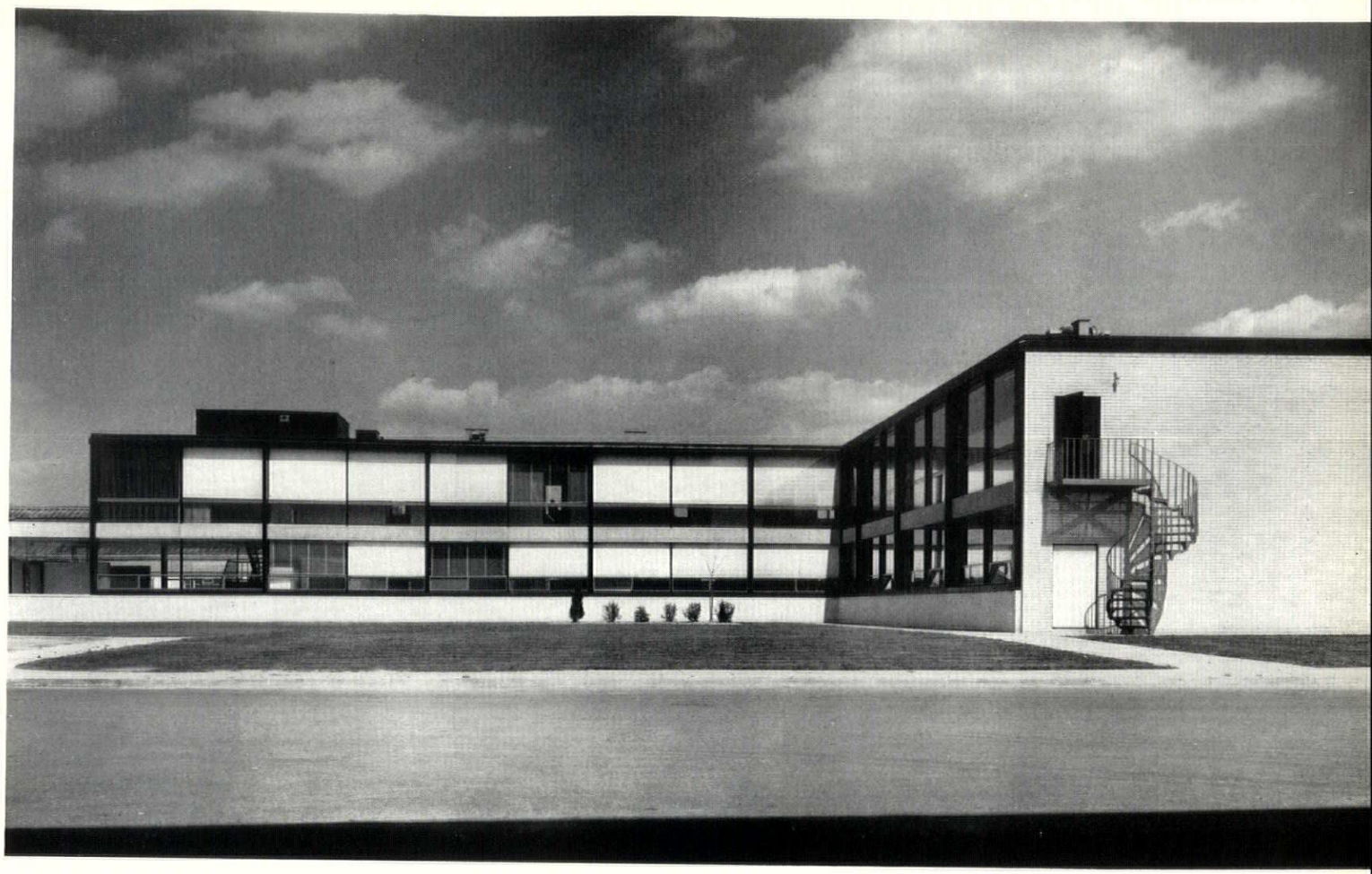
3, end of the timber-framed wing of the new sales block, with older building behind.
4, junction of the brick and timber wings of the block, showing the entrance and enquiry area, with view through to the new courtyard beyond.
5, view looking outwards from the display area, the laminated wooden beams supporting the upper floor being, themselves, part of the display of applications of the client's products.



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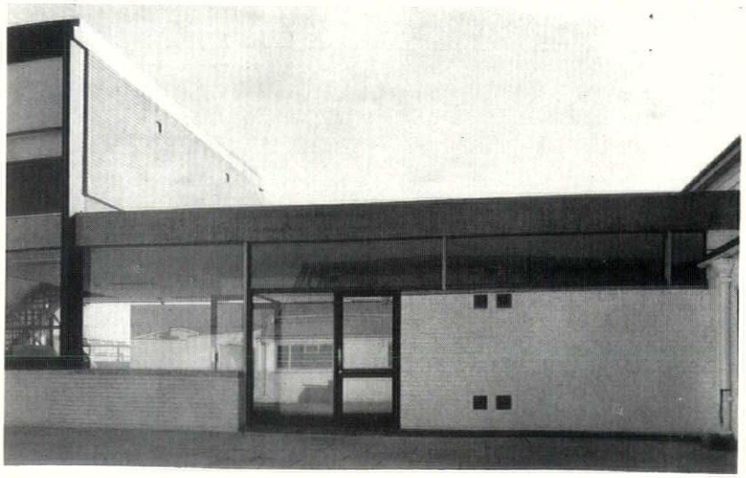
third side—later extensions may close the square. The laboratories themselves, 6—11, are planned mostly as a series of self-contained units, each 20 feet square, and the structure is a pre-cast concrete frame at 20 foot centres, with in-situ floors. The glazing mullions in the centre of each bay are also pre-cast. Standard window units are bolted to the back of the frame, leaving all frame members external, which simplifies internal installations. Other glazing goes directly into the concrete. All exposed in-situ concrete is bush-hammered. Heating is by radiant ceiling panels, supplemented by a warm air system to make up losses due to fume-cupboard extraction.

6, courtyard side of new research laboratories, with link to older laboratory block at far left.
7, linking block, with entrance, between old and new laboratories—new block on left.
8, access corridor on first floor of new research laboratories, as seen from the escape door visible in 6.



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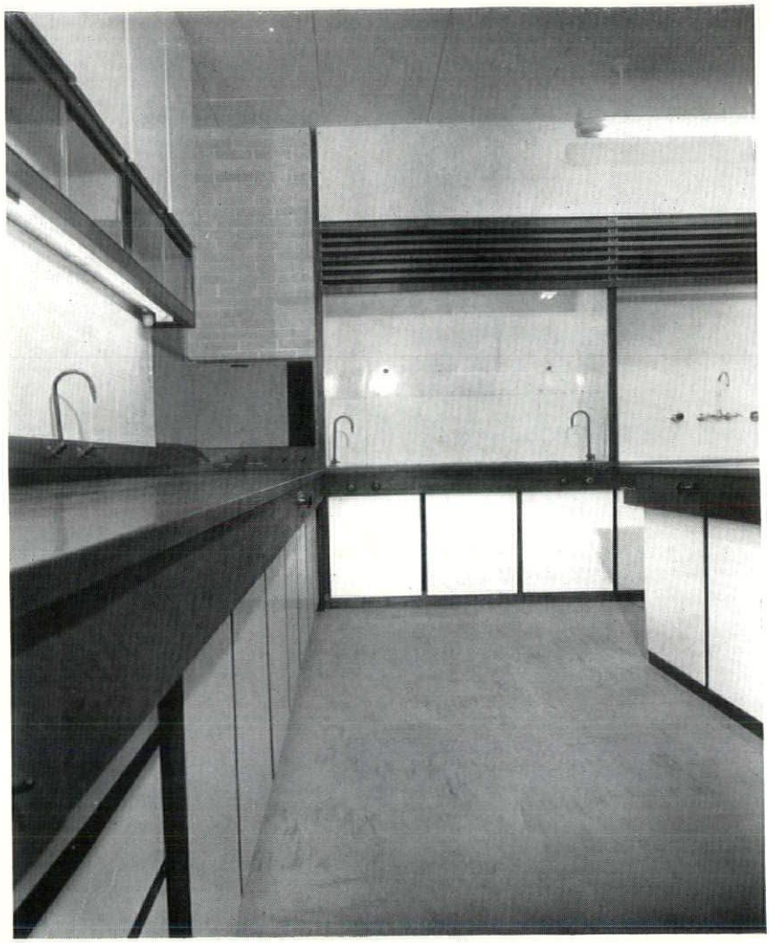

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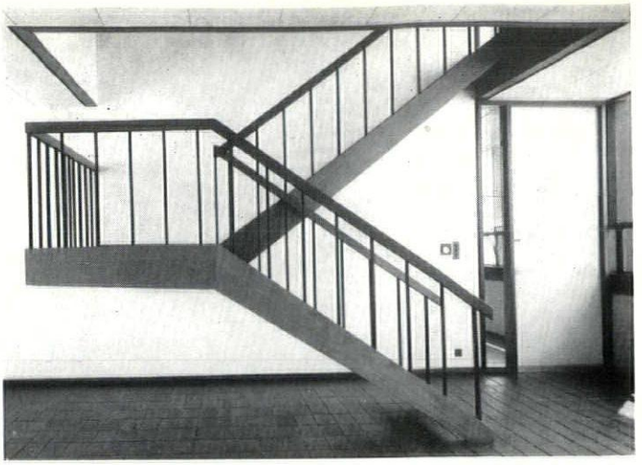

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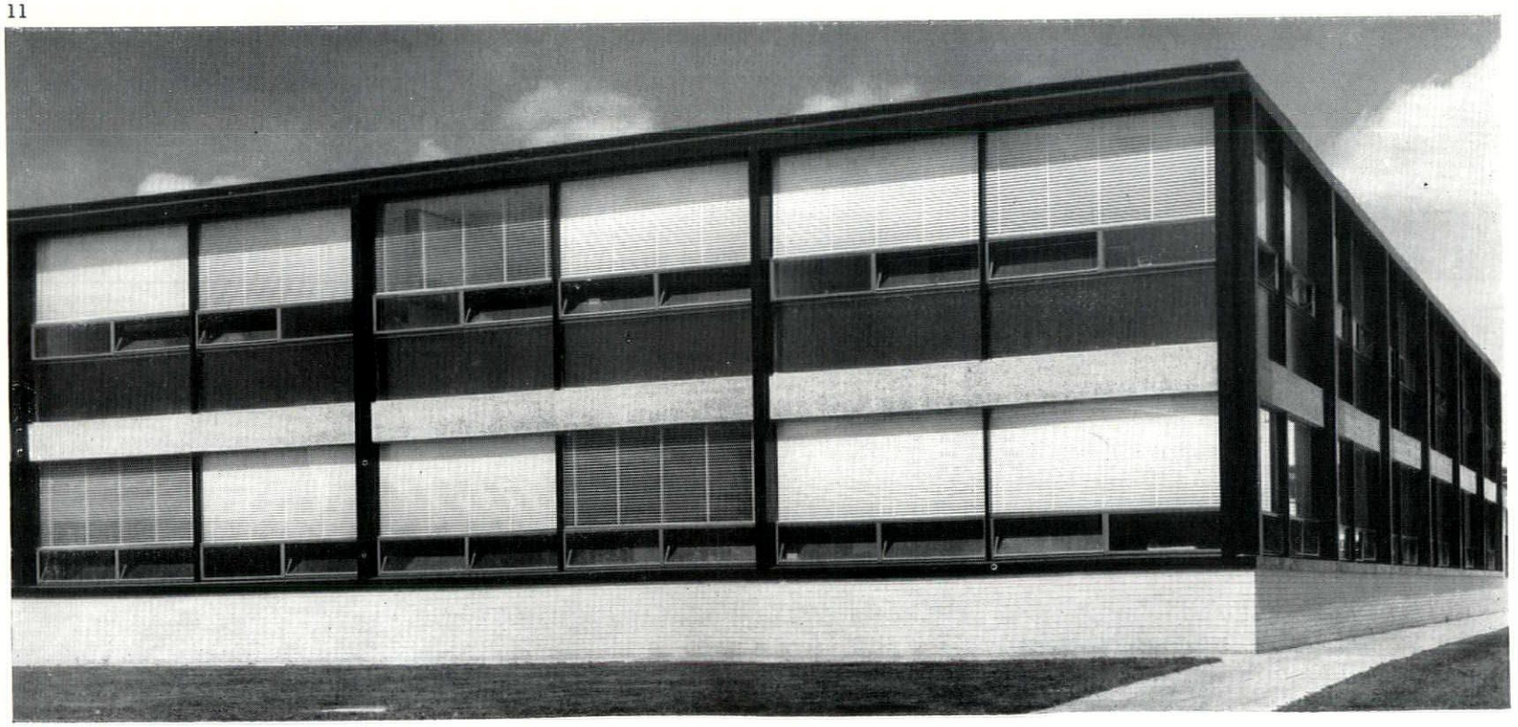
9, interior of typical laboratory, with fume cupboard and sink at rear, central work-bench, and plastic-faced doors to all low-level cupboards.
10, staircase in laboratory block.
11, exterior angle of laboratory block, showing mating of precast frame units at corner, brick plinth and bush-hammered edge beam of in-situ floor slab.

The process group, 12, consists of three main functional elements: the plant itself, a small block to house control laboratories, and a store for raw materials and finished products. The building to house the plant consists simply of a series of superimposed machinery platforms to support a gravity-fed process, platforms and frame being all of in-situ concrete. The whole block is clad in patent glazing (easily replaceable in case of fire or explosion) standing two feet clear of the frame on ladder mullions, 13, thus leaving ample space for pipes and services well away from the plant.

The storage block, 14, is a simple brick structure with a single-pitch roof carried on laminated timber beams. A covered way connects with the plant, and provision has been made for extension along the line of the roof pitch. The control laboratories, 15, also brick-built, are separated from the plant because of the fire risk. This block, too, may be extended as need arises.

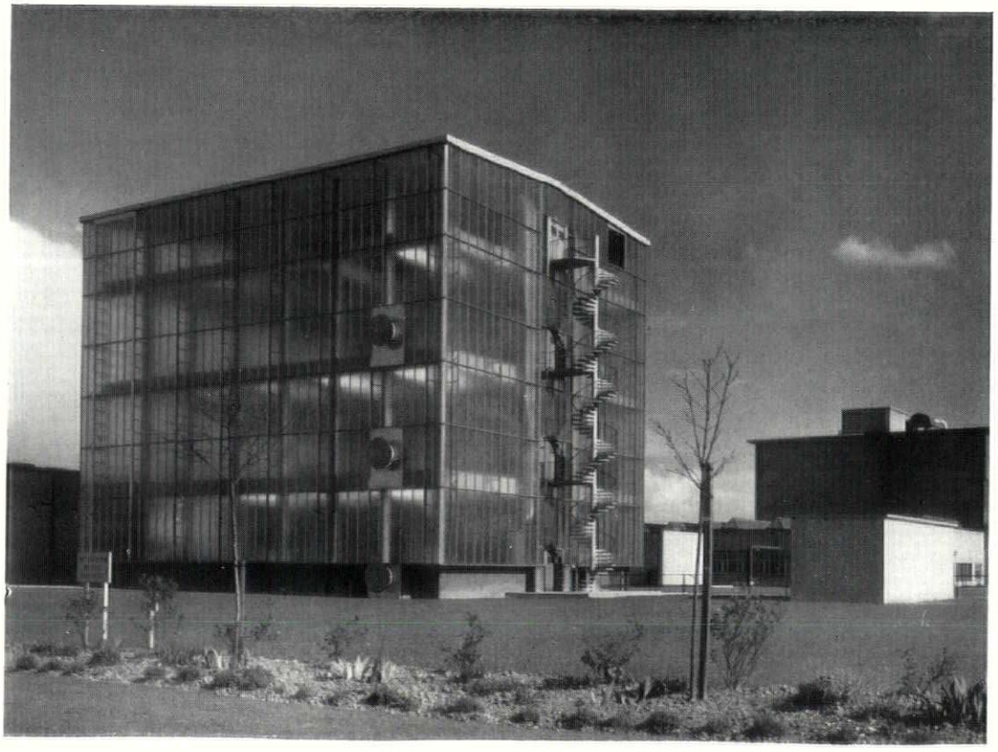
11



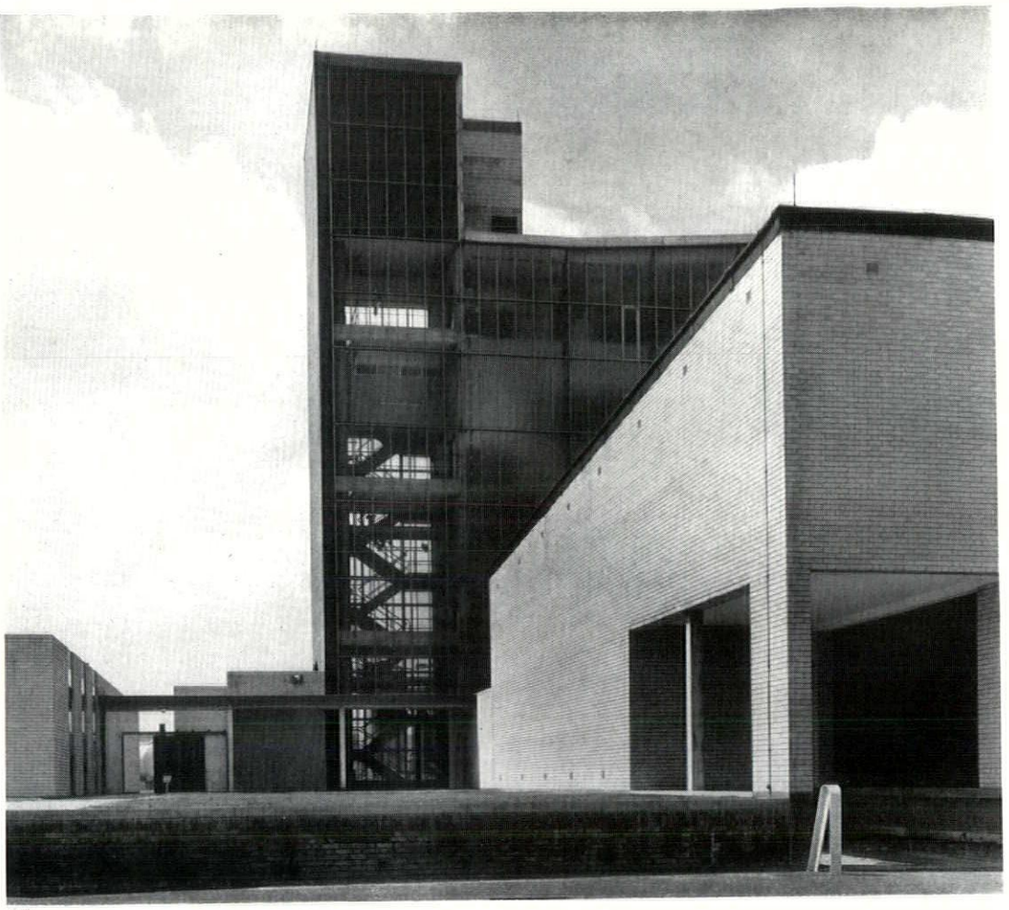
12

FACTORY EXTENSIONS AT DUXFORD

13



12, general view of process group, with store at right, and control laboratories in front of stair/lift tower of main plant.
13, the plant block seen from the other side, with laboratories, and earlier plant by same designers beyond. The extent to which the glazing of the plant block stands clear of the floor slabs is well seen in this view.



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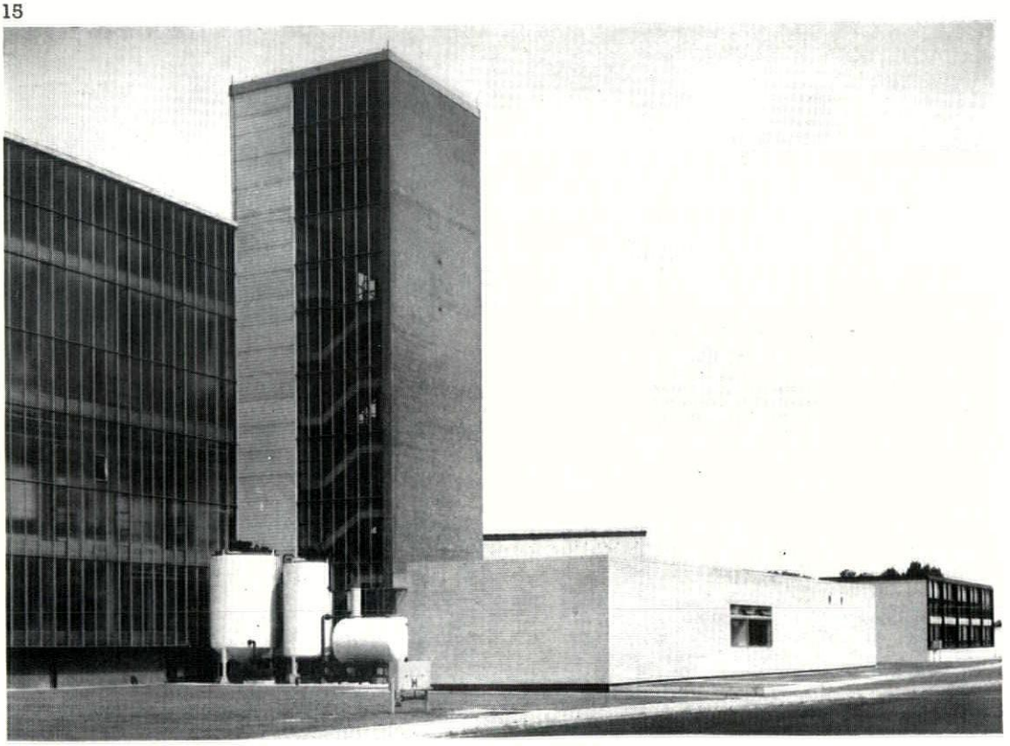
14, the storage building of the process group, with loading bay at extreme right. Behind is the stair tower of the plant proper, which carries a water-tank at its head.
15, control laboratories and main plant of process group ; the new research block can be seen beyond.

15



ID

a monthly review of interior design

Church in Stepney, London

architect : Holger Jensen
in association with Armstrong and McManus
associate-in-charge : Richard Wackerbarth

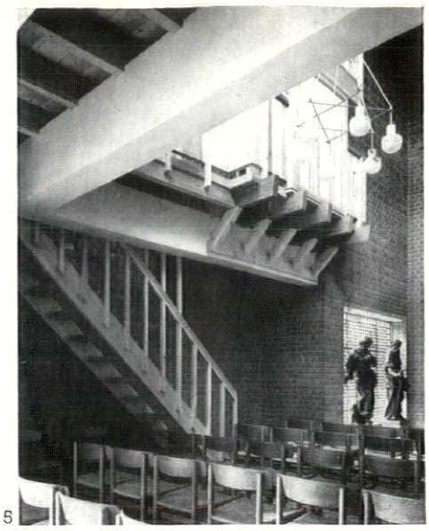
Replacing a much earlier structure, destroyed by bombing during the war, the Danish church in Stepney serves the spiritual needs of Danish sailors from ships in the Port of London, while its ancillary buildings serve their general welfare. The church proper is a tall brick box, almost square in plan, covered by a form of butterfly roof, and its interior, carried out almost entirely in fairface brick and redwood, gives London a tangible lesson in Danish detailing by a distinguished Danish architect.

1. the suspended ship models under the roof, commonly found in seafarers' churches all over Europe, are the only overtly traditional touch in the interior, yet the whole businesslike, straightforward design has a distinct flavour of the Functional Tradition about it, and even something of the functional manipulation of three-dimensional space that can be found in other nautical churches, such as St. Mary's, Whitby (AR, February, 1958).

1

2

Church in Stepney, London



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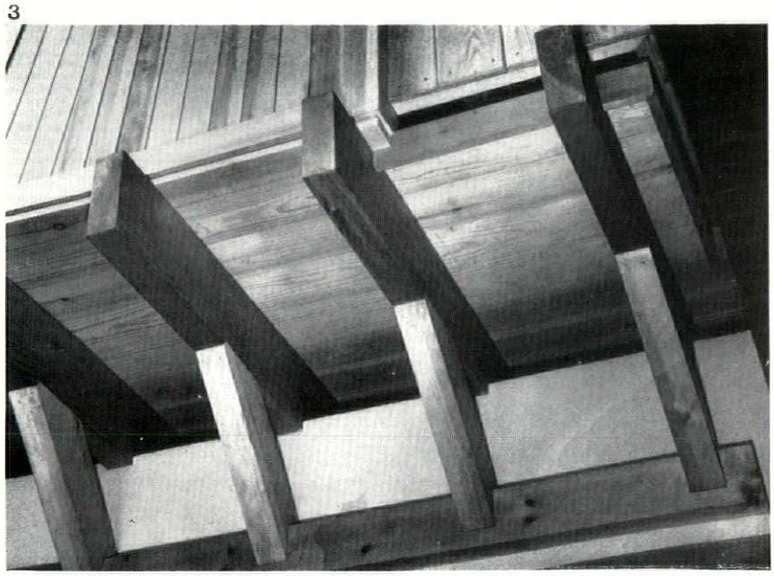
2, the organ at the end of the back-gallery ; pipe-work, action and organ case were made in Denmark to a collaborative design by the architect and the organ builders, Frobenius of Copenhagen, but the wood is a similar European redwood to that used in the rest of the church.

3 and 4, bracketing under the organ, and the organ console, with music-desk and stops. As will be seen from 5, above, the organ is bracketed completely forward of the gallery, whose edge is marked, in 4, by the line where the redwood boarding meets the brickwork, with a characteristically simple joint.

5, the southern side of the church, showing the gallery stair and the window which side-lights the altar.

3



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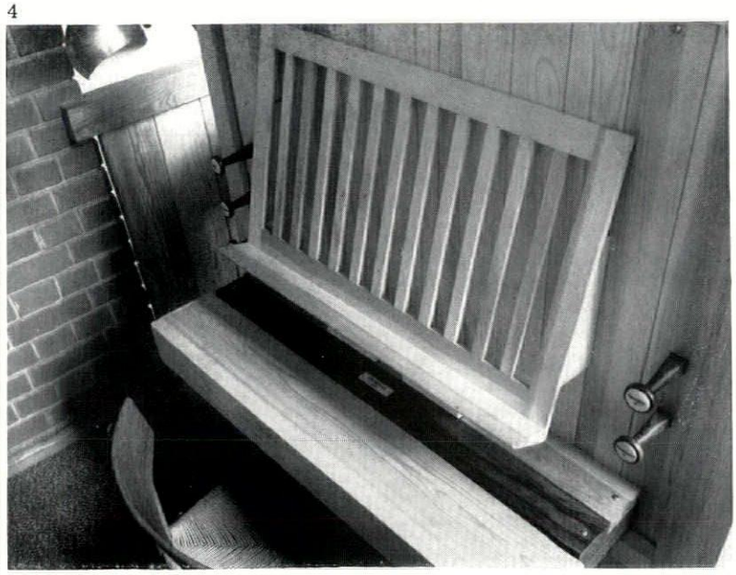

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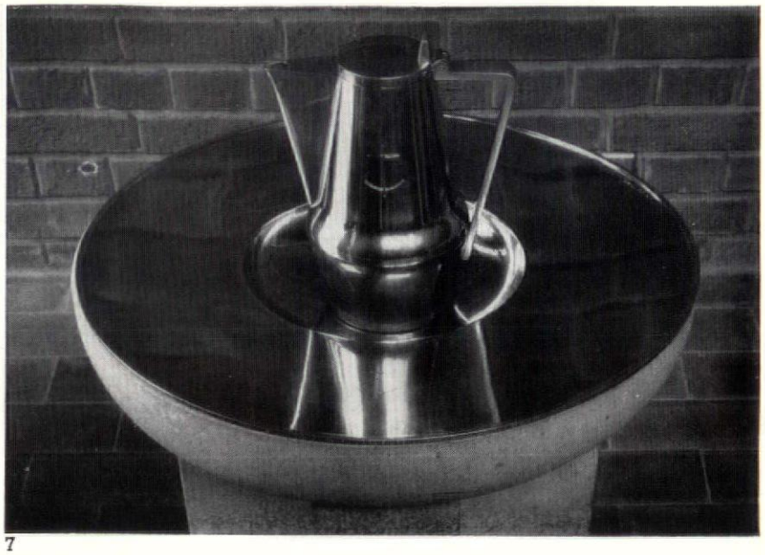
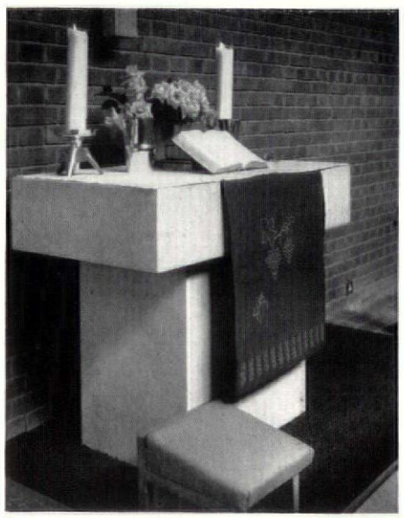


7

6, altar furnishings; 7, the font. The plate and other pewter-work were made in Denmark to the architect's design. The metal of the organ pipes is similar in alloy and appearance.

8, the altar. This, like the font, was made in England of Roman stone. The extremely simple form returns to the idea of a rude table, but without fake primitivism.

9, the sanctuary, showing the altar and kneeler within the wooden altar-rail, the font beyond it. The lower arm of the wooden cross can be seen above the altar. The two fine baroque statues in front of the window are by Cibber, and come from the old Danish Church.



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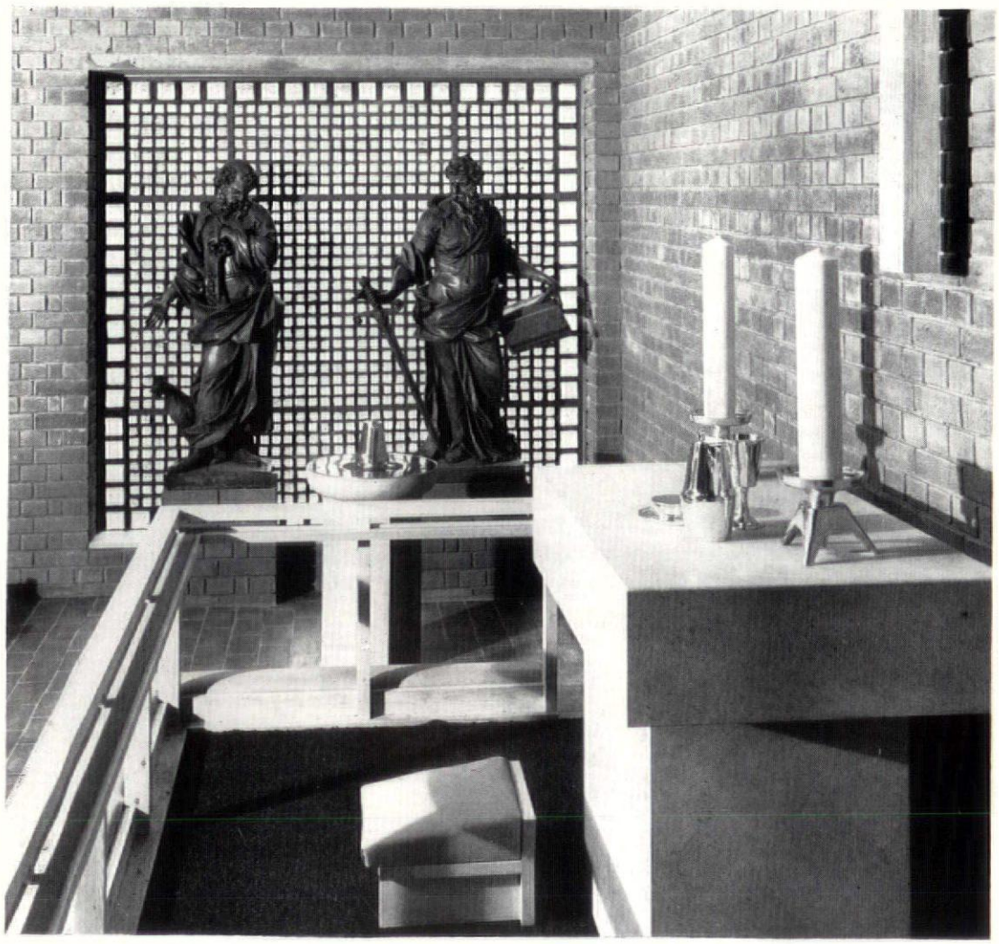

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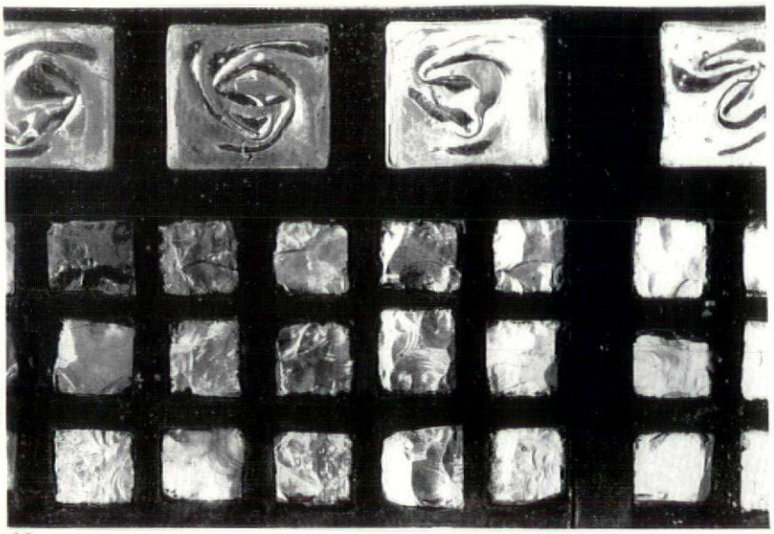


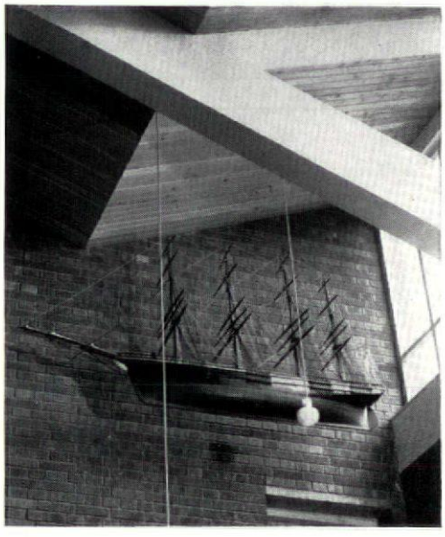
10

sent from Denmark by the architect. 13, the complete church and ancillary buildings, seen from Commercial Road. The stained glass window can be seen under the entrance-pergola, but the church has no door on this side, entry being from a foyer-corridor at the back. To accommodate very large congregations, folding doors can be opened between the church proper and the meeting room occupying the first two ground-floor bays of the building on the right.

Church in Stepney, London

10, a detail of the stained glass window by Palle Bruun—the smaller glass lights are made by breaking up larger pieces (not unlike those in the top row) of clear colour, mostly yellows and reds, and the whole is then cast into wire-reinforced concrete, and carried in an iron frame. 11, general view of the sanctuary, showing the clear rise of the brick wall behind the altar. The liturgical orientation of the church is the reverse of the normal practice, so that the stained glass window behind the statues receives direct sunlight from the south for most of the day, introducing a positive element of warm lighting to supplement the overall light from the clerestory, high on the east wall facing the altar, which admits direct sun only early in the day, as in 1, page 261.
12, the larger of the two ship models, suspended under the roof. This one came from the old Danish Church; the smaller one, visible in the detail on the cover of this issue, was

11



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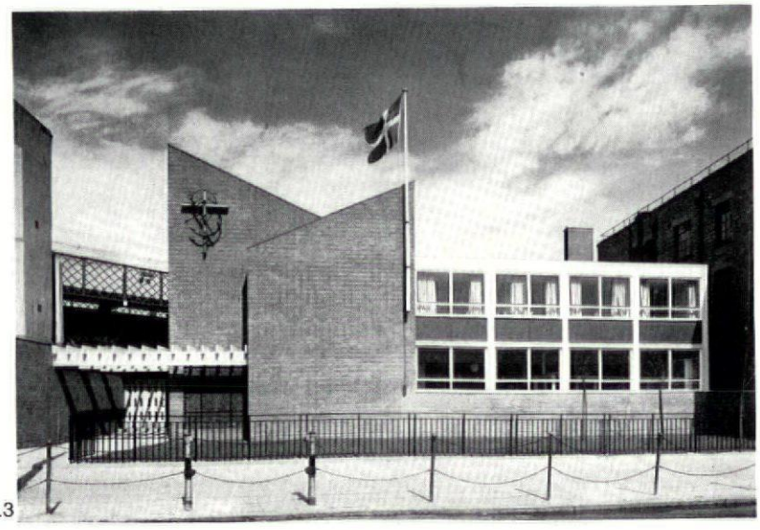


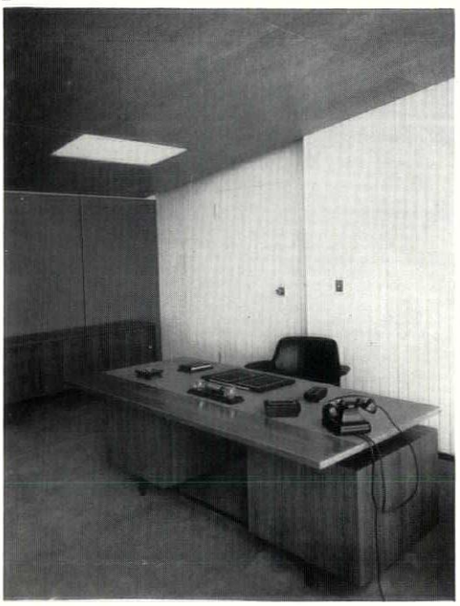
13

1

Gift Room at UNESCO HQ, Paris

designer : Robin Day

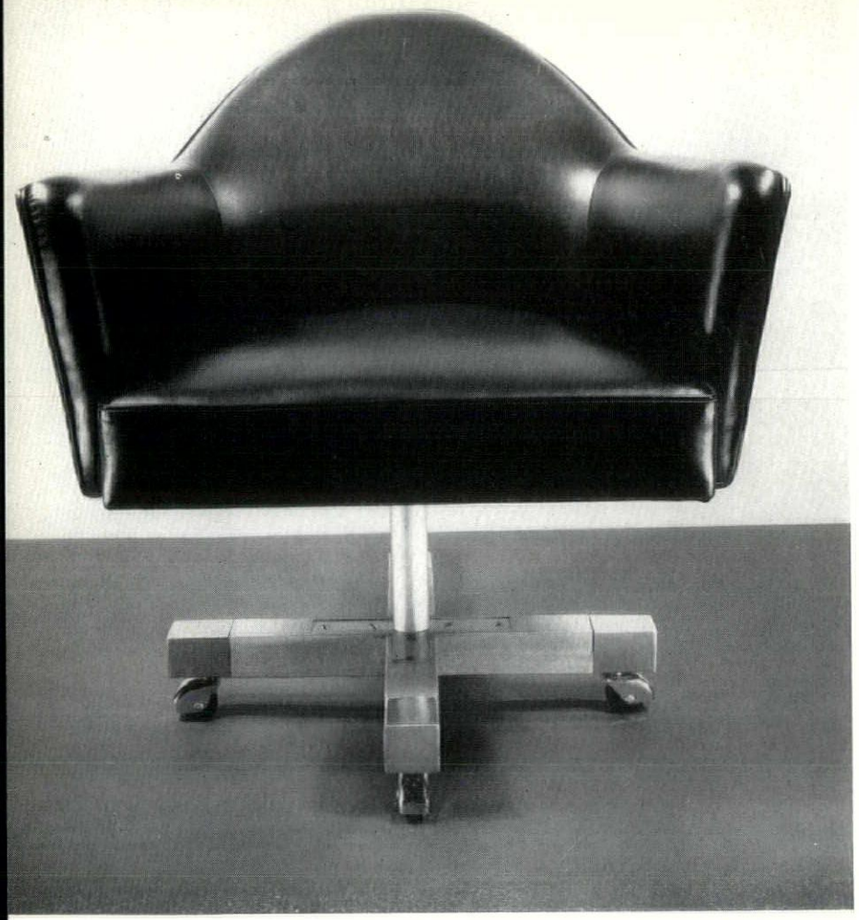
2



Although there is no British Room at the UNESCO Headquarters in Paris, in the sense that some member governments have given 44 complete furnished interiors for council or committee rooms, an independent group of manufacturers and other interested parties, under the aegis of the British Furniture Manufacturers' Federated Associations, have presented UNESCO, in the name of the British people, with an office for the President of the Executive Council.

1, the room, which lies in the curve between two wings of the building's Y shaped plan, is on the north side of the block, the front towards the Place de Fontenoy, looking over the Ecole Militaire to the Eiffel Tower. Like all offices on the main floors of the block, it has a ceiling that slopes up toward the window, because of the structure above it—here it is panelled in oak veneer with flush light-fittings. The main desk, the two low tables and the secretary's desk (not shown) are in walnut with satin chrome metal frames. The wall behind the desk is in white-painted boarding, with a mirror strip next the window, against which the natural crush curtains are drawn. The chairs, like the other movable furniture and the over-all design, are by Robin Day, and covered in red fabric, except for the swivel chair, upholstered in black leather. The carpet is grey.

2, looking into the back corner of the room, toward the storage units, also in walnut, and the back wall which is panelled out in golden tan leather to match the top of the desk. A painting by Ben Nicholson, the gift of the British Council, hangs on this wall.



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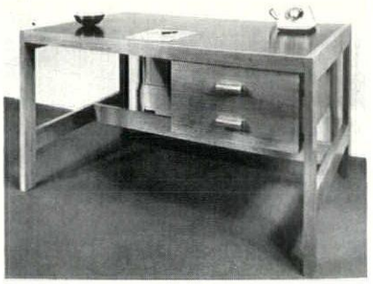


2

DR
design review

Architects' furniture

In spite of the increasing trend to compartmentation and specialization in the design of interiors, a number of separate pieces and, occasionally, integrated suites, of first-class furniture continue to be designed in British architectural offices.

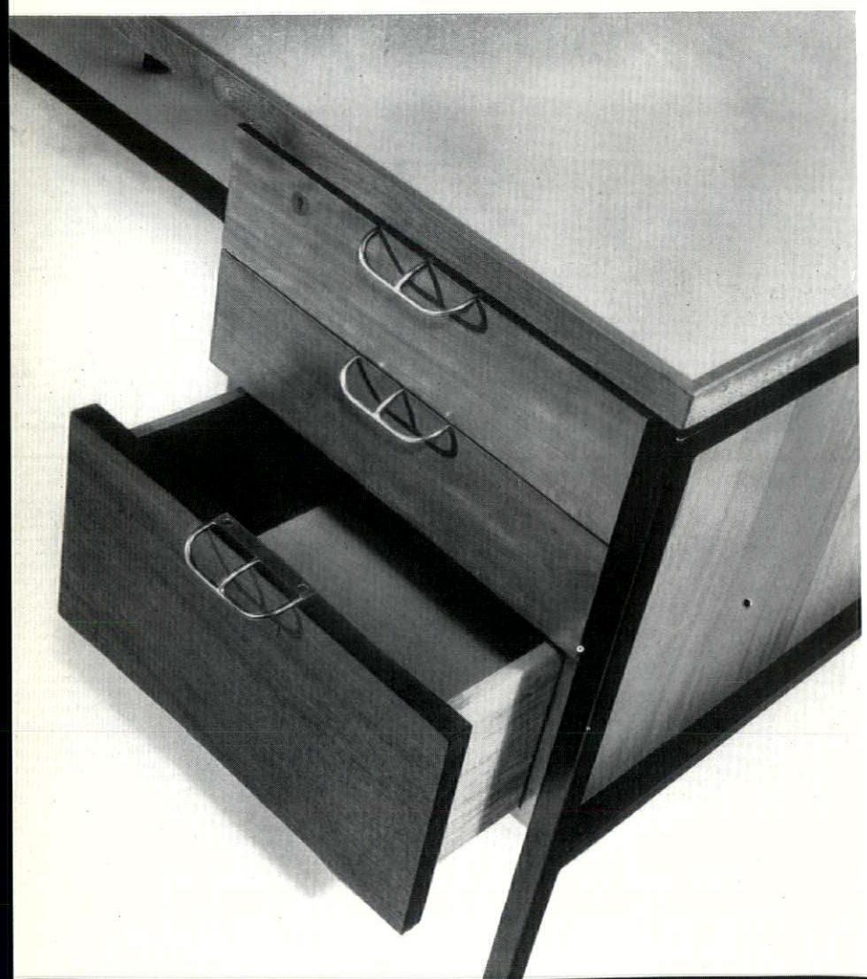
1, executive chair, from the suite of unit-designed office furniture by Brian Henderson of Yorke, Rosenberg and Mardall, which shared first prize in a recent TDA competition. Upholstered in black leather, it shares the general air of slightly larger-than-life robustness and common-sense luxury that informs the other pieces in the set.

2, a desk, from the same suite, framed in polished abura wood with black linoleum top. The whole suite

Architect-designed furniture

is to be manufactured by Bath Cabinet Makers and should be on the market in the New Year. Prices are expected to be moderate, in spite of the quality of workmanship and materials, because the whole range is built from a few basic units.

3, corner of desk, from a range of university furniture desiged by Basil Spence and Partners. The range, which includes other sizes of desk, tables, chairs, bookshelves and storage units, is notable for its sensible and elegant detailing, exemplified here by the drawer-pulls. Frames are in inch-square stove-enamelled steel tube, solid wood is guarea, the work tops in various materials.



3

4

4, single-pedestal desk from this range. Manufactured by George M. Hammer, cost should be just under £23 in its most lavishly-equipped variant.

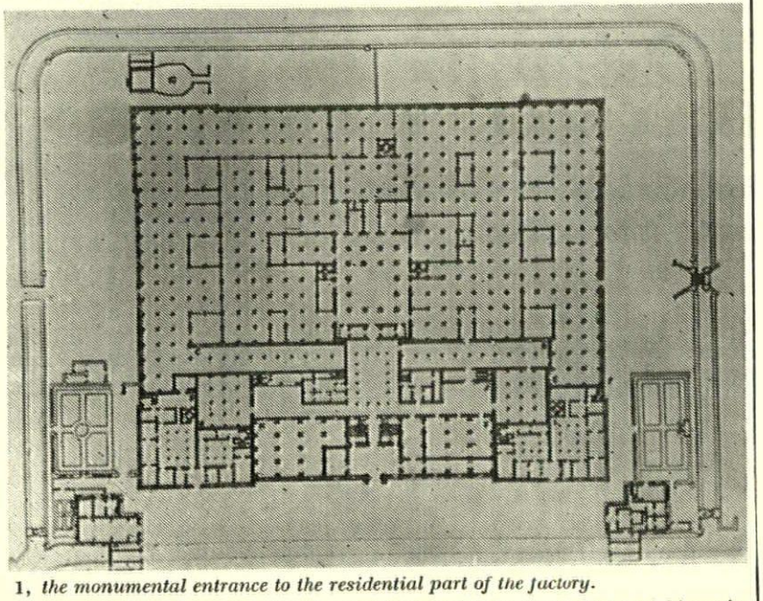
RENÉ TAYLOR

ROYAL TOBACCO FACTORY

An account of the largest early industrial building in existence, completed in 1770, now being converted for university use.

The University of Seville has moved to new quarters. The architectural significance of this transfer is that, when it is completed, one of the leading examples of eighteenth century industrial architecture will have ceased to function as such, for the University is taking over the Royal Tobacco Factory, now grown too impracticable to fulfil the purpose for which it was created. It reached its heyday in the nineteenth century when virtually the entire state tobacco monopoly was concentrated within its walls. It was, in fact, a sort of quasi-fortified township, with its own living quarters, chapel and even a prison. Formerly the Factory was completely isolated from the rest of the city, whose walls ran alongside the main façade. It was surrounded by a moat that could only be crossed by three drawbridges. In addition, there were check and control points manned by a host of guards and customs men who waged a ceaseless feud with the illicit manufacturers, tobacco smugglers, pedlars and *contrabandistas* that the existence of the monopoly inevitably encouraged. More often than not they were in league with the workers inside and even with the guards themselves: *Quis custodiet ipsos custodes . . .?* These were the days, evoked by Prosper Merimée in 'Carmen,' when the *cigarreras* or cigarette girls streamed out of an evening from the Factory, dancing *seguidillas* and *sevillanas* to the strumming of guitars and the chatter of castanets. But all this belongs to the Romantic age of Washington Irving, Theophile Gauthier and David Roberts. It has long since passed away. Now the Factory is to house the Faculties of Law, Medicine, Science and Letters, as well as the University offices.

Briefly, the history of the building is as follows. The original plans were drawn up in 1725 by a military engineer called Ignacio Salas, though work on the site did not actually begin until the middle of 1728. Operations were suspended three years later, owing, it seems, to various objections having been raised against Salas's design. The latter, however, carried out what was probably the trickiest and most important part of the project. This was to divert and canalize the river Tagarete, which ran in front of what was to be the principal façade so as to provide the Factory with an underground water supply. These preliminaries absorbed about half the total cost of the undertaking. This total has been computed at 36 million *reales*, roughly the equivalent of £1,500,000 at today's values. Between 1733 and 1737 there was another spell of activity under a second military engineer called Diego Bordick, only to be followed by a further gap of sixteen years. In 1750 work was resumed under a Dutch engineer, Sebastian van der Beer, who appears to have drawn up a new set of plans which he was asked to present and explain in person to King Charles III. Van der Beer remained at the head of the scheme until 1766, four years prior to its final completion. In that year he was relieved of his post, a victim of the political changes that followed the downfall of the minister Esquilache. The latter's successor, Muzquiz, dismissed with the curt phrase 'that his services were no longer needed,' so that, as a contemporary put it, 'everyone was struck dumb, seeing that he had been at the head of the enter-



1, *the monumental entrance to the residential part of the factory.*
2, *plan of the factory, showing the residence of the superintendent and his assistants in front, with the main factory behind.*

prise ever since its inception in 1750.'

Without going into the question of whether Salas, Bordick or Van der Beer was ultimately responsible for the design of the Factory as it exists today, there is no doubt that it was in part inspired by Juan de Herrera's Lonja or Exchange (1582–98) in the same city. The lateral façades show the same arrangement of a double row of windows, separated by a string-course, but instead of the superimposed orders of the Lonja, the bays are divided by giant pilasters. Moreover, the main façade is enlivened by the introduction of a mezzanine, replacing Herrera's flat rectangular panels. The result is distinctly cosmopolitan and links this whole front with the type of Late Baroque building exemplified by Marquet's Post Office (1767) and Sabatini's Customs House (1769) in Madrid. Its general air of severity, however, is mitigated by a good deal of detail carried out in the local *churriguerresque* tradition.

The whole structure measures some 550 by 450 feet, not far short of the dimensions of the Escorial. As may be seen from the plan, it is divided into two parts, namely the 'palace' or residence of the Superintendent and his principal assistants and the factory proper. The residential part, with its monumental entrance, courtyard and staircase, occupies the front of the building and is clearly separated from the remainder. But it is the industrial section that is of predominant interest. This occupies about two-thirds of the total area. Outside, the extensive terraces where the tobacco leaf was dried may still be seen. The interior is organized on the basis of innumerable small spatial units or compartments about eighteen-foot square, upheld by massive supports. It consists essentially, therefore, of an aggregate of autonomous units, a singularly modern conception, and an arrangement which had the virtue of extreme flexibility in respect of the changing needs of the monopoly. These units are grouped so as to form extensive galleries, some of them as much as 400 feet long, running the whole length of the building. They are punctuated by numerous small courtyards that serve to admit light and air to the interior. All the manufacturing processes were housed in this part of the building, from the milling of the leaf, carried out by means of circular crushers, operated by teams of mules, to the packaging of the finished article. But by far the most remarkable feature of this building is the way in which it was planned, complete with its underground reservoir of water, so as to provide just the right degree of humidity and ventilation required in the various processes of tobacco manufacture. The manner in which the atmospheric conditions of the interior can be controlled should prove a boon to the University when it takes over, particularly in the broiling Sevillan summer when it is invaded by hundreds of foreign students on vacation courses.

3, *cigarreras at work in the factory.*

Dariush Borbor

SUISSE-ROMANDE

Although the guide-books insist that Switzerland is divided into three parts and three languages, architecturally the line is not so abrupt. Architecture cannot be contained within narrow bounds in this international age, especially in a country as small as Switzerland, where twenty-two fondue-eating cantons cling together forming Confederatio Helvetica. A desire for unity coupled with a distaste for standardization is reflected in Swiss life, philosophy, administration, politics, architecture and town planning, and this is especially true of the Suisse Romande* whose recent architecture is surveyed on the following pages.†

Three periods in the history of Switzerland are of significance to its architecture and town planning. The late middle ages brought into the fortified towns the harassed countryfolk, resulting in the familiar topping of the buildings with a further two storeys. But the industrial revolution, which created irrecoverable chaos of over-concentration in many countries, had quite the opposite effect in Switzerland; electric power and cheap communications led to industrial decentralization, saving the country from the horrors of Megalopolis. The third period of population movement came after the Second World War when, for economic reasons, the rural inhabitants became town conscious. This led to acute housing famines which were further aggravated by the increase in marriage and birth rates. Foresight, rent control, and new planning laws tackled the problem with common sense, the main building types being subsidized blocks of flats. Age-old problems were given new solutions; the elastic plan and the convertible house dealt with the needs of the growing family. The tactful marriage of private development, co-operative societies, and public authorities failed to produce architectural masterpieces, but saved the country from the hazards of Subtopia.

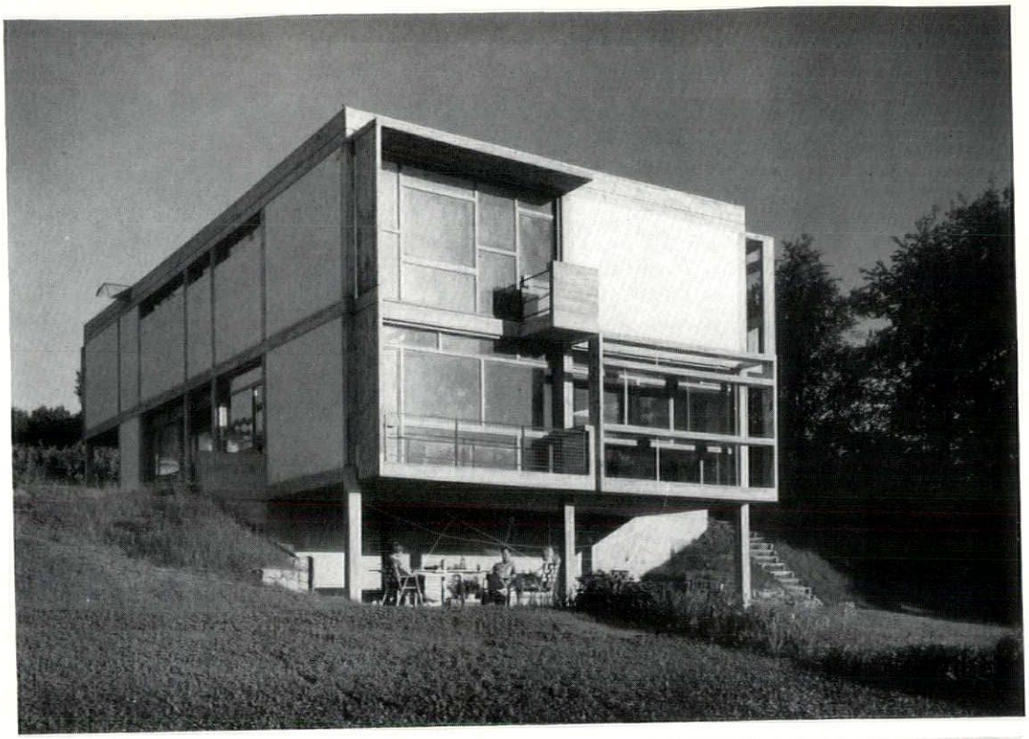
Tubular stands in the street for advertisements.

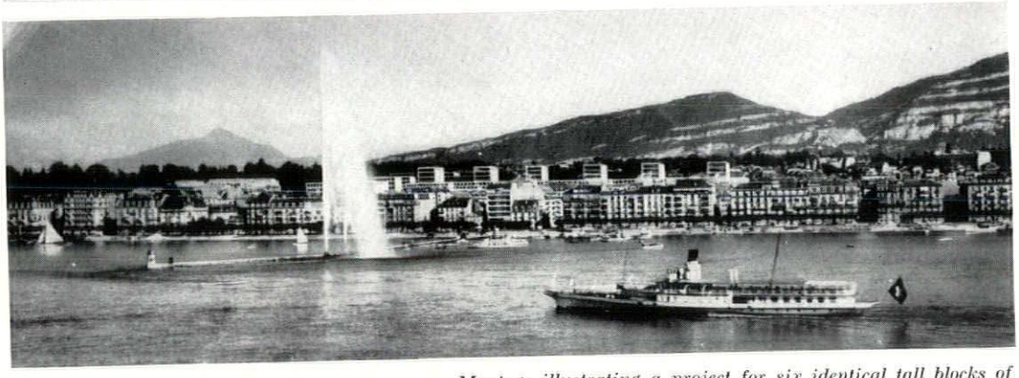
Housing estates are sufficiently small and varied to be contained within the landscape; single houses are normally sufficiently far apart to make them read singly and not as sprawl. This is well illustrated at Cologny where modern villas overlook Lac Léman. On the whole, street elements are strictly controlled and

* Parts of Romandie, now Normandie, were gradually annexed by the Swiss, the latest, in 1815, being Geneva. The French-speaking peoples of these areas, which include the cantons of Genève, Vaud, Neuchâtel and parts of Fribourg and Valais, are referred to as Suisse Romande.

† A survey by Ian Nairn, of recent architecture in German Switzerland, appeared in the March AR.

Private houses overlooking the lake at Cologny, Geneva: above, by F. Gaillard (for his own occupation); right, by P. Bussat and J. M. Lamunière, in natural surfaced reinforced concrete with painted panels. The client was Robert Jeanneret.





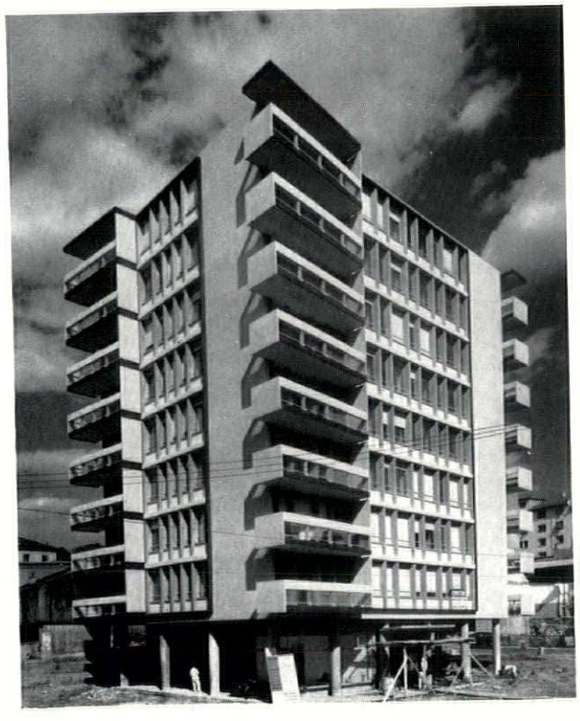
Montage illustrating a project for six identical tall blocks of flats in Geneva. In the foreground is the fountain referred to in the article. Below, the only one of these blocks so far completed: R. Passera, architect.

refined sufficiently to create satisfactory visual entities; posters, for example, are of standard size and are fixed on to tubular stands and not merely stuck on to walls; being requirements in their own right they are treated as such and annual poster competitions and exhibitions help to achieve high standards of commercial and industrial art. Architecturally, too, competitions have resulted in many young architects being responsible for big jobs, in many of which an appetite for experiment and an unselfconscious employment of steel and concrete elements in the same building have resulted in a clean and lively architecture.

The problem of the architect and the engineer coming to loggerheads is an international one, but recently the Federal architects and engineers agreed to classify their work into four categories. In the first two, which range from simple structures to residential and public buildings, the architect is in charge. In the third, which includes factories, silos and industrial buildings, the choice is left to the client, while in the last category, which includes roads, bridges and dams, the engineer is in charge. He must, however, consult the architect on choice of site and general conception.

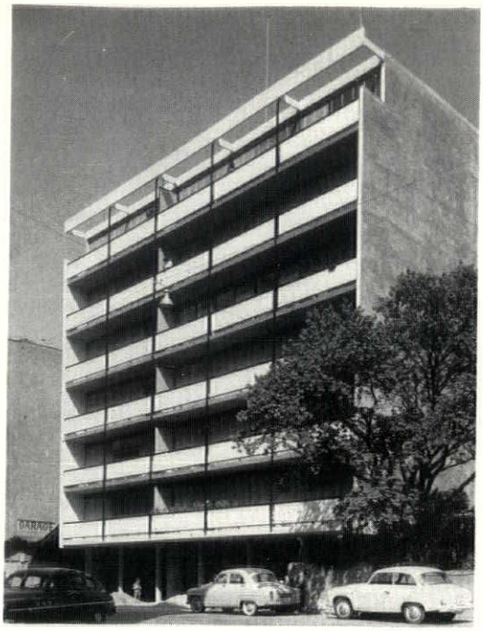
Geneva is to Suisse Romande what Zurich is to German-speaking Switzerland. Situated at the foothills of Salève, overlooking the lake, it has attracted artists, connoisseurs of art and wealthy travellers since the days of Byron

Above, flats at Geneva by A. Bordigoni, J. Gros, A. de Saussure and R. Fleury, showing prefabricated façade elements. They are part of an estate near the League of Nations building.



and Shelley. From the lakeside the attractive city—apart from some badly pruned trees—stretches horizontally with a regular roofline, broken only by the spire of the old cathedral and the exciting vertical fountain on the lake shooting up 330 feet into the air; lit up at night, it remains an outstanding work of dynamic civic design. This rich cosmopolitan city is one of the headquarters of the United Nations—the neo-nothing-on-earth League building spoils an attractive park—and of CERN* still being built. An urban estate near the League of Nations building is fully landscaped, and despite some crude pieces of architecture is beginning to look stimulating—it is normal practice in Geneva to put large blocks of flats either at the edge of, or in, a park.

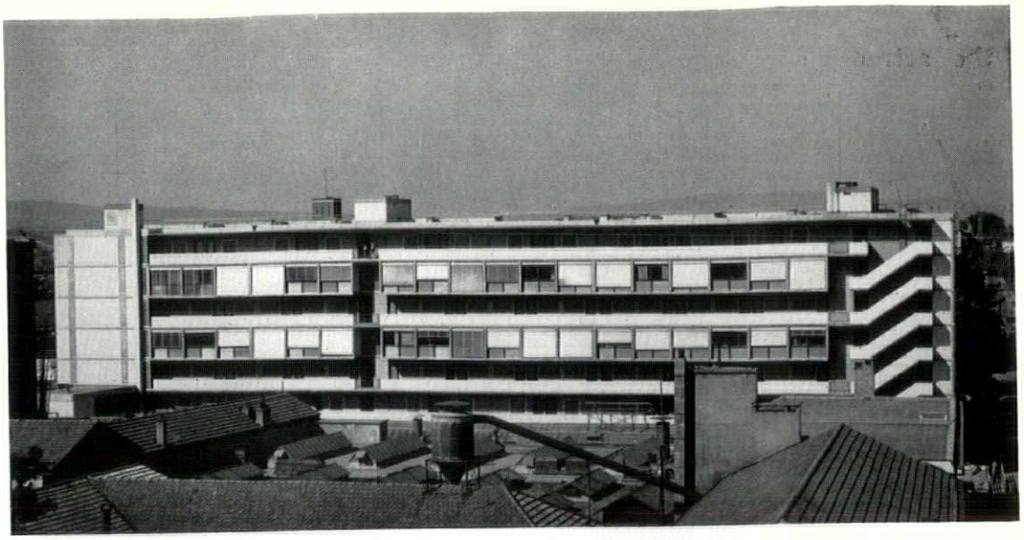
*Centre Européenne pour la Recherche Nucleaire

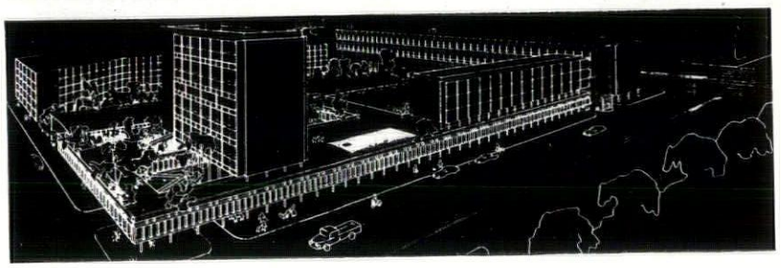


Flats in the rue Prévost-Martin, Geneva, by M. Cailler and A. Gaillard: street façade with shops and garage-entrance on ground floor; below, the opposite façade.

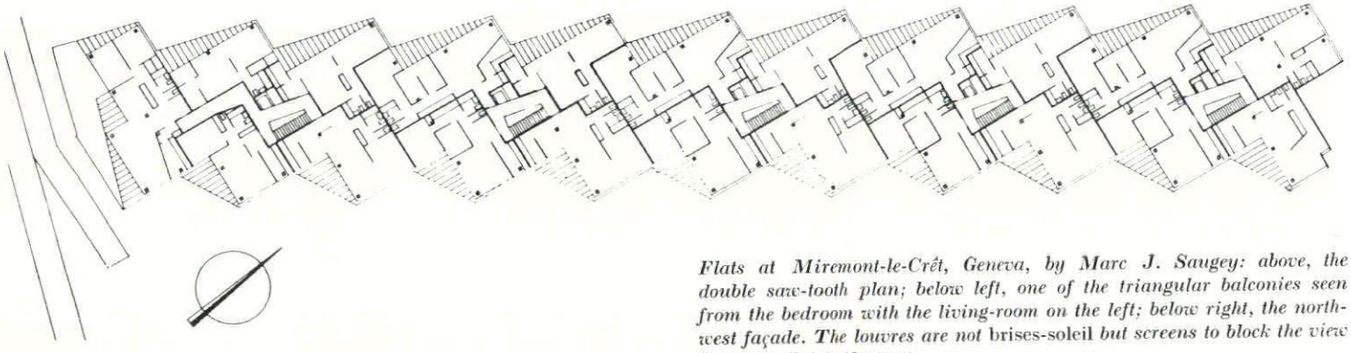
Above, flats at Malagnou-Cité, by Georges Addor, with staggered balconies designed to increase privacy.

It is not quite true to say, as some do, that curtain walling came to Switzerland through Marc Saugey, the outstanding Geneva architect; Le Corbusier's Maison Clarté, an early building much publicized owing to a famous murder that took place there, was in fact, the first. Saugey, however, has carried the idea further and adapted the curtain wall to meet European requirements. He was first hailed as urbaniste proper with his Malagnou-Cité; which includes shops, post office, and gardens. Perhaps the most influential architect of Suisse Romande, he has designed three cinemas, all of them getting away from the camera-box concept. His two latest buildings are of special significance. Though different in function and character, these both express typically Swiss concepts. One is Gare-Centre, a complex unity of shops, flats, offices, filling station, cinema and

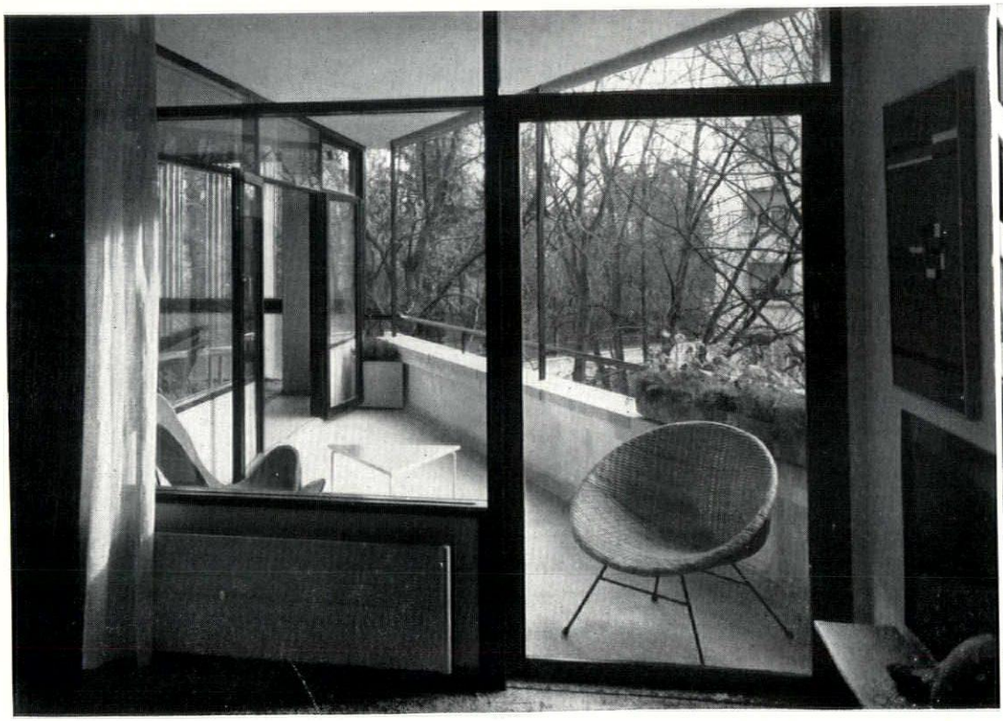




Project for a multi-level housing development in Geneva by P. Bussat and J. M. Lamunière. Above, the portion of the scheme already built.



Flats at Miremont-le-Crêt, Geneva, by Marc J. Saugey: above, the double saw-tooth plan; below left, one of the triangular balconies seen from the bedroom with the living-room on the left; below right, the north-west façade. The louvres are not brises-soleil *but screens to block the view from one flat to the next.*



Interior of one of Marc J. Saugey's three recent cinemas: Le Star, at Gare-Centre, Geneva.

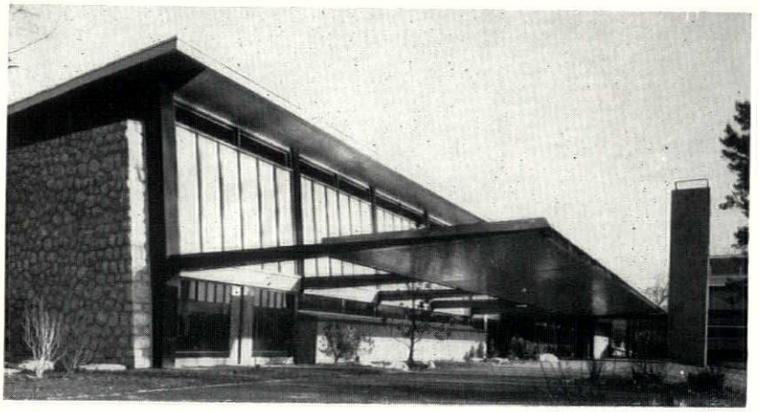
garage. This mixing of uses under the same roof is an interesting approach essential for central area development.

The other Saugey building, Miremont-le-Crêt, is a residential neighbourhood, housing also a few small-scale shops. This is an outstanding piece of architecture. It is fitted on to a long, narrow, difficult site and vigorously expresses its ingenious saw-tooth plan. It is also notable for its colourful entrance hall.

Other towns of Suisse Romande do not display such great virtuosity, partly because of their size and partly for geographical reasons. Lausanne has some interesting buildings, but steep slopes make development difficult. Vetter's project for the city centre deserves a special mention. It includes three-level traffic, a twenty-storey town hall, high offices and gardens. La Chaux-de-Fonds, Corb's home town, Payerne and others all have some buildings of interest. However the Swiss have their share of disappointments. The Grand-Théâtre with full Wagnerian pomp, which was burnt out during a rehearsal, leaving only the sculpturesque façade, is still not rebuilt and is under constant controversy between those who are fighting for a new one and those in favour of restoration.

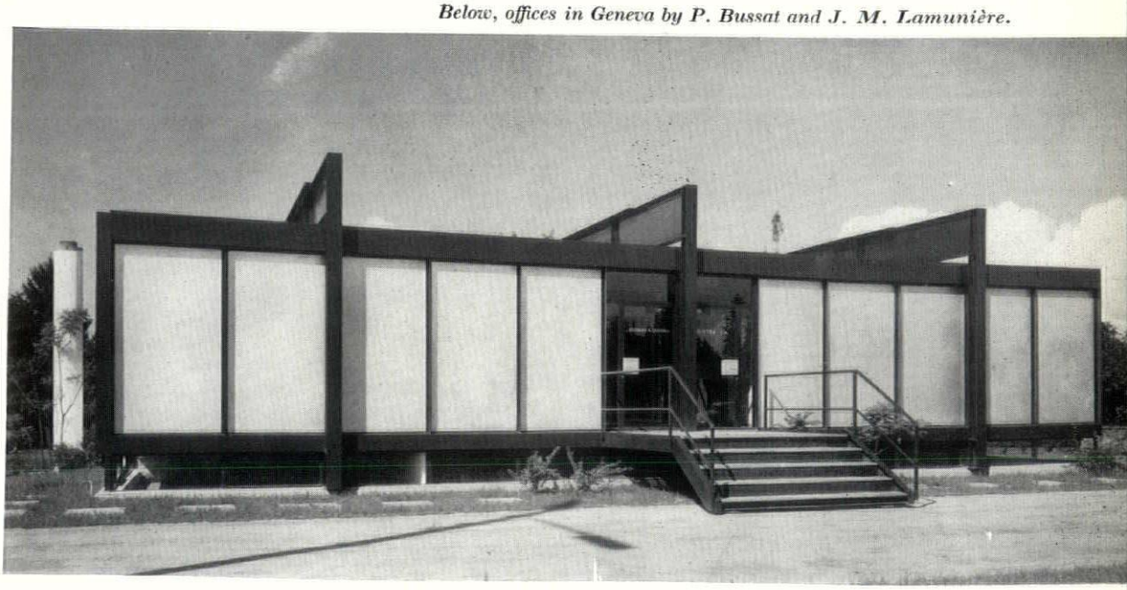
The fashionable description of Switzerland as clean and dull with well detailed buildings must be revised. Clean it certainly is. Good detailing is to be relied on. The accusation of dullness, however, must be considered in the right perspective. Up to the nineteen-fifties, it is true, most develop-

Above, a multi-purpose building, the Gare-Centre, Geneva, by Marc J. Saugey. It has shops and a garage below, offices on the first and second floors and a walk-way on the third with flats above.



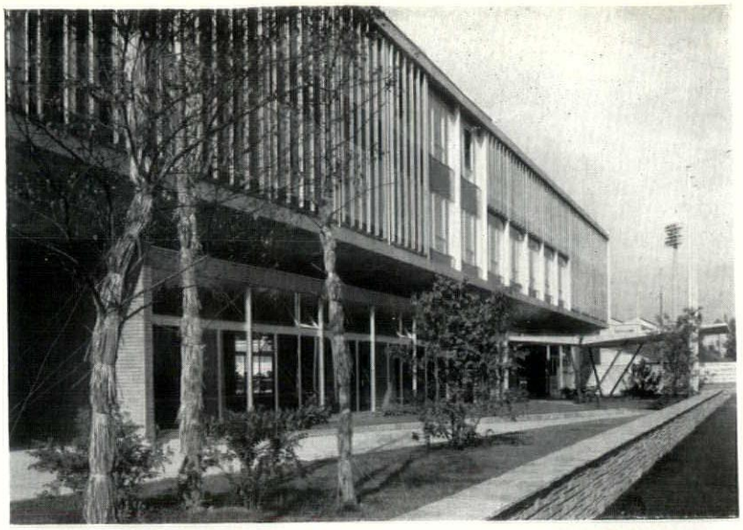
Left, school at Grand-Sacounex, Geneva, by G. Brera and P. Waltenspuhl: gymnasium with cantilevered roof forming a covered playground.

Below, offices in Geneva by P. Bussat and J. M. Lamunière.



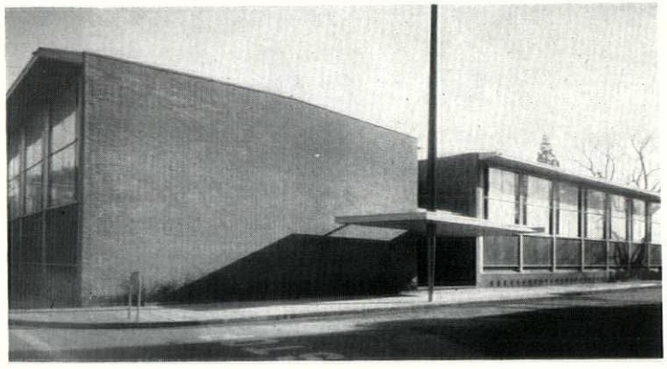
ment in Suisse Romande was of a mediocre kind—except for Maillart's bridges—but recent contributions, although not as lively as in some places like Brazil, Chandigarh or Mexico (where exceptional men are working under exceptional circumstances) are certainly as varied and imaginative as in Italy or Scandinavia. The reason can perhaps be found in the central position that Switzerland enjoys in Europe, giving the architects a chance to visit the best European buildings. For although articles and photographs can display certain trends, they can never remain as substitutes for the visual experience, or the fourth dimension.

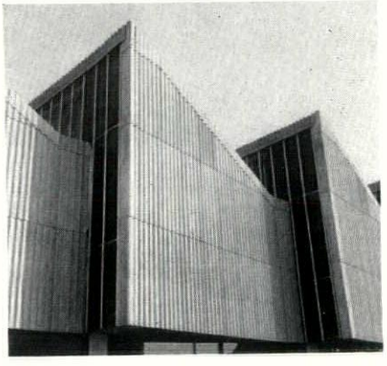
It is not really possible to sum up in a few words for any country its architectural ideals of today; but perhaps the nearest one can get for Switzerland is the Mumford ideal: 'the orderly breakup of . . . unwieldy structures, and the reconstruction of their power and culture on a federal basis . . . one of the major tasks of urbanism.'



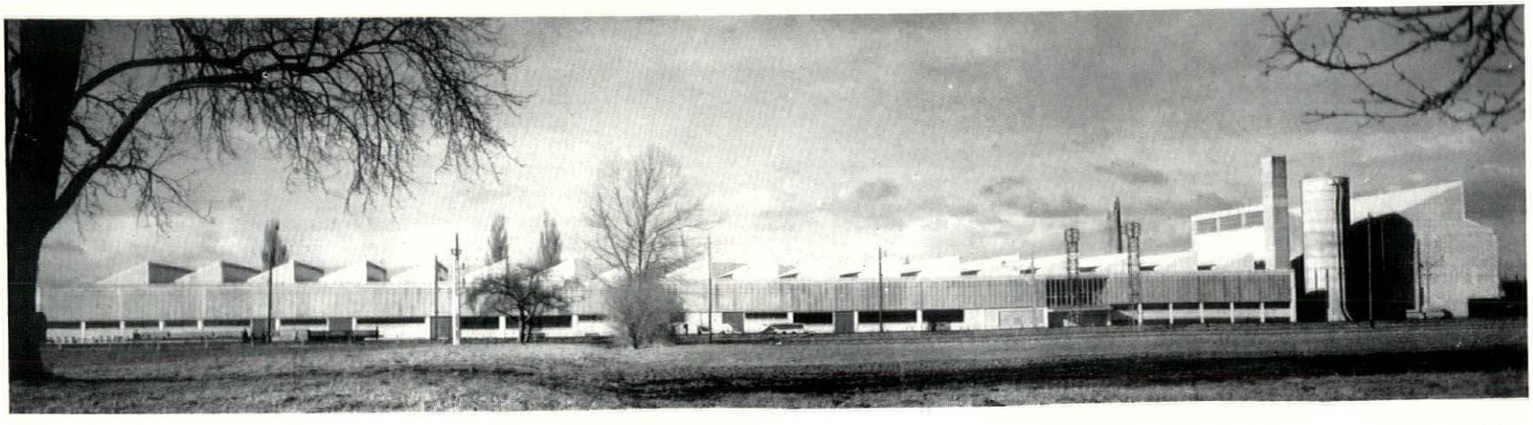
Left, offices by Georges Addor in the route de Lyon, Geneva: top, street façade of the two-storey building with canopied entrance in the distance: bottom, reception foyer showing the construction of the building on pilotis.

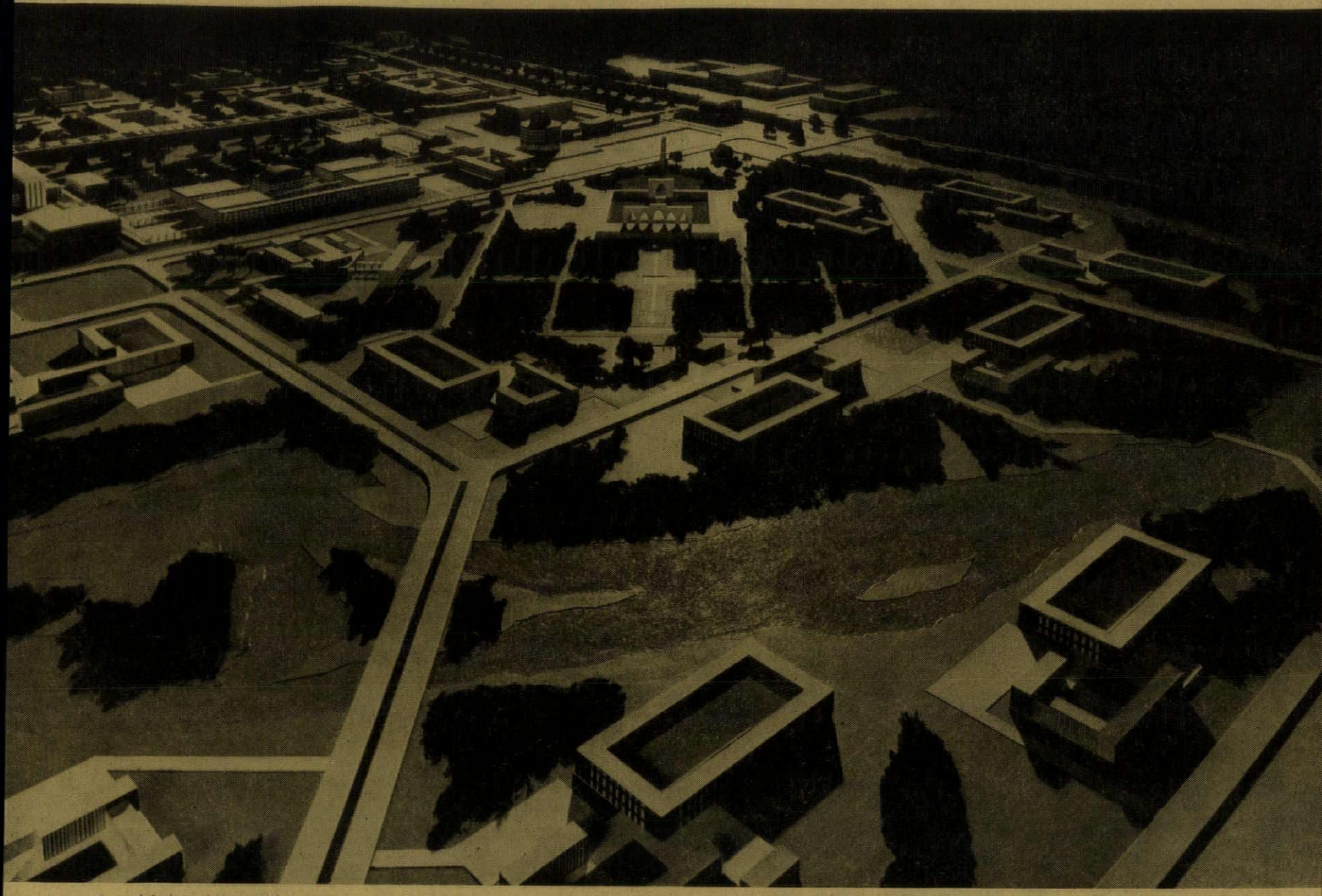
Below, gymnasium by P. Waltenspuhl, designed to be dismantled at a later date and re-erected on another site.





Factory at Payerne, by P. Waltenspuhl: below, general view: left, detail showing asbestos cladding and system of double glazing.





1, *aerial view of the model, seen from the western, or residential end, with hostel blocks on either side of the lake in the foreground. The formal planting beyond leads back to the mosque, and has the students' union to its left. The campus proper is seen in the top left-hand corner.*

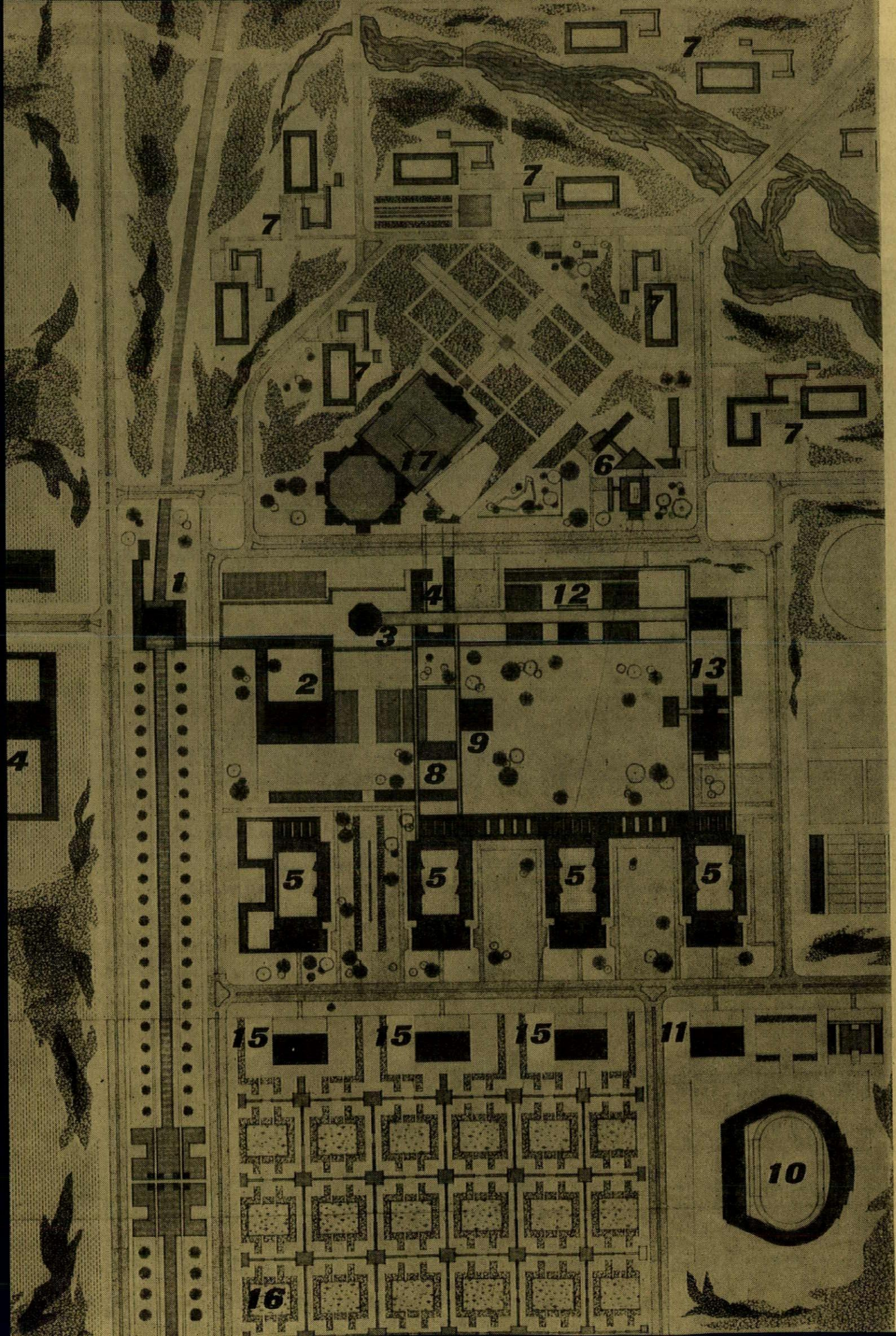
UNIVERSITY OF THE PANJAB

architects	***RAGLAN SQUIRE AND PARTNERS***
associate project architect	***William Whitfield***

2, *a sketch made on the site by the associate architect for the university project, showing the only existing landscape features—the canal with its bridges, adjacent irrigated land and tree-belts.*

The University of the Panjab is the oldest modern University in Pakistan, having been founded in 1882, and now occupies a number of buildings in the commercial part of Lahore. This environment is unpropitious to the conduct and development of academic life, and the University is to move to a new site, occupying some 2,300 acres outside the city where a new campus is to be created. The master-plan for this development was commissioned under the Colombo Plan Aid Programme, and covers not only the site layout, but the outline planning and design of the buildings.

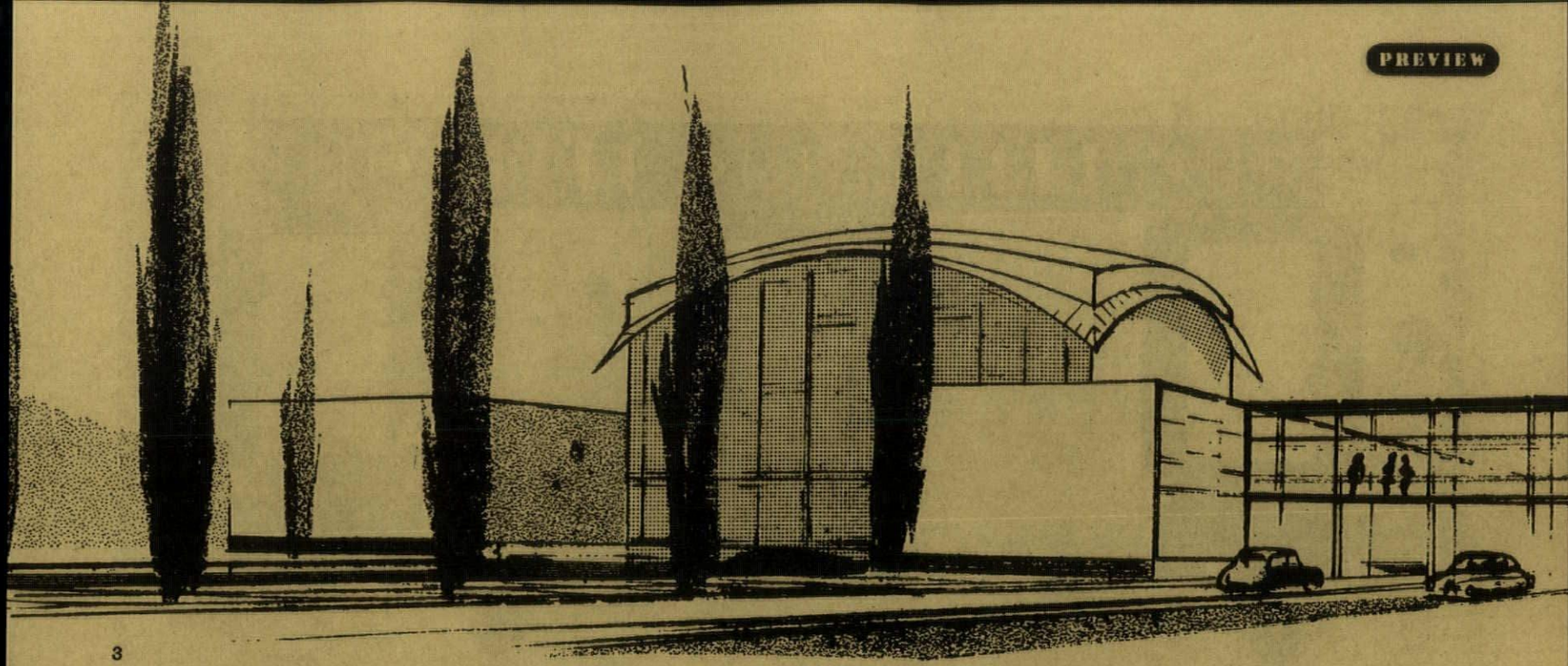
The site lies outside a proposed ring road, part of



UNIVERSITY OF THE PANJAB

key

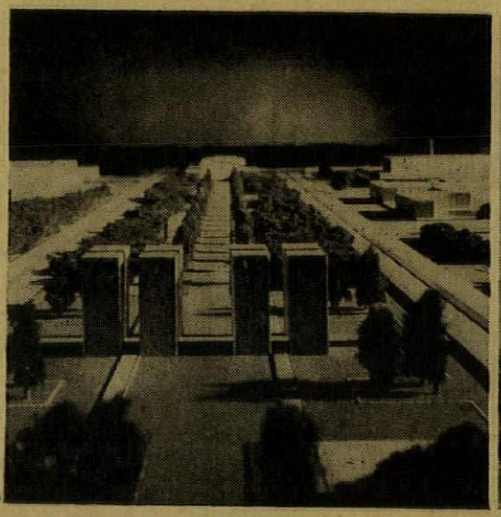
1. convocation hall
2. assembly group
3. library tower
4. library and university press
5. teaching colleges
6. students' union
7. hostels
8. bazaar
9. museum
10. stadium
11. physical education
12. humanities
13. polytechnic
14. law college
15. colleges and institutes
16. botanical gardens

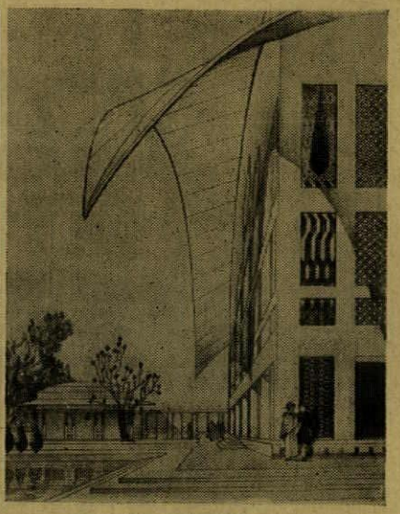


3

3, Convocation Hall and the examination rooms, with trees flanking the canal which flows under the hall.

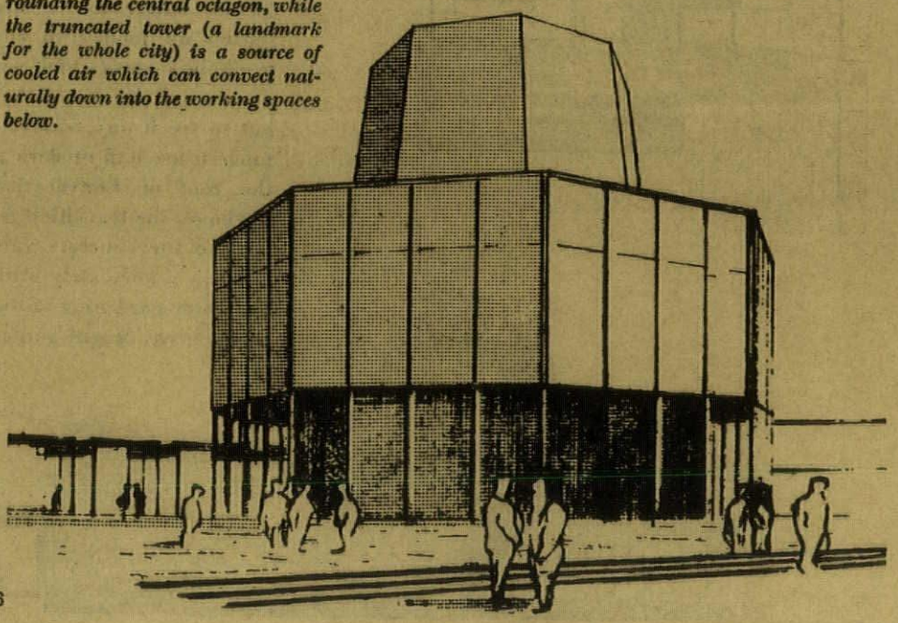
4, view of the model, looking down the canal from the University Boulevard with the eighty-foot towers of the Watergate in the foreground, and Convocation Hall in the distance.
5, an early project for Convocation Hall, with its Bengal roof, made while studying the native architecture of the Lahore area.





4,5

6, the library; working and study areas are to be in galleries surrounding the central octagon, while the truncated tower (a landmark for the whole city) is a source of cooled air which can convect naturally down into the working spaces below.



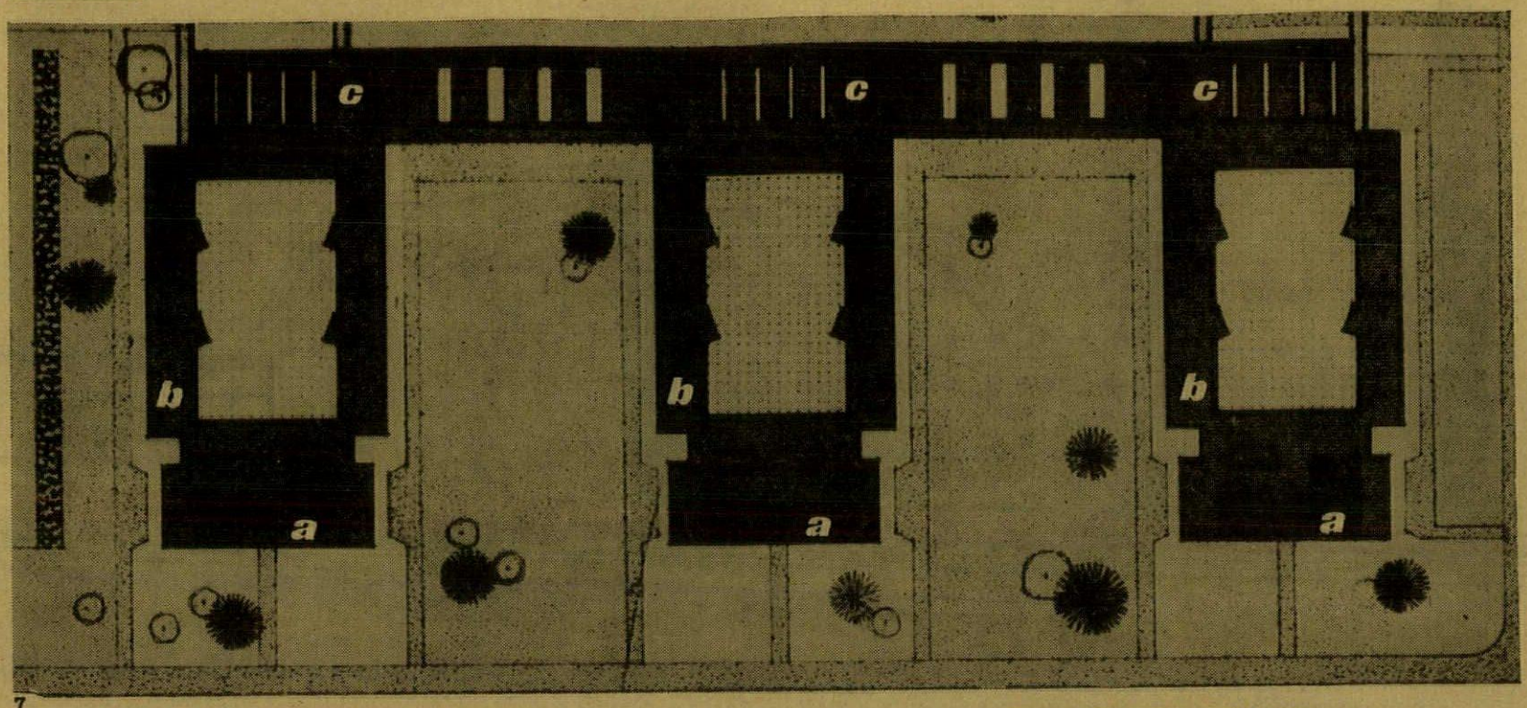
6

which will become the University Boulevard, and an irrigation canal, crossing this road, traverses the southern part of the university area. Trees and cultivation adjoin this canal, but the site is otherwise featureless scrub, except for a slight depression, subject to flooding, which will be excavated to form a lake, the spoil being used to bank up the roads and make podia for the buildings, a necessary precaution because of the high water-table.

The plan can be regarded as consisting of three zones. The first, adjoining the ring road, contains—for instance—the botanical gardens and the stadium, which serve to screen the university from the city, while serving both. The second zone contains the campus proper and the main teaching areas, to the north of the canal, and certain associated academic institutions to the south. The third zone is predominantly residential, but contains also the students' union and a mosque, whose correct orientation introduces a strong diagonal element into an otherwise regular plan.

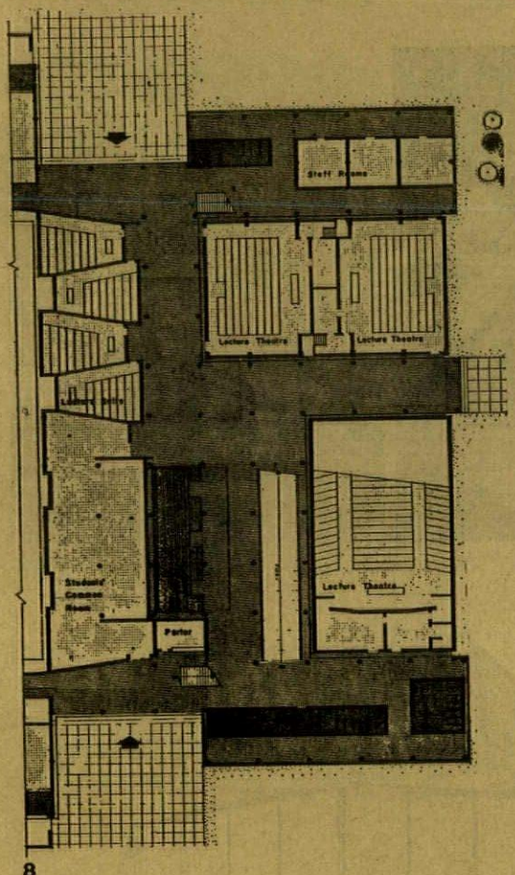
The canal is to be developed as the main formal element of the campus area, forming the basis of a long vista from the University Boulevard, between the towers of the ceremonial Watergate and down to Convocation Hall, which stands across the canal. On the cross axis of Convocation Hall stands the library, and beyond—still on the cross axis—runs the spine of the Humanities Group which closes that side of the campus. The north side of the campus is occupied by the Polytechnic, the east side by the Teaching Colleges (effectively the 'departments' for different studies, in normal university nomenclature) while to the south, flanking the library piazza, is a group containing the museum, a bazaar, and the assembly hall with its ancillary rooms.

Local conditions affected the design in two basic ways. Firstly, shortages of foreign exchange have led to heavy reliance on locally-produced materials—



7

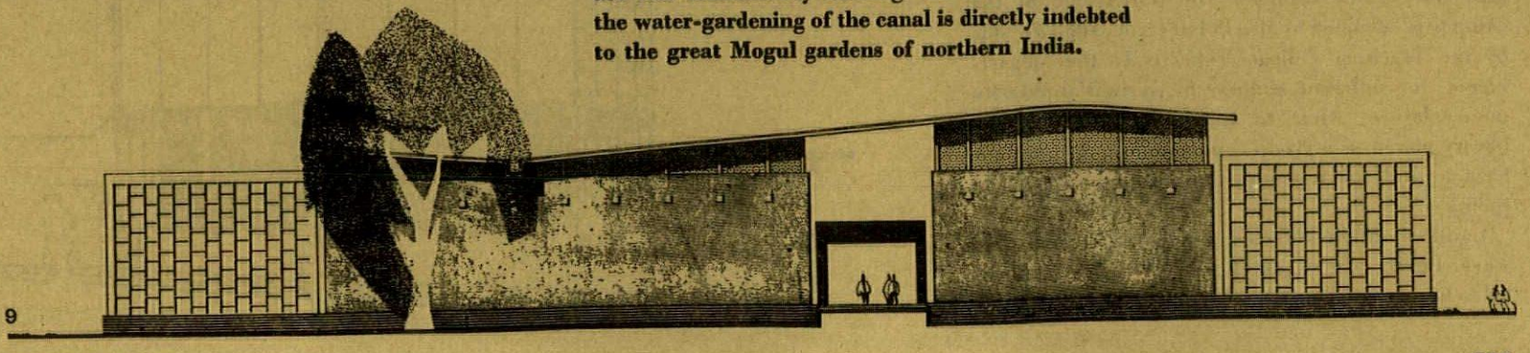
UNIVERSITY OF THE PANJAB



8

7, part plan of the teaching colleges, an extensible system of courts flanked by tutors' rooms, etc. (b) served by a rank of workshops, laboratories and other specialized teaching areas (c) which can be altered, if need arise, without disturbing the other accommodation. At the head of each court is an area of more heavily-used rooms—auditoria, etc.—(a) which can be air-conditioned at an economic cost.
8, part plan of a teaching college, showing the lecture rooms and other air-conditioned areas at the head of one of the courts.
9, western (outside) elevation of a teaching college, with auditorium roofs rising above the rest of the block.

such as brick and concrete—and prohibited complicated structural techniques. They have also necessitated a sparing use of air-conditioning, and accommodation has been so grouped that air-conditioned areas are idle and unoccupied as little as possible, while the rest of the teaching area has been largely handled as isolated pavilions under wide-spreading, shade-producing cover, with extensive use of natural air-conditioners such as pools. Secondly, a serious attempt has been made to understand the philosophies underlying the architecture native to the area—not for the sake of setting up models to copy, nor the adoption of symbolic forms (which would, inevitably, belong to a culture of which a modern university was not part) but to see if any remain valid under conditions of modern use and modern technology. In the case of the roof of Convocation Hall, the outcome is obvious—the transition from the traditional Bengal roof to the concrete vault is natural—but others are less immediately striking. On the other hand, the water-gardening of the canal is directly indebted to the great Mogul gardens of northern India.



9

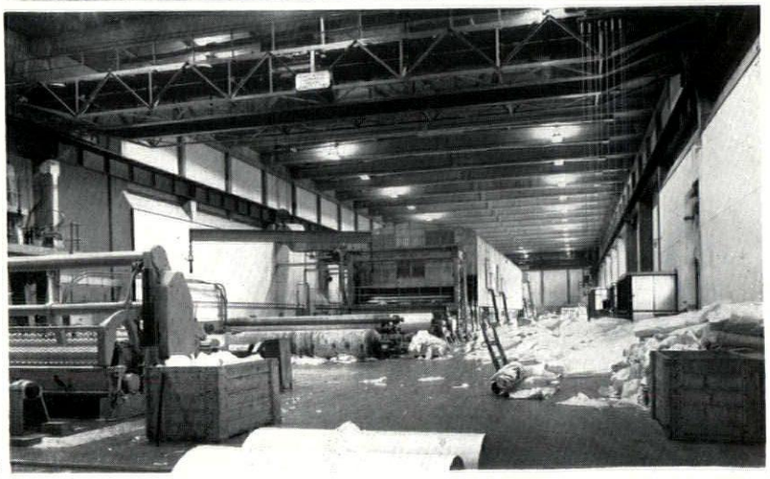
PAPER MILL AT DARTFORD

ENGINEERS: W. S. ATKINS AND PARTNERS
Architect in charge: S. M. KOWALSKI

1, the engineers' workshop has an end wall faced with cedar boarding. The panels below the windows are of multi-coloured facing bricks. The water tower beyond is clad with asbestos sheeting.

2

3



4

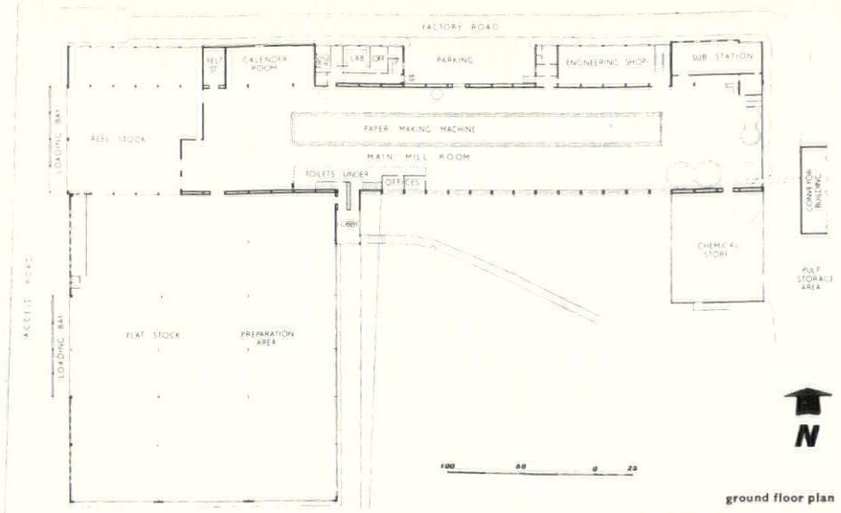
Paper Mill at Dartford

This extension to a paper mill at Dartford in Kent occupies the site of an old tannery, with a 300 ft. frontage on Dartford Creek, where the barges bringing wood pulp can berth. The basement was built with concrete retaining walls and in situ concrete columns, to house the lower part of the main mill machinery and other services and the ground floor is supported on the basement walls and columns and the roof precast, post-tensioned beams spanning 75 ft. between columns. The roof is of insulated aluminium decking, fixed to precast prestressed concrete purlins. The problem of the thermal insulation of large areas was solved by cladding the building with asbestos sheeting, with an air space between this and the internal lining. The only glazing is a horizontal strip of three-ply

2, *the services gantry carries steam and hot and cold water to the new mill. The columns are of precast concrete. The chemical building is in the background, with the main mill room beyond.*

3, *the stock building, with the two loading bays beyond.*

4, *the main mill room, showing the overhead travelling gantry.*



ground floor plan

glass 5 ft. deep on the south side of the mill room. A temporary chemical store has been provided which will be demolished later to allow for the construction of a second mill room, and since the conveyor building supplies the raw materials for the existing mill room, this has also been planned to allow for the extension.

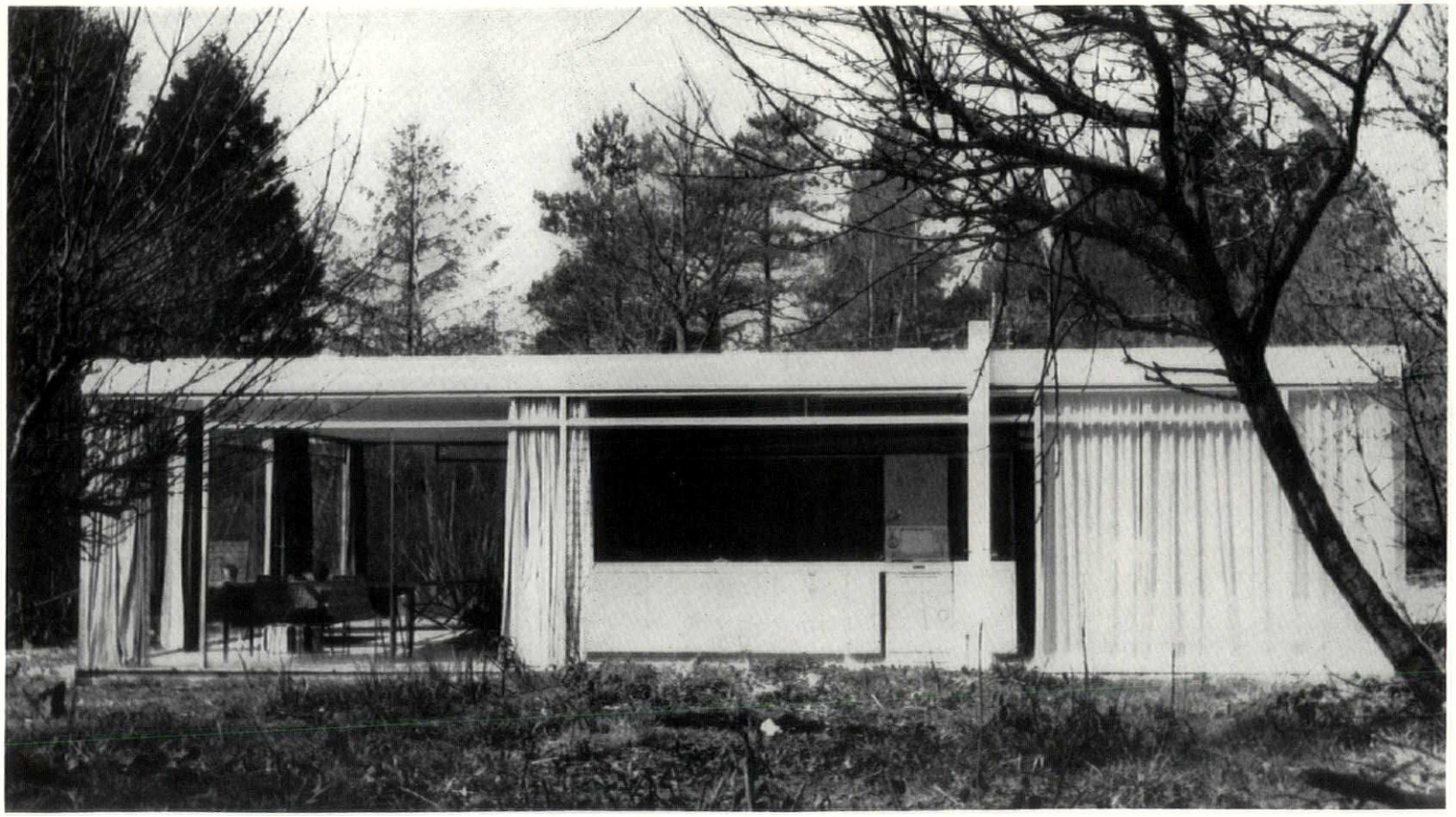
Paper Mill at Dartford

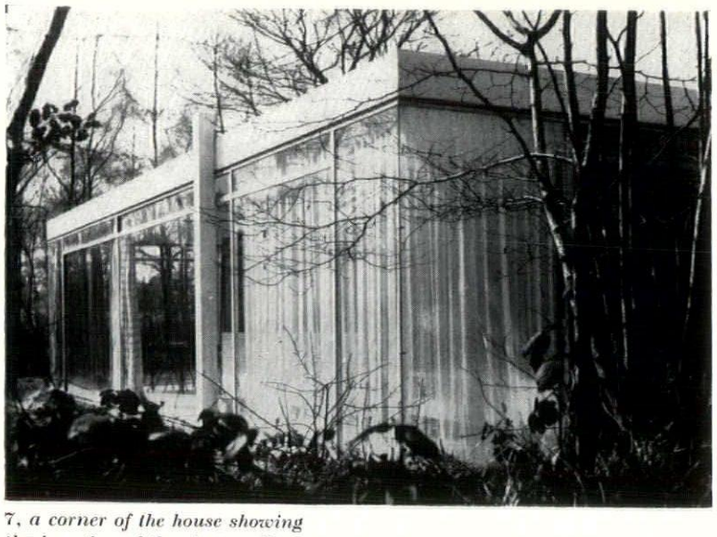
5, the entrance lobby is of mahogany framing faced with cedar boarding and with a painted timber fascia. Steps are of concrete and the balustrading is of painted tubular steel rods with a mahogany handrail.

HOUSE AT OCKLEY, SURREY

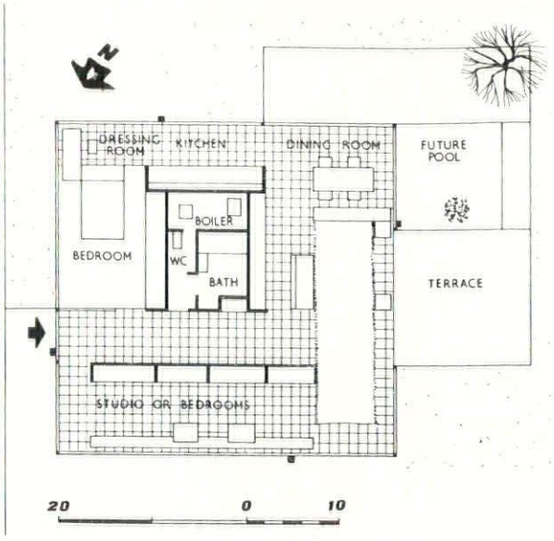
ARCHITECTS: QUINE AND NEWBERRY

6, the house from the north-west, with the kitchen area in the centre, the dining room on the left and the curtained dressing room on the right.





7, a corner of the house showing the junction of the glass walls. Full lined curtains help to prevent excessive heat loss.



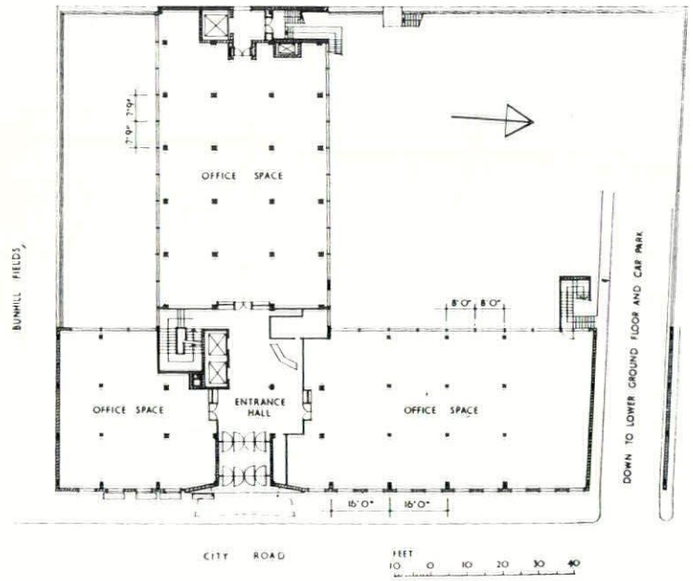
House at Ockley, Surrey

Set in an acre of wooded land on the Surrey-Sussex border, this house was designed by the architect for his own use, as a glass pavilion in which the elements can be easily moved to give flexibility to the internal plan. It is a single storey, thirty-six foot square, steel framed structure, with interdependent beams supporting the roof on four boxed stanchions, which are set one-third of the way along each side of the house. The outer walls are entirely of plate glass in aluminium framing, with sliding doors on three sides and small sliding vents at high level. A central core houses the bathroom, w.c. and boiler room which provides automatic under-floor heating. This central block is surrounded by store cupboards, which are also used to divide the hall from the studio. Floors are finished with off-white terrazzo tiling, carpeted in the bedroom and bathroom. The roof is an insulated sandwich of fibreglass and building board, finished with bituminous felt.

OFFICES IN CITY ROAD, LONDON

ARCHITECT: MORRIS de METZ

A twelve-storey office block with a T-shaped plan to give maximum daylight. The frame is reinforced concrete in bays of 16 ft. and external columns are set back 2 ft. 6 in. from the face of the building. Beams and stairs were precast on the site; floors are of solid reinforced concrete slabs. The end walls are faced with reconstructed Portland stone slabs. The main façade has reinforced concrete mullions, and spandrels faced in lightweight concrete with an exposed aggregate of green granite.



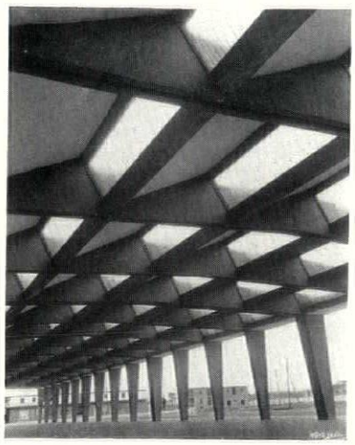
8, the offices seen across City Road. The panels under the windows of the low block are faced with mosaic.

WORLD

1

Fruit-Market for Florence

Destined to become one unit in a large group of installations handling fruit, meat and other produce for the city of Florence, the *Mercato Ortofrutticolo*, designed by the engineer Giulio Lensi Cardini, 1, is welcome reassurance that the Italians' bold mastery in engineering is not being lost in the present stylistic faction-



2

war among the architects. Planwise, the complete installation will consist of the central 'hall' seen in 1, flanked by wholesalers' offices and stores in two blocks on either side (some served by railway sidings, the others by lorry loading bays) and a screen of ancillary buildings round the perimeter of the site.

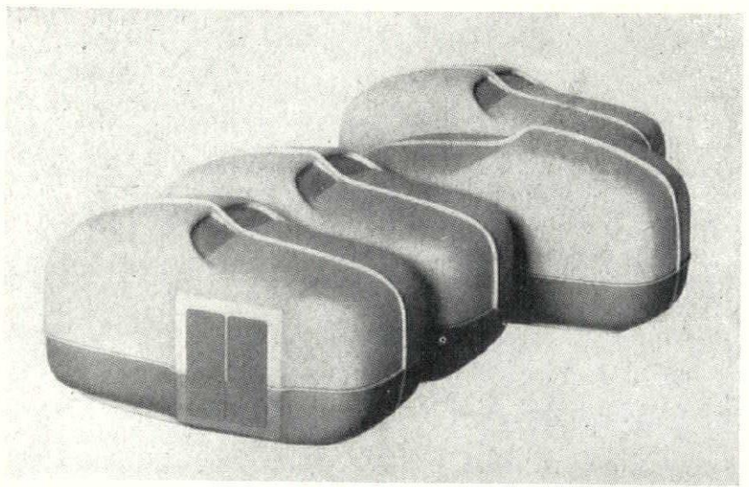
The structure of the main hall, and the somewhat similar structure of the wholesalers' blocks, consists of symmetrical portal frames built up from vertical legs of ordinary reinforced concrete, supporting spanwise beams terminating in thirty-foot cantilevers. These beams are built up from units pre-cast on the site and are post-tensioned, and the spaces between them are occupied by a form of northlight, 2, using wired corrugated glass, cast in directly without framing, for the

3

glazed pitches. Some of the ancillary buildings have analogous structures with tapering pilotis but this seems, as in the case of the 'ceremonial' entrance-block, 3, to be for reasons of an intended stylistic consistency that does not quite succeed.

In what Nature of Materials?

Although they are not easy to discover, there are other progressive architects in France besides Le Corbusier and his connection, but because they are outside the Establishment of *Architectes D.P.L.G.* they get a poor press. Nevertheless, the



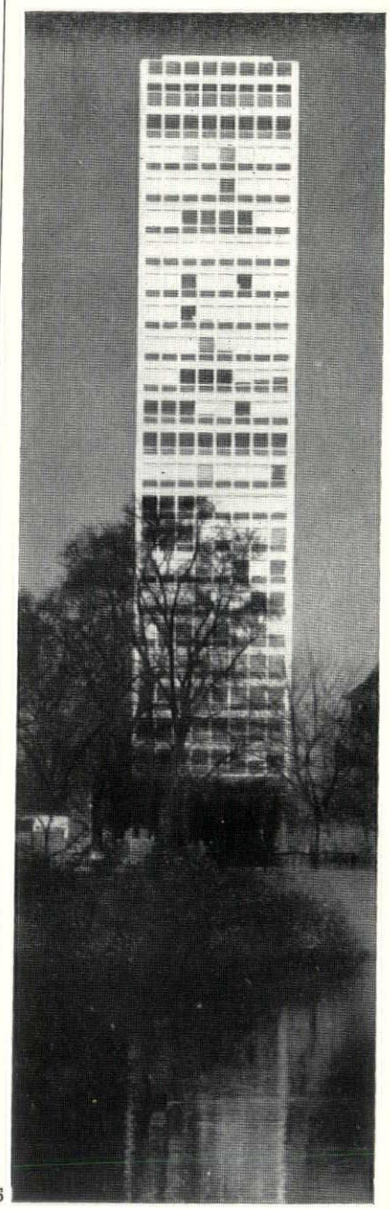
4

name of Ionel Schein is known, if only because he produced a plastic house in 1956, at the same time as the Monsanto house and the Smithson *House of the Future*. Still in the plastics field, he contributed an article to a recent number of *Bauen & Wohnen* (July, 1959) on the influence of plastics on architecture, illustrated with a great number of products and projects—including one by himself (in collaboration with Coulon and Magnant) for transportable exhibition pavilions, 4.

These snug, caravan-shaped structures fully demonstrate his points about the best use of plastics technology lying in vaulted shell forms, without right-angled arrises or, indeed, angled joins of any kind, and in the evolution of site techniques to accommodate the delivery of large space-enclosing units, instead of small structural components. But they provide little comfort or guidance in the problem with which his article ends '. . . a question of using a material, a technique, honorably for the sake of beauty. . . . A clear insight into the qualities of the new building materials is needed; courage is needed to reject a false application of them.' The difficulties of this problem are brought to light in Franz Fueg's introduction to the same issue of *Bauen & Wohnen*. 'The question can no longer be asked, "Where can I use wood? In what way must it be processed?" but "What properties must be incorporated in the synthetic material in order that it correspond to the demands I make on it?" A complete reversal of approach has thus come about. . . .' If the 'Nature of Materials' is no longer a design-directive, what sort of insight into the qualities of plastics is necessary to avoid false applications and to honour beauty?

Mannesmann beyond Comment

With the completion of the Mannesmann office tower, 5, in Dusseldorf, German office-block design steps in one stride straight into the post-Seagram epoch, and Schneider-Esleben's design leaves no room for argument about the step taken. The adoption of a steel-tube frame probably represents the inevitable next step beyond the use of r.s.j.'s—here the problems of handling such a structure (and of mating it to a curtain wall) have not

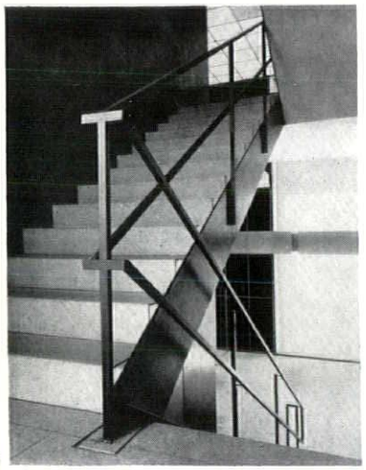


5

only been resolved almost before they were posed, but have been made the occasion for developing

refinements of detailing, 6, even before any crudities existed to be smoothed away. The interior, too, has been made the occasion to read a sermon in steel into detailing of such severity that Arne Jacobsen's place as Europe's leading machine aesthete is clearly in dispute, 7.

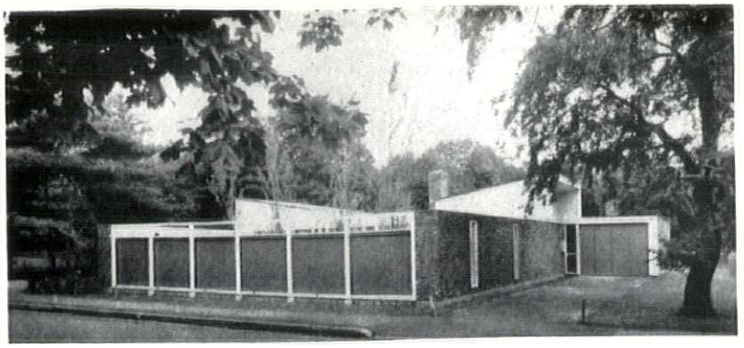
6



7

But above all, the uncompromised simplicity of Mannesmann's Neutral Technological Frame is so complete, that Schneider-Esleben has been able to do with it what modern movement orthodoxy insists should be possible with every honest building—to site it next to older buildings of merit without producing disharmony. The new tower is Mannesmann II, and it stands immediately next—is linked indeed—to Mannesmann I, an industrial masterpiece from the drawing board of Peter Behrens, 8, and neither in any way criticizes, harms or argues with the other. The Mannesmann tower does not defy comment, it is beyond it—this is what the masters and the prophets assured us modern architecture would be like.

8

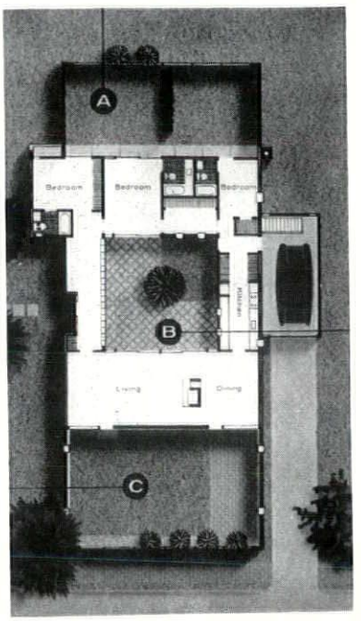


9

Sert House and the Press

Jose Luis Sert's new house for his own occupation in Cambridge, Mass., masterly 9—a exercise in domestic space-manipulation—has received the due praise of the professional press. Thus, Ronald Gourley, in *Architectural Record* (Mid-May, 1959), praised its 'simplicity, straightforwardness and respect for time-honoured fundamentals . . . balanced concern for the general, the specific, the large, the small, the whole.'

But it also received a straight accolade from 'America's Family Magazine,' for, in one of the most remarkable pieces of popular illustrated journalism on an architectural theme, *Look* (June 9, 1959) devoted a six-page coloured spread to it, and contrived to convey more visual information about the house and its interior spaces than any architectural paper did. *Look's* version of the plan, 10, made the patios instantly comprehensible, and referred the reader immediately, by linked labels, to their actual appearance, while the very large coloured illustrations (which a mass-circulation magazine can afford) were taken from Phillip



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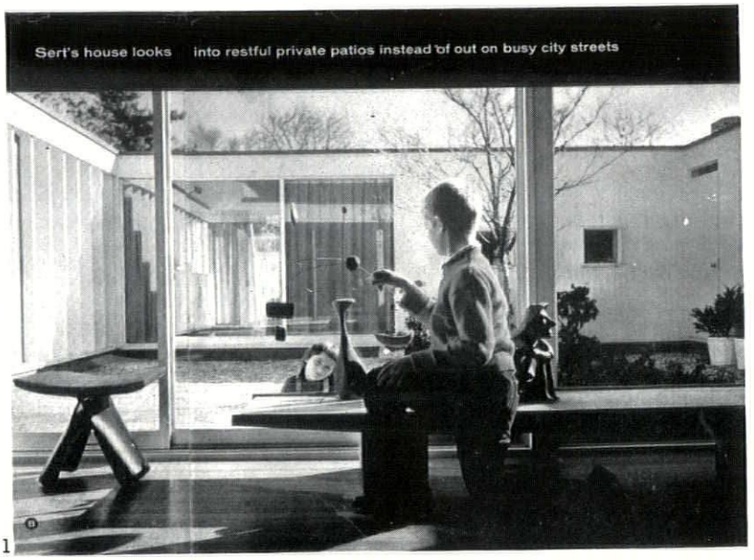
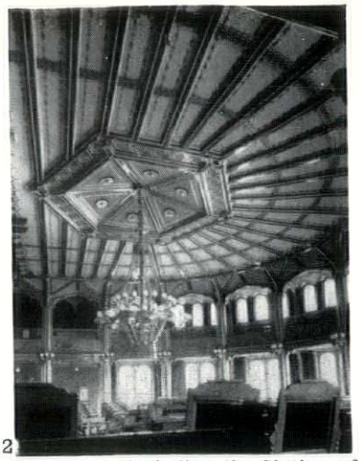


11

Harrington photographs which, even in black and white, 11, still give a more immediate impression of the domestic nature of Sert's inner and outer spaces than professional papers were able to do. The result is fully comparable with *Esquire's* celebrated tour through the curtain-wall country (*The Glass Canyon*, December, 1958) but whereas that was concerned only with façades and entrances, this transmits far more genuinely architectural information.

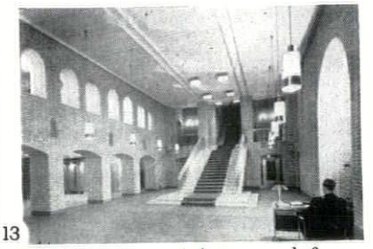


12

To House an Expanding Democracy

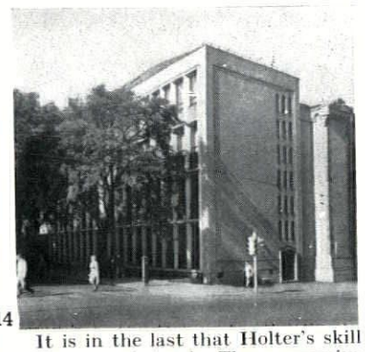
Putting new with old is a severe enough test for an architect at any time, but when, in addition, the old in question is a building enshrining lively national sentiment, then the task is daunting indeed. For this reason alone, Nils Holter's extensions and alterations to the Stortinget (Parliament House) in Oslo would command respect anywhere, but when they are compared to similar work done for other Chambers of democracy (including the Mother of Parliaments), respect is multiplied by admiration.

Holter's tasks were many: to enlarge and restore the Chamber itself, 12, by adding a bay to the base of the semicircular plan, achieved with such subtlety that it is reported in *Byggekunst*, No. 4, 1959, that many visitors believe, at first, that Victor Langlet's magnificent, if belated Puginism is still intact; to



13

provide a new staircase and foyers to replace those removed to make way for the extensions, in which he used a form of simplified Romanesque, 13, not unlike that of Dominikus Bohm's churches in Germany, and echoing the *Rundbogenstil* of Langlet's exteriors; to reorganize many subsidiary spaces in the old work for services, garage space, library and 'lobbies,' 14; and, finally, to add a large office block at the back.



14

It is in the last that Holter's skill emerges most clearly. The progressive simplification of style as one moves from the Chamber itself towards the back, cutting down to the bare bones of the brick structure, effectively prepares the eye for an office-block which is an entirely modern design with a gridded and largely glazed façade. No such gradual modification can be made on the outside, where Langlet's work and Holter's meet directly, but at this point, 14, Holter makes a gesture of accommodation to the existing work with a door-frame and a flight of staircase windows that are in no sense a stylistic concession, yet make a gentlemanly transition.

EXHIBITIONS

PAINTINGS

Even those critics who have the gift of making sweeping yet persuasive generalizations seem to have found it impossible to hit on a definition of romanticism that fits all the cases of it which were exposed to view in the huge international exhibition devoted to the Romantic Movement, recently to be seen at the Tate Gallery and for someone like myself, addicted to making value judgments which are private and unverifiable, defeat was inevitable. The only helpful generalization of my own occurred to me after an intensive study of the art of Hieronymus Bosch and the early paintings of Chirico, when I arrived at the conclusion that if a picture appeared to be meaningless its meaning was bound to be erotic. The Surrealist Movement was in full swing at the time so there were plenty of other pictures about which lent support to this notion and partly persuaded me of its validity. I haven't found much use for it in recent years, and I was pleased to find a picture in Wildenstein's recent exhibition of 'Highly Important Paintings by Rembrandt, Boucher, Cézanne, Hals, Guardi, Gauguin and Others' which gave me an excuse to recall it. The Tate exhibition did, indeed, contain some highly important works, and perhaps the most important of all was a small canvas by Seurat, a pure abstraction if ever there was one, divided with geometrical rigidity into horizontal strips of colour, which nevertheless immediately presented to the eye a view of a house and a garden ensconced in the rich golden stillness of a summer afternoon. The picture which allows my little generalization to make its not very important point is in a far less exalted class. It is by Antoine Caron who worked for Henry IV in what is known as the second period of the School of Fontainebleau. It is entitled 'The Triumph of a King' in the catalogue, 1, but as such looks pretty meaningless. The figures have only a decorative relationship to one another; the 'King' has drawn his sword for no reason at all and the soldier in the foreground is walking rapidly without going anywhere. It is, in fact, simply a display of handsome men and women, and it might be nearer the mark to call it 'The Triumph of Eros presented as an Unknown Subject.' The fanciful landscape at the back is painted in the sudden, unnatural but delicious blue which in the work of this charmingly elegant and faintly cynical school stands for distance.

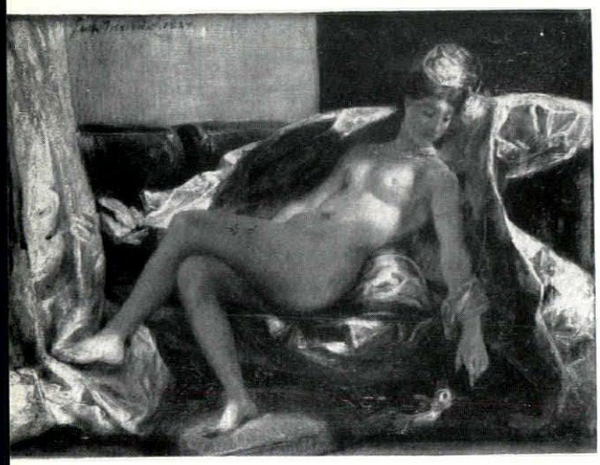
The Romantic painters were very far from cynical. The lesser men were full of big thoughts and the hope of exorbitant experience exempt, as Henry James remarked of the writers of romances, 'from the conditions that we usually know to attach to it.' They tended to use painting as a means either of inciting or recording experiences which 'took them out of themselves.' In the language of our time, they wanted to be 'sent,' and even the great Delacroix was not above the game of 'facing danger' as opposed to facing reality. The painters of mountain gorges, dark forests, Vesuvius in eruption, biblical catastrophes and violent scenes from Shakespeare were, for the most part, merely reflecting the violence and revolutionary fervour of the time in a muddled, fanciful and frightened way. They were escapists whose escapism was coloured by the atmosphere of the world they wanted to escape from.

It is, I think, unusual to present the minor figures and the weak and discredited aspects of a movement as if they had to be taken into serious consideration when assessing its creative achievements, but that appears to have been the task which the organizers of the Romantic exhibition set themselves.

One critic estimated that there were not more than thirty masterpieces among the

1

hundreds of paintings and drawings included in the exhibition, and although I do not have much sympathy with the kind of assurance that enables a man to take such a count, and feel that he might possibly have missed one or two, there is no doubt at all that an air of mediocrity took possession at the Tate, in spite of the splendid opening rooms dedicated to the English light, and caused many critics to agree with those who brought this extraordinary miscellany together that Romantic art was overshadowed and bedevilled by Romantic literature and that it couldn't be expected to yield much in the way of great painting or anything at all resembling a coherent aesthetic. But if, instead of treating Romantic painting as a minor manifestation of a spiritual upheaval which occurred between 1780 and 1848 and using the work of a host of minor artists to prove their point, they had considered the Romantic Movement in painting to be primarily a new 'mode of beholding,' a new way of facing reality, determined by a profound response to the turbulence in man and nature, it would not have been difficult to make an exhibition of great paintings. Seven of the artists who were actually included in the exhibition—Goya, Géricault, Daumier, Turner, Constable, Delacroix and Courbet—would have formed the major part of it and been given equal representation. Of these seven masters, only Delacroix—who was a bit of a culture snob—was in any way bedevilled by literature, and he was great enough most of the time to transform his illustrations into painterly terms, though one wouldn't think so before a picture like 'Hamlet and Horatio in the Graveyard' or 'The Shipwreck of Don Juan.' But these second-rate works by Delacroix were, in an exhibition arranged to show what were called the 'principal themes of the period,' as useful as the splendid 'Lion Hunt' and the 'Women of Algiers' which graced the room allotted to 'Wild Animals and the Cult of the Exotic,' for it was obviously hard to find works of any consequence for 'The Romantic Interpretation of the Poets' and the literary Delacroixs at least introduced a touch of seriousness into an outstandingly ridiculous group of paintings. Incidentally, the only first-rate painting of the nude in the entire exhibition—a small canvas by Delacroix, 2—was exhibited under 'Wild Animals and the Cult of the Exotic' because a parrot is depicted in the bottom right-hand corner.



2

I do not know why the year 1848 was chosen as the final year of the Movement. It is usual, I agree, to associate it with the first half of the century, and although it seems to me to be an arbitrary dating as far as painting is concerned, the year 1848 probably has a significance that I have missed. It happens to have been the year in which 'Wuthering Heights' and the Communist Manifesto were published, but since neither of them was in the display of Romantic literature it clearly has nothing to do with them. Perhaps the fall of Louis-Philippe—or even the July Days—was considered to mark the end of the epoch.

All the same, an extension of the period into, say, the early sixties, before the advent of Impressionism, would have allowed the inclusion of Manet's 'Déjeuner sur l'herbe' and 'Olympia,' and brought Courbet more fully into the picture with such things as his fighting stags and his painting of Lesbians: the latter is a notable contribution to Romantic eroticism, but this is a matter which the exhibition left well alone. Probably its absence from the list of principal themes explains why Fuseli's melodramas were preferred to his marvellous drawings of prostitutes. I think that the list must have been drawn up before the pictures were chosen: there doesn't seem to be any other way of accounting for the boring rows of 'Italianate Landscapes' and the almost equally dull roomful of 'Mountains,' or for some of the artificial and prosaic works—among them a silly Fragonard and a large solemn portrait by Wright of Derby of an unprepossessing gentleman, trying to lie gracefully on the grass, who evidently had what's called a 'romantic disposition'—in the room devoted to 'Feeling,' a room which left one with the impression that it was partly reserved for pictures which arrived by mistake.

There was, of course, much to be thankful for. There was a fascinating group of works by Caspar David Friedrich. He spent most of his life in Dresden, totally isolated from the mainstream of painting, and he must be considered a great provincial. His compositions are static, his colour very cold and his sense of light is fraught with an uneasy anticipation of the dark. The figures in the foregrounds of his landscapes almost invariably have their backs towards us; they are dark, anonymous silhouettes against the light and almost as insubstantial as phantoms. These still and silent watchers of infinity and the unknown would seem to be projections of himself: they are the counterpart of the romantic novelist's appearance in his own books, a device which came to be known as 'romantic irony' and which in Friedrich's hands becomes an emblem of the inexplicability of the human condition. Photographs of his major works were not available, but this sepia of a rocky beach, 3, gives some sense of the presence of the brooding observer he has not depicted.

3

It was, however, the work of Turner and Constable which represented most clearly and powerfully the Romantic approach to painting. Turner's 'The Burning of the Houses of Parliament,' 4, is filled with a demoniac elation which is probably without parallel outside his own work and as a creative response to a destructive force is more breath-taking than Leonardo's deluges.

4

One doesn't usually think of Constable as an artist dedicated to the pursuit of elation, but in his original painting of 'The Leaping Horse,' which was, I think, the most impressive picture in the exhibition, there is an all-over saturation of the canvas with violent paint marks which form one great indivisible act of possession. There is no let up anywhere; no dead patches, no artistic 'intervals.' He does not need a conflagration or a lion hunt to symbolize his creative power. The fire and the fierce enveloping pounce come totally from within.

Robert Melville

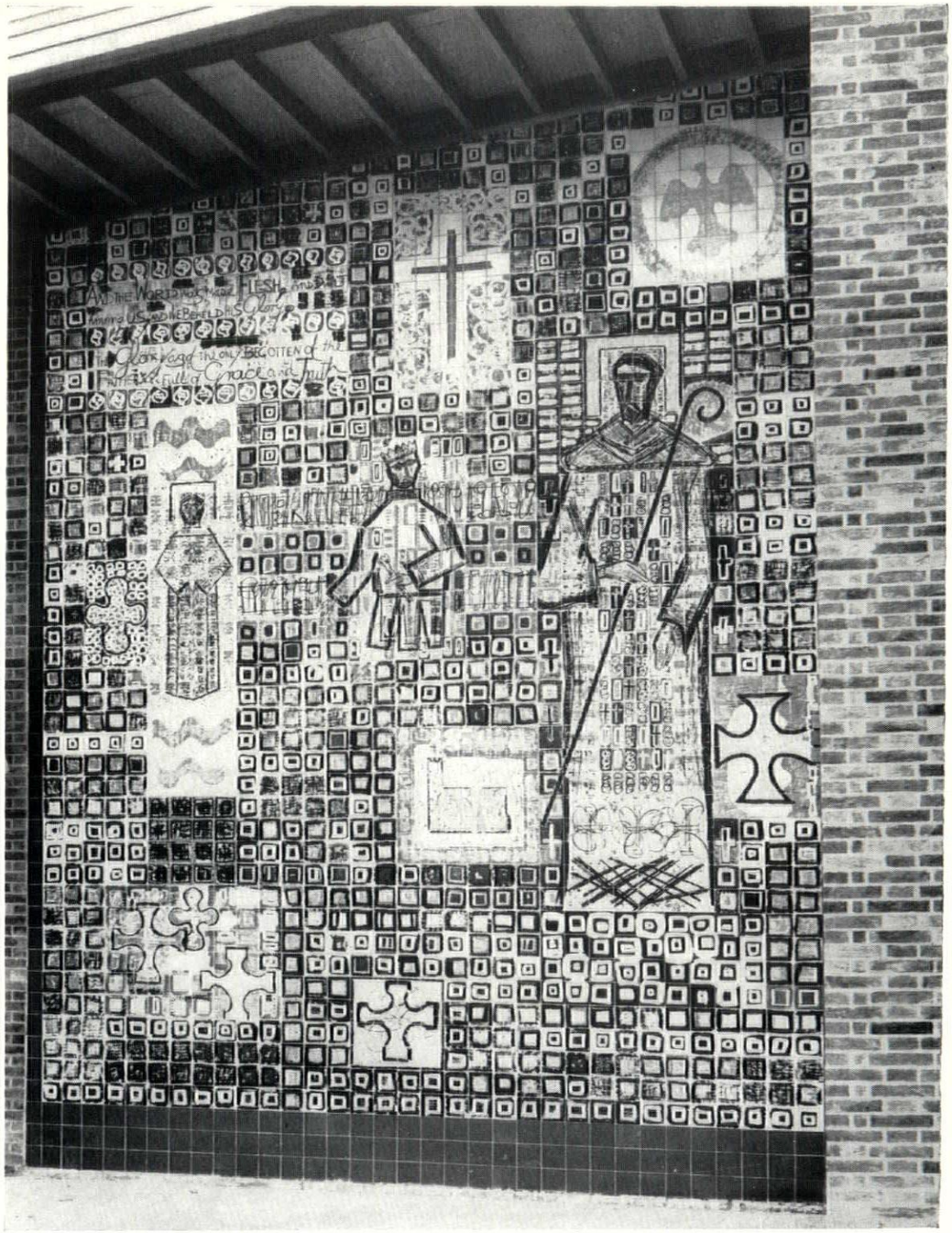
ART IN USE

TILED CHURCH WALL

Coloured tiles have obvious advantages for exterior decoration: being part of the substance of the wall, homogeneity with the architecture is more likely to be achieved, the scale of the basic unit—that of the single tile—conforms to that of surrounding walls when these are brick, and the colours are permanent and self-cleaning.

An unusually distinguished tiled wall, designed by Mr. William Gordon, has recently been incorporated in a church at Leicester—St. Aidan's on the New Park Estate (architect, Basil Spence). It forms the recessed portion of the porch. Informal in composition and relying on texture rather than repeated pattern, it therefore represents a wholly different aesthetic conception from the tile decorations of Latin America, where the most noteworthy experiments in the external use of decorative tilework have hitherto been made. It also differs from them in being of stoneware, instead of ceramic, tiles. The predominant colours are green-blues, supported by brown, grey, black, yellow and white.

The size of the panel is 24 ft. by 17 ft. The main figure represents St. Aidan; the smaller ones King Oswald, his patron, and St. Cuthbert, his successor. The crosses incorporated in the design are based on the early crosses of Northumberland.



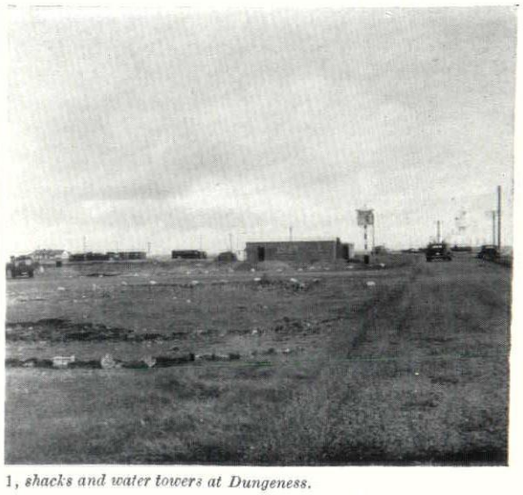
COUNTER-ATTACK

DUNGENESS

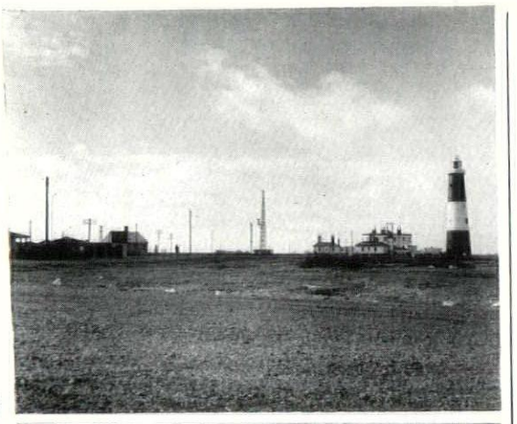
Dungeness is to have an atomic power station. Whatever the rights and wrongs, it is going to be built, so the question becomes what sort of atomic power station. Can respecting the *genius loci* have any meaning when the object to be accommodated is as big and revolutionary as a set of reactors? I think it can, and I think in this case the landscape problem is fairly simple and clear-cut.

Dungeness is at the southern end of Romney Marsh; it is completely flat, and is made up entirely of shingle for the last mile and a half south of Lydd. On the point there grew up first a lighthouse and cottages, then gradually and without plan all manner of objects—shacks, houses, poles, pylons, water tanks. The place is a forest of verticals which achieves a kind of wayward end-of-the-world feeling of its own. Indeed, it has moving verticals as well as fixed ones; for there is deep water very close to the point, and quite big boats pass within a few yards of the shore, often with superstructures as tall as the lighthouse. The whole thing looks like a composition put there by some beat younger brother of Edward Wadsworth, 1 and 2.

If the new reactors try to be chunky vertical shapes, like extra-large ships' superstructures, there might be a chance of producing a pattern of angular bizarreness—of creating a place. That the type of place would be something completely new doesn't matter at all. The illustration, 3, shows the sort of effect I am trying to suggest. From the published designs of atomic stations, particularly of Berkeley, such shapes do look feasible, and they could be painted as positively as the lighthouse. The shingle could be banked to make ramparts to hide the switchgear and the low buildings, so that the main reactors rise up sheer from the ground; if the power lines were taken away up the eastern edge of the marsh, which is already a remarkable tangle of verticals built-up all the way to Hythe, they would again be adding to an existing pattern, not intruding into the rural and lonely inland parts of the marsh. Unfortunately the Minister of Power has announced his intention to do just the opposite: to take the



1, *shacks and water towers at Dungeness.*



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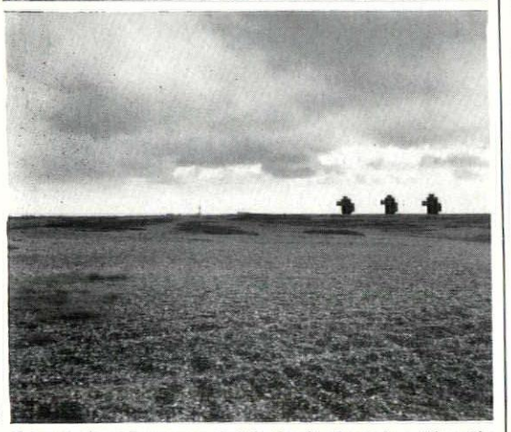


3

2, verticals at Dungeness, and 3, chunky shapes to continue the pattern.

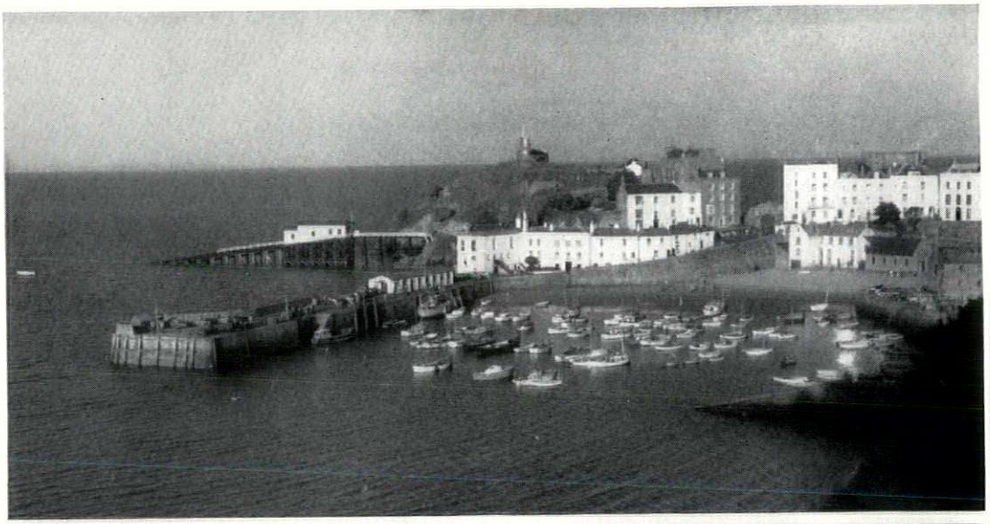
power lines slap across the marsh, in spite of the fact that at a public inquiry at which the two alternative routes were discussed, the route across the marsh was opposed by the county council, its landscape adviser, the CPRE and the Royal Fine Art Commission.

As to the station itself, the one thing that would be most out of place would be a big horizontal mass which would try and compete with the horizon—what breaks most into the pattern around Dungeness at the moment is not any of these queer up-and-down objects but the long horizontal shape of the apparently quite unoffensive and simply designed hangars at Ferryfield. But is the architect going to be brought in early enough to have some say in basic decisions like this, or is his job just to be some kind of sop to amenity? My bet is that the Dungeness reactors are going to be smooth and slabsided (or maybe, if a bit more 'up to date,' rough, brutal and slabsided) with the architect's vision and the artist's perspective omitting switchgear, wire fence, car park and any kind of representation of the existing landscape. I hope I'm wrong. **Ian Nairn**

OUTRAGE AVERTED

Tenby is a delightful, near-perfect seaside resort amongst fine coastal scenery in the Pembrokeshire National Park and whilst the local council seem set on municipal improvements to make it comparable with less perfect places, the Friends of Tenby—proud of their town and aware of its charms for tourists (on which most of the people there live most of the time)—are making a brave stand against the onset of outrage. So far Subtopia has not taken root here as elsewhere. It would be criminal if it did.

From across the sands of the south beach the town presents itself as a gently folded Regency screen of cream hotel facades perched above the cliffs—neat, clean, and glowing in the evening light of a contemporary engraving. From the north there is the more continental view of a gay and colourful port, 4—promise of foreign charm subtly fulfilled in the town itself where narrow streets and narrower pavements, steep alleys, and unselfconscious architecture are compressed within bastioned mediaeval walls that hide, contain, and present all sorts of driving hazards, 5, and provide what the official guide-book calls 'an attractive air of quaintness.' This guide goes on to describe how one of the most interesting thoroughfares in Tenby runs along the whole length of the town walls: 'St. Florence Parade, the portion between the sea and the South Gate (called the Five Arches) is lined with flower beds, while the South Parade (the part beyond the gate) is shaded by a row of trees whose blossoms make a delightful display in the springtime.' This for once in an official guide is understatement—understatement in the sense that it omits to describe how the flower beds are caged behind chicken-wire fencing and guarded by a crude concrete lamp standard, 6; understatement also in that South Parade is a fine example of townscape that should on no account be spoiled. You don't need to be a connoisseur to appreciate this. You don't need to analyse it to see why; in fact the component parts are simple. The town walls and arches stand by courtesy of the late George Chater, FRCS, who obtained from the Court of Chancery in 1873 an injunction to preserve them. They are not a museum piece either but form the back garden walls of properties in Upper Frog Street. There is a tarmac pavement shaded by the aforementioned trees making an informal esplanade, 7, a place to gossip, to sit on long benches, or wait for the bus, 8, 9. No fuss, no show, no pretentiousness—and so far, no municipal improvements. But what the guide-book omits to mention is the



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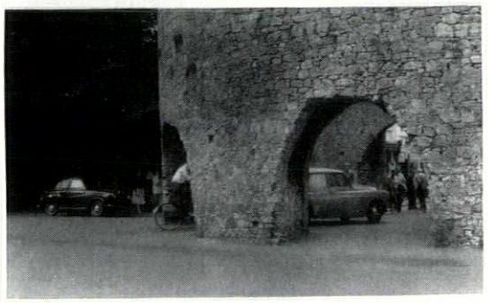

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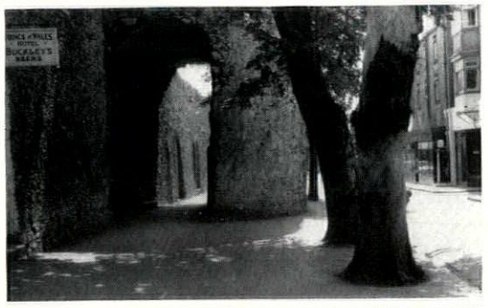

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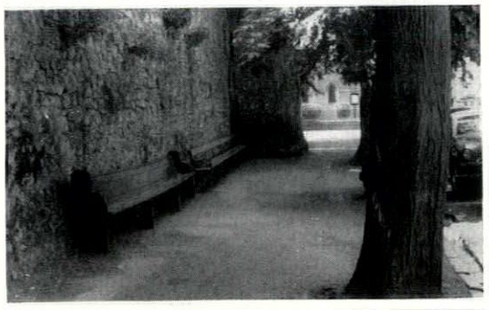

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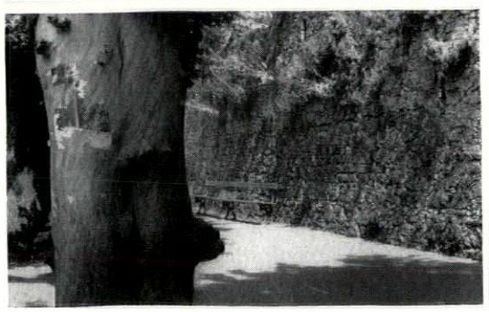

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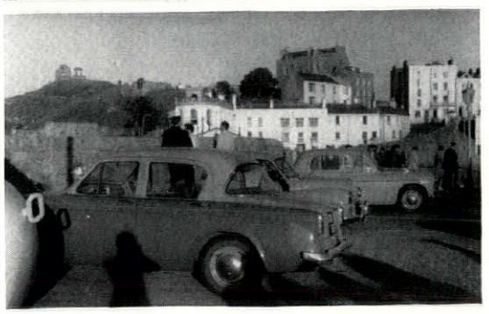


10

Town Council's incomprehensible attempt to remove the trees, cut back the pavement and erect a bus station! (nor does it mention how the Council cut down the trees along the sea front in the face of expert advice and how two people were killed in the landslides predicted by the experts).

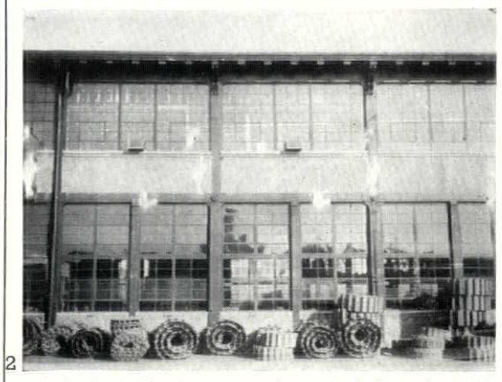
After two public meetings called by a handful of residents where proposals were put forward for a Ratepayers' Association to fight the Council, counter proposals by those who preferred to attack along more gentlemanly lines resulted in the launching in March, 1959, of the Friends of Tenby, an association with Lord Merthyr as president, to protect and improve the unique character of the town *in association with* the Town Council and other organizations. There are now over 200 members including people who return to Tenby year after year for holidays. Associates can join for as little as 2s. 6d. a year; full members 10s. 6d. So far the Town Council disapprove but the proposed outrage behind the town walls has been shelved. The Friends have since learned of the Civic Trust and become affiliated, and recently prevented the possibility of a Butlin holiday camp just outside the town by buying up the land themselves, and are now hoping to get it scheduled as an open space. There was no question of disliking holiday camps in themselves, but simply that unlike all the other Butlin sites, this one was very near an existing town and would have seriously unbalanced the economy. Their next campaign will be to clear the jetty of parked cars, 10. Admittedly the town has a parking problem; what town hasn't? But the jetty is surely one place where boatman, resident, or holiday-maker should be free to wander unharried by any marauding motorist.

Raymond Spurrier

HISTORY

FRAME OF STEEL

The contribution of Chicago to the development of steel-frame construction from the late seventies to the nineties is familiar. Its early use for warehouses and factories on the other hand has been studied little. The pioneer here seems to have been the New York architect Charles H. Caldwell (1863–1932). Warehouses until after 1900 were still structures with heavy stone or brick walls, often articulated by giant arches round several tiers of windows, i.e. of the type of Richardson's famous Marshall Field Wholesale Warehouse in Chicago which was built in 1885, and indeed of an early building at 549 West 26th Street in New York by Caldwell himself, which was illustrated in an article by the celebrated critic Russell Sturgis in 1904. Then however, in the same year 1904, Caldwell built for the Fischer Marble Company at 290 Locust Avenue in the Bronx a two-storeyed building with an exposed steel frame, 1 and 2. The building was discussed by Sturgis in 1905. It has aged remarkably well and was found at a recent renovation to be in perfectly good condition. The heavier vertical supports outside are rectangular in shape and composed of



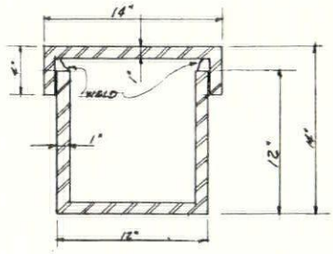
1, 2, *Charles Caldwell's two-storey factory in the Bronx in* 1905 *is the earliest known industrial use of an exposed steel frame.*

two pieces welded together, a 14-in. by 4-in. steel channel section one inch thick at all points, and a 12-in. by 12-in. three-sided section also one inch thick. This latter section has cut-outs to permit the joining or welding of the two sections from within the column and to allow the painting of the interior face. The floor construction is of steel girders supporting wood joists and wood flooring; this floor is today rated to carry a load of 125 p.s.f. —a very respectable capacity indeed. The steel girders are supported by interior steel pipe columns about 12 in. in diameter, and the roof, also of steel girders, is supported by the same type of column, 4, 5.

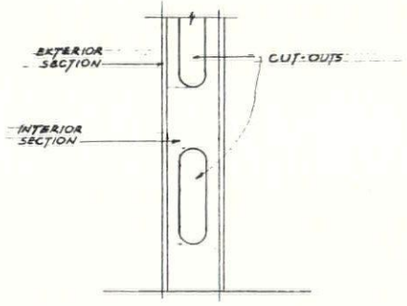
3, *In this factory designed by Frank Lloyd Wright in* 1905 *the steel frame is concealed behind a brick front.*

The historical problem posed by the Fischer factory is, of course, how Caldwell could have moved so quickly from one type of structure to another so amazingly different. The most likely answer lies in the location of the building. The Bronx at the time was not yet subject to the strict fire regulations of Manhattan. The encasing of iron in masonry was here not insisted on. Sturgis actually wrote that Caldwell had shown how most tall buildings ought to be designed if only the problem of fire-proofing could be overcome. The editor also saw the significance of what Caldwell had done. 'It will be felt at once,' he wrote, 'that a new possibility is shown to exist, that a new motive of design is secured for us, whenever the time comes that we can build as we wish to build—as our instincts direct us to build—with a frame of steel.'

The episode of the Fischer factory sheds much light on the history of the steel frame in American industrial buildings. In its period this building represented a really radical break with the tradition represented



4 SECTION OF BUILT-UP STEEL COLUMN



5 ELEVATION OF COLUMN SHOWING CUTOUTS

by Richardson's Marshall Field Wholesale Store. Indeed even after 1900, when the steel frame had been completely accepted for skyscrapers, factories were still hiding behind solid brick and stone fronts. This applies for instance to the Schoenhofen Brewery at Chicago, a building of 1904 by R. E. Schmidt which Sturgis praised, and also to Frank Lloyd Wright's early E-Z Shoe Polish Works of 1905, 3.

The subsequent history of the steel frame in American industrial building is a confused affair. On the whole, American designers did not investigate its possibilities with anything like the same fervour as men such as Behrens and Gropius in Europe. Yet it remained for an American

industrial architect, Albert Kahn, to carry the steel frame to its greatest height in factory design. Kahn's factory of 1905 for the Packard Motor Company employs substantially the same expression of the curtain wall as Caldwell's building, which was finished slightly earlier. The Packard Plant, framed not in steel but in reinforced concrete, stresses the neutrality of the skeleton in much the same way as the factory in the Bronx. A few years later, in 1909, Kahn carried the same ideas much further in designing the tremendous Highland Park Plant for Henry Ford; after that date Kahn went on experimenting with even greater areas of glass, until he reached the well-known Dodge Plant of the Chrysler Corporation (1935). In industrial building the steel frame has hardly ever been handled with greater skill than in this building. The stride from Caldwell's pioneer effort of thirty years before is gigantic.

Leonard K. Eaton

TOWNSCAPE

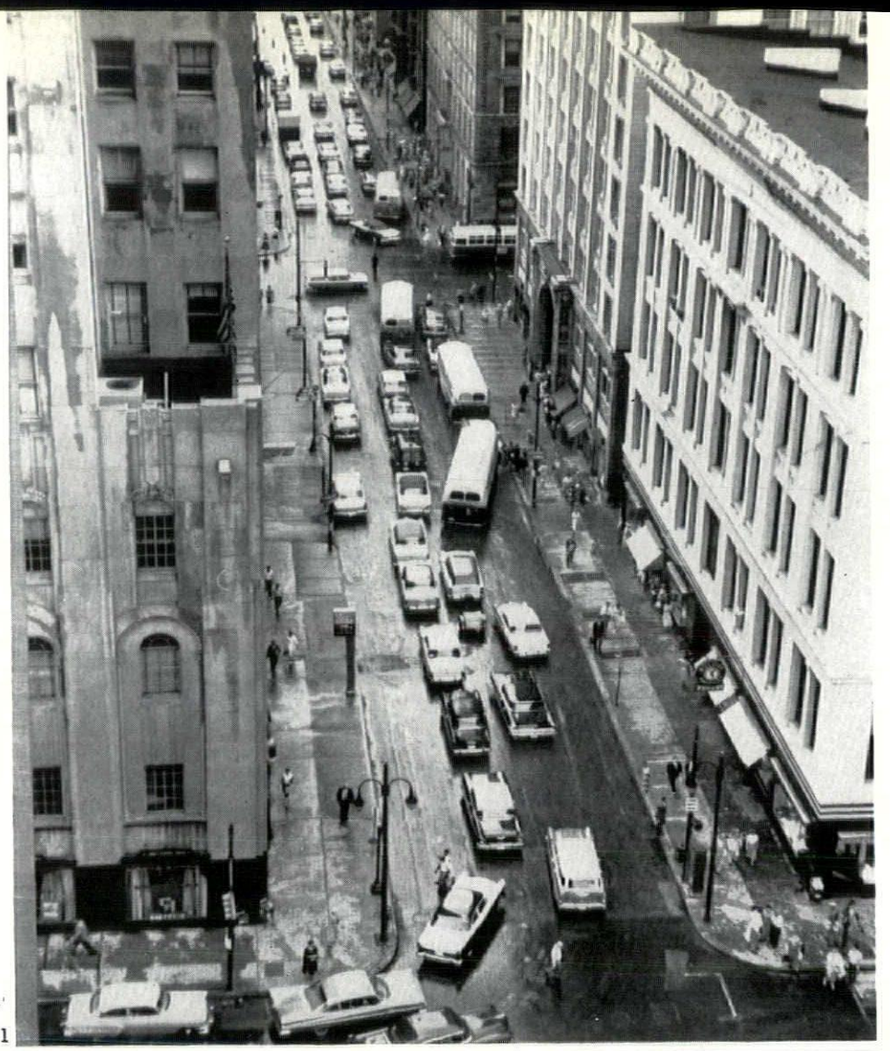
DOWNTOWN TRANSFORMATION

In 1958 *the American magazine* Fortune *published a series of articles under the general title* Exploding Metropolis *which dealt with such problems as urban sprawl, city administration, and how downtown can be made a more enjoyable place.* For the last of these Ian Nairn and Gordon Cullen helped with advice and drawings, and the articles applied many of the lessons learnt in England to the American situation.*

Toledo, Ohio, has now put some of these theories into practice and, in a new pedestrian mall in the downtown area, has done something to restore to the citizen a place where he can drift, and shop, and sit, with no traffic to worry about, but with the city amenities of shops and restaurants close at hand. This transformation, from the car-filled canyon, 1, to the seemingly spacious mall, 2, has been achieved very simply and at no great cost. The road has been closed to all wheeled traffic, lawns and pools have been set so that the roadway winds between them, slides and swings make a children's playground and penguins from the Toledo zoo add to the fun. The mall was opened in August for a trial period of 45 days; if the local enthusiasm at its inception—40,000 visitors in the first week-end—is anything to go by, it should become a permanent feature of Toledo and an inspiration to other city authorities.

M.B.

* *See AR April* 1958, *and October* 1958.



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2

SKILL

DOMESTIC WINDOWS OFF THE PEG

by John Carter

How closely do our standard windows reflect our needs? The author of this article, while not attempting a detailed review of all the standard windows available in this country, considers the range of peformance they offer, taking as 'standard' not only those which are fully such, but also those which are standard in section only.

windows before the war

An intelligent and much better informed approach to lighting, the lightweight panel idea in walling and a more sensitive grasp of heating and ventilation—these are what have most affected window design in the last twenty years. In manufacture, too, industrialized methods have influenced the departure from traditional forms. Before then, there were really only two choices—the standard wood or metal casements which seem in retrospect to have been evolved exclusively for the speculative market; or 'purpose made' windows to one's own design. Since the fundamental questions of light, ventilation, heat loss and site organization had not yet been canvassed at the scientific level, all windows accepted solutions evolved long before for timber: outward opening lights, small panes and single putty glazing.

Postwar development and research have shown us that, in the traditional window, heat loss and weather and draught exclusion were inadequately catered for, that methods of opening were insufficiently explored and maintenance often difficult. They also showed that traditional understanding of contrast grading and restricted sky glare which was so gracefully evident in tall Queen Anne windows with deep reveals, had to be re-stated to accommodate the larger modern glass making sizes. Lastly, that there was an unsatisfactory boundary of responsibility between window maker and window fixer.

dimensions

The dimensioning of standard windows has two aspects: on the one hand there is the need for a window to fit adjoining building materials, on the other there is the need for a window to correspond to the proportional bias of the times.

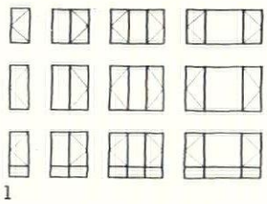
Though the 4-inch module is now well in the offing, it might generally be considered reasonable that standard windows should at least conform to brick sizes. An examination of the dimensional tables in this page shows that this is far from the case. The reason for this disparity is to be found in the fact that standard windows owe their origin to craft practice and that the joinery craft has always been independent of the bricklayer.

The first standard windows were of metal and were put on the market by Messrs. Hope's before the first world war. Described as 'cottage' windows, they were designed to meet the requirements of architects, the local authority 'cottage' being the particular use in mind. It is, of course, one of the bugbears of those who put a revolutionary article on so conservative a market as that of building that, if they are to get a ready sale, they must not only provide for an existing use, but they must provide it in substantially the same form as that of the article they hope to replace, even though the materials and methods used might suggest something quite different.

In fact, the existing British Standard for steel windows, BS990, owes too much to the early cottage window, 1. Not only as regards the curious anomaly of putty and glazing bar mentioned above, but also in its general proportions; for, though glazing bars are no longer *de rigueur*, the actual form of the window is evidently of the past.

The most characteristic of our requirements in this matter is our preference for the landscape proportion—that is, for a window that will be wider than it is high. 'Landscaping,' of course, raises a crop of contingent problems. If a landscaped window is to be fixed, it is going to be hard to clean from inside unless there are opening lights to right and left: if it is to open, then its weight becomes a problem and neither of the traditional methods of vertical sliding and side hanging can be made to work. The commonest answer is the central pivot, whether horizontal or vertical; though this will foul the curtains if opened wide. In general this is probably a small price to pay for so fundamental an aesthetic preference and it is encouraging to see the substantial number of standard windows (particularly of wood) which can be got in landscape proportions.

Another of our common requirements which are less well provided for is the storey height window.



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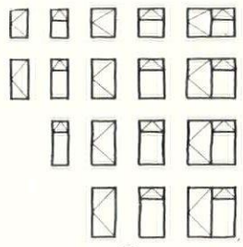

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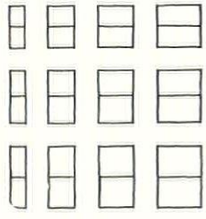

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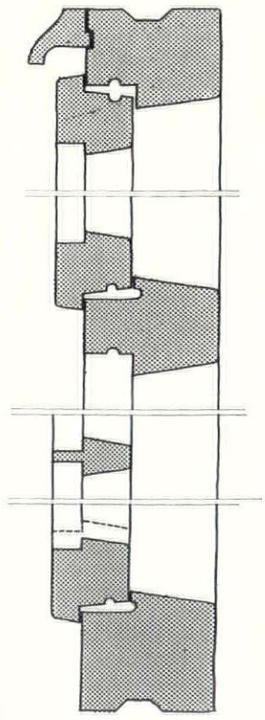


4

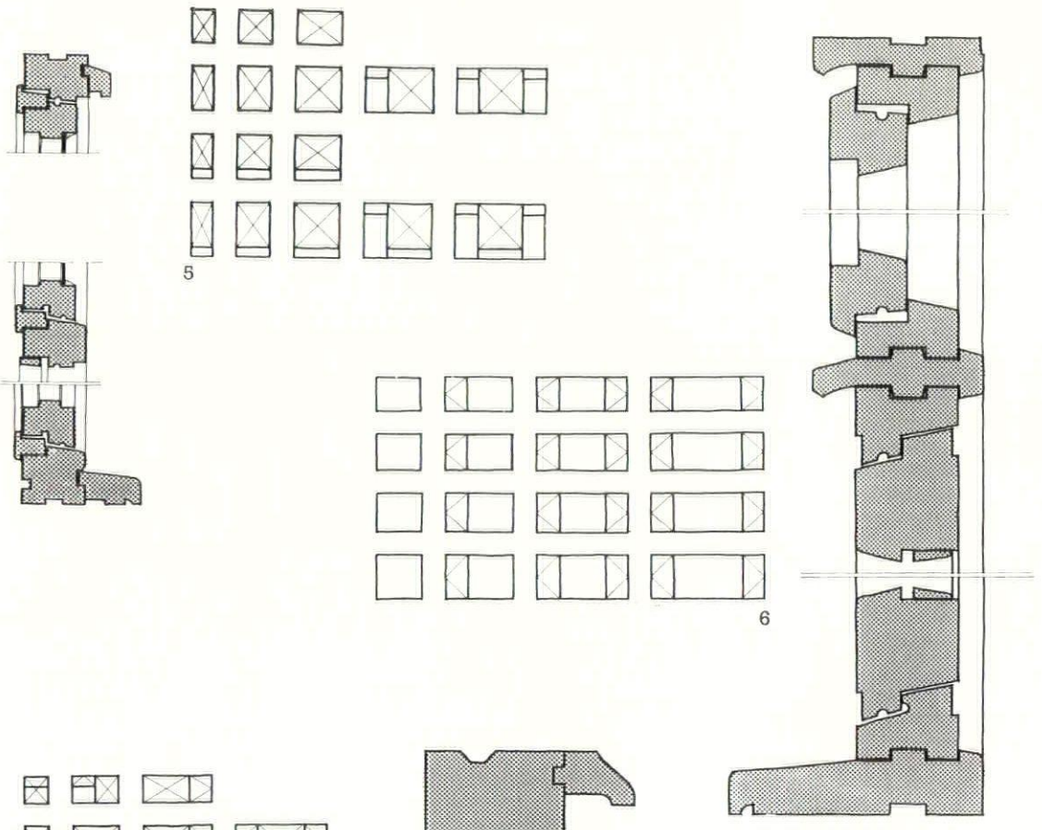
Horizontal Dimensions

BS 990	1ft. 8in.	3ft. 3¼in.	4ft. 10½in.	6ft. 6½in.
BS 664 pt.1	1ft. 5¼in.	2ft. 1¼in.	4ft. 0¼in.	
BS 664 pt.2	1ft. 6in.	2ft. 3in.	3ft. 0in.	3ft. 9in.

Vertical Dimensions

BS 990	3ft. 0⅜in.	4ft. 0in.				
BS 644 pt.1	2ft. 6¼in.	3ft. 6¼in.	4ft. 0¼in.	4ft 6¼in.	4ft 9⅛in.	5ft. 9⅛in
BS 644 pt.2	3ft. 9⅛in.					

1, *chart of steel windows to B.S.* 990.
2, *chart and section of wood windows to B.S.* 664, *pt.* 1.
3, *chart of wood windows to B.S.* 664, *pt.* 2.
4, *comparative table of dimensions of illustrations* 1, 2 *and* 3.



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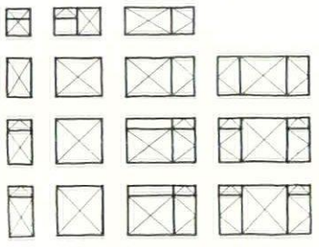

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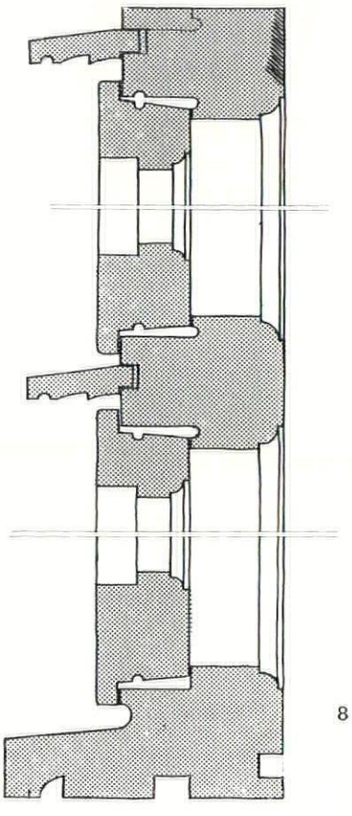

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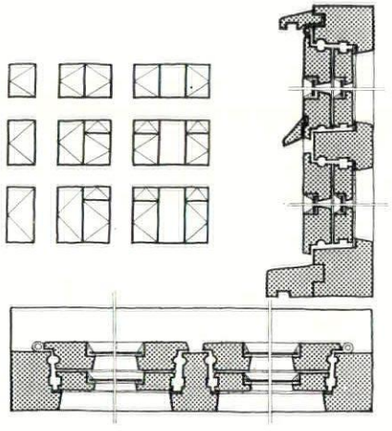

9

sections and charts of wood windows

5, chart and section of Jayanbee windows.
6, chart and section of Modolite windows.
7, chart and section of Sadd windows.
8, chart and section of Sharp Bros. and Knight windows.
9, chart and section of EJMA double glazed windows.

This, of course, raises difficulties in a standard window range, as a storey height window can be divided up in so many different ways. Two interesting solutions have been put on the market in recent years: one is Messrs. Janes' Modolite system which allows for the insertion of a variety of infilling lights within a system of standard sections, 6. The other, which is more elegant visually, is that of John Sadd, which inserts hardwood sections within the softwood frames to give the required stiffness with less bulk, 7.

tall buildings

The tendency to build high in recent years has faced the standard window manufacturers with another problem, namely, how to permit glazing from the inside. Some firms, like Crittalls, offer the full standard range with the glazing bars reversed so that the putty faces the room. This is, of course, against all precedents, but is visually an advantage as the light, catching the splayed surface of the putty, produces a less harsh contrast. Another approach to the same problem is to retain external putty but to use the horizontal pivot as is done in the Continental type wood window of the Carda type and, in metal, in Hope's Standard Reversible Window.

Tall buildings have also served to hasten the use of double glazing. Double glazing of the sandwich type is fairly easily accommodated in metal standard sections, but there are serious doubts about the effectiveness of the edge seal. Double glazing in two separate leaves presents a formidable problem to window manufacturers. EJMA have put forward designs for both types, though it remains to be seen how readily they are taken up by individual manufacturers, 9.

One of the standing objections to wood windows is that they let in draughts. The only sure way of whittling away this objection is to use double rebating. But, in the sphere of standard windows this is still not so common as it ought to be. An exception is Sharp Bros. and Knight's 'Stormproof' range.

aluminium and plastics

So far we have been considering only steel and wood. The most important newcomer to the field is aluminium. But here it is interesting to note the same forces at work which influenced the first steel windows. The commonest use of aluminium is for vertical sliding sashes. These are a very high class product, but offer no real advantages over the traditional timber sash, whose proportions they imitate so closely. A more imaginative use of the material employs the horizontal sliding sash of the transport industry, 12. This type of window commonly relies on a spring to prevent the sashes from rattling and a washer—in place of a drip mould—to keep the wet out; and thus may be said to have brought about a complete revolution in window making. Since an aluminium sash is far lighter than its counterpart in wood or steel, the smaller sizes may be lifted out for cleaning.

Aluminium has not proved quite so trouble-free as regards maintenance

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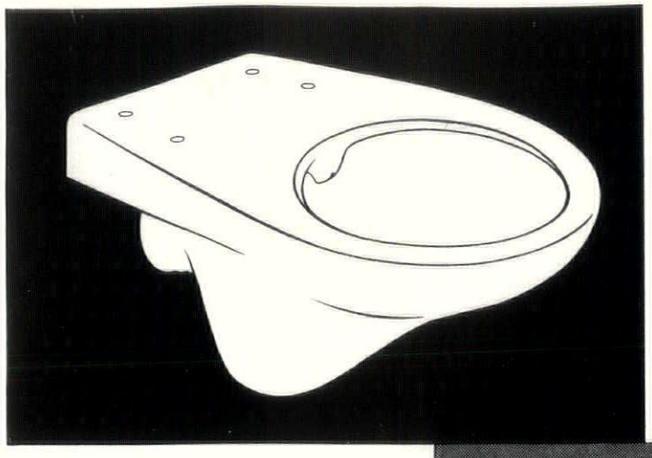

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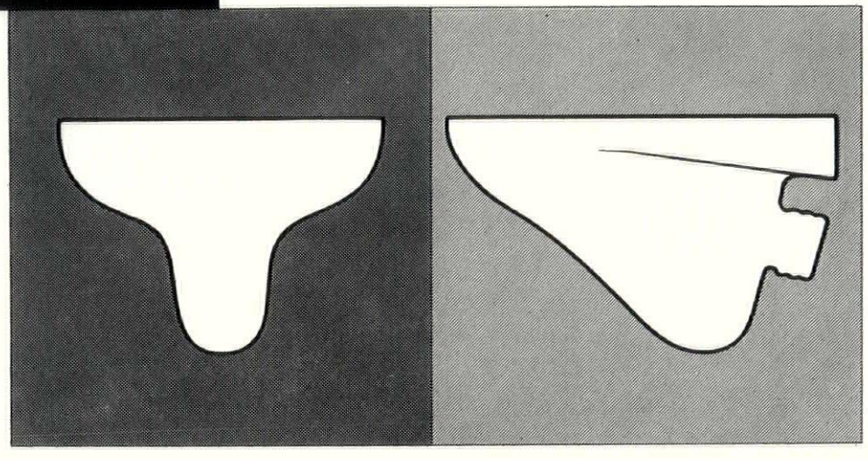

material

The 'Standard' Sanwall closet—wall-hung to facilitate floor cleaning—is a refreshingly simple design. Beneath its glazed exterior is 'Standard' vitreous china, a non-porous material. Even without its glaze it is non-absorbent. No moisture can enter the body material and swell it, making a 'mosaic' of the glaze and so letting in more moisture. 'Standard' vitreous china is a clean material. It is strong, too, and highly resistant to breakage. For fine design in a really clean and durable material, always specify 'Standard' vitreous china.

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continued from page 292]

as we had hoped—it does not need painting, but it does need regular cleaning. For this reason the use of plastic-coated steel, as in Ideal Casement's 'Mipolam' range of windows, is at least of interest, 13.

conclusions

In reviewing these windows for dwellings, it becomes clear that the timber industry has responded more fruitfully than the steel industry; that the newcomers—'continental' ideas and the vehicle industry—bring much needed alternatives to a world still heavily in debt to traditional practice. Wood window makers need to concentrate on two things—they should enlist much better support from that oddly isolated and impervious trade, the lock and fastener makers and they should try to develop the storey height unit with interchangeability of 'panel.'

To look back over the development of a particular class of products is to see in the building industry two main characteristics. First the solutions of different problems are too divorced from each other. One maker solves the heat loss problem, another the conundrum of how to open and close and a third deals successfully with maintenance. Second, the astonishing variety of windows offered seems too great for the variety of needs encountered in practice. And yet some needs remain very thinly catered for.

Failure to reach an economic/ functional balance must of course be

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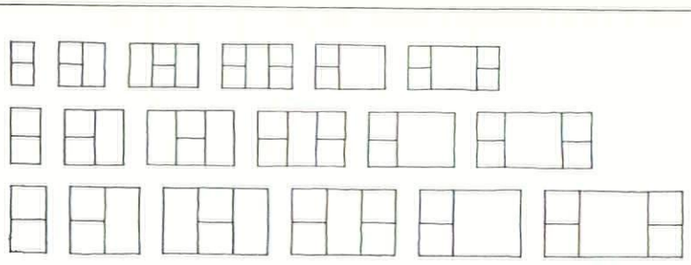

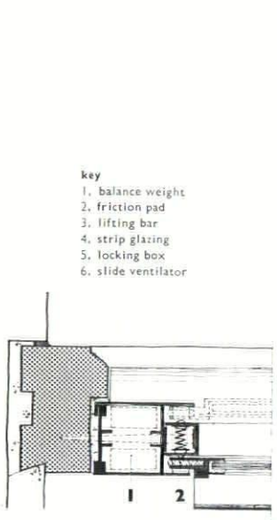

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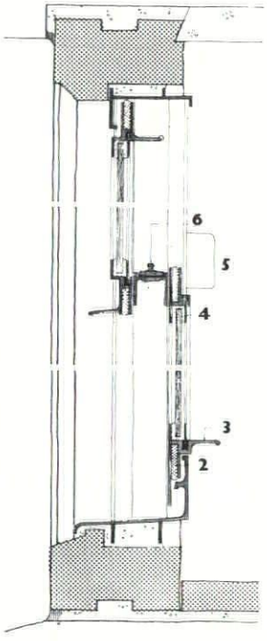
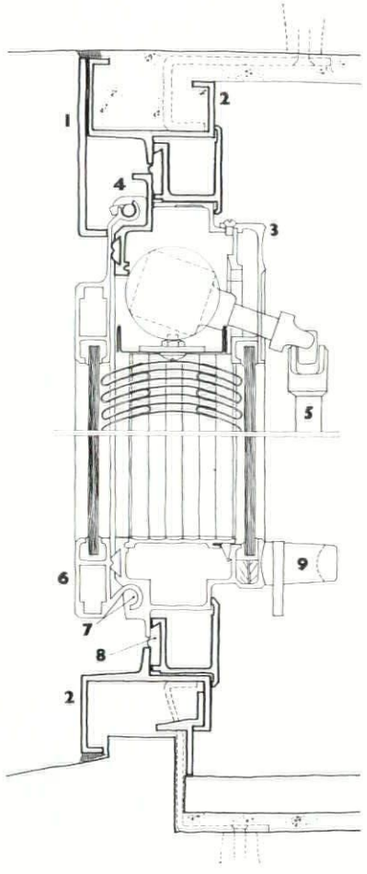
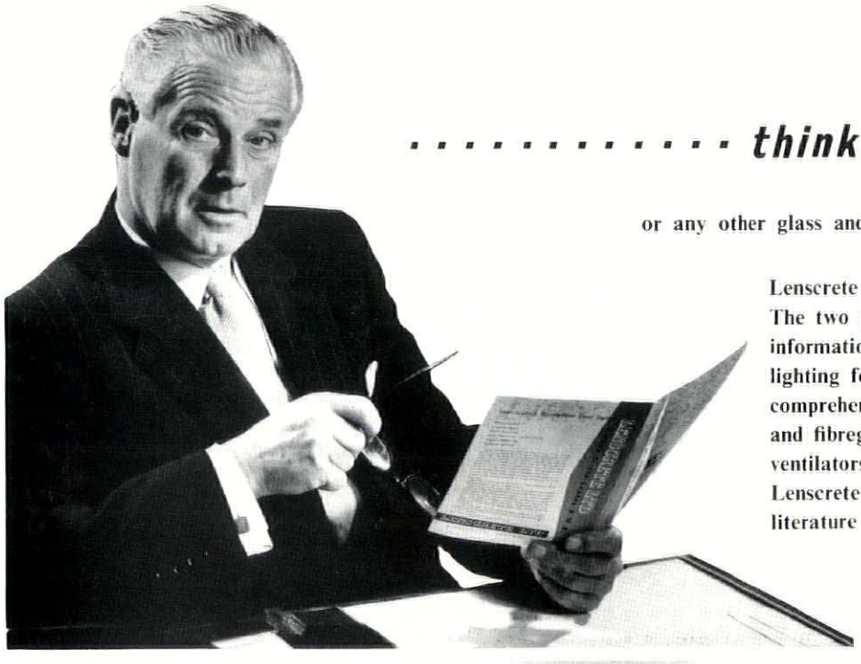




11

10, *Braby aluminium vertical sliding windows, section and chart.*
11, *section of Crittall's aluminium vertical sliding window.*



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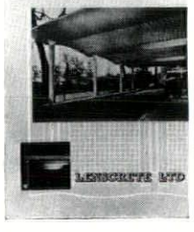

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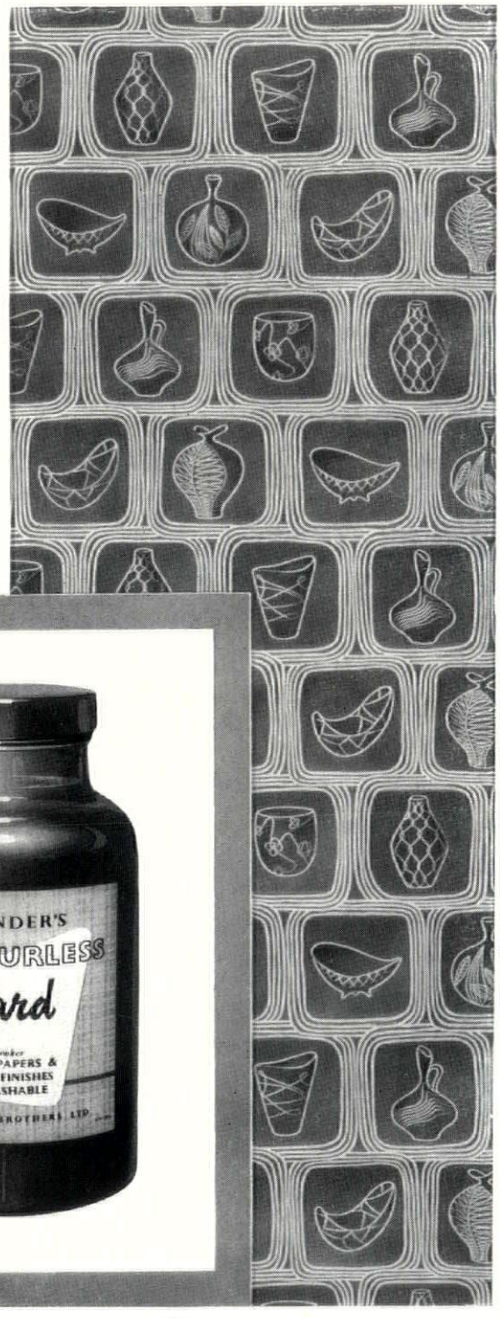

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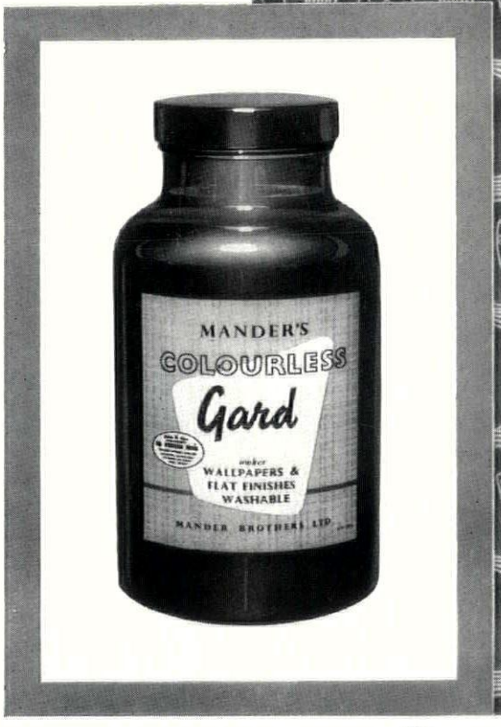

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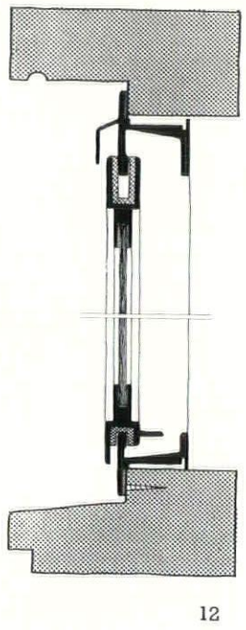

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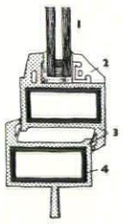

13

12, *section of Quicktho aluminium vertical sliding window.*
13, *Mipolain plastic coated steel window.*

laid partly at the door of the architect. His type of training—to design the purpose made building—is at odds with the growing economic pressure in industry towards standardized quantity production. British Standard Specifications represent one attempt to define at least a provisional economic balance, but as the non-standard windows shown here reveal, the BSS does not derive from basic functions. Even if such were the aim of the Institution it would be a difficult one to attain because the customary and the familiar are so strong among the criteria of choice. After all, the window was a deeply rooted social symbol long before we submitted it to functional scrutiny.

THE INDUSTRY

Wood Floors

Wood seems to have very largely recovered the ground lost after the war in domestic construction. As though to consolidate this state of affairs, TDA have issued a very handsome booklet entitled 'Wood Floors' which gives in diagrams and tables nearly everything the architect will want to know. 'Floors' are interpreted both as 'Floorings' and as constructional floors and there are neat drawings with notes on all the variations that you can easily think of. Particularly useful are tables showing which timbers to use for such specialized purposes as gymnasia, ballrooms and skating rinks. This useful office reference costs 3s. and can be obtained from *TDA*, 21 *College Hill, London, E.C.*4.

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Factory, Research Laboratories and Sales Block at Duxford, Cambridge. *Consulting engineers* (factory and research laboratories): Ove Arup & Partners (*architect:* P. M. Dowson). *Architects* (sales block): Westwood, Sons & Partners. *General contractors* (factory and research laboratories): William Sindall Ltd.; (sales block): F. J. & T. E. Prime. *Heating and ventilation:* G. N. Haden & Sons Ltd.

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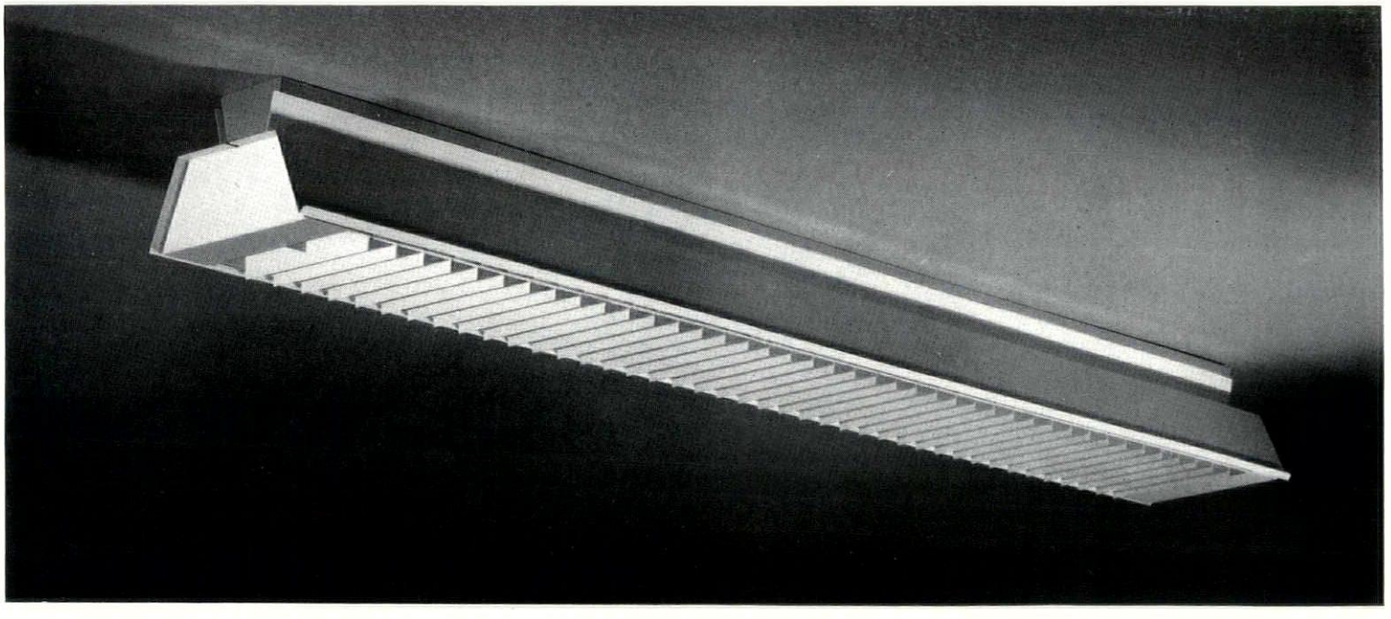

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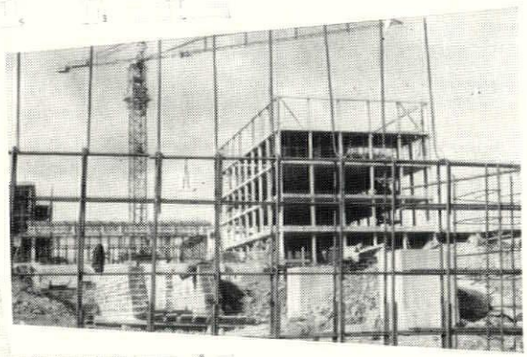

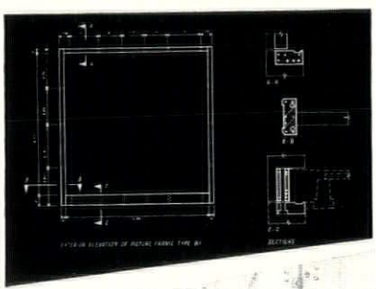

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continued from page 296]

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Offices in City Road, London. *Architect:* Morris de Metz, FRIBA. *Consulting engineers:* J. H. Coombs & Partners. *Quantity surveyors:* H R. Heasman & Partners. *Contractors:* Sir Robert McAlpine & Sons. *Sub-contractors and suppliers: Asphalt:* Val de Travers Asphalte Ltd. *Drainage and internal plumbing:* Building Installations Ltd. *Heating:* M. & J. Lossos & Co. *Ventilation ducts:* Anderson Construction Co. *Electrical installation:* Phoenix Electrical Co. *Stone facing and mullions:* Clarincrete Ltd. *Marble:* Marmi (England) Ltd. *Mosaic panels:* Marriott & Price Ltd. *Exposed aggregate panels:* Cheecol Processes Ltd. *Facing bricks:* W. T. Lamb & Sons. *Balustrades:* Gardiner, Sons & Co. *Terrazzo:* Marriott & Price Ltd. *Wood block floors:* Bennetts Wood Flooring Co. *Floor tiles:* Marley Tile Co. and Horsley Smith & Co. *Metal windows:* Crittall Manufacturing Co. *Lifts:* J. & E. Hall Ltd. *Paints:* Hadfields Ltd. *Light fittings:* Ekco Ensign Electric and G.E.C. *Sanitary fittings:* Stitsons Sanitary Fittings. *Door furniture:* Yannedis & Co. *Fireproof shutters:* Fireproof Shutter & Door Co. *W.C. partitions:* Venesta Ltd. *Lightning conductors:* J. W. Gray & Son Ltd. *Lightweight floor screeds:* Cheecol Processes Ltd. *Rooflights and pavement lights:* J. A. King & Co.

Correction

In the August-September issue Joseph Freeman, Sons and Co. Ltd. advertised a building in Princes' Gate and said that the architects are T. Mortimer Burrows and Partners. In fact the architects are Adie, Button and Partners, to whom Joseph Freeman, Sons and Co. Ltd. wish to apologize for the inconvenience that has been caused to them.

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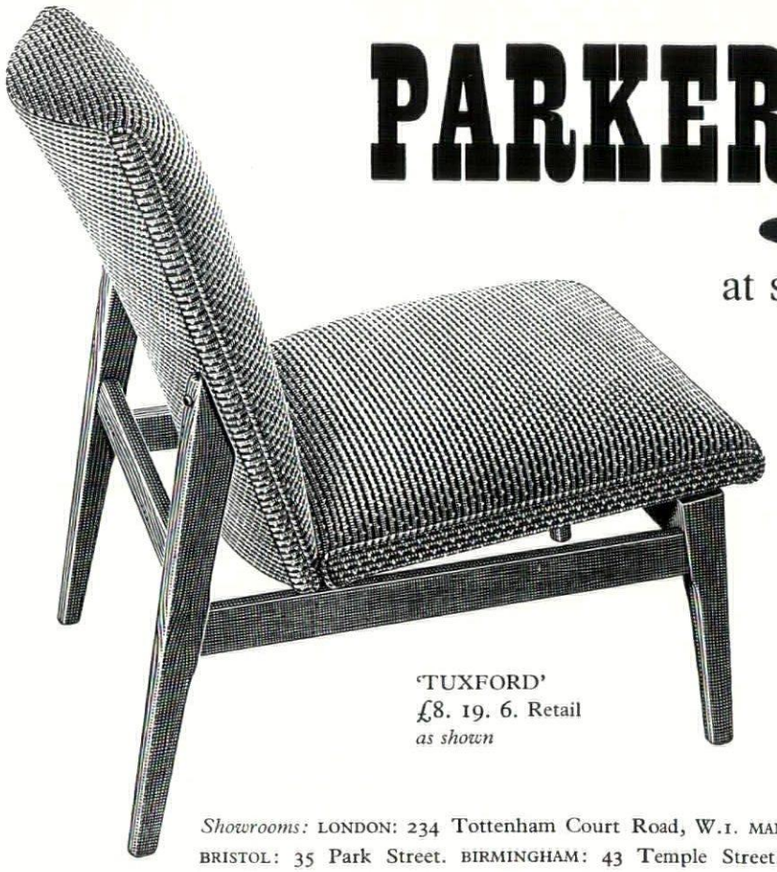

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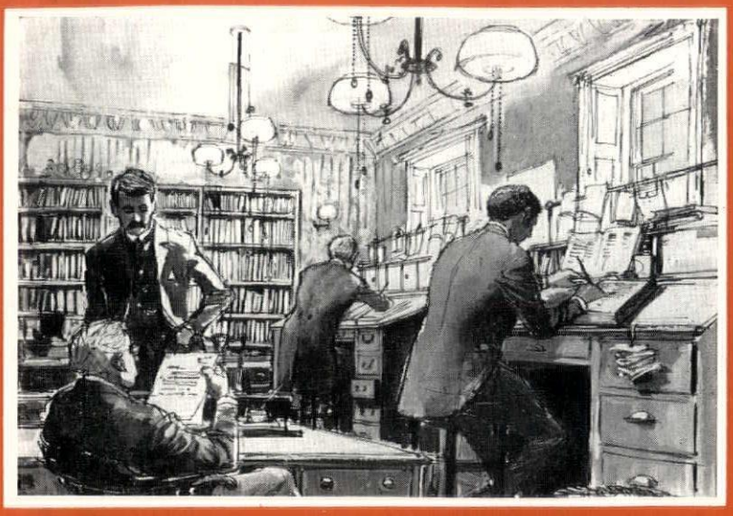

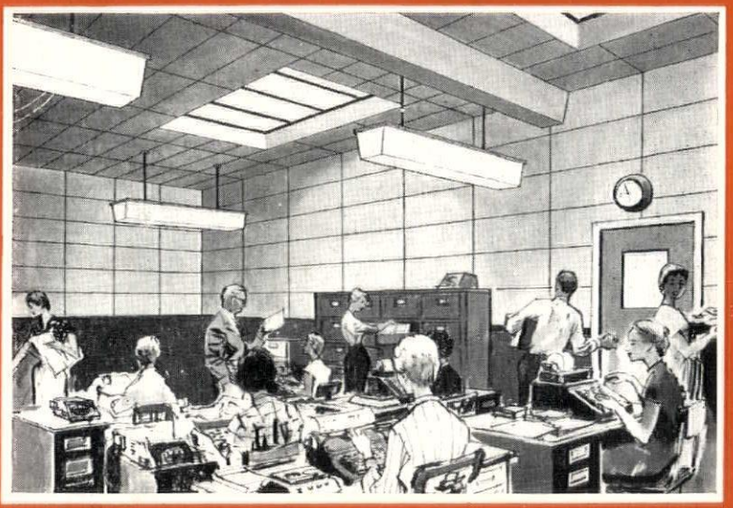

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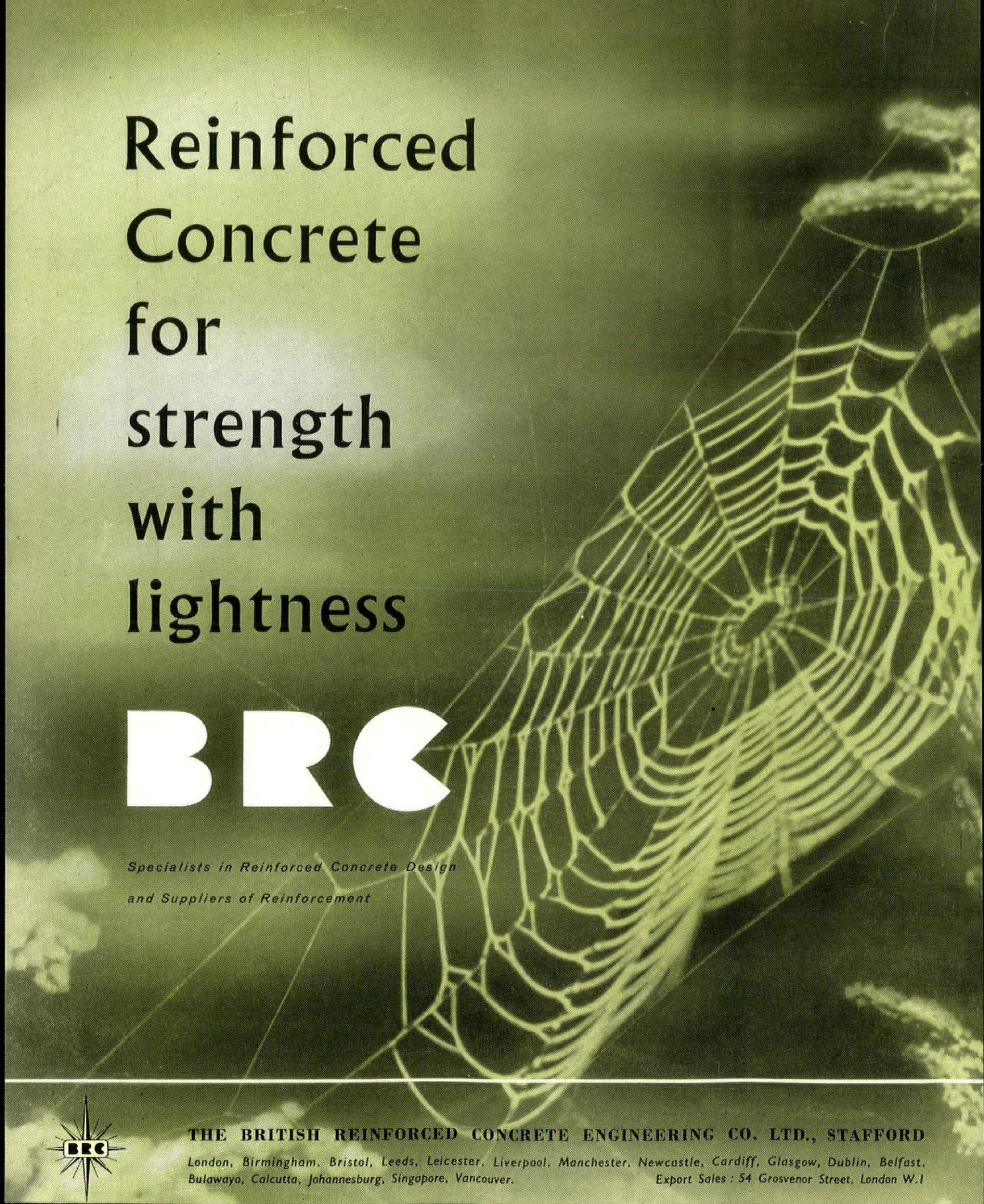
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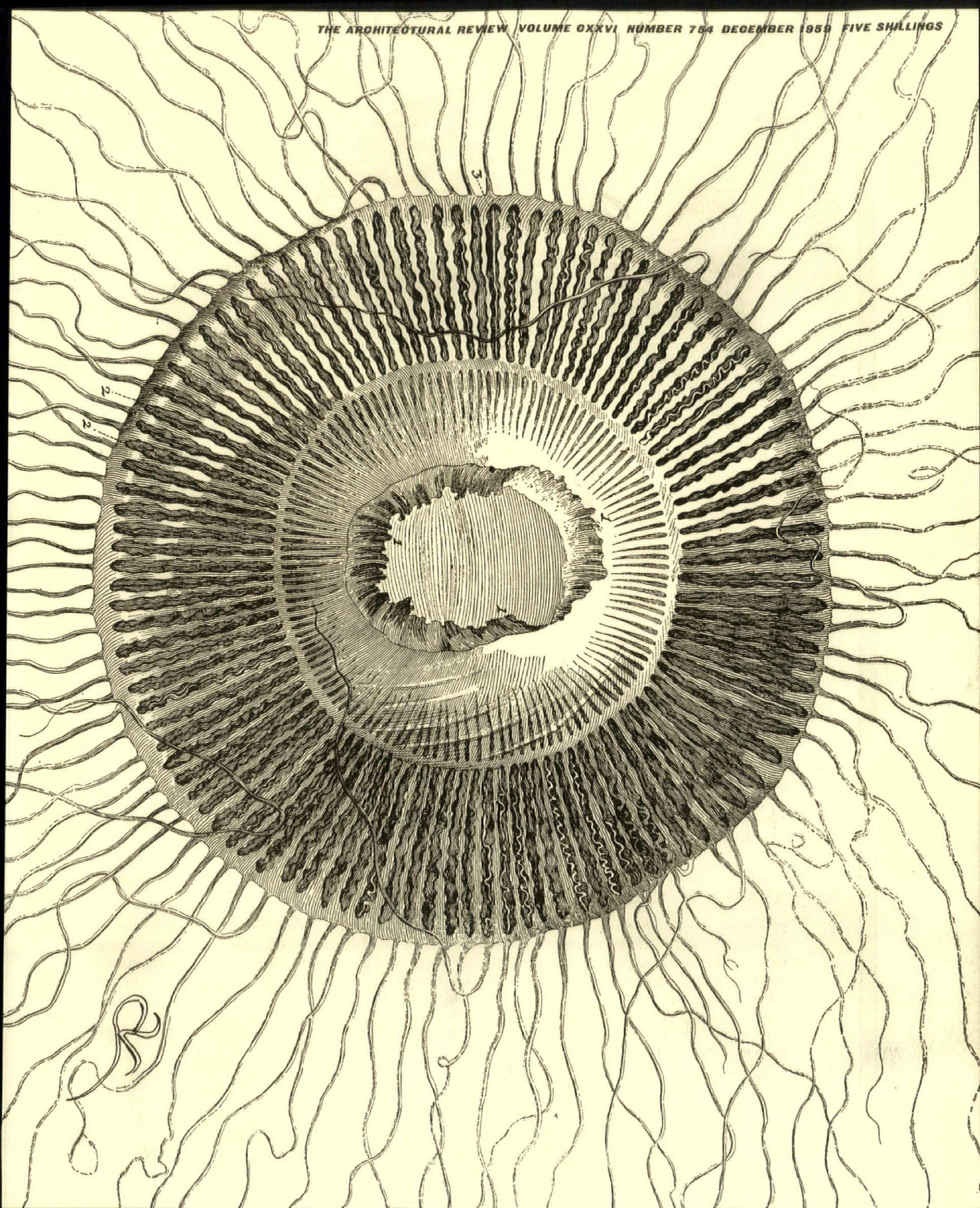

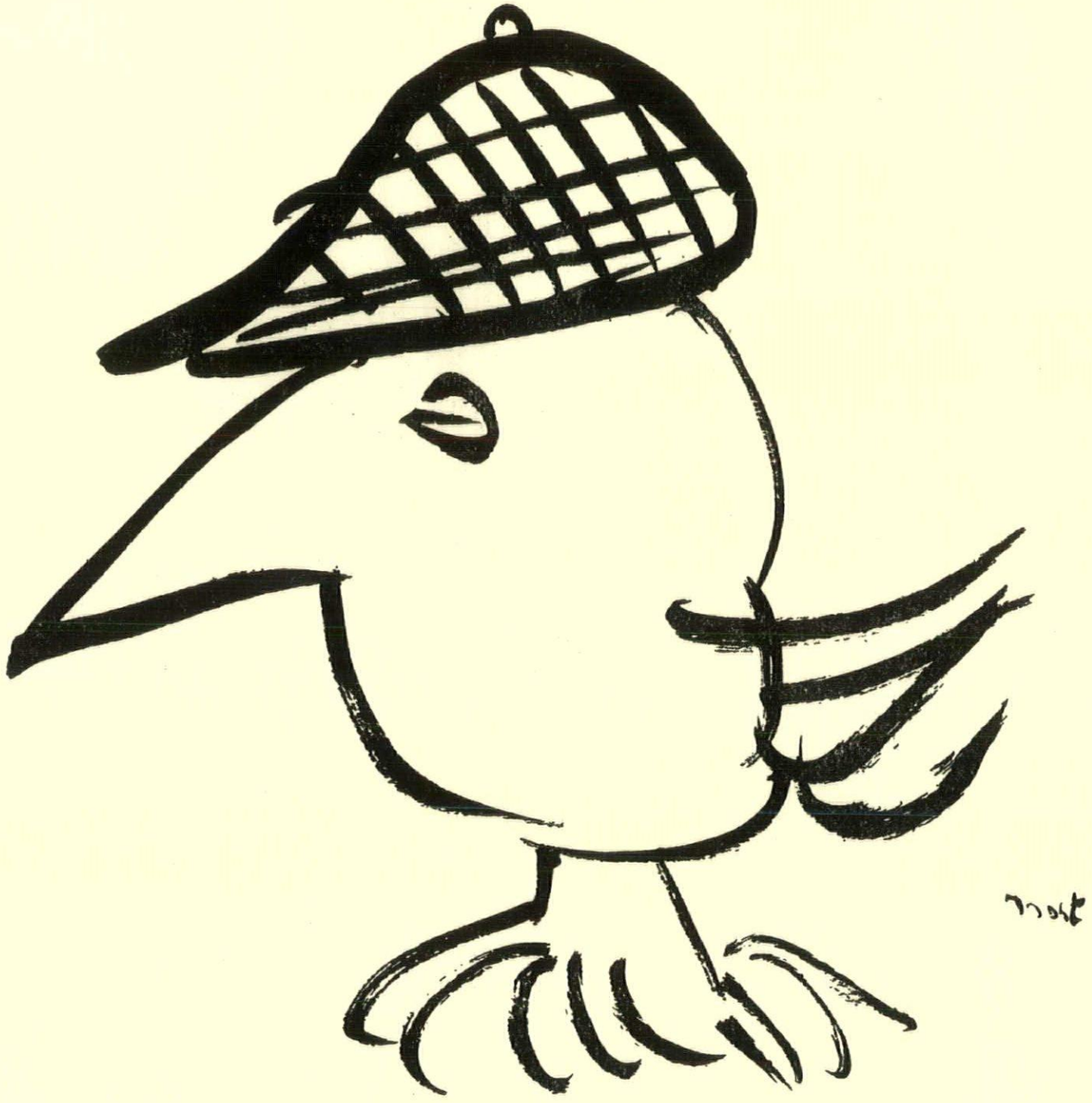

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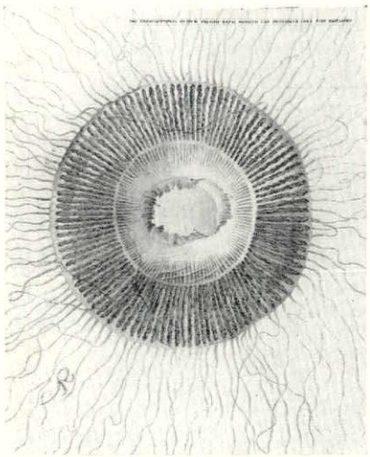

The cover reproduces, slightly larger than the original, plate *XXX*, *Medusa Octostyla*, from the *Icones Rerum Naturalium* (1776) of Petrus Forsskal. Although he died at the early age of thirty-one, Forsskal was one of the outstanding pupils of Linnaeus, and the posthumous books based on his researches are considered to be classics of the systematic literature of Natural History. Such systematic studies, and the speculative hypotheses based on them in the late eighteenth century, were the foundations of the new science of biology whose profound and various influence on architectural thought is discussed by Peter Collins in an article on pp. 303-305, to honour the centenary of the most influential biological work of all, *The Origin of Species*.

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BOOK REVIEWS

After Roman, Before Gothic

CAROLINGIAN AND ROMANESQUE ARCHITECTURE 800-1200. *By Kenneth John Conant. Penguin Books (The Pelican History of Art)*, 1959. 70*s*.

The western world saw two great periods of architectural invention (before the modernism of our own time), the Classical, and the Gothic. The former, created by Greeks, was codified by Rome and exported throughout the Empire; the origins of the latter still have elements of mystery. It is in probing this mystery that many students are drawn to investigate the middle of the sandwich: what came between, the running-down of the Roman style and the various importations which prolonged its life. For in spite of great changes the buildings of the period that closed in the twelfth century A.D. are a continuation of the story of Roman architecture, and are rightly termed Romanesque.

It was during this period that there arose the administrative and technical methods that were to characterize also the later, Gothic, Middle Ages, and for that reason if for no other an adequate assessment of the Romanesque achievement has long been needed. In the work now under review, Professor Conant has admirably summed up the mighty works covered by a field of study which he has made specially his own. The book is a notable contribution to scholarship, written in clear, readable English. Its text abounds in pithy passages: 'The practical working systems which produce a building are more important than literary-minded critics suspect' (page 57); the Hungarian invasions of 937 and 955 'stirred the Burgundians to undertake fireproof vaulted construction' (page 80); 'Cluniac psalmody . . . was most beautiful when sung in vaulted churches. Thence, a general stimulus for vaulting' (page 109).

The author's very wide travels before the war of 1939–45 have enabled him to note at first-hand much that is now lost, while more recent discoveries are reported down to c. 1954, the date of the Foreword. The difficulties of compilation and publication at the present day are emphasized by the subsequent lapse of time, and by references such as that to Poblet as still 'desolate' (page 132), whereas it was handed back to the Cistercians in 1940. The traditional date of 1063 is still accepted without comment for the design of Pisa Cathedral by Buschetus (page 232), though recent opinion prefers c. 1089. Other minor criticisms are that the less known place-names are inadequately identified in the text and index, though most of them can be found on the

admirable series of maps; and that some unfamiliar terms are introduced without benefit of glossary (e.g. 'rat-tail' for toothing, pages 119, 308).

Detailed commentary on this most important study is here impossible, but some of its illuminating generalizations must be mentioned. Professor Conant rightly stresses the fact that until c. 1050 the technique of the Rhineland was substantially ahead of that of France, while the great 'colonial' expansion of French Romanesque to England and Spain led to further remarkable improvements (the cross-sectional area of the supports at Santiago de Compostela is only about one-quarter of that at St.-Bénigne, Dijon). The author's intimate knowledge of Cluny has yielded a clear statement regarding modular systems of planning and design (page 116 and pages 306–7), where the symbolic systems of Pythagoras, Plato, and Isidore of Seville are convincingly demonstrated as in actual mediaeval use.

It should be added that the choice and reproduction of illustrations (a number from Professor Conant's own very fine drawings) in this volume more than maintain the high standard set by this notable series. **John Harvey**

The Technological Eye

THE NEW LANDSCAPE IN ART AND SCIENCE, *By Professor G. Kepes. Paul Theobold & Co. Chicago.* $15.50.

This is easily one of the most fascinating and stimulating books to come from the United States since the war. It is difficult to do it justice in a few words or even by selecting a few of its 453 illustrations.

The author's premise is that technical and scientific progress has given such added potential widths and depths to our vision that a new world has been discovered, hitherto unknown and unseen, except perhaps intuitively by the painter or the sculptor. Exploration of this vision is going on independently by specialists in different directions. The exhibition at the MIT from which the illustrations in the book are taken was the first attempt to show examples of these varied visual experiences in juxtaposition; 'The discovery of this new landscape is a challenge to correlate all this material to form a new integrated vision through the rational understanding of the world (the knowledge frozen in words and quantities) and the emotional (the knowledge vested in sensory images and feelings).' The electronic microscope can show us matter the size of a thumbnail enlarged to the distance between New York and London, and the radio telescope can make things visible in outer space, which at best could only be guessed at hitherto; the radiograph makes us see into and across matter, spectral stress patterns can be photographed projecting movement in time into diagrams, signals can be translated into pictures and vice versa. The extraordinary thing is how almost identical patterns and images are perceived by the astronomer looking through the radio telescope into space, by the scientist through the electronic microscope into molecular matter and, most curious of all, by the artist—usually consciously quite unaware of scientific and technical vision. However, to see side by side the graph of the movement of a pendulum, a sculpture by Gabo, a diagram of sound waves, an x-ray defraction pattern of a crystal, or cosmic ray showers, together with an abstract painting, proves that somehow there must be a higher order which imposes such common denominators on such heterogeneous phenomena.

Professor Kepes having introduced the problem has called on specialists in all fields, ranging from Gropius and Giedion to Arp, Leger and Gabo to philosophers, poets and scientists, so that each specialist contributor could give an explanation of this new vision in his field.

Although there is no conclusion—because it is too early yet to arrive at one—the book is so thought-provoking and exciting that anyone interested in things visual can't afford not to peruse it.

F. H. K. Henrion

Material Consideration

VITA DEI MATERIALI NELLA ARCHITETTURA. *By Giulio Roisecco. Soc. Ed. Vitali Ghiunda, Genoa. Lire* 3000.

Professor Roisecco teaches Structure at Rome University. He is a pupil of Nervi, and Nervi is quoted in the foreword: 'In your accurate study you have shown the manifold relations between building materials and architecture, and drawn attention to the practical, the structural, and the aesthetic importance of their rational and proper use. This seems to be a very opportunely timed job, for the sensible use of materials, is an essential condition of any correct architectural achievement.' The author often refers to Nervi and about as often to Wright and Neutra. Among his illustrations are some from Japan, others from the Italian Middle Ages and Renaissance, yet others from Germany. The juxtapositions are stimulating and the equal sympathy for the past and present are gratifying and incidentally very Italian. The chapters of the book deal with the supply of materials, local traditions, the use of materials, the influence of climate and locality, and finally architectural expression. The 180 illustrations are excellently chosen but poorly printed and the long captions sometimes get dangerously near to padding. The book is paper bound and considering this, rather expensive. **N.P.**

The Complete Works

SPECIFICATION 1959. *Editor: F.R.S. Yorke, F.R.I.B.A. Asst Editor. : Penelope Whiting, A.R.I.B.A. Architectural Press.* 35*s*.

The latest edition of this reference book includes an extensive revision of Carpenter and Joiner to keep pace with recent developments in the use of timber both as a structural and a finishing material. For example, an entirely new section, Timber Engineering, contributed by D. W. Cooper, has been included which deals with structural uses of timber in all its forms from portal frames in laminated construction spanning up to 75 ft. to the humble, but highly efficient, small-span trusses designed by the Timber Development Association. The use of timber as a finishing material includes an exhaustive analysis of plywoods and other building boards. Timber also features in the section on Curtain Walling where several proprietary systems in timber are included.

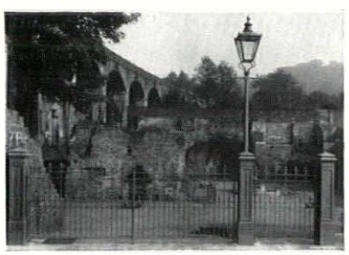
The publication of a new Code of Practice has necessitated considerable revision of Roofer and several new materials have been included. New equipment, materials and methods of construction have also caused revisions to the sections on Electrical Engineer, Piling, Structural Aluminium and Shops.

Specification specimen clauses are of the usual high standard. It is interesting to note that the Editors considered substituting check lists for full specimen clauses, but rejected the idea after experiments proved that in many cases the headings without the clauses were useless or confusing. Specification writers who regularly use this sturdy volume will surely applaud the Editors' decision to retain the existing system. **G.T.**

MARGINALIA

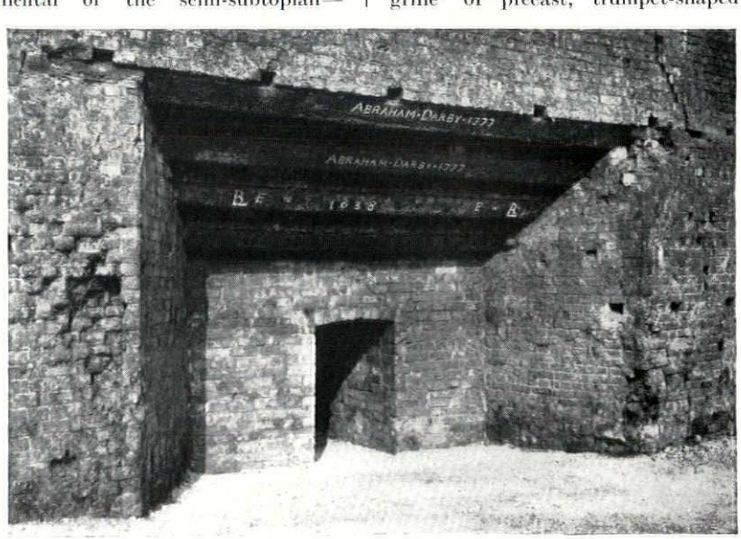
Coalbrookdale Museum

The 250th anniversary of the first successful use of coke in iron-smelting has been celebrated by the conversion of the place where this innovation took place—Abraham Darby's furnace in Coalbrookdale—into a museum. As a monument in the history of western technology, the site is of extreme importance, comparable to the remains of the Bessemer plant at Sandvicken (Marginalia, AR, October, 1958) and the formation of a museum, housing a good deal of the history and productions of the Darby family, in the heart of the characteristic early-industrial land/townscape they helped to create, is to be applauded as an imaginative and responsible action on the part of Allied Ironfounders. Unfortunately, the visual and architectural problems attendant in the setting up of this kind of 'on-site' museum have been handled in a manner that falls far below the standards set at Sandvicken, or in the LCC's handling of the *Cutty Sark*. Thus, the gates and lamp-standard in



1

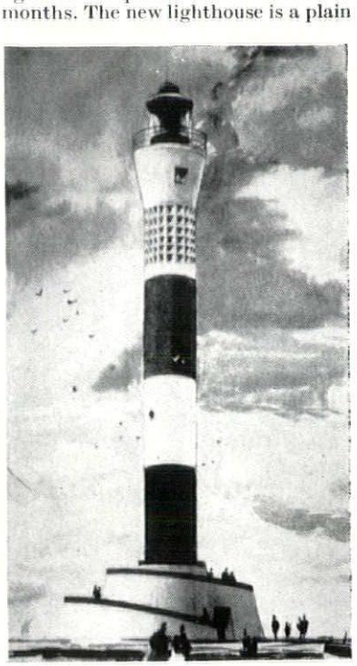
1, are not original, but a rather pedestrian reproduction, as the date reveals, while to their right the whole treatment relapses into municipal grass and chain-link fencing. Neither part of this fence—the quasi-monumental or the semi-subtopian—matches up to the character of the architecture of the furnaces, 2, nor does it make an adequate foil to it. Let us hope that when, as seems inevitable, the scheme has to be extended, an effort will be made to bring the new work up to the standard of the old.



2

To the Lighthouse—Again

The last lighthouse to be built in England was erected before Modern Architecture began, over half a century ago, and the technical and architectural history of lighthouses in this country will jump straight from masswalling in masonry, and oil or gas lighting (as things were at the time of design) to prestressed, post-tensioned concrete, electric lanterns of 600,000 candlepower, and automatic fog-warnings, when the second Dungeness light is completed in the next few months. The new lighthouse is a plain



3

cylinder in form, 3, designed by Ronald Ward and Partners, with prestressing cables taken from various heights, down through the thickness of the walls of the pre-cast drums of which it is built, to anchorages in the foundations. A spiral ramp to a public observation-platform surrounds the base, and there is a 'belfry grille' of precast, trumpet-shaped

4, *altar frontal for Swansea Parish Church, designed and executed by Margaret Kaye.*

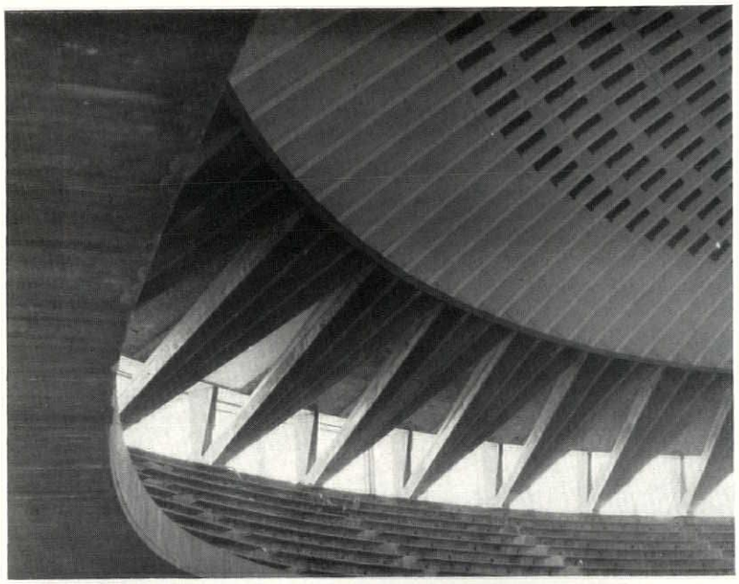
units near the top to emit the sound of the foghorn. The functional-traditional black-and-white banding is not painted, but is formed by a permanent finish of specially selected aggregate with suitably coloured cements.

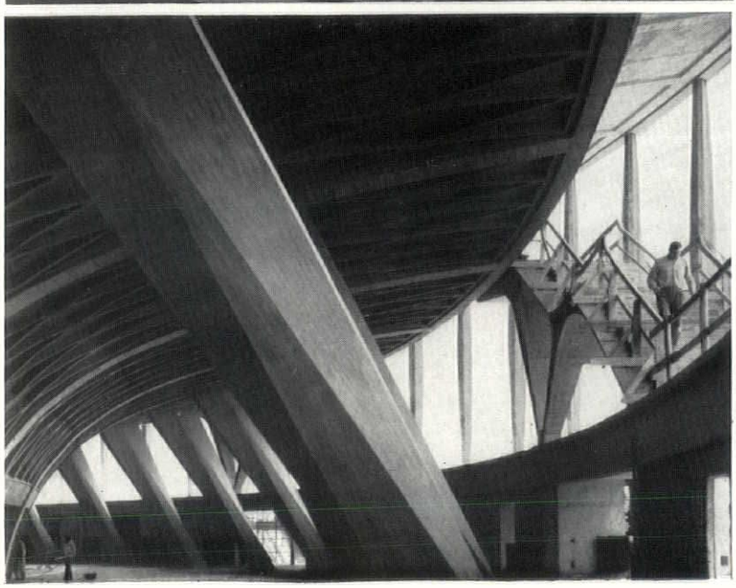
Roman Games

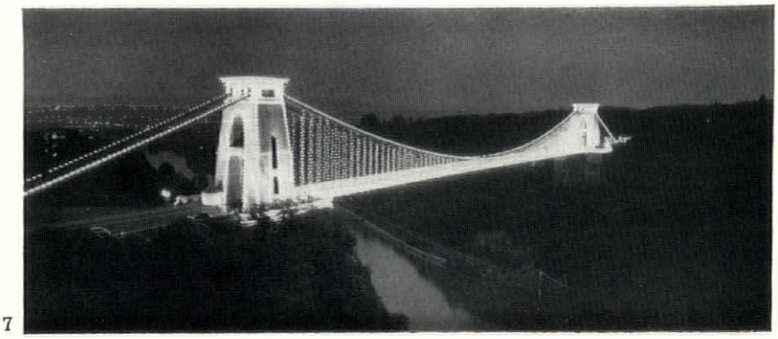
Two recent photographs, 5 and 6, by G. E. Kidder Smith, of the nearly completed circular covered stadium at Rome, the Palazzo dello Sport, for the 1960 Olympic Games. The designer is Pier Luigi Nervi.

First Permanent UK Pavilion

Whatever the political or economic reasons that prompted its erection, the appearance of a permanent British pavilion (the first of its kind) on the Rand Show site at Johannesburg is a welcome development in Board of Trade policy toward overseas exhibitions. The pavilion itself, 8, designed by Fleming and Cooke, is a simple rotunda, covered by a dome 110 feet in diameter, whose weight is only partly carried by the rotunda, some of the permanent roof loads, as well as the wind loads, being transferred by guy-wires to ten masts evenly spaced around the structure. Internally, 9, there is a mezzanine floor served by two spiral ramps, one inside and the other outside the building, and the minimum of other permanent structures (apart from a small cinema) so that the space can be as adaptable as possible for different kinds of exhibits. It is to be hoped that positive action on this scale will be followed by equally positive action over the next *Triennale di Milano*, and other international exhibitions of comparable status.







Canals in Safe Keeping

Among other good things in the 1958-59 report of the National Trust is the news that two stretches of canal are in process of negotiation for acquisition by the Trust and that the negotiations, though complex, are in a very advanced stage. The two stretches in question are from Lapworth to Stratford on the Stratford-on-Avon Canal, the other is the southern section (Stourport, Kidderminster, Kinver) of the Staffordshire and Worcestershire Canal. Both, of course, come within the category of places of natural beauty (whatever its man-made basis) that the Trust is empowered to acquire, but both are also, of course, monuments of early industrialism, and it is to be hoped that these acquisitions may establish a flexible precedent that can be stretched to cover other uneconomic, but scenically and historically valuable canals, with the ultimate aim of creating a canal-side linear National Park.

Let there be Light

7, Brunel's suspension bridge at Clifton, near Bristol, was illuminated to mark the centenary of his death and thus provided a spectacular new view of one of the most important monuments in the west of England. The illuminations have now been removed and it seems that there are no plans to repeat them next year—it is a great pity that so successful an experiment should not lead to an annual lighting-up of the bridge and it is to be hoped that the Bristol City Fathers will have second thoughts before next summer.

ACKNOWLEDGMENTS

MARGINALIA, pages 299–301: 3, the Builder; 5, 6, Kidder Smith; 7, Bromhead (Bristol); 8, 9, Industrial Architecture. FRONTISPIECE, page 302: Paul Dony. UNIVERSITY LIBRARY, SHEFFIELD, pages 307–314: 1, AR Aerial Unit; remainder, Henk Snoek. CURRICULUM, pages 315–323: 3, King's College, Newcastle; remainder, James Gowan. THREE CHURCHES, pages 324–331: 1, 4, 5, Edward D. Mills; 2, 3, 6, Henk Snoek; 7, 9, Cecil Thomas; 8, 10–13, 15, 16, 18–21, Galwey Arphot. INTERIOR DESIGN, pages 337–339: Toomey Arphot. DESIGN REVIEW, page 340: 1, Austin Motor Co.; 4, Nuffield Organisation. WORLD, pages 345–346: 1, Photogrameiricos; 2, Pando photograph; 3, Plasencia; 4, Moncloa; 5, Arkitektur; 6–8, Domus; 9, 10, Alexandre Georges, Exhibition of Structures by Buckminster Fuller. CHURCHES OF THE PUNA DE ATACAMA, pages 347–349: Paul Dony. CURRENT ARCHITECTURE, pages 350–353: 1–3, Wainwright; 4, Denys Lasdun; 5, John Maltby; 6, Tothill Press; 7–9, Galwey Arphot. MISCELLANY, pages 354–358: Exhibitions, 2, Gimpel Fils; 3, 4, James Mortimer; 6, Laboratorio Fotografico. History, Country Life. Functional Folly, 1, 4, 9, John Piper; 2, 3, 6, 8, 10, J. M. Richards; 5, Marcus Whiffen; 7, Galwey Arphot. Counter Attack, Andor Gomme. SKILL, pages 359–363: 2, Turners Photography; 3, 5, 15, 16, Monsanto Chemical Co.; 4, John Adams/Bakelite; 6, E. J. Jackson/Bakelite; 7, Bakelite; 11, Giornalfoto Milano; 12, 14, Publifoto; 13, Lee Angle Photography; 17, Monsanto Chemical Co./Robert C. Cleveland; 18, Hubert Davey/Bakelite; 19, Polyfoto; 20, Willy Kessels. THE INDUSTRY, pages 364–368: 5, Deighton Wilkes and Co.

The armed angel of Casabindo, opposite *is one of the* angeles caballeros *who may be found in paintings in some of the churches along the* Camino de los Incas *high on the Argentine side of the Andes. The musket he carries is an entirely proper attribute for a guardian angel in this bleak land that has always been one of the frontier territories of the human race, as well as of the Christian religion, and the primitive churches of the region, together with their hard-won decoration, are the subject of an article on pages* 347–349.

Peter Collins

BIOLOGICAL ANALOGY

1959 marks the centenary of The Origin of Species, *a work that threatened at one time to make biology the master of philosophy. But Darwin was not the first biologist to enunciate doctrines with wider implications, and the entanglements of biology and architectural thought have a history that goes back a century further, to Buffon and Linnaeus as Professor Collins shows in the article below.*

The purpose of analogy is to familiarize us with new ideas by linking them to ideas we already understand. It is not uncommon, however, for new theories to be linked analogously to ideas which are hardly understood by anyone, but which have captured the popular imagination by their progressive appeal. Perhaps also the less an audience understands of a subject used as an analogy, the more impressive does the argument appear. This results, if I may fall into the same trap myself, from some kind of osmosis of profundity. People today talk glibly of 'chain reactions' as if the principles of nuclear physics were obvious to anyone. A century ago, the favourite words were 'germ' and 'evolution.' Now that we are celebrating the centenary of the publication of *The Origin of Species*, it may be useful to examine the influence of biological analogies on architectural theory, and try to assess their usefulness with respect to the architecture of our own day.

The origins of the biological analogy, like so many ideas which have influenced modern architectural doctrines, can be traced to about the year 1750. At that time, two epoch-making scientific books were published: Linnaeus's *Species Plantarum* (1753), in which the entire vegetable kingdom was classified binominally according to the disposition of the female reproductive organs, or 'styles,' and Buffon's *Histoire Naturelle* (1749), a vast compendium which attempted to incorporate all biological phenomena into a general interpretation of the laws governing the universe. Linnaeus's work does not immediately concern this present inquiry. Buffon, however, is of considerable relevance, since he disagreed both with Linnaeus's immutable species, and with his whole doctrine of classification by arbitrarily chosen characteristics. On the contrary, he believed that this kind of compilation obscured the fact that all species must have derived from a single type, and, supporting his views on this subject both by the evidence of fossil shells, and by reference to mammoths recently discovered in Siberia he put forward a philosophy of creation in which the idea of evolution was expressed clearly for the first time.

In so far as his system relates to biological ideas used later by architectural theorists, there are two features which deserve mention. The first is that, in hitting upon the idea of evolution, he saw it as essentially a process of degeneration, not of improvement, since his religious beliefs (or his respect for those held by his contemporaries) prevented him from assigning the evolutionary process to any but the lower animals. On the other hand he was the first scientist to distinguish correctly between the 'vegetative' and specifically 'animal' parts of animals, whereby an animal may be regarded simply as a vegetable organism endowed with the power of moving from place to place. Thus 'organic life' has come to mean, for architectural theorists at least, the sum of the functions of the 'vegetative' class, for all living organisms, whether plants or animals, possess them to a more or less marked degree.

The scientist who first gave classical expression to this meaning of 'organic' was Xavier Bichat, whose *Physiological Researches on Life and Death* was published in 1800. Until then it was normal, especially in view of the humanistic culture of the age, for the biological analogy to refer to animals rather than plants. Lord Kames, for example, who disliked symmetry in gardens, contended nevertheless that 'in organized bodies comprehended under one view, nature studies regularity, which for the same reason, ought to be studied in architecture.' At the beginning of the nineteenth century, however, 'organic' came to be regarded less as a quality of 'life which moves'. It was thus the asymmetry of plants and viscera, rather than the symmetry of animal skeletons, which came to be accepted as characteristic of organic structures, whereby biology could still be adduced to support the architectural fashions of the age.

The most important enunciations of evolutionary theory at this time were those published by Lamarck. Lamarck was essentially a botanist of the school of Buffon, but when, at the age of fifty, he was appointed professor of Zoology by the

National Convention without any previous experience at all, he was obliged to transfer his attention to the study of anatomy. As a result of this combination of disciplines, he was eventually led to conclude that living forms had not evolved retrogressively as Buffon had believed, but progressively. This change of attitude was only to be expected. Buffon, living in the age of Rousseau, and at a time when the Book of Genesis was literally accepted, naturally favoured a hypothesis implying a Fall from perfection. Lamarck, in the age of Revolution, and at a time when the idea of Progress was literally accepted, naturally favoured a contrary view.

Similarly, it was not entirely strange that Lamarck should suggest that evolution was due to environment. The importance of this influence on art, law and society had already been emphasized by Winckelmann, Montesquieu and de Goguet respectively, although they did not, as far as I know, go so far as to say that it actually caused evolution direct. This, however, was the essence of Lamarck's revolutionary argument. 'It is not,' he wrote, 'the organs—that is to say, the form and character of the animal's bodily parts—which have given rise to its habits and peculiar properties, but, on the contrary, it is its habits and manner of life and the conditions in which its ancestors lived that has in the course of time fashioned its bodily form, its organs and its qualities.'

The word 'biology,' or science of life, was invented by Lamarck in about 1800; at the same time, the word 'morphology,' or science of form, was invented by Goethe, who in his own day was as famous as a scientist as he was as a poet. Being a poet, however, he understood the term morphology in a much wider sense than we do today (when the subjects of its study are confined to the comparison and relationships of living structures and their development), and included non-living forms such as rocks. This, as we shall see, was to be another element of confusion in the biological analogy in that, from its inception, there was uncertainty as whether morphology was concerned with structures which live, or with structures which grow. Félix Vicq d'Azyr, for example, at the end of the eighteenth century, had rejected the old comparison between the growth of organisms and the growth of crystals, contending that crystals are mathematically regular in shape and homogeneous in structure, whereas organisms are of rounded shapes and complex composition. On the other hand Jacob Schleiden, fifty years later, considered that life was nothing more or less than a 'form-building force,' and he considered the growth of crystals and organisms to belong to the same category of phenomena. As late as 1898, Herbert Spencer could still assert that the growth of crystals and organisms was 'an essentially similar process.' Since it was Spencer's biological works which mainly influenced Frank Lloyd Wright, the possible effects of this ambiguity will be obvious.

Moreover, as soon as the new science of morphology was established, and pursued methodically by the study of comparative anatomy, two dilemmas in the interpretation of the facts at once made themselves apparent: does form follow function, or does function follow form? To the layman, the conundrum might appear futile and insoluble, but to those familiar with the history of modern architectural theories its importance will need no justification. Amongst biologists, the distinction was considered sufficiently important to perpetuate a bitter quarrel for half a century, the leader of the 'form follows function' school being Georges Cuvier, the leader of the opposing faction being Geoffroy Saint-Hilaire. Cuvier (who was incidentally a friend of the architect A. T. Brogniart, and obtained his assistance in examining fossilized building stones) stated that every modification of a function entailed the modification of an organ. Geoffroy Saint-Hilaire protested against arguing from function to structure as an 'abuse of final causes.' The controversy might well have continued indefinitely had it not been that advances in cell-theory distracted attention from morphology, by causing organisms to be seen no longer as cleverly constructed mechanisms but simply as an aggregate of cells.

In the event, when the biological analogy was first seriously applied to art theory, the delicate topic of 'form versus function' was avoided completely, since interest was concentrated on the way forms grow, rather than on the way they work. From the time aesthetics became associated with psychology in the middle of the eighteenth century, philosophers had been trying to explain how inspiration (or 'genius' as it was sometimes called) grew in the human mind. Buffon himself, in his speech on *Style* to the Academie Française (1753) was perhaps the first to hint at a biological analogy when he remarked that 'the human mind can create nothing, and only produces after having been fertilized by experience and meditation, in that its perceptions are the germs of its products.' Later Young, in his *Conjectures on Original Composition* (1759), stated that 'an original may be said to be of a vegetable nature; it rises spontaneously from the vital root of genius; it grows, it is not made.' But it was left to Samuel Taylor Coleridge to express the idea as a complete artistic theory.

There seems little doubt that Coleridge derived his ideas from Germany, where he had studied in his youth and where such ideas had long been in circulation. Young's *Conjectures*, though virtually ignored in England, had been twice translated into German within two years of its publication, and had become an important part of the gospel of Storm and Stress. J. G. Herder, in his essay *On the Knowing and Feeling of the Human Soul* (1778), had used plants as an analogy for the development of art forms from the soil of their own time and place. Goethe, in his famous early essay on German architecture, had described Gothic as the organic product of growth in the mind of genius. But Coleridge, who was himself an amateur biologist, not merely translated these views into English; he organized the attack against the whole 'Mechanico-Corpuscular' philosophy of creation. 'The form is mechanic,' he wrote, 'when on any given material we impress a predetermined form, as when to a mass of wet clay we give whatever shape we wish it to retain when hardened. The organic form, on the other hand, is innate, it shapes as it develops itself from within, and the fullness of its development is one and the same with the perfection of its outward form.'

Several criticisms relevant to the present enquiry may be made concerning Coleridge's views. One is that the process of artistic creation is explained by him as virtually an unwilled and unconscious process of mind. The second is that however violently he might attack the 'mechanical' theory, it has been frequently used by biologists to explain how living organisms actually work. It was not only early philosophers such as Descartes who regarded the animal body as a machine. One of the most famous of Cuvier's disciples, Henri Milne-Edwards, stated that he had 'tried to grasp the manner in which organic forms might have been invented by comparing and studying living things as if they were machines created by the industry of man.' Finally, it is worth noting that no explanation of morphological development was more mechanistic than Darwin's 'Natural Selection.'

It has already been pointed out that by 1859 there was nothing novel in the idea of evolution as applied to the theory of life, even though the term 'evolution' was not used in this sense until 1831. This is equally true with regard to the theory of architecture. The classical architects of the early eighteenth century believed implicitly in evolution, since they believed that the moderns had improved on the Romans, just as the Romans improved on the Greeks. Even mid-nineteenth-century writers on architecture such as Fergusson, who specifically criticized Lamarck's

theories, believed in architectural evolution because they believed in Progress. For biologists the novelty of Darwin's theory was that it attributed evolution to a selection of *existing* forms (or, to put it another way, the elimination of obsolescent forms) by Nature herself. It thus inevitably weighed the balance in favour of the 'function follows form' school by presupposing that the forms existed in the first place. Lamarck had claimed that a change in environment actually modifies the form of animals, and that these changes are transmitted by heredity. Darwin claimed, on the contrary, that the changes were arbitrary and accidental, and that species changed only because the unfunctional forms never survived. He compared the action of natural selection to that of a man building a house from field-stones of various shapes. The shapes of these stones, he said, would be due to definite causes, but the uses to which the stones were put in the building would not be explicable by those causes. Yet as Charles Singer has pointed out, when a man builds a house, there is the intervention of a definite purpose, directed towards a fixed end and governed by a clearly conceived idea. 'The builder in the proper sense of the word *selects*. But the acts of selection—mental events in the builder's mind—have no relation to the "causes" which produced the stones. They cannot therefore be compared with the action of Natural Selection.' Architectural theorists who are guilty of similarly inexact analogies between building and botany may find consolation in the thought that a classic precedent was furnished by the Master himself.

If in fact we look at those phenomena which scientists consider as biological, we shall see that the number of exact parallels which can be drawn are slight. Vicq d'Azyr classified organic functions into nine categories: digestion, nutrition, circulation, respiration, secretion, ossification, generation, irritability and sensibility, and of these only circulation would seem to have any analogy with the function of buildings. Similarly, if we examine morphological systems of classification, whether it be the Linnaean system (based on one selected feature), Cuvier's system (based on total structure related to inner parts), or the system of von Baer (based on what he called the 'spatial relationship' of organic elements, i.e. radial, longitudinal, massive and vertebrate), there seems little even remotely suggestive of buildings and the way they are designed. It would seem as if the analogy must always be general and poetic, and in fact the features held in common seem limited to four: the relationship of organisms to their environment, the correlation between organs, the relationship of form to function, and the principle of vitality itself.

The most comprehensible analogy concerns the influence of environment on design, an idea which undoubtedly derived its main stimulus from Darwin, although it first emerged in the work of Alexander von Humboldt, who opposed the academic methods of Linnaeus and suggested that plants should be classified according to the climates in which they were found, rather than according to inherent characters determinable in a museum. Being of a romantic and aesthetic disposition, he sought a system of classification through the impression made by landscapes when simply looked at by the ordinary observer. He was very interested in architecture and described in detail the pre-Columbian buildings he found in Central America. He nowhere seems to have suggested, however, that the design of buildings had much relationship with topography and vegetation, although he thought that pyramids were best suited to mountainous ground. Only in the sphere of engineering did he exert any influence on construction, in that his description of Peruvian suspension bridges is known to have suggested modern experiments in this field.

Darwin naturally took von Humboldt's doctrine considerably further by contending that Nature had *selected* those forms which were most suitable for the environments in which they were situated, but he offered no suggestion as to how Nature created such forms in the first place. He had in fact no training and probably little interest in pure morphology, and in so far as his work affected morphological studies, it was to cause the public to regard organisms *historically*. In his first draft of *The Origin of Species*, written in 1842, he remarked that 'we must look at every complicated mechanism and instinct as the summary of a long history of useful contrivances much like a work of art.' Whether or not he actually regarded the history of architecture as analogous with natural selection, I do not know. But there can be little doubt that, so far as his biological theory of the relationship of form to environment is concerned, the relevance of Darwinism to architecture has tended to decrease. Improvements in air-conditioning equipment are making architectural form increasingly independent of climatic considerations. Only in districts where distinctive local materials can be used for domestic architecture is there any likelihood of regional characteristics influencing form, and even in newly developed areas where the example has been set, such as Arizona, there seems little evidence of a desire to carry the movement very far.

As regards the 'correlation between organs' (which one might perhaps compare with the relationship between the parts of a building), the fact was first enunciated as a biological principle by Vicq d'Azyr, who pointed out that a certain shape of tooth presupposes a certain type of structure in the extremities and the digestive canal, because the animal's bodily parts are adapted to its way of living. This idea was taken even further by Cuvier, who, from small fossil fragments, showed how one could reconstruct extinct animals by a sequence of deductions based on the interdependence of each organic part. Yet in so far as this discovery relates to architectural theory, it suggests merely a curious parallel with the Renaissance theory of modular proportions, whereby, as the Humanists had observed, the proportions of the human body are so standardized that if one were to find the finger of an antique statue, it would be possible, theoretically, to reconstruct the whole (a fact enthusiastically seized upon by the great forgers of the age). However, the only use to which Cuvier's discovery was put by nineteenth-century theorists was in proving that the 'imitation of styles' was morally wrong, since it left false evidence for future historians. After describing zoological reconstructions of prehistoric animals in his *True Principles of Beauty in Art* (1849), Fergusson added: 'With the same facility with which a fossil impress or a bone does this for the geologist, does any true style of art enable the archaeologist to tell from a few fragments in what century the building to which it belonged was erected.'

In general, the only major biological fact which seems directly analogous to modern architecture concerns the relationship of form to function, but as we have seen, the theory that form follows function was hotly contested by those who believed that function follows form. It is curious to note that this dilemma was specifically pointed out by Herbert Spencer, from whose writings (so Frank Lloyd Wright tells us) Louis Sullivan derived many, if not all, his biological ideas. However, since nobody has ever denied the obvious fact that form and function are in some way related, it is worth considering how this relationship does fit in with a theory of design.

In case it should be objected that such a topic is not part of the 'Organic' theory at all, but of the 'Functional' theory, it is opportune to suggest that whereas in the functional analogy, the relationship between form and function is considered as necessary to *beauty*, in the biological analogy, it is considered as necessary to *life*. Historians are generally agreed that credit for this new interpretation must

be given, as far as architectural theory is concerned, to Louis Sullivan, although it may be noted that he never expressed it or applied it until after he had met Wright. It had been foreshadowed by Greenough and Baudelaire, who, perhaps with von Humboldt in mind, suggested that the best critics were those who had travelled alone through forests and prairies, contemplating, dissecting and writing. 'They know,' he wrote, 'the admirable, inevitable relationship between form and function.' Similarly, Viollet-le-Duc, like Ruskin before him, drew attention to the way mediaeval sculptors had studied the morphology of vegetation, and how they understood that the contours of plants 'always express a function, or submit themselves to the necessities of the organisms.' He did not, however, draw any major philosophical conclusions from this observation, except to say that the masons 'sought to bring out in the structures of their buildings those qualities they found in vegetation.' The French Rationalists were in fact more interested in the idea that form follows structure (which they found quite intelligible without the use of elaborate analogies), so that there can be little doubt that it was Sullivan who first made biological analogies the foundation of a total architectural doctrine.

Sullivan seems to have derived little inspiration from Viollet-le-Duc's theories, since his main interest was in composition rather than in construction (which he left to Adler). Yet following the anti-academic fashion of his age, he objected to the term 'composition,' although in the circumstances it is difficult to see why. Since 'decomposition' is the chief characteristic of organisms which are dead, it might reasonably be inferred that 'composition' is the chief characteristic of organisms which are living. But, like so many theorists who have found the biological analogy stimulating, he never really pursued it very deeply, and made little distinction as to whether it referred to the object created or the process of design. Whilst some of his writings suggest a Lamarckian interpretation of evolution (as when he wrote that 'it was not simply a matter of form expressing function; the vital idea was that the function *created* or organized its form'), most of them suggest the Coleridgean analogy between biology and poetic vision. It is perhaps significant that his first enunciation of an architectural doctrine—the address on *Inspiration* given to the Western Association of Architects' Convention—was in the form of a long poem intelligible only to three other people in the room.

In the present century the biological analogy has been associated primarily with Frank Lloyd Wright, into whose young hands Sullivan enthusiastically transmitted his copy of Spencer's biological works. What Wright has meant by 'Organic Architecture' has never been clear; the difficulty is that for Wright it meant so much; crystalline plan forms, the possibility of growth by asymmetrical addition, the relationship of composition to site and client, the use of local materials, the individuality of every created thing, the need for every artist to endow his work with the integrity of his innermost being, and so on. But primarily it meant for him a *living* architecture; an architecture in which useless forms were sloughed off as part of the process of a nation's growth, and in which every composition, every element and every detail was deliberately shaped for the job it had to perform. To this interpretation no one can take exception, and perhaps the safest thing to say of the Biological Analogy is that it is simply a more poetic expression of the ideal of *L'Architecture Vivante*.

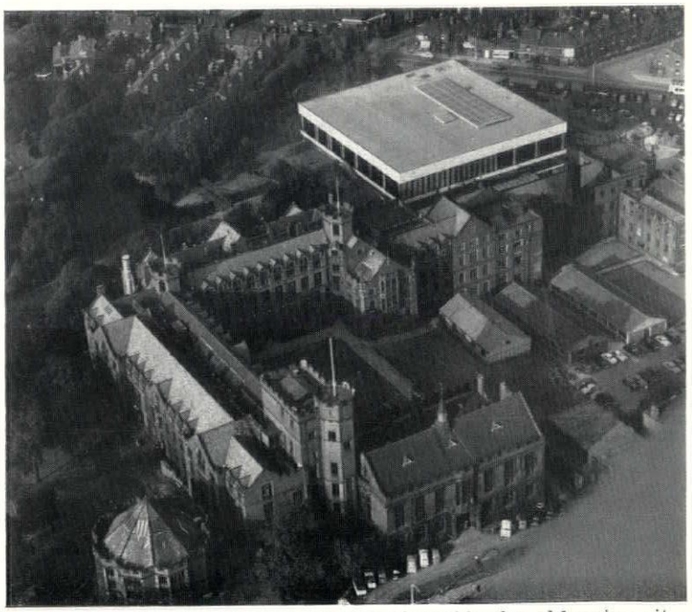
It is now a century since the *Revue Générale de l'Architecture* launched the slogan 'Organic Architecture' in this sense, although at the time it proved premature. 'We have named it Organic,' wrote the editor in 1863*, 'because it is, in relationship to the Historic and Eclectic Schools, what the organized life of animals and vegetables is in relationship to the unorganized existence of the rocks which form the substratum of the world.' Since then, many developments have occurred in biological theory, and many in architectural practice. Occasionally some of the former can be paralleled with some of the latter. Claude Bernard's discoveries concerning the way the body adapts itself to changing conditions (or vaso-motor mechanism) suggest clear parallels with the flexibility of modern planning. Similarly Milne-Edwards's law of economy, which states that nature does not always create a new organ for a new function, but often adapts undifferentiated parts to special functions, or even converts to other uses organs already specialized, suggests many interesting parallels in this present age of standardized forms. Most important of all, Wilhelm Roux's discovery that the blood-vascular system is largely determined by direct adaptation to functional requirements demonstrates that form does occasionally follow function after all. But in general, detailed analogies are as dangerous now as when the slogan was first formulated, and apart from holding that architecture must be a living art, we cannot go much deeper into the mystery of life than when *The Origin of Species* was first given to an astonished and excited world.

Within the last few years, however, one surprising change has occurred in the philosophy of architecture which provides a curiously apposite termination to a study of the influence of Darwin. The nineteenth century's naïve faith in evolutionary progress is now being seriously challenged, and a suspicion has arisen that Buffon's approach may not have been entirely wrong. This does not of course mean that optimism has given place to pessimism, but simply that we no longer accept, like the followers of Darwin, the idea that every change is for the best. Recently however it has become clear, in both Europe and America, that the leading architectural periodicals are no longer content merely to divide all new buildings into the two categories: 'evolutionary' and 'vestigial,' and leave it at that; they are subjecting contemporary architecture to systematic criticism in order to determine how improvements can best be brought about.

This, of course, is the very opposite of natural selection, but it has become necessary because we can no longer afford to regard every new 'contemporary' building as automatically an advance on the rest. In the early years of the International Style, there was much to be said for accepting every manifestation of the new spirit uncritically, since premature disparagement might have stunted its early growth. Today, when the functional forms evolved by the leading modern architects are so widely accepted, there is obvious danger of their misuse, and nothing can better serve the advancement of architecture than that examples of this should be publicly singled out.

An even more cogent reason for the new critical attitude is that, just as biologists have become very conscious of 'biotic' environment (i.e. the influence of free organisms on each other), so we are becoming much more aware that 'environment' does not only comprise natural scenery, but also the accumulated legacy of the buildings in our towns. The urban scene, especially in America, is in many districts predominantly 'contemporary,' so that modern architecture has no longer an excuse for ignoring its neighbours. On the other hand, with the general acceptance of functionalism, there is no need to perpetuate the early revolutionaries' aggressive disdain for the so-called 'beaux-arts' styles. Such buildings, when juxtaposed against our own, bear gratifying testimony to the victory of the fittest, but they also carry the awful warning that, in architecture, it is not necessarily only the Fittest which Survive.

* The earliest use I have found of the word 'organic' with specific reference to a 'living' architecture occurs in Lamennais' beautiful eulogy of Gothic buildings in *De l'Art et du Beau* (1841): 'Ce qui les caractérise, c'est le travail organique qui de tant d'éléments divers a fait une seule forme, dont les innombrables parties . . . se fondent en un corps unique et vivant'.



1, air view, showing the new library alongside the old university buildings. The old library is the detached octagonal building in the bottom left-hand corner.

UNIVERSITY LIBRARY, SHEFFIELD

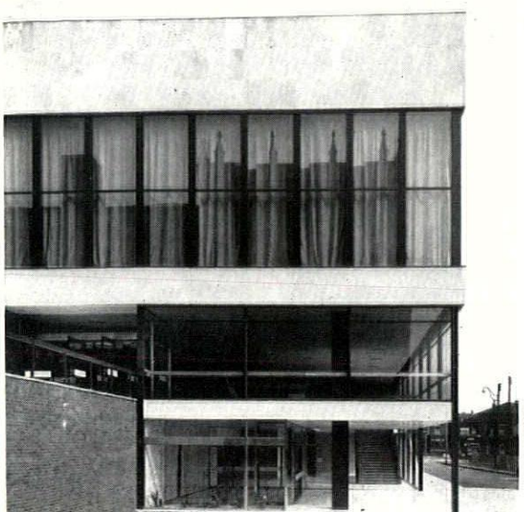
ARCHITECTS	***GOLLINS, MELVIN, WARD AND PARTNERS***
assistant architects	***M. Litchfield, B. J. Mayes, H. Prime***

2, from the east, looking towards the corner on which the main entrance is situated.

3

UNIVERSITY LIBRARY, SHEFFIELD

4



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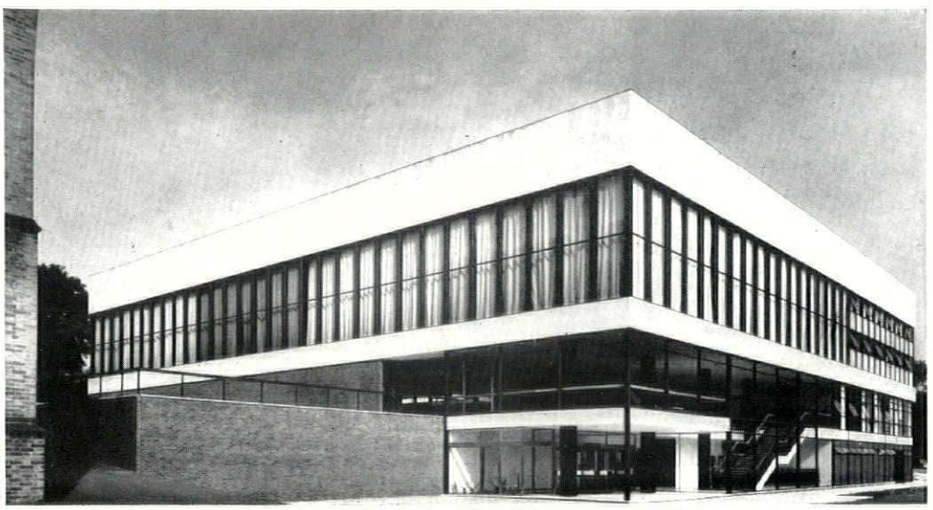
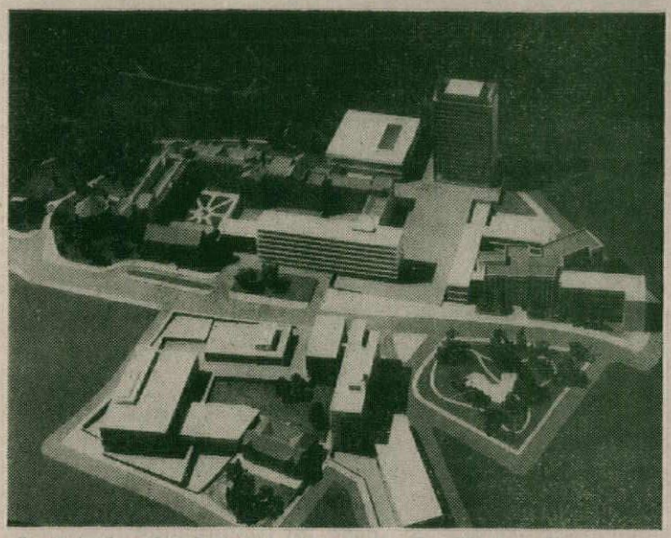


6

3, a section of the north-east façade, facing the future campus. On the left is the entrance vestibule. Through the glass wall can also be seen the main staircase and the mezzanine floor.
4, looking along the south-east façade, across the mezzanine-level terrace that separates the library from the old university buildings.
5, the main entrance. On the left is the retaining-wall of the terrace shown above.
6, terrace and library from the east. The upper floor, above book-stack level, contains the main and subsidiary reading rooms.

The library is the first to be completed of the group of buildings which was the subject of an open competition, held in 1953, for the development of the central area of Sheffield university. The site is a corner of Weston Park, which the City Corporation made available for the University; it lies immediately north-east of the existing university buildings. There is a steep fall from west to east.

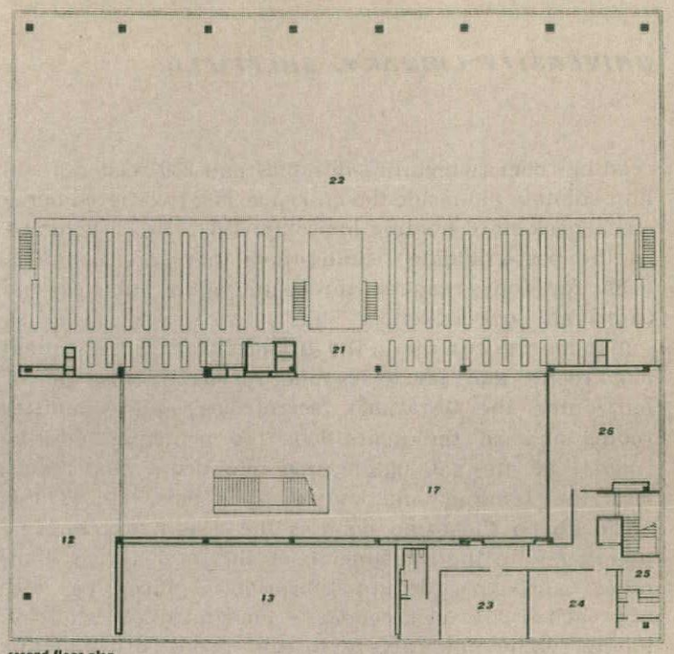
The form of the library is a low square, 155ft. along each side, 52ft. high on the east or campus side and 32ft. high on the west or park side. This allows it to



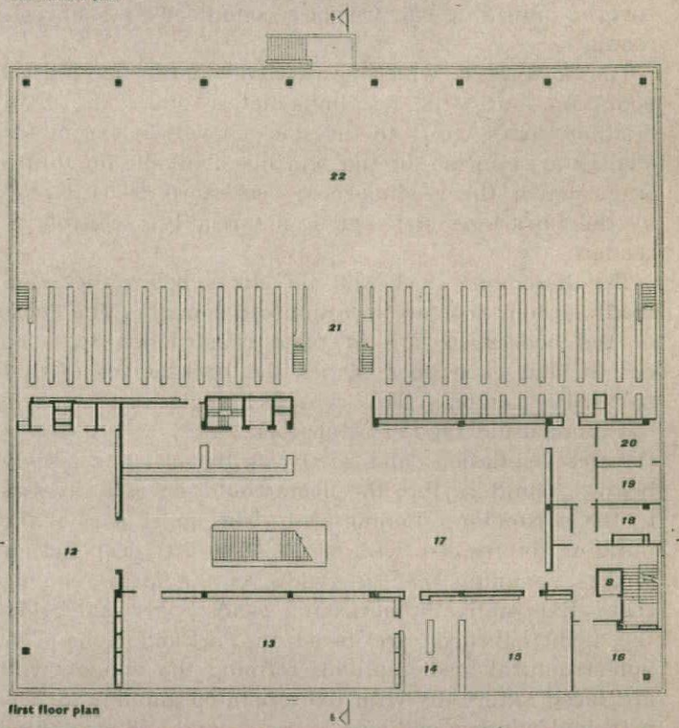
7, revised redevelopment scheme for the Western Bank area of the university, of which the library (centre top) is the first instalment. Alongside it is the 16-storey Arts tower, starting next year.

act as a foil to the 16-storey Arts block on which constructional work is to start early in 1961, and to the long low chemistry block which forms the east boundary of the campus. This is already under construction.

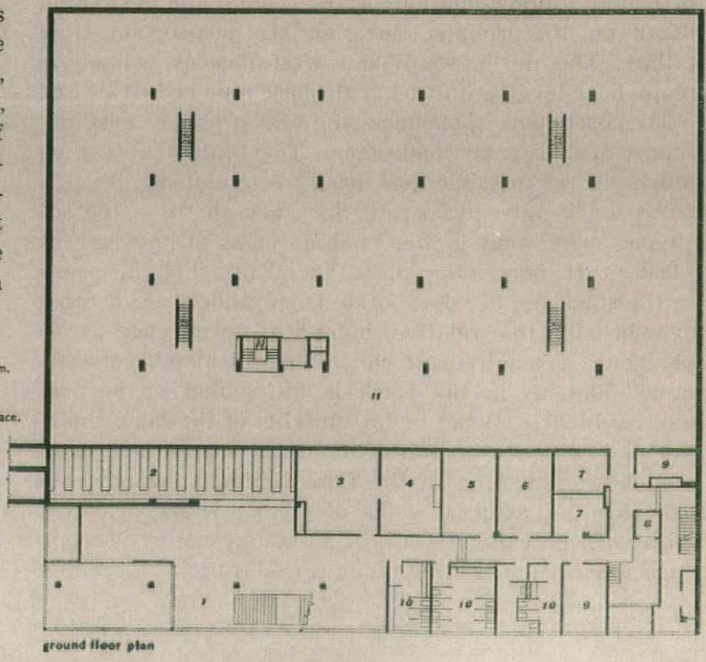
To ensure that no books can be taken away without the issue of a voucher, the plan is divided into two parts: the rooms within, and those outside, the entrance and exit turnstiles. Within the control lie all the rooms to which readers normally have access. They are approached from the centrally placed catalogue-hall, in which are the card-index catalogue cabinets, shelving for bibliographical and standard books of reference and the combined issue-desk and voucher-counter. Also within the control lie the main reading-room and the two smaller reading-rooms for post graduates and current periodicals, access to all three being from the catalogue-hall. At the back of the main



second floor plan



first floor plan



ground floor plan

key
1, entrance hall. 2, cloakroom. 3, processing room. 4, dark room. 5, stationery store. 6, strong room. 7, cleaners. 8, lifts. 9, mess room. 10, lavatory. 11, book stack. 12, post-graduate reading room. 13, periodicals reading room. 14, binding and unpacking. 15, cataloguing. 16, labelling. 17, catalogue hall. 18, inter-library loans office. 19, deputy librarian. 20, secretary. 21, reading room book store. 22, reading room. 23, female staff common room. 24, male staff common room. 25, kitchen. 26, air-conditioning plant. 27, mezzanine exhibition space. 28, pamphlet room. 29, thesis room.

Between ground and first floor, in the front part of the building not occupied by the tiers of book-stacks, there is also a mezzanine floor (see sections overleaf) through which the main staircase rises. This provides exhibition space and at the same level is the librarian's office.

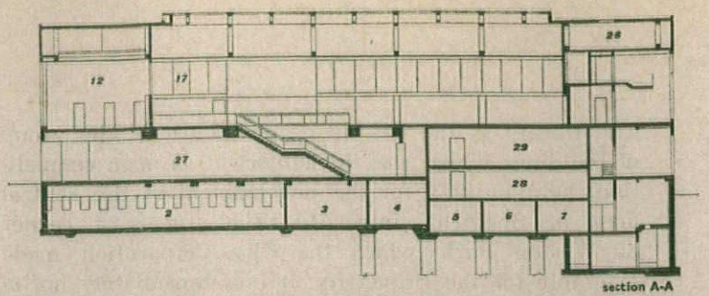
reading-room (which has 76 tables and 280 readers), and immediately alongside the entrance, is a two-tiered open-stack book-store holding approximately 130,000 volumes. In the post-graduate reading-room there are 12 tables, each for four readers, three microfilm cubicles and 55 private book-lockers.

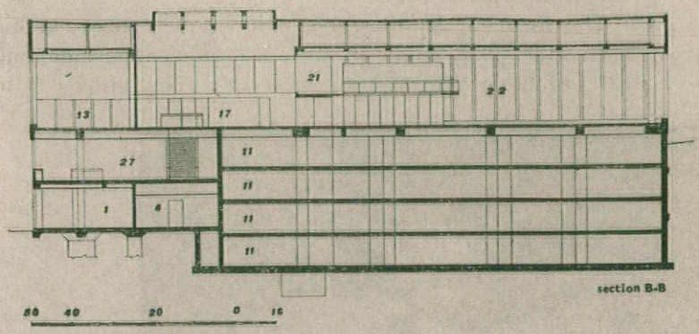
Outside the control on the ground floor are the student cloakrooms and lavatories and service rooms, on the mezzanine the librarian's, secretaries' and committee rooms and on the main floor the principal working rooms: i.e. the cataloguing and new acquisition rooms, and the binding and unpacking rooms, etc. These, although on the same floor as the reading-rooms, can, together with the labelling room, the inter-library loans office and the deputy librarian's office, be also approached by a secondary non-controlled staircase having immediate access to the goods lift and the covered unloading bay. On the second floor are staff rest-rooms.

The book-stack, which has accommodation for 870 000 books on four tiers, lies immediately under the main reading-room. Access to the stack, however, except for a small area on the top tier which is available for future extension of the reading-room book-store, is used only by the librarian's staff and is not readily accessible to readers.

The basement stack and the floors below the main reading-room floor are in reinforced concrete. The floors in the book-stack are in plate construction with no beams, and each floor carries the bookshelves of that particular tier only. This construction was preferred to the more usual type of steel stack partly on account of the fire regulations and partly, as the stack is largely below ground, so that the floors could act as buttresses to the perimeter retaining-walls. The upper part of the building is framed with steel with 8ft. deep lattice girders spanning the 80ft. width of the main reading-room. Externally the horizontal bands above and below the principal floor are faced in Portland stone. The non-structural steel mullions forming the window-wall are faced externally with black-painted aluminium. The principal window-mullions to the ground and mezzanine floors on the campus elevation are box-section steel pillars. The north, south and west facades below the main floor-level are faced with dark blue-brown bricks.

The basement book-stack and the principal reading-rooms are fully air-conditioned. To reduce the cost, as much air as possible has been recirculated, although fresh air is introduced into the stack to the extent of 10 per cent., and in the reading-rooms at the rate of 1,000 cu. ft. per reader place. To ensure that the books in the stack neither deteriorate from mildew nor become over-brittle, the relative humidity never exceeds 65 per cent., a requirement which alone demands refrigeration. The air in the stack is distributed by vertical ducts which form the metal uprights of the book shelving and which are connected to the main horizontal distribution ducting in the false ceiling above the top tier. All the external walls of the stack are insulated with cork and there is a heating coil at ceiling level on each tier. In the reading-room, to reduce solar glare and

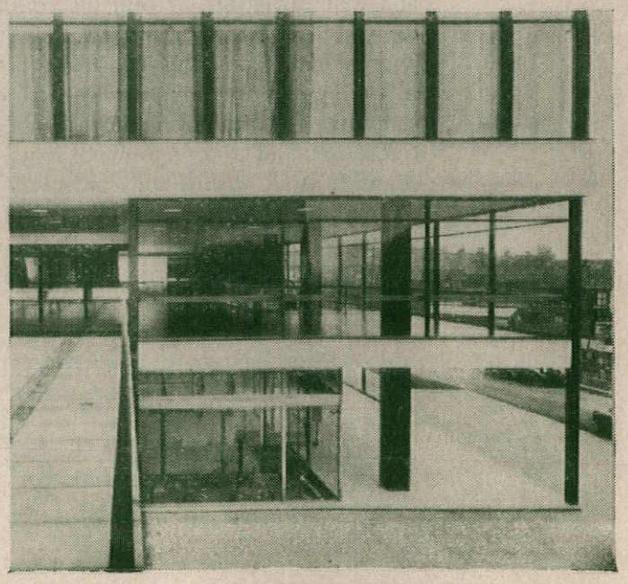




key
1. entrance hall.
2. cloakroom.
3. processing room.
4. dark room.
5. stationery store.
6. strong room.
7. cleaners.
8. lift.
9. mess room.
10. lavatory.
11. book stack.
12. post-graduate reading room.
13. periodicals reading room.
14. binding and unpacking.
15. cataloguing.
16. labelling.
17. catalogue hall.
18. inter-library loans office.
19. deputy librarian.
20. secretary.
21. reading room book store.
22. reading room.
23. female staff common room.
24. male staff common room.
25. kitchen.
26. air-conditioning plant.
27. mezzanine exhibition space.
28. pamphlet room.
29. thesis room.

to reduce the demand on the refrigeration plant, windows facing south and west are glazed with double anti-sun panels. All rooms which have air-conditioning have fixed windows and only those relying solely on radiators and convectors have opening lights. The ceilings of the reading rooms are of pierced aluminium panels which are clipped to the heating coils, above which is a layer of insulating and sound absorbent material.

Lighting in the reading-rooms is by flush fluorescent fittings which can be lowered to allow ease of replacement. The catalogue-hall has an overall corrugated plastic translucent laylight, above which are fluorescent lights at high level.

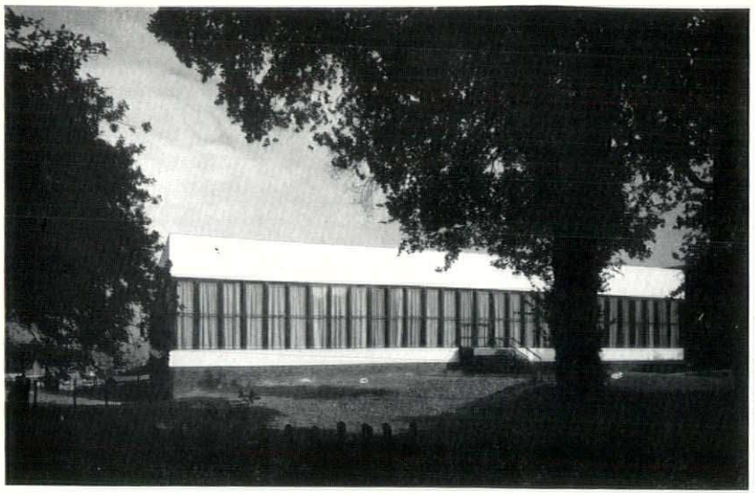


8, the entrance corner, showing the mezzanine floor inserted below the main library floor, alongside the upper tier of book-stacks.

9

9, close-up of the main entrance (edge of mezzanine floor-slab faced with Portland stone; vestibule lined with Piastraccia marble).
10, looking through the entrance façade, lit up at night.

10



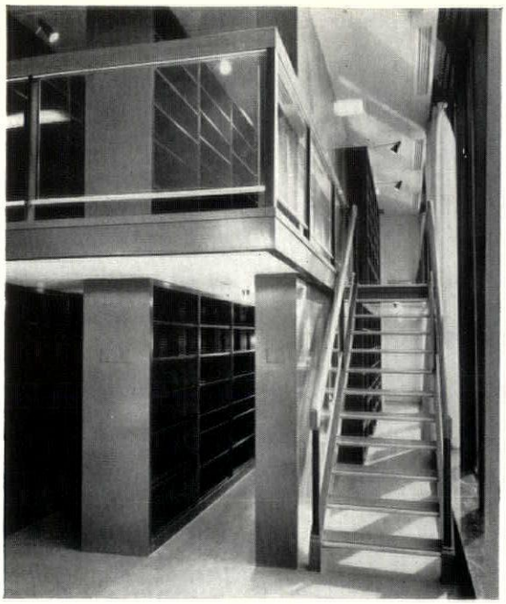
11

12

UNIVERSITY LIBRARY, SHEFFIELD

The reading room. 11 and 12, exterior by day and night (at this side of the building, facing Weston Park, the first floor is only a little above ground level).
13, interior. On the right is the balcony containing open-access bookshelves beneath which the reading room is reached.

13



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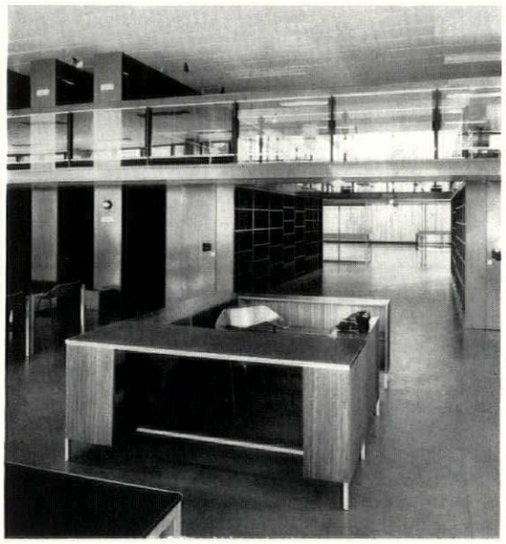
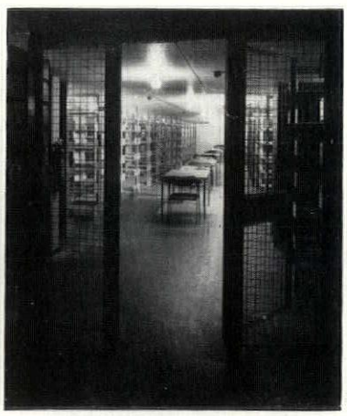


15

16

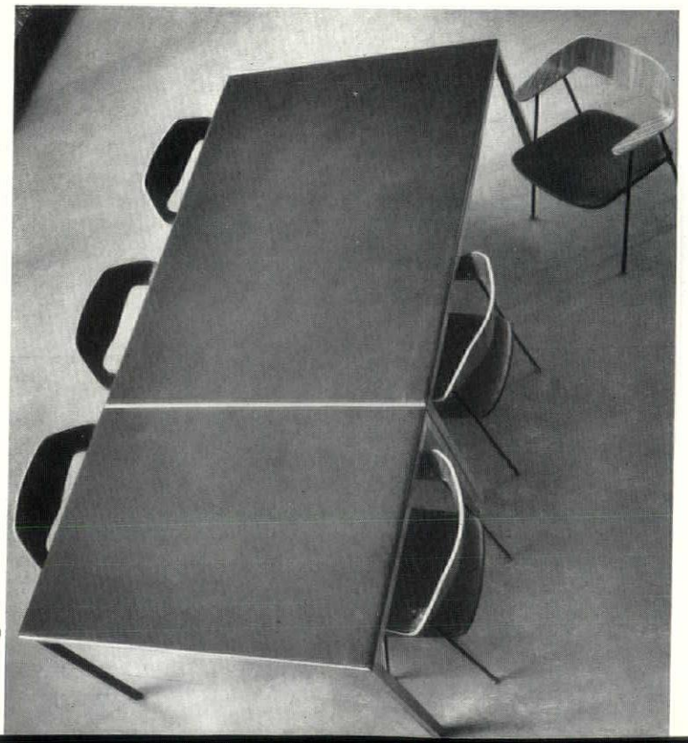
14, one of the staircases leading up to the book-store balcony (see facing page).
15, looking into the main reading-room beneath the same balcony.
16, the post-graduate reading-room, occupying the south-east side of the first floor. All reading-rooms have floors of grey linoleum.

17



18

17, one of the staircases leading down to the successive levels of the book-stack.
18, inside a typical book-stack. These are in four tiers, occupying the whole of the south-western half of the building below the reading-room level.
19, the standard table and chairs used in all the reading rooms. They have a metal frame and the table top and chair seats are covered with black imitation leather; the chair backs are of tola.



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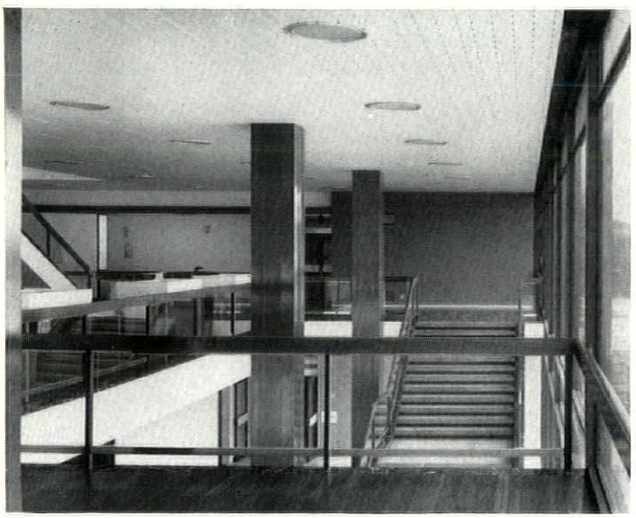

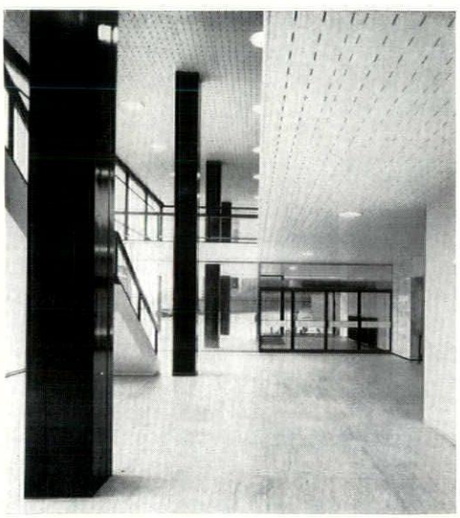

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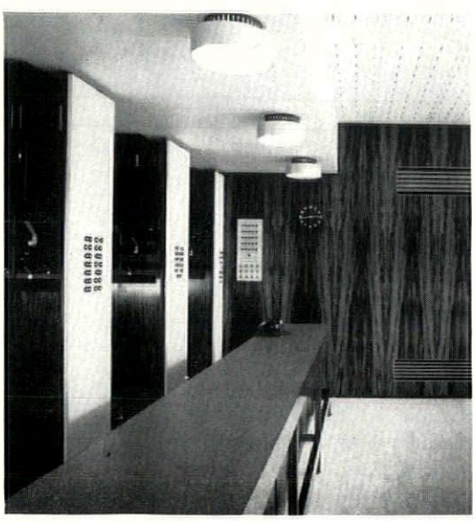

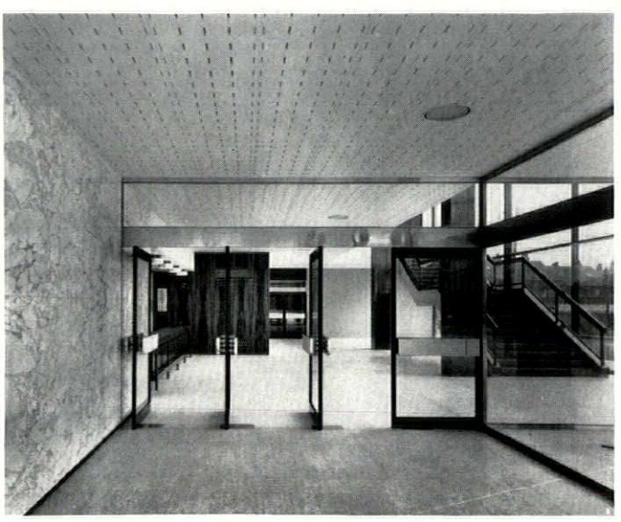

23, 24

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20, the catalogue hall on the main reading-room floor. The catalogue cabinets are at the far end, the entrance to the reading-room beneath the book-store balcony (see 13, 14, 15) is on the left beyond the library counter, and the staircase leading up from the mezzanine floor in the centre. The wall on the right, separating the hall from the periodical reading room, is faced with Danish maple.

21, the main staircase at mezzanine floor level. It has laminated wood treads on cased steel bearers. The balustrade is metal with glass panels, the handrail mahogany.

22, looking past the foot of the staircase towards the main entrance, showing also the mezzanine floor. The floor is travertine. The columns are faced with aluminium with a black sprayed cellulose finish.

23, cloakroom in ground-floor entrance-hall. The far wall is faced with Macassar ebony.

24, looking into the entrance-hall from the vestibule: on the left the cloak-room seen in 23; on the right the foot of the main stair.

James Gowan

CURRICULUM

The continuing debate on architectural education has just received an important official contribution in the publication of the report of the RIBA committee to consider the recommendations of the Oxford Conference of 1958. *The report, like many official documents of its kind, is chiefly concerned with the educational standards of those who enter architectural education, and the professional standing of those who emerge from it. But what of the educational process itself? In his article below, James Gowan—who as student and teacher has experienced most of the current educational techniques—approaches architectural education from the entirely different standpoint of asking what aspects of architecture can reasonably be taught in schools, and offers both a model curriculum that could be put into effect here and now, and illustrations of the kind of work it could be expected to produce in each year.*

Any discussion on architectural education today becomes immediately involved with Bauhaus principles. For over 20 years the progressive schools in this country and others have based themselves on Gropius's theories on architecture and study, and many continue to do so in the belief that the system has certain fundamental values which can survive indefinitely without adjustment. However it is evident that, in the more advanced schools, this is not the case and a large gap exists between what is taught and what is thought.

It is important to recall that the Bauhaus had two primary aims, both of which were accomplished. One was a reaction against the 'styles' and Beaux Arts academism. This initiated a teaching procedure based, fundamentally, on economic essentials; the decorative, the superfluous, the irrational, were eliminated. The second aim was to establish a particular kind of architecture which Gropius describes in 'we want to create a clear, organic architecture, whose inner logic will be radiant and naked, unencumbered by lying façades and trickeries; we want an architecture adapted to our world of machines, radios and fast cars, an architecture whose function is clearly recognizable in the relation of its forms.' The reaction predetermined, and the manifesto defined, an architectural style; the architecture of the Fagus factory and the administrative building at the Cologne Exposition. And teaching experiments in this country (the post-war school at Kingston-upon-Thames) have shown that similar teaching will produce a similar architectural style.

At the present time most schools are operating in an academic vacuum, that is, the students are developing privately and on their own initiative. The problem is, once again, to relate the content of teaching to a stated architectural aim. This will necessarily be retrospective and academic as a school can only

directly teach digested opinion and *indirectly* create an atmosphere which is concerned with anticipated and unrealized objectives.

It is becoming apparent that architecture, mainly due to economic pressures, is becoming multi-aesthetic; that is, not *one* style but a number of styles, each appropriate to the particular problem, are developing. For example:—

The 'house' is deeply rooted in *traditionalism* and, because of the wide variations of owner-requirements and limited finance, it is likely to remain so.

[*continued on page* 323

CURRICULUM

Two parallel streams of study form the skeleton of this model curriculum. First, the 'environmental'; this is concerned with the structure (social, cultural, etc.) of our communities. Second, the 'technical'; this is concerned with the physical means available to the architect.

The 'environmental' stream commences in 1st year with simple studies of human dimensions (design of furniture and basic equipment) and human activities (work studies and layout of rooms in the home) and ends with the design of a single-cell dwelling.

In year 2, the subject of study is a village, in which new building is taking place, and problems of relationship between new and old exist. Groups of 4-6 students carry out a visual investigation of the area, the primary concern being chiefly topographical at this stage; ground levels, position of trees, surface materials and the location and description of the principal buildings. This information is recorded for subsequent reference. Sites are then selected for a realistic programme of buildings which is as representative as possible; a house, a public building (village hall), a commercial building (shops) and an industrial building (workshop or garage). These are then carried to final design stage by individual effort.

Years 3, 4 and 5 follow the same pattern; a site research, development proposals, the design of housing and a typical range of public buildings. The town (year 3), the city sector (year 4) and the city (year 5) reiterate the problems but expand the scope of the enquiry and each are studied in a progressively more thorough and acute manner.

The 'technical' stream begins, in Year 1, with three studies using limited construction techniques. The elements are 1. linear (scantlings), 2. plane (sheet glass, plywood) and 3. solid (stone, concrete blocks) and the jointing technique to be used is stated. Simple problems, such as 1. small span bridge, 2. screen system in an enclosed space, display on screens, 3. garden shelter or walling layout, have a threefold use. They state a functional problem, they require three-dimensional consideration and they indicate that each type of element exerts its particular discipline. This work has to be based on accrued, empirical experience, as the technical lectures do not advance sufficiently until year 2. Then, until year 4, one design problem is undertaken with each of the materials; timber, masonry, steel, in situ concrete and precast concrete. The intention is to cultivate a greater degree of general competence and to concentrate attention on the limitations and the potentialities of basic building techniques.

The two parallel streams are a fairly adaptable system, in an educational sense. The 'environmental' progression of individual . . . city provides a realistic basis for the general advisory lectures; sociological, legal, cultural, etc., and substitutions can be introduced into the sequence as more important problems arise. There is an argument, now, for studying suburban growth instead of the village and such a change could be made without disrupting the continuity.

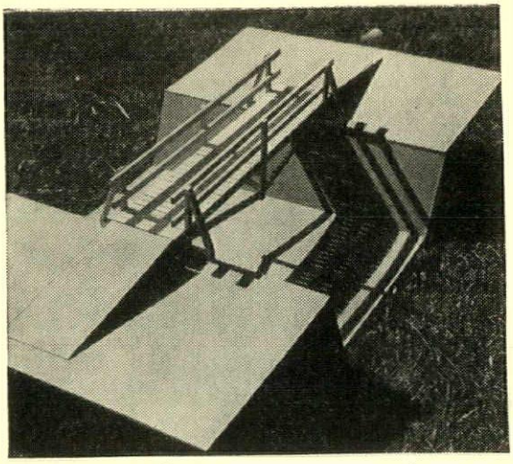
The 'technical' stream has the same adaptability to change. With its design studies in particular building materials, it provides the spine into which the specialist technical lectures are introduced and the design studies themselves cultivate a need and a demand for technical information.

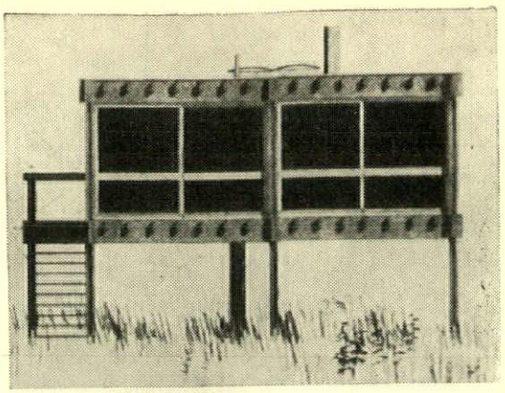
student directed to a member of the society or association for extra-curricular and general professional information →

technical stream ↓ | environmental stream ↓

maths physics chemistry →	basic design studies with scantlings, blocks, sheets post and beam	1	human dimensions (equipment and furniture) work studies (room planning) ← work method
structures →	draughtmanship, perspective, typography		visual research ← modern history lectures
principles of materials → principles of building →	individual construction of furniture		single-cell dwelling
design lectures on each building material →	timber building masonry building	2	village study: research programme design of buildings: ← information and specialised lectures phased to precede programmes 1. housing 2. commercial 3. industrial 4. public
sanitation, heating, ventilation, lighting, services →	individual construction of furniture		landscape design ← history and general studies
contractors organisation, plant, requirements, and building equipment. →	steel building insitu concrete building	3	town study: research programme design of buildings: 1. housing 2. commercial 3. industrial 4. public
office experience in summer vacation and winter term of year 4 →	individual construction of furniture		history essay ← history and general studies
technical information visits and lectures phased to precede design programmes →	glass building precast concrete building	4	city sector study: research programme, design of buildings 1. housing 2. commercial 3. industrial 4. public
colour →	individual construction of furniture		landscape design ← history and general studies
professional practice →		5	city study: road and city growth
legal and financial aspects of land and building →	individual construction of furniture		city building history essay

The next five pages illustrate, either with student-work or other material that is comparable in intention, the kind of design-schemes, research and practical exercises that would make up a five-year course following the model curriculum set out above.





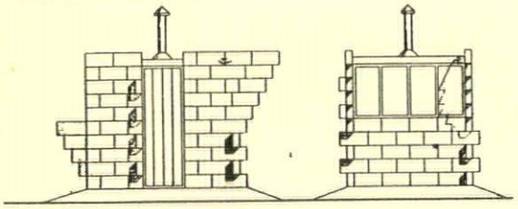
1 | 5
2 | 6
3 | 7
4 | 8
9

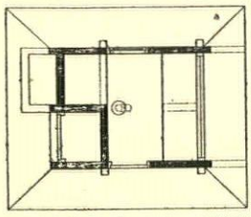
ISMUS IN HOLLAND

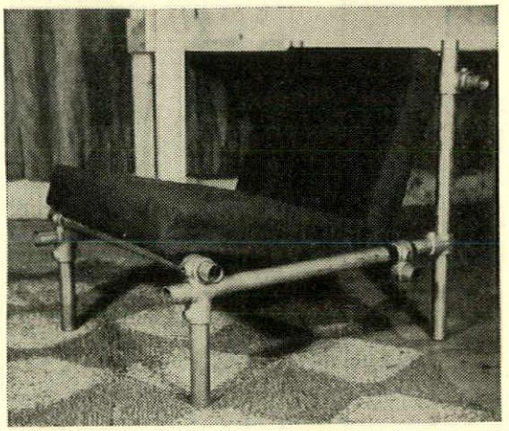
DADA

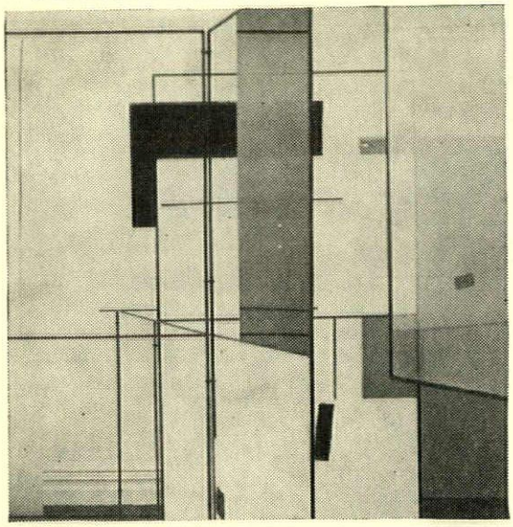
in Holland ist ein Novum. Nur ein Holländer, I. K. BONSET, ist Dadaist. (Er wohnt in Wien.) Und eine Holländerin, PETRO VAN DOESBURG, ist Dadaistin. (Sie wohnt in Weimar.) Ich kenne dann noch einen holländischen Pseudodadaisten, er ist aber kein Dadaist. Holland aber,

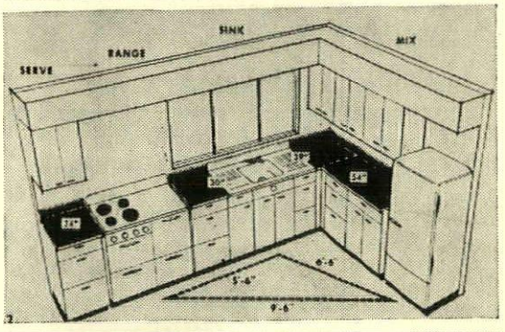
HOLLAND IST DADA

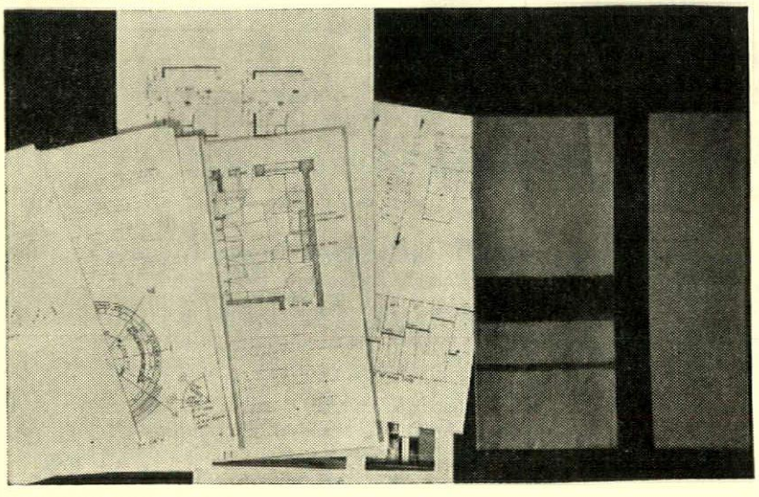


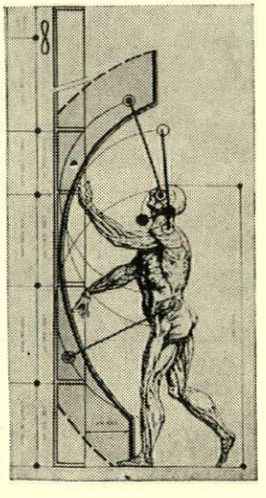












year 1

1, the timber bridge spans 20 ft. and uses one size of scantling throughout, 4 in. by 2 in. It is an exercise in simple triangulation in which the elements, the walkway, the handrail, and the structure are interrelated geometrically and are interdependent structurally.

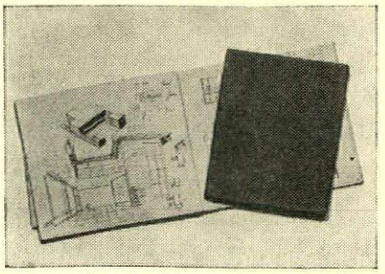
2, the garden hut, an exercise in concrete block construction, houses fuel, garden tools and a work bench. The walling, in one instance, is corbelled to incorporate eye-level shelving and, in the other, to form a fuel hopper. Transverse walls are articulated by projecting the bonding blocks.

3, demountable screen systems are one way of posing the problem of frames, joints and panels; the whole being structurally self-supporting. The scheme illustrated is not concerned with the problem of display (which is intended in the curriculum) and stresses the system itself.

4, 5, 8, 9, the subsequent studies are basic research leading to the design of a single cell dwelling, 5. This includes human dimensions, 9, furniture dimensions, study of kitchen use, 8, equipment layout and technical standards (space, light, ventilation, etc.), 4.

6, a section of Kurt Schwitters typography is included to symbolize these studies, which are to be included in the First Year course, and to act as a reminder that the bulk of contemporary typography has drifted a long way from its function of imparting information clearly and effectively.

7, during each year, as a practical exercise, the student makes a piece of furniture for his own use. He must devise, construct and test the object himself. The example illustrated is made of scaffolding, strip and foam rubber—and challenges you to like it.



The student should make, and accumulate, a series of notebooks which will give an overall picture of his five years' study.

year 2

10 | 15
11 | 16
12 | 17
13 | 18
14 | 19

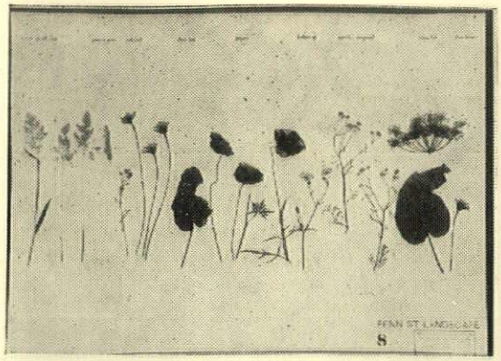
10-14, *at its best, a second year scheme at village scale should be preceded by a particularly thorough, well-documented research. This scheme began with photographing the site, recording materials, colours, road surfaces, plant life, etc.; the concern being entirely with visual things. The artist's house and the village hall (which were the subject of the design studies) are sited in this village and the relationships with existing surroundings are clarified by a model.*

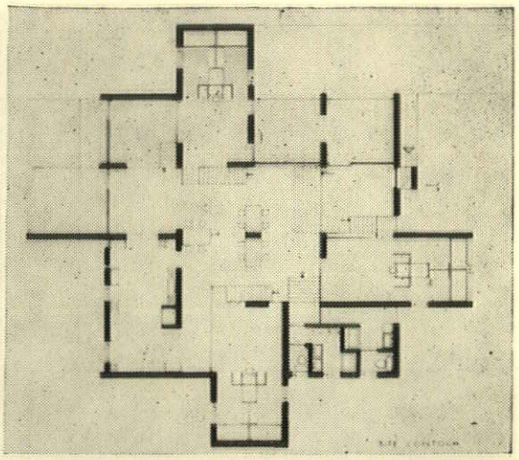
18, *the village hall is the timber study; built in posts, trusses and panels. The bolted, structural joints have been carefully considered and a positive, pleasant interior results.*

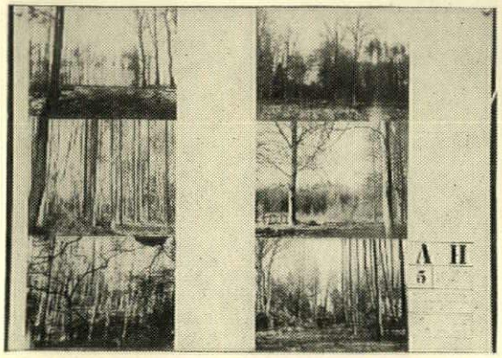
19, *a full dress perspective study, required as an exercise in this year, based upon the artist's house in Woodward's scheme.*

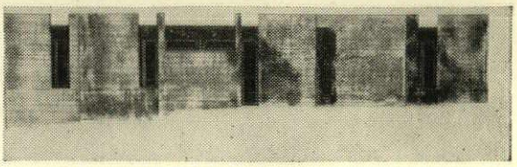
15, 16, *this brick building is a holiday camp arrangement, small rooms sharing central dining facilities, etc. This has produced a cellular, rather over-generous plan, but the brick is aptly used in a vertical, load-bearing manner. Practically, the building is neat and competent, but a contradiction is apparent between the formality of the original idea and the picturesqueness of the final result.*

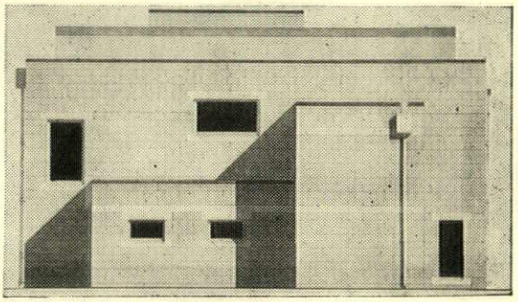
17, *the problems of deviations within the programme are exemplified by this block building, representative of a prevalent, minority point of view which sees architecture directly in an historical continuum and interprets this situation literally. The coping, lintols and string courses are applied without re-assessment or thought, to a contemporary problem such as is often set in schools, and the result is so far removed from function that it is virtually decoration. This is a boiler house (not a chapel) in concrete blocks (not stone) but—legalistically speaking—it answers to the letter of the programme, as set.*

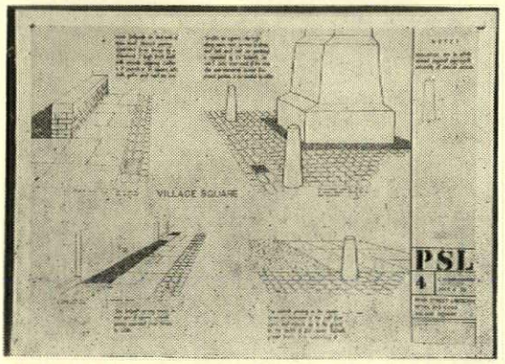


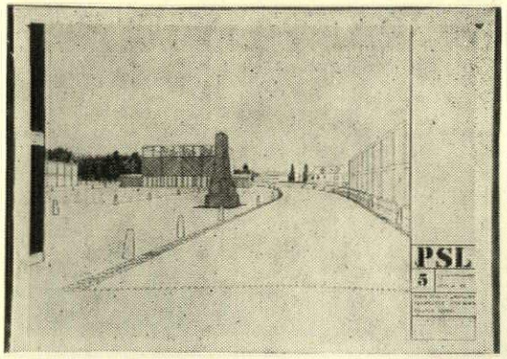


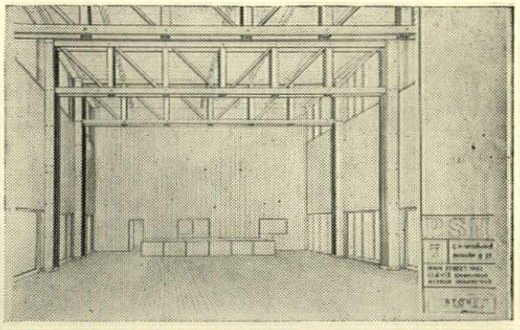


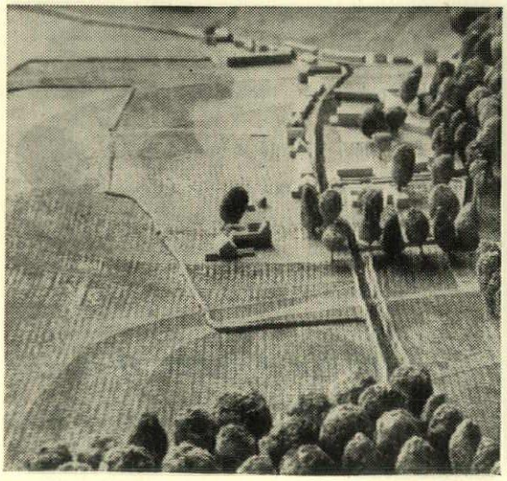


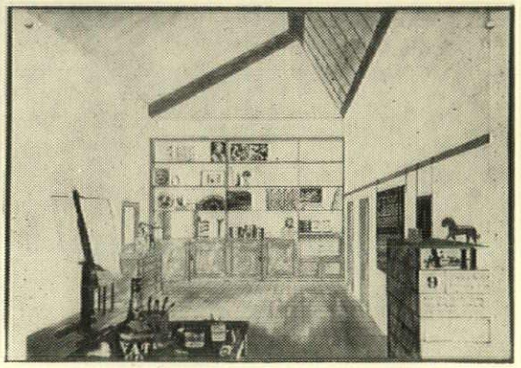




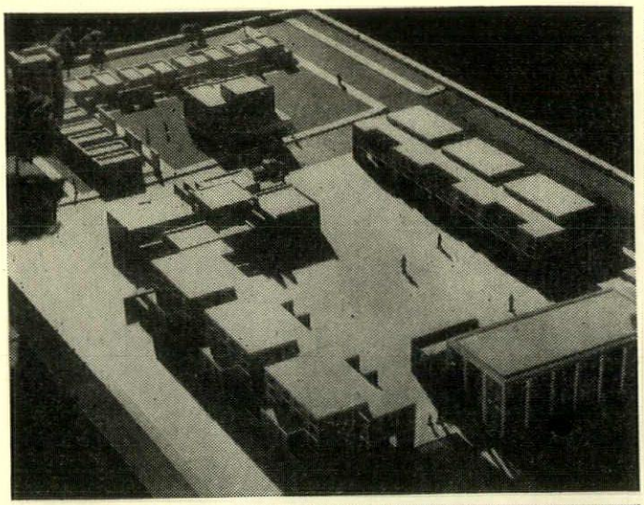


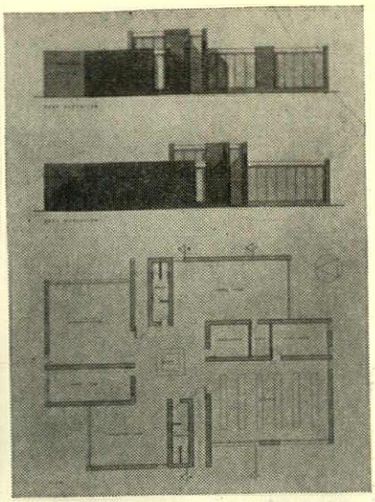


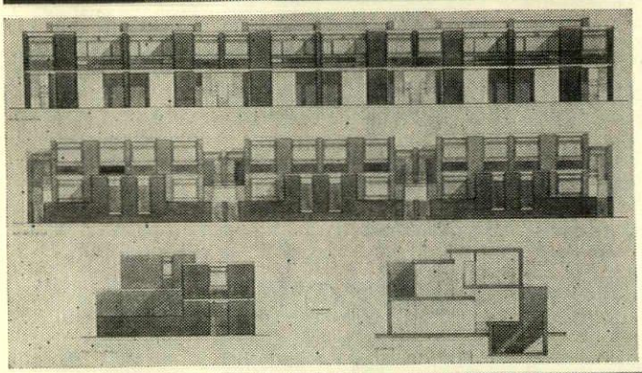


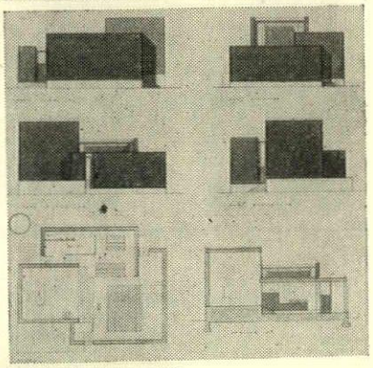


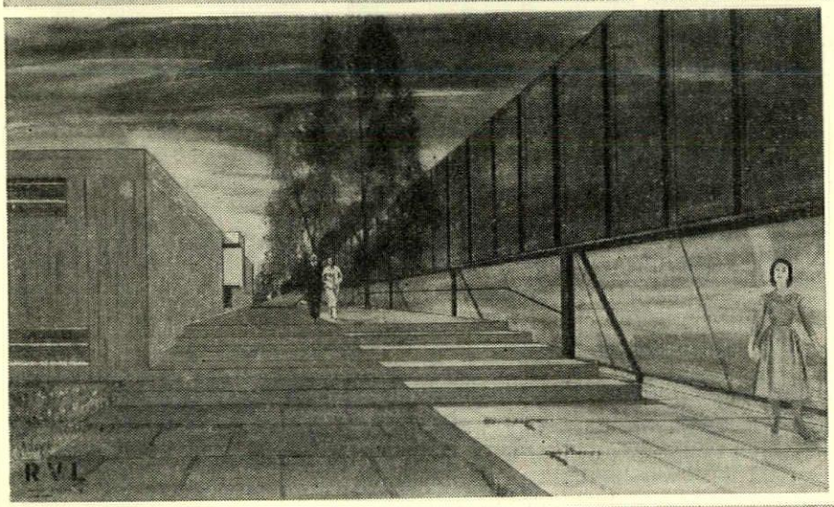
year 3

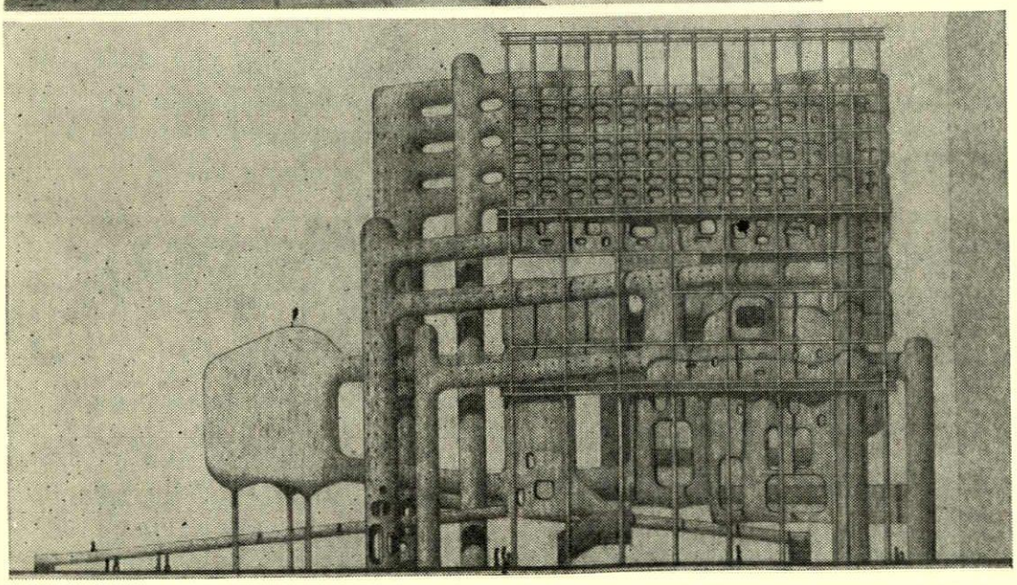












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20, *a town centre, such as this, provides a good example of a small group of students working together and producing a unified result. Planning decisions were made together but the buildings were designed individually using agreed materials: blue brick, concrete and glass.*

21, *the library was one of the best things about this group of studies; the control has been given the key central position and round this the reading rooms rotate.*

22, *there is little system, however, about the stores which are sometimes solid, sometimes glazed once, sometimes twice; and the entrances seem unduly restricted. However, they harmonize with the other town-centre buildings in structure and style.*

23, *the chapel (from the same study) is an exercise in three simple volumes and has an emphatic quality which is immediately appreciated. It is reminiscent of the* 1923 *house at Rotterdam by J. J. P. Oud—which is a pleasant enough thought.*

24, *a steel building, is a required exercise in the third year, and this one is an envelope to cover, and to exhibit, Roman remains. It is a fluent, skilled piece of work and the presentation is as good as one could expect in Year* 3. *There are strange things, however. It looks like a two-storey building (whereas it is a single volume in fact) and the provision for viewing inside it seems almost incidental and unimportant.*

25, *the Furniture Manufacturers Association showrooms is a particularly fine example of the work done recently at the Regent Street Polytechnic and their rather specialized preoccupation with structural techniques. On the lower floors are the firm's offices, the auditorium is poised by the ramp, and the top floors are lettable offices. The building is of* Ferro-Cimento *supported by a precast concrete frame which seems to be structurally redundant. It is probably essential, visually, to impose an architectural order on what might otherwise be mistaken for automobile engineering and everything is so openly stated that one can see at a glance the long circulation routes.*

year 4

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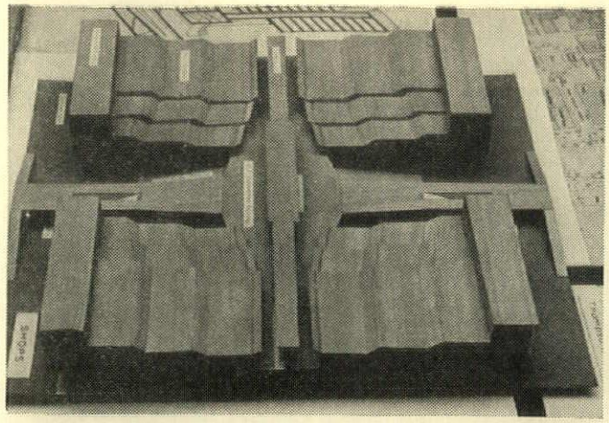

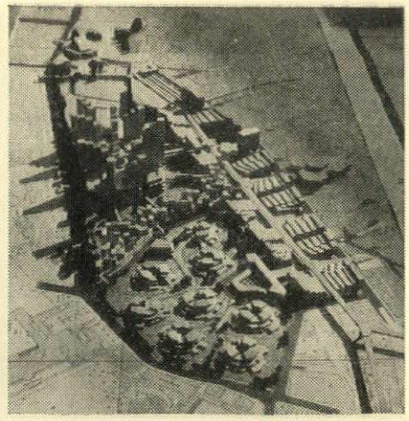

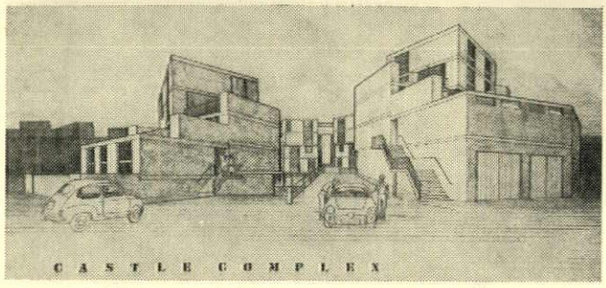

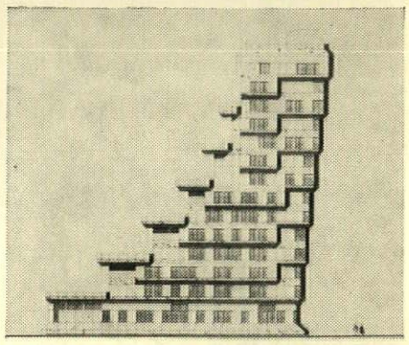

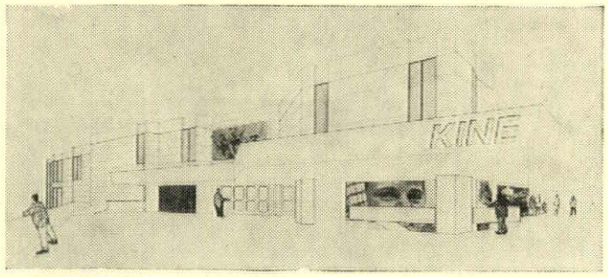

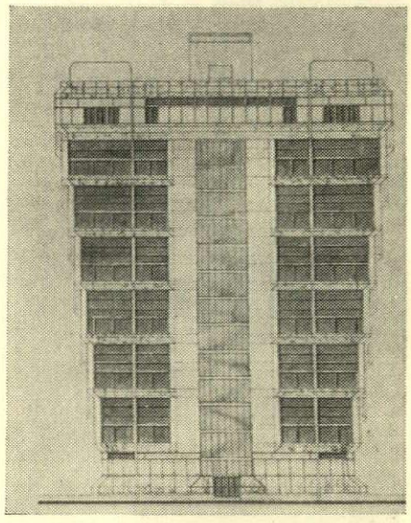

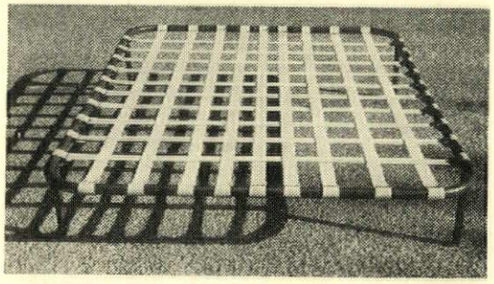

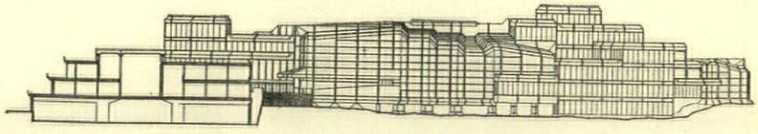

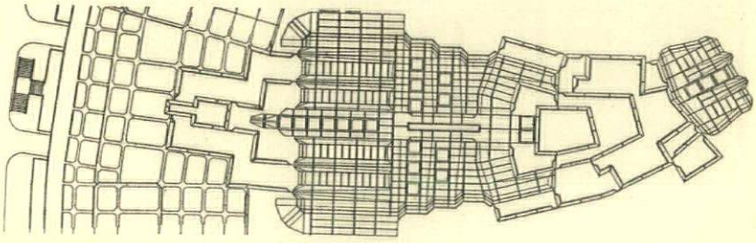

26, 27, 28, this Westminster scheme (on the metropolitan scale required in fourth year) is bounded by Parliament Square, Victoria Street, and Victoria Station and has St. James's Park on its north side. In this futurist-flavoured layout the city worker arrives at the station and is taken by travellator through the shopping, 26, to the small professional or the large commercial offices. In the remaining greenery, which is linked to the Park, stand the large stunted 'castles,' 28, which contain luxury flats built round a central service court. The result is a clear image of the students' intention, which is basically a zoning idea. Victoria Street, which is a rather dead shopping area, receives wedges of new shops, with rear servicing, on both sides of the travellator system, 26. The residential area is placed next to the Palace and the commercial area adjacent to Parliament Square.

29, 31, a tapering block of luxury flats from another scheme for the same area. The steps diminish with the size of the flat and form terraces overlooking the Park.

30, a cinema which effectively integrates display technique with its built form, in a manner that derives from the current student interest in pop-art imagery, as well as ideas on the integration of the arts.

32, the bed is a good example of student/user design. It is made of steel tube, the legs terminate in large ball bearings, and it is sprung with unequally spaced strip rubber secured with copper rivets and washers.

33, 34, the concert hall, in precast concrete panels (precast concrete is a fourth year subject) is part of an aggregation of buildings which the student-designer felt had its own animal identity (a recognizable head and so on). He has been fairly successful in producing simultaneously a rather good building and an armadillo.

year 5

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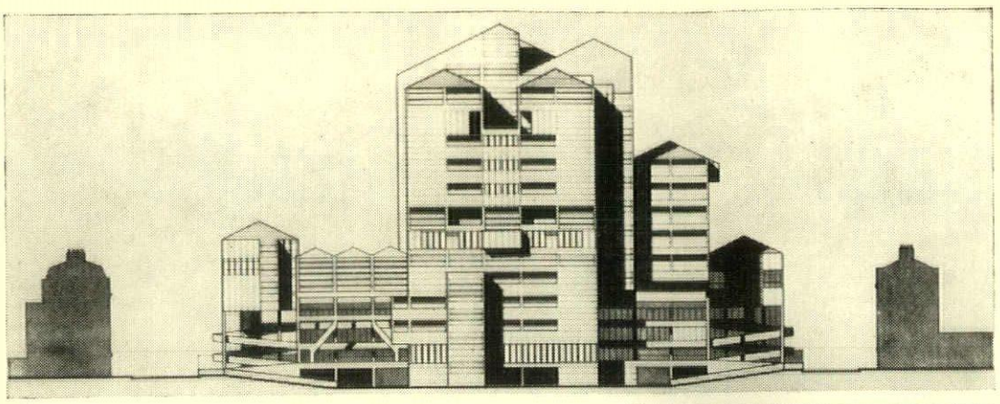
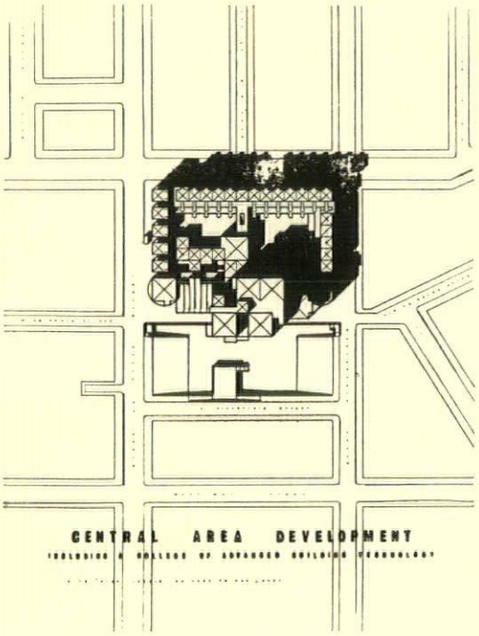
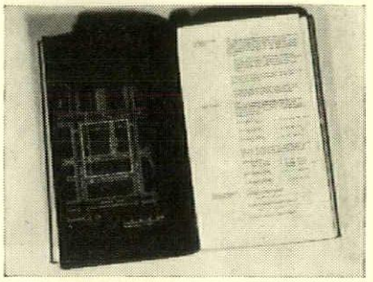
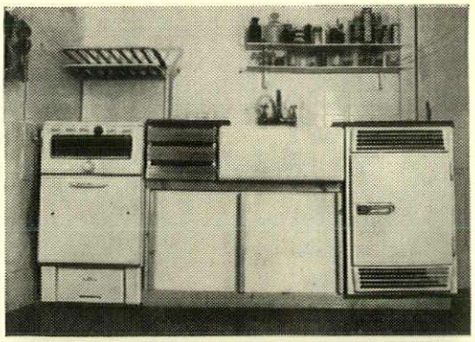
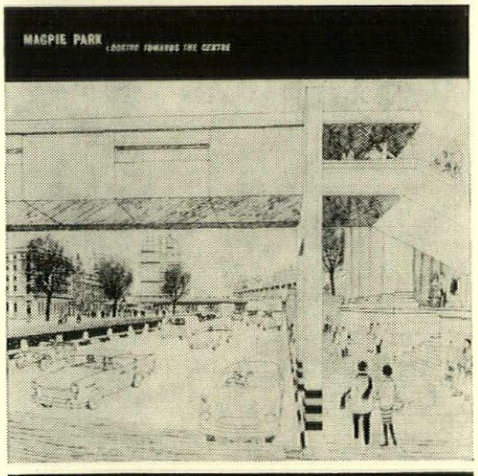
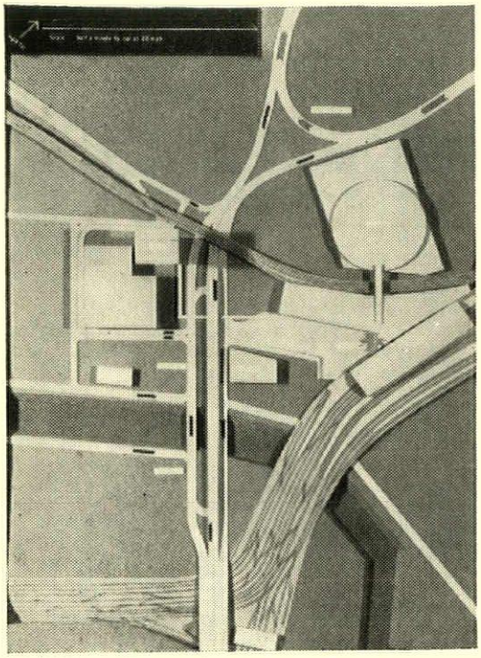


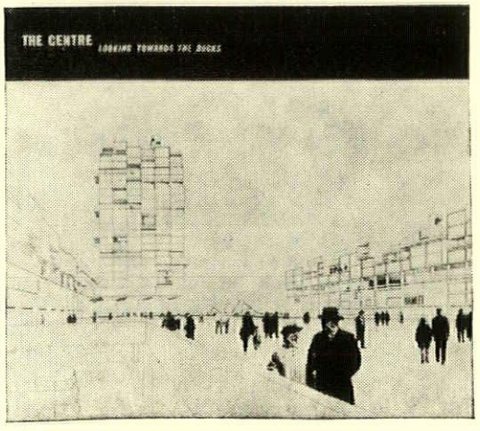












35, 36, *a central London redevelopment project for a school of advanced technology (architecture, building, surveying and engineering), residential accommodation, shops, commerce and light industry—a fifth year thesis-subject by Michael Haskell of Regent Street Polytechnic.*
The school is located in the large tower, the shops on ground level, commerce and light industries on the basement and lower floors and hotel accommodation on the north and last sides of the site. On two corners of the site are car ramps towers which feed each end of two floors of car parking. Lecturers' accommodation, maisonettes and flats, are sited on the west side.
37, *Haskell's design is accompanied —as it should be—by a thorough, considered report containing photographic reductions of the drawings. It is a most capable scheme, but two doubts remain; the artificial lighting and ventilating of all the commercial and light industrial floor area (124,000 sq. ft.) and the use of a steel frame structure with panels of pink anodized aluminium. It looks like, and would probably be better in fact in, precast concrete.*
38, *the culmination of the furniture construction programme; the integration of mass produced and purpose made units in a single structure.*
39, 40, 41, *road planning and central areas scheme for Bristol—the work of a post-graduate group at the Royal West of England Academy—primarily concerned with an improved traffic system. This is broken down from the regional trunk roads, to those linking central areas, to local roads. Traffic is brought quickly into the centre and parking provided. Above this a pedestrian platform is formed and shops, flats and offices are directly accessible from it. The scheme was costed, exhibited and publicized energetically, but was eventually turned down by the local authority. Nevertheless, independent research of this kind can only be undertaken by schools, but when it is sufficiently realistic and immediate, it usually has some effect outside the school itself.*

continued from page 316]

Technology infiltrates, most slowly, into the house via the components (doors, windows, flooring, etc.) and the mechanical equipment.

The commercial block with its simple repetitive accommodation is ideally suited to the *standardization* of components; the structural elements, cladding, partitioning, equipment and furnishing.

The industrial problem, power station, oil refinery, etc., is constructed directly and functionally in the *engineering* tradition of ships and railways.

The spiritual problem, the church, which has not yet been solved by dedicated functionalism, has responded to a more *personal*, indeed, emotional approach.

In addition, each constructional material exerts its own particular discipline. Each has certain structural, functional and plastic limitations which are unique and characteristic. Examples like the *brick* Liverpool warehouses, the *glass* Palm House of Decimus Burton, the *timber* bridge of Palladio and the *concrete* Governor's Palace of Le Corbusier indicate the extensive range and divergency of expression which result from this premise.

Architecture is generated by order; this is a synthesis of the brief, the site, the technical means and the plastic intention. Architecture is the organization of these things. In this order, geometry is of significant importance and is fully realized when it integrates, simultaneously, structure, space, function and the plastic idea.

Architecture is concerned with the form and growth of our environment, villages, towns, suburbs and cities, and the methods by which each of these structures can change or adapt itself to today's needs. Within these structures a hierarchy is developing in which each type of building (residential, commercial, industrial . . .) has a distinctive form as a result of its function, an appropriate location as a result of convenience and a symbolic emphasis as a result of its importance.

City building, in London, has shown the meaningless confusion of building individual blocks without a constructive regard for the cumulative result. The post-war satellite towns demonstrate the same consequences when old planning concepts are used to solve new problems. Both show clearly the limitations of conventional town planning techniques and their failure to provide an acceptable environment. It is certain that creative solutions are only likely to come from architects and the schools, indeed, in other countries Aalto, Le Corbusier and Kahn are already involved with the complex problems of building today's cities and towns.

This dissatisfaction with man-made environment is felt outside architectural circles. William Molley Whyte, in an article which describes a great many functional deficiencies of our cities asks: 'And how are our architects and planners responding? With superb technical ability and a truly remarkable unity of approach, they are freezing on a design for living that is the antithesis of everything the city stands for. Typically, the new projects consist of a series of high-rise tower apartments set in geometric patterns on an abstract green space carefully preserved against human encroachment. The results are not 'cities within cities,' but anti-cities, and it is characteristic that they are sealed off from the surrounding neighbourhoods as if they were set in cornfields miles away.'

Whyte's comment is fair. The tower blocks in the landscape, the Ville Radieuse, is still the image for most high density housing schemes and Le Corbusier's Utopia has been reduced by adaptation and modification to lean, minimum essentials so that the results are now far removed from the fullness of the original ideal.

It is necessary to re-establish our aims, to define the forms we propose for our towns and cities. These large scale planning studies usually require a fairly extensive preliminary research, which is beyond the means of the individual architect or small office. But the architectural school is in a most advantageous position. By group effort, these involved problems can be assimilated and solved in a completely realistic manner.

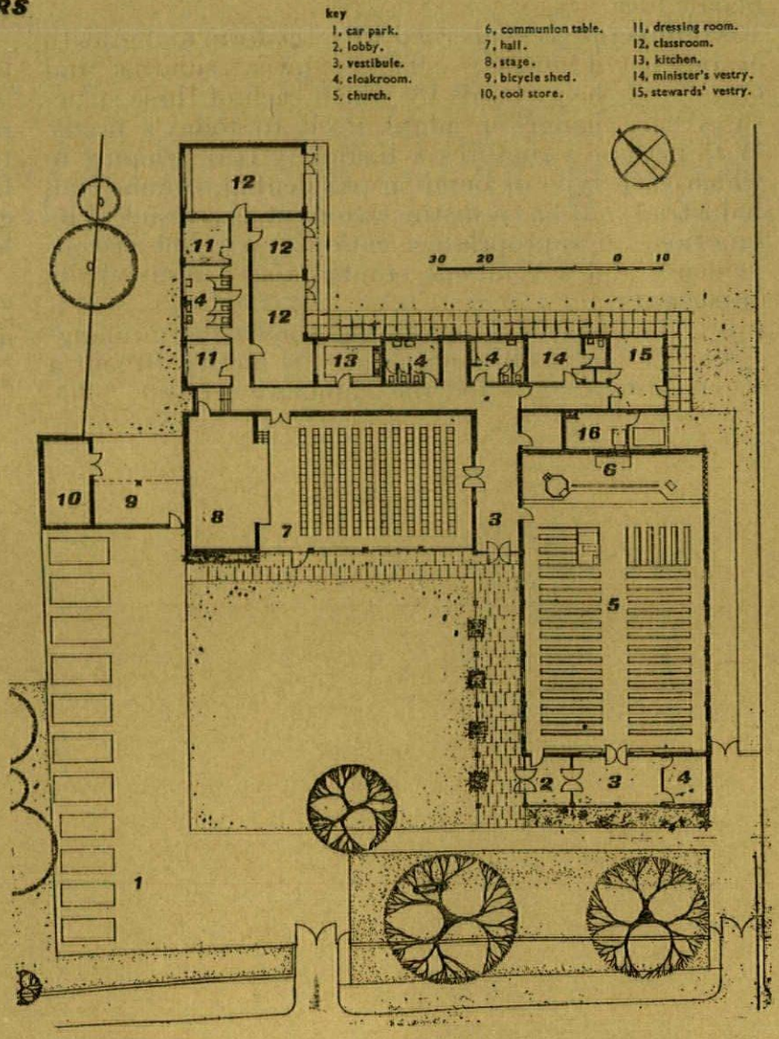
Acknowledgments for the use of illustrative material are due to: the Architectural Association, London; The Regent Street Polytechnic, London; The School of Architecture, Cambridge University, and The School of Architecture, Royal West of England Academy, Bristol. The inclusion of schemes from these schools does not, of course, imply that they support, or employ, the model curriculum set out in this article. Restrictions of space have made it impossible to publish the name of every student concerned in the schemes illustrated.

THREE CHURCHES

The three recently completed churches illustrated on the following pages belong to three different denominations, a hopeful sign that the new life which at last is beginning to be apparent in church architecture in England may represent a general awakening rather than an isolated case or two of enlightened patronage. All three are inexpensive, but lose nothing by the simplicity this has imposed on them. To the great advantage of all three the architect has been allowed to design the furniture.

METHODIST CHURCH, MITCHAM

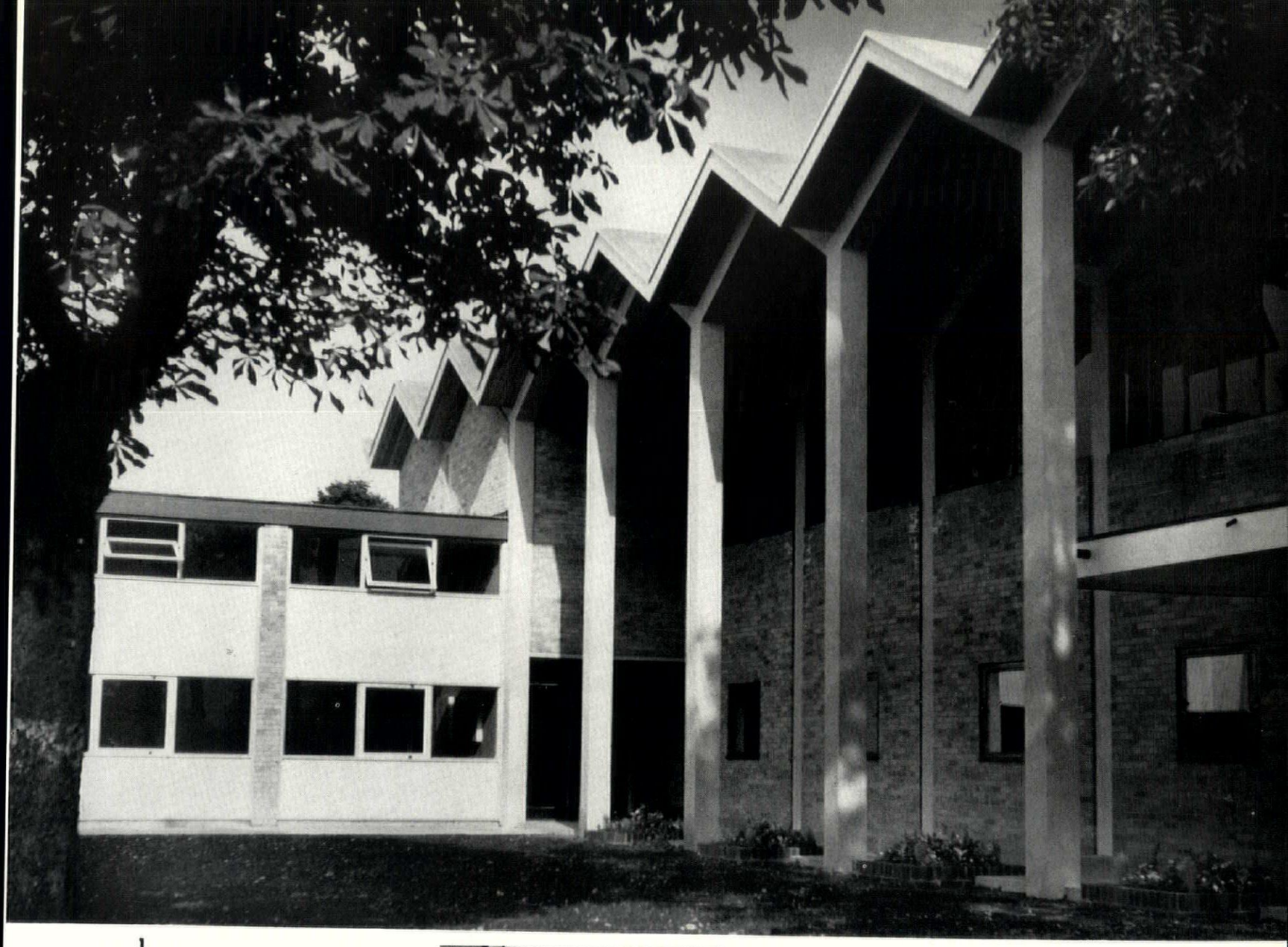
ARCHITECTS | ***EDWARD D. MILLS AND PARTNERS***



On Mitcham Cricket Green: an L-shaped group consisting of a church to seat 300 (replacing a bombed church on a nearby site) and a church-hall with classrooms, etc., adjoining. There are gardens in front of and behind the building. The church has its own vestibule at the west end, but can also be entered from the vestibule of the hall, which is otherwise independent.

The hall is reached by a covered way along the north flank of the church. It seats approximately 200 and has a stage, three large classrooms, two dressing-rooms, and two vestries. Two of the classrooms can be made into one by folding doors and adjoin the kitchen, which has a service counter so that they can be used as a youth canteen.

The construction of the church consists of a reinforced concrete frame designed by Ove Arup and Partners with brick infill walls, hardwood windows, and a folded slab roof finished inside with timber strips. The hall and classroom block has load-bearing brick walls and timber roofs, covered with woodwool slabs and asphalte. Ceilings are acoustic tiles and windows softwood, painted. Heating is by hot air in floor ducts and can be independently controlled in different parts of the building. The church organ, which is in a loft over the entrance to the hall, has a remote control system linked to the console in the body of the church.



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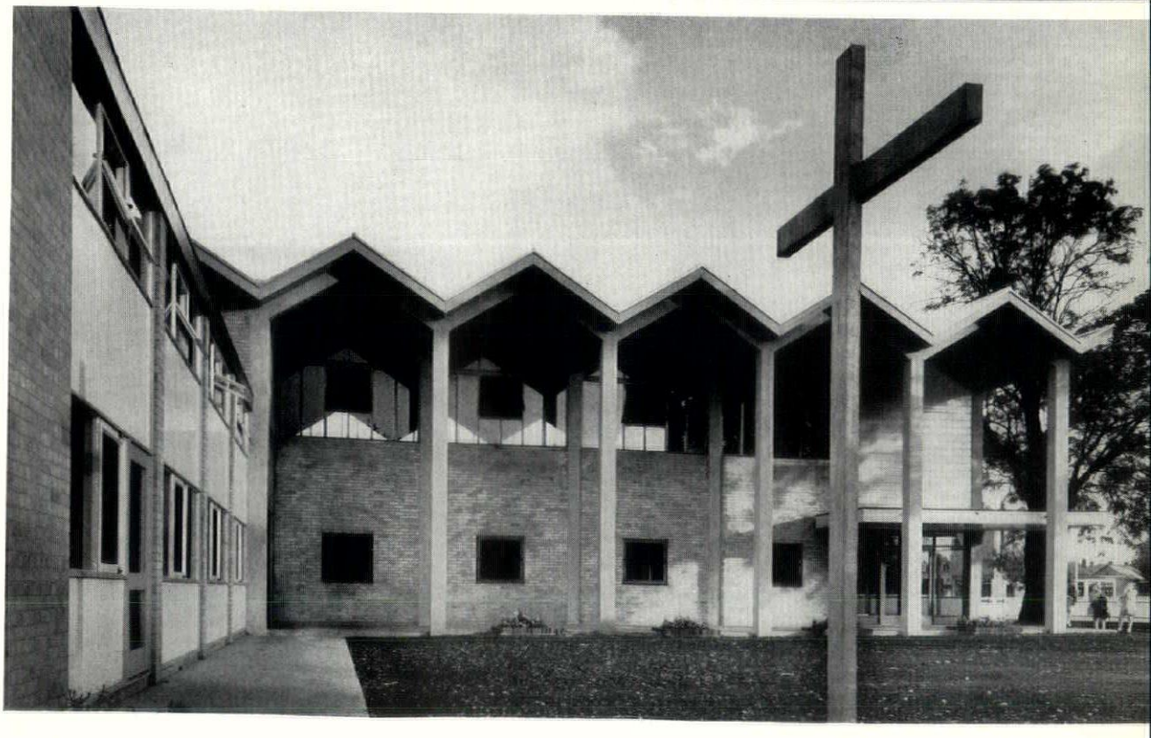
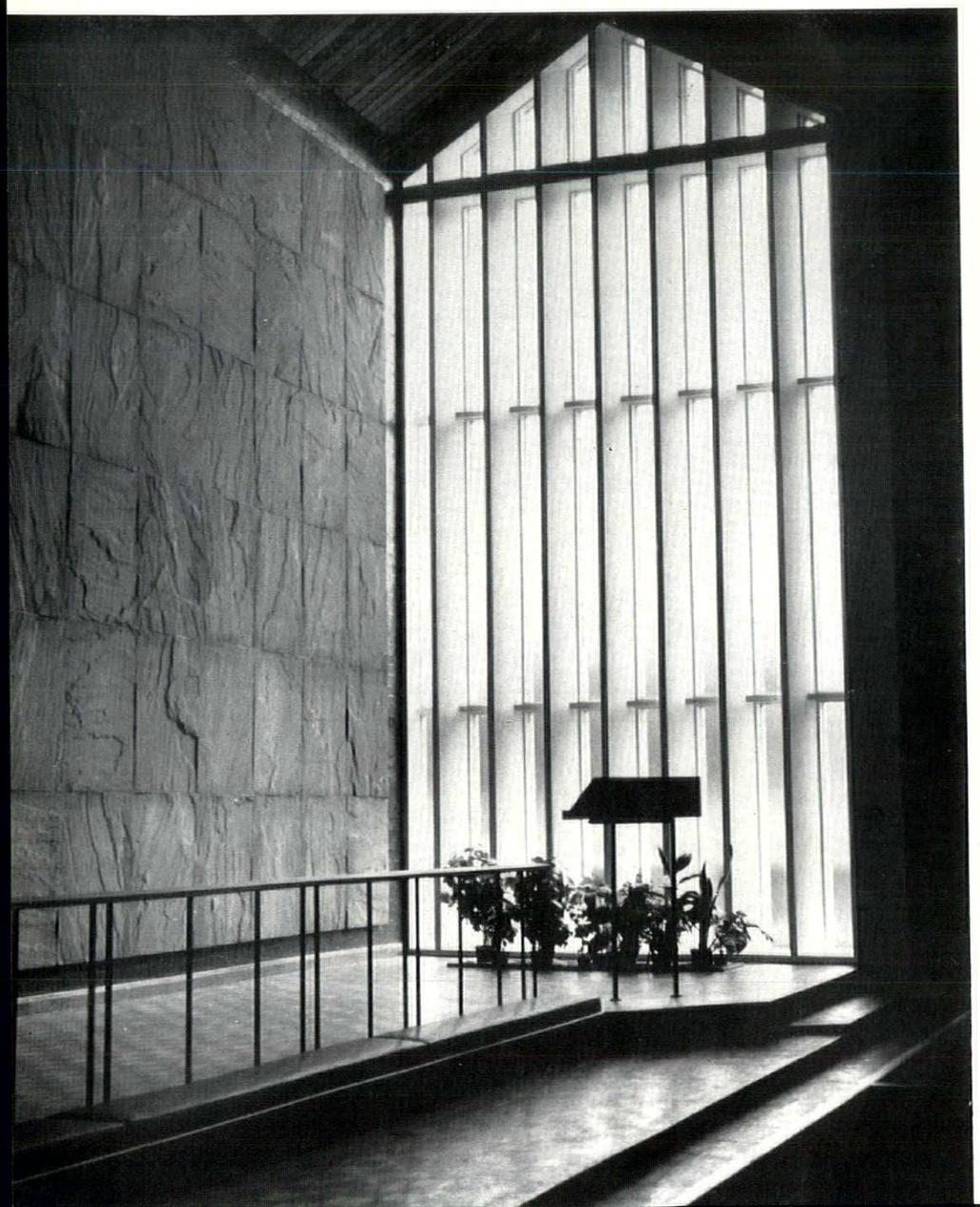


2

1, from the west, showing the covered approach to the hall along the side wall of the church. The concrete frame supporting a folded-slab roof has brick infill walls with small hardwood-framed windows below and large clerestory windows above. 2, the north-west wall of the church, with the hall on the left, both facing on to the same garden. The entrance from Mitcham Cricket Green is on the right.

METHODIST CHURCH, MITCHAM

3



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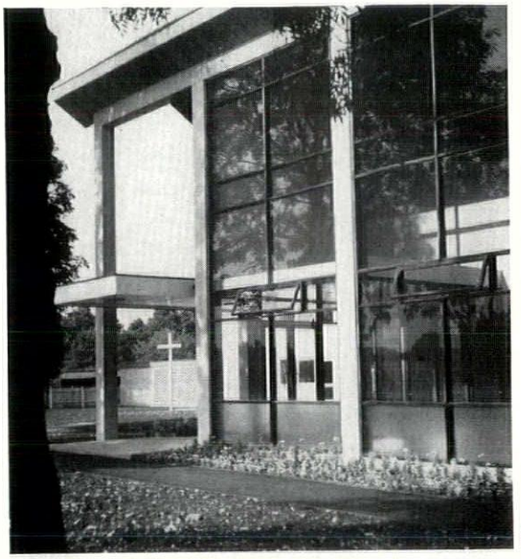

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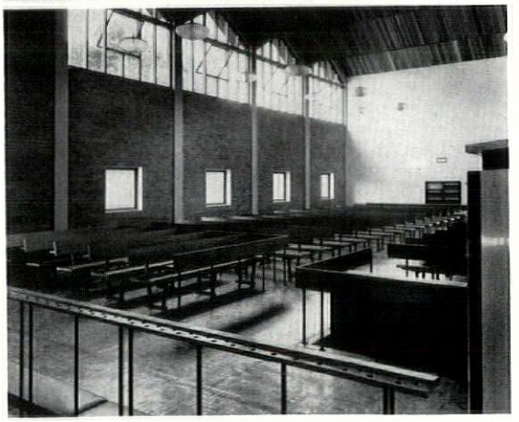

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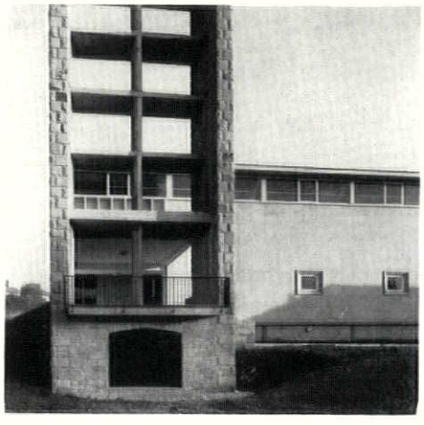
3, inside the church, looking towards the chancel. The end wall is faced with riven York stone and the ceiling with narrow strips of timber in a natural finish.
4, close-up of chancel, showing York stone wall and side lighting.
5, corner of church and covered way, looking north.
6, looking from the chancel, with a corner of the pulpit on the right.



7

8

7, the foot of the tower, with the nave of the church beyond.
8, tower and connecting link to church, which serves as a canopy over the entrance.

ROMAN CATHOLIC CHURCH, LANCASTER

ARCHITECT	***TOM MELLOR***
associate architect	***Jack Waterhouse***
assistant architect	***David D. Silcock***

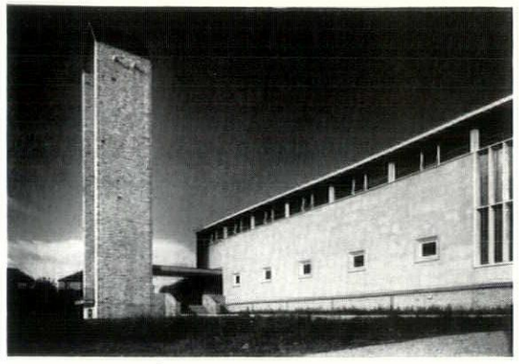
On the edge of a new housing area. The site is triangular, at the junction of three important roads, and the detached tower is designed to be seen from all three directions. The church is dedicated to Saint Bernadette.

Liturgical requirements and the need for direct vision and a close relationship between priest and congregation determined the equal width of nave and chancel, the raised chancel, the siting of the baptistery (at the south end) and the open screen between baptistery and nave. Chapels and sacristies are ranged along the west side.

ROMAN CATHOLIC CHURCH, LANCASTER

The reredos is by John Piper and the Stations of the Cross and baptistery crucifix by Peter Watts, who is also designing a large crucifix for the tower. The furniture was designed by the architect.

The tower has a reinforced concrete egg-crate frame; otherwise construction is load-bearing stone—that in the tower and gable-walls of local rubble and that in the main walls of ashlar above a rubble base. The ceiling of the nave is of open timber slats, strong enough to allow access to the light-fittings above it. It follows the line of the underside of the steel roof-trusses. A gap in the centre is spanned by two tension bars connecting the halves of each truss.



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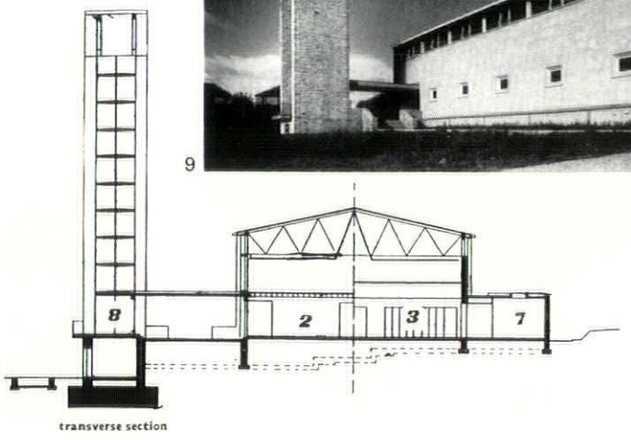
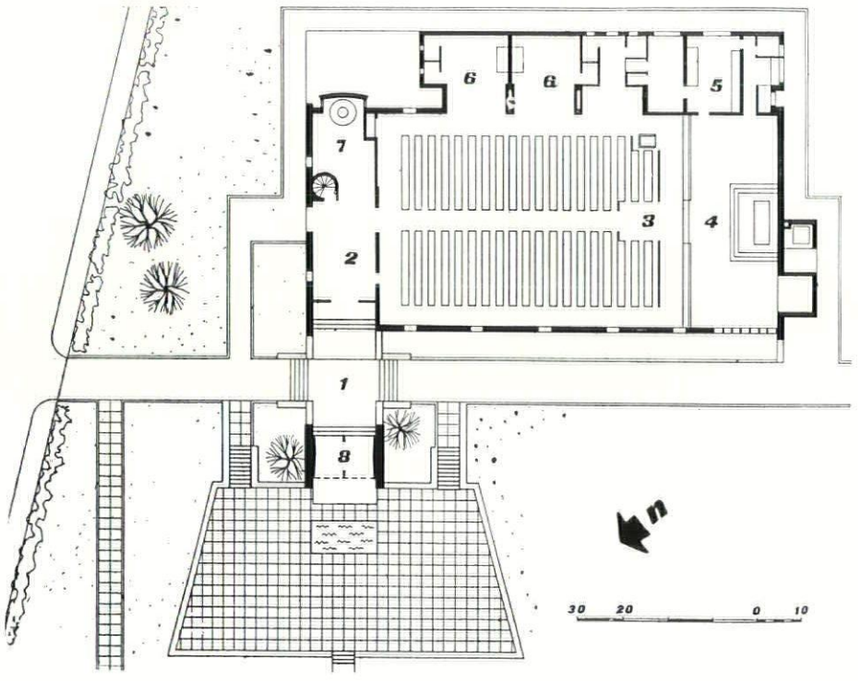


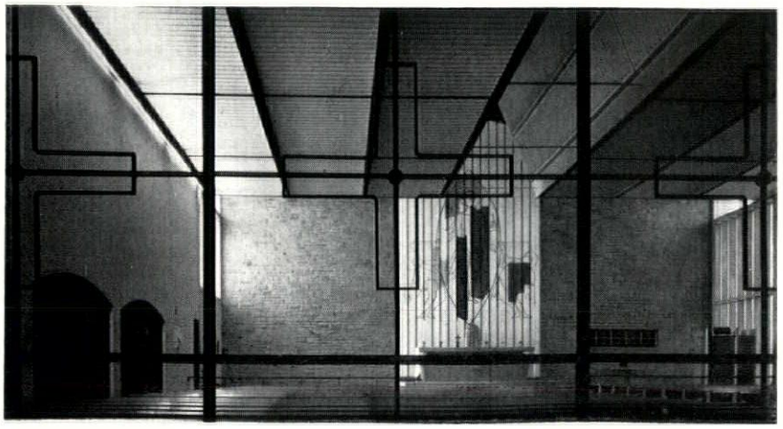
transverse section

key
1, entrance
2, narthex.
3 nave.
4, sanctuary.
5, sacristy.
6, side chapels.
7, baptistery.
8, tower.



10

9 (top of page), south side of church and free-standing tower.
10, the altar, with reredos by John Piper.
11, looking towards the altar through the metal screen that separates the nave from the entrance narthex.



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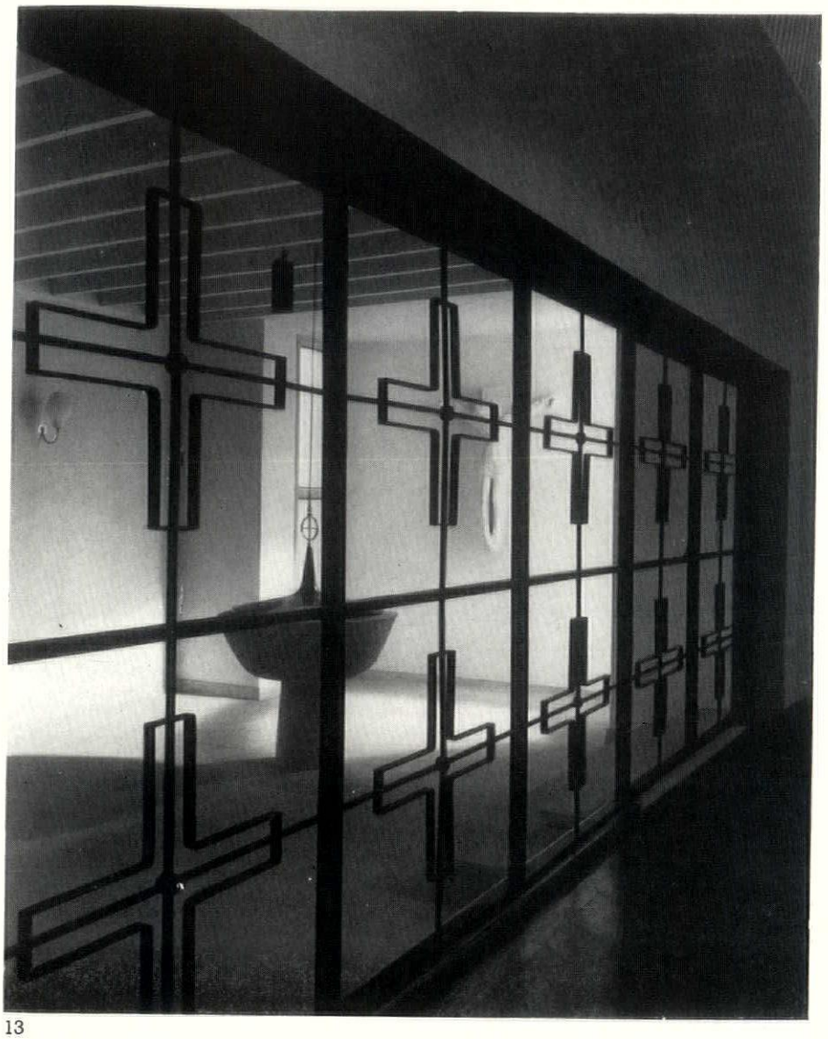
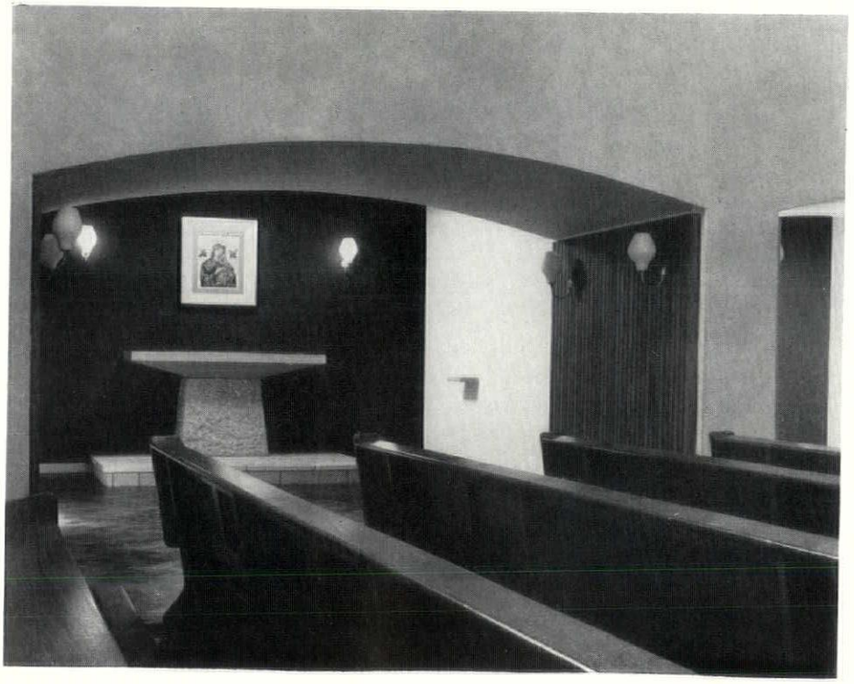


13

12, the nave, looking towards the altar, showing the ceiling faced with open timber slats, rising in the centre to the peak of the roof. The ceiling is the principal source of light, natural and artificial.
13, looking into the baptistery, through the screen at the west end.
14, one of the side chapels on the north side of the nave.
15, baptistery and font. The sculptor of the crucifix is Peter Watts.

14



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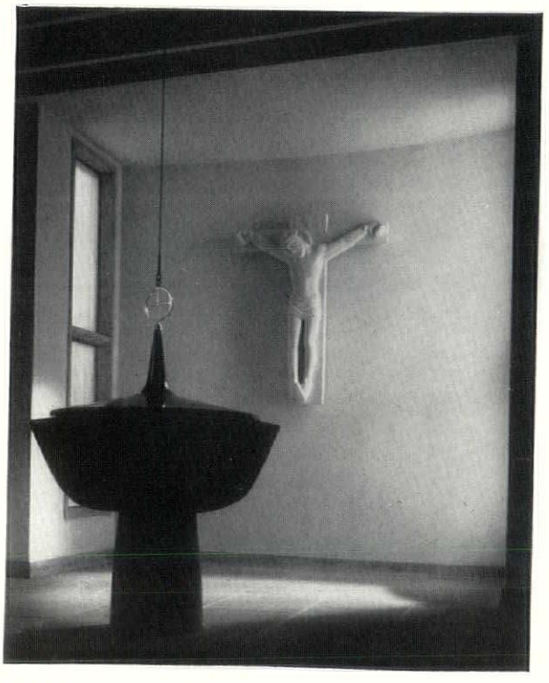


RECONSTRUCTED PARISH CHURCH, TOLWORTH

ARCHITECT | **KENNETH WOOD**

16, the new entrance end of the church, faced with mahogany boarding below and an open cedar screen above.

16

The conversion of an existing dual-purpose church-hall for purposes of worship only, and the addition of a new hall and ancillary accommodation. The site was restricted, necessitating the placing of the hall alongside the church close to the edge of the site, and the required extra accommodation could only be given in the church by reversing its orientation and adding a new chancel, sanctuary and vestries to the end. There were also difficulties of light, which determined the unusual shape of the hall and its structural system, as well as the glass screen which, 30ft. long and 13ft. high, occupies the whole south side of the sanctuary. The light coming through the screen is diffused by white terylene curtains.

17

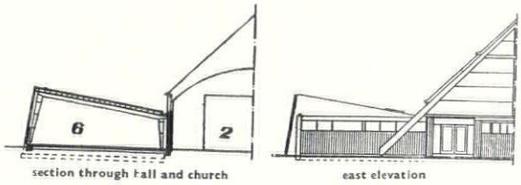
17, the same end of the church as that shown above, before reconstruction.

The existing bell-turret at the east (now the entrance) end of the church has been removed and the end brought forward to cover the new vestibule, a new facade being created in the form of a laminated timber arch, beneath which the bell has been rehung. The tiling

of the roof, however, has not been extended, the new part of the roof being left with open timbers to admit light to the baptistery between the entrances. Similarly, the new gable end is filled by an open timber screen of cedar. The need for structural bracing has been used to provide a large cross in the gable.

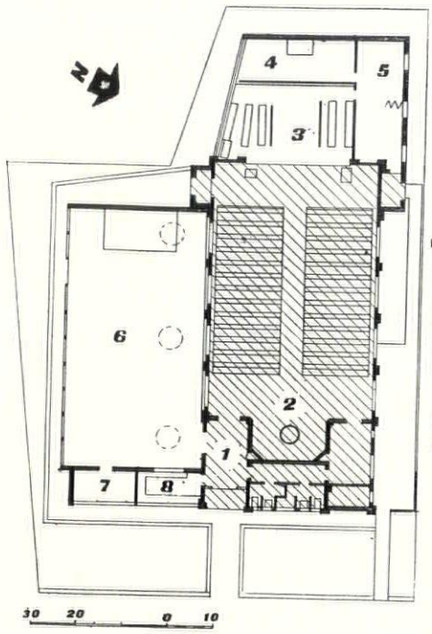
The new chancel, etc., is of timber frame construction with brick cavity walls. The hall is similar, with the main timber frame of Gurjun. The hall and the sanctuary screens and external boarding are mahogany. The new arch at the extended end of the church is of laminated Douglas fir, and the cross of Gurjun.

Emmanuel Church is a Church of England evangelical low church, demanding the greatest simplicity in the furnishing. New furniture was designed by the architect and consists of Lord's Table with black enamelled steel framework, brass trim and beech rail and top, stalls and lectern of Douglas fir on black steel framing, hymn and psalm boards of Doussie and white beech and pulpit of Douglas fir for the framework and Doussie for legs, base and handrail.



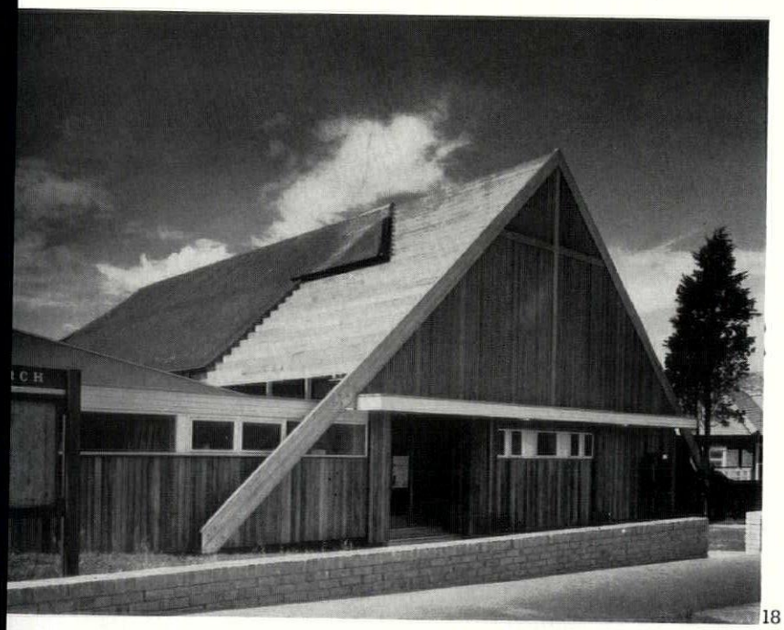
section through hall and church

east elevation



key
1, entrance.
2, existing church.
3, chancel.
4, sanctuary.
5, vestry.
6, new hall.
7, store.
8, kitchen.

The shaded portion represents the area covered by the original building.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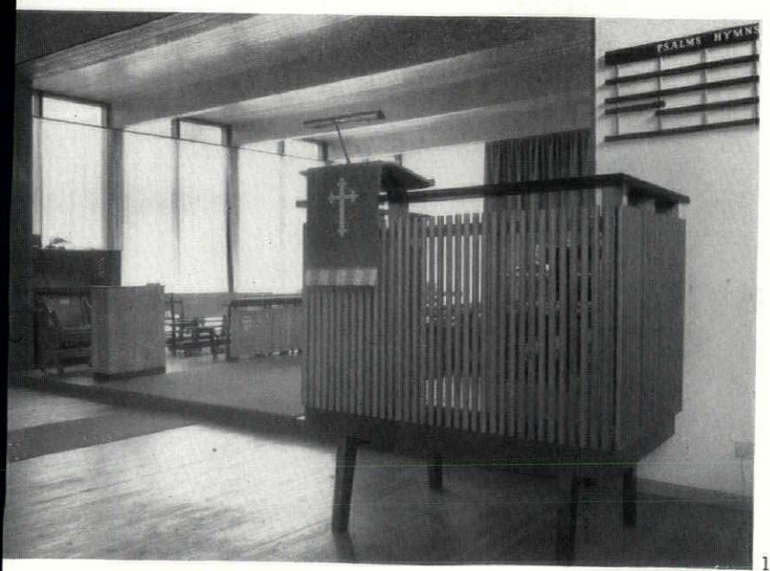

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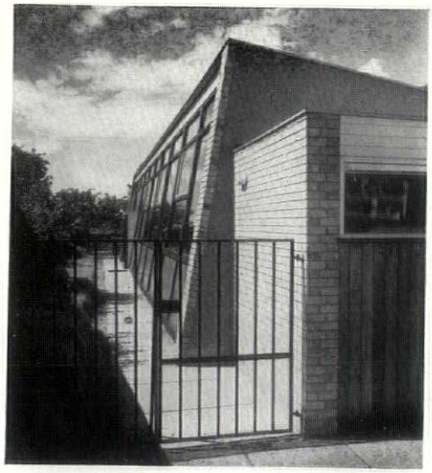
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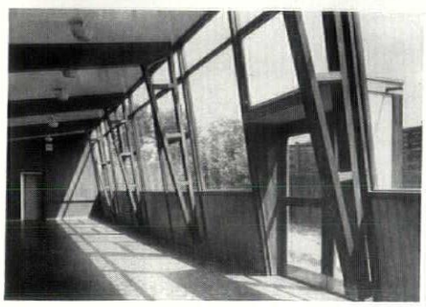
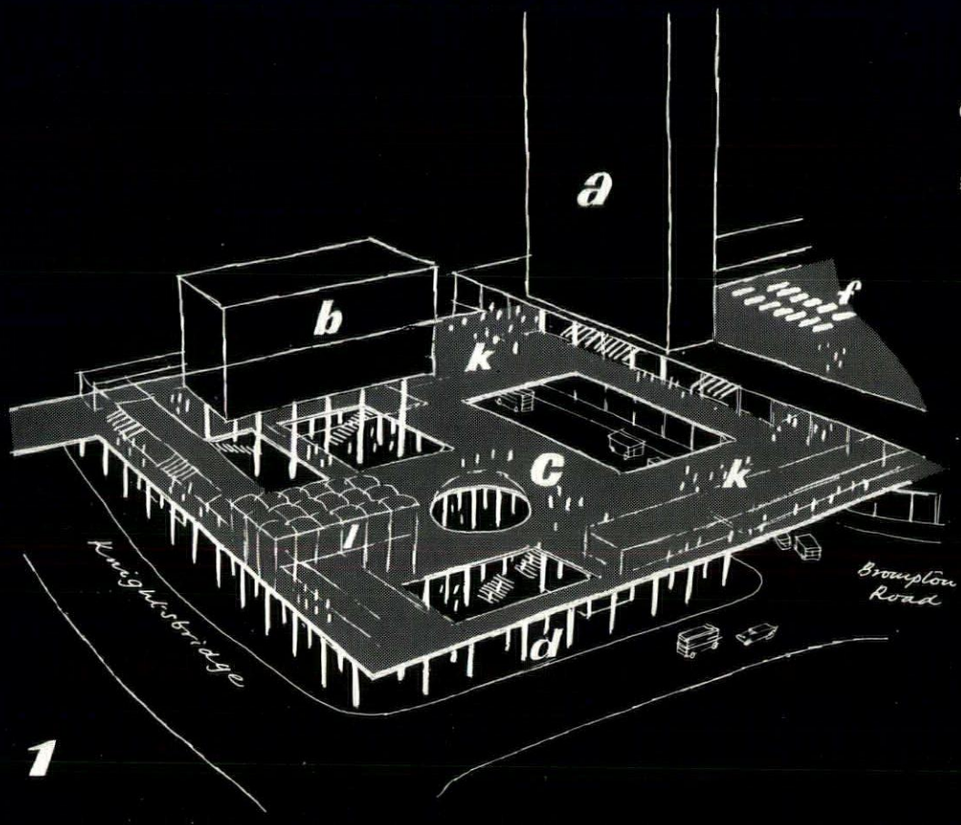
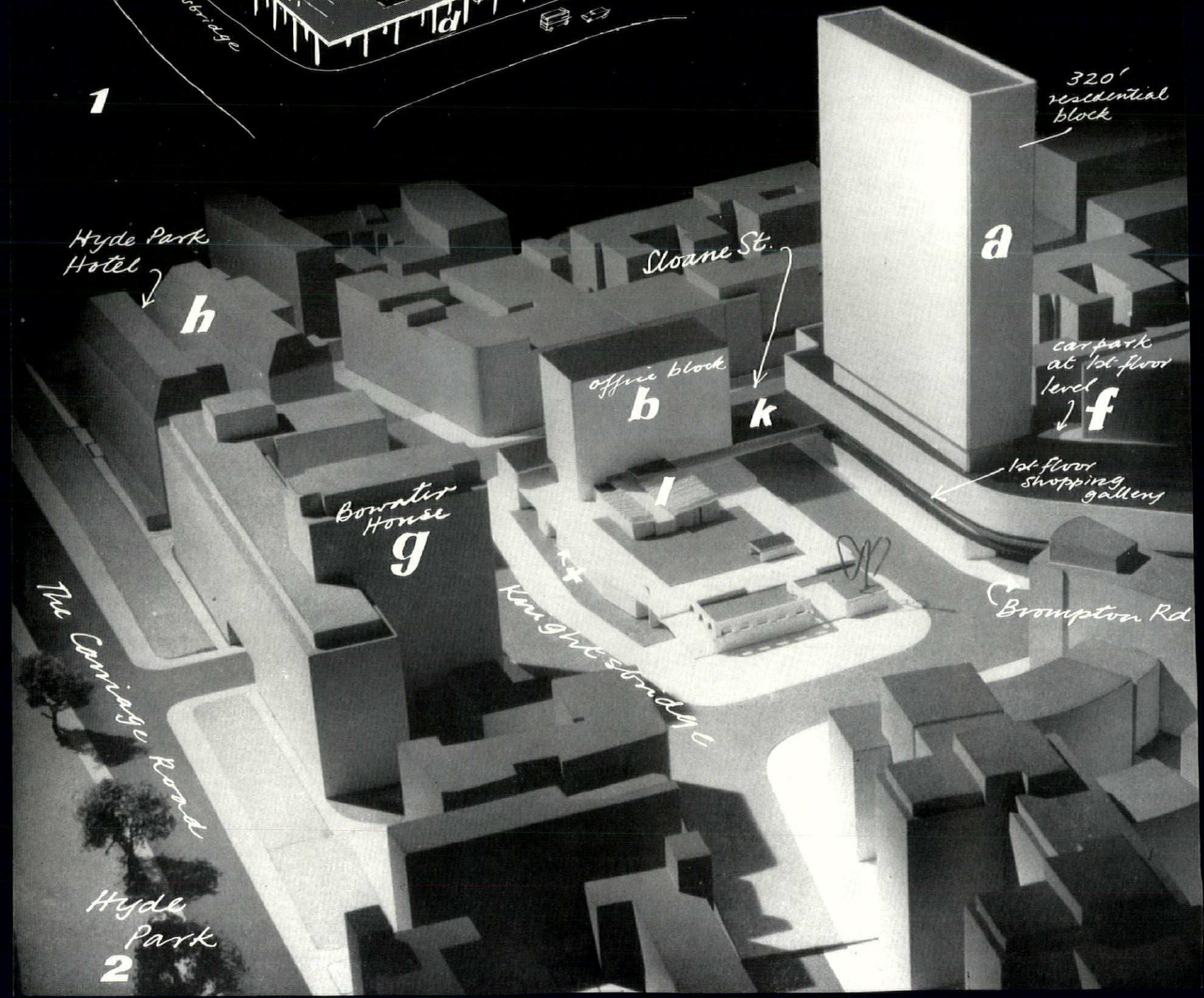

21

18, the extended end of the roof showing exposed timbers and gable filled by open cedar screen.
19, interior showing pulpit, which has a frame of Douglas fir, legs, base and handrail of Doussie and front formed of vertical rods of Douglas fir.
20, the window wall of the hall along the edge of the site. The end wall is in brick.
21, inside the hall, constructed with a timber frame and box beams in Gurjun.

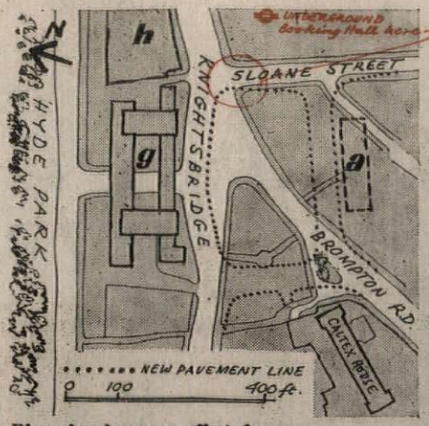
The LCC scheme for Knightsbridge, shown in diagrammatic form below, **2,** with its 320 ft. high residential block, **a,** has been opposed on the grounds that high buildings should not be permitted so close to Hyde Park. A solid wall of high building right on the edge would indeed be fatal but towers set back and seen above the trees could, with skilful attention to silhouette and grouping, look very fine. However, in this scheme, it is the design of the central traffic island that is all important and in the following pages the proposal is put forward for a first-floor deck, **c,** left, raised on columns to unify the two sides of the square, as shown in **1.**



1



2



Plan showing area affected.

key to illustrations
a, tower block, flats
b, office block
c, pedestrian deck
d, ground level paving
e, Underground booking hall
f, roof car park
g, Bowater House
h, Hyde Park Hotel
k, bridge
l, restaurant
x, podium

TOWNSCAPE

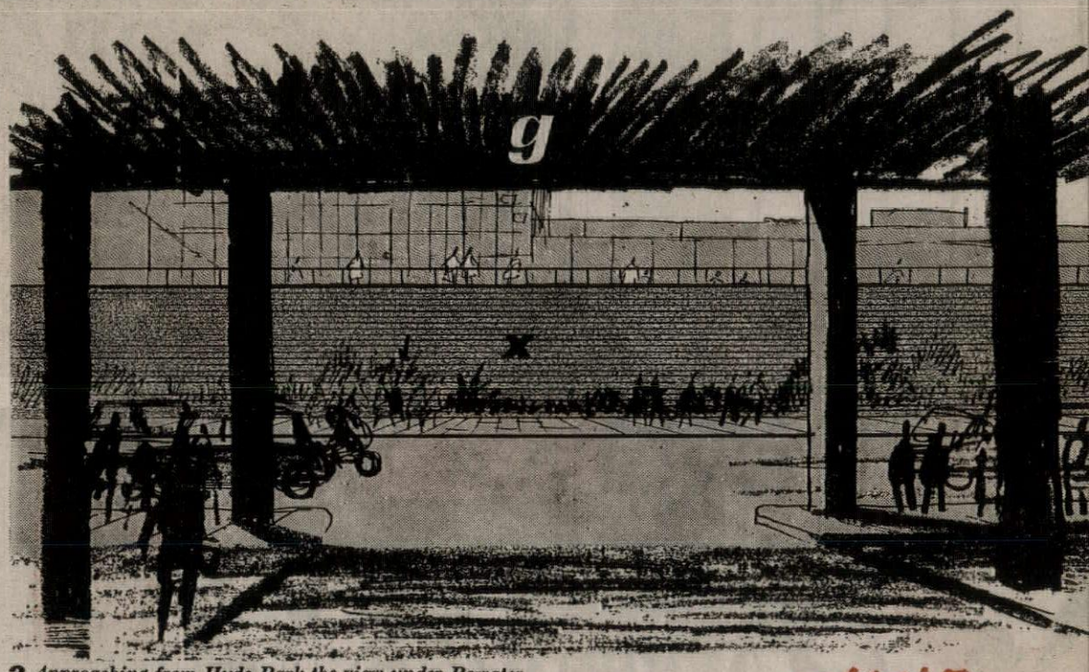
Kenneth Browne

KNIGHTSBRIDGE GREEN

In their desperate attempt to ease the worst points of congestion, the traffic authorities intend to follow up the Hyde Park Corner scheme, now under construction, with a giant 400 ft. roundabout at the junction of Knightsbridge, Sloane Street and Brompton Road, the next bottleneck to the west. The demolition required to make room for it can be judged from the map above. In the absence of a realistic plan for London's traffic, this roundabout is unlikely to prove more than a local remedy. However, since its position, shape and size have been decided, the important thing now is to ensure that it is not just another large area of wasted space ringed by traffic.

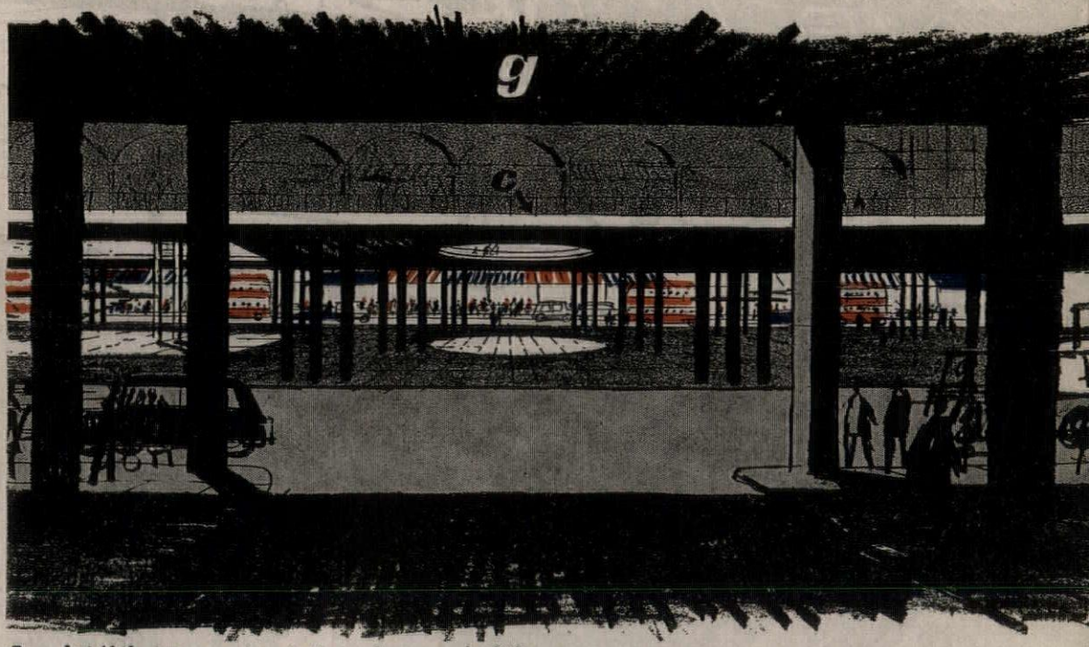
The LCC planners have appreciated the problem and, aided by a co-operative landowner, propose to treat this as a comprehensive development area so that a co-ordinated scheme can be evolved. The block model (*2* facing page) is a statement of their general intentions, and shows that they propose to build on the roundabout a large pedestrian terrace or deck on a podium, beneath which is a ground level car park. On the terrace stand an office block *b* and restaurant *l* reached directly by escalator from Knightsbridge Underground station. A footbridge *k* connects across the road to a first-floor shopping gallery under the residential tower block *a*. At the rear is a roof-level car park *f* reached by ramp from a side street.

This seems the right kind of approach to the problem and the idea of a large pedestrian deck well above traffic level is an admirable one. The alternative put forward here is merely a development of this idea, based on a suspicion that from the street approaches (sketch *3* on right) the



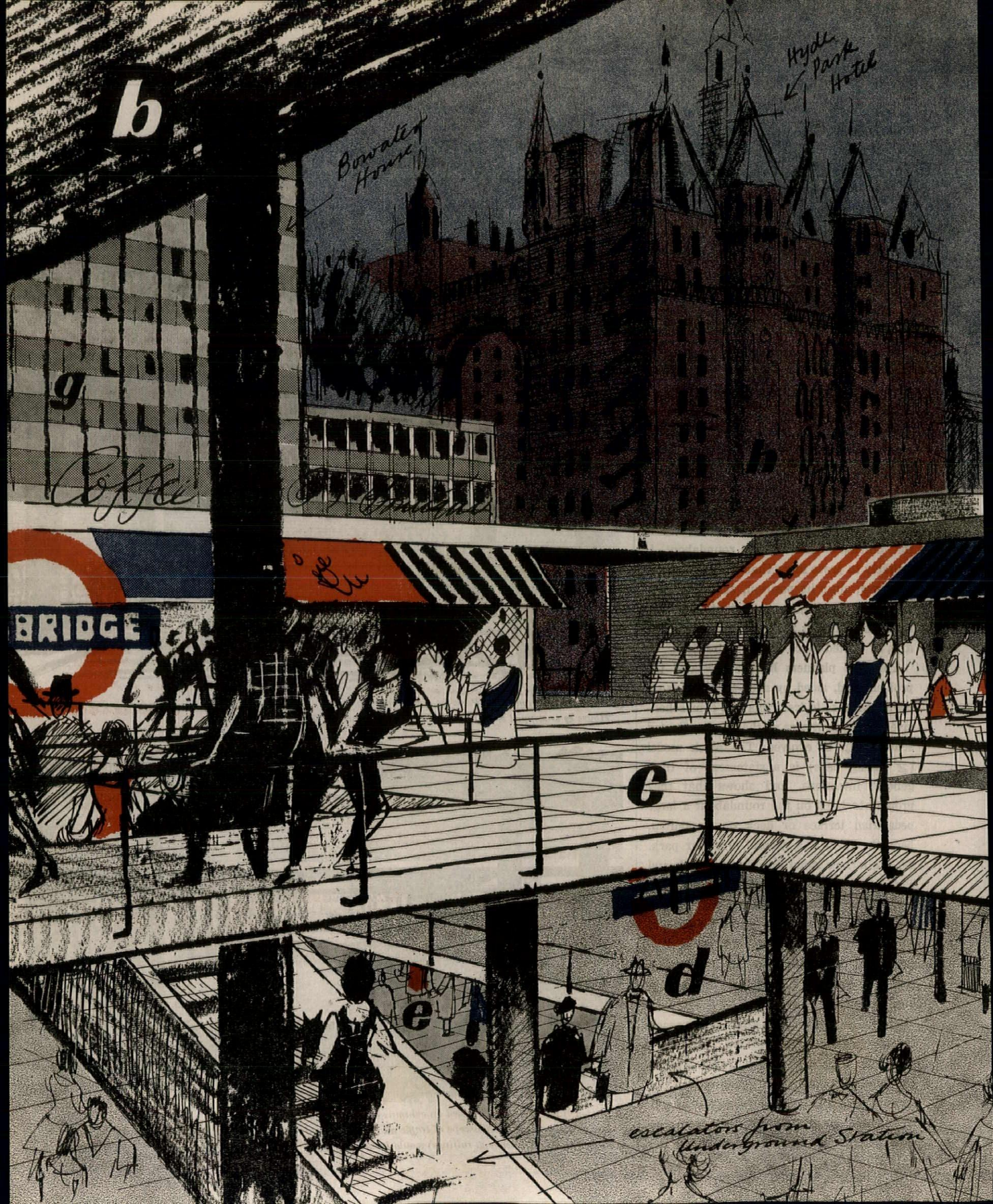
3 Approaching from Hyde Park the view under Bowater House g is stopped short by the solid podium shown in 2 . . .

solidity



4 . . . but if the terrace c is raised on columns as in 1 the eye can penetrate to the kaleidoscope of traffic and shops beyond. Some physical barrier (e.g. railings) would be necessary.

transparency


b
Hyde Park Hotel
Bowaters House
g
Coffee
BRIDGE
c
d
e
escalators from Underground Station

*Typical view from the pedestrian deck suggested in **1**, looking under a building **b** raised on pilotis. The deck is pierced so that activity can be seen on three levels at once. Escalators from the Underground booking hall **e** lead up to ground level and up again to deck **c**. Beyond the perimeter shops are Bowater House **g** and the Hyde Park Hotel **h**.*

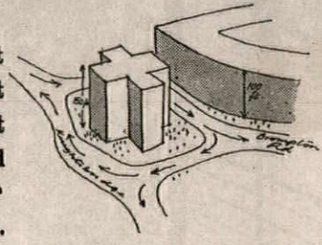
podium itself **x** might appear too massive and visually divorce one side of the new square from the other. If the pedestrian deck were raised on columns **1** (page 332) the effect would be light and transparent and the opposite sides of the square would be linked **4**. To make this idea of a first-floor pedestrian deck really work it should, perhaps, be carried further. In plan it should be increased to the full area of the roundabout below, and be thought of as a continuous floating slab spanning across the street to the south and continuing under the tower block **a** to link up with the car park **f**. It should be pierced to admit light to the roadway and the ground-floor level of the island itself, and would now be large enough to accommodate a variety of activities. In piercing the slab interesting multilevel views could be achieved, **5**, and a new and exciting focal point provided for Knightsbridge. The raised pedestrian deck would be fed directly from the tube station **e** and contain small shops, kiosks, clubs, a pub and coffee bars, their intimate scale contrasting with the backcloth of high buildings across the street, such as Bowater House **g** and the Hyde Park Hotel **h**. This differs from the LCC scheme in looking inwards as well as outwards. A small theatre might replace the office block **b**. A ground-level service road would be required for the shops, and a certain amount of car parking space, but in the main this would be concentrated at **f** (see the first diagram, page 332).

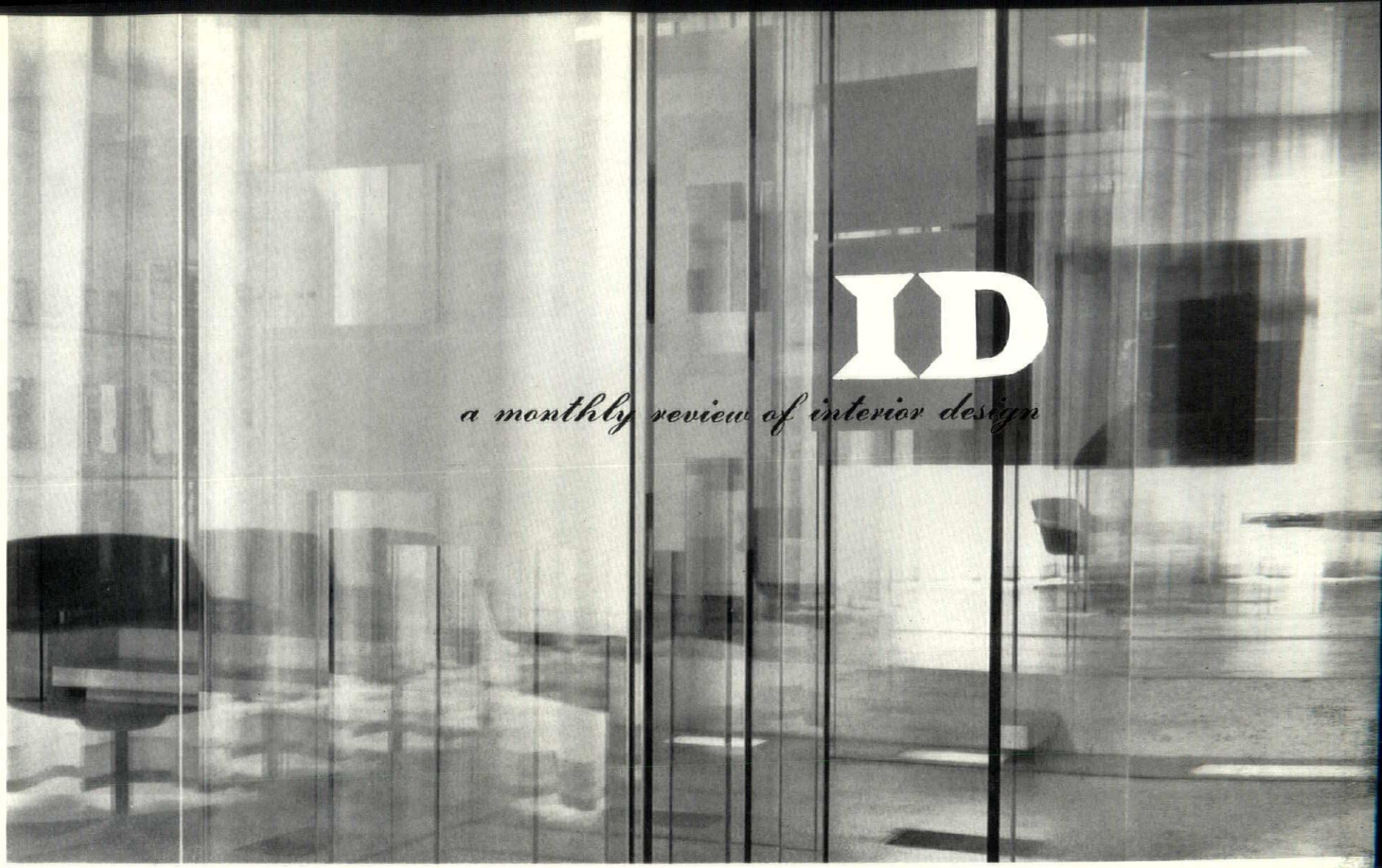
Climbing from ground level **d** to the pedestrian deck **c** would now be an exciting visual experience **6**, the cut-away slab above suddenly revealing the 320-foot residential block **a** towering upwards.

The LCC scheme has been criticized by

View from ground level **d** *looking up to the pedestrian deck* **c** *with the tower block* **a** *soaring up beyond.* **6**

local residents for building on the traffic island. What is not generally realized is that no development would take place at all unless the owner could be certain of getting as much accommodation on the site as there is at present. So in fact the probable alternative to the LCC scheme, which piles up most of its accommodation vertically but does not increase the overall accommodation, is not an open, tree-planted square as many would wish but a development of this kind of which we have seen too many already.





1

Glass Showroom in St. James's, London

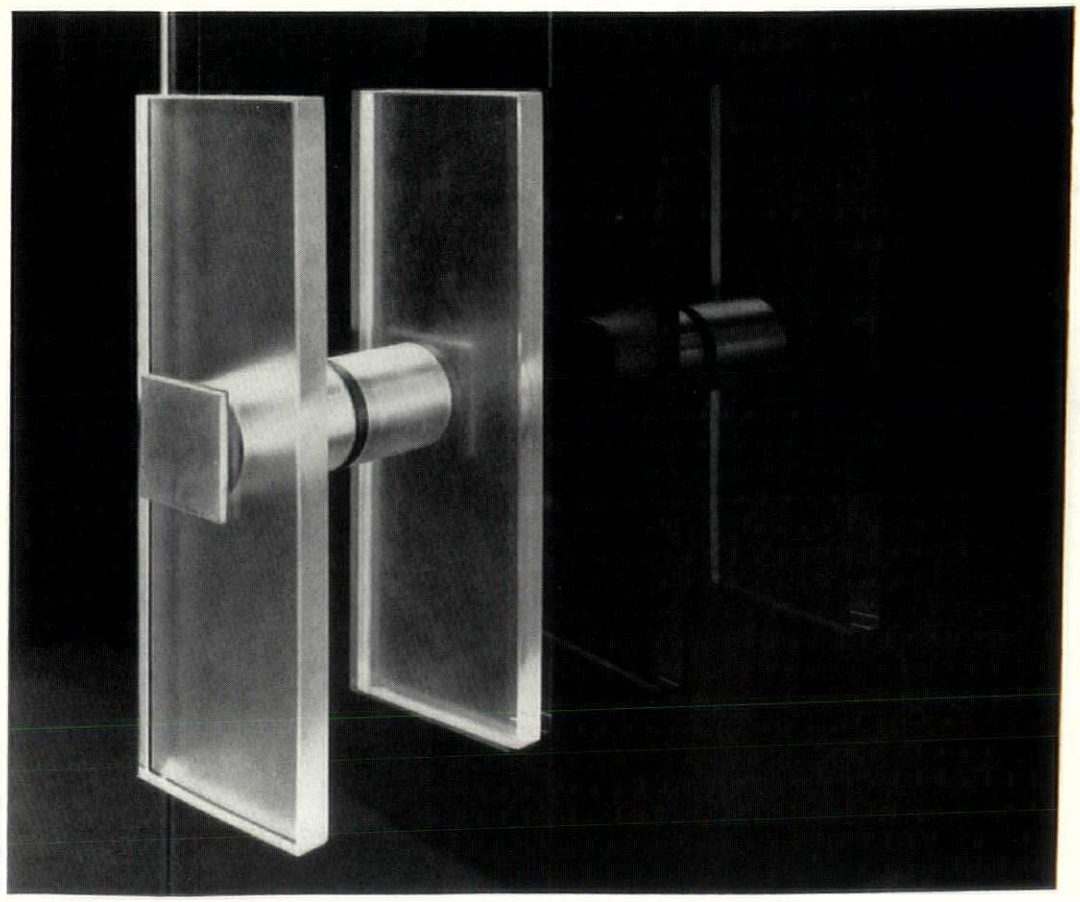
architect *Margaret Casson*

assistant *Bernard Holdaway*

A large upstairs room with a wide bay-window overlooking Green Park was required to be converted into a display of glass—glass pure and simple, in all the forms manufactured by the client (Pilkington Bros.) and in its natural form.

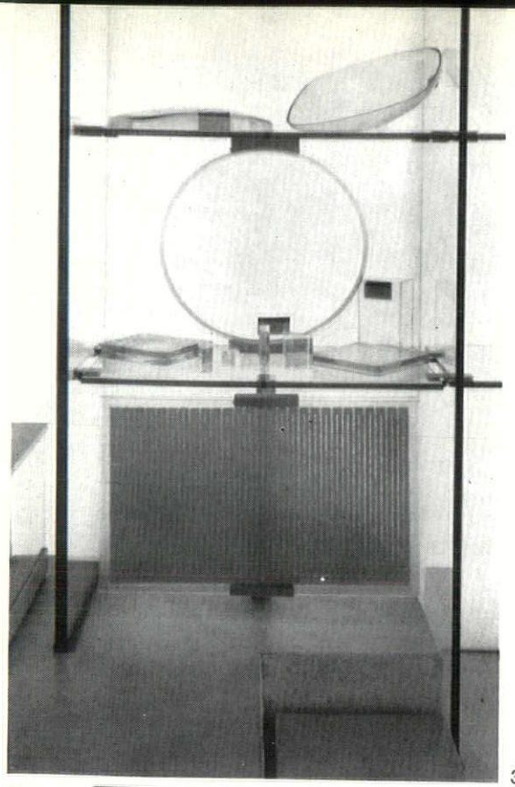
1, occupying the centre of the floor, half-way between the bay window and the mirror-clad back wall (which carries the reflections at the extreme right) is a maze-like composition of narrow sheets of polished plate glass running from floor to ceiling (see 5, over page). Transparent when viewed against the light, it makes an elaborate play of repetitive reflections when seen from the window side.

2, toughened glass door-pushes on one of the plate glass doors to the showroom, reflected in the black glass wall of the access-corridor.



2

glass showroom in St. James's



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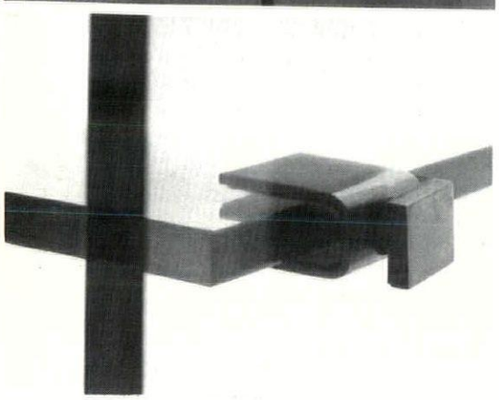

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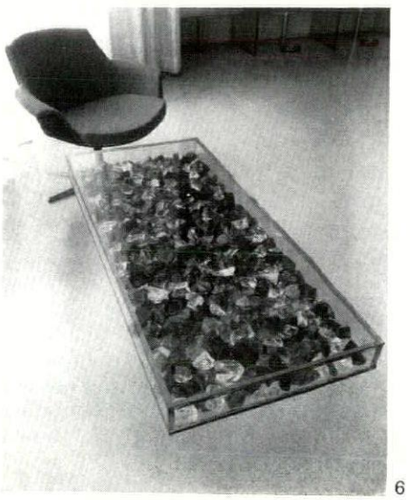


6

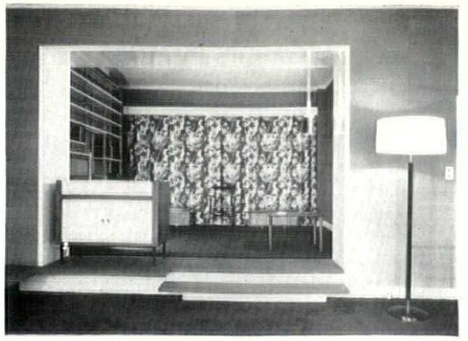
3, one bay of the glass shelving that runs down both sides of the room, to carry products for display. Underneath is an electric space-heater consisting of a flat metal heating-element sandwiched between two sheets of glass.

4, one of the metal clips securing a shelf to an upright panel—these clips are the only parts of the shelving that are not made of glass.

5

5, general view of the room from the entrance (which is on the raised dais whose edge and step are seen in 3). The glass panels of the central display are carried in slots in the ceiling and terrazzo floor, and are illuminated by lights sunk in the floor and ceiling. Other lighting comes from fluorescent fittings behind the shelving, diffused through a layer of glass fibre tissues. The windows are also curtained in heavy glass fibre fabric.

6, the only strong colour accent in the room—a low table with a top made entirely of plate glass, filled with large chippings of antique and optical glass in characteristic ambers, blues, and reds.



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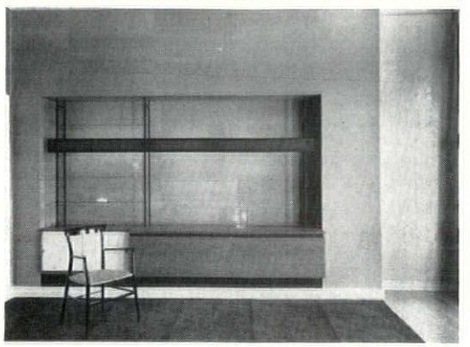
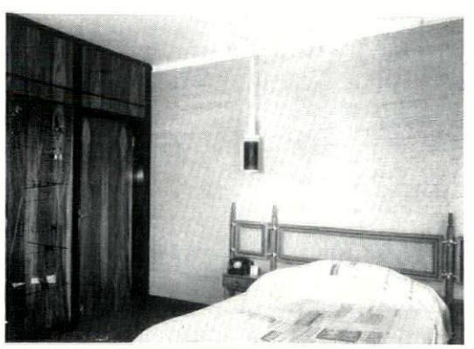


8

7, 8, two views of the living room, which occupies the whole of the first floor of the flat in Eaton Square (see opposite)—7 shows the study area up two slate steps from the main room, which lies across the front of the house, 8 (at right angles to 7) shows the built-in hi-fi installation and the gold mosaic wall flanking the window. The carpet is dark green and the walls are covered in grey-blue silk paper.

9, the bedroom, with entrance and wardrobe wall on left.

10, the bathroom—cupboards, etc., in the corners reduce the room to a cruciform plan which is 'doubled' by the mirror, seen here, and another mirror facing it over the bath; the doors at the left give access to the bedroom wardrobe from the back.



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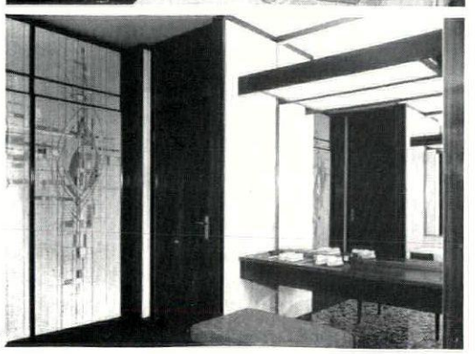

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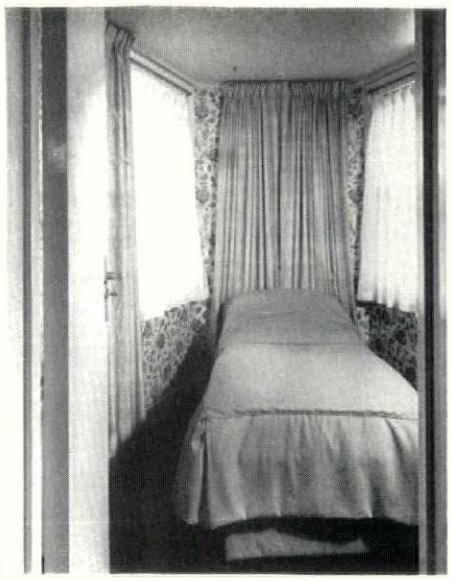

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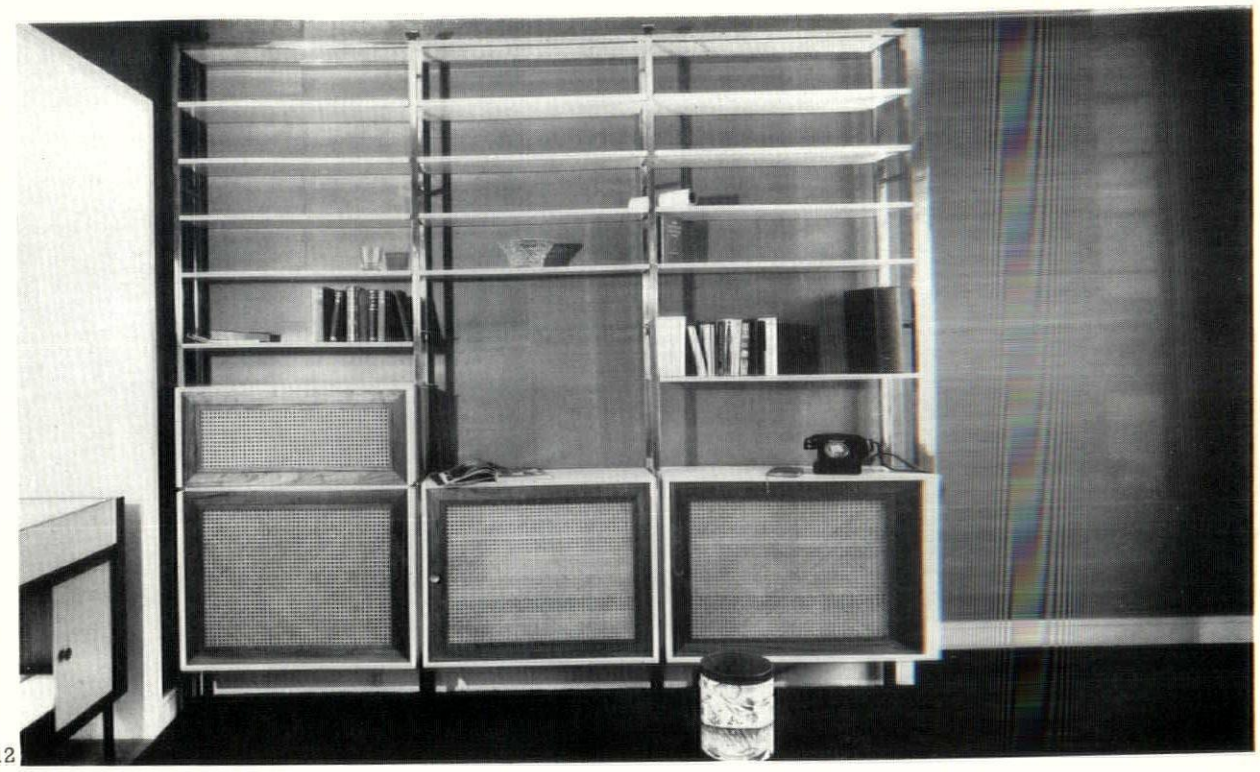
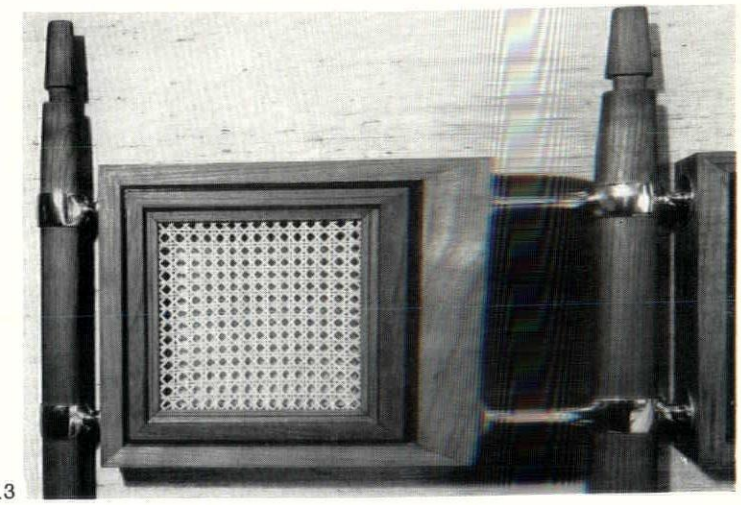


12

Flat in Eaton Square, London

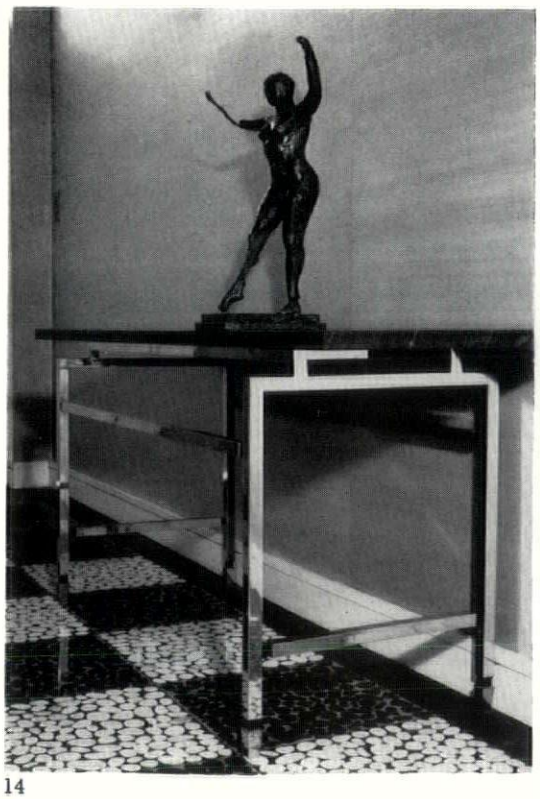
architect Margaret Casson

assistant Heather Blake-Smith



13

11, the small back bedroom which, like the master-bedroom, is at ground level.
12, the book-shelf unit in the study area (see 7, opposite), the frame of square, brass-finished tubes with white-painted woodwork, teak trim and caned fronts to the cupboards. The drink cabinet, left, has sliding tambour shutters and internal lighting with a shutter-actuated switch.
13, detail of French caning and teak frame, with brass brackets, which form the standard constructional devices of all the purpose-made movable furniture in the bedroom.
14, Degas sculpture on the hall table, which has a top of green serpentine marble, carried on a square, brassed frame. The hall floor is of black and white marble-pebble tiles, and walls are covered with orange silk-paper.
15, corner mirror in bedroom with long stool in foreground, and wardrobe doors at right. The inlay of brass and coloured plastics in the rosewood doors is by Mitchell and Hollaway.



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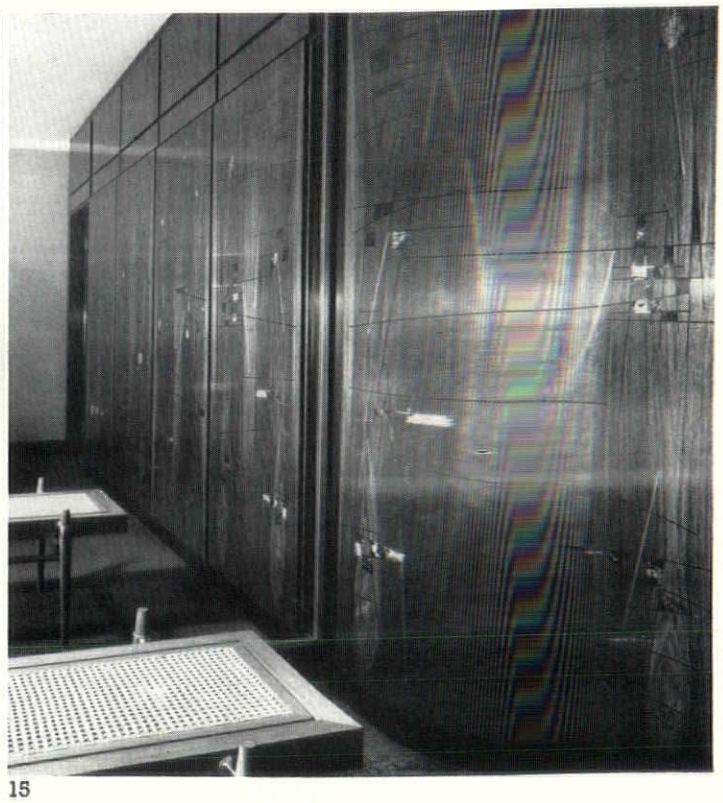

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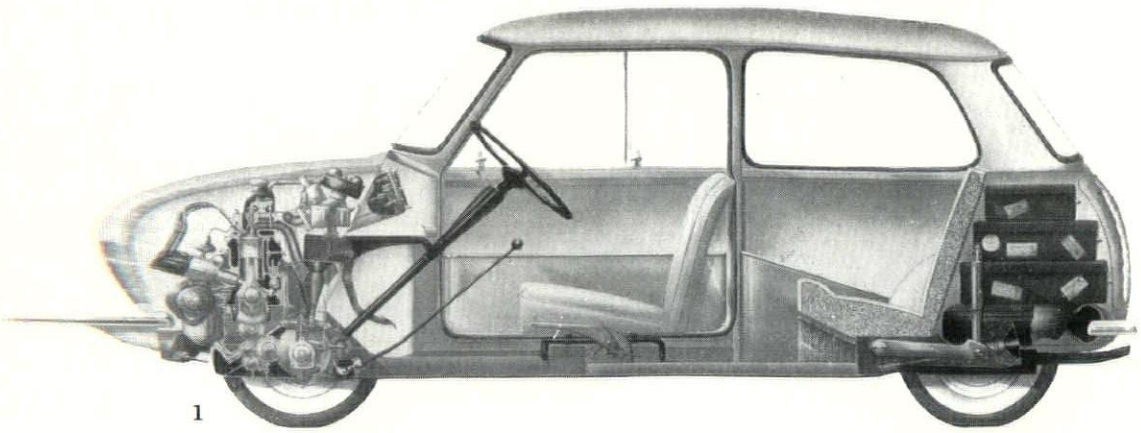

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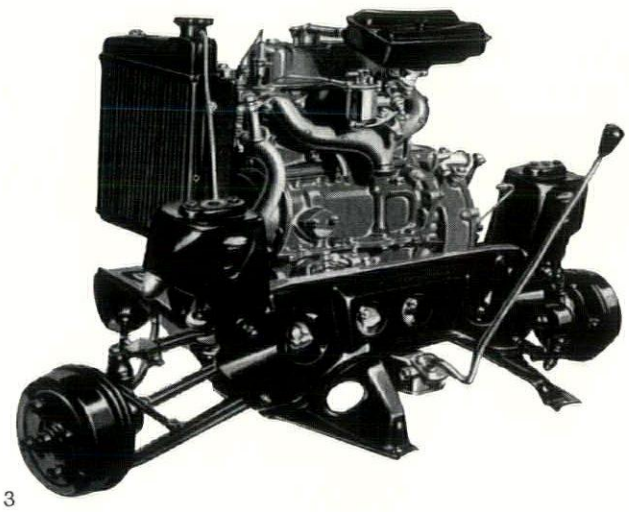

3

4

BMC miniature cars

Answering closely to the functionalist dream of a motorized box on casters, the new, almost identical, front-wheel-drive Austin Seven and Morris Miniminor have been justly acclaimed as a radical departure in British car design.

***1,** the section shows how the use of very small wheels, dismissed to extreme corners of the body shell, has made it possible to create a large passenger-space in a short car—it is to be hoped that other manufacturers will follow the lead established here by the designer, Alec Issigonis, and regard seating-dimensions as something that should answer an irreducible optimum, not an absolute minimum.*

***2,** the running-gear consists of two axle-aggregates fixed to the underside of the structural shell, an unusually clear separation of parts in automotive practice, where running-gear tends to be distributed all over the car, and mixed up with its structure.*

***3,** the power unit fits on top of the front axle aggregate, in the transverse position that has appealed to designers of front-drive cars all through the history of motoring, as in the German DKW models. The resultant unit, with all controls attached except the pedals (and their integration into the unit may be only a matter of time), could presumably be fitted to any suitable wheeled body as a kind of land-going outboard motor.*

***4,** in terms of styling, the bodywork of these 850 cc. cars is very frank about their internal arrangements and functions—except that there is no outward sign of the side-mounted radiator, which delivers its hot air into the near-side wheel arch. On the other hand, the management of external details and trim appears—as is so often the case with British cars—untidy and unconsidered: the raised "seam" that runs from the windscreen pillar to the front wheel arch appears to be simulating a large door, while that at the back, following the profile of the rounded rear quarter, breaks up what would otherwise be a compact form. The filler-cap and rear lights look as if they had been stuck on to the body as afterthoughts, rather than designed into it from the beginning.*

NEOLIBERTY: THE DEBATE

Reyner Banham's article Neoliberty, The Italian Retreat from Modern Architecture, *published in the April number of the* REVIEW, *aroused, in Gillo Dorfles' words, 'immenso scalpore a Milano' although, in fact, the great uproar extended to other places inside Italy, and outside it as well. This resulted in a great deal of correspondence and editorial comment, of which the most combative or informative parts are reprinted below, with Dr. Banham's comments. First, however, a general misconception about the status of the article needs to be cleared up: many of the replies assume, explicitly or implicitly, that the first article in the* ARCHITECTURAL REVIEW *is on every occasion an editorial. It is only such when unsigned, or when it appears over the signature 'The Editors,' but if it appears over the signature of a particular person, then it represents only that person's individual point of view. Obviously, the Editors are unlikely to publish opinions directly hostile to the established policy of the* REVIEW, *nor do they normally publish texts that they do not believe to make a worthwhile contribution to a discussion of the subject concerned, but it is not to be assumed that they support, in detail, every proposition in any article made over a personal signature.*

Federico Correa

Dr. Banham's opinions, and the polemical tone in which they were expressed, were his own. They evoked responses that were equally personal, and equally polemical—thus, Federico Correa wrote from Barcelona:—

Can a serious architectural magazine, as I thought yours was, publish something (like) your article on Neoliberty? What's all this talk about Neoliberty anyway. . . . Form follows Function, the modern movement said, referring of course to valid function . . . form will change through functions that are new, or old but valid and newly reconsidered. These last, necessarily left behind when crossing the famous watershed, will be responsible for a similitude with past forms.

Nobody is trying to go back, in romantic revival, to good old 'borghese' days. But Liberty lessons in wearing and growing old nobly, ingenious use of simple economic materials in simple economic structures, and so on, had to fall upon the eyes that contemplate the ruining in five years of those beautiful clean-cut facades with sweeping reinforced concrete cantilevers faced in vitreous ceramic. These same architectural eyes will continue to consider architecture of the Art Nouveau period as the first of the modern, whether or not purely plastic-minded eyes consider Art Nouveau as the last of the old styles.

Importing that the intentions are just those of looking back, reviving the forms of a middle-class past, is lack of either insight or goodwill.

* * *

Reyner Banham comments: (*a*) the argument on weathering is one that has been used *ad nauseam* by the enemies (and some of the professed friends) of progressive design. To take purely Italian examples for argument's sake, the present condition of Terragni's work, faced in a variety of materials, makes nonsense of it, as does the parlous condition, a few years ago, of Moretti's Fencing School in Rome, faced in that 'reliable' traditional material, marble.

(*b*) it is not I that imputed a revival of the forms of a middle-class past, but Aldo Rossi, a professed friend of Neoliberty, and the same point was made, by implication, by Paolo Portoghesi. Where I appear to lack 'insight and goodwill' seems to be in considering such a revival to be a bad thing.

Sybil Moholy-Nagy

Mrs. Sybil Moholy-Nagy wrote in even stronger terms from New York :

Reyner Banham's article *Neoliberty* suffers from that oldest of British afflictions—condescension. If

anything this is an attitude typical of the 'borghese' middle-class through its ignorance of any contexts larger than the British viewpoint. The invective of 'infantile regression' with which the critique ends seems much more applicable to a man who indulged in a sort of hero worship . . . only to flip over into 'confusion followed hard on disillusion' when he fails to understand the direction in which his hero is maturing. (Remember Ruskin and the mature Turner) 'Queasiest and most cowardly,' 'wrong-headed and misguided' just aren't terms of architectural analysis where a whole movement is under scrutiny. . . .

What matters is that Mr. Banham has not the slightest inkling of the ideological basis of the Italian architectural revolution. This basis is a profound obligation toward Historical Continuity which is as embedded in the Italian mind as is a parochial insularity in the English. The whole history of Italian architecture is one of transitions and not of clashes, a supreme power to fuse thesis and antithesis—developed elsewhere—into a creative synthesis . . . it is a rhythm that goes from La Zisa to Assisi, from the castle at Volterra to the Villa Madama, and from the Piazza San Marco to Sant'Elia's many-storeyed city centre.

That a group of internationally recognized architects were willing to risk their standing with the CIAM fraternity . . . is one of the miracles of our undevout age; and it might be flattering but not true in fact that they are all young men. The justification of their revolution has been stated by Mr. Banham himself: that an architectural movement should be supported by the ideals and methods of its day. This contemporaneous obligation has forced on thinking architects, not only in Italy, the conclusion that we must 'start all over again' because the purely subtractive results of the identification of architecture and machine-cult has revealed itself as a romantic pipe-dream . . . is Mr. Banham that young not to remember the gangling stage of functionalism? . . .

It makes one squirm with embarrassment to hear the ARCHITECTURAL REVIEW plead tearfully for the preservation of Le Corbusier's masterpieces which are in a state of shameful disintegration because the architect was either too unskilled or too arrogant to bow to *time* and *impact* as the ultimate judges of his design. These responsibilities have been resumed by the Italian architects, together with an identity of enclosing form and enclosed space totally absent from 'out-and-out modern'. . . .

* * *

Reyner Banham: I feel quite undismantled by Mrs. Moholy's hatchet-job, since most of her energetic swings have missed the points of fact involved, viz. (*a*) Sant'Elia, the crucial figure in the twisted history of Italian modernism, is not a figure of synthesis, but of violent antithesis to the Italian tradition of compromise with the past. Has Mrs. Moholy actually read his *Messaggio*, with its contempt for piazzas and flights of steps, its hatred of the past and its traditions?

(*b*) Ernesto Rogers, the patron of Italian defeatism, is one of the last few people still trying to resurrect the corpse of CIAM. It is precisely the CIAM group of Italian architects, with their peculiar views on history, who have made Neoliberty possible, and their continued acceptance by the 'CIAM fraternity' finally disgusted the younger members of CIAM to the point of revolt.

(*c*) But of course I am too young to remember the gangling stage of functionalism, and so is everyone else under forty. I write of Functionalism as history, not as something practised by my personal friends and enemies. My disappointments with it are therefore different to Mrs. Moholy's, and that goes for the rest of my generation.

(*d*) And speaking of generations, I spoke also for my generation, not for myself, when I wrote of an ideal picture of Italy and subsequent disappointment with it. Italy has never been my hero, as Mrs. Moholy could find by looking back over earlier issues of the AR, and I, *personally*, am neither surprised nor suddenly disappointed at what has happened.

Figini and Pollini

From Italy itself came one letter from architects directly accused of 'retreating' in Dr. Banham's article, Luigi Figini and Gino Pollini, saying that they agreed in part with the argument of the article, but not where it held the whole Italian Modern Movement to blame, recalling that they themselves had attacked Neoliberty for its superficiality, proposing that—besides the 'style of the Retreat'—there was also what might be called the 'style of revision, or something analogous' and continuing:

We hold to be already acquired (by universal acceptance) the right of an artist to continual research (which could carry him beyond the positions he has already achieved) while we deny that, in homage to the idol of consistency, he has any duty to continue repeating or copying himself. But this does not mean that we share the iconoclastic position of those today who require the turning of a new leaf and a fresh start from the beginning. Nor do we believe the message of rationalism to be completely exhausted.

With the polemical avant-garde period finished, our cultural position today—unlike that of 1920–1940—induces us to make a considered re-appraisal, discriminating what is valid and vital from what has proven fallible. (The pressure of social values, the measure of the human scale as norm of construction, and the 'method' of squaring up to architectural problems, can still bind us to the experiences of rationalism.)

Turning to our own particular case, that is, to our building in the via Circo (1957) which has been presented in the AR as an example of the 'retreat' by comparison with another building of ours built ten years before (via Broletto, Milan, 1947), we wish to draw attention to the following:

The shape of the top eaves-cornice, which chiefly characterizes the building, arises from technical studies aimed at an efficient solution of the problem of defence against bad weather, achieved here by means of large prefabricated concrete tile slabs and joint-covers.

So, too, a predominantly technical reason accounts for the use of projecting blocks of solid porphyry, which serve better to secure the cladding panels of common porphyry paving-setts to the wall behind (an idea already used by us in a project of 1938).

Thus here, as in other parts of the structure, a greater degree of formal definition has been attained through technical research.

In this building too, full weight has been given to existing surroundings—an old urban nucleus of the city. This determined us not to allow the voids to prevail too much over the solids (thus limiting the use of large glazed areas) and to use materials and colours that more or less imitate those of surrounding structures.

* * *

Banham: In front of a document such as this, spoken from experience in terms of manifest honesty, I bow my head with respect, only wishing that the rest of the polemics had been of this quality. Nevertheless, the soft-option approach of the last paragraph will strike any English reader, and make him ask why the Italians, after some fifteen years of accumulating skill in the insertion of unashamedly modern buildings into historical environments, should now apparently lose their nerve, and start to back off into one of the most vicious of compromises (and one from which we have suffered so long in England)—'Keeping in Keeping.'

Ernesto Rogers—Casabella

The most energetic reply from an architect implicated by name as one of the 'retreaters' came from Ernesto Rogers, who devoted the whole of the first essay in *Casabella-Continuità* 228, to a personal apologia and rebuttal, considerably longer than Dr. Banham's original attack. Dr. Rogers was amongst those who believed the original article to be an editorial, and therefore devotes much of the early part of his text to general reflections on the ARCHITECTURAL REVIEW—not very flattering reflections—that are irrelevant to the main argument. However, his general reflections upon the REVIEW and its interior decoration (which he may care to revise now that our new offices have been illustrated) provoked him to the following comment:

Mr. Banham imagines that he has found (no doubt in the dust-laden drawers of that Victorian furniture) the magic key with which to unlock the floodgates of history and deviate its course towards his private aquarium of morays waiting to suck our blood.

One might say that he would find it much more reasonable to use an old Ford than a horse, because the Ford comes with the Machine Age, whereas the horse, obviously comes before. This comparison may be deduced from the rather conventional outlook of the whole article, which argues that, if there must be imitation, the architects who reflect de Stijl are to be preferred to those who adopt the Liberty manner . . .

However, the most important part of Dr. Rogers' rebuttal comes toward the end of his article, and is best given by quoting *in extenso*, the following paragraphs:

A man who cannot see straight deforms everything he sees: 'modern practised as a style since it could not be practised as a total discipline, as the literally hollow formalism of Terragni's Casa del Fascio at Como clearly demonstrates.' Hasn't Mr. Banham seen the coherence between form and function, and hasn't he heard of Terragni's struggle for his work in order to give (unfortunately deceived) a content and a moral form to Fascism. And why did Pagano, Banfi and Labò die if not because with their artists' discipline they could not help opposing the rules of the dictatorship?

He should have more subtly recognized what has often been observed by writers in this country, namely, the continual dramatic struggle of culture in general, with the contingencies of Italian society

(before, during and after Fascism); from this he should have inferred the difficulty of art itself to fit into life, the dialectical relationship, the tenacious duel of love, the incomprehension, the rejections and the redemption of this struggle. Then he might have sensed one of the most interesting aspects of our history, that by means of which Italian architecture, in its valid examples, is a moral act, and, at least implicitly, an instrument of political struggle: its successes are irregular, like the whole history of progressive tendencies in Italy, but for all that it is hardly to be despised and condemned.

After the war of liberation and the great period of partisan warfare, it seemed as if the world, Europe and Italy were rising to a definitely better life and we cherished these hopes, imagining that they were the truth, while afterwards we could not fail to perceive that they were only new Utopias. Since then the whole of progressive and enlightened Italian society has struggled to avoid the shoals of officialdom. And the fact that there sometimes appears to be an architecture which is more charged with feeling than with reason is not due to the retreat of architects—not on your life—but rather to a struggle upstream. One should see what happens in municipal offices, in the offices of the ministries, and how often those few who believe in art have to grit their teeth in order to move beyond the barricades.

It is by no chance that Ridolfi, Gardella, BBPR, Albini, Samonà, Michelluci and Piccinato, among the most ardent defenders of modernity, are no longer doing what they used to and for this very reason are coherent. Hasn't Mr. Banham wondered why? One can hardly believe that these persons and many others have all and at the same time become so irresponsible as to renounce the victories which they have so laboriously achieved. Their strength lies in the very fact that they understood the Modern Movement as a 'continuous Revolution,' that is to say, as a continuous development of the principle of adhering to the changing content of life.

Gradually, the thematic material was enriched and as a consequence the requirements became more subtle; thus, too, the formal results became more difficult, because they tried to include greater and greater numbers of propositions; the enlargement of the range of architectural problems and the immediate result of critical thought, the historical revision of all movements and styles, especially those nearer to us in time, which, owing to the normal opposition arising from the clash of generations had been distorted.

One understood better even (and why not) the Liberty style, in which there were energies still to rescue and canalize.

That the Liberty style should not only be considered in its historical framework, as the ancestor of modernism, but in the light of its own values, is moreover so necessary an observation that as a young student I based a thesis on it for my degree.

What is there to be so frightened about?

There is no doubt that we should look at past experiences (all of them), of course, without allowing ourselves to be seduced by them, as unfortunately happens to someone—and I am the first to admit that.

However slow and elaborate the complex process of review, it has been misunderstood by those less experienced in the field: they have received a shock, but it must be acknowledged that this process may have made even the more experienced overlook a number of cultural components (such as technology) to which they had devoted much more attention at other times. But progress is the result of choice and suspension of judgment, which at any moment may be guilty of incompleteness. Progress is paid for in errors, but I am convinced that the few dangers that Italian architecture risks are quite evident to us, even without the arrogant prodding of Mr. Banham, the caretaker of the Frigidaires, who really believes that 'the domestic revolution . . . began with electric cookers, vacuum cleaners, the telephone, the gramophone and all those other mechanized aids to gracious living that are still invading the home and have permanently altered the nature of domestic life and the meaning of domestic architecture.' We may as well add the mixer, which we can use to mix a cocktail of all the other revolutions, the 'milestones' of which were according to him, the 'Manifesto of Futurism, the European discovery of Frank Lloyd Wright, Adolf Loos's *Ornament and Crime*, Hermann Muthesius's lecture to the Werkbund Congress of 1911, the achievement of fully Cubist painting, and so forth.' All this cocktail needs is a pinch of salt.

* * *

Banham: It would be tempting to make fun of Dr. Rogers—'have to grit their teeth (stringere i denti).' What a terrible thing for grown men who survived the Partisan period! But seriously, the thing that impresses me about Dr. Rogers's apologia is the number of points on which he agrees with me. He and I, as far as I can see, are saying exactly the same thing about Terragni and the Casa del Fascio, but he is sympathetic, and I am not, so that, when he calls up the spirits of the martyrs, I—and many another Anglo-Saxon—merely demand how he dares couple the names of Banfi and Labò, political martyrs of the first rank, with that of Terragni who—if we are to trust the testimony of Giulia Veronesi—did not renounce Fascism till his mind was deranged. However, for a full scale response on purely Italian questions, I would like to refer the reader to Bruno Zevi's comments.

I would, however, like to take Dr. Rogers up on the question of my *key*. I did not discover it in my office, but on that very railway line from Milan to Como. There, working on the problem of Sant'Elia and of Futurism, on the territory in which both were born, I was forcibly struck by the way in which the Italians, more than any other nation except the Americans, have appreciated the possibilities of the small, domesticated and personalized machinery that came in around 1910. Marinetti was the first 'intellectual' to put this appreciation into words, and thus opened the eyes of a generation. Dr. Rogers, like many other Italians, has his view of the historical importance of the *young* Marinetti and *early* Futurism, obstructed by the image of the academic fool that Marinetti became in middle age. In 1910, Marinetti was a figure of world significance in the foundation of twentieth-century sensibility—a sensibility that Dr. Rogers, still urging me to read Ruskin (in a paragraph not quoted above), seems not to share.

Bruno Zevi—l'Architettura

The observations of Bruno Zevi, to which reference is made above, have been numerous and various. In *l'Architettura* 47, 1959, Zevi directly attacked Rogers for citing the 'martyrs' in his own support, and said further:

> . . . the Milanese have answered evasively, accusing Reyner Banham of being an 'advocate of refrigerators.' We do not think that one can fight refrigerators with vague generalities.

* * *

Banham: It sounds as if the war between Rome and Milan has broken out again.

* * *

Zevi's main statement on the subject of Neoliberty had been made in the previous issue of *l'Architettura*, under the title *The Andropause of Modern Italian Architects*, and the following is the English summary given in the margin of his editorial:

In the April issue of THE ARCHITECTURAL REVIEW, Reyner Banham has launched a violent attack against the recent trends in Italian architecture—the 'neoliberty,' the 'signorile' and the 'casalingo,' which he considers as many symptoms of 'infantile regression.' We agree, in fact we are grateful to Banham for having credited our magazine with having systematically fought against these forms of decadence, which have occurred particularly in Milan and Turin. There is no question that the Rationalism of the Thirties is in a crisis, but this cannot be helped by turning back to the *Art Nouveau*. If the alternative were between the *Art Nouveau* and the Bauhaus, we would definitely choose the Bauhaus. Every evolution of modern architecture, including the 'organic' one we advocate, starts from the Bauhaus experience. We only have two objections to raise to Banham's article: (1) to publish the works of the masters of the *Art Nouveau*, as we are doing, does not mean to invite people to copy them. . . .; (2) the 'neoliberty' movement is rather limited, a small episode in the story of modern Italian architecture. Banham was right in attacking it, but he should not overemphasize its importance. It is a 'lapsus' more than a disease.

* * *

Banham: I thank Dr. Zevi for support from so distinguished a quarter, but I beg to differ on the last two points. Neoliberty appears to me to be only one symptom of a general disease afflicting Italian architecture—other symptoms can be seen, for instance, in Rome, on the Monte Parioli, but have not been tagged with an 'ism.' As for the publication of works of the masters of *Art Nouveau*—if it is only a matter of revaluation, why is it proceeding in such minute detail, month after month, building by building (five articles already on Mackintosh) in a plethora of emotive words like *marvellous, splendid, most precious page of modern architecture, miraculous, passionate*?

Bruno Zevi—l'Espresso

From the point of view of non-Italians, however, there is little doubt that Bruno Zevi made his most valuable contribution to the Neoliberty debate in *l'Espresso*, the weekly paper that has been described as 'an Italian *New Statesman* with *Life* magazine pictures.' In the issue for May 24, 1959, he wrote one of his regular columns on architecture, giving it the title *Torniamo al Liberty* (Back to Liberty), and drew

attention not only to Banham's article, but also to a recent study of south Italian *Art Nouveau* by Renato Defusca (*Il Floreale a Napoli*), and deduced (from a reading of the latter) three motives towards a revival of *Art Nouveau* in Italy. He described them thus:

(1) An historical pressure. The Modern Movement reached Italy fifty years late compared with other European countries. Hence the solutions were applied before the problems had been tackled, and modernism entered the building scene only to make it squalid. We welcomed functionalism without having lived out its precedents, the Arts-and-Crafts revival, nineteenth-century engineering, Art Nouveau and proto-rationalism. It is all the more logical therefore to try today to rediscover and revalue our few works of the beginning of the century that reflect—in however faint and provincial a manner—the grand currents of renewal.

(2) An opportunity for critical revision. The Rationalists overabused the nineteenth century and the *floreale*, feeling no need to distinguish them from their later imitators. . . . The masters of Liberty are artists of the very first rank, to be classed not as simple forerunners of the modern movement, but as protagonists of one of its most fruitful periods.

(3) A nostalgic tendency. Basically, these our grandfathers did less harm, even while plastering their architectural pastry with whipped cream, than our fathers and elder brothers. Their palaces and villas, in spite of their decorative affectations, are less sickening than the pseudo-modern suburban quarters of skyscrapers and stridently coloured constructions currently in fashion. They reflect an illusion, pathetic but legitimate, of early Italian capitalism intent on de-provincializing the country.

These three motives . . . could easily become twisted to support the rise of a Neoliberty. And so much, precisely, has happened in Milan. From such false reasoning descends . . . the infantilism of sudden cultural conversions, the artistic and—above all—the human decadence of which Neoliberty is the most obvious symptom. . . . In a culture that tires of ideas and first principles even before they have been realized or made concrete, and suffers a fever of originality and artificial vitality, it was logical for the Rationalists to feel an urgent need to surpass themselves—even by going backwards. They braved out the difficult times, when a desire to build modern meant going hungry . . . but now prosperity has corrupted them.

* * *

Banham: No comment needed; except that if Zevi, who is an Italian, feels moved to say such things, which are what I said only more so, then perhaps I am not so insensitive to the subtleties of the Italian situation as Rogers and others claim I am.

Piccinato and Quillici

Finally, four comments from above the battle, so to speak, deserve note. A group of architectural students in Rome, led by Giorgio Piccinato and Vieri Quillici, took the opportunity to send a manifesto, and observed:

. . . Latest Italian 'performances' that you rightly criticized in AR . . . clearly prove the unprogressive background of our post-war architecture. Only in taking up the spirit of the modern movement do we think it will be possible to get out of our present situation. To see that the AR is in accord with these ideas has been very agreeable to us. Our heavy problems of building and planning can find no solution without a deep criticism of (architecture's) ethical meaning.

Cesare Brandi—Corriere della Sera

The opinions of the Italian equivalent of the 'Top People' who read *The Times*, were expressed in an article by Cesare Brandi in the *Corriere della Sera* for July 10, 1959. Since this was written for a non-specialist readership, it was mostly taken up with explaining the issues at stake, and hoping in an avuncular way that Reyner Banham's 'Lavata di Testa' had been applied at the right moment to call younger Italian architects to order. But it is worth noting, in passing, that Brandi alone appeared to agree with Banham that *Art Nouveau* was the last of the old styles, not the first of the new.

Giovanni Bernasconi—Rivista Tecnica

From the side-lines, the well-informed Lugano magazine, *Rivista Tecnica* (8, 1959), made a general survey of the current bad press for Milanese architecture, back to, and including the *Casabella-Architecture d'Aujourd'hui* polemics of 1957, and was the only overseas commentator to recall the ARCHITECTURAL REVIEW'S earlier strictures on Milanese revivalism, such as the speculation on the inspiration of the *Torre Velasca* which appeared in 'The Exploring Eye' (AR, November, 1958). Giovanni Bernasconi concluded his survey with the observation:

. . . and, certainly, contemporary Italian architecture has no need for research into Dutch Expressionism . . . the eclecticism of Berlage; Italy has *altro cielo e altri colori*.

* * *

Banham: Readers may remember Sig. Bernasconi as one of the most energetic defenders of the reputation of Antonio Sant'Elia, and his observations are—unlike those of the Neolibertarians—fully in accord with the tradition of progressive design in Milan that Sant'Elia founded, and Eduardo Persico confirmed.

Crespi/Grisotti—Architettura Cantieri

The most truly Olympian comment, however, came from *Architettura-Cantieri*, the Milanese magazine that first raised the alarm at revivalist tendencies in North Italian architecture. In its No. 21-1959 it gave overwhelming proof of its concern with facts, rather than polemics, by printing a complete translation of Reyner Banham's article—complete even to the footnotes. The tone of its accompanying comments (either by Raffaello Crespi or Marcello Grisotti) suggests that *Architettura-Cantieri* is not very impressed with Neoliberty, which it accuses of missing the structural rationalism that was the true strength of *Art Nouveau*, nor with Dr. Banham whom it accuses (as usual) of missing the subtleties of the Italian situation, and of not attending to the strain of continuity during and since the rationalist epoch in Italy. Nevertheless it hoped that the 'already celebrated article' would put Italians

. . . on guard against the ills that can arise from our 'tendency to tendencies,' trying always for 'critical vindication,' or forcing on the natural reaction of the young by offering them cultural alibis and absolution, rather than a serene and severe attention that would be, in truth, more generous.

To run a 'tendency' magazine is doubtless amusing and frightfully *engagé*, but risky, for all that. There is a danger of incurring fillipics that are not entirely (like those of Banham) merited if gratuitous categorizations are instilled in the reader, if criticism and polemics are confounded.

* * *

Banham: Agreed. A plague o' both their houses, Roman or Milanese. Let's get back to architecture.

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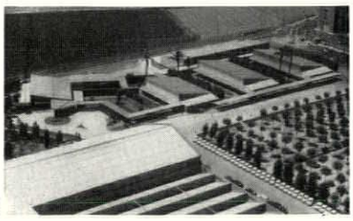
a monthly review of outstanding buildings abroad, and new developments in world architecture.

Aluminium Prize Structure

Now that the fanfares and the floodlights have died away, it is possible to look back on the Reynolds International Aluminium Architecture competition, and reflect a little on the prize-winning scheme by Cesar Ortiz-Echague. The building in question is, in fact, the complex of halls linked by covered ways, 1, that provides canteen, social and visitors' amenities for the factory that builds FIAT cars under licence, just outside Barcelona. Architecturally, it is a welcome sign of continuing progressive thought in Spain (as was the Spanish pavilion at Brussels, *see* AR, August, 1958) but it also has a curiously English air—as it were, a cross between our post-war schools and the early incursions of British modernists into tropical architecture. This similarity, 3, pervades even the interiors, where the lattice roof-beams, 2, have an immediately familiar look to British eyes, even if the I ertoia chairs do not.



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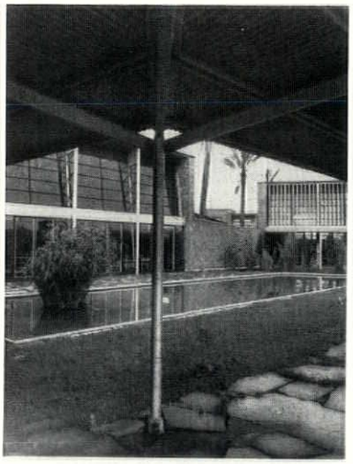
Here, of course, the resemblance is due largely to the techniques of construction and yet these techniques are, in fact, the least familiar part of the whole. We have almost as little experience in England of fabricated aluminium structures of this kind, as the Spaniards had when this building was put in hand—in their case, none, since this was the first in Spain. The detailing bears witness to the experimental nature of the work: a sophisticated, Prouvé-like use of pierced webs and tapered sections, married to what appears to be rather happy-go-lucky riveting, 4. However, if this riveting might alarm some purists, there is clearly nothing wrong with it structurally, and the frame and roof have successfully weathered two winters of Barcelona's boisterous sea-side climate.



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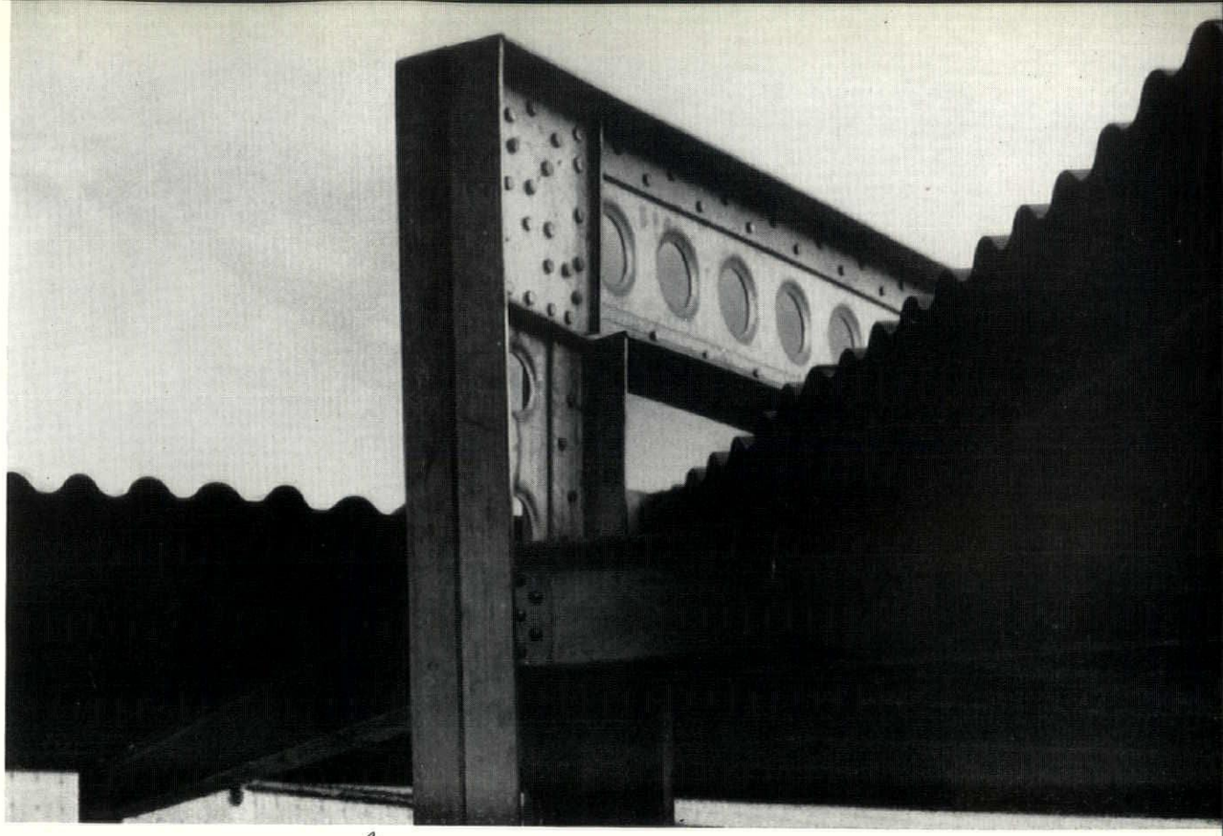

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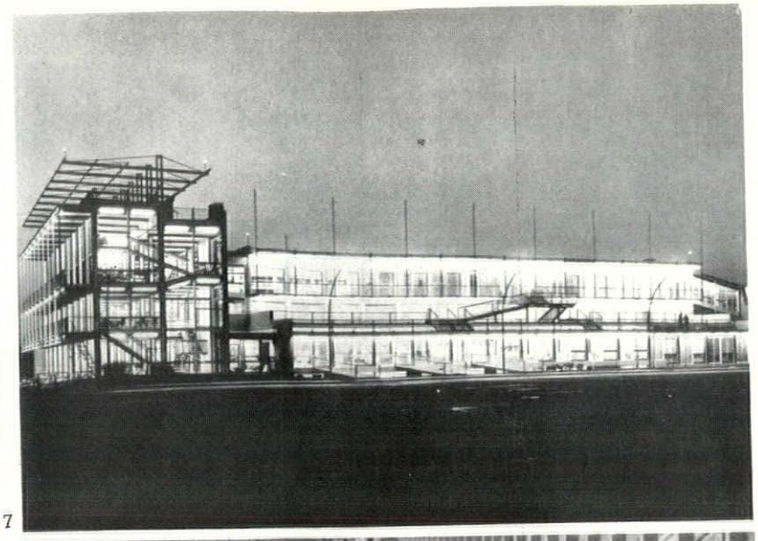
Nya Ullevi Stadium

A 55,000-spectator stadium is a sizable one anywhere, but in Sweden it is immense. Yet Nya Ullevi, in Gothenburg, has more than its size to recommend it. The designers, Fritz Jaenecke and Sten Samuelson, have departed completely from the symmetrical, formalist orthodoxy that still circumscribes many stadium designers, and attempted a 'functional' form that distributes standing and sitting accommodation around those parts of the perimeter where it is most in demand—*not* around the curved ends behind the goal-posts or where most cinders fly from the speedway. The result is a lopsided plan because seated spectators occupy more depth than standing ones,

but what makes this asymmetry immediately striking is the consequence of roofing it, 5. The roof rises and falls like a roller-coaster in order to take up varying depths of stands of approximately the same angle of rake, and this increase in depth becomes so marked on the 'seats' side that normal cantilevering (sufficient elsewhere) has to be reinforced by wire-bracing from above, the two pylons that provide the anchorages also serving the more conventional purpose of carrying floodlights.



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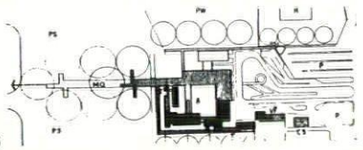
Jet-port for Milan

Many an air-traveller to or from Milan must have occupied his mind with puns about 'thinking ill of Malpensa' as he kicked his heels in what was, until recently, one of the slummiest airports in Europe. Now, however, in preparation for jet services to Italy's second city, Malpensa is in course of complete renovation and rebuilding in a local variant of the glass-and-steel style, 7, increasingly (and justifiably) favoured for airports. The new buildings, designed by Vittorio Gandolfi, shown in black in 6, are the first phase of an extensive scheme, intended ultimately to handle medium sized air liners on



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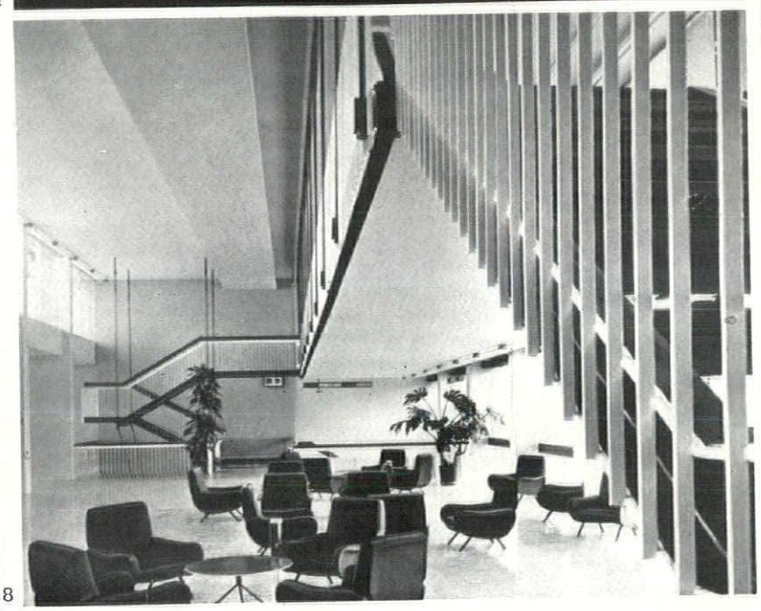
either side of the main block, and big jets from a projecting 'passenger finger' shown in two phases of extension in the plan. The interiors, largely the work of Gabriella Gandolfi Albertazzi are, as might be expected, in a considerably lightened-up, and straightened-up, version, 8, of the super-de-luxe airport style established at Ciampino, the airport for Rome. The result adds up to a terminal building that will certainly be compared to Gatwick (AR July, 1958).



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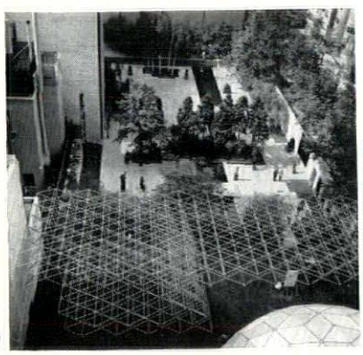

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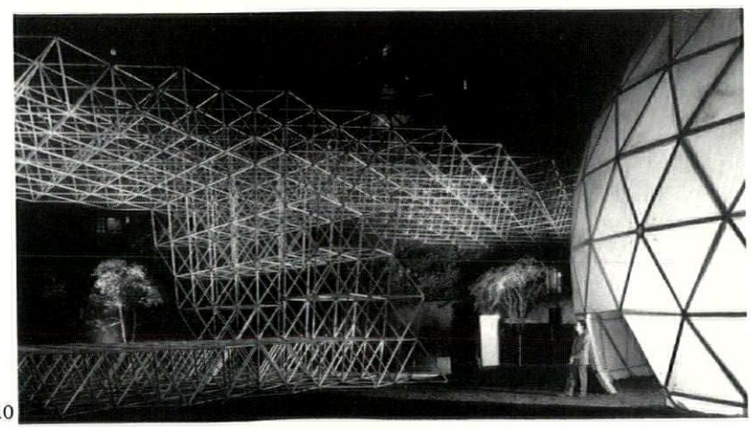
Octet on West Fifty-third Street

'Although he is not directly concerned with aesthetics,' as Arthur Drexler's catalogue-introduction admitted, Buckminster Fuller has recently been given an exhibition at the Museum of Modern Art, New York. The exhibits wrought a massive transformation on the familiar landscape of Philip Johnson's sculpture-court, 9, behind the museum (cf. AR, Nov., 1959, p. 253), and included the MIT rigid radome, built up from plastic dished units bolted edge to edge, a discontinuous compression strut, now known as a tensegrity strut, derived from the work done for Fuller by Kenneth Snelson at Black Mountain, and a large cantilevering structure with overhangs of sixty feet one way (to the right in 10) and forty feet the other, toward the back wall of the museum. This was one of the largest demonstrations so far of the Octet (octahedron-tetrahedron) truss employed to create flat surfaces of wide extent, and invites comparison with the flat trusses of Konrad Wachsmann's B36 hangar (AR, *World*, August, 1955). The comparison will show that, on analysis, the Fuller Octet ventures much further into the deep waters of three-dimensional geometry—Wachsmann's structure depends on a square grid in plan, and thus gives a tidier outline; Fuller's, based on the tetrahedron, gives parallel sides at 60 degrees between one set and another, and thus a wavy edge when used to make rectangular forms, 10, but should turn out much lighter. Comparisons are virtually impossible, but the fact that this Octet truss with its span of over 100 feet comes in at under four tons, suggests that as a structure type it must have an inherent weight advantage.



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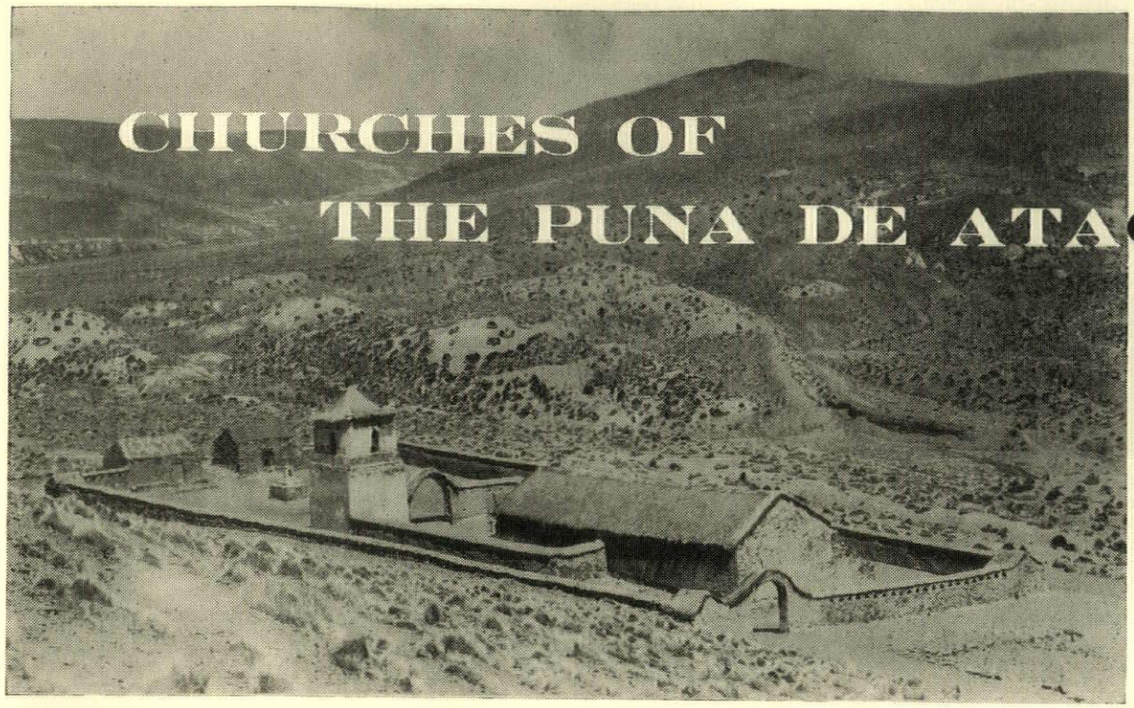
PAUL DONY

CHURCHES OF THE PUNA DE ATACAMA



If there is an architecture where the Lamp of Sacrifice (as Ruskin called it) burns bright, it must surely be that of the churches of the high and inhospitable Argentine face of the Andes, built and maintained with the utmost fortitude by both priests and laity. The twenty-odd that still survive are described and illustrated by Paul Dony in the article that begins below.

In 1542 Cristóbal Vaca de Castro, who assumed the government of Peru after the assassination of the Conqueror, Francisco Pizarro, decided to send out an overland expedition to the River Plate. At that time, the whole of the Inca empire, including the old capitals, Quito and Cuzco, had fallen into the hands of the Spaniards. Both Lima and Sucre (first known as La Plata or Charcas) had been founded, whereas at the other end Buenos Aires, tentatively established in 1536, had been abandoned for Asunción del Paraguay after five years, only to be refounded in 1580.

Two hundred well-trained men left Charcas under Diego de Rojas and started due south, following the ancient Inca road across the high plateau and accomplishing the historic first 'entrada' into the territory known as El Tucuman—to-day's north-western provinces of Argentina: Jujuy, Salta and Tucuman. Rojas died on the way, but some of his companions eventually reached the Paraná river.

After traversing the highly eroded table-land that stretches south of Potosí, the old trail (Camino de los Incas) runs along the eastern slopes of the Andes, descending into the plains somewhere west of the present city of Tucuman and, probably for reasons of safety, keeping clear of the Humahuaca Valley that was reconnoitred later and then became the main link between Bolivia and Argentina. The country—the Puna de Atacama—is bleak and desolate, windswept, stony and treeless, practically the only growth being a low, blackish shrub ('tola') and an occasional cereus. It is so thinly populated even now that, without coming across a single dwelling, one may cross distances of thirty miles such as the steppe appropriately named Campo de la Paciencia. Silence is impressive, and even the human voice loses its timbre owing to the high altitude.

The lower route, climbing northwards from Jujuy to La Quiaca through the Quebrada de Humahuaca, is sparsely dotted with tiny villages, but the effect of the scenery is enhanced by rugged and colourful mountain ranges closing in on both sides until the plateau is reached a short way off the Bolivian frontier.

The churches with which this brief survey is concerned, scattered along both routes, are all included within the former boundaries of the Argentine province of Jujuy. From south to north, over a distance of 180 miles, the altitude rises from 4,000 to 10,000 ft. The Tropic of Capricorn crosses this region more or less half way between the city of Jujuy and the northern boundary: the villages of Huacalera, on the valley road, and Susques, on the Inca highway, lie a couple of miles off it.

Franciscan and Dominican friars probably came down from Peru as early as 1550. A few Jesuits followed about 1585, joined later by a fresh group proceeding from Brazil. Founded in 1593, the city of San Salvador de Jujuy gradually became an important centre, second only to Salta, on the muleteers' trade route to the mining districts of Potosí. In his itinerary from Buenos Aires to Lima ('El Lazarillo de Ciegos Caminantes,' 1773) Concolorcorvo gives a vivid picture of the perils and amenities of the road and describes its many 'postas' or relays. Travel was active through the valley and it is easy therefore to account for the establishment and maintenance of small places of worship all along the Quebrada. Not so, though, in the Atacama desert. Nevertheless, not one of the lonely Andean villages along the Camino de los Incas was neglected and, in the course of two centuries, the padres, with uncommon fortitude, raised chapels and oratories wherever they could rely on their being taken care of by the dwellers, their own visits being few and far between. It should be borne in mind that, up to the present day, the number of parish churches in these provinces is exceedingly small and limited to the bigger centres; most of them are modern constructions, devoid of any architectural interest. The country chapels are visited once or twice a year by a priest, who then administers at one sitting all the sacraments that have been left in abeyance: baptisms, confessions, Holy Communion, marriages.

Distributed over an area three times as large as Wales, some twenty of the old structures still exist. Most of them were built in the eighteenth century, a few belong to the second half of the seventeenth. Probably one out of every three remained unknown to scholars and artists until thirty years ago. In most cases, documentary evidence is lacking as to their erection and the restorations they have undergone, so that any attempt at a chronological classification is impossible. Sometimes a wooden lintel or a bell has a date carved or embossed on it; this, however, is seldom an indication of the building's age, since such parts have often been re-used from one to another, owing to the difficulty of securing new ones for lack of raw material or transportation.

Utmost simplicity is the rule. Of necessity, without architects except the self-trained padres, and without skilled workmen, technical problems had to be reduced to a minimum. In fact, the first country chapels—many of them superseded later by somewhat more elaborate structures — were of the 'rancho' type: rough rectangular huts, only larger than those used as dwellings. Construction was elementary: adobe walls (up to 6 ft. thick), packed earth floor, double-slope roof with coupled rafters. A tiny lateral sacristy was added at the far end and a squat, square and bulky tower built on one side of the front. The plainest arrangement consisted of a narrow external staircase applied against the nave wall and leading up to the belfry. (Antofagasta de la Sierra, 7, now pertaining to the province of Catamarca.)

Whereas in New Mexico, where evangelization was massive, the friars at once started raising churches of ambitious size, designed to accommodate large crowds, the exceedingly thin population of the Andes provinces only required chapels of very modest proportions. But a more capacious and refined type slowly evolved out of the most primitive, though without ever losing its peculiar character of intimacy.

The single-nave plan was invariably adhered to and stress should be laid first on some negative features prevailing over the whole district: there is no indigenous or 'mestizo' decoration of any kind, there is no attempt ever to develop anything like a lateral façade, openings are few and small, bell-gables ('espadañas')—so abundant and graceful in the more southernly provinces—are absent, and so are outer galleries.

The first enrichment very likely was the choir-loft ('coro alto'), a wooden platform spanning the nave above the doorway and directly accessible from the belfry staircase. When the flanking tower rises higher, with a hollow core and an upper story to lodge the bells, it is commonly entered at ground level from the front and either a ladder or an inner staircase gives access to both the belfry and the choir-loft. Cochinoca and Coranzulí have twin towers. Isolated towers, as at Rosario de Coranzulí and Uquía (a Jesuit halting-place, one

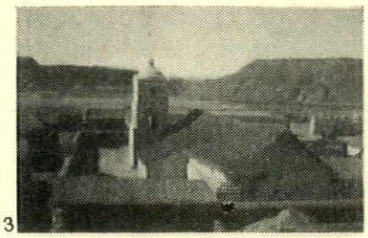
day's march from Jujuy) are exceptional. Sometimes the tower has three stories, the cubic masses of which, superposed and set back, are relieved by unsymmetrical fenestration; but they certainly are no improvement on the primitive, sturdy, overpowering bulk of the tower at Acoyte (8—now pertaining to the province of Salta).

Probably the most striking feature of these Andean churches is the 'soportal,' a double-sloped porch obtained by simply extending over the entrance the roof's framework,

1

which rests on the protruding nave-walls (Huacalera, 3; Tumbaya, Yavi, Susques, Yruya).

Either located in front of the church or surrounding it, the 'atrio' is a walled-in enclosure of large size. Though also to be found in some Quebrada villages (Uquía, Purmamarca), it is typical of the Altiplano or high plateau and is an element of great distinction and beauty. With its arched doorways and the simple but effective openwork decoration of its walls—the upper courses of adobe-bricks being placed obliquely on their smaller sides so as to form a row of pierced chevrons under the thatched covering—the 'atrio,' extending its smooth horizontals across the plain or against the arid, unshapely background of a nearby ridge, turns the sleepy village church into a harbour of peace and meditation. Sometimes (Rosario de Coranzuli, titlepiece) there is a double enclosure, sometimes an outer and an inner courtyard as in Casabindo, 2, where the outer, larger one has four cul-de-four altar stations engaged in its walls, two facing east and two facing west. These are not open chapels ('capillas abiertas' or 'posas') as in Mexico, where mass could be celebrated outdoors whenever the congregation exceeded the church's capacity. The Andean open-air altars are actually 'sitiales' wherein to rest the monstrance in which the Host is carried in procession: the French word 'reposoir' conveys the idea clearly. A perfect example is Susques, 3, 11, where four 'sitiales' are built against the walls in the corners of the square atrio enclosing the chapel. They are disposed in such a manner that every one of them faces the procession as it liturgically moves round the court in an anti-clockwise direction. Such an arrangement was traditional in Spanish cloisters and the monks, who would have met blank walls if they had walked clockwise, encountered decorated niches or



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fountains when moving in the other direction; very few examples have been preserved intact, but one is to be found in France in the fifteenth-century cloister of Cadouin (Dordogne).

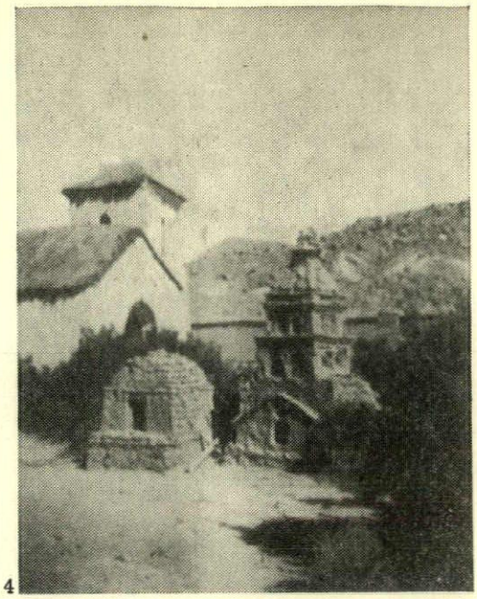
In some places the cemetery adjoins the atrio, elsewhere it is enclosed in it (Casabindo): diminutive clay monuments, 4, handmade and pathetic, are built on top of the tombs; crosses are placed on them on All Saints' Day, until which time they are kept within or near the church.

Interior ornaments and fittings are generally unassuming and of a poor artistic quality. Altars are often built in. Costly wooden retables (there is a fine one in Yavi) were neither easily obtainable nor advisable in these lonely parts: in case of aggression, the padres had to collect their valuables quickly and this was easier if they simply lay in niches cut in the wall; there was also less danger of fire.

Of exceptional interest are the magnificent pulpits in Jujuy cathedral and at Yavi (the Marquess of Tojo's seat). Though belonging both to the Cuzco school of woodcarving, the former is by far the more significant. Jacob's ladder is figured on the banisters and the Evangelists on the panels of the bowl, but curiously enough two of the attributes are inverted—St. Lucas appearing with the Lion, 10.

In Uquía and Casabindo, the walls of the nave are hung with late seventeenth-century paintings, quaintly representing winged angels dressed up and armed like musketeers, so-called 'ángeles caballeros,' frontispiece, page 302.

Clay and adobe are used where



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church furniture would be too expensive, as in the case of a low bench ('poyo') often running along the inner wall (Casabindo); touching in its plainness is a small confessional at Antofagasta de la Sierra, made out of a low seat between two rough adobe partitions, each pierced with a tiny latticed opening.

The giant cactus, or cereus ('cardón'), replaces timber in many instances: sawn into boards or logs, it yields an exceedingly useful and decorative material, somewhat soft and pulpy, whitish, with curious veins and innumerable rows of holes. Where wood is specially scarce, as in the Puna de Atacama, 'cardón' is turned into light beams, like those supporting the choir-loft at La Cueva, or rafters, doors and panels. Confessionals are built of it at Humahuaca, where a local 'indústria del cardón' is being developed. Both at Susques and at Casabindo the pulpit is made of this material: a whitewashed bowl for the former, a balustered balcony for the latter. A short distance from Humahuaca, the so-called Santa Bárbara Tower, now in utter neglect, has a door, 9, entirely made of cereus boards fastened by straps of undressed leather; when the author and his wife opened it, they had a surprise: a skull lay behind it. For centuries, raw leather has been used in the northern provinces instead of nails or wire to tie rafters and beams together; the straps are fastened when wet and will last for ever.

When Ruskin, a hundred years ago, wrote of the spirit that offers labour and time because they are precious, when he said that what matters is 'not the gift, but the giving,' he might have been thinking of the humble Andean sanctuaries. For, in spite of their poverty, all of them disclose some effort towards beauty, however awkward and modest. The string courses and attempted blind arcade at La Cueva, 5, possibly illustrate this better than any other example. But there are many more details, the charm of which is increased by the coarseness of the material and the 'naïveté' of the treatment: 'guardapolvos' or dripstones (6—Yavi, here designed to keep off dust instead of rain),

6

projecting beam-heads over a doorway (Santa Victoria), indented and carved lintels (Huacalera, Casabindo, Yavi). The 'Lamp of Sacrifice' is still burning high up in the Andes.

Such enrichments are all the more lovely as the materials employed are in fact reduced to three: clay (stone, with the barrel vault, has been used in Casabindo only), cereus and, for thatching, a kind of reed called 'totora.' Nature has nothing else to offer. Andean architecture is part of the soil and vigorously attached to it. The mud-coloured villages, crouching low under the icy winds, fiercely hold their own against the desert—the desert that starts right beyond the last house's backyard. But the minute a rancho or a chapel is abandoned, as soon as fails the care of man and the breath of life, it crumbles down and breaks up into dust.

Adobe walls, a thatched roof—possibly covered up with mud ('torta de barro')—a touch of whitewash here and there: the village merges completely into the surrounding scenery. How could one talk of style? In the Andes, architecture is ageless. And, as in the Arab world, there is only one style: the same ever. 'Celui de toujours,' said Jérôme et Jean Tharaud.

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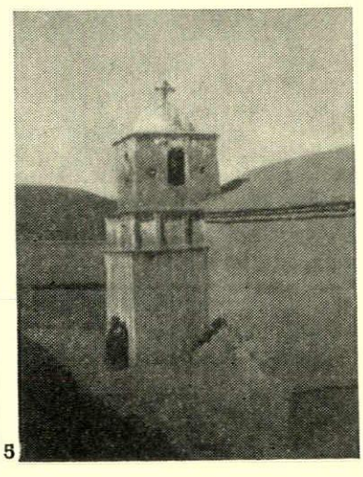

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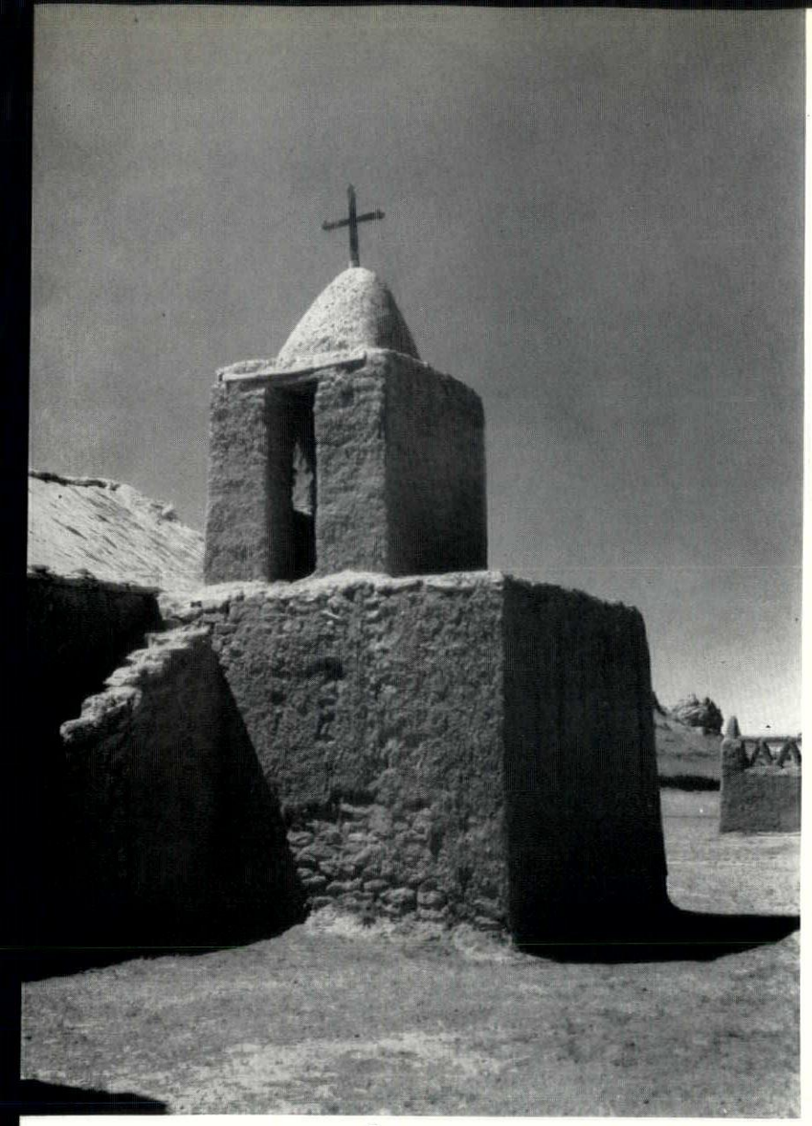

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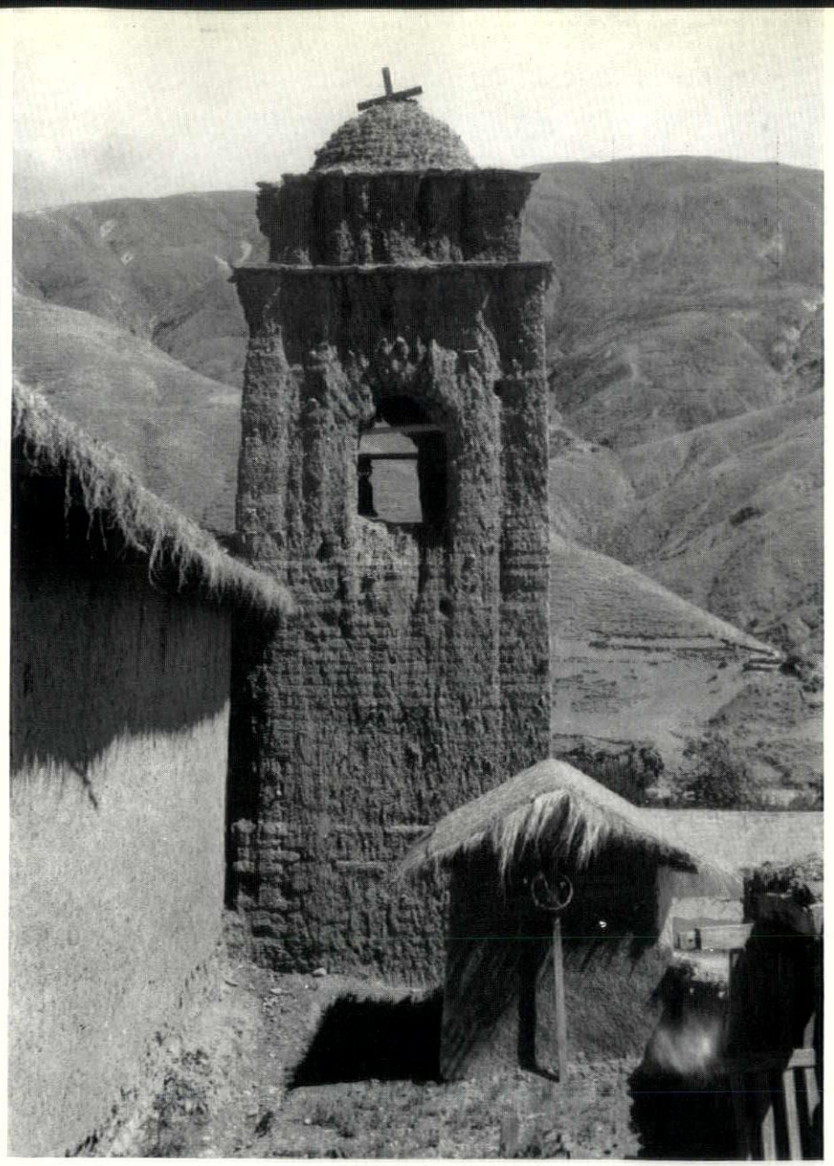

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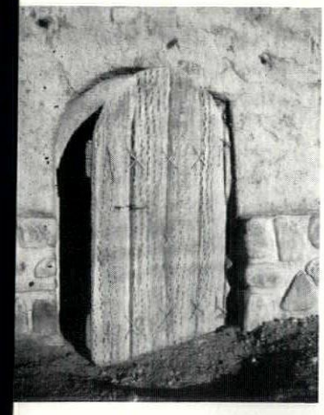

7, the belfry of Antofagasta de la Sierra, with an external staircase.
8, the tower at Acoyte in the province of Salta.
9, the door of the Santa Barbara Tower is made from boards of giant cactus fastened by leather straps.
10, the carved pulpit in Jujuy cathedral.
11, the bell tower at Susques.

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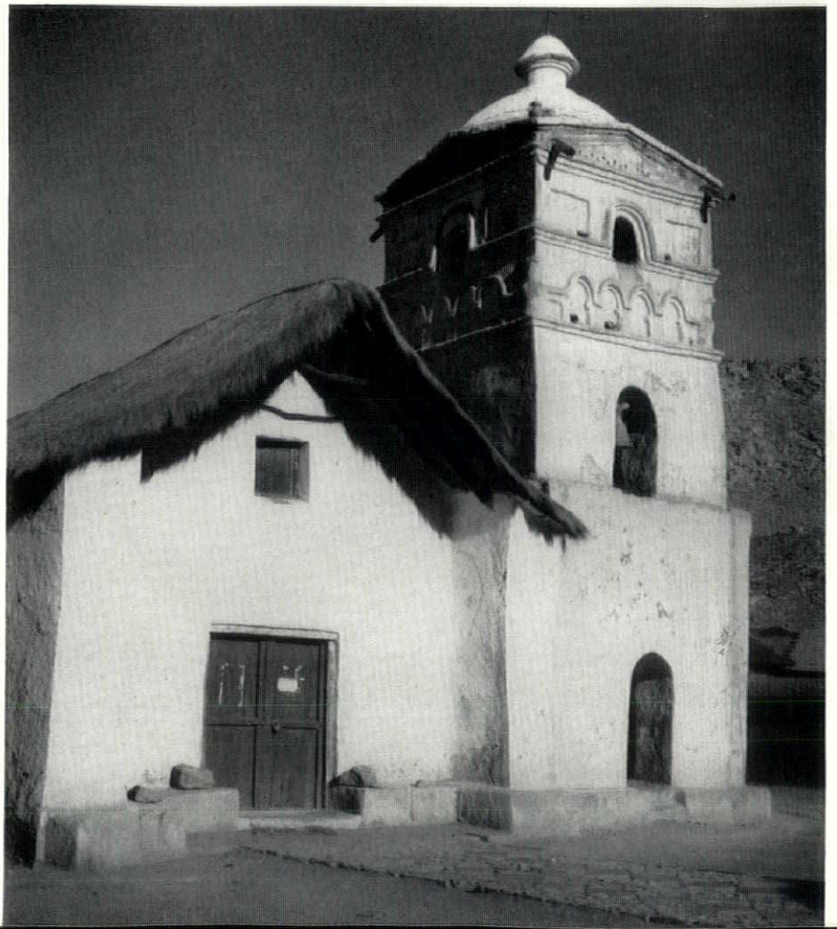


11

THREE SECONDARY SCHOOLS IN THE WEST MIDLANDS

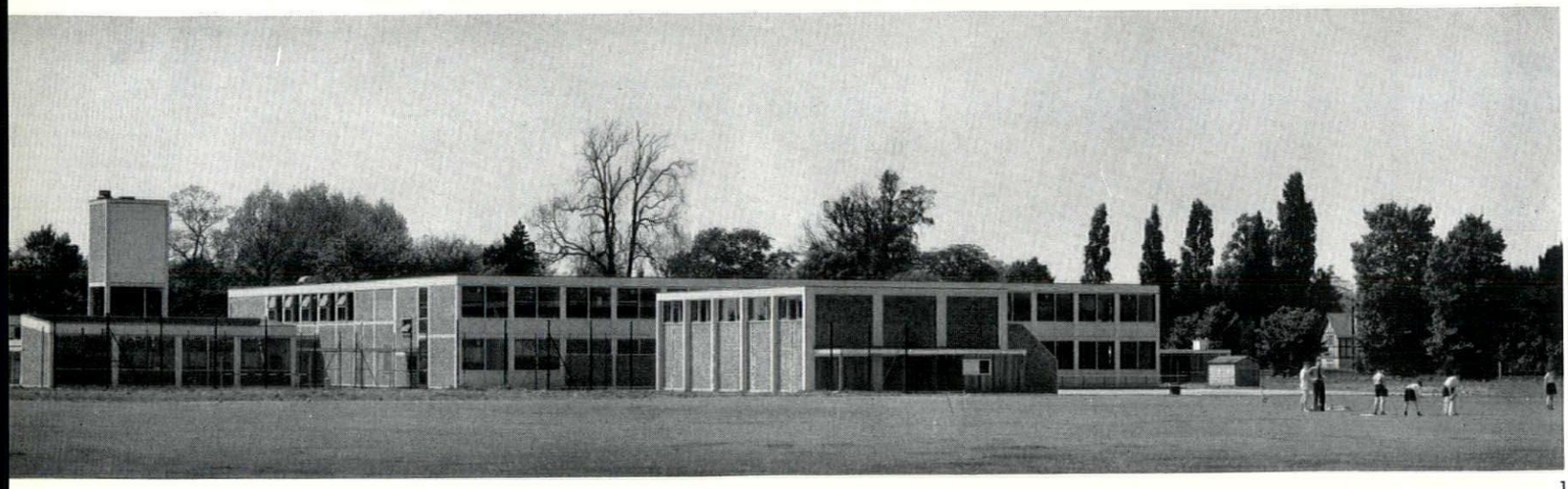
ARCHITECT: FREDERICK GIBBERD

These three schools, two in Worcestershire and one in Warwickshire, are all in rural surroundings and all three are comparatively small for secondary schools.

The two Worcestershire schools, at Kidderminster and Upton-on-Severn, have level sites and are compactly designed around garden courts, to leave the existing environment as undisturbed as possible. Both schools are two storeys high with the ancillary buildings, such as workshop blocks, single storey. In the larger of the two, at Kidderminster, the single storey blocks are arranged as projecting fingers around a main block.

The school at Henley-in-Arden has a much more irregular site, both in its contours and tree planting, and is, therefore, more irregular in plan form and silhouette. The central teaching block is three storeys high, to be in scale with the existing trees and to overlook a small valley to the east.

All three schools are frame structures. Upton-on-Severn has a steel frame with infilling panels on the ground floor of grey concrete blocks and rendered and painted panels at first floor level; the Kidderminster school has a reinforced concrete frame with timber framed panels of glass and vitreous enamelled sheet steel. The Henley-in-Arden school has a steel frame cased in concrete, painted black which, together with the red brick infilling walls, gives it an affinity with the local half-timber tradition.



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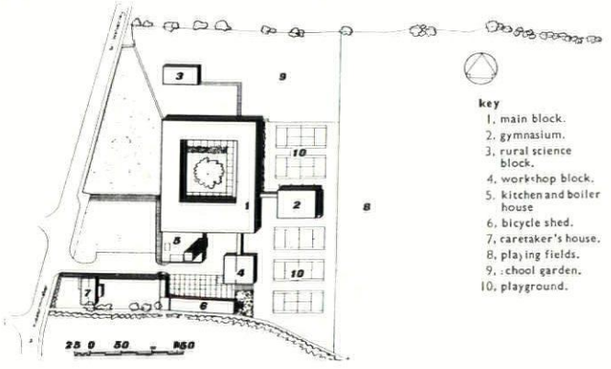
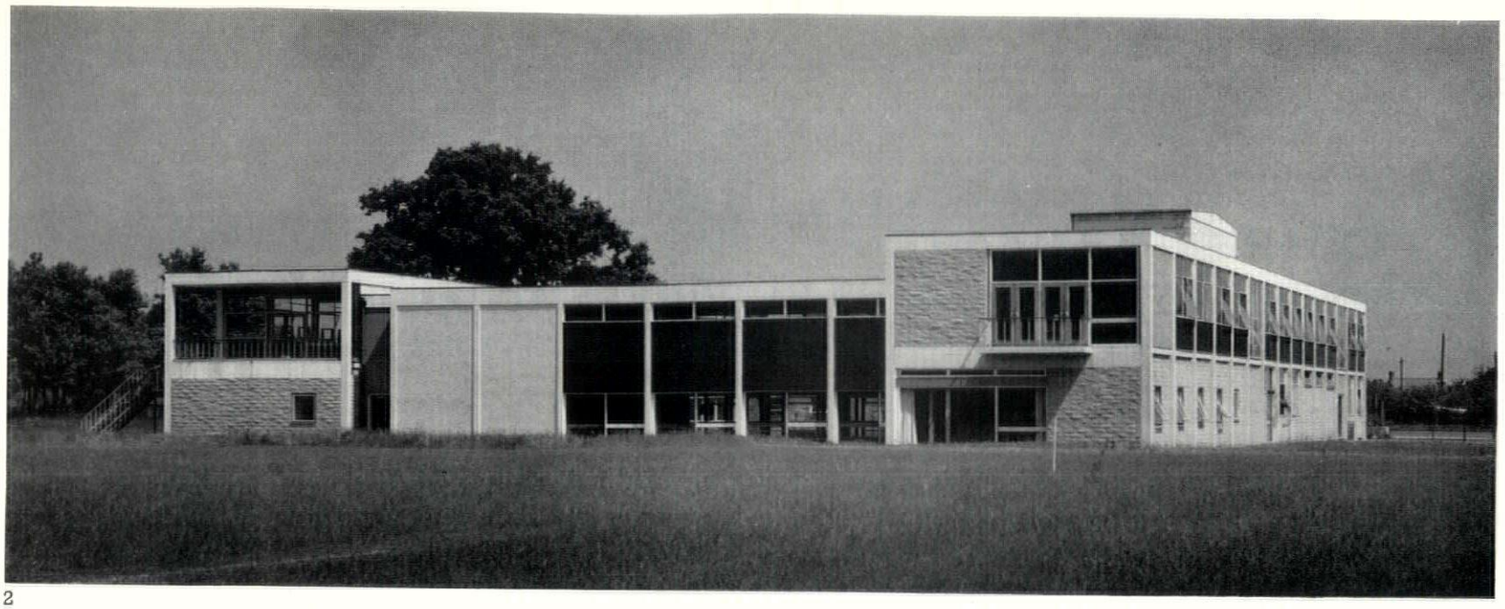
SIONHILL SCHOOL, KIDDERMINSTER

partner in charge: A. E. Kelsey



1, *a view from the playing fields on the east, showing the main block with the gymnasium in the centre and the workshops on the left.*



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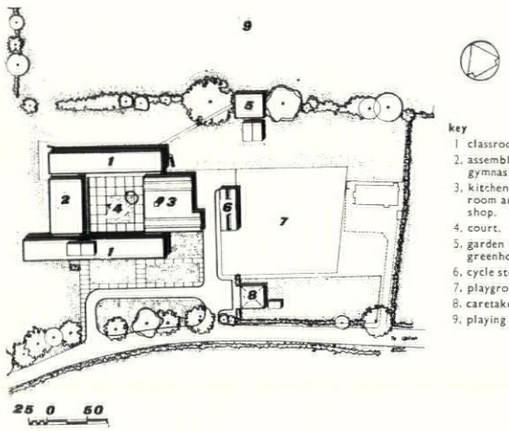


HIGH SCHOOL, HENLEY-IN-ARDEN

in association with: G. R. Barnsley, County Architect

associate architect: J. B. Forrest

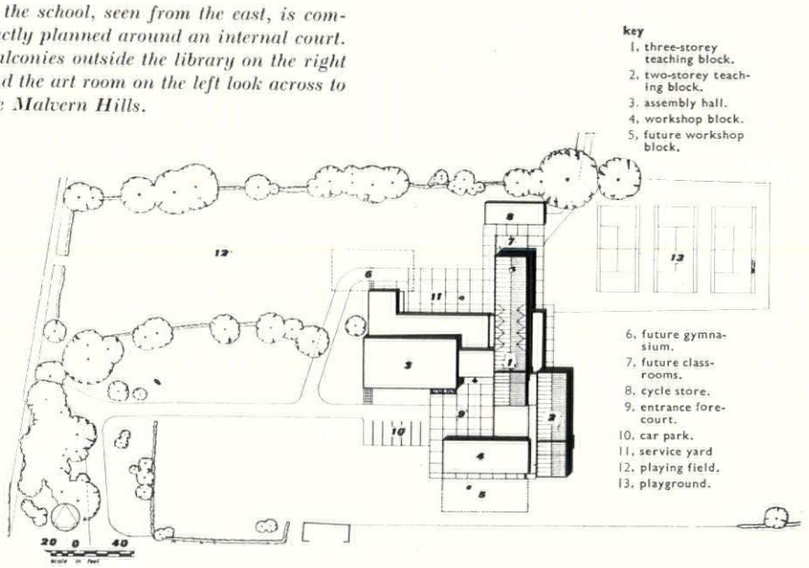
3, *the two and three storey teaching blocks overlooking the playing fields. The roofs continue the line of the surrounding trees.*

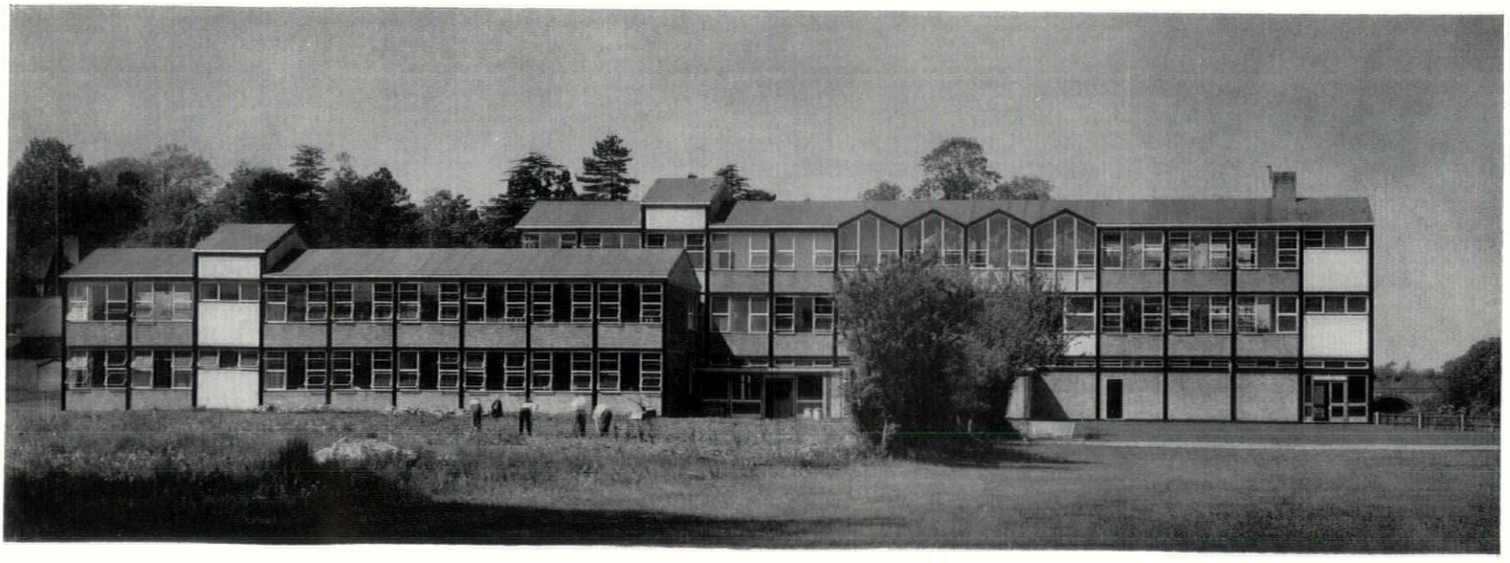
THE HILL SCHOOL, UPTON-ON-SEVERN

in association with: L. C. Lomas, County Architect

partner in charge: A. E. Kelsey

2, *the school, seen from the east, is compactly planned around an internal court. Balconies outside the library on the right and the art room on the left look across to the Malvern Hills.*





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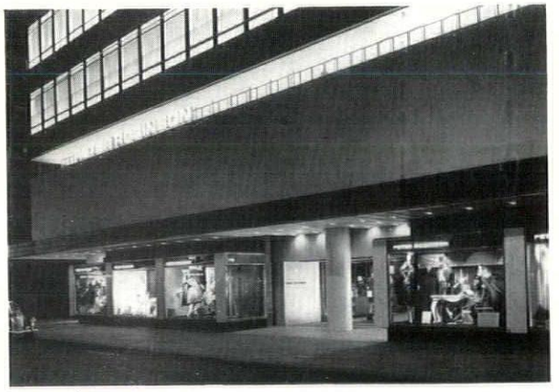
4, the Strand frontage, with the concrete screen wall to the first floor and recessed clerestory window above.
5, the main entrance at night: the screen wall is now dark with the clerestory window a bright strip above.
6, the front of the Royal Society of Arts behind the store is better seen than previously, as the screen wall is set farther away from the columns and provides a clean, undetailed foil.

DEPARTMENT STORE, STRAND, LONDON

ARCHITECT: DENYS LASDUN, OF FRY, DREW, DRAKE AND LASDUN

This is the first post-war building in England to make large-scale use of bronze cladding. The upper three floors of the main façade are entirely clad in pressed bronze sections and a bronze clad gutter is integrated with the cladding on each floor to minimize accumulation of dirt and bad weathering. The windows in the upper three floors have gold cellulosed frames. The main external feature is the first floor showroom, which has a reinforced concrete screen wall on three sides of the building, clad externally in reconstructed Portland stone. It incorporates a continuous clerestory window which is gear controlled and can be opened in lengths of 60 ft. in one operation, allowing the maximum flexibility internally for display purposes. An illuminated cantilevered canopy extends the whole length of the main frontage. Air doors are installed in the main entrance and circulation between trading floors is by means of escalators. The architects for the interior of the store are Design Research Unit.



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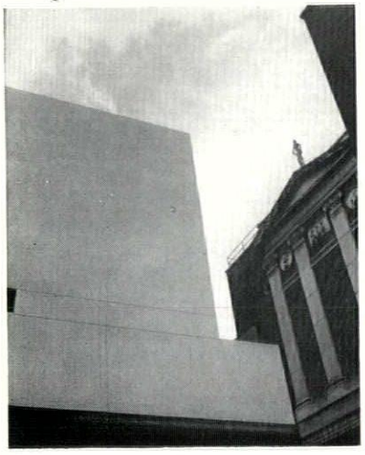

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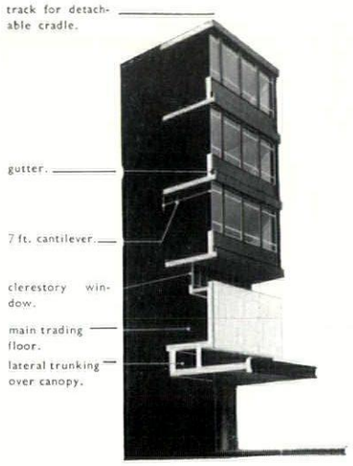
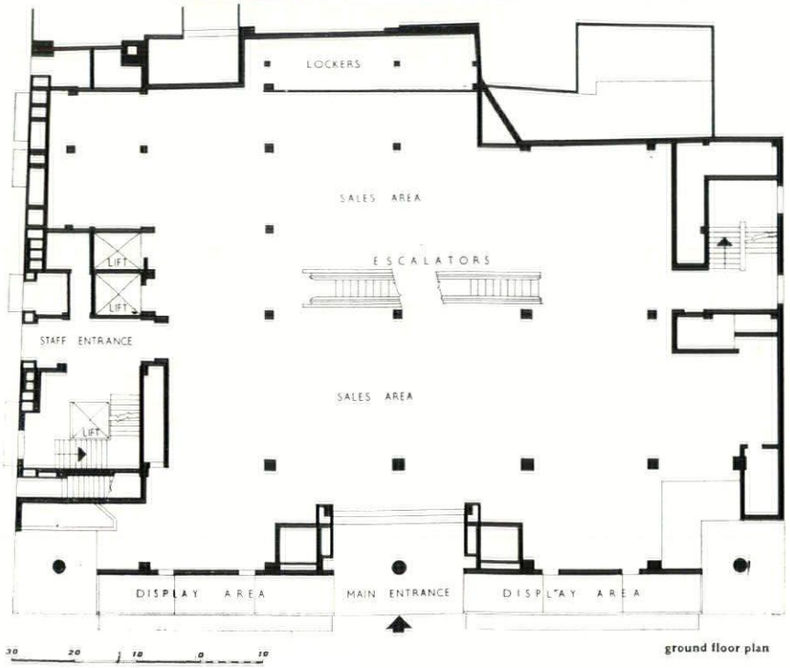


section through facade



ground floor plan

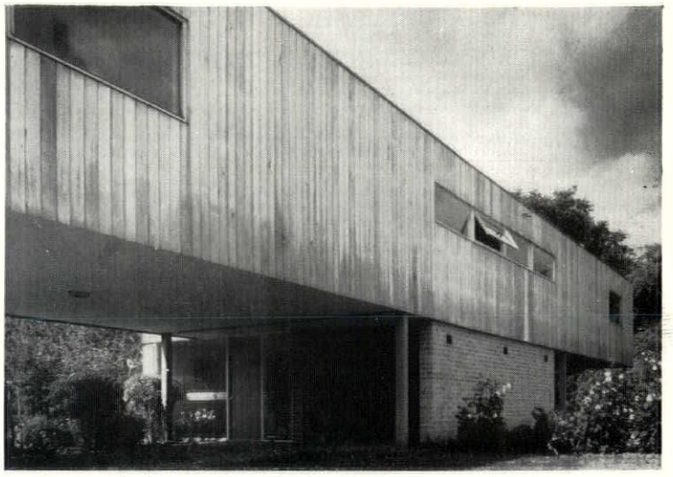
7

HOUSE AT MEDMENHAM, BUCKINGHAMSHIRE

ARCHITECT: JOHN FRYMAN

The site, near Marlow, has an open view to the east, with woodland to the west. The area is liable to be flooded and the main rooms have therefore been planned at first floor level. The whole house stands on four welded portal frames with eight welded box columns and perimeter steel beams. The foundations are of reinforced concrete, and apart from steel beams over the major window openings the framing terminates at first floor level. The walls are of 6 in. blocks and insulating plaster faced externally with Western Red cedar; the floors are softwood joists, with asbestos cement soffits, 4 in. of mineral wool and hardwood boarding. The roof is of compressed straw, three layer felt and chippings with hardboard or plaster linings. The bathroom is centrally placed to eliminate condensation, and all the plumbing is stacked in the centre of the house. The windows are purpose made with wood frames and metal inserts.

7, the west front, with the long windows to the bedrooms, study and living room.
8, looking under the house to the garage and entrance hall. Windows on this side are small and at high level.
9, the entrance hall with the overhanging living room beyond.



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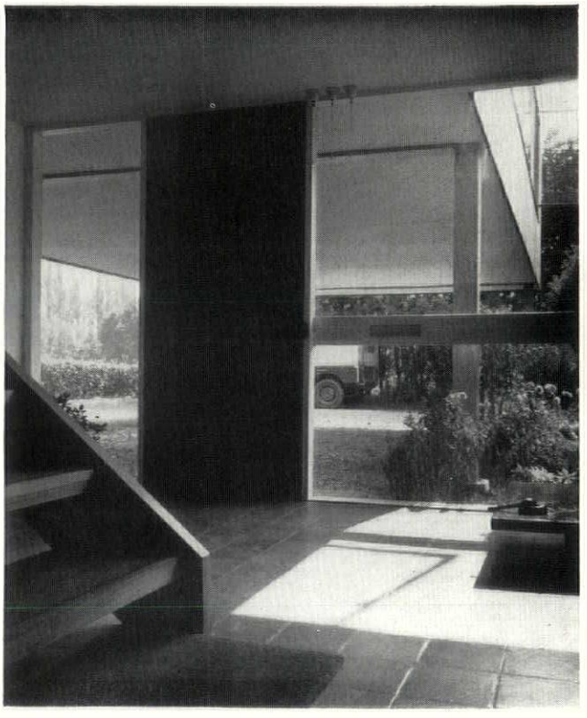

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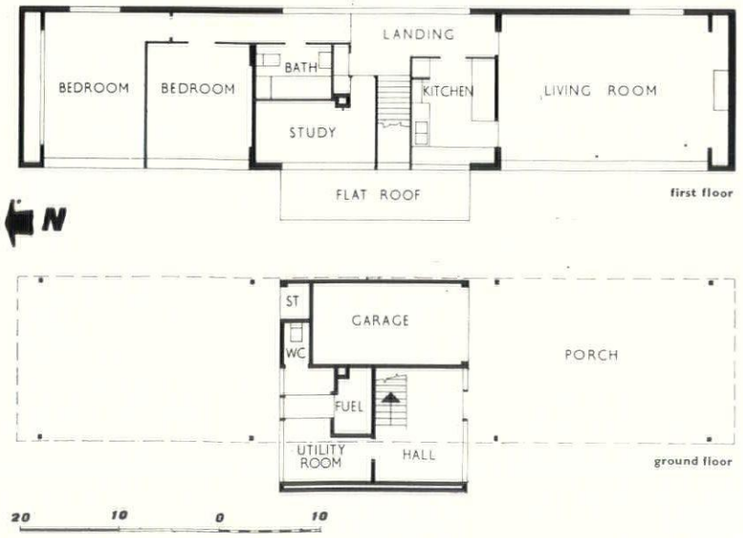


EXHIBITIONS

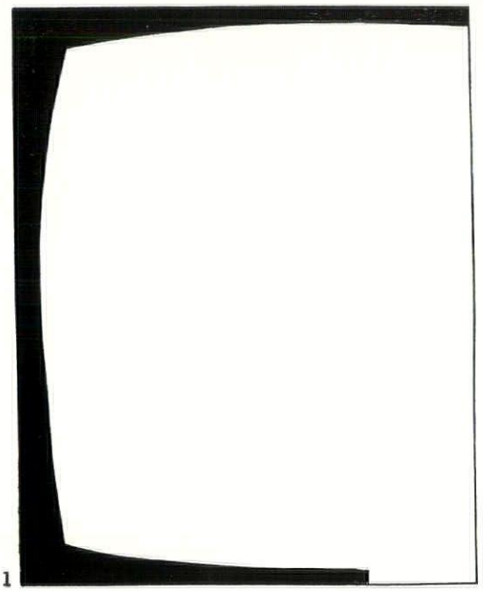
PAINTING AND SCULPTURE

The exhibition of paintings called 'Place,' held at the ICA and organized by Roger Coleman with the collaboration of three young English action painters, was an experiment in the mechanics of audience participation. It was all done with screens, and might have worked if the spectator had been given something interesting to look at while he was 'participating.' Coleman devised a neat ground plan for the screens, and short of using one of the pictures as a 'welcome' mat couldn't have done more to bring pictures and people together. The panels on which the pictures were painted were all 7 ft. high and came in two widths, 6 ft. and 4 ft. These panels were, with one exception, joined together to make two-, three- and four-fold screens, and, apart from those that zig-zagged out from the end walls, were painted on both sides. The screens were disposed diagonally across the gallery to form narrow alleys and small 'precincts,' and since the paintings started at the spectator's feet and rose well above his head he was hemmed-in by painted surfaces at almost every step on the walk. (The walls of the gallery were bare, and the bits that could be seen were painted black, as if in mock mourning for the passing of the old order.)

In the space at his disposal, the spectator remained too close to the panels to obtain an undistorted view of any work in its entirety, and it seems to have been taken for granted that this would automatically give him the sensation of being enveloped or invaded by the paintings. In practice, no such thing happened, and Coleman either left something out of his calculations or was let down by his collaborators. What was needed from the painters to make the scheme work was an expanding space job of the kind 'majestically demonstrated in Pollock's *Blue Poles*,' to quote from Coleman's guide to the exhibition; but it was quite evident that they thought Coleman's scheme would do the job for them, and that they expected their work to be given the same enveloping power as Pollock's as soon as it was stood against our faces.

If Coleman had had several hundred square feet of Pollock's drip painting to put on his screens the effect would probably have been unforgettable, but it would have been due almost entirely to the special nature of Pollock's work. It isn't merely the big canvas and the flat space concept, but the teeming repetitiveness, the long, flowing overlapping skeins of multi-coloured line that makes his drip paintings seem to surge through one when one goes close to them.

The large, flattish areas of colour in the panels provided by Coleman's three collaborators were too uneventful, and too uninteresting as texture, to serve his purpose. These young men—Robyn Denny, Ralph Rumney and Richard Smith—have already gained some reputation in *avant garde* circles. At present they seem to be intent on producing something analogous to the kind of music-making that's called 'minority pop'; I have the impression that in an arrogant sort of way they are deliberately spending their talent on something humbler than fine art! Coleman says that they have arrived at 'the significant aesthetic decision' to accept mass media 'as a legitimate body of reference,' and adds 'note Rumney's CinemaScope heads,' 1. These 'heads' are large, flat, two-colour



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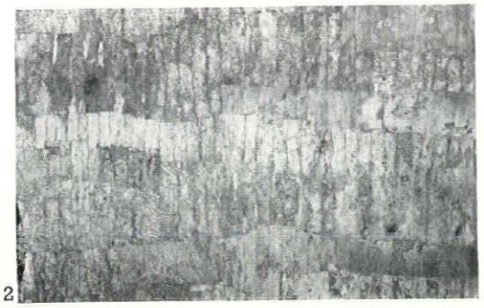
abstracts and are nice examples of what I mean by 'minority pop' painting. They are somewhere between 'fine art' and commercial entertainment, and are neither fine nor entertaining.

A number of Gwyther Irwin's extensive *collage* surfaces—shown recently at Gimpel Fils—possess qualities that would have lent success to Coleman's exercise in exhibition design. They have subtleties of tone and an all-over flicker and ripple of abstract minutiae that repays close examination.

Irwin makes his pictures out of posters that have been stripped off hoardings, and great soggy masses of this raw material are delivered to his studio a lorry load at a time. The backs of used posters serve his low-keyed, monochromatic sense of colour extremely well, and he only takes snippets from the printed side on the rare occasions when he feels the need to disturb his muted surfaces with a few bright accents. Whenever he fastens a single, perforated, broken-edged sheet of paper to a black background the effect puts one in mind of an ancient parchment with the inscriptions gone, and it looks too much like a boring museum item, but when he covers a support from edge to edge with small,



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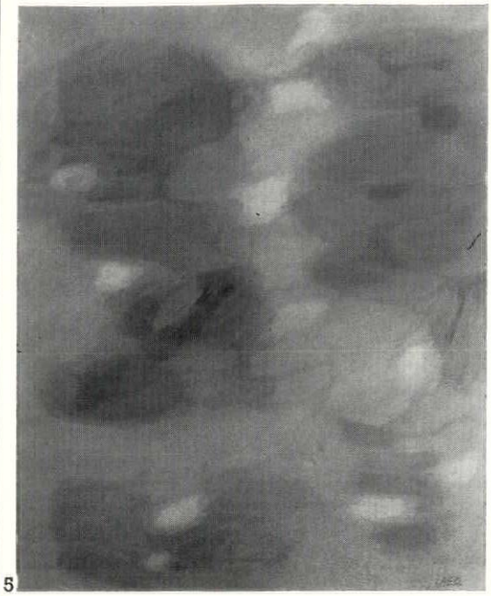
hand-torn pieces of paper closely related to one another in shape and tone his work acquires a hushed, meditative, faintly melancholy charm, and in such works as 'Lazy Man's Land,' 2, the sense of light and purity conveyed by his assemblages of greyish paper scarred and soiled by soot lines and stained by stale paste is a remarkable accomplishment.

Leon Kossoff, who has been exhibiting at the Beaux Arts, has almost the exactly opposite intention to Irwin. He turns paint into an unspeakably gross substance for the expression of a vision of mankind benighted by age, illness and sorrow, and dragging out his existence in cities irremediably soiled and hideous. I can't take it, but I'm prepared to believe that its desperate turgidity is a horrible form of

3

eloquence. His 'Building Site with St. Paul's,' 3, perhaps the most readable of his paintings, is one of two works which have been acquired by the Chrysler Museum.

The art of Bosch gave rise in the sixteenth century to a very flourishing school of imitators. They treated the naked human figure as an emblem of the degradation of physical life and were usually horribly complacent about it. Their pictures swarmed with sadistic, pornographic and scatological details which only got by because they were supposed to be listing the temptations of St. Anthony or the punishments which awaited sinners in hell. One of these pictures, an 'Inferno,' 4, attributed to Jan Mandyn, has found its way to the Arcade Gallery. There is a good deal of brutally comic grotesquerie to be discovered in the treatment being meted out to the tiny heaps of naked figures, but the painter is not particularly interested in devising new horrors and is rather unusually concerned with the plausible organization of his strip-like planes. The fantastic architecture of beer jugs and torture machines and the large raised platform on which one figure is being very slowly roasted catch the light from unseen fires and are coloured a delicious pink—though it occurs to me that the painter was probably trying to catch the colour of flayed human flesh.



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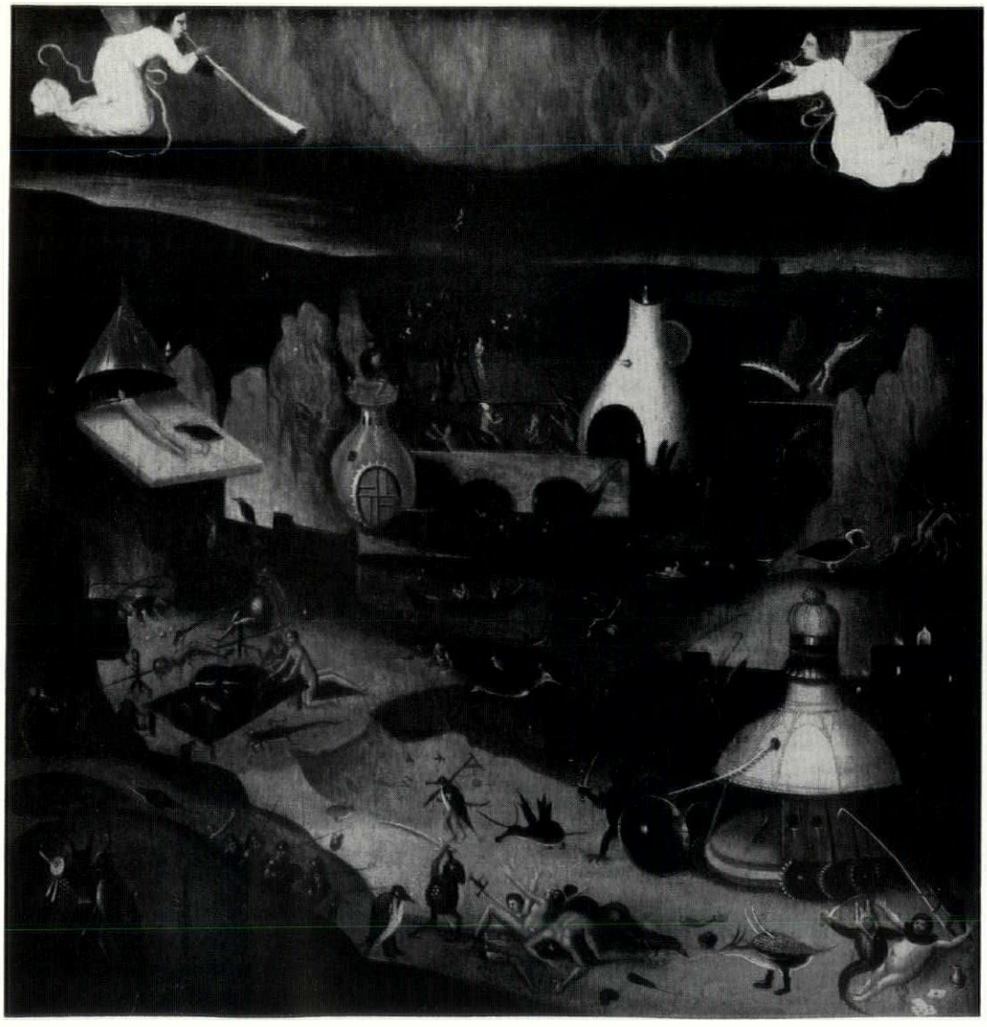
The Spanish painter Antonio Lago, whose work was shown for the first time in London in a recent mixed exhibition at Arthur Tooth & Sons, has, like Irwin, the impulse to convert his sense impressions into a luminous spaciousness. His abstracts are looser than Irwin's and the activity in them is a kind of fading and dissolving, 5. They have a cool sweetness which, due perhaps to the widespread influence of Sam Francis, is less rare in paintings of the abstract impressionist variety than in other contemporary work.

Sweetness is a quality rare enough in good contemporary sculpture, and for that matter has not often been considered a necessary virtue even in those periods when the gracefulness of the human figure was thought to be a not unworthy subject for the sculptor. The only distinguished figurative style that I can think of at the moment in which sweetness was persistently sought and captured was that evolved by the sculptors of the polychrome saints in Bavarian Rococo churches, and although these smiling, light-stepping, elegant figures are emblems of a belief in the resurrection of the body that we have had reluctantly to forsake, they are also potent images of the spirit reconciled with the flesh, the hope of which is still part of our make-up. Without aiming so high, and taking care to provide himself with an alibi which might pass as irony, Emilio Greco edges towards sweetness in his bronzes at Roland Browse and Delbanco. They are mostly of girls in bikinis, and it is a pleasant change from the nudges and winks of the organic abstraction to contemplate sculpture which at first sight appears to arise from a boldly



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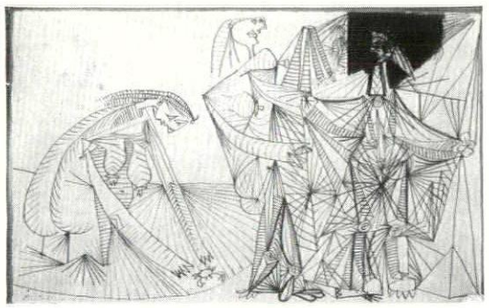
romantic response to the human body. But Greco's work is not quite the bold response that it seems to be. It is clear that he admires Modigliani, and has something of his spirit: like him, he is an eclectic, and his work contains brilliantly effective echoes of many sculptural styles, but by

comparison with Modigliani's paintings of the reclining nude, his figures are lacking in frankness and an inner core of conviction. Some aspects of his treatment seem to me to be an admission that the attributes of his model are clichés. He has bound her breasts out of existence, 6, as if in negative response to Hollywood and the brassiere trade and although he treats stomach and buttocks as compensatory felicities he uses tricks of posture that remind one of the fashion model. The skilfulness speaks for itself and the charm is inescapable, but true sweetness cannot survive the nervy game of blowing hot and cold.



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Greco also showed a group of drawings in hatched line which were clever but empty and I find it rather surprising that a sculptor whose figures recall Italian coastal resorts has not contributed in his drawings to the classic modern theme of figures on the beach. A splendid example by Picasso, 7, one of the great masters of the theme, has been on view at the Hanover Gallery. It belongs to a series of large pen drawings made in 1938. The crouching figure on the left is looking at a crab, and she looks with almost everything she's got. The inventiveness, based on intense observations, with which Picasso conveys her total absorption is both comic and profoundly touching. **Robert Melville**

HISTORY

CHARLES CLERICI: CRAFTSMAN IN SCAGLIOLA

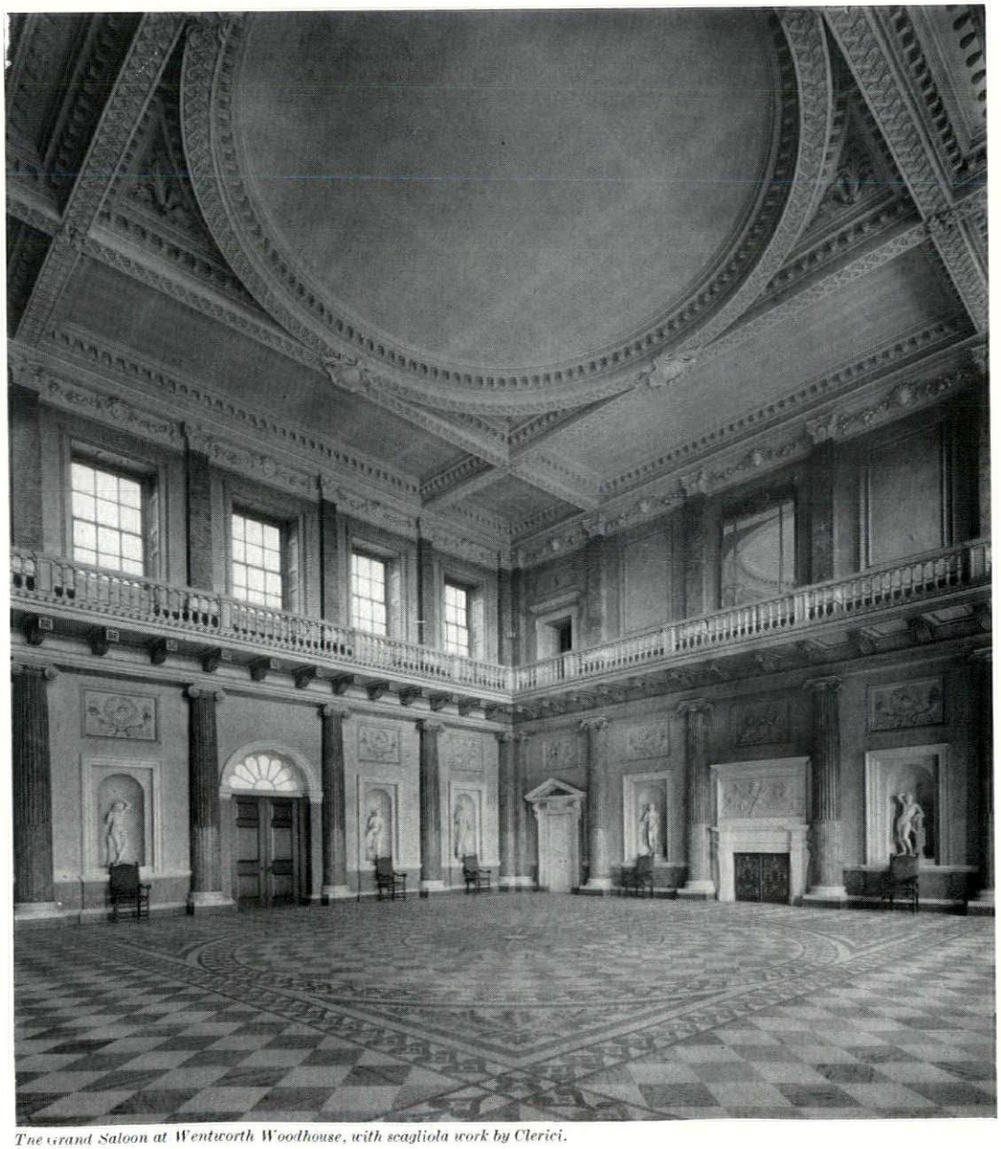
Palladianism, under the aegis of Lord Burlington, flourished in the first half of the eighteenth century. The desire for things Italian, which included stucco and plaster work, resulted in an influx of Italian workers into England. The plasterers are sometimes remembered by name—Altari, Bagutti, Varssali, Cortese . . . but the details of their lives are forgotten; the majority remain anonymous. They were not all mere stuccoists: some specialized in scagliola.

At one time a jealously guarded secret, scagliola is basically a fine plaster with additives—sometimes glue, albumen, even curdled milk, according to the particular theories of the craftsman, and, of course, colouring matter—which is planed and highly polished so that it looks like and is often indistinguishable from real marble.

Scagliola was introduced into this country—so it is said—by the architect James Wyatt, at the Pantheon, Oxford Street, in 1772. In fact, it was used by other architects before that date: just one illustration is Thoresby Park, in Nottinghamshire. The mansion, a seat of the Duke of Kingston, was designed by John Carr, of York, and finished in 1768. The Reverend William Bray, itinerant writer of 'A Tour into Derbyshire and Yorkshire,' was sufficiently impressed by the house to give a description in which he mentioned the scagliola. Of the central circular hall, he said 'The sides of this room are of the same composition as is used in the hall in Lord Rockingham's, resembling a yellow marble; on the sides are pillars and pilasters, mostly white but some resembling verd antique. The floor is of the same composition.' Alas, the mansion and building records have long since gone.

Fortunately, the muniments of Wentworth Woodhouse, former home of the Marquis of Rockingham, remain, and there, among the vast accumulation of documents, is a letter from John Carr, the architect, in which he mentions that the scagliola work at Thoresby Park was done by a Charles Clerici, assisted by Ely Crabtree, who later set up as a plasterer in Lendal, York. From the same muniments it has been possible to enlarge a little on the life of this hitherto unknown craftsman.

The year after the completion of Thoresby Park, Clerici appeared at the town house of the Marquis of Rockingham, in Grosvenor Square, where for a while he worked—and lived, since his bills for washing, liquor, the shoemaker and tailor



The Grand Saloon at Wentworth Woodhouse, with scagliola work by Clerici.

were all paid by the steward. In 1774, he again transferred to the Marquis's country seat at Wentworth Woodhouse, Yorkshire, where he had been in the 1760s, and there remained for many years, still working under Carr's direction.

His pay was a guinea a week in addition to his board and lodging—not bad remuneration when one considers that the steward, a man of considerable responsibility, received only £50 a year.

Arthur Young, the agriculturalist, visiting Wentworth Woodhouse, remarked that 'the most skilful hands from Italy are kept constantly employed in finishing this noble design.' He exaggerated, unless he referred only to Clerici's two hands, for no other Italians figure in any of the accounts.

Clerici did a variety of jobs: he made casts, pedestals, scagliola tables and put vine leaf insets in marble chimney pieces, but his principal work was in the Grand Saloon, illustrated on page 356. The niches, the eighteen fluted Ionic columns beneath the gallery, the eighteen Corinthian pilasters to the gallery, and the fine 'marble' floor, designed by Carr, are his epitaph: they are superb.

Clerici must often have wondered whether his time had been well spent whilst working in the great shell of a country house for the pleasure of one nobleman. But in 1789, seven years after he had left, the Saloon was really used in the manner which its scale justified. The occasion was the visit of the Prince of Wales. The park was crowded with 20,000 rejoicing subjects. Inside, a brilliant assembly thronged the Saloon and, lit by a vast chandelier of 200 tapers and festoons of 8,250 lamps, the work of Charles Clerici was there for all to admire.

Clerici's stay at Wentworth Woodhouse was fairly uneventful, except for the time when he put a maidservant in the family way. A curious situation then developed. Clerici, apparently, retired into the background and left the senior members of the household to worry—not over the girl's plight—but over what was to become of the yet unborn child: an infant at Wentworth Woodhouse would be highly inconvenient. They need not have concerned themselves: the young woman died—to their obvious relief.

For the rest, Clerici lived quietly: he was treated with respect and addressed as 'Mr.'; when he was sick, a woman was engaged at 6d. a day, to look after him and, very occasionally, small payments were made to him by the steward . . . for tea and sugar. Then, in August, 1782, his work finished, Clerici drew the whole of his salary for eight years 259 days—£475 10s. 10d.—and disappeared again into oblivion.

Robert Brian Wragg

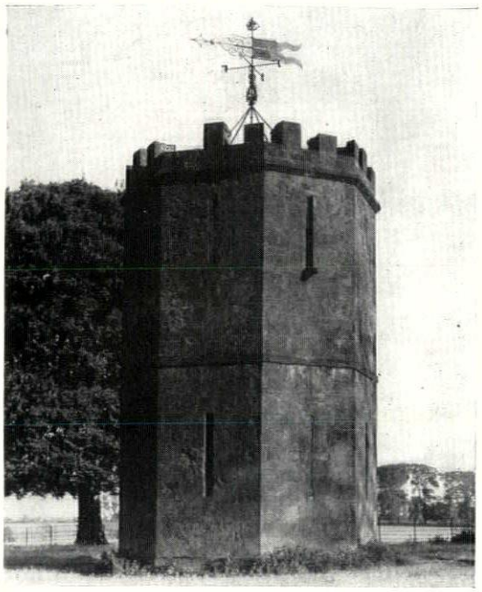
FUNCTIONAL TRADITION

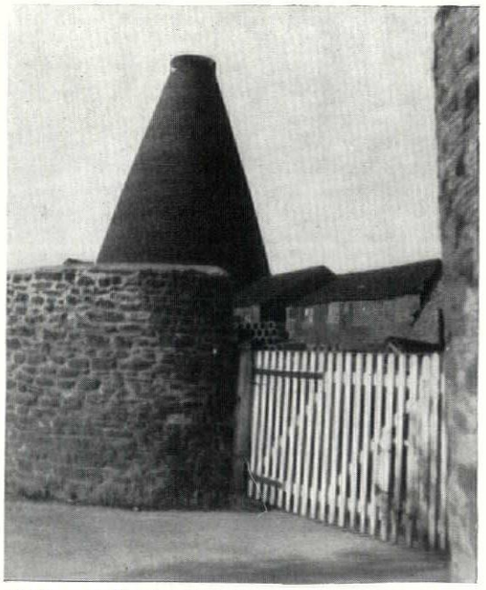
THE FUNCTIONAL FOLLY

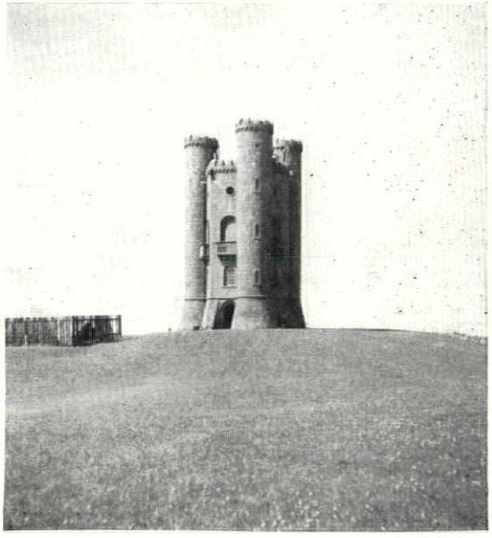
The Concise Oxford Dictionary *defines a folly as 'a costly structure (considered) useless.'* The definition has the advantage of conciseness, no doubt; but what led to the erection of nine out of ten of the buildings that are normally known as follies? Nothing else, surely, but the need to supply the landscape with a vertical feature in a particular spot.

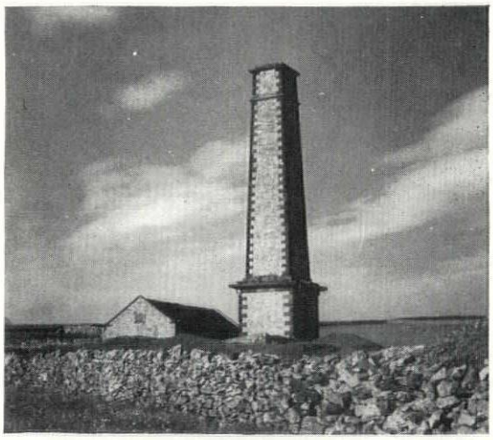
Accept this definition—which isn't really affected by the fact that many follies were designed to have romantic overtones as well—and you arrive at the conclusion that the 'uselessness' of follies for 'practical purposes' is beside the point; and indeed most eighteenth-century follies did serve some practical purpose, though that was of less importance than the aesthetic one. Buildings put up for utilitarian reasons may in terms of landscape be follies—in short, thus there are such things as functional follies. This is a truth of great pregnancy for us today; but before we turn to that let us examine a small collection of follies, functional and otherwise.

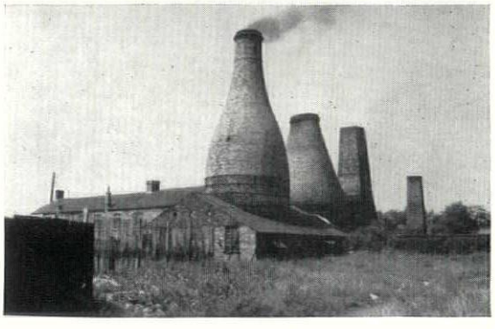
1 is at Wroxton, Oxfordshire, and dates from the middle of the eighteenth century; 2 stands on the edge of the Cotswolds, overlooking Broadway and the Vale of Evesham, and was built some fifty years later. No one, presumably, would deny the term 'folly' to either of these. With 4 we have our first functional folly, the chimney of a Derby-











1 | 2
3 | 4
5

1, *Wroxton, Oxfordshire.*
2, *Broadway.*
3, *Bridgwater, Somerset.*
4, *near Ashbourne, Derbyshire.*
5, *Stoke-on-Trent.*

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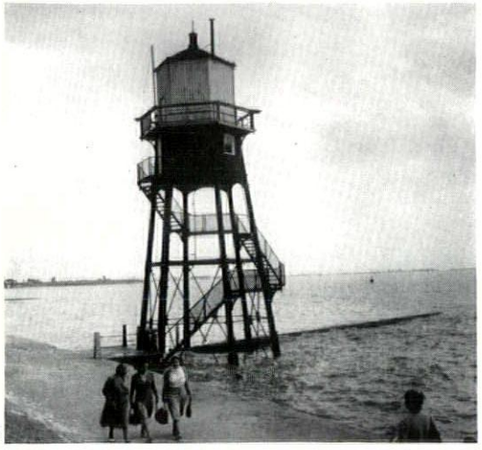

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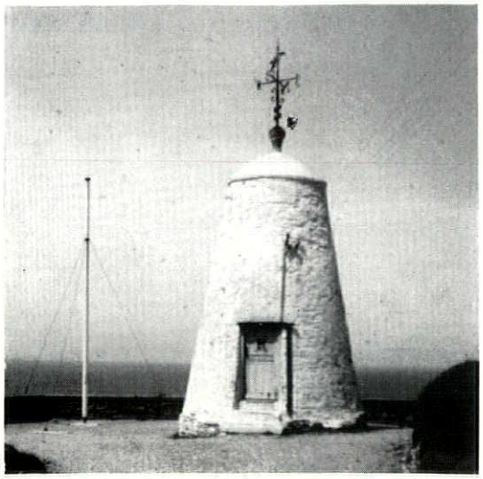

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6, *Alton, Derbyshire.* 7, *Dovercourt, near Harwich.*
8, *Portreath.* 9, *Burnham.*

shire mine. To make the strongest possible impact upon the eye a folly should have a certain strangeness of form, and this is what puts the kilns of the Potteries, three different varieties of which are seen (at Stoke-on-Trent) in 5, high up in the ranks of follydom; 3 shows a kiln folly of yet another shape, at Bridgwater in Somerset. Here it should be remarked that although the folly has been referred to as a landscape feature it is one of the many landscape features which have their place in townscape too; the lock-up at Alton, Derbyshire, 6, is an eighteenth-century functional folly in a village setting, and the tower at Harwich is a nineteenth-century one in a town. The last mentioned might also be counted among the functional follies of the coast, a large class whose practical function comes very close to their visual function as follies, it being their business to be seen or to provide elevated places for seeing from—or more often both at once. 8, from Portreath, shows a charming early example of this class, 9 and 7 later ones at Burnham and Dovercourt (near Harwich) respectively.

10, *Harwich.*

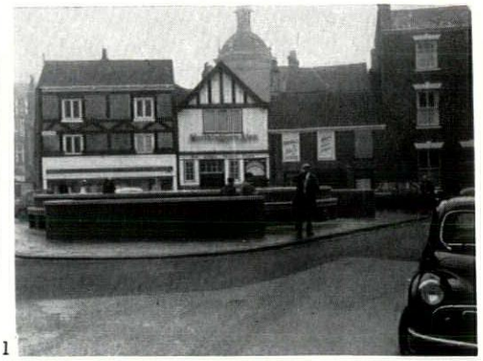
The importance of our discovery of the functional folly should by now be obvious; it is simply this, that in times when the means of erecting follies in the old sense are lacking we really have no need to do so: there are scores of utilitarian structures which can do everything the non-functional folly of the eighteenth century did. Only of course they must be properly sited; and so we come back once more to the necessity of establishing the same kind of visual control over our *whole* surroundings as the Georgian landowner had over his relatively narrow acres.

Marcus Whiffen

COUNTER-ATTACK

GRIMSBY, LINCS.

There used to be a small open space immediately west of the centre of Grimsby called the Bull Ring. For some time it was used as a car park and at least saved a few cars from adding to the congestion. Or it might have made a pleasant little space for pausing in shopping. However, when the public lavatories in the Old Market Place were pulled down, the Borough Council decided that they would find a good new home in the Bull Ring. The only question was: should they be built above ground and so save money or underground and so save space? After much debate, the space-saving plan was adopted, and digging began. Things didn't quite run smoothly, but eventually the work was completed: only, somehow they weren't quite as underground as expected; and with all the money spent on expensive excavation, they stick up about three feet



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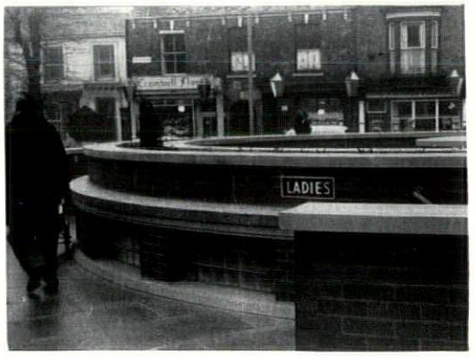


2

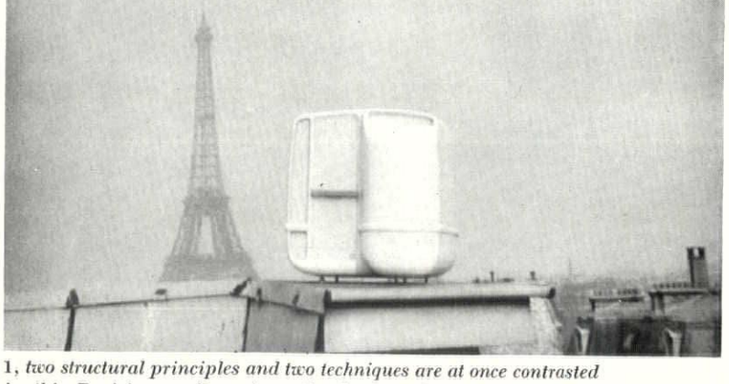
above the pavement level, 1. The space is destroyed as effectively as if they had been built to full height. Presumably as a bit of face-saving, the builders or the Council have given the top a bit of fancy stone-work, and even planted shrubs, 2. The whole little square has been sent packing.

THE RIVER ROE, CO. DERRY, N. IRELAND

Between Dungiven and Limavady there used to be a most beautiful stretch of the River Roe. Its banks were covered with fine trees. Now the trees are down, after some smart eyewash out of Belfast had bullied the local farmers into saying yes. The ostensible reason was that new floodbanks should be built; the real one perhaps to find some new way of coping with a bit of the unemployment problem. Unfortunately the Belfast people don't seem to have realized that the trees were there for a reason. Three main results can be expected from this little bit of ignorant interference. Firstly (in time), a beautiful stretch of the river has been made commonplace. Secondly, in a few years time the river, which was rich in salmon, will be more or less empty: the river will be overfished (as the fish will be easy to catch), and there are now no shady places which the salmon need for spawning. Thirdly, not very long hence the new floodbanks will have to be replaced, because there are now no longer any big roots to hold them in place. All this: and yet all that was needed was the repair of the old banks.

Andor Gomme

SKILL



1, *two structural principles and two techniques are at once contrasted in this Parisian rooftop view—the flowing shell structure of the model of a mobile hotel unit, seen also in* 10, *with the graduated build-up of linear struts in the Eiffel Tower and the predetermined, factory produced connections of the plastic mouldings with the butchered, site fitted, flashings of the Mansard roof. Both aspects need to be considered when designing with polyester fibreglass.*

POLYESTER FIBREGLASS *by*

Michael Brawne

It is as a corrugated rooflight that polyester fibreglass has so far made its greatest impact in building. This, however, hardly begins to explore the architectural possibilities inherent in this plastic which, like reinforced concrete, is the combination of two complementary materials: polyester resin and glass fibre reinforcement. Its great potential may in fact lie in its ability to be formed into complex, three-dimensional structures. This article therefore emphasizes the method of manufacture and the characteristics of the material and does not attempt to provide an exhaustive listing of current uses.

Polyester fibreglass has, more than any other plastic, caught the architectural imagination. It has done so presumably since it alone amongst the plastics can at present produce a structural and space enclosing element. The small-scale uses of polyester fibreglass are far from insignificant, yet it is its specific ability to produce a moulded three-dimensional enclosure which is of special interest and which may in fact be indicative of both a new technology and a new aesthetic.

Polyester resin is chemically a co-polymer of the esters. These are produced by the reaction of organic acids and alcohol and are very similar to the alkyds used in paint. Polymerization involves the arrangement of the molecular structure of a material so that it will acquire certain known and previously determined properties. It is this 'manhandling' of the chemistry which is perhaps the most important technological innovation of the post-war years and which is in the very near future likely to produce a whole series of new materials. The polyesters belong to the thermosetting group of plastics; they do not, that is to say, return to their original state when heated. They 'set,' become rigid, on being mixed with a catalyst, normally a peroxide, and an accelerator. These start a chemical reaction in which heat is given off.

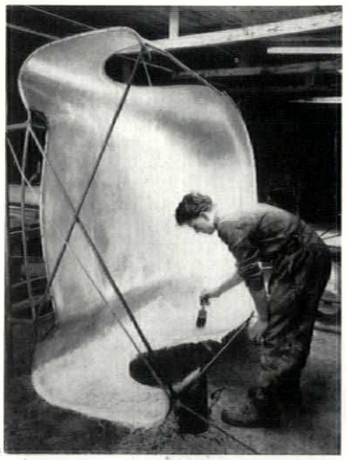
In order that this resinous material may be reinforced, in particular for it to acquire tensile strength, glass fibre is added while the resin is still liquid. The glass fibre may take a number of forms:

(*a*) it may be a loose mass of chopped strands which, as the fibres are short and in random directions, has relatively low tensile strength but equal strength in all directions;

(*b*) it may be a loosely combined mat of fibres in which the fibres lie in random directions and which has tensile strength greater than that of chopped strands, or

(*c*) it may be fabric—cloth woven in a number of weaves—where the threads are spun glass fibre; this has the greatest tensile strength due to the known orderly and continuous arrangement of the reinforcing material but is also its most expensive form.

The characteristics of the material which have furthered its use in building are its ability to be made into a weather-resistant structural element of varying degrees of opaqueness and variety of colour. Its considerable strength, equal or greater than that of aluminium, is almost entirely due to the glass reinforcement. Other materials can of course be used to give strength—cotton fabric, asbestos, expanded metal—but few seem to be as useful as the various forms of glass fibre. It is also of course only with glass reinforcing that highly translucent products can be made; light transmission can be as great as 85 per cent. The selection of the appropriate type

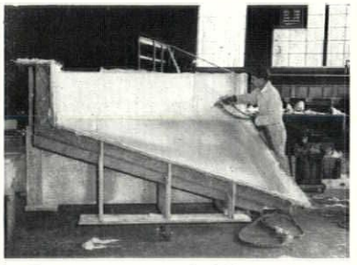


2, *a glass fibre mat which will form part of a car body is being impregnated with resin.*

of glass fibre is therefore particularly important. Its influence on the characteristics of the material is summarized in Table 1.

Whichever type is selected, it must, if it is to be used out-of-doors or in hot humid conditions, be made of alkali-free filament. This is the more expensive version and specifications of fibreglass products should make it clear which kind is being used. In addition to this the filaments ought to be treated with a silane emulsion so that the glass fibres bond with the polyester resin. Weathering depends on this key.

The weathering is also dependent on a definite thickness of resin lying on the finished surface of the product. Very thin mats of fibreglass are produced which are used as a kind of finishing coat and which absorb and hold the resin. These should certainly be specified in any component used



3, *the same process as in* 2 *but mechanized; compressed air sprays the resin on to the glass cloth reinforcing.*

externally. In extremely sulphurous atmospheres there may still be a leaching out of the resin and the suggestion has been made that for such situations polyester fibreglass could be coated with a layer of p.v.c. or acrylic.

The greatest drawbacks to the use of fibreglass reinforced plastic are its price and fire resistance. Both resin and glass fibre are products needing considerable manufacturing resources. There are three producers of glass fibre in this country, two of whom are in fact only nominally in the field, and there are about five chemical firms marketing polyester resins. Their prices are to quite a large extent dependent on their capacity and the likely demand. Labour costs on the finished component are also often high since few building elements, with the possible exception of corrugated roofing sheets, have yet been produced under a fully mechanized system. The price may, however, be lowered with greater demand; in the USA, for example, where there is a larger market and rather greater competition between the producers of the raw materials, fibreglass articles are often considerably cheaper than in this country.

Fire resistance is perhaps the more serious problem. It is possible to add chemicals to the resin which will make the laminate self-extinguishing; it will only burn while in contact with a flame. It is interesting that despite this relatively poor fire resistance, a glass fibre reinforced plastic was used for the casing of some capsules shot into outer space and recovered after re-entry. It would seem that what in fact happened was that during the short intense exposure, the surface carbonized and this new layer provided

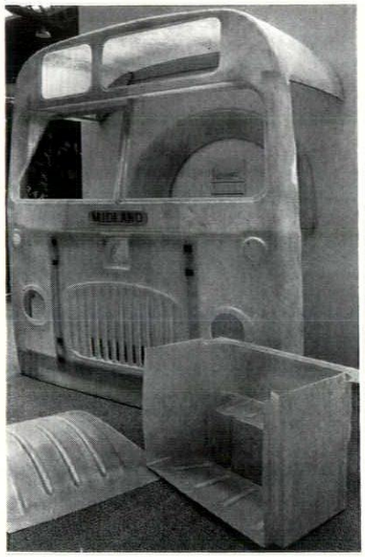
table 1: strength of polyester fibreglass and aluminium

	rod with uni-directional rovings	plain weave cloth laminate	chopped strand moulding	aluminium
tensile strength 1,000 p.s.i.	120	38	26	10-35
compressive strength 1,000 p.s.i.	70	30	25	10-15
flexural strength 1,000 p.s.i.	150	48	32	10-25
impact strength (edge unnotched) ft-lb/in.	70	22	20	20

a kind of protective coating. It was able to do so because of the very low thermal conductivity of the material, about one seven hundredth that of aluminium. Some recent tests on corrugated roof lights have apparently shown very similar results.

The important weakness of the self-extinguishing additive is, however, that it may considerably lower weather resistance and be responsible for discoloration. There is also, in any case, appreciable loss of the self-extinguishing effect after prolonged exposure and the LCC, for example, makes no distinction between the two grades. It would seem that, at present at any rate, the self-extinguishing form should only be used internally, away from ultra-violet radiation, in places where it is likely to come into contact with cigarettes, an electrical short circuit or similar hazard.

Until very recently polyester fibreglass products were made more often by amateur and professional enthusiasts in disused garages than as part of a co-ordinated industrial process. This was due to the fact



4, *these bus components are economical in polyester fibreglass since the number required is relatively small and the shapes complex.*

that the simplest method of manufacture, the hand lay-up process, requires little capital and hardly any equipment since no pressure is needed to produce a moulding. This basic process consists of a few simple stages: a form of plaster or wood is coated with a parting compound (in the same way that shuttering is oiled), the resin is mixed with the accelerator to start the chemical reaction going, pigment and filler may also be added at this stage, some of this glutinous mass is then spread over the mould and the reinforcing material added. Further layers of reinforcing and resin are built up until the right thickness is achieved. The material then cures at room temperature. The resultant product is a hard tough shell, smooth on the mould side, rough on the other.

Various attempts have been made to mechanize this particular process. Instead of placing the resin by hand it can be sprayed on and equipment has been used in which polyester is sprayed from one nozzle, the accelerator from another and they combine to react chemically on the reinforcing. In addition to this, chopped-up strands of glass fibre may be blown on by a third nozzle so that the three components of the

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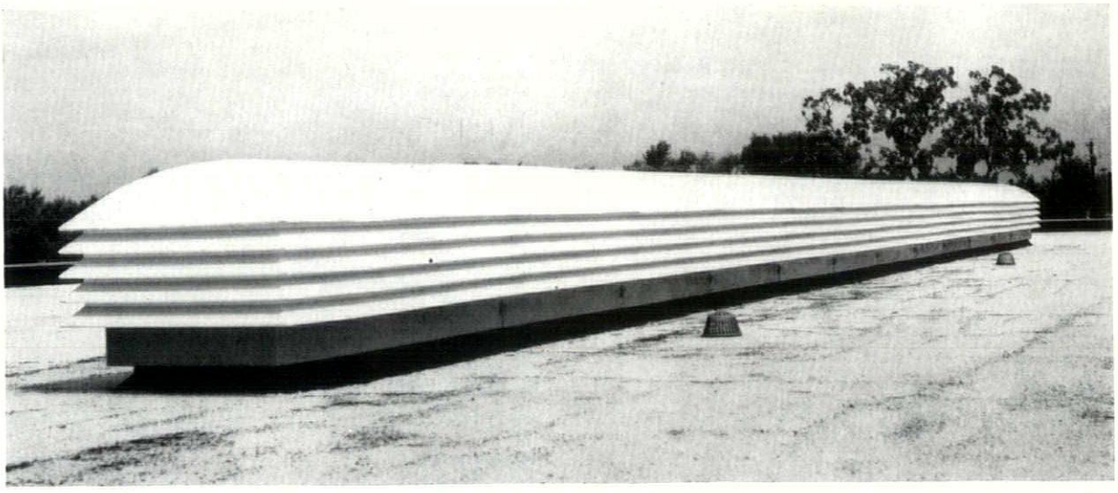

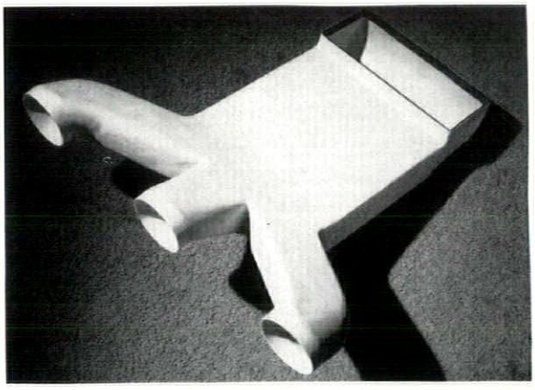

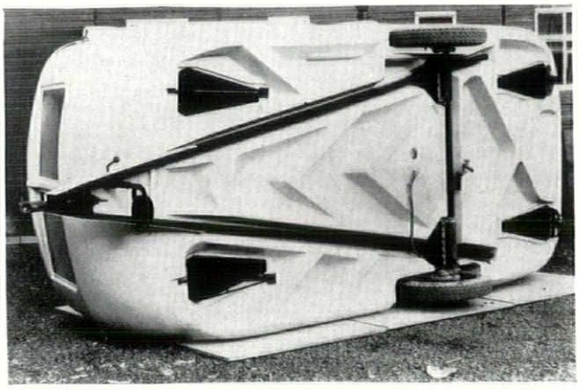

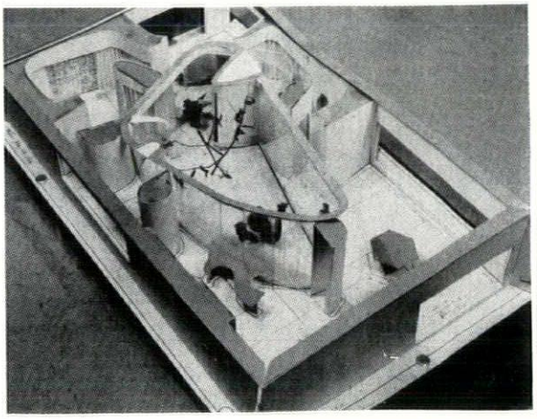

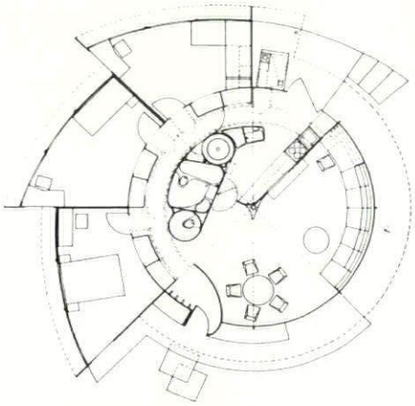

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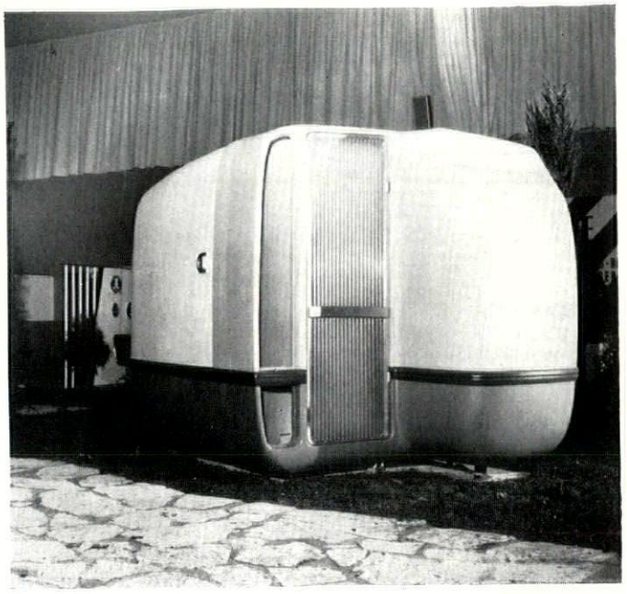
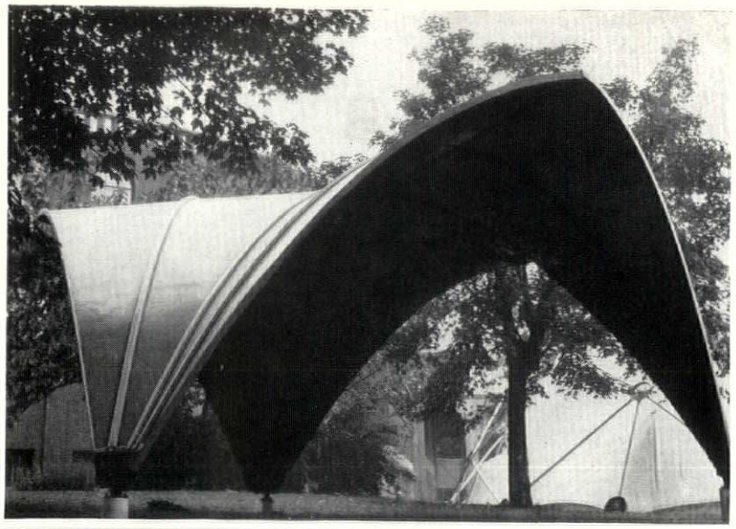
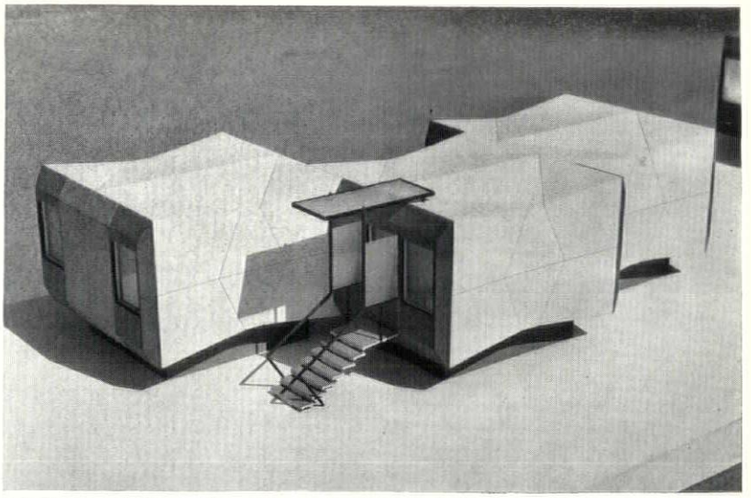
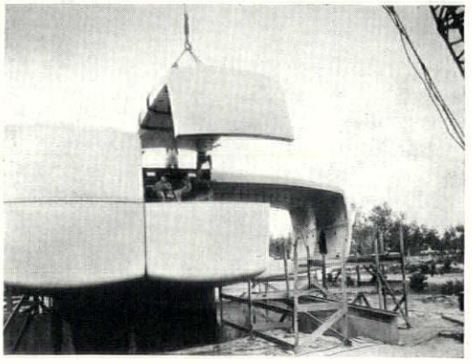
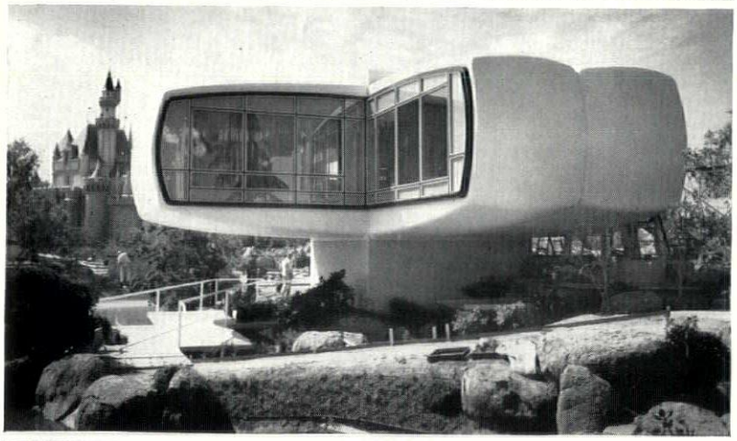
5, *a moulded roof top monitor at the Monsanto laboratories in St. Louis which is not attacked by corrosive chemical fumes.*
6, *surface continuity and smooth flow can be achieved in quite intricate forms such as this ducting of the Viscount 800.*
7, *the underside of a caravan chassis designed to contain the wheels and metal legs and which achieves rigidity through the depth necessary to house these parts.*
8, *House '1980' at the 1956 Ideal Home Exhibition by Alison and Peter Smithson was made of fibrous plaster but clearly illustrates the aesthetic of reinforced plastics.*
9, *a spiral house designed by Coulon, Magnant and Schein for the French magazine 'Elle' in 1956. It exhibits, particularly in the bathroom area, many of the forms also found in the Smithsons' house of the same year. These shapes are made possible by the simplicity of the hand lay-up process.*
10, *a prototype hotel cabin also by Coulon, Magnant and Schein which was part of a study sponsored by the French Hotel Federation. The cabin consists of two upper and two lower moulds and includes a bathroom in the bulge to the right of the door. Four cabins can be loaded on to an articulated trailer.*











11, *three joined shells at the 1957 Triennale by Robert Menghi built up from polyester fibreglass skins on a honeycomb core.*
12, *prefabricated fibreglass house units designed by Cesare Pea. The faceted wall units which include heating elements are also intended as cladding for multi-storey buildings. These units have something of the character of Howell and Killick's project for Churchill College.*
13, *diamond shaped polyester fibreglass hyperbolic paraboloids used with a tubular frame for a factory in Texas.*
14, *a complete bathroom unit of polyester fibreglass mouldings with plumbing connections installed in the factory. It was designed by Alberto Roselli and is a development (in metal) of the ideas of Buckminster Fuller.*

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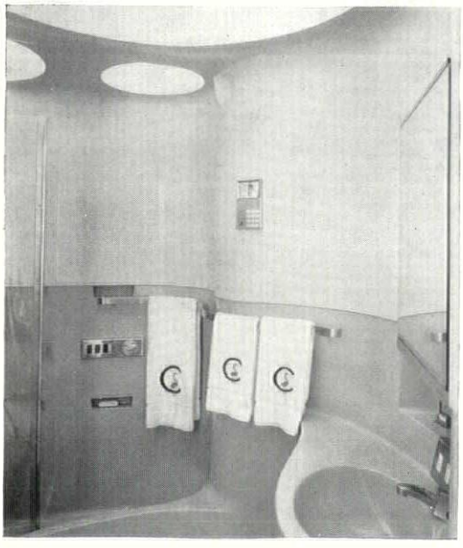


15, *the Monsanto 'House of the Future' is, despite its Disneyland setting, a serious study in the large scale use of plastics. It was developed by Marvin Goody and Richard Hamilton with H. P. Whittier, of Monsanto, as part of a project at M.I.T.*
16, *the structure of the Monsanto House consists of eight shells cantilevered from a central square core of four columns tied at top and bottom. Each L-shaped form is built up from two separate sandwich-construction shells; both have two skins of polyester fibreglass, the outer with an isocyanate foam core, the inner with a 3-inch-deep honeycomb core for the ceiling and a 4-inch-deep honeycomb core for the floor. The shells were made by the hand lay-up method and formed with a vacuum bag.*
17, *the bathrooms of the Monsanto House were designed by Henry Dreyfuss. Except for the w.c. pan the entire bathroom consists of two polyester fibreglass moulds which join about shoulder height. Radiant heating panels are attached to the back surface of some of the walls.*

continued from page 360]

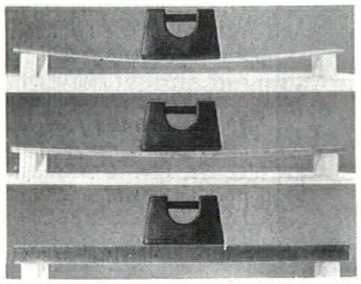
material arrive simultaneously on the prepared mould. While this is an obviously rational method it has not as yet produced wholly satisfactory results in practice. It is very dependent on the skill of the operator and the smooth functioning of the equipment. Unfortunately a good deal of equipment has been modified for use with polyester fibreglass rather than designed with this specific problem in mind and it is probably not until new machinery comes on the market that this particular method will prove successful.

If two smooth surfaces are needed in the finished product, the polyester fibreglass has to be placed between two matched moulds and these brought together under pressure. As it is uneconomic for these moulds to remain idle while the resin cures, heat is also added during this stage so that the material will harden in a matter of seconds rather than hours. A typical process might consist of the manufacture of miners' helmets in which chopped strand is sucked on to a mould by a vacuum process in an enclosed booth, the shaped reinforcing is placed between the matched moulds, a mixture of resin

and accelerator is forced into the space between them and the two moulds brought together under heat and pressure. This method is a repetitive mechanized operation which needs a long run of production—perhaps a thousand parts—to pay for the heavy mould costs and capital outlay in equipment. Given such a long run, however, the cost of each item is significantly lower than if it were made by hand. Charles Eames's famous moulded chairs are, for example, produced by this method.

Simpler, less mechanized variations on this are the bag moulding techniques in which a flexible sheet is forced over a mould by suction or pressure. There is also a continuous lamination process where the material is shaped between rollers and it is this method which is used in any fully mechanized production of corrugated sheets.

Polyester fibreglass has also been extruded using roving (a bundle of



18, *the rigidity of a panel can be greatly increased by introducing a foamed core between two skins of polyester fibreglass. Each of the three panels has the same self-weight and the same superimposed load.*

continuous glass strands) which has very great strength—in tension twice that of structural steel—due to the one directional orientation of the filaments. At the moment, however, it is only possible to extrude very small sections up to a diameter of $\frac{3}{8}$ in. which are used mostly for fishing rods and aerial supports. The suggestion has been made though, that in view of its great strength it may be a suitable material for prestressed construction. When the technical problems of extruding are overcome, a whole new range of products with very great possibilities is likely to become available. This is particularly true since extrusions can be designed as very complex shapes which make possible difficult connections and which are also able to distribute the material so as to create structurally economical sections. As these extrusions are likely to be stronger than comparable sections in aluminium, they may prove yet another serious competition to the use of aluminium in building.

Flat sheets pose, of course, much less of a problem. The reinforcing can be coated by rollers and the mould costs, two flat plates, are very much lower. It is nevertheless in a curved or faceted form that polyester fibreglass finds its most logical use, both in terms of strength and economy. Whether ease of production under present techniques or versatility and economy in use will determine the trend in the manufacture of polyester fibreglass may, to a large extent, depend on the design of the right equipment at this time. The choice between these alternatives may also have some architectural repercussions.

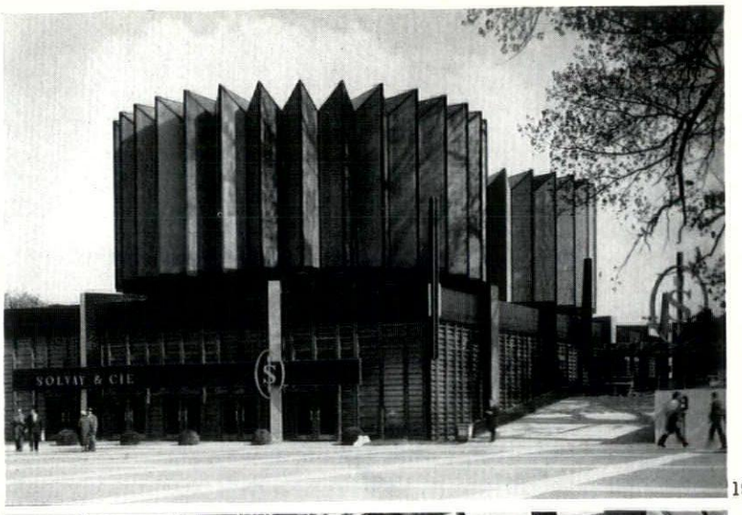
In the last three or four years there has been a noticeable trend towards the design of continuous and often curved surfaces. This is undoubtedly partly a reaction to the linear, frame and infill structures of the previous decade, but is perhaps also a forecast of the shapes likely in a building technique largely dependent on the use of plastics. The interest which is being shown in the architecture of the Aegean islands or that of the Sahara fringe is probably equally symptomatic of this trend towards a moulded building. It is in some ways obviously comparable to the fascination which Japanese architecture exercises as a prototype for modular, frame and panel design. Often these sculptural forms have had to be built out of substitute materials and they are, therefore, important as spatial prototypes rather than as technical innovations.

The Smithsons' House of the Future displayed at the Ideal Home Exhibition three years ago, 8, has all the characteristics of a polyester fibreglass structure although it was actually made of fibrous plaster. Its continuous, often doubly curved surfaces with rounded corners could easily and economically be moulded out of glass fibre reinforced polyester. Additional strength and heat insulation could be given by using this over cores of foamed plastic or bonding it to paper or aluminium honeycomb. The thickness of this core, as of the fibreglass itself, can, of course, be varied depending on the strength required. Since the abrasion resistance of polyester is not very high (making it a questionable material for kitchen sink units), it may be advisable to give the structure an outer coating of melamine resin. Recent experiments have also shown the possibility of embedding 'Mohglas,' graphite coated glass cloth, as part of the laminate to create a heating element. Sections of the house could, therefore, contain radiant surfaces as part of the structure.

There have naturally been several projects in which polyester fibreglass elements were part of the structure. In 1956 René Coulon designed a spiral exhibition house, 9, in which the entire enclosure was fabricated out of segments laid up by hand on a plaster mould. More recently two Italian designs, one for a roof structure, 11, the other for wall components, 12, have studied the use of reinforced plastics. There have also been several schemes for complete bathroom units, 14, which obviously owe a good deal to the very much earlier 'Dymaxion' designs of R. Buckminster Fuller. Such complete units seem especially suitable, at this stage at any rate, for aircraft, trains and ships.

The most ambitious and widely publicized of these projects has been the 'House of the Future' designed by Marvin Goody and Richard Hamilton as part of a programme financed by the Monsanto Chemical Company in the States, 15, 16 and 17. Despite certain disappointing aspects of the design—especially its fenestration—this is the sort of exploratory study which is all too rare and which can really only take place if sponsored by industry or government. In the Monsanto House two identical doubly curved shells—one for the roof and half the wall, the other for the floor and remainder of the wall—are cantilevered from a central structural core. Eight pairs of these shells form the cruciform enclosure of the house.

It is perhaps outside these architectural prototypes that the most interesting developments are occurring and have been able to reach the production stage. Boats 56 feet long have been built as a single continuous structure and moulded caravan bodies are now common, 7.



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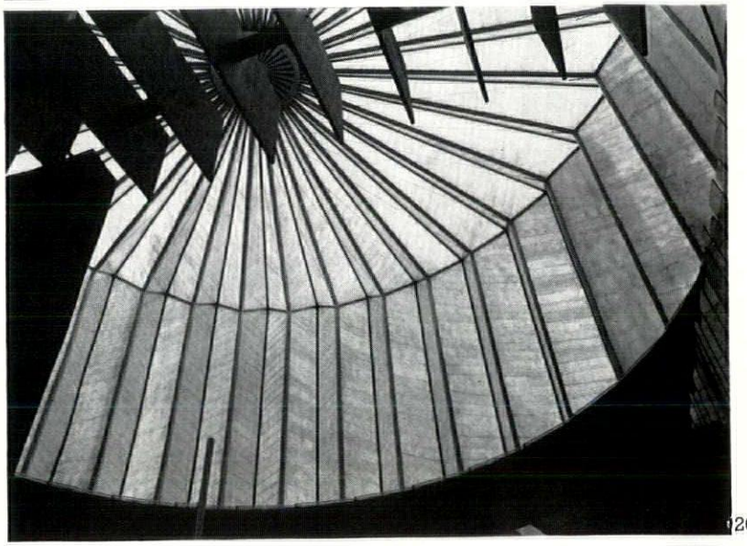

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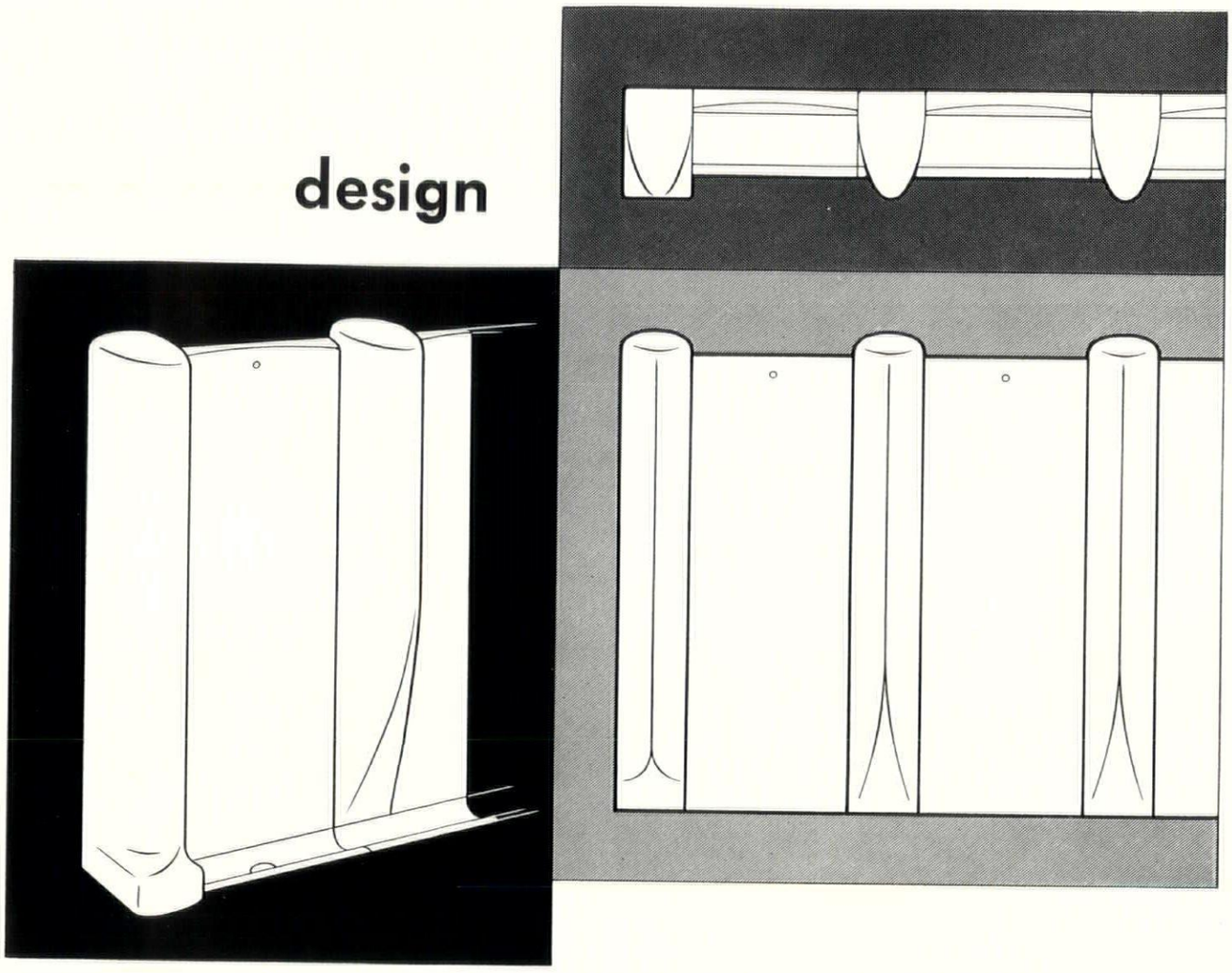
21

19, 20, *the two lanterns of the Solvay Company's pavilion at the* 1958 *Brussels Exposition were made of translucent and coloured polyester fibreglass panels with a honeycomb core.*
21, *translucent polyester fibreglass umbrellas designed for the American Exhibition in Moscow by George Nelson.*

The manufacture of car bodies, 2, is providing useful experience in the serial production of large components though at the moment these are more expensive than a comparable metal item mass produced. But the geodesic radar domes of the North American defence system are perhaps the most spectacular and vivid application of the material.

Whether the implications inherent in these domes or the Monsanto house will be pursued is, of course, very much open to question. It is, for example, possible that the aircraft industry which in this country is at the moment anxious to deploy its resources will turn to building. In that case its accumulated knowledge of skin structures would find a useful outlet in reinforced plastics. It is equally possible that the present use of polyester in a vast number of small articles—one catalogue lists over 90 separate categories—may prevent its quick development. It is also true that despite its great advantages—strength, colour, translucency, weather resistance, fabrication—it has some considerable weaknesses—fire resistance, abrasion, cost. The very fast rate of development in the chemical industry may, therefore, supersede polyester fibreglass by a more advantageous, a more 'universal' material before it has even been fully explored.

design



material

What architects and local authorities have been waiting for—a slab urinal made of vitreous china. The 'Standard' Vitural is non-absorbent right through, in its body material as well as its glaze. Neither will craze or deteriorate. The urinal is, therefore, always hygienic and odour-free. Clean simplicity of design and an alternative form without stall divisions are further advantages of the 'Standard' Vitural. For fine design in the right material, specify 'Standard' vitreous china.

vitreous china by **Standard**

449

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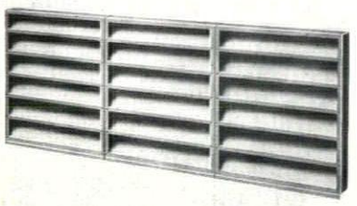
THE INDUSTRY

Fixed louvres

Greenwood-Airvac have put a new range of aluminium fixed louvres on to the market. The case for the aluminium as against the wood louvre is greater than it might appear, since the effective size for comparison is not the overall size of the louvre but the free area between blades and this for aluminium will be between 50 to 60 per cent of the overall size and for wood only about 33⅓ per cent. The Greenwood-Airvac range is composed of standard units of widths of 15 and 18 in. and heights of 12 in., 18 in. and 24 in. These units are all 2½ in. deep and can be bolted together in any combination. When this is done, the vertical joint is closed by a pair of pvc tubes, the horizontal joint by the turn down edge at the foot of each unit. Greenwood-Airvac prefer to assemble the units in their factory. The price of the three 15 in. by 18 in. units in the photograph is £6 15s., to which must be added a charge of about 10 per cent if shop assembly is required.

Greenwood and Airvac Ventilating Company Limited, Beacon House, Kingsway, London, W.C.2.

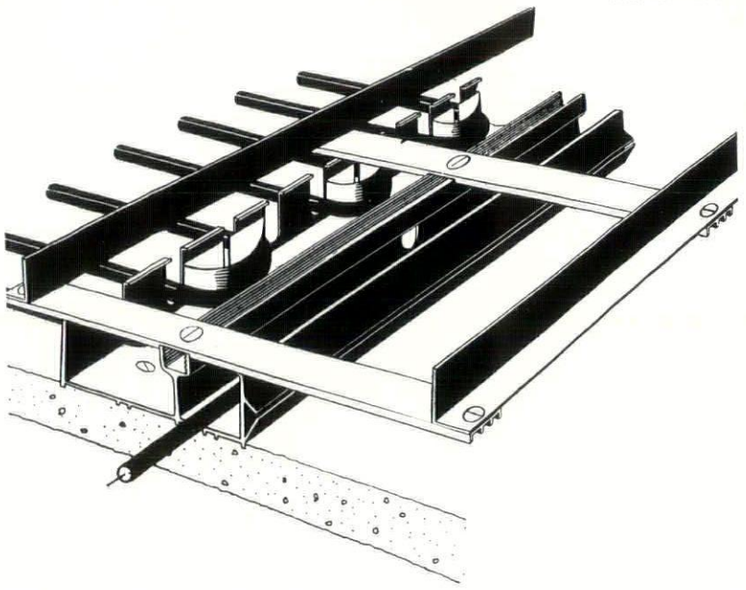


1, *the Greenwood-Airvac aluminium louvre.*

Thermodare

Embedded electric floor heating has become all the rage, before we know very much about it—as so often has happened in the history of technology. One of the unknowns is —whether or not the cables should be buried for all time or should be withdrawable in case of breakdown. Thermodare have now produced a withdrawable system of extruded aluminium trough sections which house the main distribution wires and accommodate the ends of element loops. When the troughing has been laid and elements looped into position a 'structure' of cross straps and angles is fixed to the top of the trough—the upstanding legs of the angles forming a stop to the floor screed. Into the space between these legs sits a metal frame with reinforcing bars which is filled with concrete and finally with the floor finish to form a cover—removable for inspection of the heating system. The company issues a good explanatory booklet with stage-by-stage pictures to demonstrate the installation procedure.

Thermodare (Great Britain), 94/98 Petty France, S.W.1.



2, *one of the working diagrams for the installation of Thermodare electric floor heating.*

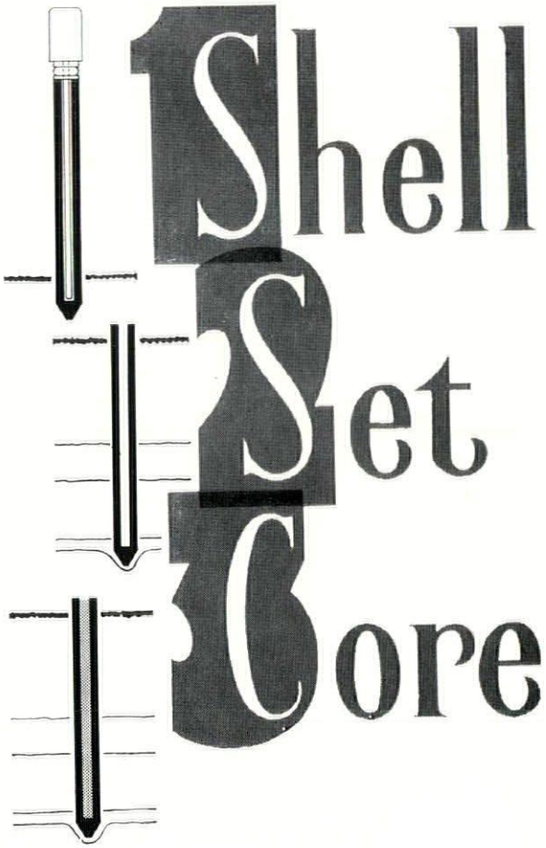
Graceline

Edge finish has always been a problem with rigid plastic coverings to worktops and draining boards. One solution was the traditional thin hardwood strip; another to cover the edge with a strip of plastic, machined off flush with the top surface. But now it is possible to have rounded edges, down to radii of 1 inch for internal or external angles.

The Formica people have developed a form of their material incorporating a plasticizer, which they claim not to affect the durability and heat-resisting qualities now familiar to us all.

A number of firms who make plastic covered equipment have seized on this—3 shows a unit made by Graceline Units Ltd. of West Drayton, which, with a stainless steel sink in size 21 in. by 63 in. costs £24 19s. 4 shows a cutaway detail of the edge. Presumably architects can have

[continued on page 366



Shell Set Core

The sequence of operations in West's Shell Piling System has an important bearing on the stability of the pile.

First the precast shoe and reinforced concrete sectional shell are driven to a predetermined "set" in the load-carrying stratum and the reinforced concrete core is then cast in-situ, thus assuring stability of the pile whilst the core is not fatigued.

The system has a number of other advantages: Bearing capacity of each pile can be calculated and the toe resistance and skin friction resulting from the driving of the pile are retained.

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A5

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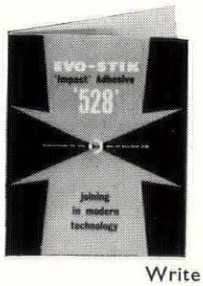

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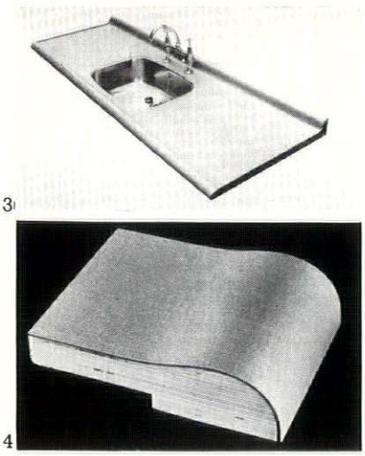
continued from page 364]



3, 4, *general view and detail of sink unit with rounded, Formica-covered edges.*

their own 'round edge' designs made up in the same way.
Graceline Units Ltd., West Drayton, Middlesex.

A good-looking domestic boiler

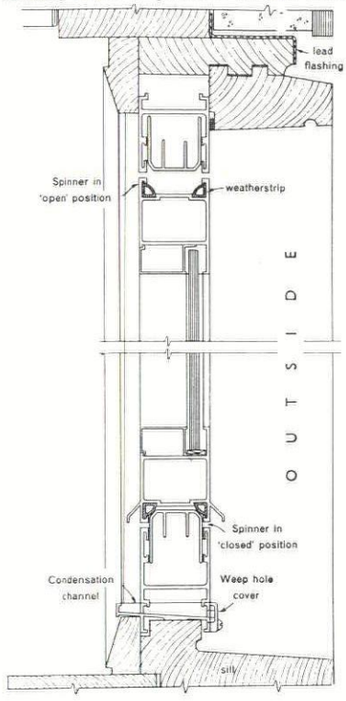
The illustration, 5, shows Neville Conder's casing for the Tayco Thermatic 25. This is a solid fuel domestic boiler with a rating of 25,000 Btu and is a little sister to the same firm's Super Thermatic which was put on the market about a year ago. It has a boiler which is described as 'quartic.' This means that it is square on plan top and bottom and circular on plan in the middle, a form which is reputed to be of special efficiency. The other point about it (apart from appearance, which is excellent) is that it has an enclosed shaker and deep ashpan which together cut down to a minimum the puff of ash caused by riddling. The stove can be got in

5, *the Tayco Thermatic 25 boiler.*

five colours as well as white and costs 24 guineas retail.
Robert Taylor and Company Limited, 170-172 Victoria Street, London, S.W.1.

The 'spinner' window

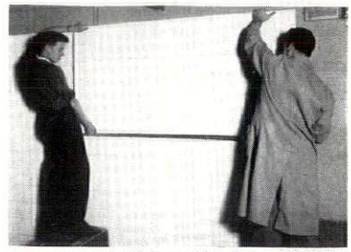
Williams and Williams, with their 'Spinner' window, have made a new contribution to the problem of cleaning windows in air-conditioned buildings. This is a horizontally pivot-hung aluminium window, designed normally for double glazing; but instead of closing on to the usual complicated system of reversed rebates, the pivoted light is designed to spin in the clear. When it is to be closed, a key is turned and four aluminium channels advance from behind the fixed frame and close against a pair of continuous neoprene weather strips. The advantage of this is, first, that when the window is closed, there is positive double seal against the escape of conditioned air to the outside. Second, that the escape of air during cleaning is limited to the second or so which it takes to spin the window once through 360°. For once the window has been spun i may be locked, the former outside face may be cleaned and it may be left until the next time of cleaning—there is no need to spin it back again.
Williams and Williams Limited, 36 High Holborn, London, W.C.1.



6 VERTICAL SECTION

Prefabricated tile partitions

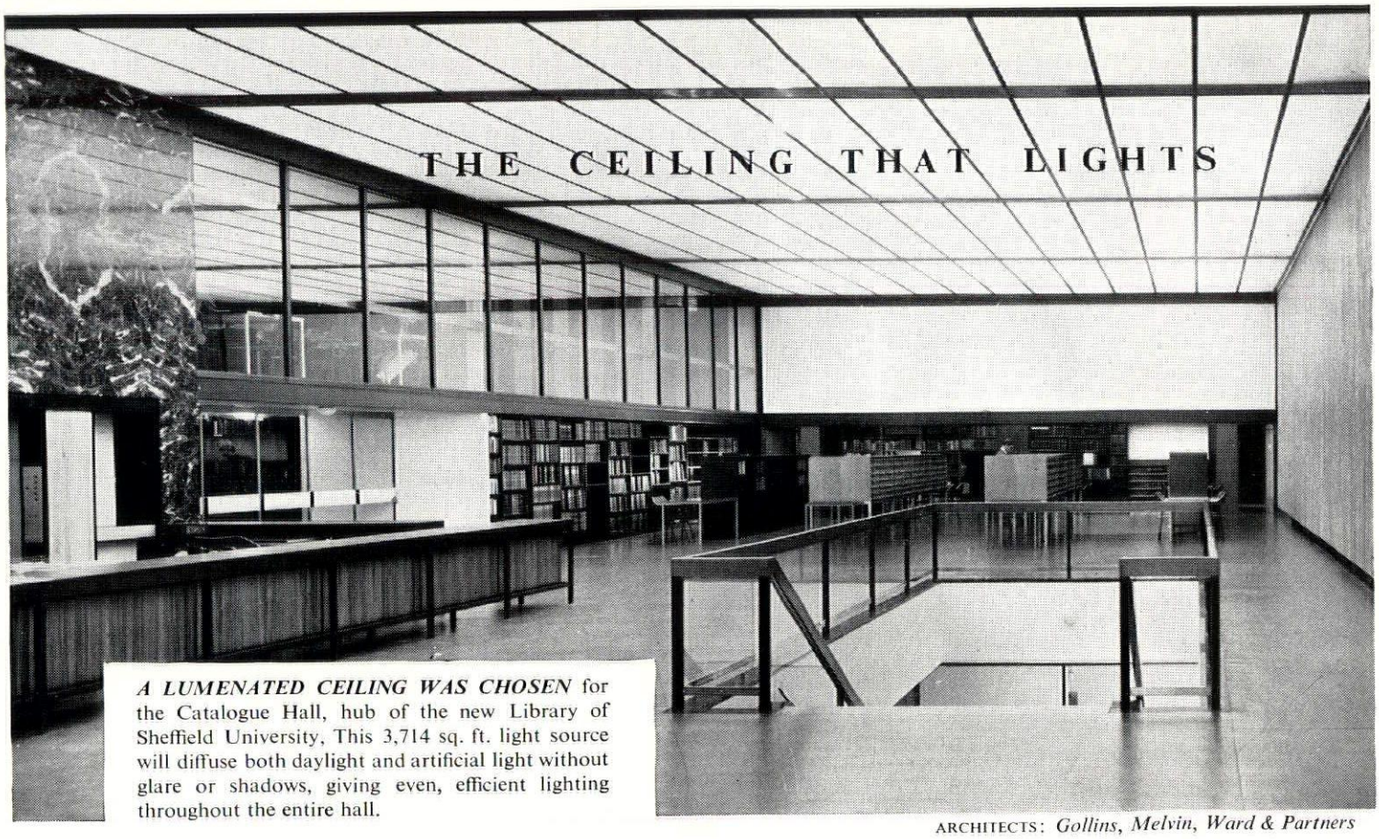
Pilkingtons Tiles Limited have brought into the market an interesting rival to the terrazzo partition. It is a ceramic tile partition, made up in panels of up to 6 ft. by 3 ft. in size and in thicknesses of $1\frac{1}{4}$ in., $1\frac{1}{2}$ in. and $1\frac{3}{4}$ in. The two outer



7, *a section of tiled partition being lifted into place.*

surfaces can be made of any of the 22,000 standard glazed tiles on the maker's books and are joined together by ceramic spacer discs which leave a space between. The partitions are, therefore, relatively light for handling. When they are in position

[continued on page 368



A LUMENATED CEILING WAS CHOSEN for the Catalogue Hall, hub of the new Library of Sheffield University, This 3,714 sq. ft. light source will diffuse both daylight and artificial light without glare or shadows, giving even, efficient lighting throughout the entire hall.

ARCHITECTS: *Gollins, Melvin, Ward & Partners*

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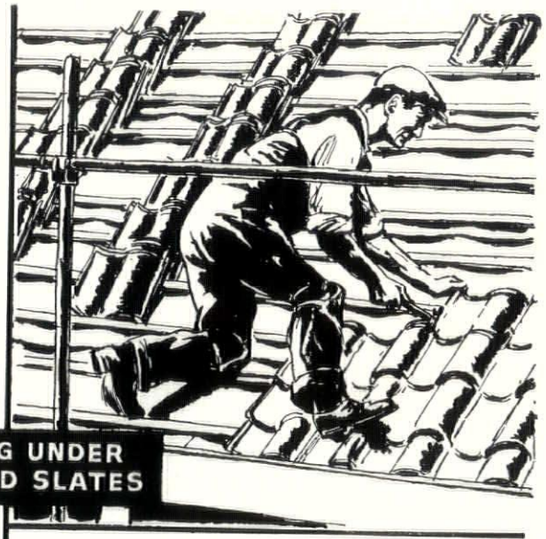

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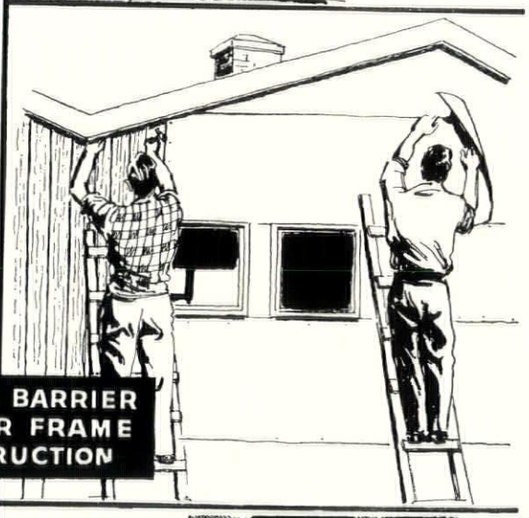

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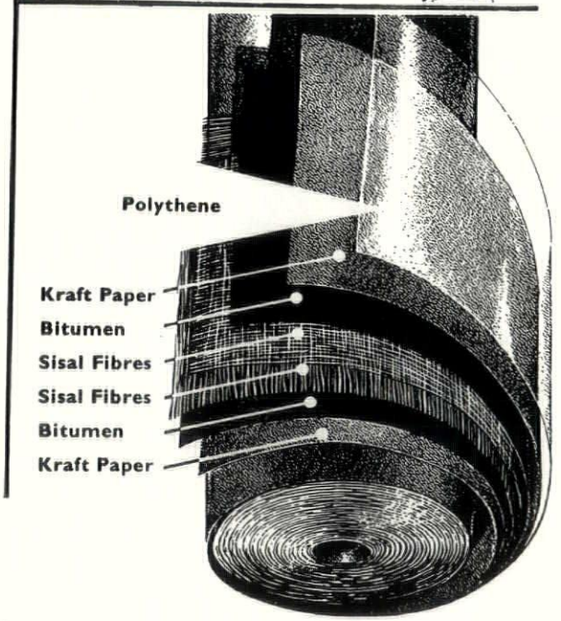

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GRAMS: **Brickwork Barking**

continued from page 366]

the hollow core is filled with concrete. *Pilkingtons Tiles Limited, Clifton Junction, near Manchester.*

Anglo-Italian curtain wall alliance

The news that Crittall have come to an agreement with Curtisa SpA, of Bologna, concerning the exchange of experience on aluminium curtain walling is very welcome. Without going so far as to concede that Italian aluminium detailing is in all points preferable to our own, there is no doubt that the art of aluminium extrusion is more developed in Italy than over here. It is not only that the best Italian curtain walls are more sophisticated, but that they are in many points technically superior. Examples of these are the exploitation of the 'clip-on' section and the use of a more elaborate detail to avoid the 'cold bridge' effect. These little Italian triumphs in matters of technical detail are at first sight unexpected, as the Italian building industry as a whole is more dependent on craft as opposed to industrial techniques than ours. But we must remember that the North Italians had about a five years' start over us in the construction of tall buildings. We must remember also the fine metal work tradition which has always flourished in Bologna and Milan. In all events we congratulate Crittall on a most imaginative tie-up.
The Crittall Manufacturing Company Limited, Braintree, Essex.

CONTRACTORS etc

University Library, Sheffield. *Architects:* Gollins, Melvin, Ward & Partners. *General contractors:* W. J. Simms, Sons & Cooke. *Sub-contractors: Mechanical, heating and air conditioning:* G. N. Haden & Sons. *Air conditioning ducting:* Andrew Machine Co. *Library book-stacks and shelving:* Roneo Ltd. *Structural steelwork:* Thos. W. Ward Ltd. *Portland stone:* Bath & Portland Stone Firms Ltd. *Fire detection installation:* The Pyrene Co. *Lumenex ceilings:* Lumenated Ceilings Ltd. *Lifts:* Otis Elevator Co. *Metal windows, doors, ventilators and frames:* Mellowes & Co. *Glass lens rooflight:* Lenserete Ltd. *Collapsible gates:* The Bolton Gate Co. *Paropa roof paving:* Frazzi Ltd. *Fibrous plaster and acoustic tile ceilings, fibrous plaster mullion casings:* Claridges (Putney) Ltd. *Terrazzo paving:* Hodkin & Jones Ltd. *Asphalt tanking:* Val de Travers Asphalte Ltd. *Asphalt paving and cork insulation:* Limmer & Trinidad Lake Asphalt Ltd. *Tier 4 suspended ceilings:* Sundeala Board Co. *Marble wall linings, facings and floorings:* Walter W. Jenkins & Co. *Danish panelling:* John Dale Ltd. *Balustrading and handrails:* Grundy Arnatt Ltd. *Sprayed asbestos columns:* Dicks Asbestos & Insulation Co. *Turnstiles:* Dixon Powner & Sons. *Hardwood block and strip flooring:* Acme Flooring & Paving Co. *Plywood panelling:* John P. White & Sons. *Counter and joinery fittings:* Simms Sons & Cooke. *Furniture, cloakroom and other fittings:* Conran Furniture. *Cork, p.v.c. and linoleum flooring:* Horsley Smith & Co. (Hayes). *Window blind gear:* W. J. Furse & Co. (London). *Travelling cradle and gear:* Palmers Travelling Cradle & Scaffold Co. *Double glazing units:* Pilkington Bros. *Main reading room ceiling:* Frenger Ceilings Ltd. *Facing bricks:* Richard Parton (Builders Merchants) Ltd. *Lamenated wood stair treads and landings:* Hordern-Richmond Ltd. *Sanitary fittings:* W. Emery & Co. *Timber doors:* F. Hills & Sons. *Extruded aluminium columns:* Northern Aluminium Co. *Steel gate:* Hobbs Hart & Co. *Partition blocks:* Thermalite Ltd. *Protection to Portland stone:* R.I.W. Protective Products Ltd. *Slate copings and cills:* John Fletcher Dixon Ltd. *Stainless steel ventilators:* J. R. Bramah & Co. *Ironmongery:* Smith Bros. & Widdowson Ltd. *Paint:* Jenson & Nicholson Ltd. *Clocks:* Gent & Co. *Electric light fittings:* Troughton & Young (Lighting) Ltd.; The Merchant Adventurers Ltd.; A.E.I. Lamp & Lighting Co. *Modular fittings, lowering gear:* London Electric Firm Ltd. *Curtains:* Liberty & Co.

Methodist Church, Mitcham. *Architects:* Edward D. Mills & Partners. *General contractors:* James Longley and Company. *Sub-contractors: Electrical:* Service Electric Company. *Flooring:* The Marley Tile Co.; Bennetts Wood Flooring (Tungit) Co. *Heating:* Advanced Heating & Air Conditioning Co. *Roofing:* Permanite Ltd.; Broderick Insulated Structures Ltd. *Structural steel:* R. O. Wright & Co. *Asbestos cement panel:* The Universal Asbestos Cement Manufacturing Co. *Bricks:* London Brick Company; Sussex & Dorking United Brick Companies. *Doors:* Thames Plywood Manufacturers Ltd.; John Sadd & Sons.; Esavian Limited. *Ironmongery:* A. J. Binns Limited. *Light fittings:* Rotaflex (Great Britain) Ltd.; Merchant Adventurers of London Ltd.; Frederick Thomas & Co.; A.E.I. Lighting Group. *Paint:* Hadfields (Merton) Limited. *Roller shutters:* Shutters Contractors Ltd. *Roof lights:* Williaam J. Cox Limited. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *W.C. partitions:* William Mallinson & Sons. *York stone:* S. Marshall and Sons.

Roman Catholic Church, Lancaster. *Architect:* Tom Mellor. *General contractor:* The Warren Construction Co. *Sub-contractors: Steelwork:* The Bamber Bridge Steel Co. *Wood block floors:* Hollis Bros. *Pews:* Walmsley's Furniture & Joinery Ltd. *Special furniture:* F. L. Treasure; Hayes and Finch Limited. *Heating:* John Grundy Limited. *Electrical installation:* W. H. Inman Limited. *Copper roofing:* A. Higgingbotham and Sons.

Reconstructed Parish Church, Tolworth. *Architect:* Kenneth Wood. *General contractor:* Tom Porter & Son. *Sub-contractors: Bored pile foundations:* The Cementation Co. *Structural components and main arch:* Kingston (Architectural Craftsmen) Ltd. *Poststressed lintol:* Cable Covers Ltd. *Roofing:* Permanite Ltd. *Flooring: Alufloor and resurfacing:* G. C. Constructional Flooring Co.; *wood block:* Horsley, Smith & Co.; *cork tiling:* Thames Flooring Co. *Heating:* Weatherfoil Heating Systems Ltd. *Electrical installation:* Davenant Electrical Co. *Lighting fittings:* Merchant Adventurers of London Ltd.; Philips Electrical Ltd. *Carpeting:* Heal & Son Ltd. *Mosaic:* Dennis M. Williams Ltd. *Door and window furniture:* Allgood Continental Ltd.; Arens Controls Ltd. *Paints and finishes:* Thos. Parsons & Sons Ltd.; Floor Treatments Ltd. *Signwriting:* Hastings Signs.

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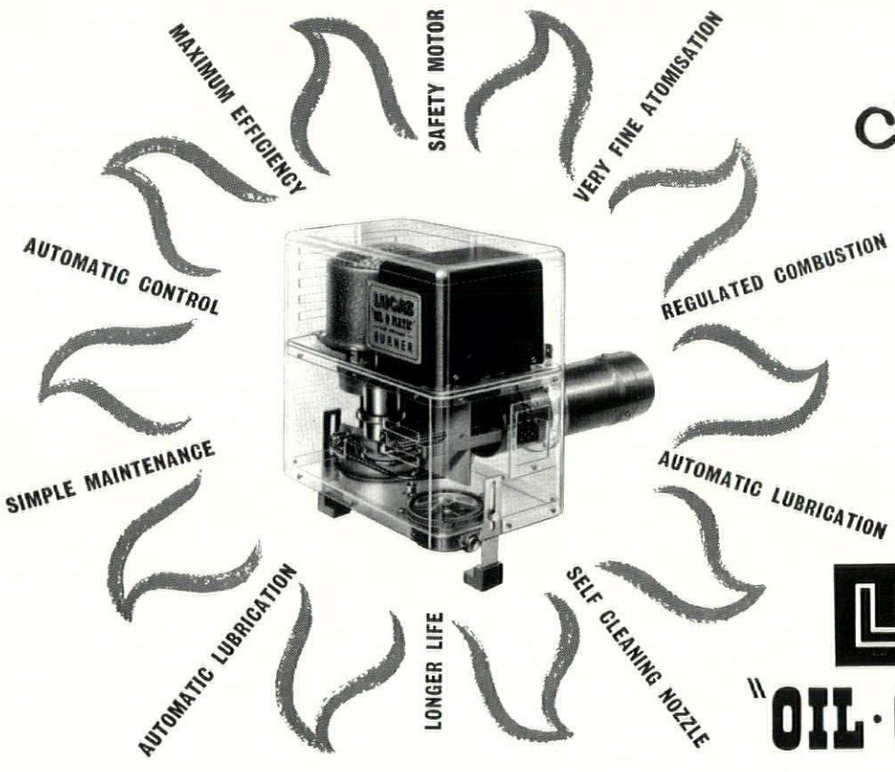

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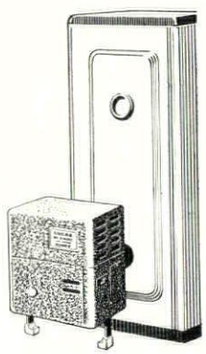

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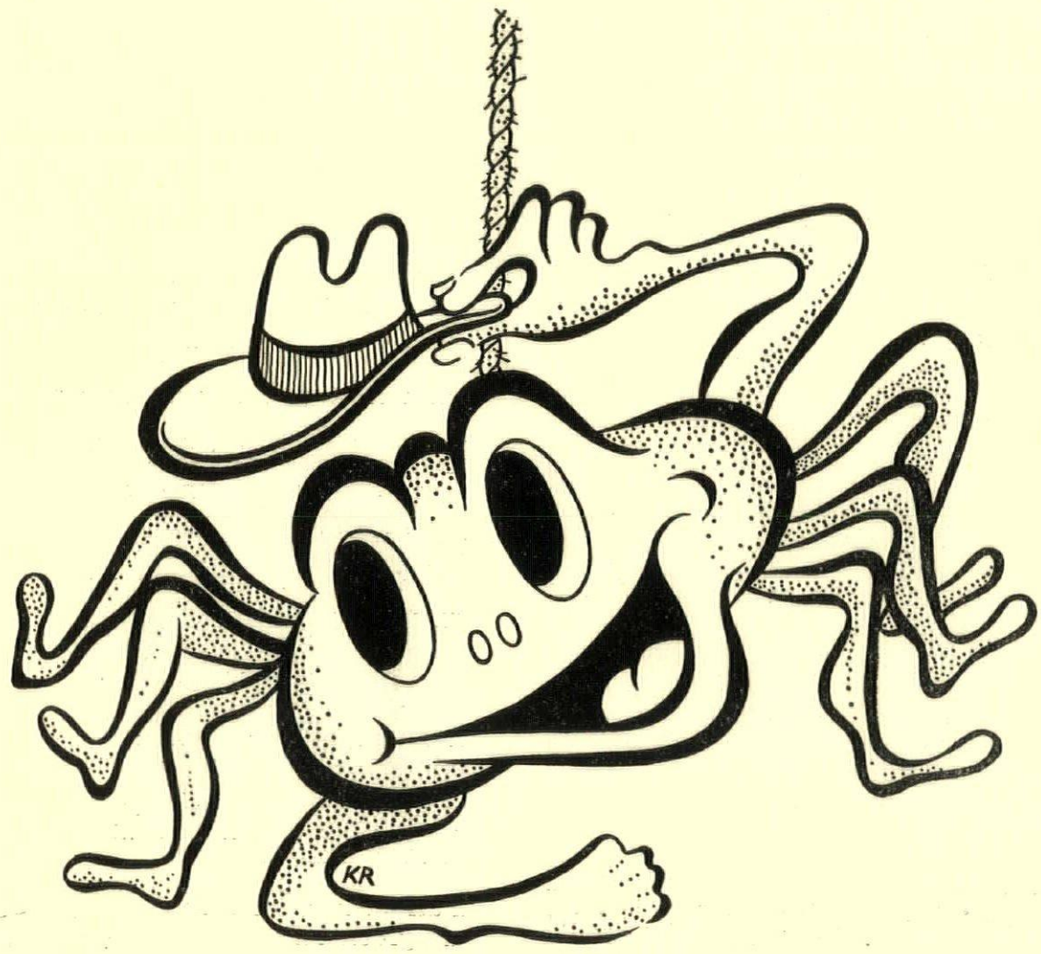

. . . systems are many and varied, and include those connected with trousers, stockings and the type illustrated here.

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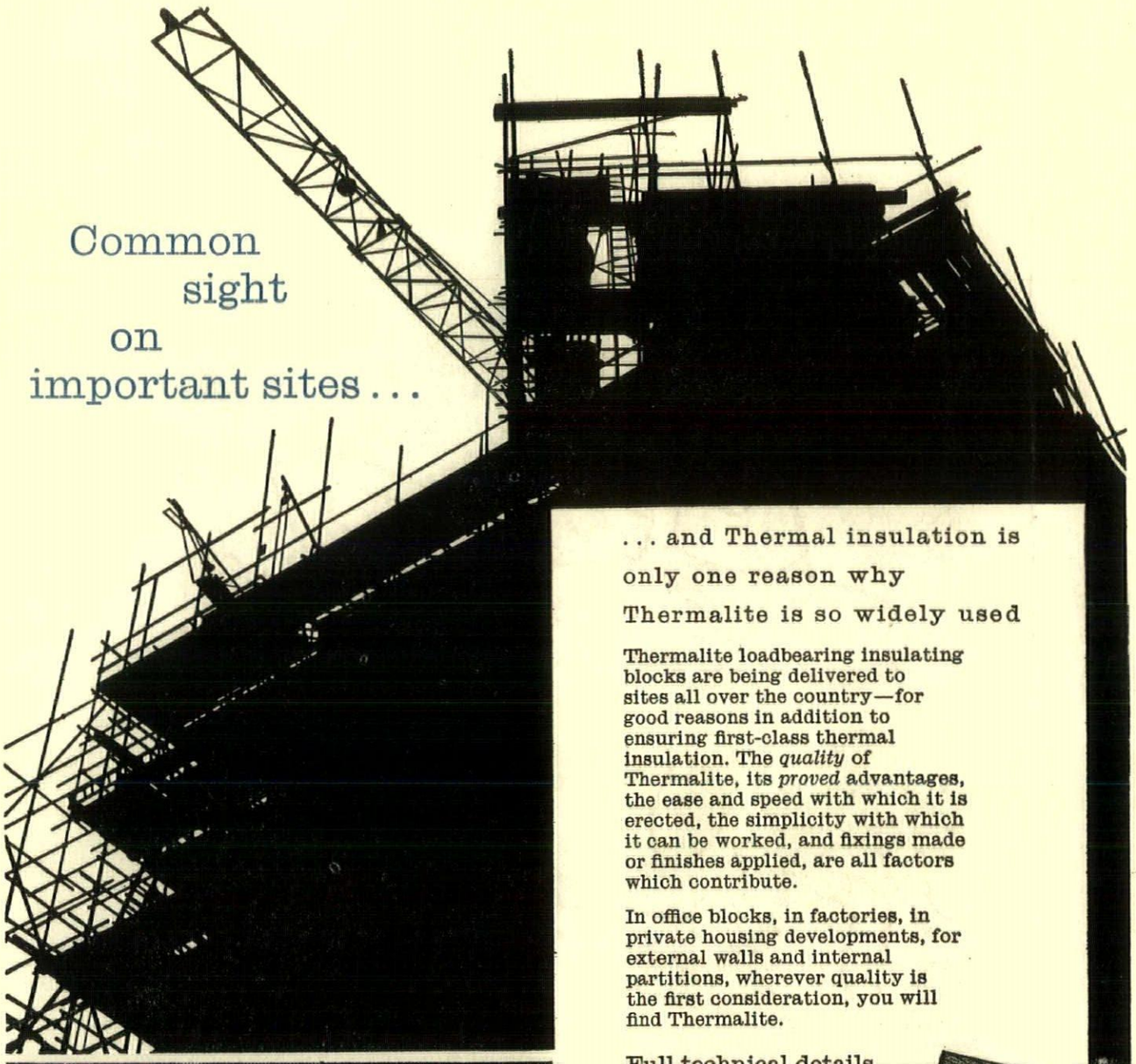

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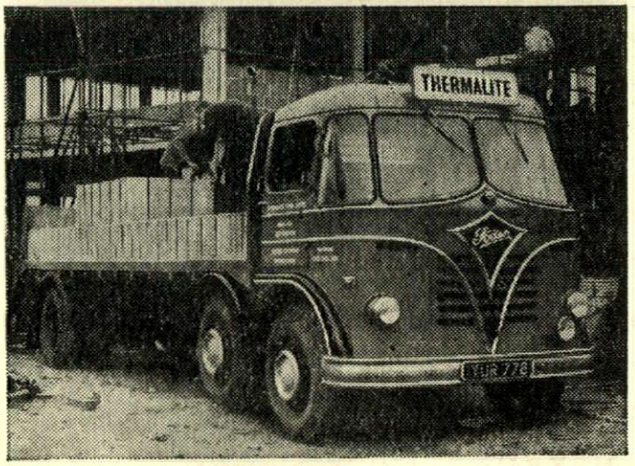

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