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MARGINALIA



Review Editor

This month the Editors of the REVIEW welcome Sir Hugh Casson as a new member of their editorial board. Their deliberations will gain much from having a practising architect among their number, but Sir Hugh is a good deal more; he is unique in the world of English architecture for being that almost extinct thing, an impresario who knows how to organize other people so as to extract the best from them. To this remarkable talent must be attributed his personal triumph as co-ordinator of the 1951 Festival of Britain culminating in the architectural and landscape achievement of the South Bank. Since then his versatility has been tested in a number of other fields—as President of the Architectural Association, as head of the new but already flourishing School of Interior Design at the Royal College of Art, as architect, with Neville Conder, of an ambitious development plan for Cambridge University, as consultant for the design of the private apartments in the Royal Yacht *Britannia*, and as designer of British pavilions at overseas exhibitions.

Principal guest at the Canadian Institute of Architects' jubilee celebrations last year, a witty speaker and broadcaster, and a columnist in a class by himself, Sir Hugh has given much more time than most architects are prepared to give to the thankless and ill-paid (indeed mostly unpaid) work of general propaganda in the cause of the urbanities, the humanities and the amenities. This work, for which the whole architectural profession is in his debt, he will be able (still under-paid) to carry on and even perhaps develop as a REVIEW editor. He is at the time of writing getting ready to descend on Shrewsbury to lead the discussions Birmingham University's Extra-Mural department is preparing in that city, apropos the REVIEW's Shrewsbury plan.

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A Portrait of James Adam

A painting, previously known simply as *Portrait of a Young Man*, and ascribed to Mercier, has been shown by recent cleaning to be a signed work of Alan Ramsay, and identified, by Alastair Smart in the *Burlington Magazine* for April, 1954, as James Adam.



Portrait in the collection of Mr. Graham Ash, now identified as James Adam and attributed to Alan Ramsay.

The identification is an ingenious one, since, though there is plentiful evidence of connection between Ramsay and the Adam family, there is no undisputed portrait of James Adam with which to compare. However, the features are very close to those of a Battoni, supposedly of Robert Adam, but unlikely for reasons of dates—dates, however, which would not exclude his brother James. Even better evidence is provided by the paper which the young architect holds in his hand. Such papers were normally left blank in Ramsays of this type, but in this case it carries a drawing which, as Mr. Smart points out, is very close in style and subject to some dated



Infra-red photograph of paper in James Adam's hand, showing a Palladian rotunda painted over the design for a Gothic tower.

James Adam sketches of 1752-6 now in the Soane Museum. Furthermore, infra-red examination of this part of the picture reveals a section of a Gothic crown-tower under the Palladian rotunda, and there are James Adam church designs of 1753 which include some generally similar work, though nothing of conclusive resemblance. The suppression of this allusion to a rather private interest in Gothic, shared by painter and sitter, by a more respectable Palladian exercise, is in line with the Adam brothers' public attitude to the Gothic Revival.

Malraux Symposium at the I.C.A.

The ICA recently invited five speakers to take part in a symposium under the chairmanship of Lawrence Alloway on Malraux's *The Voices of Silence*, each one to discuss a different aspect of the work. In spite of the difference in their interests, Dr. Hodin giving a personal portrait of his friend Malraux, Professor Cocking speaking as a literary critic, Professor Gombrich as the art historian, Nigel Henderson on problems of photography and Andrew Forge on the author's use of artists, all speakers were agreed that *The Voices of Silence* (the meaning of the title, incidentally, turned out not to be at all certain and open to different interpretations) was an immensely personal work by a highly individual, a self-centred and an aggressive writer. It was generally agreed that Malraux the novelist was now writing works of fiction whose subject was art, whose characters were the painters and sculptors of yesterday and today, and whose incidents were the images.

The following briefly paraphrases the opinions aired. Malraux is not and does not pretend or intend to be an historian, art historian or psychologist; he is not interested in what happened in history but only in what the works of art mean to us now; he holds that it is we who turn the symbols and artefacts of past civilizations into works of art. Being a creative artist himself Malraux's insight into the creative process is deeper than that of the historian or psychologist and this book therefore, though dangerous reading, is both inspiring and instructive, in spite of some lack of historical proof and of much rhetoric; it breathes a high moral attitude and above all attempts a new synthesis. Much is explained by the strong influence on Malraux of Spengler's *Decline of the West*, an influence he tried to escape and to oppose. Much, especially the extraordinary tenseness of the book, can be understood from his personal position as an intellectual, an intellectual in despair who is desperately trying to do something.

Nevertheless, as the Chairman, in conclusion, said, whoever is interested in art will have to read this book sooner or later.

INTELLIGENCE

The Association of College and Reference Libraries has published a second monograph entitled *Library Building Plans Institute*. It is on

the design of library buildings, summarizing discussions between architects and librarians. The price is \$2.25 and it can be obtained from ACRL Monographs, c/o American Library Association, 50 E. Huron Street, Chicago.

CORRESPONDENCE

The New Brutalism

To the Editors,

THE ARCHITECTURAL REVIEW

SIRS,—We do not think that A. and P. Smithson need fear that philosophers will think architects fools. The discussion in your pages on the New Brutalism is well up to the standards set by S. Potter and other Exischweppsalists on the back page of other monthlies dealing with Art and Life (*Punch*, *Vogue*, *House and Garden*). It would be better still if your contributors would write in basic Schweppish, which, using only monosyllables, is ideal for expressing Brutalist thought.

Incidentally, the full text of K. Scott's letter will be found in *The Architects' Yearbook* 1953, with substitutions such as for 'The Smithsons' read 'Frank Lloyd Wright.' Who is pulling whose leg?

We are, etc.,

RICHARD LLEWELYN DAVIES,
JOHN WEEKS.

Tring, Herts.

Twentieth Century Picturesque

To the Editors,

THE ARCHITECTURAL REVIEW

SIRS,—Dr. Pevsner is surely overstating his case when he says that 'the modern revolution of the twentieth century and the Picturesque movement of a hundred years before had all their essentials in common.'

Nobody would deny that elements of Picturesque theory have been assimilated by modern architecture, but, as Dr. Pevsner concedes to Mr. Basil Taylor, the Picturesque movement was closely connected with 'Historicism,' and any purely eclectic attitude towards style must fail to define the modern movement. This has been concisely pointed out by Mr. Colin Rowe in his review of Talbot Hamlin's *Forms and Functions of Twentieth Century Architecture*, in the *Art Bulletin* of June, 1953. The explicit aim of the modern movement was to find the sources of a style proper to the twentieth century—to rediscover the secret of 'Style' itself. Within the terms of Picturesque theory it is quite impossible to make a qualitative comparison between, say, buildings by Palladio, Sir Edwin Lutyens, and Le Corbusier. All three may be equally successful from the standpoint of the Picturesque, yet, clearly, each has a content which escapes definition in those terms, and it is precisely this content, linking each work with its own age, which would interest a modern architect.

In his analysis of particular buildings Dr. Pevsner seems equally one-sided. He ascribes to buildings by Le Corbusier Picturesque qualities such as free grouping and a mixture of materials, but ignores other qualities without which these Picturesque qualities are quite meaningless. For instance, in a Picturesque building the massing is not necessarily a logical expression of the plan (viz., the Houses of Parliament, where the grouping of the towers is least effective from the very position in which the symmetrical plan becomes evident); but in a building by Le Corbusier the visual hierarchy always reflects a functional hierarchy, an understanding of which intensifies the aesthetic pleasure derived from the forms.

To ignore such factors because they do not happen to 'fit' in with a particular 'aesthetic theory' would seem a curiously unscientific procedure for a historian to adopt. Not to admit the didactic element in modern architecture is to make nonsense of it. But once this didactic element is admitted no purely visual 'theory' basing itself on the universal validity of forms independent of structure and function appears to be adequate. It is because this fact has been lost sight of that so much of Post War British architecture is effete and superficial.

I am, etc.,

A. I. T. COLQUHOUN.

London.

Dr. Pevsner writes: *Mr. Colquhoun is misinterpreting me. I did not say 'elements of Picturesque theory have been assimilated by modern architecture.' On the contrary I said 'stimulated by the disciplines of function and technique' modern architects arrived at such motifs as 'the free grouping of the individual building, a mixture of materials, synthetic and natural, rough and smooth, and, beyond that, the free planning of a whole quarter, with differentiation of levels, differentiation of vehicular traffic and pedestrian ways, with interaction between landscape and building, and between buildings of different shapes and heights.'* I also said that I, personally, after having seen this and been convinced by the soundness of the functional and technical arguments behind it, discovered that a theoretical system existed in England in which these same categories were understood and appreciated in their aesthetic value, even if the English system was developed in terms of lawn and lakes and trees rather than of stone and streets and trees.

I say 'in their aesthetic value,' because in this article I was not dealing with anything else. Mr. Colquhoun has no reason to assume that I therefore ignore any other aspects of twentieth century architecture. What else would 'stimulated by the disciplines of function and technique' mean?

Inventory or Guide?

To the Editors,

THE ARCHITECTURAL REVIEW

SIRS,—In his review of Professor Pevsner's Penguin county series recently* Mr. Ian Nairn very confidently asserts that he can 'only add a half-dozen attributions that seem worth mentioning' to published information on architects, following this up by stating that the 'gothic Gatehouse at Bishop Auckland Palace was designed by Sir Thomas Robinson' (why the capital for Gatehouse incidentally?). I wonder on what information Mr. Nairn based his attribution, for he mentions no date or authority.

Now Mr. Anthony Dale, in his study of Wyatt (1936) claims this gatehouse for his subject in the list of works he attributes to Wyatt and places the date as 1775. Yet I consider that the strongest claimant is Robert Mylne who has recorded the following information in his invaluable journal. I list the entries chronologically:—

1772 June 12. Gave Bishop of Durham a sketch for hanging a room at Auckland with tapestry.

August 18. At Auckland.

September 25. At Auckland.

September 26. Returned to Auckland (from Durham). Surveyed the Castle and improvements proposed to be made.

September 27. At Auckland—made a sketch for a gateway at entrance.

1774 September 19. At Bishop Auckland.

September 21. Examined several things about the castle and gave advice on drains and the plaster (sic) to New Rooms, garden

*The Buildings of England: County Durham, Derbyshire & Hertfordshire by Nikolaus Pevsner, reviewed A.R. March, 1954.

walls, stores, chimneys, etc.

September 22. Left Auckland.

1775 September 14. At Auckland.

September 17. Left Auckland. Saw Raby castle.

The fact that there were several visits after the submission of the sketch plan for the gateway would suggest that these were for the purpose of supervising its erection.

I am, etc.,

London.

CHRISTOPHER GOTCH.

Mr. Nairn writes: *I believe in all the alternatives: that Sir Thomas Robinson designed the gatehouse about 1760, that Mylne made a sketch for a gateway in 1772, and that Wyatt may have built a gateway and screen about 1775. For the whole point is—as a reading of Dr. Pevsner's description will soon show—that there are two gates, which Mr. Gotch has telescoped into one: the gatehouse, which is the point at issue (illustration 56b in County Durham) and the screen wall and inner gateway behind it.*

It is surely the latter for which Mylne made a sketch in 1772, and whether he or Wyatt designed what is there now is another matter altogether. The Wyatt attribution comes from Papworth's Dictionary, and significantly it is called 'a gateway and screen at the entrance,' almost the same phrase as in Mylne's journal.

To return to the gatehouse: it looks too coarse and hamfisted to be either Mylne or of 1772: it looks like the previous generation of Gothic, and in fact the date attached to it is 1760. Circumstantially, Sir Thomas Robinson was just as active in the area in the 1760's as Mylne in 1772-5; he had lived at Rokeby, just over the Yorks border, and built Winston bridge about ten miles from Auckland in 1764.

The actual attribution, called a 'Gothic gateway at Bishop Auckland' is also from Papworth's Dictionary, and no source is given there. However, there is a point up to which one must believe earlier writers; and to have quoted chapter and verse for all the attributions would have enlarged an already enormous review beyond the editor's patience.

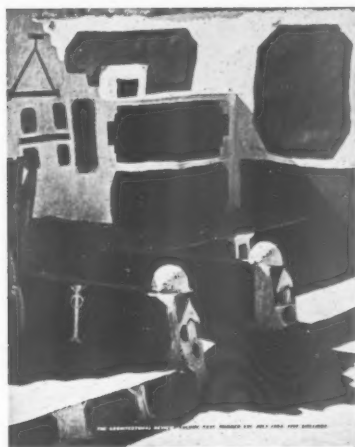
Regarding the other points in Mr. Gotch's letter: the mood in which I wrote that I could only add about half a dozen attributions was not confidence but rueful dismay at the inadequacy of my records; and of course I meant a Gothic gatehouse not a gothic Gatehouse.

ACKNOWLEDGMENTS

COVER: Constance Stewart for Black Star. FRONTISPIECE: Kenneth Browne. EIGHT BUILDINGS IN SWEDEN by Ralph Erskine, pages 9-19: 12, 13, Sundahl; 15, Norrlundsbild; 16, Wahlberg. GIBBS, pages 20-26: a, b, c, o, p, q, r, NBR; 1, British Museum; 2, 17, Anderson; 3, d, R. Comm. Hist. Mon.; 4, page 21, k, l, m, Warburg Institute; 5, 6, 8, 9, 10, Alinari; n, Marcus Whiffen; 20, Ashmolean Museum; 21, Kersting; 22, Dell and Wainwright. FLATS AT RICHMOND, pages 27-30: John Pantlin. AIR TRAVEL OFFICE IN LONDON, pages 31-33: Galwey, Arphot. M'POGGA, pages 34-40: FRONTISPIECE: Gordon Cullen, based on drawings by the authors; 1-6, Constance Stewart for Black Star. CURRENT ARCHITECTURE, 1, 2, 5, 6, John Pantlin; 3, 4, R. B. Finney. MISCELLANY: Exhibitions: 1, 2, R. B. Fleming; 3, M. Routhier. Criticism: 1, 5, John Pantlin, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, S. Newbery. Furniture: Wainwright. Transport: British Transport Commission; Landscape: drawings & photographs, Kenneth Browne. SKILL, pages 55-70: page 55, 24, Stewart Bale, 5, 10, Salisbury Photo Press, 13, Neil Nimmo; 14, C. K. Bower & Sons; 15, Dudley Studios; 18, John Pantlin; 20, Commercial Photo Co.; 28, BBC; drawings by B. Spearpoint.

THE ARCHITECTURAL REVIEW

Volume 116 Number 691 July 1954



The Cover shows the painted gate-posts and flanking walls of the entrance to the lapa, or forecourt, of a house of the M'Pogga tribe in the Transvaal. The remarkable painted architecture of this Bantu people, who animate and enhance the formal qualities of their mud-built dwellings with decorative motifs derived from European, as well as African, cultures, is an object lesson in the use of colour in building, and of coloured buildings in the landscape, and is discussed and illustrated on pp. 35-40.

1 Marginalia

2 Correspondence

2 Acknowledgments

4 Frontispiece

5 **Modulor** by Peter Collins Most of the thoughts of Le Corbusier have been presented to the public in a form which is both paradoxical and grandiose, and the Modulor is both of these; grandiose in the global scope which its inventor expects for it; paradoxical in that anything so watertight and so rigid should come from one so professedly anti-academic. In this review of the New English translation of *The Modulor*, Mr. Collins relates Le Corbusier's system to modular systems of the past, and to proportioning methods based on simple geometrical forms such as triangles, notes the difficulties inherent in both, and the continuing controversies which both have aroused. The Modulor is affiliated to both approaches, giving both a module of measurement and a module of scale, but its reliance on the Golden Section relationship introduces new difficulties peculiar to itself—the impossibility of equal subdivision and the enormous size of the dimensions beyond the height of a man, increasing in logarithmic progression. Le Corbusier's personal solution to these dimensional difficulties has been to claim the right to ignore the demands of modular conformity when it suits him, and in this, as Mr. Collins points out, he is at one with the academic masters of the past, who waived their watertight rules when it suited them—his constant abuse of the Ecole des Beaux Arts will not clear Le Corbusier of the charge that his system is

just as academic as those of the past, but unlike those of the past it has not the justification of having been used, consciously or unconsciously, in the creation of any of the universally acknowledged masterpieces of world architecture—it must stand or fall by the *Unité* at Marseilles, and even there he admits that he has not used it consistently.

9 Eight Buildings in Sweden by Ralph Erskine

21 **James Gibbs** by S. Lang The bicentenary of the death of James Gibbs still finds him a little-studied architect—his activities in France, Switzerland, Germany and Flanders remain obscure, his sojourn in Italy less so since there are some documentary records, though Abramo Paris, and Garroli, whom he mentions, with Fontana, as his masters, are rather shadowy figures, and evidence for contact with Juvarra or Galilei is limited to drawings and prints in the Gibbs collection. French books and prints are also to be found in this collection, but there is no record of his personal contacts in France. In spite of all the time which he had spent abroad, and his Scottish descent, he contrived to be an unmistakably English architect, was well regarded by Wren, succeeded Hawksmoor in works in the two University towns, owned a volume of drawings by Talman, and was in close touch with Thornhill. But his dependence or independence of these domestic and foreign influences is almost impossible to establish by any documents other than his buildings themselves, and this Miss Lang sets out to do in the latter part of her article, taking St. Mary-le-Strand as her chief example. The most convincingly English feature of the church is the position of the spire, and that was an original invention of Gibbs himself, passed on by him to the Anglo-Saxon church-building tradition on both sides of the Atlantic. The other features of the design reveal at every turn his inventive and knowledgeable eclecticism, English and Italian motifs appearing in judicious and ingenious mixture, the English ones often revived by reference back to their Italian precedents, and by his preference for using real buildings, rather than text-book illustrations, for his sources.

27 Flats at Richmond: Architect, Eric Lyons

31 Interior: Air Booking Office in London: L. B. Haley, Civil Engineer to BOAC

35 **M'Pogga** by Betty Spence and Barrie Biermann The painted architecture of the M'Pogga people, a branch of the Bantu living near Pretoria, in the Transvaal, is an object lesson in the use of colour in the enhancement of architectural qualities, and also a notable achievement by a community poised precariously between two cultures. The parent stock of the M'Pogga built in thatch, but the tribe are now established in an area where this material is not available, and, having turned to mud-brick construction, they found themselves faced with the blank and unfamiliar expanses

of the flat walls. The challenge thus presented they solved by painted decoration employing motifs which draw partly on their traditional arts of personal adornment, and partly on the visual world of the white man, who arrived in this area at about the same time as themselves. The resultant eclectic art is one that, seen from within the courtyards of the houses, animates and resolves the interplay of simple architectural forms, and puts a barrier of man-made order between the inhabitants and the open veld outside. But seen from outside, and from a distance, the painting serves a different function, and points up the essential drama of there being man-made order of any sort in the undifferentiated expanses of the veld. In this, their painted buildings are very suitable to their position on the veld, and in their transitional eclecticism they are equally apt to the tribe's transitional position in the cultural complex of South Africa—a position whose transitory nature is emphasized by the fact that the buildings of the M'Pogga settlement from which the illustrations in this issue and on the cover were drawn, have recently been destroyed though other settlements still survive.

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The Authors Betty Spence, architect, qualified at Witwatersrand University, and has worked for various architects in Johannesburg and London. Held a lectureship at Witwatersrand, and a post as Research Officer in the National Building Research Institute in Pretoria, during which time this article was written. Now married and in practice with her husband, Carl Pinfold. Barrie Biermann, architect, qualified at Capetown University. At the National Building Research Institute with Betty Spence. Now a lecturer in the Department of Architecture at Durban University.

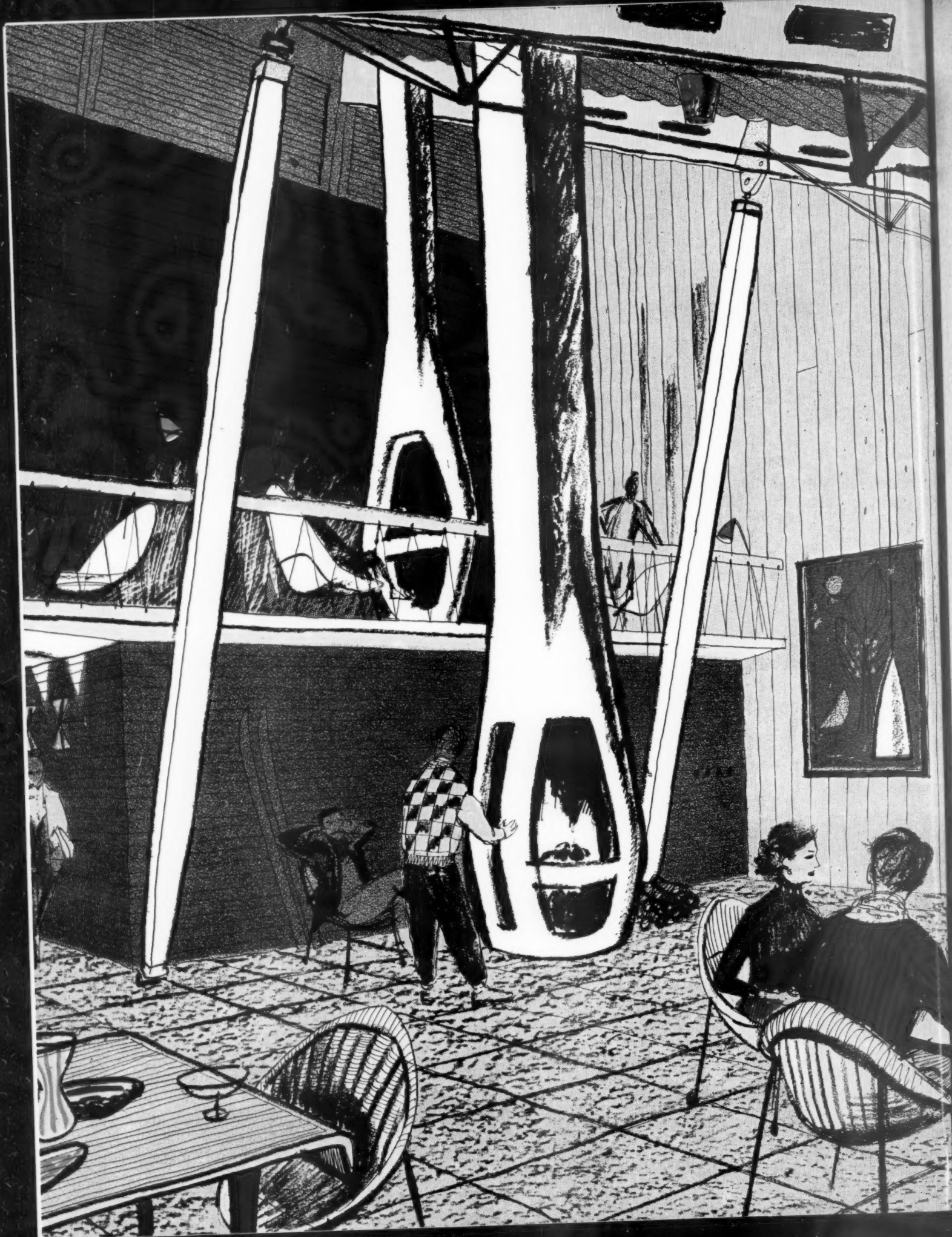
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THE ARCHITECTURAL REVIEW

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FIVE SHILLINGS



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Though he is so various that he has created no buildings which are typical of himself, there runs through the work of Ralph Erskine, an English architect now practising in Sweden, a constant preoccupation with themes such as shelter, exemplified, in one of its possible senses, in the hotel he has recently designed for the ski-ing grounds at Borga described and illustrated, with his other recent work, on pp. 9-19. Most of the building lies snugly below ground, and is married into the landscape, but the main hall, seen in an impression by Kenneth Browne, opposite , with its light detailing, its free-standing stoves and its canted structural members supporting a sloping roof which carries a ski-run, gives a pioneer sense of encampment, of the need to defend oneself quickly against the wintry cold of the landscape outside.

Peter Collins

MODULOR

The ideas which Le Corbusier has publicized in his long career usually have two characteristics in common; firstly, an element of paradox in the way they are expressed, and, secondly, a grandness of conception as regards their application and their ultimate benefit to humanity. The paradoxical nature of his theories has been neatly described by Mr. John Summerson in one of his essays in *Heavenly Mansions*; the grandness of his conceptions is apparent to the most superficial observer, and relates Le Corbusier more closely to the revolutionary architects of the eighteenth century than do the novel shapes of his buildings, or the intensity of his humanitarian ideals.

The *Modulor*, as an idea, is as breathtakingly ambitious as the *Unite d'Habitation* in its aim to provide an objective ideal solution to a general human problem; it is also the most paradoxical theory of design which could be enunciated by a violent opponent of academicism. Le Corbusier envisages every architect and engineer having on his drawing board not only a foot or decimetre scale for measuring, but also a *Modulor* scale for proportioning, so that every object designed for human use shall correspond to a single all-pervading harmony.

There is no need to describe here the *Modulor* in detail. The years of research during which it was formulated have been described by Le Corbusier carefully and at times grandiloquently, and every architect should study his book, which has just been skilfully translated by Peter de Francia and Anna Bostock.* Briefly, the problem was to find a series of proportions all related directly to the human stature, and the solution adopted was to evaluate dimensions in the Fibonacci series based on the length 6 ft.

The Fibonacci series is a simple series of numbers in which each additional figure is formed by adding the two previous numbers, thus 1, 2, 3, 5, 8, 13, 21, etc. This can be expressed algebraically as $a, b, a+b, a+2b, 2a+3b, 3a+5b, 5a+8b$, etc. The principal virtue of this series is that the larger the numbers become the more does $\frac{a}{b}$ tend to equal $\frac{b}{a+b}$ etc. Now the formula

$a : b :: b : a+b$, or $\frac{a}{b} = \frac{b}{a+b}$ is the expression of the 'golden section', and can be expressed

numerically to four figures as $\frac{.618}{1} = \frac{1}{1.618}$. It will be seen, however, that these figures are not quite accurate, as by multiplying across we get $1 = .999924$.

* *THE MODULOR: A harmonious measure to the human scale universally applicable to architecture and mechanics.* By Le Corbusier. Faber & Faber. 25s.

So much, then, for the general arithmetic of the theory, which was explained in detail by Matila Ghyka in the February, 1948, issue of *THE ARCHITECTURAL REVIEW*. Before the reader of *The Modulor* accepts all its implications, he will have to decide, firstly, to what extent any modular system of design can be justified, and, secondly, whether any such system can have objective and universal validity.

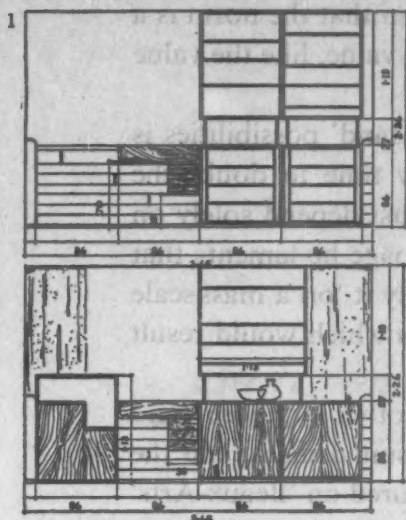
To discuss the first question, we must begin by distinguishing between the various meanings of the word 'module'. Firstly, it can mean a standard measurement of which all elements of a design are multiples. In practice this type of module is inevitably used by every craftsman, since it can be taken as the maximum amount of tolerance. If a joiner works to the nearest $\frac{1}{8}$ ", then $\frac{1}{8}$ " is his module. The aim of the Modular Society is to design not to the dimension of tolerance, but to a module of four inches, which will, by ensuring that everything is in multiples of this dimension, increase the standardization of manufactured articles, and enable a great number of diverse elements to be fitted together perfectly.

Another type of module is the basic measurement used to regularize the rhythm of elements in a building. At Le Havre, for example, Perret established a module of 1 ft. 9 ins. for his facades, but this dimension is used only for the general disposition of the parts, and is seldom actually found in the buildings except in the *inter-axial* spacing of various elements.

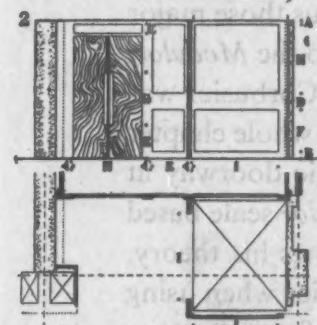
Thirdly, we have the modular system of the classical orders which was set out by Vitruvius, although modified by every major architect of the Renaissance, since its precise values are not supported by the great monuments of Greece and Rome. The Vitruvian system is not concerned with measurements as such but with proportion, and is an algebraic system for standardizing the relationship of parts, whatever the scale.

Two other systems of proportioning independently of scale may be mentioned. One is the method of relating all proportions to those of musical intervals. This method, which has been dealt with exhaustively by Professor Wittkower in *Architectural Principles in the Age of Humanism*, is similar to the method proposed by Le Corbusier, except that the relationship of units is based not on the 'golden section', but on harmonic proportions. Aware of the 'divine proportion' which links all musical sounds by simple arithmetic relationships, the Renaissance theorists concluded that such proportions might be objectively valid throughout the entire universe, and sought to apply them to obtain harmony in architectural design. Palladio was the only architect we know of who made a serious attempt to incorporate these proportions fully into his buildings, basing them on the Vicentine foot of approximately $13\frac{1}{4}$ English inches. Yet even within the wide limitations of Renaissance planning and structural requirements he found difficulty in putting the system into practice, hence the frequent disparity between the dimensions of his original drawings and those of his finished buildings.

The other system is the control of design by simple geometric forms such as triangles, squares, circles, golden sections, etc. This method, advocated by Le Corbusier in *Towards a New Architecture*, has behind it a long tradition in Gothic as well as Classical design, and it was the basis of the early French academic system. François Blondel, the first Academy professor in Paris, claimed it as the basis of his design for the Porte S. Denis, and although his successor in office, Jacques-François Blondel, has demonstrated in *L'Architecture Française* that the true measurements of the Porte S. Denis do not in fact coincide with the proportions published in François Blondel's *Cours d'Architecture*, this edifice has always been regarded as one of the classic proofs of the method, and was accepted as such by Le Corbusier. François Blondel's teaching was attacked by Claude Perrault, who claimed in his *Ordonnance des Cinq Espèces de Colonnes* that if certain proportions in buildings seem more beautiful than others, it is only



It will be seen in this example of furniture units designed to the Modulor scale that there is a gap of 11 cms. at each end between the furniture and the wall. This is due to the fact that the width of the room is also a Modulor dimension.



The values for the dimensions in the diagram are: A = 21" (red); B = 4" (red); C = 6 1/2" (red); D = 10 1/2" (red); E = 21" (blue); F = 27 1/2" (red); G = 34" (blue); H = 44 1/2" (red); I = 55" (blue).

because we have grown accustomed to them. The controversy between those who believe in objective systems of proportioning and those who do not has continued almost uninterrupted from the seventeenth century until the present day.

The novelty of the *Modulor* is that it combines two modules in one, a module of measurement and a module of scale. As a module of measurement it is to some extent limited by the fact that it is not capable of equal subdivision, 1. A more serious limitation is that although the dimensions at the base of the scale are reasonably small (if less accurate expressions of the 'golden section') they rapidly assume astronomic values as the logarithmic spiral progresses. Le Corbusier tried to overcome this difficulty by introducing a second spiral, or 'blue' series, running half way between the 'red' series, but in fact only the latter is based strictly on the height of a man. Nevertheless, even this subdivision is inadequate, and the *Modulor* tape sub-divides both series again by processes of interpolation to which Le Corbusier refers vaguely as 'secondary operations' (p. 160). As an example of this defect in the

system, let us examine his illustration, 2, of the interior of a room in the *Unite d'Habitation*.

The height of the room is 226 cms. (7 ft. 5 ins.) but the only *Modulor* dimension below this is 183 cms., i.e., the height of a man, so that to obtain a height for the door Le Corbusier is in

a dilemma, as the door is a flush door unbroken by small panels. He overcomes this difficulty adroitly by employing narrow push-plates 86 cms. high (*Modulor* dimension) and screwing them 53.4 cms. (*Modulor* dimension) from the ground. This leaves a distance (undimensioned in the drawing) for which the only possible *Modulor* dimension is 53.4 cms., thus giving a door of total height 192.8 cms., or 6 ft. 4 ins. Judging from other dimensions on the drawing, however, the door almost certainly measures 200 cms., and indeed Le Corbusier remarks elsewhere in his book that his doors are not kept strictly to *Modulor* dimensions. This departure is justified as 'a personal interpretation of the *Modulor*, the limitations which it imposes and the liberties which it allows' (p. 100).

Even the smaller dimensions suffer from this kind of inflexibility. The floor thicknesses of the *Unite d'Habitation* are of two dimensions, 33 cms. for the

intermediate 'balcony' floors, and 53.4 cms. for the fire-resisting floors between each flat. On consulting the *Modulor* scale, it will be seen that the structural engineer must have been asked to accommodate his calculations to values among the following *Modulor* dimensions: 26.7 cms., 33 cms., 43.2 cms., 53.4 cms., and 69.8 cms. In other words, thickness of the fire-resisting floor had to be either 1 ft. 5 ins., 1 ft. 10 ins., or 2 ft. 4 ins., differences not implying great economy of design in reinforced concrete.

The norm on which all the *Modulor* values are calculated is the height of a man. Originally Le Corbusier selected 175 cms., the conventional height of a man in the metric scale, which is equivalent to approximately 5 ft. 9 1/2 ins. (This compares with 5 ft. 7 1/2 ins. under the *ancien regime*, for the pre-revolution French foot was 15/16 of an English foot.) He found, however, that dimensions calculated on 175 cms. were very difficult to translate into inch measurements, and so in 1946 he changed the norm to 183 cms., or 72 ins. Seventy-two inches falls simply within the Fibonacci series: 1/2", 1", 1 1/2", 2 1/4", 4", 6 1/2", 10 1/2", 17", 27 1/2", 44 1/2", 72", etc., and was therefore a much more convenient norm for a system intended for the standardization of

dimensions in countries using both metric and English scales. It will be seen that the norm is a purely conventional dimension, adopted because of its practical arithmetic value, like the value of middle C in the musical scale.

The difficulty of selecting the correct value from 'a hundred or a thousand' possibilities is recognized by Le Corbusier, who adds: 'I still reserve the right at any time to doubt the solutions furnished by the *Modulor*, keeping intact my freedom which must depend solely on my feelings rather than on my reason' (p. 63). Yet only on the previous page he laments that American industrialists have not already seized upon the *Modulor* to apply it 'on a mass scale in the dimensioning of manufactured articles'. One can imagine the chaos which would result if the norm were to be changed once mass production had started!

But however perfect the figure accepted, the *Modulor* is still just another of those rigid academic systems which the great architects of the past ignored when it suited them, and the inferior architects used to justify their mediocrity. No amount of scorn poured on 'Beaux-Arts' star-shaped plans (pp. 61, 72, 223) will clear Le Corbusier's theory of a classification which he, more than any other writer of this century, has done his best to render opprobrious. The other systems do, however, have the advantage of being able to call on the evidence of a number of celebrated buildings the beauty of which is uncontested, even if the precise means whereby that beauty was obtained is not. As a demonstration of the value of the *Modulor*, Le Corbusier explains how its dimensions have been exclusively applied to the *Unite d'Habitation*, but he does not show how his theories relate to acknowledged masterpieces of the past, as he did when he put forward his earlier doctrine in *Towards a New Architecture*. He has not given us those major dimensions of Notre Dame, the Capitol, or the Petit Trianon which correspond to the *Modulor*, and it would be interesting to know whether the experiment was tried when Le Corbusier was formulating his system. It seems more than likely that it was tried and failed, for a whole chapter in his book is devoted to demonstrating how the dimensions of a small Gothic doorway at Chaalis, or the height of a balustrade in Sancta Sophia, correspond to the *Modulor* scale based on 183 cms. The very sparseness of his evidence undermines rather than supports his theory, and the fact that he was able to find such scraps of corroborative evidence earlier when using the 175 cm. *Modulor* (p. 49) suggests that some door somewhere is bound to fit any system.

We are given reasons, which some may consider plausible, why the Parthenon cannot be expected to conform (p. 209), but unless Le Corbusier is claiming that the *Unite d'Habitation* is the first and only complete building ever to be erected to a harmonious and human scale, the onus is on him to show us that other buildings of perfect harmony and scale must have been *instinctively* designed to the proportions he proposes.

For this is the stumbling block of all novel systems of proportioning. Renaissance architects adopted Vitruvian canons *because they believed that the Greeks had actually used such canons to obtain the perfect beauty of their temples*. With new systems there is no such justification, for, if buildings were designed intuitively in the past without such systems, they can be so designed in the future. Le Corbusier exercises this intuition when he claims the right to disregard the *Modulor* if it produces results which are obviously unsatisfactory to the eye (p. 130). This he considers an example of his freedom from academic servitude, but it is also the most devastating refutation which the *Modulor* can suffer.

'I will fight against any formula and any set of instruments which take away the least particle of my freedom. I want to keep that freedom so intact that at the very moment when the golden figures and the diagrams point to a perfectly orthodox solution I may reply: "That may be so, but it is not beautiful."' (p. 183).

EIGHT BUILDINGS IN SWEDEN BY RALPH ERSKINE



Hotel at Borgafjäll



House at Storviks Hammarby.



House at Båge.



Village at Jädraås.



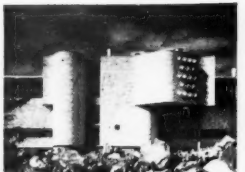
Housing at Storviks Hammarby.



Housing at Gytöpp.



Mattress Factory at Köping.



Cardboard Factory at Östenfors.



Ralph Erskine, architect of the buildings illustrated on the following pages.



The architect's summer office in a converted boathouse.

The stranger within the gates often comes to seem more like a native than the natives themselves, and to many English students of recent tendencies in architecture Ralph Erskine must have seemed—with his command of surface and picturesque composition—the very epitome of the newly-risen generation of Swedish Empiricists. But this ability to bring constituent Swedish tendencies to what appears to us so convincing and definitive a realization, probably depends on his being a stranger like ourselves, for he is British and his education, training and qualifications are quite normal by British standards—born in 1914, he went to the Friends' School in Saffron Walden, did his professional training at Regent Street Polytechnic and is an ARIBA and AMTPI. It is a training which would have brought most men of his age to a newly-established private practice, or the first secure foothold on the establishment of a large public office. But Erskine subsequently found himself in Sweden, and his development has therefore been an unusual one for a man of his background.

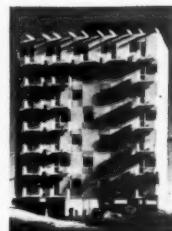
His value, to contemporary Swedish architecture, is clearly the specifically non-Swedish qualities which he brings to his designs, qualities which make him an unmistakable stranger to the Swedes, who appear to find his work more 'expressive' than their own—meaning by this, more interested in plasticity, and that plasticity, which we might be tempted to relate to some purely Baltic source, such as the work of Aalto, they see as descended from Tecton.

But, in spite of all this, it is clear that Erskine has made particular efforts to put himself in touch with both the physical and psychological aspects of his new environment. His town office is in a house near the Drottningholm Palace in Stockholm, lying just across a garden from his other house, in which he lives, but in summer the entire office goes *en villégiature* to a studio in a converted boathouse on an island in the Stockholm Archipelago, living and working in that summer rusticity which seems to be so highly valued in the psychology of Sweden's capital, if not in the country at large.

He arrived in Sweden just as the reaction against the International Style was beginning to make

itself felt—that reaction which we tend to regard as the main characteristic of recent architecture there—and his earliest Swedish work had the stamp of that Empirical and Romantic approach. But since then his protean inventiveness and his use of expressive plasticity have drawn him away from the common conception of Swedish Empiricism, and established him as an original.

In the ski-hotel at Borga one sees him trying to strike a sympathetic harmony between the building and its snowbound surroundings, and succeeding on his own terms as well as Wright did in relating Taliesin West to the desert, yet the interior asserts an entirely different kind of relationship between building and environment for—in spite of the solidity of its weather protection—the lightness of the detailing, and the exposed diagonal structure create a remarkable sense of encampment and temporary residence. Such an effect seems typical of his work, for his sense of shelter is imaginative and strong and often summons up his most original and decorative talent—the simple, massive, weathertight wall of the flats at Växjö, with the summer balconies suspended clear of it, or the need for extra-strong roof-structures at Gytorp resolved in the decorative undulation of a run of concrete vaults. His imagination is essentially visual and particularly three-dimensional, and it is this, no doubt, which makes him a stranger to the rather linear and diagrammatic traditions of modern architecture in both Britain, his country of origin, and Sweden, the land of his adoption.



Flats at Växjö, with summer balconies suspended clear of walls.

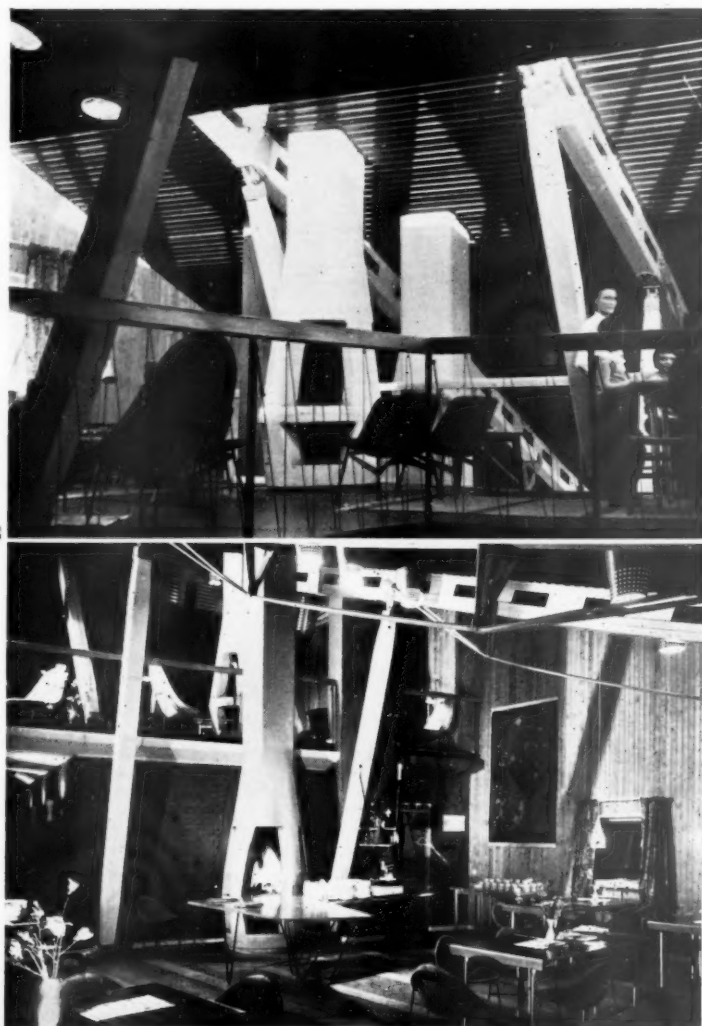
HOTEL AT BORGAFJÄLL

This ski, fishing and general 'mountain' hotel in South Lapland for 70-80 guests is 75 miles from the nearest small town and railway. It is largely underground and carries ski runs over its roofs. Local materials have been used as far as possible, partly to make a *terrain sculpture* and partly to cut transport costs. Wind screens have been constructed to build up snow in sculptural forms. The main structure is planned as a wooden shell with a secondary concrete building placed inside it housing the kitchen and boiler-room. The building is painted in slightly dissonant primary colours to give, like the Laps dress, a splash of intensive colour in the almost colourless winter landscape.

Walls are timber studs double panelled on both sides; timber roofing is covered with bitumen-finished steel sheet; floors and the dining room foundations are cast in concrete; the kitchen foundations are concrete blocks cast on the site; floors in corridors and halls are covered with local stone tiles; the main construction internally is painted white, with steel elements in blue and yellow; all other wood surfaces are acid stained or treated with ammoniac.



1

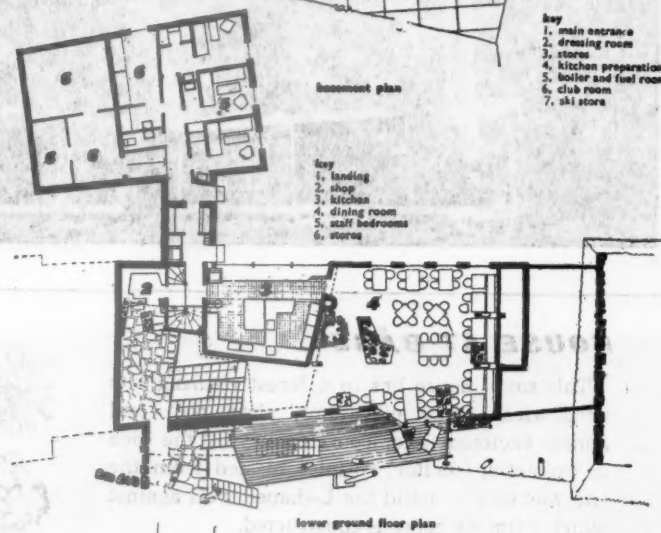
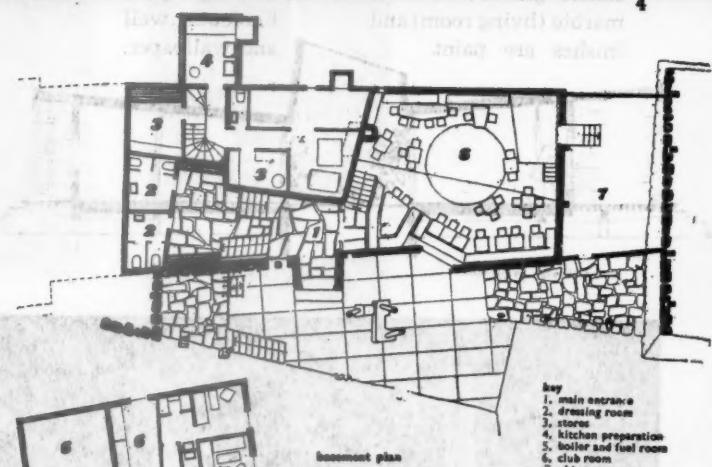
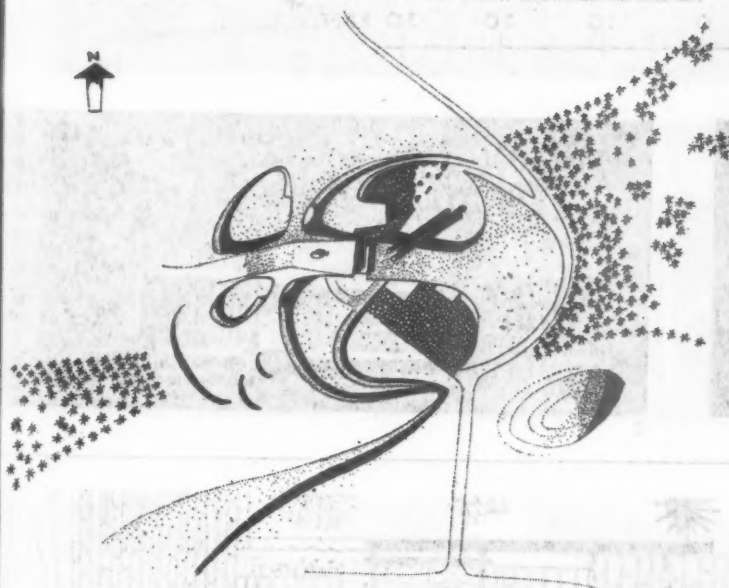


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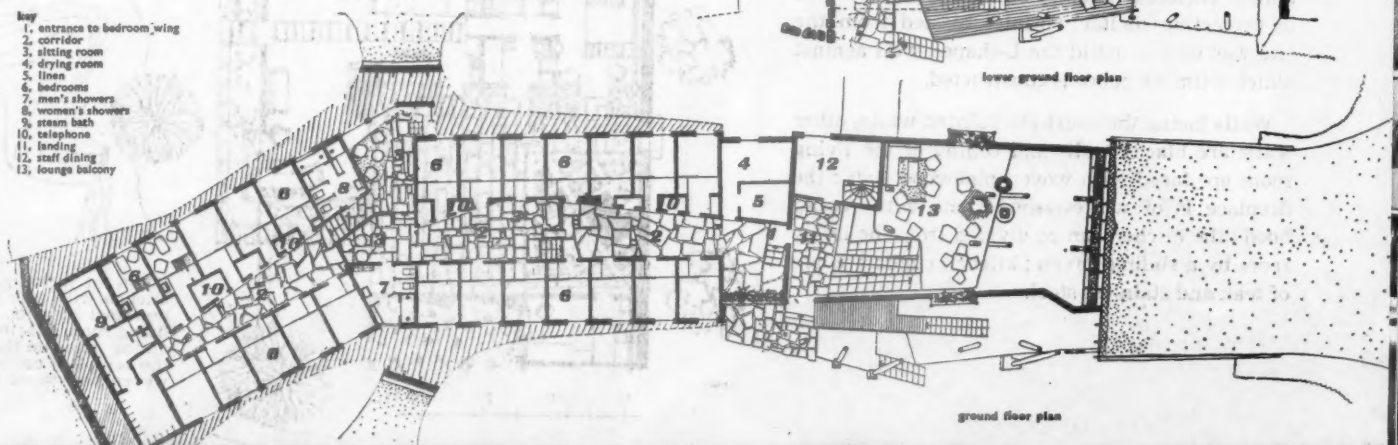
3



1, on the facing page, general view of the ski hotel from the south. 2, the ground floor lounge, and 3, the lower ground floor dining room. On page 4 is a drawing by Kenneth Browne, in colour, of this floor. 4, the south elevation showing the ski run over the roofs.



- key
1. entrance to bedroom wing
2. corridor
3. sitting room
4. drying room
5. linen
6. bedrooms
7. men's showers
8. women's showers
9. steam bath
10. telephone
11. landing
12. staff dining
13. lounge balcony

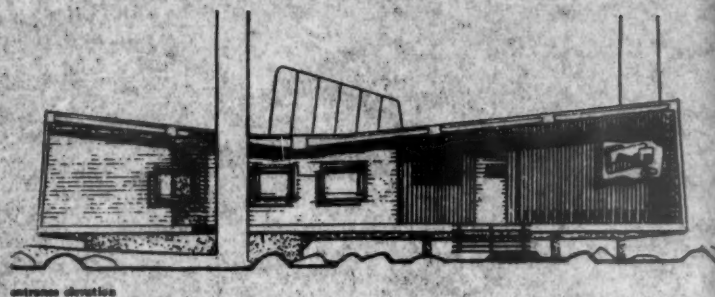


HOUSE AT STORVIKS HAMMARBY

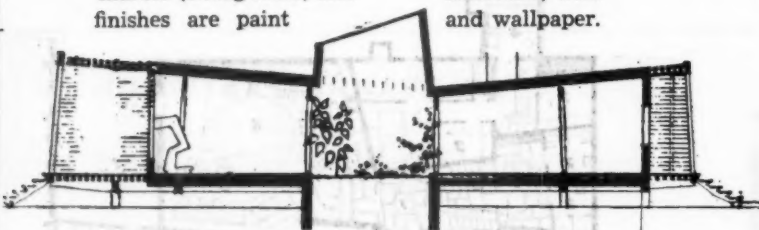
This house, completed in 1949, was designed for the Swedish climate with its long winter and intense short summer. The house plan is compact but surrounded with verandahs and balconies. There is an interior winter garden with a glass roof which not only lets light generally in to the centre of the house but also allows morning and afternoon sunlight to parts which otherwise have sun during one part of the day only. The house is planned to be run without servants. Each child has its own bed-sitting room opening on to a common room in direct contact with the kitchen. The children enter the house through a utility room with drying cupboards and provision for washing dirty boots.

The structural frame is a system of exposed pre-cast concrete stanchions and beams; walls are timber framing with weather boarding, insulation material and t. and g. boarding; floors are timber on r.c. slab; the roof has two layers of asphalt paper on wooden panels with $\frac{3}{4}$ -in. stone composition insulation; windows are timber framed and double glazed; floor finishes are oak parquet, marble (living room) and linoleum; wall finishes are paint and wallpaper.

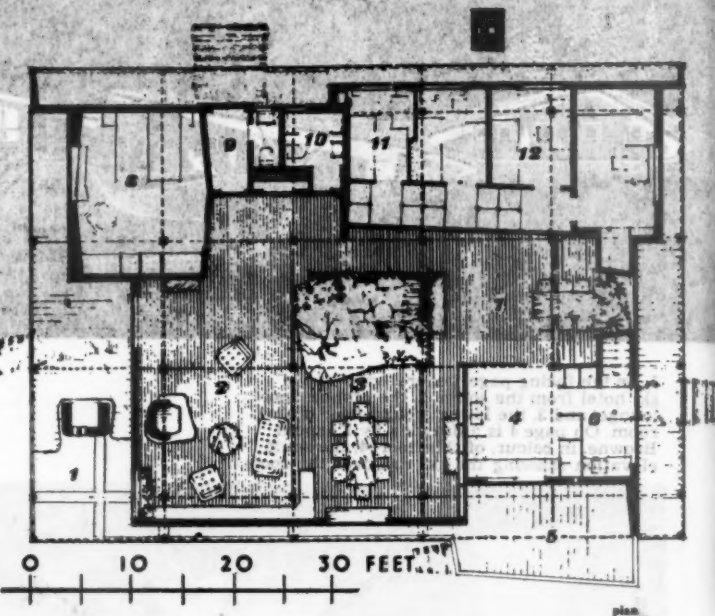
- key
- 1. verandah
- 2. living room
- 3. dining room
- 4. kitchen
- 5. dining service
- 6. entry
- 7. living room
- 8. bedroom
- 9. entrance
- 10. bathroom
- 11. guest room
- 12. children



entrance elevation



section through living room



plan



5

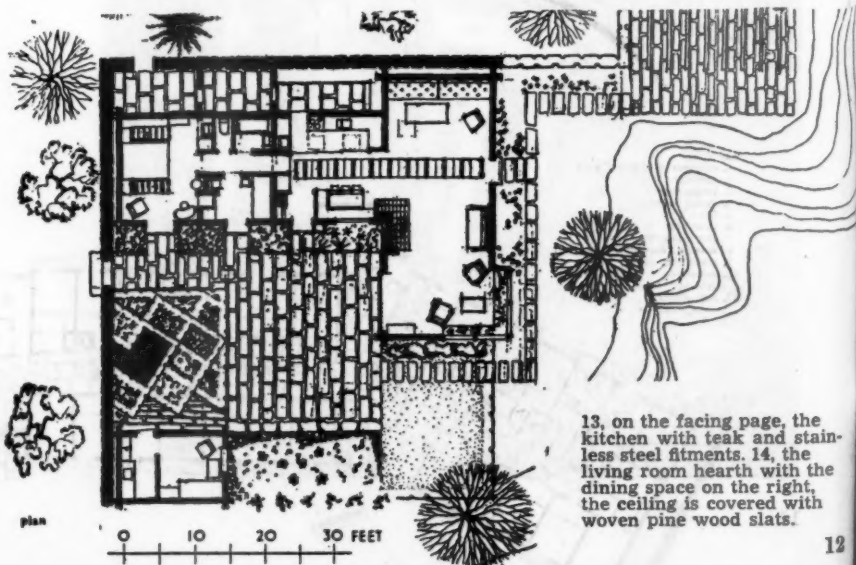


6

HOUSE AT BÅGE

This small house lies in a forest clearing; its windowless stone elevations, slate roof and almost enclosed inner court conveying the idea of protective shelter. Granite blasted from the site was used to build the L-shaped wall against which a timber house is constructed.

Walls facing the court are painted white, other walls are black; walls and ceiling of the living room are faced with woven pinewood slats; the fireplace is of whitewashed stone with copper hood; the kitchen can be divided from the living room by a sliding screen; kitchen cupboards are of teak and stainless steel.

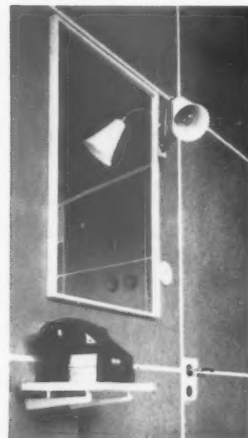


plan

13, on the facing page, the kitchen with teak and stainless steel fittings. 14, the living room hearth with the dining space on the right, the ceiling is covered with woven pine wood slats.



5 and 6, on the facing page, rear and entrance elevations. 7, the verandah and free-standing chimney which carries the flue from the living room fire, as well as the outdoor one at the base of the stack. 8, the living room hearth, and 9, the living room looking towards what the architect intended as an internal patio-garden (see plan on facing page). 10 and 11, two details of light fittings in the bedrooms.



10



11



8



9

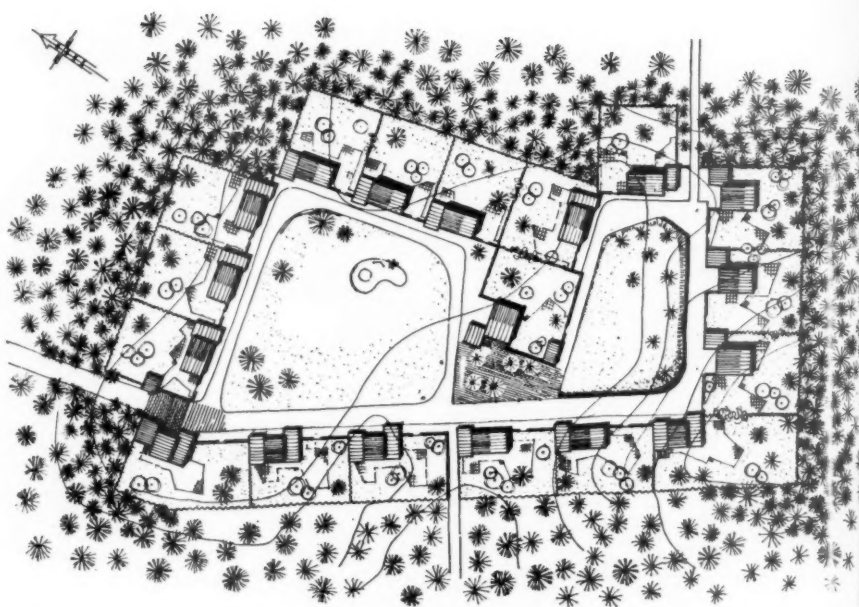


13

VILLAGE AT JÄDRAÅS

Forestry workers have hitherto lived isolated in the forest either with their families or in primitive working camps. Road making and transport methods used for bringing timber out of the forest now make it practical to plan villages in suitable sites, the workers being driven into the forest by buses. The village illustrated here consists of 18 houses and providing accommodation for workmen from the local railway workshops, foremen and clerical staff as well as the forestry workers. The houses have a living room, kitchen and two or three bedrooms. In certain houses, intended for foremen, one bedroom is on the ground floor and can be used as an office or study. The working space of the house consists of the kitchen, with its dining space, the utility room with wash boiler, drying cupboard, broom cupboard, etc., the shed and the cellar. The normal working entrance to the house is through the shed, where dirty boots, tools, rain clothes and cycles are left before entering the living rooms.

Ground floors are aerated concrete; construction is wood frame with stone composition insulation; roofs are covered with corrugated asbestos.



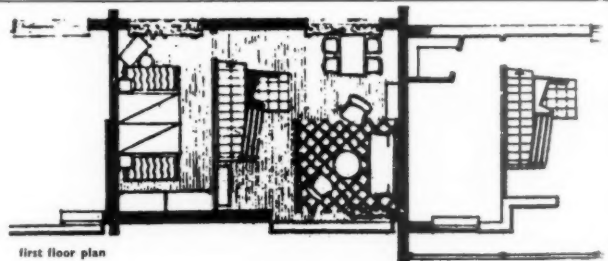
site plan

HOUSING AT STORVIKS

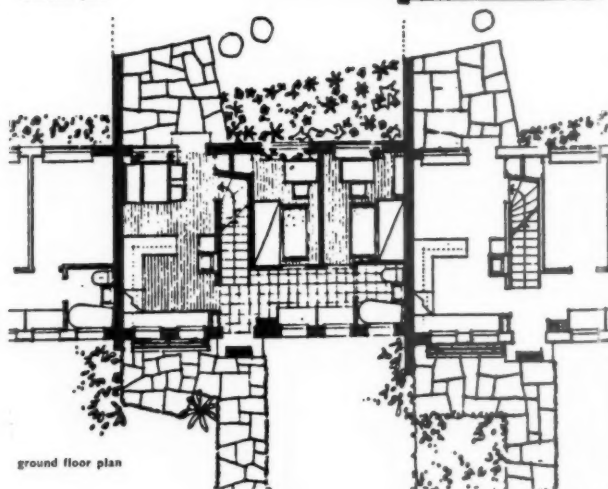
HAMMARBY

These three- and four-room houses, the first stage of four groups of forty dwellings with school and shops subsidised by the local paper pulp industry, are built in chain form around an open grass area, to become the future neighbourhood's village green. The houses are joined by a wall or an outhouse giving semi-enclosed gardens and have greater privacy than is the case with terrace houses. Living rooms, which are planned on the first floor, and kitchen-dining areas face both green and garden.

Walls are of light concrete blocks and ground floor walls facing the green are faced with slag-stone (residue of a now abandoned local iron ore industry) which has an uneven blue lustre; floors are of reinforced concrete; roofs are tiles on timber joists; windows are double glazed.



first floor plan



ground floor plan



perspective



15

Erskine's plastic treatment of exteriors is mirrored by his landscape-like treatment of the insides of his houses; spaces revealed behind return walls or turn-down ceilings; 15, living room, hall and staircase in one of the houses for forestry workers at Jädraas. 16, first floor living room in a house at Storviks Hammarby. The staircase rises behind the fireplace, with its curved flanks rising to meet a sloping wood ceiling—devices which 'expand' what is in fact a very limited space.



16

15

HOUSING AT GYTTRORP

When completed this scheme will comprise a village of 100 dwellings with community centre, shops and district heating plant.

Walls are concrete blocks faced with plaster ; roofs are of 3-in. shell concrete construction with

insulation space, timber panelling and asphalt paper ; floors are reinforced concrete ; windows are double glazed and timber framed ; exterior finishes are coloured plaster, and untreated or bush hammered concrete ; interior finishes are painted plaster or wallpaper.



17, one of the terrace blocks with flats on the left.

MATTRESS FACTORY AT KÖPING

This factory is for the treatment of horse hair and feathers and the manufacture of mattresses.

Structural frame is of reinforced concrete with brick infilling ; floors are of reinforced concrete slab ; the roof over the office block and feather department is shell concrete with 4-in. stone composition insulation, 2-in. airspace, boarding and two layers of asphalt paper (the projecting roof over the balcony in the office block being a separate construction from the main block) ; windows are double glazed ; exterior finishes are red brick with recessed black pointing and coloured plaster panels.



19

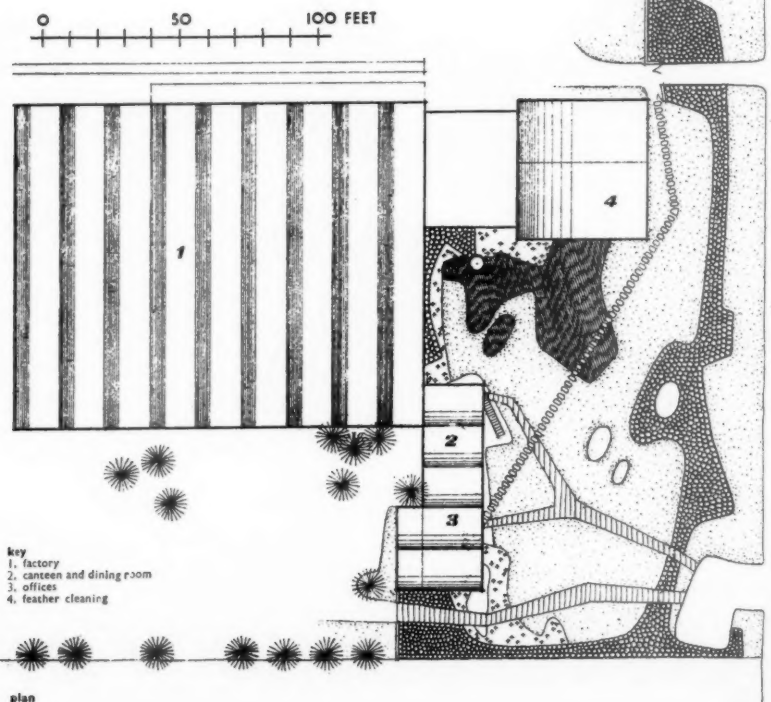


20

19 and 20, two interiors of the office block: 19, the director's office, and 20, the entrance hall. 21, the staircase leading to the canteen and dining room. 22, on the facing page, view beneath the canteen terrace. 23 and 24, two general views with the office block on the left and the factory to the right. The tall block on the far right of 23 is the feather cleaning shop.



21

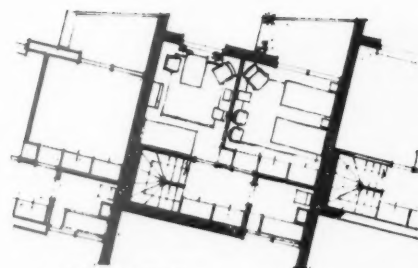




18. the entrance elevation of one of the terraces.



typical ground floor plan

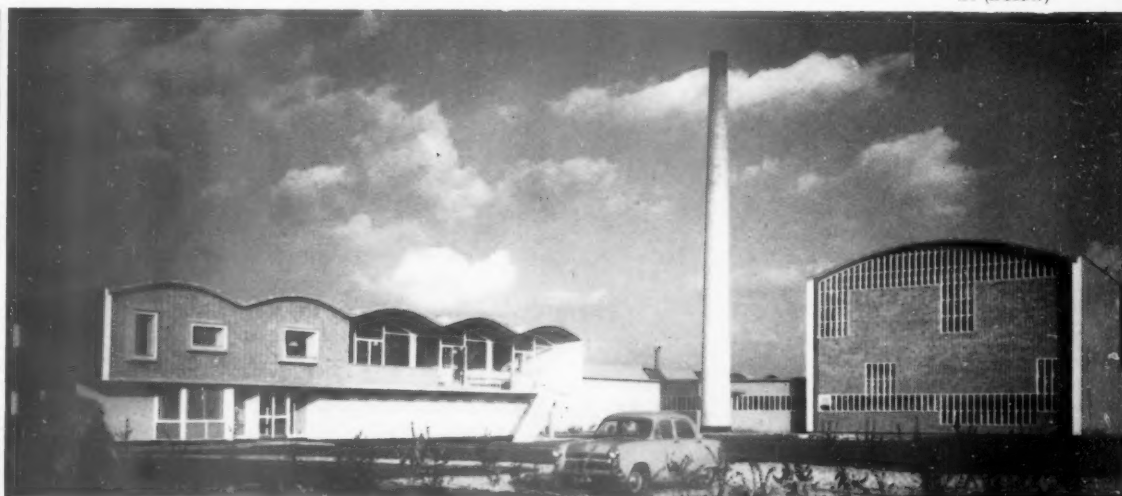


typical first floor plan

22

23

21 (below)



25



25, view along the west flank of the building, 26 and 27, the loading bay with cantilevered reinforced concrete canopy. The end wall seen on the right in 26 has a temporary finish, to allow for a future extension. 28, 29 and 30, on the facing page, views of the ventilator house on the east side of the building.

CARDBOARD FACTORY AT ÖSTENFORS

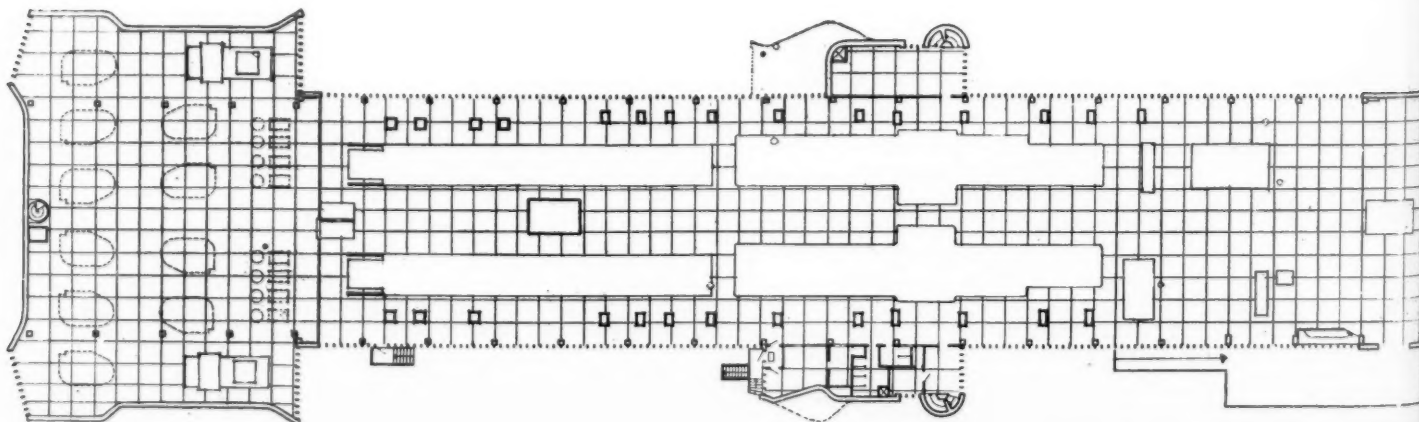
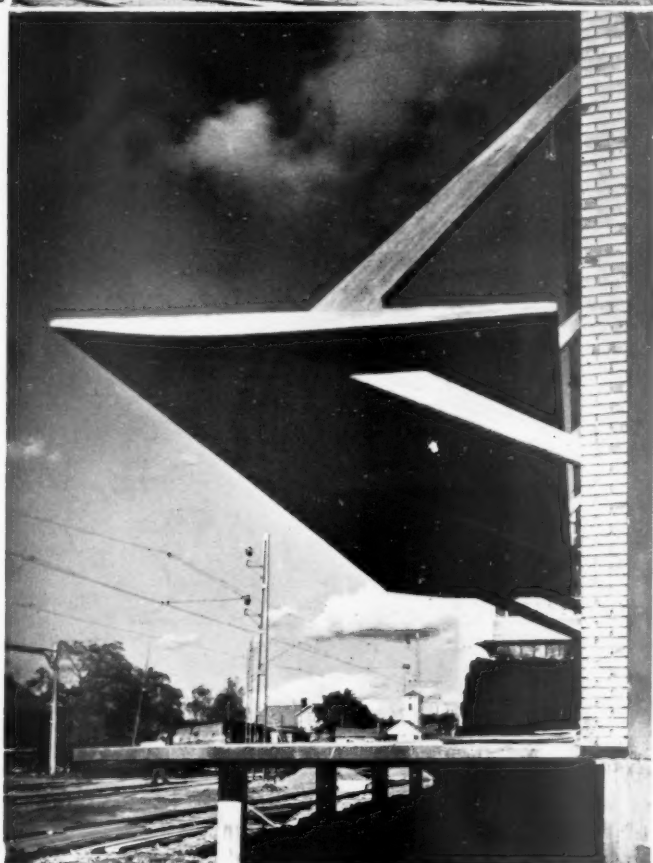
The controlling requirement in the design of this factory was a 426-ft. aisle which would allow all machines to be reached by an overhead crane. Columns along this aisle carry the crane track and support the roof beams, the roof cantilevering either side of the aisle. Brick walls are curved in places to give the necessary stiffening against a strong prevailing wind without concrete supports.

The construction is of reinforced concrete framing with 15-ft. bays; walls are brick; floors are of reinforced concrete; the roof is of light-weight precast reinforced concrete slabs with two layers of asphalt paper; windows are triple glazed; wall finishes are yellow brick inside and out; a false ceiling of anodised aluminium forms an extraction duct for the ventilation system.

26



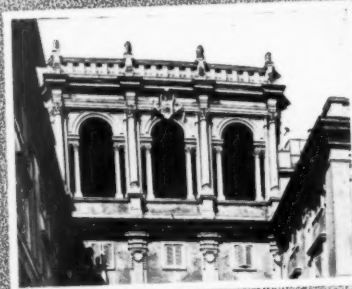
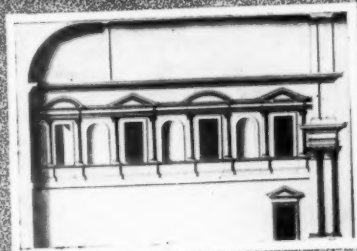
27



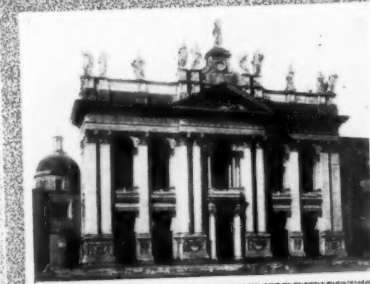
ground floor plan







GIBBS AND HIS SOURCES





Gibbs's gift for intelligent borrowing is best shown in *St. Mary-le-Strand*, executed on his return to England. Italianate, it fits perfectly into the London scene, its detailing a blend of British and Italian motifs.

The upper nave windows combine Palladio, 1, and Borromini, 2; the lower rank draw on Jones's *Banqueting House*, 3. The porch is from St.

Paul's, 4, with details from Wren's original source,

Cortona's *Sta. Maria della Pace*, 5, and the upper west front is related to the East End of Galilei's *S. Giovanni in Laterano*, 6.

S. Lang

GIBBS

A BICENTENARY REVIEW OF HIS ARCHITECTURAL SOURCES

The bicentenary of the death of James Gibbs falls next month. Although he was a prolific and in his time much sought-after architect and the author of a most successful *Book of Architecture*, neither his life history nor his work has been fully studied: least of all have the sources of his work been investigated. Gibbs has been accused of having been an eclectic but that would certainly be a wrong estimation of him; for two reasons: firstly Gibbs, having spent his most impressionable years in Italy, felt himself very much an Italian and an expert in matters Italian. He signed his name mostly, though incorrectly, in Italianate manner as "Jacobo Gibbs, Architecto" and frequently mentioned his prolonged stay there, obviously implying that he must know better than other architects who had made just a hasty tour, what was Italian. Such an attitude may account for the use of rather obscure and far-fetched motifs, the absence of motifs taken from the usual books and the absence of French or Dutch ideas. But secondly Gibbs also invented new types and created new motifs and shapes by developing further traditional ideas. In this article an attempt has been made to explain Gibbs's architectural style by investigating his sources and demonstrating the use he made of them.

James Gibbs of all English post-Renaissance architects was the least insular and the only one whose style formed part of the main stream of contemporary European architecture. It is true of course that Inigo Jones, Wren, Hawksmoor, Vanbrugh, Burlington, Archer and others had drawn on, and been greatly influenced by, a variety of Continental forms; Burlington was a Palladian—but he was so 200 years after Palladio's time; Hawksmoor applied many single motifs of French and Italian architecture—but he applied them without entering into the spirit of Baroque spatial conceptions. His was a

style entirely different in its intentions from Continental Baroque. The same is true of Thomas Archer; he too created an independent, highly individual style in which Baroque motifs occur, but his buildings cannot be called Baroque in the true sense either. These architects were Romantics and although their work did in the end contribute much towards European architecture, in their lifetime they were isolated from a European point of view, and they did not produce any immediate artistic progeny; they were forerunners, but not ancestors.

Not so Gibbs. His work belonged to contemporary European architecture and had substantial immediate influence. The spire of St. Martin in the Fields has been imitated in places as distant from Charing Cross as St. George's, Dublin,¹ and Providence, USA, and the architectural types he created remained valid for some time.

At the time of Gibbs's arrival in Rome and more so a decade later, when he began work in England, the beginning of the end of the Baroque could be discerned by any searching eye, though the end did not come until after the mid-century. But what characterizes the early eighteenth century is that the main stream of the Baroque began to branch out into many rivulets which gradually became independent rivers; the all pervading influence of Italy began to wane, and the hitherto unproductive or subservient countries began to show signs of intransigence. Austria produced a special Late Baroque style besides an early classicism,² France the Rococo, in Italy itself types of classicist tendencies began to appear side by side with a specifically Italian Rococo. Thus in trying to circumscribe Gibbs's position the question will have to be asked: to which branch of the continental stream does his work relate? It is true that he spent eight years in Italy, but he had been for a nearly equal period in Holland and had travelled through Flanders, Switzerland, France and Germany. Very little is known of his stay in Holland, where he had gone in 1694 after the death of his parents to join an aunt. In the manuscript now preserved in the Soane Museum, which contains most probably his own memoir,³ it is mentioned that he studied with an architect, but so far this architect has not been identified. Equally little is known about Gibbs's sojourn in France, Switzerland, Germany and Flanders. About his stay in Italy a little more is recorded. The sources of our knowledge are threefold: the memoir, Gibbs's own letters⁴ and other people's letters referring to him.⁵ The memoir gives lists of buildings in many Italian towns, and it is probably correct to assume that Gibbs was in some way

familiar with the churches and palaces mentioned. In his letters he mentions as his teachers Fontana, Abramo Paris and Garroli,⁶ and letters from English Noblemen making the Grand Tour confirm Gibbs's own assertion that he had lived in Rome for many years, given to the study of architecture.⁷ Unfortunately very little is known of either Paris or Garroli. The latter was professor of perspective at the Accademia di San Luca.⁸ Paris may conceivably have been a member of Fontana's workshops or one of his pupils, since he was in contact with another of Fontana's pupils, Fischer von Erlach.⁹ Yet another pupil of Fontana at the time was the South Italian Filippo Juvarra,¹⁰ the architect of the Superga in Turin who later on visited England and appears to have known Burlington.¹¹ Nothing is on record about any connection with Gibbs, but in Gibbs's collection are a number of drawings for coats of arms and cartouches with Juvarra's signature. What other Italian architects Gibbs may have known must remain a matter for conjecture. Galilei also a visitor to England¹² is a likely contact and Gibbs's collection at Oxford contains a print of the Lateran façade by Galilei.

Again nothing is known of any French acquaintances of Gibbs. The Invalides were building when Gibbs passed through France; his collection contains French inscribed plans of Roman churches; he owned a volume of drawings by Cotellet, a *Recueil de divers Dessins de Fontaines et des Frises Maritimes Inventés et dessinés per Monsieur Le Brun* . . . and several prints of French churches.

But in spite of his continental background and affiliations and his Scottish descent, Gibbs did fit into the English architectural scene, a fact which is the more remarkable because he had never been in Eng-

¹ M. Whiffen, 'The Progeny of St. Martin in the Fields,' *The Architectural Review*, Vol. 100, London, 1946, p. 5.

² H. Sedlmayr *Osterreichische Barockarchitektur*. Vienna, 1930. *Passim*.

³ This manuscript entitled *A few short remarks on some of the finest Ancient and modern Buildings in Rome, and other parts of Italy, by Mr. Gibbs while he was studying architecture there* is possibly written by his own hand though it should be noticed that the date of the architect's birth had been erased and filled by a different hand. It is also certain that the whole of it, even the account of his Italian days, was written and probably also only composed towards the end of Gibbs's life, since the author refers to a palazzo Odescalchi as being owned by the Duke of Bracciano; name and ownership of this palace only dates from 1745. Somewhere else in the text reference is being made to a book as published in 1715.

⁴ *R.C.H.M., Egmont*, Vol. 2, p. 218, p. 234 f.; *Stuart*, Vol. 4, p. 569; *Portland*, Vol. 5, p. 332.

⁵ *R.C.H.M., Egmont*, Vol. 2, p. 217, Sir John Percival to Mr. Gouge; *Stuart*, Vol. 2, p. 92; cf. also infra footnote 18.

⁶ A reference to Signor Abramo Paris 'his old master' is made in a letter of Gibbs to the Earl of Mar in 1717. Cf. *R.C.H.M., Stuart*, Vol. 4, p. 568.

⁷ Cf. footnote No. 5.

⁸ Pietro Francesco Garroli, painter of architectural subjects 1638-1716, Professor of perspective at the Accademia di San Luca; practically nothing is known of him.

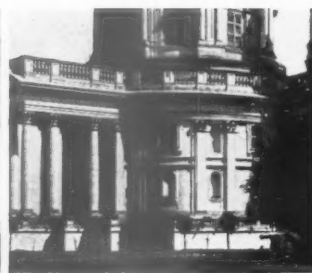
⁹ J. J. Morper, *Der Prager Architekt J. B. Mathey, Münchener Jahrbuch der bildenden Kunst*. N.S., Vol. 4, Munich, 1927, p. 197 ff.

¹⁰ There is an inscription by Juvarra on a design in the Museo Civico in Turin for a monument for Carlo Fontana, in which he describes himself as Fontana's pupil.

¹¹ R. Wittkower, 'Un Libro di Schizzi di Filippo Juvarra a Chatsworth' in *Bollettino delle Società Piemontese d'Archeologia e di Belle Arti*, Vol. III, Turin, 1949, p. 1, ff. *passim*.

¹² I. Toesca, 'Alessandro Galilei in Inghilterra,' *English Miscellany*, Vol. 8, Rome, 1952, pp. 189 ff.

GIBBS AND HIS SOURCES



Immediately after St. Mary had been finished, the Earl of Burlington 'bid him build him house and offices in Piccadilly.* Unless a lucky find provides us with some more information we will probably never find out precisely how much Gibbs did at Burlington House.** Colen Campbell claimed† that he was the architect, and since he is silent about the colonnade of the courtyard we can assume that this feature was Gibbs's contribution. The general layout of the semi-circular colonnade, **c**, demolished as recently as 1868, makes us think of Fontana's Curia Innocenziana in the Palazzo Monte Citorio, 7, although gain the details differ. The plan is

nearly identical, but Fontana has solid walls, Gibbs columns, like Palladio in his villas and Bernini at St. Peter's. The steeple for St. Clement Danes, **d**, was built as an addition to Wren's church. Although it follows the general arrangement of London steeples, that is several storeys of tempiettos put on top of each other, the tempiettos themselves are definitely Italian in character. The first stage amounts to a copy of one storey of St. Biagio at Montepulciano, 8, and is thus one of the few examples where Gibbs turned to sixteenth century architecture of the High Renaissance. Amongst preliminary designs for St. Martin in the Fields is one on a circular plan, **e** (plate 15 in his Book) which seems to have taken its cue from Sta. Maria di Carignano in Genoa, 9, as well as from motifs used by Juvarra in his Superga in Turin, 10. Gibbs has

designed and built a number of country houses, some of which are vaguely reminiscent of Roman palaces, but their strongest influence obviously was Palladio. The piano nobile and the attic storey of Down Hall, **f**, bear a strong resemblance to the Rotonda, 11, as well as to the Villa Tornieri, 12. The centre motif of the house at Whitton, **g**, comes from the Second Book of Palladio (Chapter XIV), 13, and the rusticated centre of his plate 58, **h**, as well as several others have been supplied by the Villa in Cesalto, 14. As has been established elsewhere‡ Gibbs followed Hawksmoor's general ideas, as to site, over-all shape and general division of the Radcliffe Camera. The Camera, **i**, Gibbs's last building, is in a way more Italianate than those of his middle

period: on the one hand Hawksmoor, 15, had followed very largely Italian models and Gibbs, at last able to erect a centralized building, may have turned to Italy as the home of circular buildings, and in particular to Carlo Fontana's, his old teacher's, publication of St. Peter's (p. 337), 16 (see especially the coupled columns, volutes and eases, though transposed), but also to a model mentioned above—the Superga at Turin. But this last work of Gibbs when it was completed about 1747 was really behind the times, the work of somebody harking back to what he had learned in his youth. From all this one might indeed believe Gibbs to have simply been an eclectic were it not for St. Martin in the Fields, the paramount example for Gibbs as an innovator. The interior, **j**, though more English than St. Mary-le-Strand, still differs considerably from English proto-

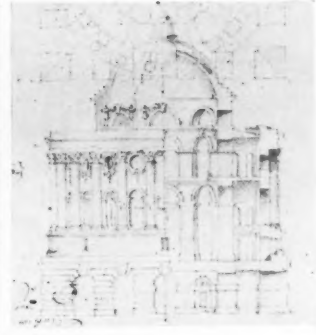
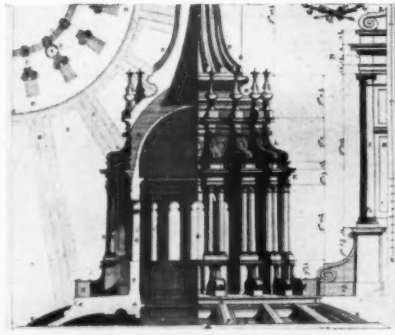
* Cf. Gibbs's *Memoirs* in Soane Museum.

** There is a certain similarity in plan and elevation between Burlington House and early designs for an oblong Radcliffe Camera.

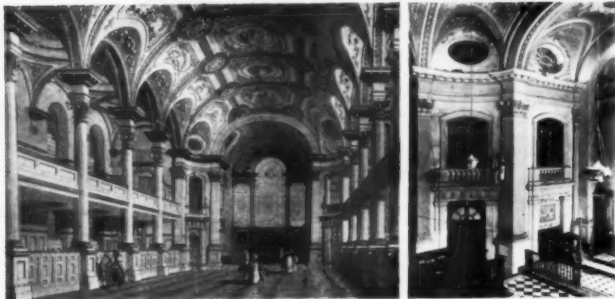
† In his *Vitr. Brit.* Vol. III, p. 7.

‡ See S. Lang, 'Hawksmoor out of Gibbs,' *Arch. Rev.*, Vol. CV, 1949, pp. 183 ff.

GIBBS AND HIS SOURCES



15, 16



J, k



17



I, m



18, 19



n



20

types. For Gibbs the wooden galleries are an accessory, fitted in somehow, but they do not influence the construction as do the galleries in churches by Wren, or in John James's St. George's, Hanover Square, 17; there the galleries rest on piers and the columns only start from the floor of the church. It is also contrary to earlier English usage that the ceiling of the nave is connected with the aisles by parts of barrel vaults lying across the very shallow main vault. By this means nave and aisles become a single space and an airiness and lightness is achieved comparable to that of the Late Baroque churches in other countries. The aisles are vaulted by shallow domes as at St. Paul's, but the choir with its balconies and curved end wall, **k**, is distinctly

reminiscent of Italy. The most familiar feature of St. Martin is its tower placed above and behind the portico, **l**. That remains Gibbs's own invention. The portico itself, however, has amongst its ancestors probably Inigo Jones's St. Paul's, Covent Garden, and also his St. Paul's (in spite of the lack of a pediment) and certainly Hawksmoor's Clarendon Building, Oxford, of 1714 (St. George's, Bloomsbury, was built at the same time as St. Martin). In addition the Pantheon in Rome, 19 (engraved by G. B. Faldo, 1665) was of course known to both Hawksmoor and Gibbs, and Gibbs may well have been impressed by the north facade of the Sorbonne Church (of 1635). More famous even than the portico is the spire of St. Martin, **m**. Spires of a similar kind had been built by Wren, but again Gibbs's spires have their own individuality. The steeple

of St. Martin while following the usual trend is much more of a piece. Its growth is wholly organic from the square base to the top of the spire. It is, moreover, the dominating feature of the whole building and its climax, in a way different from Wren's. More often than not, Wren's spires, e.g., St. Mary-le-Bow, 18, are only loosely connected with the body of the church—are incidental to it rather than part of it. Another very original building is the Senate House, **n**, in Cambridge; it has a long pre-history, but Gibbs does not seem to have drawn here on his predecessors' ideas; Gibbs himself has planned this building linked together round a quadrangle of which the Senate House was to form one wing.* Burrough of Caius had produced a design, which was given to Gibbs† but whether it is the one

in his collection in Oxford we have no means of telling nor whether the twenty drawings mentioned in Hawksmoor's Sale Catalogue‡ were his own or Wren's who is known to have made a design too. Neither of these three architects is a likely prototype judging from the style of their other work; nor could any other prototype be found. A giant order with fluted columns and pediment does not seem to have been used before anywhere; fluted columns in Italy are only to be found in interiors with the exception of Fontana's Dogana di Terra, 20 (etched by Piranesi) who incorporated remnants of an ancient Roman colonnade. France has fluted columns, but not in giant orders; England, which uses the giant order frequently, never before fluted them on house facades.

* See Book of Architecture, pl. 36.

† Willis and Clark, op. cit., Vol. III, p. 44.

‡ K. Downes, 'Hawksmoor's Sale Catalogue', Burlington Magazine, Vol. 95, London, 1953, p. 332ff.

land before 1709, when he returned from Italy. It is true that a period of struggle followed his arrival in London and years passed before he got any commission in the capital and that therefore he had opportunity to acclimatize himself. Possibly too he had picked up a good deal about English taste and leanings while he conducted through Rome Mylords and Gentlemen on their Grand Tour.

On arrival in London, or soon after, Gibbs got to know Wren, who was 'much pleased' with the young architect's drawings.¹³ Unfortunately we are left in the dark entirely on whether those drawings were Gibbs's own designs or sketches of Italian or other continental buildings. But whatever they were, they do not survive, or have at any rate not yet come to light. There is no documentary evidence as to any English influences on Gibbs, nor do any pronouncements on his side exist to tell us what he thought of past or contemporary architects here.

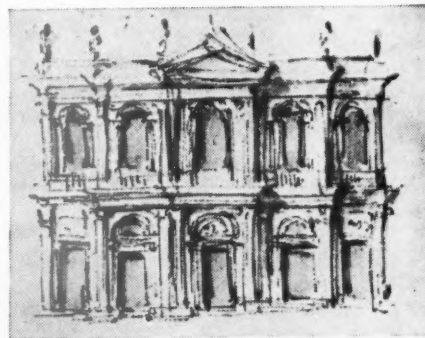
On two occasions he superseded Hawksmoor, at Cambridge (King's)¹⁴ and at Oxford (Radcliffe),¹⁵ and thus he may have felt that he got his own back for the occasions when in 1713 the Whig Vanbrugh prevented his becoming Surveyor.¹⁶ By Talman, the other expert in matters Italian, Gibbs seemed to have owned a volume of drawings. The only architect with whom he kept up a close personal relationship was Sir James Thornhill;¹⁷ amongst his other friends was Matthew Prior.¹⁸ His political affiliations were Jacobite and later Tory; first the Earl of Mar,¹⁹ later Harley,²⁰ were his protectors. Still, at one moment he also built for Lord Burlington,²¹ at another Burlington's close associate William Kent decorated a Gibbs's house,²² and later Gibbs's follower Flitcroft became Burlington's favourite.²³

This then was the background against which Gibbs's work was done, and from these sources it must be explained. Unfortunately, however, in attempting such an explanation not much help comes forth from any of the documented facts. It is the buildings themselves which will have to be analysed to receive an answer to the question of origins and influences.

The first building which was entrusted to James Gibbs after six years of waiting was St. Mary-le-Strand, erected from 1714-1717. Here already Gibbs appears as all that he was going to be later, a brilliant eclectic as well as an innovator. Motifs from Italy can be recognized side by side with English motifs, although it must be remembered that what seems to

be the most English feature, the position of the tower on the body of the church, became English only thanks to Gibbs inventing it. Palladio must be the source of the arrangement of the upper windows at St. Mary, *a*. It comes from the choir of S. Giorgio Maggiore, 1, a part of the church not at that time popularized yet by engravings.²⁴ It is noteworthy altogether that as early as 1714 Gibbs should have gone to Palladio whose fame in England only began to spread from about 1715 onwards. The actual form of the upper windows may also at first strike one as Palladian. Its immediate source, however, must be Borromini's Palazzo Falconieri in Rome, 2. If for his upper windows Gibbs came to Italy, for the lower ones the source is clearly English. Alternating triangular and segmental pediments are, it is true, a general Italian Renaissance motif, also accepted by Palladio, but their particular arrangement here against a rusticated background and with half-columns between can only be understood as a compliment to Inigo Jones's Banqueting House, 3. The disposition of the side façades as a whole reflects the same building equally clearly, and only one detail, the shape of the pediments, is, as it were, brought up to date. Apart from Jones, Wren was godfather to St. Mary's; for the profuse, palace-like decoration of the church walls all round, the semicircular porch, *b*, and to a lesser degree the apse all depend on St. Paul's, 4. Or did Gibbs for the porch go direct to Wren's example, Pietro de Cortona's S. Maria della Pace, 5? The affinities are close, as Gibbs's columns are not fluted and his order is simple, but the position of the columns corresponds more to Wren than to Rome. Again, as in the case between Palladio and Jones, Gibbs chose out of a number of Italian motifs the one which had been previously used in England; but in this case—as in others, as we shall see later—he filled it with new vigour and used it in a more lively Italian manner.

But the most vexed problem is the design of the façade: it bears a strong resemblance to the east façade of S. Giovanni in Laterano, 6. How can that be so, considering that Galilei erected this façade twenty years after St. Mary? There are several answers between which it is hard to choose. First of all Galilei was in England just when St. Mary was being built²⁵ and Juvarra, 21, elaborated a related motif in designs which may or may not have been intended for the competition of 1732.²⁶ Secondly, as Cassirer has established,²⁷ all the designs for S. Giovanni depend on those which Borromini did



This design by Juvarra for the east front of St. Giovanni in Laterano is also closely related to St. Mary's west front.

¹³ Cf. *The Memoir*, Soane Museum; reprinted Wren Soc. Vol. XII, 11.

¹⁴ R. Willis and J. W. Clark, *The Architectural History of the University of Cambridge*, Cambridge, 1886, Vol. I, p. 557.

¹⁵ S. Lang 'Hawksmoor Out of Gibbs,' *The Architectural Review*, Vol. 105, London, 1949, pp. 183 ff.

¹⁶ Letter of Gibbs to Lord Oxford, *R.C.H.M., Portland* (Vol. 3 of the Harley Papers), Vol. 5, p. 332.

¹⁷ There are several references to his contact with Thornhill (cf. footnote 18), whose architectural activity has been established, cf. *Country Life*, Vol. 77, London, 1935, pp. 154, 440, cf. also Wren Soc. Vol. XVII, 11.

¹⁸ References to visits and invitations in *R.C.H.M., Bath*, Vol. 3, p. 475, p. 482, pp. 487 ff.

¹⁹ See footnote 18.

²⁰ A. S. Turberville, *A History of Welbeck Abbey and its Owners*, 1938, Vol. 1, p. 358.

²¹ Cf. p. 23.

²² I.e. Ditchley in Oxfordshire published in *Country Life*, Vol. 16, London, 1904, p. 594, Vol. 75, London, 1934, pp. 590 ff., pp. 662 ff.

²³ Cf. D.N.B. art, "Flitcroft".

²⁴ Cf. S. Lang 'Visentini Drawings,' *The Architectural Review*, Vol. 113, London, 1953, p. 192-4.

²⁵ Toesca op. cit., *passim*.

²⁶ L. Rovere, V. Viale and A. E. Brinckmann, *Filippo Juvarra*, Milan, a cura della Città di Torino, 1937, Vol. 1, p. 196.

²⁷ *Jahrbuch der Preuss. Kunstsammlungen*, Vol. 42, Berlin, 1921, p. 56.

much earlier. Thirdly, the problem of the façade came to the fore again at the beginning of the century, when Gibbs lived in Rome. There is even in his collection a drawing for it.²⁸ A word must be added about the steeple, *o*: the erected one as well as another version reproduced in his *Book* differ from all previous English ones, but they have a distinct family likeness to those designed by various architects, 22, in the seventeenth century for St. Peter, as published by Fontana.²⁹

So much for the exterior of St. Mary. In spite of its Italian motifs it could never be taken for Italian. The interior on the other hand has a distinctly Italian

flavour—or at least had until the recent re-painting. The ornaments as well as the organization of wall, apse and ceiling derive clearly from Italian prototypes. The vault of the apse is taken nearly literally from a Roman model—or rather



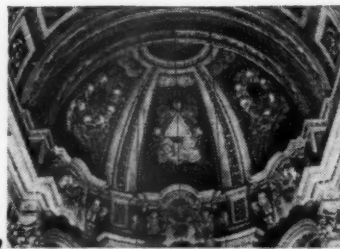
St. Mary's steeple, *c*, bears a distinct likeness to several turrets designed for St. Peter, Rome, 8, notably to this one by Rainaldi.

two Roman models: from Fontana's SS. Apostoli of 1702, 23, and Cortona's SS. Luca e Martino. The triumphal arch with its two-storied order and the large central arch is not so easy to place; I have not been able to find any one prototype for it. The motif of the two-storied order as such is of course very frequent and dates back to the sixteenth century. It could have been seen by Gibbs just across the road at Somerset House; or he may also have met it on his travels through France. As for the ceiling, *r*, this bears a distinct similarity to Borromini's designs for the ceiling of the entrance to the Lateran Palace, 24; again Gibbs is more straightforward, but he uses the same lozenge shapes with rosettes as Borromini.

The influences and prototypes which helped to make up St. Mary-le-Strand were obviously a mixture of Italian and English. The English influences were predominantly, one can even say exclusively, Wren and Inigo Jones, the Italian ones were Fontana, Cortona and Borromini and only to a lesser extent Palladio; moreover, Gibbs's prototypes were live architecture rather than taken from the usual text-books; it seems that he deliberately avoided these. On the whole Gibbs tended to simplify the Italian motifs

²⁸ This drawing actually bears an inscription in an unknown hand attributing it to Carlo Fontana: but is not as, Dr. A. Noach kindly informed me, in fact in this architect's hand.

²⁹ C. Fontana, *Templum Vaticanum*, Rome, 1694, p. 425. There are also a number of designs by Bernini, Ferrabosco and others in P. Bonnani, *Numismata Summorum Pontificum Templi Vaticani Fabricam Indicantia*, Rome, 1696, pp. 63–65.



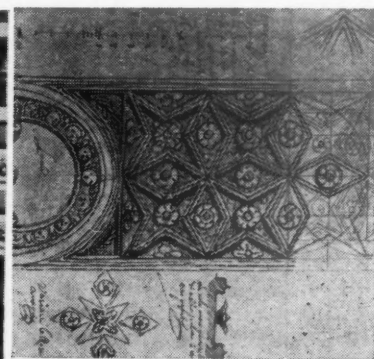
The apse of St. Mary, *c*, and particularly the vault, *d*, and its decoration are inspired by Fontana's SS. Apostoli, 9.



23

which he used; his profiles are coarser, his details less sophisticated, and the whole is a little banal; but the application of the Italian motifs is always correct. What belongs to a door is used for a door, what belongs to the vault went into the vault and so on—in contrast to Hawksmoor who put coffered archway motifs along the windows at Blenheim.

With regard to English motifs, Gibbs did not copy Wren or Inigo and thus moved further away from the Italian originals to achieve his English examples,



24

The ceiling ornamentation of St. Mary, *f*, though more straightforward than the Roman prototype is nevertheless closely related to Borromini's design for the ceiling of the entrance to the Lateran Palace, 10.

but he tended to revivify them by going back to the sources in Italy.

The buildings themselves as they have here been discussed more or less in detail should be enough to prove what these pages set out to prove: that Gibbs's style derived from the Italian Baroque but also incorporated English elements and that the result of this process of selection is by no means a disjointed assembly of motifs but a personal style whose principles corresponded to those of contemporary Europe.

FLATS AT RICHMOND

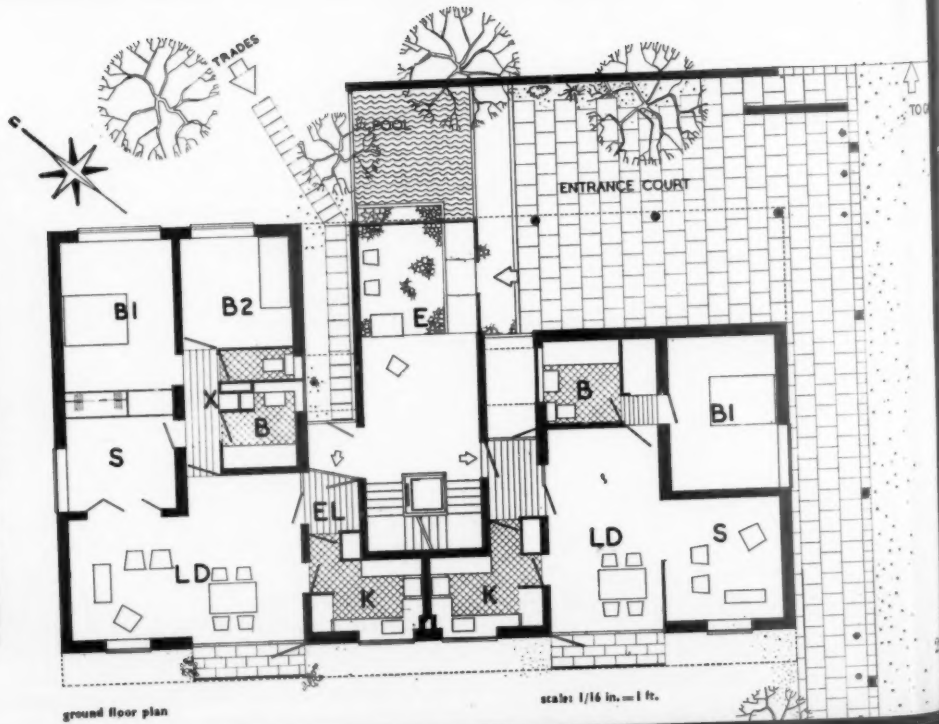
ARCHITECT | ERIC LYONS

1, detail of the street elevation. Construction is generally of load-bearing brick but concrete floor slabs are cantilevered as staggered balcony floors or beams and are joined by horizontal concrete ties. The vertical end members are rendered clay conduit blocks with steel reinforcement.





2





2, the entrance court from the drive, 3, the pool which is designed as a setting for a piece of sculpture which is not yet in place, 4, the main entrance hall; the floor panel is of black, white and green marble pieces; the wallpaper motif (Zambesi, by Walter Krauer) is in brown and off-white. The timber-louvred screen is painted lemon-yellow and white.

FLATS AT RICHMOND



typical upper floor plan

key
B1, B2, bedrooms.
B, bathroom.
E, main entrance hall.
EL, flat entrance lobby.
K, kitchen.
LD, lounge and dining area.
S, study or extra bedroom.
SB, service balcony.
X, warm ducted air heating unit.



5

5, the street elevation showing the staggered balconies. 6, typical living-dining room of a flat in the north-west wing. 7, rear elevation showing the tradesmen's entrance behind the main entrance hall.

FLATS AT RICHMOND



6



7

The site was a 'gap' previously occupied by two pairs of houses in a street of semi-detached, three-storey Victorian houses. It was decided to limit the building height to four storeys to avoid the use of a structural frame. The area of the larger flats is approximately 1,010 square feet, giving two double bedrooms, a living room and a study which can be used as a third bedroom.

The general construction is of brick walls and concrete floors. The wall thicknesses do not conform to normal 'bye-law requirements' for the whole building is a calculated structure using several qualities of brick for the various wall loadings. The walls to the ground storey are 13½ in., and the first-floor slab and roof slab are carried out to the external face to form a structural frame for the 11 in. cavity brick walls to the upper storeys. The south wall, facing the road, is partly 'framed' with concrete stanchions to allow the use of large glazed screens to the living rooms. The balconies are formed by cantilevering the floor slabs, and are staggered vertically to ensure good natural light in the rooms. The balustrading is a system of steel angles with channel stanchions, and the panels are filled alternately with coloured corrugated perspex sheeting or timber slats. Each flat is heated separately by a warm-air gas unit* and hot water is by electric storage heaters.

Externally, all brick walls are in facing brick, using

generally a pale buff-coloured brick for the ground storey and the garden walls, and a dark red-brown brick for the upper storeys. All concrete is surfaced with a pale grey cement render and the panel walls to the living rooms are faced with moulded pattern clay tiles. The perspex sheet panels are in yellow and dark blue, and the timber slat panels are stained black; these panels are arranged to create a surface pattern over the whole elevation and within the projection of the balconies. The pavings are precast concrete slabs. The pool is formed in concrete and designed as a setting for a piece of sculpture not yet completed. Internally, flats are finished simply: walls are plastered and paintwork is generally white. The tenants have selected their own wallpapers. Each main entrance hall is partly paved with terrazzo in black and white, and the floor panel adjoining the pool is of black, white and green marble pieces of random shape. The stairs are surfaced in pale grey terrazzo and landings are also in black and white terrazzo. The walls to the common parts are painted in grey or white emulsion paint with panels of wallpaper for contrast.

* Fuller information about this unit was given this year in a note 'Heating by Hot Air' in the May issue, page 356.

AIR BOOKING OFFICE IN LONDON

L. B. HALEY, Civil Engineer to BOAC; E. F. H. FOSTER, Designer; BEVERLEY

PIOK ASSOCIATES, Display Designers

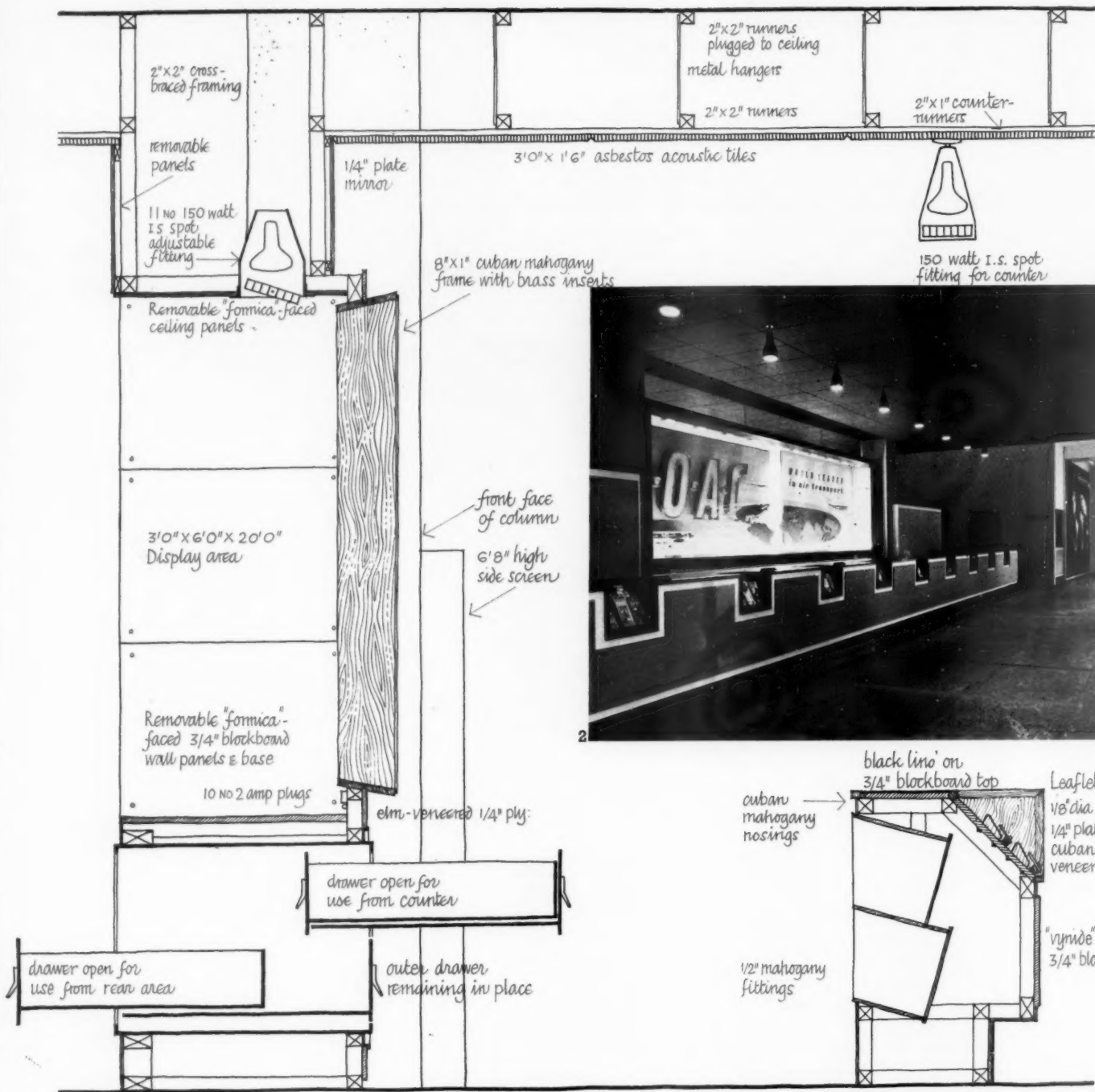
1, view of the counter from the waiting area with the display map and cashier's desk in the foreground.



In this remodelling of the BOAC booking office in Regent Street it was decided to keep the original stainless steel shop front, but to install new neon signs, remove the deep window boards which housed heaters and ventilation trunking, and cut back the reveals.

Thus in place of window displays there is an uninterrupted view of the interior.

The basic requirements of the new interior were facilities for ten booking staff, manager's office, cashier's office, filing area, passenger lounge area, display facilities



section of fitting & counter

2, the ten-place booking counter. The facing material is blue plastic leather and the top is of black lino with Cuban mahogany nosings. 3, detail of the wall map beyond the cashier's desk.



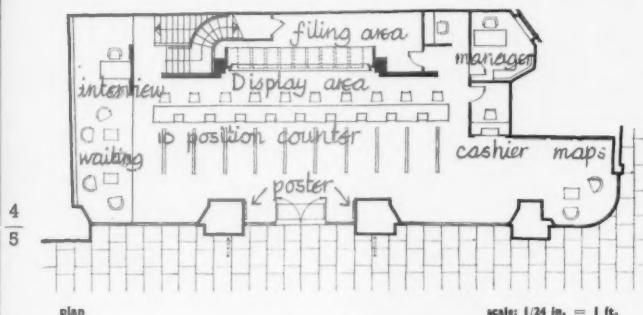


INTERIOR

4, one of the clocks installed on each of the columns beside the main entrance. The columns are painted grey, the numbers and hands of the clock are black, and the central disc and lamp fittings are brass. 5, detail of one of the display recesses which mark the ten positions at the counter. 6, the main waiting area at the south end of the booking office. The wall with the display feature has a paper with a yellow and white lattice motif. The remaining walls are grey and the carpet is donkey brown.



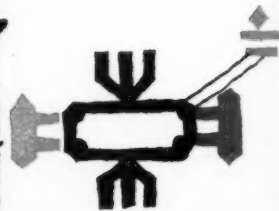
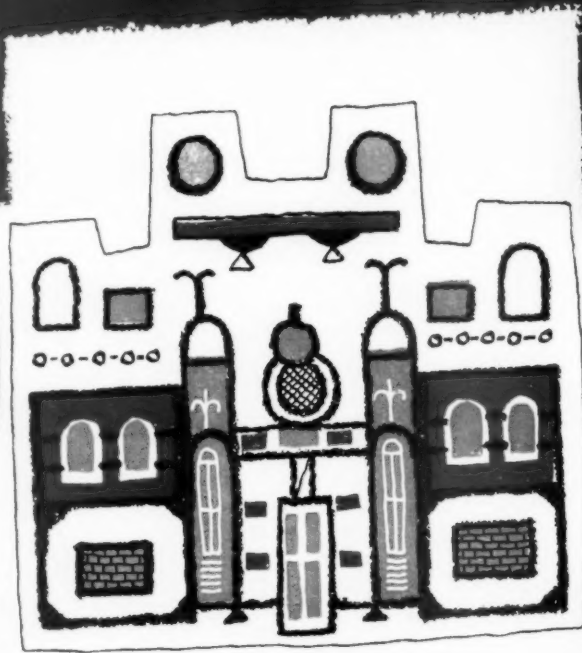
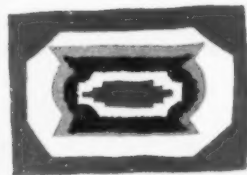
and access to the mezzanine and basement. The old interior had a large curved glass screen immediately inside the entrance doors and three separate counters. Two sets of stairs led up to the mezzanine and two down to the basement arranged around bulky curved false work to the two structural columns. The original ceiling had four different levels forming a semi-circular design around the entrance doors. The glass screen, counters and one staircase to the mezzanine and one to the basement were removed, and a single level acoustic ceiling



constructed. A new ten-position booking counter with leaflet racks dividing the positions was installed. It is faced with blue plastic leather and has a black lino top, Cuban mahogany nosings and brass and glass divisions to the racks. The rear is fitted with telephone and accommodation for manuals and travel documents. Behind the counter and incorporating the two columns is a screen shielding the stairs and filing area. The centre of the screen is a framed 3 ft. 0 in. deep display area, topped between the columns with a mirror to repeat the ceiling. Beneath the display area is a range of filing cabinets five of which open both to the counter side of the screen and to the filing area behind. When open to the rear area no gap appears on the counter side. The new ceiling over the entrance doors and counter is blue painted acoustic tiles and the two walls flanking the counter are papered in yellow lattice patterned paper. The remaining walls are in grey emulsion paint. The floor has grey marbled rubber sheet with alternate blue and citron yellow strips to emphasize the counter positions, and the carpet in the lounge area and manager's office is BCC donkey brown. Finishes in general are lacquered brass, glass, blue plastic leather, Cuban mahogany and black lino with wallpaper and pale emulsion paint as background.

An extremely restricted budget and rigidly imposed time table were determining factors in the design. The contract was commenced on January 8, 1954, and the office reopened on March 28.

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The decorative motifs used by the M'Pogga for the adornment of their mud-built houses mix abstract and figurative themes, African and European sources, and among the latter are the monumental buildings of Pretoria, the nearest large town to their settlements. Gordon Cullen's drawing, opposite , shows M'Pogga decoration based on the Mosque, above, and the Town Hall, below, with the original shown in inset, right. This eclecticism, as well as other aspects of their unique architecture, are discussed in the article on the M'Pogga which appears below.

Betty Spence and Barrie Biermann

M'POGGA

The use of colour in buildings is a sign that the function of construction has become something more than the provision of basic shelters, such as those described in *Grass Roots*.^{*} Colour, like carved ornament, is a sign that the building community has taken the first steps towards some visual sophistication, and has begun to conceive of architecture as an art. This view might be achieved through the inner processes of the community itself, or it might acquire sophistication through contact with a more developed people than itself. Such is the case of the M'Pogga, a branch of the Bantu living in the Southern Transvaal, and their painted architecture is a unique and instructive achievement by a people with long-standing traditions of its own, living on the fringe of Western Culture.

Coming into the Transvaal at about the same time as the Dutch, they brought with them no tradition of painted architecture, but have developed it in response to their new environment, both physical and cultural. The Dutch had already reacted vigorously to the peculiar qualities of the South African scene, which must have appeared to them unpromising and inhospitable, and they asserted their presence in the landscape by siting their buildings as conspicuously as possible, and exploiting all possible contrast between farmstead and veldt. Their building types, their materials, and their inheritance as members of a nation which had devoted impassioned energy to investigating the hard facts of vision—all these combined to make their homesteads celebrated as objects in the landscape.

Not so the M'Pogga, who came into the landscape with no such traditions, materials or building types. Their response was a masterpiece of *ad hoc* ingenuity in face of an unprecedented cultural situation. Their buildings, made of mud and only six to eight feet high, would be lost in a scene which they would resemble only too closely in both texture and colour, but for their brilliant and incisive painting. Though the patterns which they paint show that they are the masters, not the slaves, of their formal abilities as constructors (in spite of the

^{*}ARCHITECTURAL REVIEW Feb., 1954.

fact that their conquest of the rectangle seems culturally recent) the real function of their coloured walls is to bring visual order into the visually un-accented veldt.

Seen from within the courtyards, the painted patterns make a bastion of man-directed order and geometry against the wastes of nature, the colour work enhancing and diversifying the strict drama of rectangular relationships, borrowing figurative and abstract elements from every level of the cultural experience of a people suspended, temporarily, between two ways of life. But seen from outside, and from a certain distance, the function of the paintings changes, no longer serving to dramatize the close-up relationships of geometrical forms, but serving now to point up the drama of there being any geometry at all in the spreading and undifferentiated wastes of the veldt. It asserts the presence of man, and the man-made quality of what might otherwise appear an accident of sun-dried mud, and it gives the hutments of the M'Pogga the obsessively eye-catching quality of a boundary stone on the green flank of the Downs, or a sculpture by Barbara Hepworth in a Cornish landscape.

Sentimental purists may deplore the alleged corruption of a primitive culture; technical moralists may regret the energy which might have been expended on sanitary improvements, but was used instead in applied decoration; but those who use their eyes will surely admit that the eclectic architectural art of the M'Pogga had qualities which were very proper to their position—their position on the veldt, and their position where cultures overlap. It is a position which no people could occupy more than temporarily, but the M'Pogga occupied it with a sensitivity and dignity which is very different from the squalor of most of the syncretic cultures which lie between Black and White. Now the M'Pogga are gone from both positions—money economy has removed them from their cultural half-world, and they are disappearing into the mass of detribalized Black Africa; and now their painted houses are gone as well, the land they stood on reclaimed by those who first gave it to the M'Pogga in return for their labour. They have rebuilt on their new location, but they have not yet painted their houses. For the moment, their mural art lives only in the photographic record.

The M'Pogga are a Bantu tribe living in the Southern Transvaal of the Union of South Africa. Their buildings are of mud with thatched roofs. They are simple dwellings of one or two rooms, some square, some circular, surrounded with courtyards or 'lapas' enclosed in low walls. These walls and the walls of the huts both inside and out are painted all over with murals.

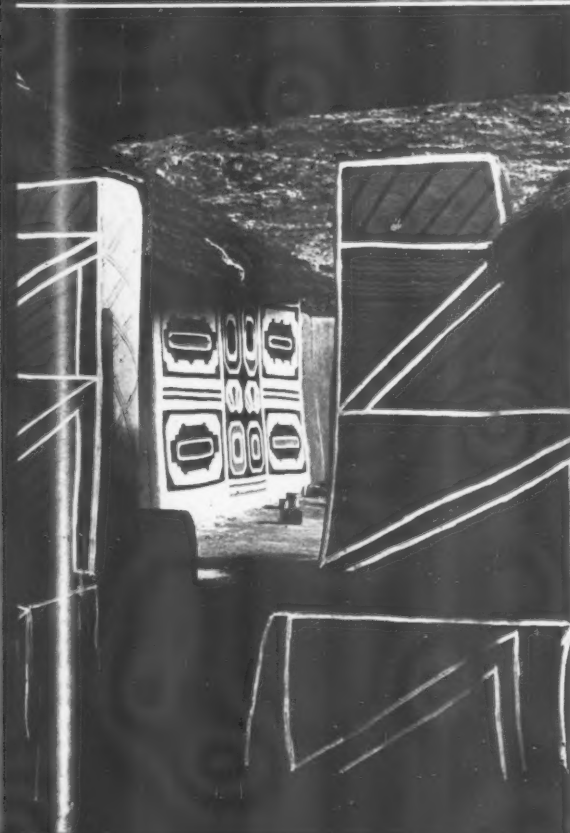
The charm of M'Pogga buildings, both in the serenity of their architecture and in the richness of the murals, is something unique which this article endeavours to portray. It is written to pay homage to a fleeting art, a product of cultural contacts which, by its very nature, must disappear, but which none the less has something to contribute to the tradition of South Africa and perhaps to a wider field.

In order to understand M'Pogga building something must be said about race contacts in South Africa.

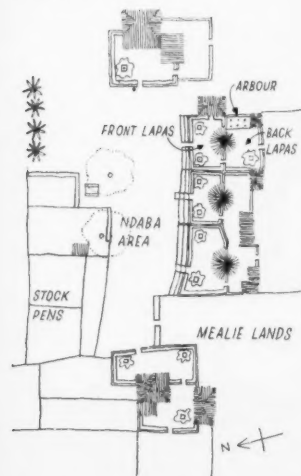
The Bantu of South Africa were originally a tribal people in many ways resembling the peasants of Europe in the last century. They moved down from the North at the same time that the European settlers on the coast moved up from the South. Some hundred odd years ago the two races met and since then have occupied the same territory.

The more powerful Western culture inevitably dominated the less developed Bantu society. At first the process was gradual but now that the Union is becoming industrialized, it is more rapid and thorough. The hundreds of thousands of Bantu employed in the European towns become what is termed 'detribalized.' They forget their own customs and assume instead more or less the habits of a Western urban proletariat. In the country, too, though tribal influence is still strong it is progressively weakened in a hundred and one odd ways. So the position at the moment is one of varying grades of detribalization, almost complete in the towns but lessening as one progresses into the depths of the country.

The towns of South Africa are almost exclusively European in appearance; for the Bantu there live in dwellings of European type. The Europeans themselves brought their architecture with them from the colder northern countries. There are the gables, stone quoins and face brickwork of early Dutch influence, the English colonial buildings with their wide verandahs and corrugated iron roofs and, more recently, the type of international building common to all countries which developed largely during the twentieth century.



1, the entrance to the front lapas of a M'Pogga house. The painted decoration, derived in part from M'Pogga costume, 3, is also seen in 2, together with the simpler finger-painting. Below is a plan of part of 'Speelman's Place,' one of the settlements in the Pretoria district.

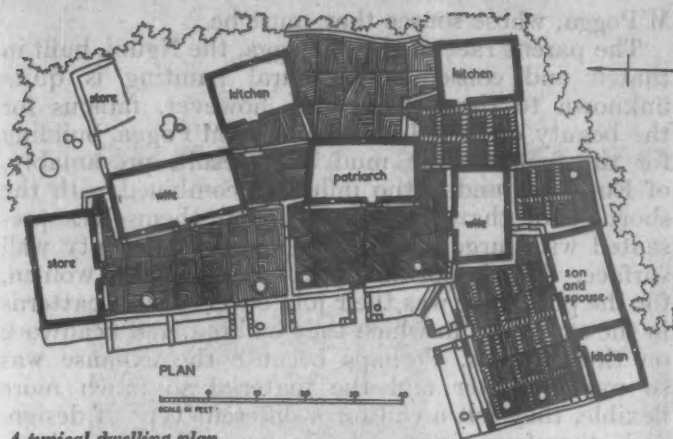




Though M'Pogga decoration draws on its own tribal traditions, it also borrows heavily from white civilization; the label from a peanut can, 4, or details, lettering and decorative motifs from buildings probably seen in Pretoria, 5. But this eclectic mixture of Bantu and European culture is summed up and controlled in the same formal discipline as shapes the buildings themselves, 6, so that the painted decoration enhances and dramatizes this play of forms assembled in the sunlight.

6





A typical dwelling plan.

In the country, however, the original Bantu settlements can still be seen. The Bantu, accustomed for centuries to a congenial climate, live mostly out of doors. They take shelter only at night or during the occasional periods of inclement weather. The living unit, therefore, is a group of detached huts interlaced with courtyard walls which define the outside living spaces. Huts vary from the beehive, semi-spherical shape, built entirely of thatch to a low mud walled type with a conical thatched roof. There is always an aesthetic unity in these settlements born of a functional solution to the requirements of a simple way of life.

With the coming of civilization this homogeneity has been interrupted and new forms appear in the architecture. The circular hut gives place to the rectangular, mud brick walls are more generally employed and corrugated iron makes its appearance. Throughout South Africa one can see the various stages of disintegration from the indigenous hut to the incongruous mud parody of a suburban villa. It is somewhere within this range that the buildings of the M'Pogga people must be placed.

The M'Pogga, or Southern Ndebele, are members of the Nguni nation, the group to which the Zulus belong. About four hundred years ago they broke away from the main Natal stem and have since lived near Pretoria in the territory of another Bantu people, the Sotho.

In the middle of the last century the tribe was divided between two brother claimants to the chieftainship, and the resulting wars became so troublesome that the Dutch Republic interfered and dispersed the tribe over European farms as labourers. In 1930 the reigning chief bought land in a Native Reserve and re-established the tribal centre at an inaccessible village 90 miles to the north of Pretoria, but many settlements still remain on European land nearer to the town.

Each settlement consists of a family group, usually the man and his two or three wives or sometimes several brothers and cousins and their wives and children. The men work on the farms or in Pretoria, the women usually stay at home or take in washing. In their home life it is tribal custom for the men to do the heavy structural work of building and the women to do the plaster work and mural painting.

Men wear European dress. The women, on the

other hand, still wear a very beautiful tribal costume. Their necks, arms, legs and waists are encircled with fat rings of grass bound with coloured beads and heavy twists of copper wire. Around their waists they wear a leather apron embroidered with beads. Over this, for warmth and in the name of decency when Europeans are around, they wear a coloured blanket. Western civilization, however, is evident in the use of safety-pins, threepenny bits and other odds and ends as part of necklaces and earrings, 3.*

One of the settlements in the Pretoria district, rather larger than the others, is of special interest, historically as well as aesthetically, and is therefore chosen to illustrate this article. This is 'Speelman's Place,' 7 miles north of Pretoria but separated from the town by an East-West ridge. During the M'Pogga wars of succession one of the claimant chiefs was imprisoned in the town and two of his councillors settled in this spot to be near him. Speelman is their descendant.

Travelling from Pretoria, an attractive, well treed town in a fertile hollow, one crosses the ridge and enters a dry and arid country. A turning leads on to a dirt road along the foot of the hills, and from here the glittering white of the painted walls against the rising ground draws attention to the small M'Pogga houses. 'Speelman's Place' is some way along the road and is approached by a half-worn track.

About a dozen huts form an irregular row curved in two shallow scallops about two lots of animal pens. The space between the animal pens and the courtyard walls which screen the huts is the communal tribal area. In front of the walls wide steps provide seating almost in the form of an amphitheatre, though I have never seen it used in any but a casual manner, 1. The men usually sit in the shade of a big tree that grows at the side of one of the animal pens.†

Behind the walls each wife has her separate establishment consisting of a main hut with a front courtyard or lapa for social living and a back lapa for household chores. Off these open smaller huts used for the children or for cooking and storage.

The main lapa is entered through a narrow opening in the front walls. It is a formal area and is kept tidy as is the European sitting-room. The surrounding walls are chin height and give complete visual privacy though it is easy enough to carry on a conversation between neighbouring courtyards. Two fruit trees carefully planted within a square of kerbing usually grace each side of the lapa.

The entrance to the main hut is opposite the lapa entrance. This hut is usually circular, and an outer semicircle of walling is built round the front of the hut, the intermediate space being used for storage.

Inside, the hut is completely bare of furniture. Sometimes there is a mud seat along part of the wall and usually a hoop iron ring in the floor serves as a guard to a shallow hearth where fires are lit in cold weather. One or two small windows framed

* The beads are also European but they have been so long incorporated as a decoration in tribal life that they have almost become a part of it.

† This arrangement in some form is common in most Bantu settlements. The Zulus, for example, build in a circle round the cattle kraal and in this case the space between the cattle kraal and the huts is the communal area.

and with wooden shutters let in a meagre light.

Personal possessions such as sleeping mats, eating utensils and suitcases full of clothes are kept tidily against the wall. Sometimes articles are hung from the roof timbers or slipped between the thatch.

The back lapa is approached through an opening in one of the lapa walls at the side of the main hut, 2. This is the utility and kitchen area. Food is cooked here, utensils kept, grain and skins laid out to dry, personal ablutions done and so on. It is the woman's private place and a mild disorder reigns. A grape vine rather than a tree provides shade in this area.

The secondary huts which open off the lapas are usually square, probably for convenience in fitting into the lapa walls. Those opening off the front lapa are used for sleeping and are as clean as the main hut, those opening off the back courtyard are of minor importance and are smoky and dirty.

The plaster work on walls, seats and floor is painted with two very distinct types of mural. The one which first attracts attention is in strong colours outlined in black on a white ground and looks rather like the chance fall of coloured glass chippings in a kaleidoscope. It is painted on the outside of the front lapa walls, the front façades of the huts and in the hut interiors.

At first glance the designs appear purely abstract but, as one takes a closer look, there is a vague familiarity in the forms, see frontispiece, page 34. One can make out a building of some sort with a gabled pediment, doors and windows and even a little bit of bonded brickwork. As one gazes other forms emerge. There, for instance, are the domes and minarets of the Indian Mosque in Pretoria, a charming Eastern building hidden behind a row of European offices and stores. Electric lights hang from pediments, numbers are used right side before or back to front as suits the design, and stars and crescents, also Eastern ornamentation presumably from Pretoria's Mosque, appear here and there.

As well as the representational designs, 4 and 5, there are others which are purely abstract. Usually rectangular shapes are repeated over the wall surface in alternating colours. Originally these too may have been derived from the openings, string courses and gables to buildings, but by now the connection is so distant as to have no resemblance. The abstract designs, though less curious than the others, are often more pleasing aesthetically.

Less important wall surfaces, seats and floors receive quite different treatment, 2 and 6. On walls and seats straight line hatchings of finger painting in the dun colour of the natural mud plaster form triangles and squares which are picked out in white. On the floors a fan-shaped pattern is formed almost spontaneously by the natural movement of the hand in laying the surface coat.

It is curious that these two types of design reflect so clearly the two influences to which the M'Pogga have been subjected, that of the European and the Sotho. The Sotho people, who live in the high veld areas where thatching grass is scarce, use mud for hut walls and as protective screens. On these are sometimes painted finger-work designs similar to the

M'Pogga, whose source they must be.

The parent race of the M'Pogga, the Nguni, built in thatch and consequently mural painting is quite unknown to them. They are, however, famous for the beauty of their beadwork. The M'Pogga, building for the first time in mud as a result, presumably, of European and Sotho influence combined with the shortage of thatching grass, found themselves presented with large unfamiliar expanses of empty wall surface. The important parts of this the women, for the plastering was their job, covered with patterns in the same way in which they embroidered beadwork on their aprons. Perhaps because the expanse was so much greater and the material so much more flexible, they felt a call for a different type of design, and therefore produced, in a similar technique, their impressions of the neighbouring Pretoria.†

The coloured murals on white are painted with brushes. The usual materials are lime white, stove black and the more attractive coloured earths in the vicinity. At 'Speelman's Place' and other settlements close to Pretoria vivid European pigments such as Reckitt's Blue are also used, not always to the benefit of the murals.

The Sotho type mural is done in the traditional way with the hand. A mixture of mud and cow dung is slurred on and the fingers drawn through so that alternate lines of thick and thin slurry give the gentle variation of light and dark, 2.

* * *

It is difficult to describe the beauty of these M'Pogga settlements; the serene formality of the smooth plastered surfaces which envelop walls and floors of both inside and outside living spaces, the low sturdy proportions, the solid walls with their slightly battered sides, the interest of the murals and the textural contrast of plaster and thatch. It is in the front lapas that the architecture is at its best. Here the harshness of the external world is shut out and all that can be seen above the walls are low conical roofs and the tops of trees ceiled with the rich blue of the sky. Interest is arrested by the simplicity of the forms contrasted with the complexity of the surface treatment, both enhanced by the tracery of the bare branches of the fruit trees.

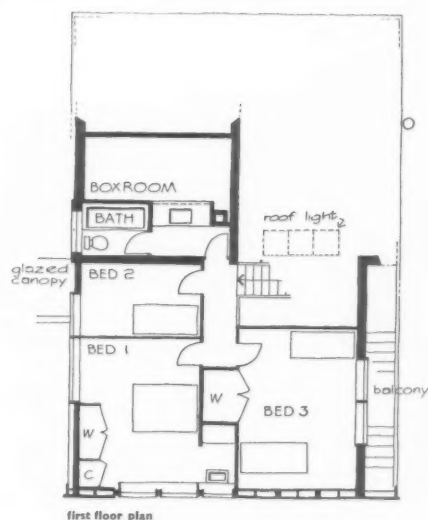
The days of the M'Pogga and their buildings are drawing to a close. To the European farmers who own the land occupied by the M'Pogga these people are labourers and the use of the land is in part payment for their services. Slowly this system is passing. A full money wage is more often paid and the land, particularly near the towns, is needed for agriculture.

There have been suggestions to preserve Speelman's place as a national monument. Is this a good idea or is it not? Alone the buildings would not stand. They are of mud and need continual repair and the wall paintings must be redone each year after the rains. And to keep the people with their buildings is surely a barbarous idea. They and their buildings are in a transitional stage between two cultures and must, in the nature of things, pass away.

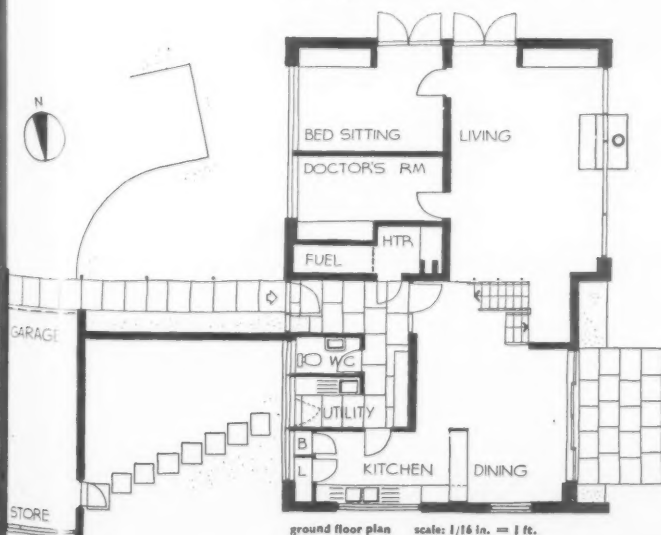
† One short visit to the M'Pogga capital village suggested that the settlements at greater distance from the Europeans employ designs more closely resembling the beadwork.



1, the living room looking towards the staircase.



first floor plan



ground floor plan scale: 1/16 in. = 1 ft.



2, view from the south-west.

HOUSE AT HIGH BEECH, ESSEX

JOHN BARTON: ARCHITECT

This house on the edge of Epping Forest, has been planned for a doctor, his wife, three children and mother-in-law (who is provided with a bed-sitting room on the ground floor next to the doctor's study). Construction of the house is by external load bearing cavity walls and steel piers, which carry timber lattice roof trusses and panel walls over windows facing the main east-west views. Certain panel walls are constructed from timber studding. The roof is finished with shingles on battens, and the living room ceiling is lined with fibreboard, V-jointed and leaving the rafters and purlins exposed. Panel walls are faced externally with cedar boarding with cover strips on bituminous felt, and lined internally with fibreboard, skim coated. The facing bricks are white flints, and the external paintwork is black and white, which is traditional in Essex. Air ducts in the floors heat the whole house, and are supplied from an oil-fired heater in the centre of the house.

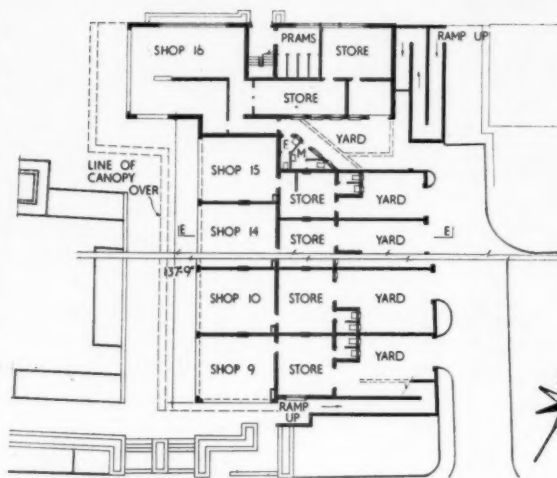
HOUSING ESTATE NEAR NORTHAMPTON

J. L. WOMERSLEY formerly BOROUGH ARCHITECT

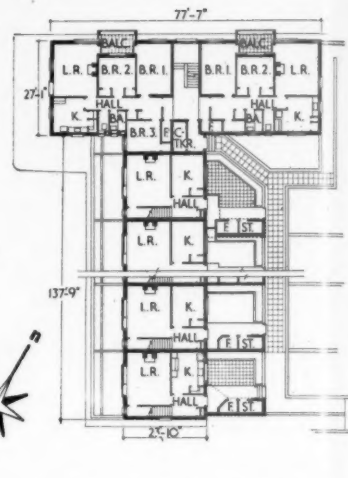
The site of this neighbourhood is in the form of a mound, lying about $1\frac{1}{4}$ miles from the centre of Northampton. It is conspicuous from the Leicester road across the Nene Valley to the east, and from the Rugby road to the west, factors which had a considerable bearing on the layout. The Corporation were anxious not to create a one-class neighbourhood and have, in consequence, reserved areas on the north-east and north-west of the neighbourhood for the erection of larger houses, to be let at economic rents. The formal central park, shopping square and adjacent infants' school and community centre create a pedestrian precinct and common meeting ground for the inhabitants. The proposed church will stand on the highest point, a traditional feature of the county landscape. The community, when complete, will comprise 1,300 dwellings, 16 shops, 3 nursery schools, an infants' school, junior school, secondary school, a



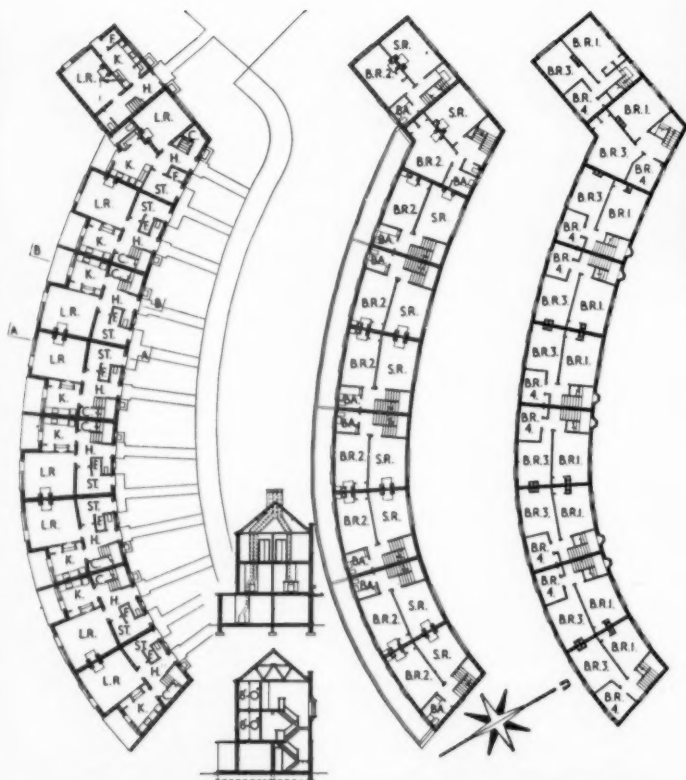
3, the shopping centre, known as Park Square, from the south-east.



ground floor plan, north-east terrace of shops



first floor plan of maisonettes over scale: 1/48 in. = 1 ft.



ground, first and second floor plans of three-storey crescent block: section A-A (top) and section B-B scale: 1/48 in. = 1 ft.



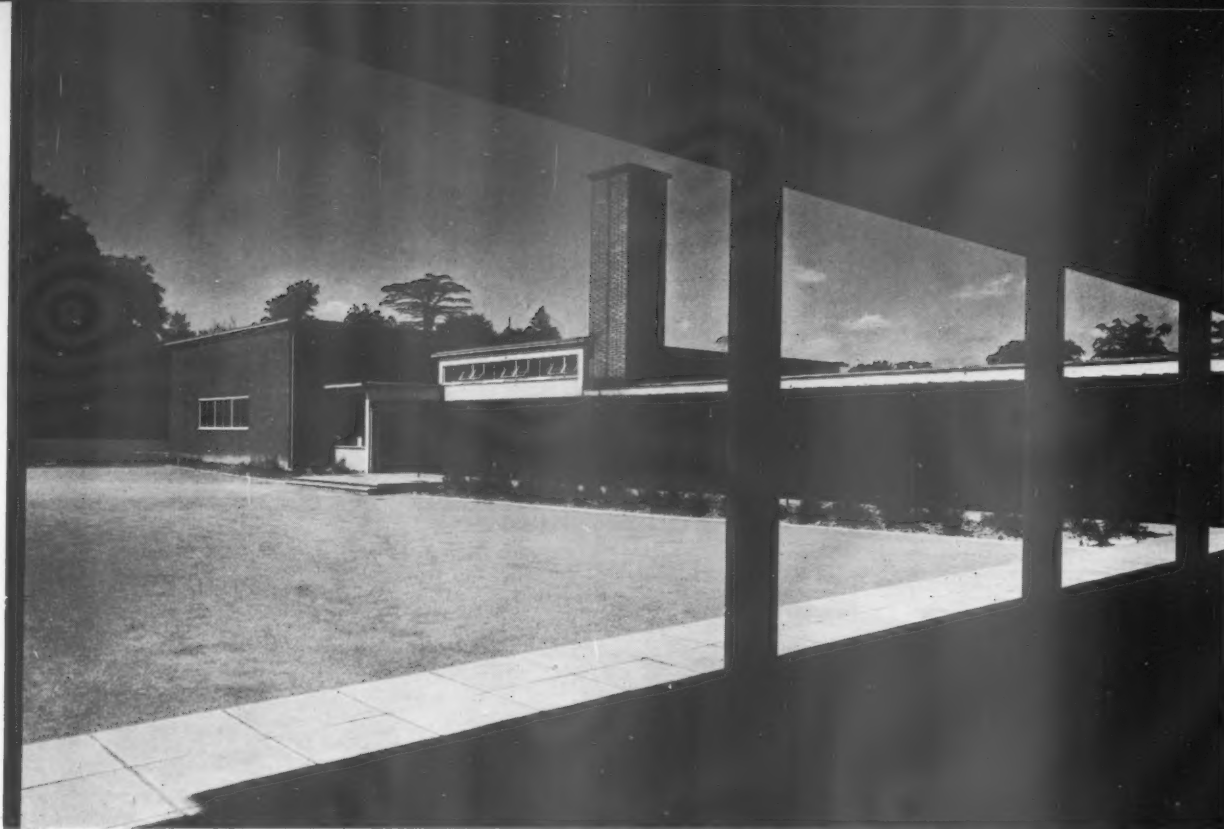
4, the three-storey crescent block which faces the central park.

C of E church, church hall and vicarage, nonconformist church, community centre and 2 inns. All buildings are of traditional construction, facing bricks from various Leicestershire brickyards being used throughout, the different colours ranging from light buff to red. Roofs are partly covered with pantiles to a $32\frac{1}{2}^\circ$ pitch, and partly of plain tiles to a 40° pitch. Apart from the curved blocks which have parapets, all buildings have projecting eaves and plastered soffits. Windows are painted in three or four colours used in groups and tenants chose their front door colour from a list of five strong colours selected by the architect.

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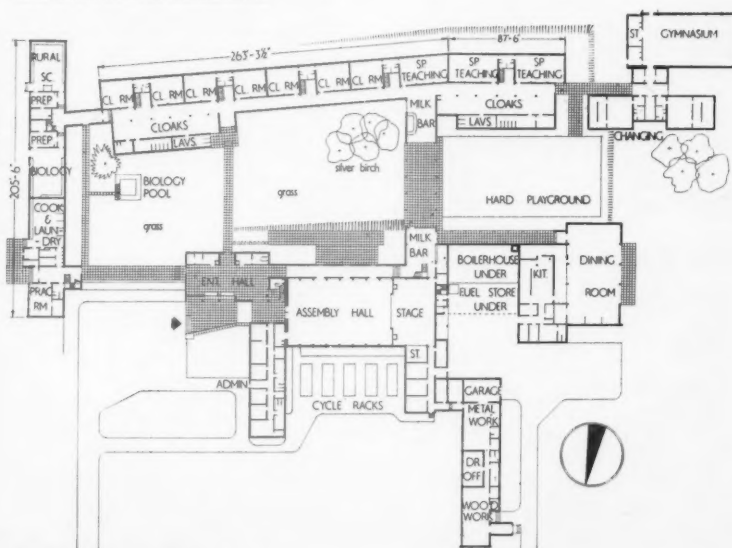
5, the dining block seen across the hard playground. 6, below, interior of the dining hall.

SCHOOL AT CHESHUNT, HERTS

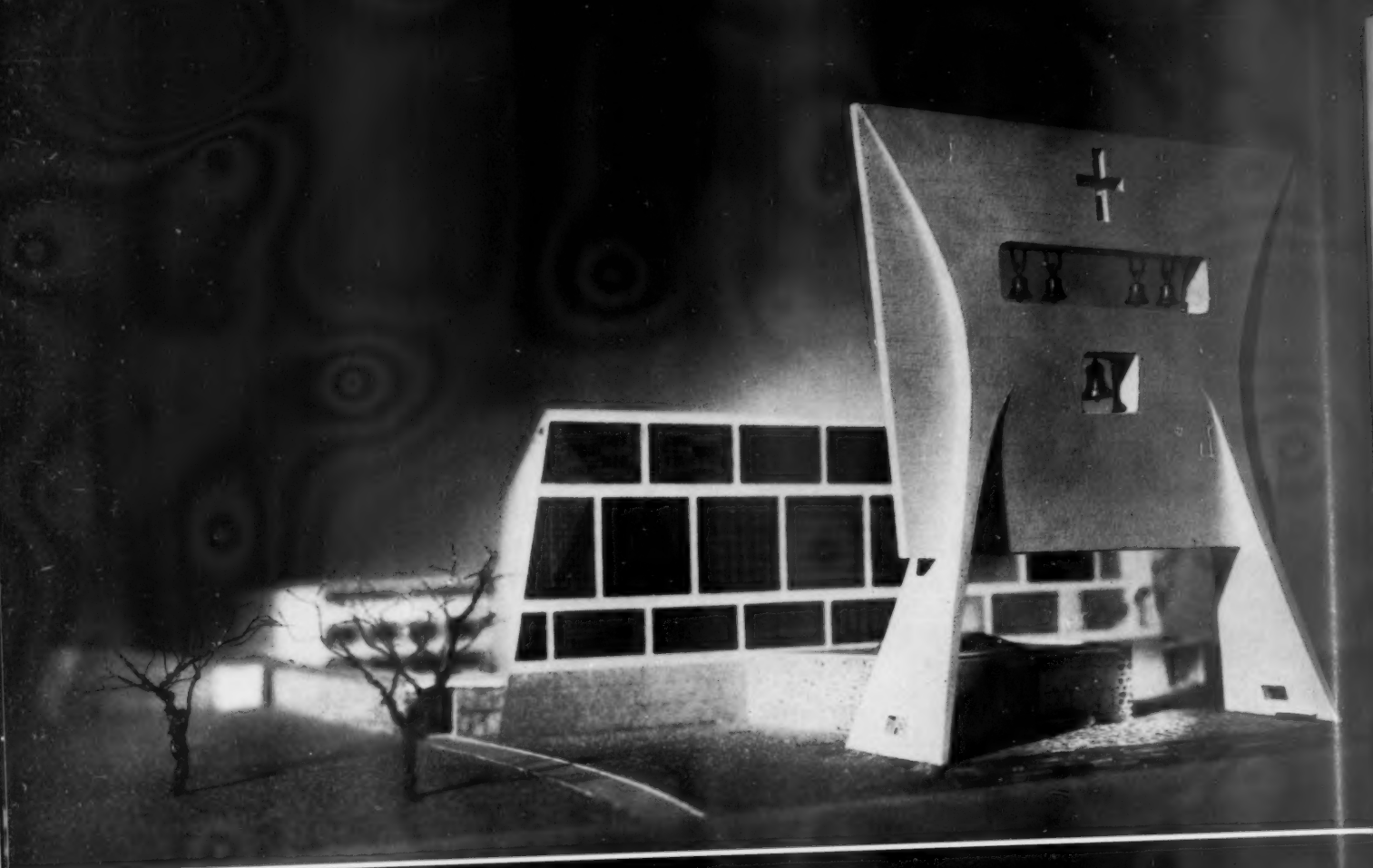
NORMAN AND DAWBARN: ARCHITECTS

This school was designed in 1949 for the Hertfordshire County Council to accommodate 750 children, the architects being asked to provide rather more science and crafts accommodation than is usual. The site is an open one in a mainly horticultural area, but with an industrial centre nearby. The school has been placed on the highest part of the site, with the classrooms facing the playing fields and the dining room overlooking the New River. The plan is a development of the pavilion layout. Economies in circulation space have been made by using staircase access only to first floor classrooms and omitting first floor corridors. Cross lighting and ventilation have been provided in all classrooms. The main court, now partly open to the north, was planned to be enclosed by a link between the entrance hall and the science block. This link would have contained common rooms and more

generous staff accommodation on the first floor, with open space below; it is hoped that it may be added later. Construction is of reinforced concrete frame with in-situ ribbed concrete floors and roofs. External walls of single storey blocks are rendered 9-inch brickwork. Elsewhere cavity walls have been used, consisting of precast concrete slabbing units externally and a brick on edge skin inside, or bricks laid as tiles with straight vertical joints externally and breeze blocks inside. Roofs are covered with built-up felt roofing finished with granite chippings. Internal finishes are: floors to classrooms, thermoplastic tiles; to corridors, wood composition block; to assembly hall and gymnasium, hardwood strip; to entrance hall, Hornton stone. Walls are plastered in classrooms, and finished fair faced sand lime bricks in corridors. Ceilings are wood-wool or fibreboard.



ground floor plan scale: 1/128 in. = 1 ft.



Though the rebuilding programme for the abbey at St. John envisages reconstruction of the whole complex of buildings, the immediate work will be devoted to the erection of a new church, opposite above, and new monastic building, below. The large free-standing structure is the belfry, which can be seen through the glazed end-wall of the church.

COLLEGIATE BUILDINGS IN MINNESOTA

MARCEL BREUER: ARCHITECT

The abbey of St. John, Collegeville, Minnesota, is well known both as a religious and an educational centre, and like other institutions of the kind it has begun to be uncomfortably overcrowded. Besides being esteemed as a centre of liturgical studies, St. John's is also known for a lively interest and forward policy in the arts, and when it became clear that rebuilding and extension would have to be faced, the head of the community, Abbot Dworschak, invited thirteen progressive architects to express their opinions, and then called five of them to Collegeville for further discussions. From these five—Walter Gropius, Richard Neutra, Joseph Denis Murphy, Barry Byrne and Marcel Breuer—the last named was selected to prepare preliminary studies for the whole development scheme, and more detailed plans for the church and monastic wing.

The overall development scheme treats the complete complex of buildings as falling into two main and separate zones: to the south-east lie the monastic and ecclesiastical buildings, to the north-west school and student accommodation, while the Church, the Library and administrative offices are located between the two main zones. Development is seen in two sequences: a long term plan, calling for the ultimate rebuilding of existing accommodation as well as the provision of new and extended facilities; and a short term plan intended to relieve the pressure of immediate requirements.

These pressing present needs are for a larger church, for less crowded monastic accommodation; more and better library facilities; more space for administrative offices; more classrooms; more accommodation for guests and for retreats; more service and maintenance facilities.

A start will be made on the rebuilding of the monastic accommodation and the church, which is the heart of this community. The monastery wing will have to provide for seventy-eight Fathers in residence now, increasing to a hundred as the community expands, thirty-two Brothers increasing to fifty, with proportionate increases in the number of Junior Brothers and Candidates; the Clericade population

Above, first and final stages of the short term development plan for St. John's. Left, site layout of the whole development scheme.

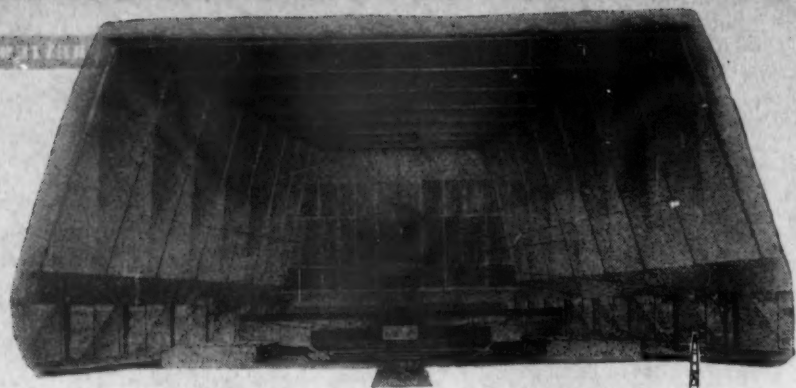
Key: 1, college; 2, school area; 3, monastery; 4, minor seminary; 5, school centre; 6, high school; 7, workshops; 8, capillary.

first stage

final stage

scholastic

monastic

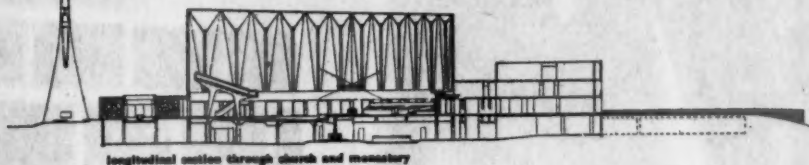


The church, left, looking toward the choir end, is vaulted by a folded concrete slab, resting on piers between which the two flanking gardens may be seen. The belfry is a freestanding concrete structure, and the brothers' chapel is in the crypt.

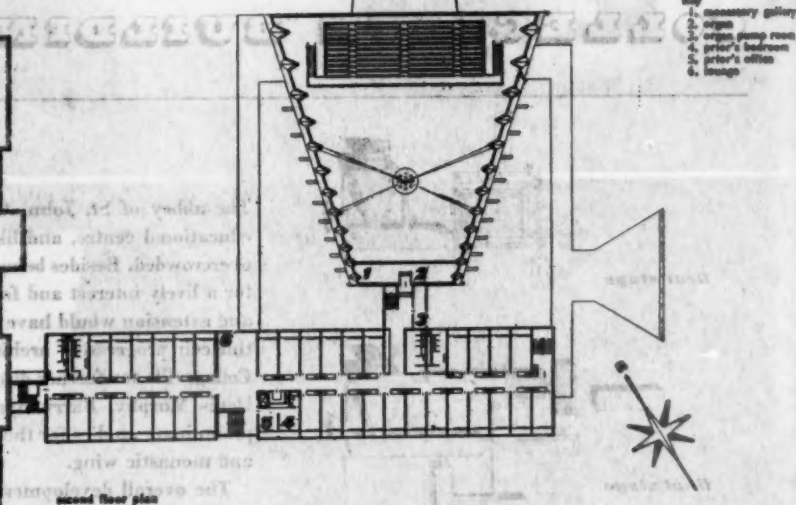
COLLEGIATE BUILDINGS IN MINNESOTA

remaining more or less constant at about seventy-two to eighty. The structure of this wing will be load-bearing walls of concrete blocks, with concrete floor slabs produced beyond the building on the south side for sun-shading, while special emphasis will be laid on the Chapter-house and its importance in the community by making it a separate structure.

The church, in a Benedictine community, poses special planning problems when it has to be shared with an outside congregation, since the monastic choir is inevitably large, and must in this case provide for up to 180 persons, while the Brothers' Chapel must accommodate 130. At St. John's, however, the rest of the church accommodation has to be on a generous scale as well, with a possible congregation of 1,250, so the amount of monastic accommodation is not disproportionately great in comparison to the lay side. Structurally, the church is a folded concrete shell, faced with light brick externally, left rough-shuttered and painted within. The south wall is of concrete blocks with numerous small lights; the north wall is a glass screen of varying texture and transparency, through which will be seen the banner-like structure of rough white concrete in which the bells will be hung.

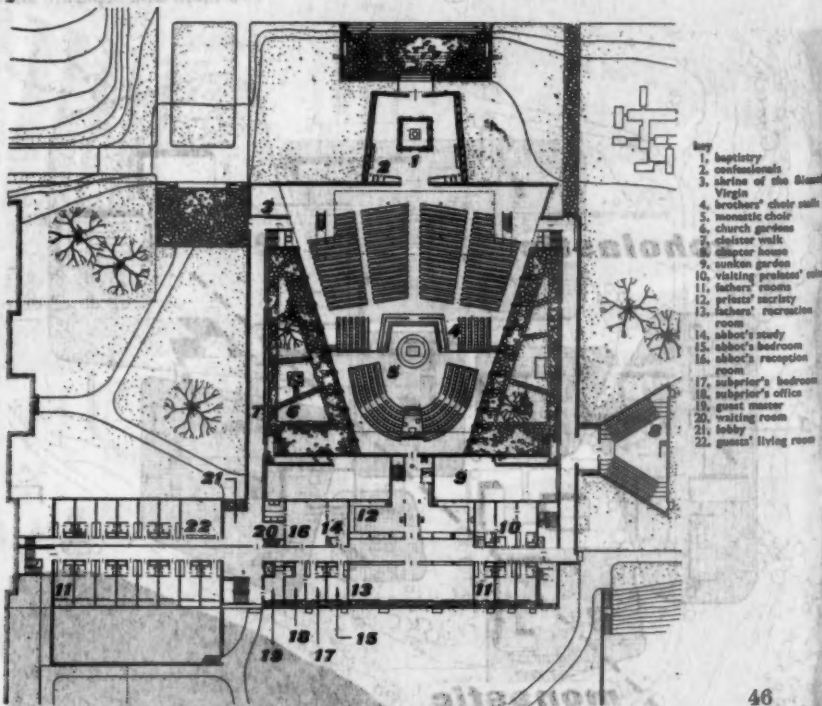


longitudinal section through church and monastery



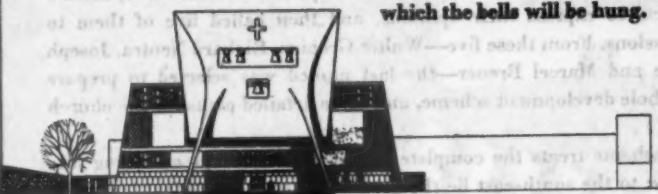
- key
- 1. monastery gallery
- 2. organ
- 3. organ pump room
- 4. prior's bedroom
- 5. prior's office
- 6. lounge

second floor plan

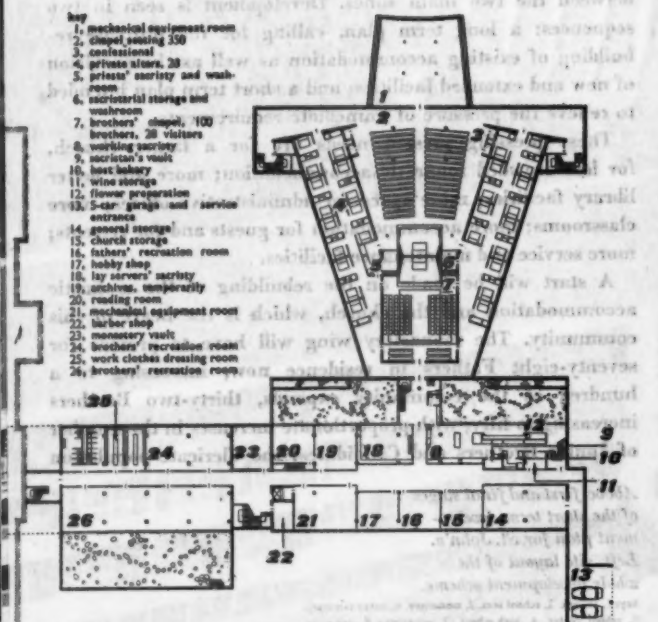


- key
- 1. baptistry
- 2. vestment room
- 3. shrine of the Most Holy Virgin
- 4. brothers' choir stall
- 5. monastic choir
- 6. church gardens
- 7. cloister walk
- 8. chapter house
- 9. junkies garden
- 10. visiting prelates' room
- 11. fathers' rooms
- 12. prior's study
- 13. fathers' recreation room
- 14. abbot's study
- 15. abbot's bedroom
- 16. abbot's reception room
- 17. superior's bedroom
- 18. superior's office
- 19. guest master
- 20. waiting room
- 21. lobby
- 22. guests' living room

upper floor plan



north elevation



lower floor plan

scale 1/1200

EXHIBITIONS

PAINTING AND SCULPTURE

History has bestowed upon the names of Jean-Frederic Bazille and Ker-Xavier Roussel the melancholy privilege of calling to mind the work of greater painters. Their pictures have just been given their first adequate showing in London. Bazille was exhibited alongside Manet, Roussel with Bonnard and Vuillard, and it exaggerated their stiltedness to such an extent that their work acquired the droll rigidity of Sunday painting. Both painters were, in fact, talented, sensitive and highly professional, and they were so fortunate in their friendships and worked in an atmosphere so propitious for the creative enterprise that if they had had a spark of genius it would have been fanned into visibility. The three large paintings by Bazille which were included in the 'Manet and his Circle' exhibition at the Tate, show him to be one of the

is still dark, even a bit muddy. The Bazille is, nevertheless, no more than a nice example of staid picture-making. Manet's picture, on the other hand, seems the result of a conspiracy between the artist and the Devil to steal the life of a certain Madame Gaillard, 'whose salon was attended by all the well-known artists, writers and figures in the art world of the time.' She is so close to us, and so flatteringly attentive, that she seems to be listening to every man who ever explained to a woman why he is different from other men. It must be the hardest thing of all to be the mere painter that Manet became, and finally to have at one's disposal the means of re-creating a fragment of optical reality without, so to speak, stopping the heart of the being who is enmeshed in it. Other masters have made the paint itself give off a sense of life, so that everything in the painting is equal. Manet did not go so far, but had the singular gift of rendering the distinctions

between what he looked at and what at the same time he happened to see.

John Russell wrote a delightful preface for the Roussel-Bonnard-Vuillard exhibition held at the Marlborough Fine Arts, and has done everything possible to leave on the mind of the reader an indelible impression of a very shadowy figure. Roussel's best work was done before the turn of the century, when Bonnard and Vuillard were making brilliant and witty comments on everyday life in flat colour patterns. It appears to have been the only period in which his habit of generalizing gathered any support from the work of his intimate friends, and his 'Decoration for a Town Hall,' 3, has something of the power of the other two to catch the essence of gesture and stance, although the impact is reduced by fusty symbolism. There is an air of polite reserve about his later dreams

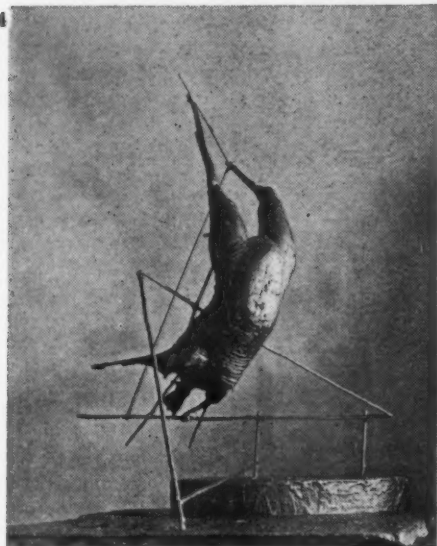


pioneers of *plein air* painting: the colour of *La Robe Rose*, 1, painted in 1865, is bright and clean, whilst Manet's *La Dame aux Eventails*, 2, painted eight years later,



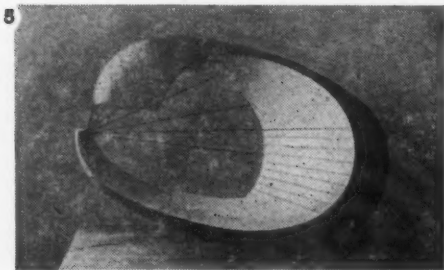
of a pagan world of fauns and goddesses which is quietly farcical.

The exhibition of Reg Butler's recent sculpture at the Hanover Gallery was remarkable for its dramatic presentation of the rival claims of linear construction and closed form upon one of the most restless and exasperated sculptors of our time. In many works, especially those which associate themselves with St. Catherine broken on the wheel, or depict a figure falling, 4, the struggle becomes symbolic, and the thin, metal construc-



tions are a threat to the human figures. The human belly and its vulnerability became the *leit-motif* of the show, in a way which recalls the obsessiveness of D. H. Lawrence. The bodies trapped and skewered on metal rods are torsos with limbs and heads whittled away, and even in the superb bronze figure of a girl with long thin legs, which is one of the most subtle syntheses of warring tendencies in contemporary art, it is the torso which expresses both the wonder and the precariousness of the human condition. The girl is taking off her vest, and the head and arms are wrapped in its folds, leaving the belly to be a kind of portrait of anonymous humanity.

Some of Barbara Hepworth's sculpture in the large Retrospective of her work held



at Whitechapel Art Gallery presents a much more potent aspect of the generalizing faculty than Roussel's mythological figures, and although many of her standing

forms are too suggestive of the human figure and at the same time too remote from it to be satisfactory, the works in which she finds concrete symbols for natural forces, beautifully exemplified by the *Wave*, 5, are unassailable little fortresses in the modernistic positions now under heavy fire.

A large exhibition at the Redfern Gallery was recently devoted to many more of these positions, some of them less impregnable than Barbara Hepworth's. But Picasso's *Portrait of Uhde* and Max Ernst's splendid *'Forest'* seem to increase in strength and assurance as time goes on. Several by-ways of painting were pleasantly explored, and Loudon Saint-hill's charming architectural personage, 6 (facing page), painted in a distinct spirit of homage to the great Arcimboldo, was among the best.

Robert Melville

CRITICISM

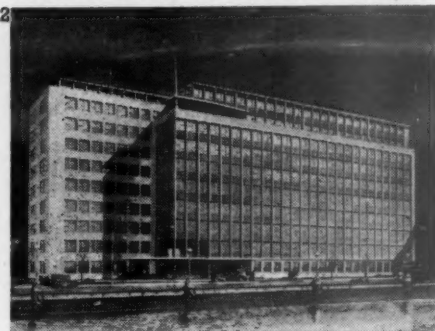
ARCHITECTURE AT THE RA

The Architectural Room at Burlington House offers a fair cross-section of English architecture in all its variety of idiom and lack of consistent aesthetic purpose. For this reason it is interesting to visit; it is also important as our only regular source of advance information about prospective building schemes. It gives the public its only opportunity to criticize, and if necessary protest against, designs for new buildings instead of having to be content with grumbling at accomplished facts, though it must be added that when designs are shown at the Academy they are often so far advanced that criticism is too late to be effective.

Among the designs towards which adverse criticism will certainly be directed this year are several for the long-suffering City of London, to which I have already referred in an article on the reconstruction of the City published last month. Also exhibited are several other designs for pseudo-monumental office blocks, nearly as clumsy in conception as those proposed for the City, notably one in Stratford



Place, London, by Ronald Ward and Partners and another in Savile Row, 1, by W. J. Biggs. Leaving aside the question of suitability to site (which criticism on the basis of a Royal Academy perspective has to do), the most acceptable solutions of the office-building problem appearing on these walls are a drawing for a large block on the Albert Embankment by Sir



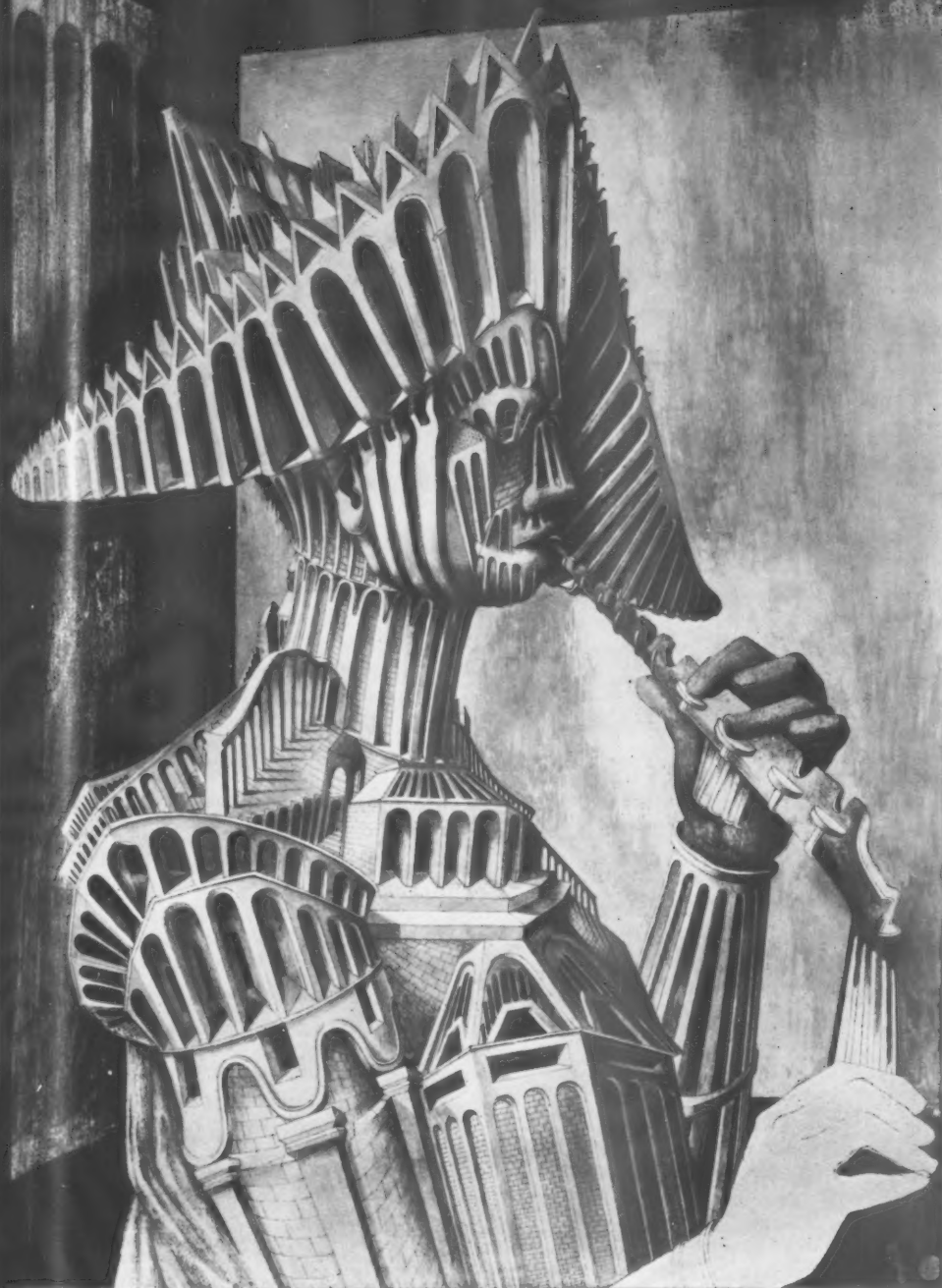
Thomas Bennett, 2, which, if rather heavily handled, is at least contemporary and workmanlike, and a model of the much-argued-over Bucklersbury House (see AR, January, 1954).

Solutions of the problem of the contemporary religious building are even less in evidence. The exhibition contains half a dozen designs for churches, but in spite of the presence of a new perspective by Basil Spence of the north side of his Coventry cathedral, there is little sign that a modern idiom suited to religious purposes is emerging from the eclectic medley of the reminiscent and the modernistic that has characterized church building in recent years. Particularly unhappy in style are a jazzy church building at Roehampton, 3, by



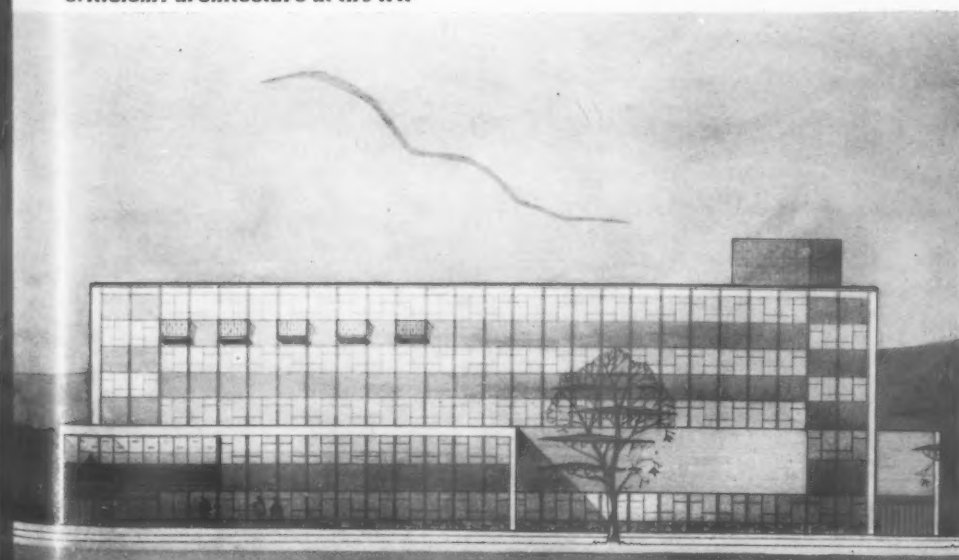
David Stokes and Partners, and a weakly modernistic scheme by Lord Mottistone for rebuilding the destroyed portion of the City Temple, 4.

A more cheerful prospect is offered by the designs for post-offices and telephone exchanges exhibited by the architects' department of the Ministry of Works, 5, which are fresh and vigorous and confirm recent impressions that Government architecture, under Eric Bedford's leadership,



exhibitions: paintings and sculpture

criticism: architecture at the RA



6



4

is at last aiming at something far better than the cautiously genteel, which has been its dominant quality for many years. There is likewise evidence of marked improvement in buildings to be put up for the police. Among three schemes for police housing in London—all of a good standard—one, at Highgate, 6, by



6

Sydney J. Hatchet, stands out as exceptionally agreeable and is none the worse for its marked Scandinavian flavour.

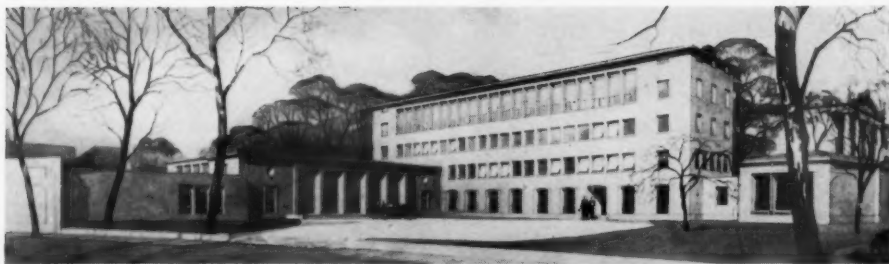
Space prevents comment on every design. It must suffice to mention those that serve to raise the level of the exhibition as compared with previous years and contribute to its serious architectural purpose, and those that depress the level more than most. Among the former (omitting one or two that have already been illustrated in the REVIEW), are a bridge at Ross-on-Wye by Arthur Bailey, a ware-

5



7

house at Nottingham by Colin St. C. Oakes, 7, a building (academic in approach but restrained and lightly handled) on the edge of Regent's Park for the Royal



College of Obstetricians and Gynaecologists by Louis de Soissons, 8, a Faculty of Letters building at Reading University by Howard Robertson, 9, the new Sheffield University buildings by Gollins, Melvin, Ward and Partners (impressively illustrated



by a model), some housing at Bedford by Max Lock and Partners, 10, laboratories at Salfords by Graham Dawbarn, and some buildings for the North Bedfordshire College of Further Education by Stanley V. Goodman (illustrated by a particularly

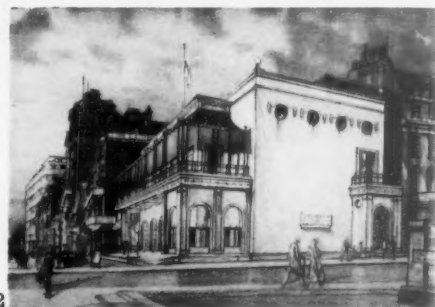


11

charming drawing, 11, the work of John H. Bramwell).

It is difficult to draw the line between buildings that should be mentioned as belonging to my second category—those that seriously depress the standard of design at the exhibition—and the numerous merely dull or trivial efforts that crowd these walls in the absence of anything more distinguished being submitted, but some comment must be made on the unusual banality and stodginess of a new studio building for the British School at Rome (by Minioprio and Spencely and P. W. McFarlane), on the same defects (achieved in spite of the use of a more up-to-date idiom) in a secondary school at Dover (by Howard Lobb) which it is disappointing to see given such prominence here in view of the amount of high quality school work going on in the country at the present time, and on the unpublike exhibition-style fancifulness of a public house, 12 (by Robert Atkinson and Partners), which is to be inserted into the front

at Brighton. The same architects' Croydon Technical College is at least an improvement on the cumbrously ornate



affair that was published earlier.

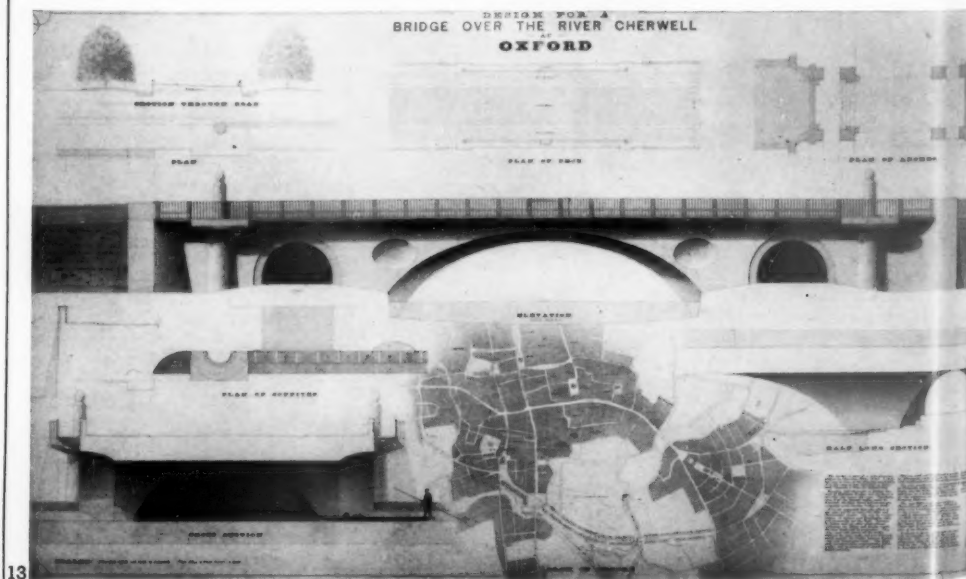
The watercolour renderings by which most of the designs are illustrated conform to custom in their somewhat stylized interpretation of reality, but a rare distinction is given to one wall of the Architectural Room by an exquisite line and wash drawing by Raymond Erith, 13, who has cultivated the agreeable habit of submitting every year one of his inimitable exercises in early nineteenth century modes. His model this year seems to have been the younger Dance, but there is much originality too in his design for a bridge over the Cherwell at Oxford embellished by a flattened Greek doric order.

J. M. Richards

FURNITURE

MASTER'S CHAIR, PEMBROKE COLLEGE

The time-lag between innovations in design and their acceptance by the old universities is proverbial. So it must be acclaimed as an event that the new Master's Chair of Pembroke College, Cambridge, is uncompromisingly in the style



13



of the mid-twentieth century. It was designed and carved by David Pye, and made and upholstered by R. Lenthall at the Royal College of Art.

This chair has been presented to Pembroke College, Cambridge, by the Messrs. F. C. and J. C. Pritchard in memory of their father and of Mr. F. C. Pritchard's son. It is intended for the use of the Master of the college at table. The dining tables in Pembroke College hall are of oak, which with age and use has taken a good deep colour. The chair has been made in black bean, a wood which in its fresh state has a not dissimilar colour and character. The coat of arms is carved in Bombay rosewood. The upholstery is of hair, covered with North African morocco of a pale brown colour.

The seat and arms of the chair are continuous, in bent beech plywood veneered inside and out with black bean. The shape presented some interesting technical problems in the making. The back is hollow, of two bent plywood panels, veneered, in a frame of solid wood. The thin rosewood panel for the coat of arms is bent and overlaid on the front panel of the back. The legs and back frame are joined to the seat bend by gluing and screwing after the fashion of boat builders' work, with the screw heads pelleted. N.D.

TRANSPORT

THE VEHICLE DISPLAYED

In the splendid Shareholders' Room at Euston there is an exhibition called Popular Carriage. Devoted to the design of public vehicles of all kinds, from the years of the Four



Georges to the present, it curiously emphasizes the continuity of coach-building traditions which had their roots in the Renaissance. It was in Caroline England that the hackney coach first appeared, soon followed by a few isolated stage-coaches, though the best in coachbuilding stemmed from State and private vehicles. In the seventeenth century, many of the features that we know to-day, whether in the railway carriage or the motor car, first took shape. The tumblehome body form, the swinging doors with drop-windows in them, the upholstered cross-seats, the curved-off angles of supplementary windows or quarterlights, persisting in the modern car and characteristic of the Victorian railway coach, go back to the time of the Stuarts. The design of modern buses and trains may have deviated; old styles are modified, but they are still there.

Railway compartments to-day, for all their large windows, and access through vestibules and side-corridors, spring from the stage-coach 'inside,' three of which tacked together, as Hilaire Belloc once remarked, made the first railway carriages. The motor coach of our roads is but a closed *char-à-banc*, 1, with a gangway cut



through the benches and, as in the modern railway coach, the side-doors reduced to a minimum conformable to safety. In the glass fronts of the latest buses with under-floor engines, and of the new oil-engine trains now appearing in the West Riding,

is something that the chariot and the berlin gave their user 150 years ago.

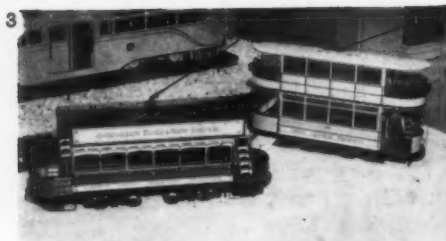
Late Victorian trains, and Edwardian trams and buses, incorporated the clerestory roof-form, which not only provided an efficient air-extractor, but opened a field for decorative lighting effects. It is on evil days now, though the railways of Rhodesia and South Africa faithfully perpetuate it still. The vehicle clerestory is supposed to have been borrowed from architecture, but it probably owes more, directly, to the decking over ships' saloons than to the great churches of the Middle Ages.

The Popular Carriage Exhibition (Peter Miller and Sheila Stratton are the designers) has been put on by Christian Barman and John Scholes of British Transport Commission with a really praiseworthy lack of partiality for this or that form of transport. They are all there—horse, steam, motor and electric—coach, train, tram and bus—in the form of models, sections, specimens of modern construction, relics of departed elegance and outmoded convenience. Nor is Ajax forgotten; indeed, he is honoured with two exhibits. A complete Victorian train lavatory, with its satinwood and mahogany panels, has been rescued from a condemned Great Northern coach. From low-level zinc tanks, the vigorous working of two brass force-pumps brought the water up to, respectively, a nickel-plated folding basin and the flushing rim of a valveless, untrapped water-closet (veined to resemble a marble throne). Across the way, a London and South Western specimen flaunts its chrysanthemums. How strong was the Victorian sense of *dignity* under all circumstances!

On a turntable in the middle stands the old Tenterden Station Bus of the Kent and



East Sussex Railway, 2, lovingly restored to its original state, though someone—quite possibly mice—made away with the old seat cushions. That old one-horse bus has had its moments; Ellen Terry found that it would carry both her and her dresses with



plenty of room. It has for a companion a full-sized, sectioned restoration of a Midland Railway third-class compartment of the middle 'seventies, which had already appeared in the London on Wheels Exhibition, and is much too good to pass into oblivion on this occasion.

Surely it is something more than mere peevishness at the era in which we live that makes the styling of many older exhibits appear so superior to that of our own time! This is very pronounced in lighting fixtures. There are the electric lamps of the 1930's, unexceptionally ghastly; there are some modern ones, preoccupied with being functional, and there is a big pendant gas lamp of the 'nineties, designed for a clerestory carriage, truly functional without self-consciousness, which is satisfying to the eye in a way that neither the jazz horrors nor the inverted plastic hoppers ever could be. One feels rather the same way over the specimens of carriage trimming—those tremendous moquettes that stand up to years of murderous wear and abuse, and then end their days as blacksmiths' aprons in Eastleigh and suchlike places. The old LMS stodgy red-and-black has something which British Railways' blue chestnut foliage certainly has not.

The models are variable; some are ordinary; some, particularly those of buses, are excellent. But two electric tram-cars, 3, of the Erith and London United lines respectively, are exquisite. Yes, the despised and vanishing tram almost steals the show.

C. Hamilton Ellis

LANDSCAPE

FIELD PATH OR TOWN PATH?

One of the unfortunate aspects of urban encroachment on the countryside is the effect on the existing footpath system of the invasion of an ever increasing number of walkers from the nearby towns. The footpath system which has developed gradually over the centuries was never intended for mass use, and if it is subjected to it there is an alarming tendency for the fieldpath either to become impassable and a hardship to



farmers, or just an extension of the town-path, 2 and 3, complete with its iron railings and cinder, asphalt or concrete surface—the town-made materials so out of harmony with the rural landscape, and which the walker has gone into the countryside to avoid. There are few things so incongruous as an asphalt path, fenced with spiked railings on both sides, crossing a field. It gives the walker the feeling of a caged animal, besides impeding



the working of agriculture.

The fieldpath is generally turned into a townpath either:—

(a) because in wet weather the unsurfaced path, when used by large numbers, becomes a quagmire and the walkers make a detour either through the hedges or over the crops. In consequence, the farmer in self-defence must be protected by a fence and the path surface stabilized to keep the walkers on the path.

or

(b) through lack of imagination and the tidying up mentality of the council; their love of law and order and of 'keep to the straight and narrow.'

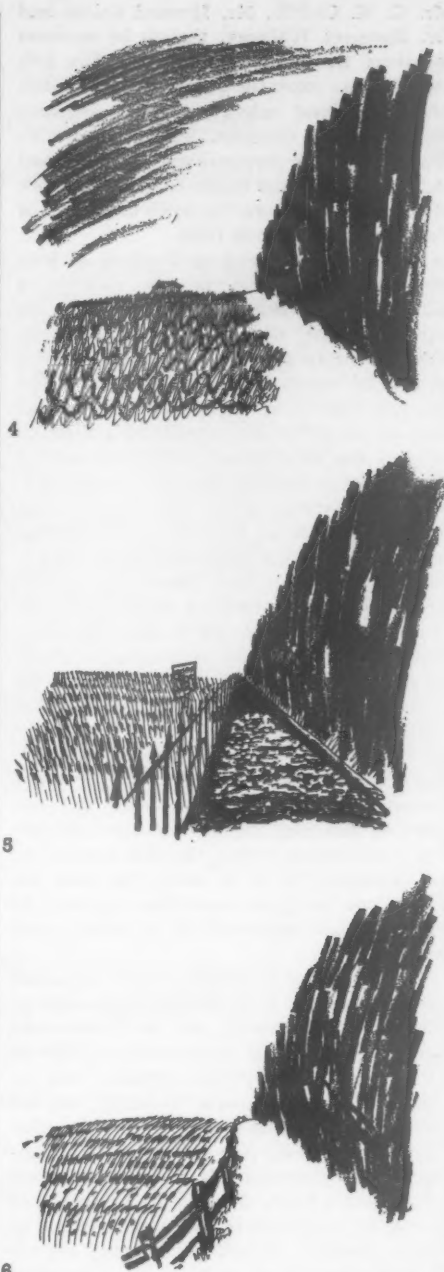
It is obviously no use leaving the future of the footpaths to chance. The mapping and preservation of rights of way now in progress should be followed by a careful examination of the degree to which the various areas of footpath are used and there should be *drastic resiting* in areas where there is heavy use on paths unsuited for it (The Access to the Countryside Act, 1949, makes provision for resiting of footpaths).

The rule throughout should be to civilize as little as possible and where paths are found to be *little used* they should be left as they are; rough going is part of the character and narrow cross-field paths which can be ploughed and re-trodden are little hindrance to the farmer, even if they cut across a field.

But where paths that are *much used* cross arable fields they are a hardship to the farmer because they interfere with ploughing, and because the path becomes widened and crops are trampled underfoot; these should therefore be resited.

When resiting, natural features should be followed such as hedgerows, streams, edges of woods and the space between shelter belts and existing hedges, where least damage will be done to the farmland. Full use should be made of existing rides through woodland, sunken lanes and sheep droves many of which are at present overgrown. When resiting to follow hedgerows the path should be placed wherever possible on the side which will give a view on to the country and screen unwanted urban sights.

For surfacing, cinders, asphalt or concrete are unnecessary besides being quite out of character. Wherever possible the path should have a natural surface, grass, trodden earth, sand, chalk or the underlying rock, but where it is liable to become impassable in wet weather it should be surfaced with hardcore, blinded with sand or earth, and left uneven where it borders the field. In pasture often no fence is necessary, 4. Where protection is necessary it should *never* be provided by a close-boarded or spiked iron fence, 5, but by a field hedge, ditch



or fence in the local vernacular, 6. It should look part of the farm not part of the town.

Sylvia Crowe

BOOKS

TWO AMERICAN CITIES

THE ARCHITECTURE OF BALTIMORE. Edited by Wilbur H. Hunter, Jr., with text by Richard H. Howland and Eleanor P. Spencer; introduction by Henry-Russell Hitchcock. Johns Hopkins Press. (London: Geoffrey Cumberlege.)

PHILADELPHIA ARCHITECTURE IN THE NINETEENTH CENTURY. Edited by Theo B. White; various authors. University of Pennsylvania Press for the Philadelphia Art Alliance. \$3.50.

The scene is a city square, lined with terraces of brick houses painted at least five shades of red but having this in common: that the front door of each is approached by a

flight of gleaming white marble steps. At the far end of the square is a grey Gothic Revival church—not sooty grey as such a church would be in an English city, but the clean, even grey of a painted backdrop. Above, the sky is pale blue and not merely cloudless, but of a quality which seems to deny the very possibility of clouds. Crossing the grass of the square, whose green is intensified by the complementary reds of the houses, are three boys; they wear blue jeans and blue and yellow shirts and their skins are coal black.

And the place? It is—perhaps it could only be—Baltimore. Colourful is an adjective that can be applied in the literal sense to Baltimore as to few American cities (and even fewer English ones): not only are there whole suburbs where even to-day those who have made good proclaim their success with stained glass in their fanlights but, as the authors of *The Architecture of Baltimore* tell us, 'in some parts of south Baltimore the window screens in summer are painted with imaginative views of lakes and mountains which effectively prevent an outsider from seeing in the low windows and produce the effect of an open-air gallery in the block.'

However, this is a book about works of architecture, not popular art. The finest of Baltimore's buildings is without question Latrobe's Roman Catholic Cathedral of 1808, a church which could hold its own in almost any company. Mr. Howland and Miss Spencer follow Mr. Talbot Hamlin in likening it to the contemporary work of Soane, but it may be suggested that in so far as it is a neo-classical version of Wren's 'model' design for St. Paul's, it shows Latrobe a good pupil of Samuel Pepys Cockerell, in whose office he was working when Banbury church, with a plan based on St. Stephen Walbrook, was going up. If Latrobe was rather less French than his name in this instance, Robert Mills was considerably more French than his in the Washington Monument, whose immediate progenitor—as Lafayette at once recognized—was the Colonne Vendôme. France did much to shape Baltimore's architecture in the first quarter of the nineteenth century, which, as Mr. Hitchcock says in his introduction, was architecturally the city's greatest age. One of the most gifted architects then practising there, Maximilien Godefroy, was indeed a Frenchman. Godefroy's Romano-Egyptian Battle Monument and his First Unitarian Church, with its triple arched neo-Renaissance loggia, are structures which had no counterparts in England at the time, while his Gothic St. Mary's Chapel of 1807 owes little or nothing to Batty Langley, to whom certain of its American near-contemporaries in the style, such as J. H. Greene's Episcopal Cathedral at Providence, are so evidently indebted.

Although Mr. Howland and Miss Spencer are mistaken in calling St. Mary's the first ecclesiastical Gothic Revival building in the United States—for the Second Trinity Church, New York, was built in Gothic in 1789—Baltimore did have the first museum (1813) and the first railway station (1830); less happily, it witnessed the first bloodshed of the Civil War.

Philadelphia has an even more important 'first' to its credit: in 1775 it became the first

capital of the new nation. At the time it was the second largest English-speaking city in the world; to-day it is the third city in the United States. Though barely a hundred miles from Baltimore, its character is utterly different. In Baltimore there is always something to remind the Englishman that he is abroad; in Philadelphia he may experience moments when he can imagine himself in London. Philadelphia has a longer history, architecturally as otherwise, than Baltimore, with quite grand colonial mansions along the Schuylkill and in Christ Church and Independence Hall a church and a public building that would have been notable in eighteenth-century England anywhere outside London. Neo-classicism arrived in the last year of the eighteenth century with two buildings, both long destroyed but both illustrated from prints in *Philadelphia Architecture in the Nineteenth Century*—Latrobe's Bank of Pennsylvania and his Pumping Station for the waterworks. The latter perhaps owes as much to Soane's belvedere at Erith as to Ledoux's Barrière de la Villette; and the resemblance between Strickland's Merchants' Exchange and the Inwoods' church of All Saints, Camden Town, cannot be due to chance; on the other hand, Thomas Walter's vast Corinthian temple for Girard College, octastyle and peripteral, is more American than it is anything else in its literal rendering of the classical theme. With John Notman's Athenæum of 1845 the picture becomes English again (Barry Italianate), but the granite-fronted proto-skyscraper put up for Dr. Jayne, the patent medicine king, and the all-iron Penn Mutual Life Insurance building, of 1840 and 1850 respectively, are wholly American; that both the latter have been scheduled for preservation by the city planning authority is an excellent omen, which counterbalances the news that Frank Furness's Guarantee Safe Deposit building is to be demolished to reduce fire hazard to the neighbouring Carpenters' Hall, a comely Georgian building which was the first meeting place of the Continental Congress and, therefore, finds itself elevated to the status of a 'national shrine.' After Mr. William Campbell's article, Furness needs no introduction to REVIEW readers; but Wilson Eyre, with four of whose houses the photographic survey in this book concludes, deserves to be better known outside Philadelphia than he is.

It remains to be said that each of these handsomely produced volumes was the result of an exhibition organized by one local cultural institution and supported by others (in the case of Baltimore, by commercial firms as well). Each contains, in addition to an admirable text, more than a hundred big pictures; each covers its field better than any previous publication. English cities, please copy.

Marcus Whiffen

INIGO JONES: ATTRIBUTIONS AND REVISIONS

THE AGE OF INIGO JONES. By James Lees-Milne. Batsford. 42s.

Mr. Lees-Milne modestly describes his book as 'an attempt to collate' the work of other scholars. That means presumably

Mr. G. H. Chettle, Mr. Howard Colvin and Dr. Margaret Whinney, though he nowhere mentions the name of the first. His first two chapters cover the background of Jones's life travels and career as court architect and theatrical designer. There follow two chapters on the documented buildings and the attributions, and finally three on the work of Jones's contemporaries, down to the end of Pratt's active career in 1669.

Inigo Jones, for so long the prey of irresponsible attributions, is now cast in a different role. Those most concerned for his reputation are more often found taking buildings away from him than adding new ones to the canon. The great exception is the Queen's Chapel in St. James's, added as recently as 1938. Mr. Lees-Milne's attitude towards the attributions is level-headed: he does not waste space in discussing the palpable absurdities among them, but he gives the doubtful cases a fair hearing. Those he comes nearest to accepting are Chevening, and a few features at Kirby Hall. Most good judges would probably be inclined to add the Stoke Bruerne pavilions, in which Mr. Lees-Milne finds a 'faintly uneasy impression of staidness,' seeming disposed to credit the design to the owner Sir Francis Crane, though in the caption to the plate he gives it 'probably' to Inigo. He does his best with Lincoln's Inn Chapel, but reluctantly has to admit Jones's probable connection with 'this ungracious building.' Perhaps the most interesting unattributed work is the east frontispiece to Raynham: but it is clearly too soon yet for anyone to express more than a guess as to exactly what happened at Raynham, and in what order.

Mr. Lees-Milne is not always to be depended upon for details. In particular his account of Kirby Hall is confused, and the illustrations are referred to by the wrong numbers. Plate 40 is sixteenth century and certainly not by Nicholas Stone. Jones's 'refacing' of the inner fronts extended only to the insertion of some windows. Nor is it easy to understand his admiration for the centre feature of the north front. On page 61 he speaks of the gallery balusters in the Queen's House as being 'coarsely' carved, whereas they are not in fact carved at all, as he implies (correctly) on page 70. His remarks on page 106 about Houghton Conquest are belied by plates 28 and 29. His account of the St. Paul's portico would be clearer, if it were supported by a better illustration than plate 22, which fails miserably to substantiate his careful description. He is mistaken, also, in referring to curved colonnades at Castle Coole; Castletown Conolly is perhaps intended? His belief that the Stoke Bruerne porches had pediments on three sides is apparently based on Campbell's plate alone, and must almost certainly be rejected.

This book is nevertheless the most up-to-date and useful general account of its subject that has yet appeared.

Maurice Craig

MUMFORD SPEAKS

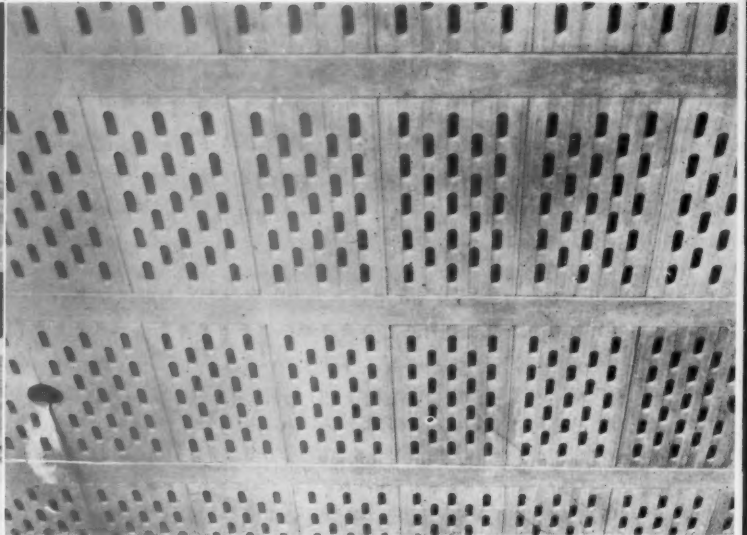
ART AND TECHNIQS. By Lewis Mumford. Geoffrey Cumberlege. Oxford University Press. 15s.

Lewis Mumford is undoubtedly one of the

curiosities of our time. He is extraordinarily erudite; and has been able to apply his erudition in such a way as to make a major philosophical contribution to the problems of the day. Starting where Geddes left off Mumford did, in *The Culture of Cities*, show how cities and their buildings are true cultural phenomena; only incidentally either planned or chance growths, always clear witnesses to the world that gave them birth. In *The Condition of Man* he took this philosophy—for he had made it a philosophy—beyond cities and architecture into all realms of life. He saw them all as a unity and showed that all art form, all man-made form, was the inevitable product of its own underlying forces. There was nothing new in this; March Philipps had said it more gracefully, if more superficially, forty years earlier. Mumford, however, on a massive scale did turn an idea into a true philosophy of history. He took the thing to the very limits of logical conclusion, and it stood the test. Sex, diet, clothes, thought, tools, government, mathematics, technics: all these combine to make one thing—Man, and the condition of Man at some particular moment of time.

The Culture of Cities may remain for architects Mumford's best known work; but *The Condition of Man* will remain his real monument. A complete philosophy—nothing he could write thereafter could be more than an addendum. *The Conduct of Life* was just such an addendum, while *Values for Survival* was, by high philosophical standards, an almost insular statement on behalf of 'Americanism,' causing some to wonder whether Mumford could use his own philosophy to illuminate the great forces of his own time.

The present book, *Art and Technics*, is a collection of lectures, undated but delivered apparently about two years ago. There is much wisdom in them, much hard thinking, but on the whole they confirm one's feeling that with *The Condition of Man* Mumford had declared his hand. The theme of these lectures is that in acquiring technics in order to present better his symbols—symbols of his inner life and aspirations—man passed gradually from handicraft to art, and then in the last two hundred years to an obsession with the technics themselves and their mechanization. From that Mumford develops his thesis that if modern man is once again to be free, in both body and spirit, he must emancipate himself from his own mechanisms; if he is not to debase further his own art symbols he must not offer them on the radio twenty-four hours a day. He must learn when to switch off! The main thesis is developed with force; much of it was made almost platitudinous by William Morris; the rest is transatlantic naivety, the cry of a sensitive soul in the American trap. Mumford is one of the really great figures of this century; strange, therefore, that while he has shown himself capable of taking all history in his sweep, he should now be so concerned with the survival of a civilization which—as this book proves—is committed to everything he loathes. R. Furneaux Jordan



Just as smell is reputed to have been the chief nuisance of the nineteenth century, noise is the chief nuisance of the twentieth. It is bad enough in the home, but it is at its worst in offices and factories. Both architects and building owners are insufficiently aware of the toll it takes on ordinary living. To draw attention to this problem

ACOUSTIC TREATMENTS

J. McLaren

the greater part of *Skill* this month is devoted to a review by an acoustic consultant on how to counter noise, particularly in places of work. The photographs above, which show the fixing of a 'Kent' fibrous plaster acoustic ceiling at the MOE's School at Wokingham, illustrate one way a traditional industry has met this new requirement.

TECHNIQUES

Noise, which may be defined as undesired sound, lowers the vitality, and thus the efficiency, of a person. Such effects are often gradual as, although the body can become accustomed to noise, extra energy has to be applied by its defence mechanism, and this puts an added strain on the body. Those who are habitually subject to noise are often unaware of it, and may even find that its removal gives rise to what seems to them an unnatural condition of quiet. It is for this reason that the suppression of noise has not figured as prominently as we might expect in the general drive for better working conditions.

The requirements of temperature, of ventilation, and of lighting have all received due acknowledgment by employers and the public: only the requirements of the ear, though they are as ascertainable scientifically as these others, have so far passed relatively unnoticed.

It is not intended in this article to deal

either with noise in domestic dwellings or with the acoustical correction of auditoria, as both these subjects have already been well documented, but to deal with noise reduction in factories, offices and their surroundings, and indicate briefly how this can be carried out.

SCIENTIFIC THEORY

Sound can be defined as a physical disturbance which sets up an alternating pressure in the air and can be detected by the ear. Sound is basically caused by vibrating objects, such as for example, a plucked violin string. When a string vibrates it alternately pushes and pulls the adjacent air particles in sympathy and they, in turn, transmit their motion to the next layer of air, and so on. The result is a series of air compressions and rarefactions which travel outwards in all directions, rather like the skins of an onion. Such a series of alternating air pressures is known as wave motion, and what is being sent out is known as a sound wave.

A sound possesses pitch or frequency which is determined by the number of vibrations per second and if, say, a vibrating string is sending out alternate compressions and rarefactions, which are travelling at a constant rate, it thereby follows that the distance between the successive compressions or rarefactions will vary in proportion to the pitch or frequency. This distance is known as the wave length and the relationship between frequency and wave length is expressed by the formula:—

$$\lambda = \frac{c}{f}$$

where λ equals the wave length in feet, c = velocity of sound in feet per second and f = the frequency or pitch in cycles per second. It will be seen that a low-pitched sound has a long wave length and vice versa, that for a note of 64 c/s (i.e. two octaves below middle C) being about 17 feet and for 4,096 c/s (four octaves above middle C) about $2\frac{1}{2}$ inches. Thus it will be seen that there is a very wide variation in wave length between the upper and lower range in the frequency spectrum. This difference has considerable bearing on the behaviour of acoustical absorbents and on the satisfactory solution of many acoustical problems.

When a sound wave reaches the ear it sets up alternating pressures on the ear

drum and these impulses are transmitted to the brain, which determines the loudness, or subjective sensation, of a sound.

The ear is a very sensitive organ and can detect sound pressures as low as one ten thousand millionth of the pressure of the atmosphere; this level is known as the threshold of hearing. Sound pressures of the value of one ten thousandth of that of the atmosphere are strong enough to cause a pain in the ear. This point is known as the threshold of feeling.

Sound pressures are usually measured on a logarithmic scale called the decibel scale. When measured on this scale the sound pressure is known as the sound pressure level and is defined as 20 times the logarithm to the base 10 of the ratio of the pressure p of this sound to the reference pressure, p_0 (p_0 is that of a 1,000 c/s note at the threshold of hearing of 0.2 millidynes per sq. cm.). Hence:—

$$\text{Sound pressure level} = 20 \log_{10} \frac{p}{p_0} \text{ db}$$

The sound pressure level is a physical unit measuring the strength of a sound. The measurement of loudness, the subjective effect of a sound to the ear, is more complex.

The response of the ear is logarithmic as regards sound pressures, but its sensitivity also depends on the frequency

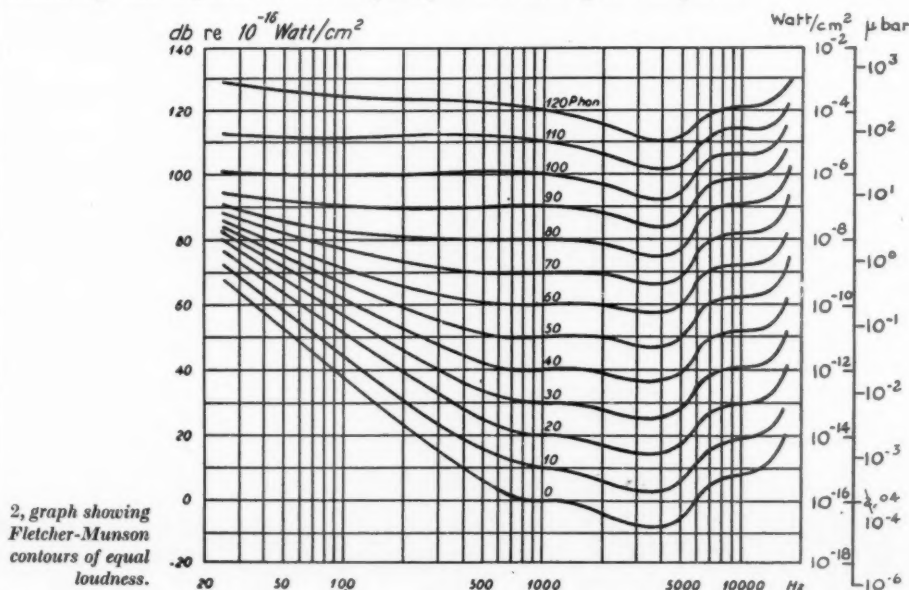
or pitch of the sound, for example, the threshold of hearing at 1,000 c/s is 0.2 millidynes per sq. cm. but at 100 c/s it is 2.5 millidynes per sq. cm. Harvey Fletcher and W. A. Munson carried out considerable research into this subject and produced the well known Fletcher-Munson curves of equal loudness, reproduced below. Each curve represents pure tones which have the same strength as the 1,000 c/s note as judged by the ear. It will be seen that at low intensities the ear is much less sensitive to sounds of low frequency than to the high frequencies, whilst at high intensities the ear is more or less evenly sensitive to all frequencies.

This curve is of the greatest importance when considering noise problems, and explains why at times noises almost inaudible can cause great distress.

Measuring instruments can be obtained which measure sound pressure levels, but in order to measure the loudness of sounds weighting networks are provided which adjust the response of the instrument to conform with the Fletcher-Munson curves; such readings are known as weighted sound pressure levels.

The unit of loudness is the phon and can be defined as follows:—

The loudness of a sound in phons can be taken as the number of decibels above the threshold of hearing of a pure tone of 1,000 c/s of apparent equal loudness. Strictly, this definition relates only to the comparison of pure tones and the weighted sound pressure levels as measured by a meter only refer to this condition. In practice, however, although the sound level meter indicates all sounds presented to it, the weighted sound pressure levels are often given as phons.



2, graph showing Fletcher-Munson contours of equal loudness.

To those who are not occupied in scientific work the physical interpretation of a logarithmic unit is often difficult and below is given a table of equivalent loudness in phons, showing the relationship between familiar sounds:—

	phons
aeroplane engine and propeller ...	130
boiler making shop ...	120
pneumatic drill, nearby ...	110
express train passing ...	100
orchestra playing loudly ...	90
in 1st class carriage, express train ...	80
loud radio set ...	70
average conversation ...	60
quiet street ...	50
average office ...	40
quiet home ...	30
rustle of leaves ...	20
uncanny silence ...	10

ISOLATING OF MACHINERY VIBRATION

Vibration in machinery, although strictly not under the heading of Acoustics, plays a big part in aggravating nuisance caused by noise. It is not intended in this article to deal with the subject of the isolation of machinery, except to state that the general principle involved consists in mounting the machinery on specially designed anti-vibrating mountings, con-

sisting of a mass and elasticity the mass being formed either by the weight of the machinery itself, or with the addition of a concrete foundation block. The elasticity can be obtained by means of materials such as cork, felt or rubber, and for heavier types of machinery springs can be used. There are several firms who specialize in this type of work, each with their own method of mounting.

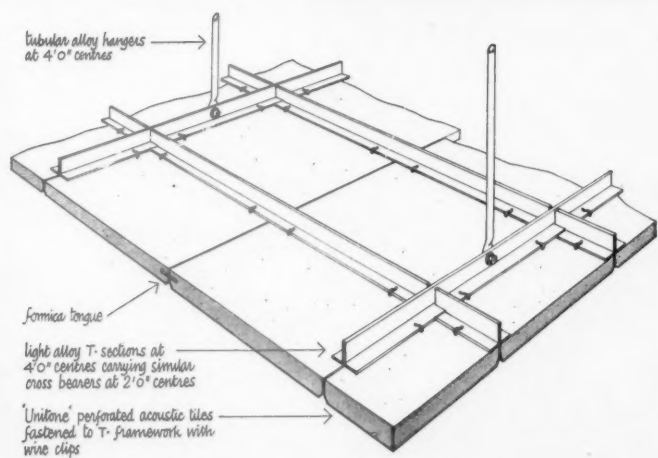
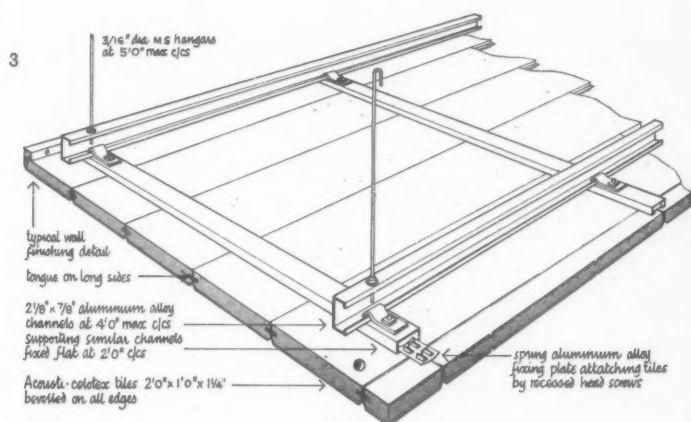
ACOUSTIC CONDITIONS

The annoyance which is caused by a noise is not necessarily a function of its loudness. There are many other factors which contribute: a loud sound, for example, which persists can be and generally is extremely injurious to the nervous health. It can be stated that an increase of noise of one phon above the normal background level can just be perceived, an increase of five phons is generally disturbing, whilst one to 15 phons generally keeps one from sleeping and the continuous submission to an intensity of 20 phons over the background is extremely injurious to the nervous system.

The background can be defined as the

normal noise heard in any neighbourhood; the loudness of the background, of course, will vary in accordance with the locality and the time of day. In busy industrial towns, for example, the background loudness may be 60 to 70 phons during the day time, whereas in the heart of the country 30 phons is a more likely figure. At night the background even in a town is usually considerably lower. Again the normal background for a factory with machinery working can, of course, be at almost any level.

One serious effect of a noisy background is to make the hearing of speech difficult. For example, the level of ordinary conversation is about 60 phons. If, however, the normal background level in an office is, say, 65 phons, then, as is well known, the voice has to be raised in order to make speech intelligible. This additional effect must throw a strain on the nervous system. Although workers in noisy areas eventually get accustomed to their surroundings and the subconscious mind automatically provides the increased effort, there is inevitably a tendency for the body to become more easily fatigued. This effect is



fibreboard 3, the Cullum channel fixing system for forming suspended ceilings with acousti-celotex tiles. **4**, acousti-celotex perforated fibreboard tiles. **5** and **6**, Unitone tiles and their method of fixing.

perhaps not immediately noticeable, but eventually it will manifest itself in the form of, say, careless work, inaccuracy and lack of concentration. Indeed poor workmanship may often be due to the noisy environment in which the work is carried on.

Other contributory factors to noise nuisance are intermittent sounds. The sudden cessation of a quiet persistent sound will be quite disturbing and will even awaken a sleeping person. For example, a person travelling by sleeper will sleep soundly when the train is running, but wake up the moment the train stops for a signal or at a station. Sudden loud sounds which occur at irregular intervals have a serious effect on the nervous system, by producing alternative suspense or shock.

The frequency or pitch of a noise has considerable bearing on its disturbance factor and it is a well accepted fact that high-pitched sounds are more disturbing than low-pitched sounds of the same loudness and the degree of annoyance may be said to increase pro rata with the frequency. However, very low frequency pulsating sound although practically inaudible can cause a great deal of nervous

disturbance.

So far there is nothing which has been laid down as to what does or does not constitute a nuisance, as it depends very largely on the circumstances of each individual case, but experience has shown that the increase of the sound over and above the normal background is of more importance than the actual sound level itself.

NOISE IN INDUSTRY

Noise nuisance in factory areas can be roughly divided into two sections:—

- (1) The nuisance caused within the factory by the operation of machinery which has effect upon the workers; and
- (2) Noise from any factory or industrial areas causing disturbances in an adjacent neighbourhood.

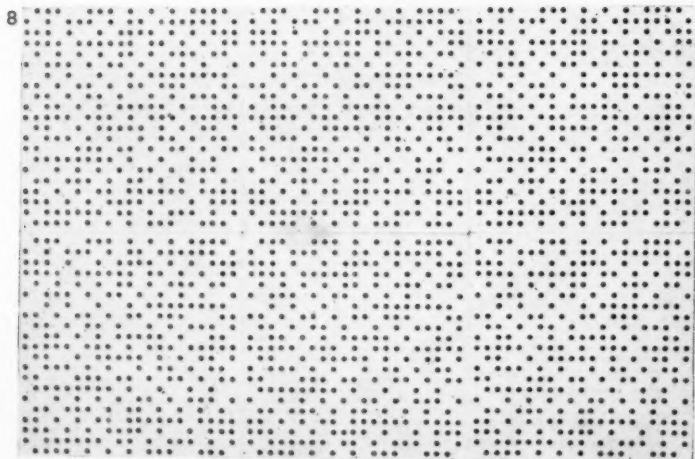
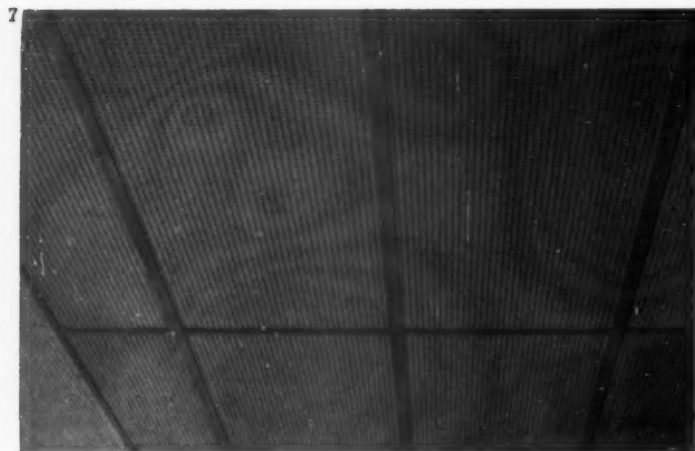
The subject of external noise nuisance caused by a factory is of the greatest social importance and is becoming more and more predominant since the construction of trading estates where they adjoin residential areas. This form of nuisance is particularly noticeable where a new industrial area is built next to an old

established residential district. In this case a great deal of trouble could be avoided by suitable zoning of industry, and by specifying that only quiet types of industrial processes should be carried on where the industrial and residential areas meet. It is further strongly suggested that it should be made compulsory to divide an industrial from a residential area by means of a continuous plantation of evergreen trees around the industrial area, to a depth of at least 25 yards. Such trees form a useful sound absorbing barrier.

It is true that such a scheme would use up some valuable land but the benefits that would be gained, not only in noise abatement, but also aesthetically, would more than repay the loss of land.

Noise in a factory is generally caused by noisy machinery, and this does not necessarily mean heavy machinery. Light types of office equipment, such as adding machines, teleprinters or even typewriters, can produce sufficient noise to make working conditions in an office unpleasant.

There is one point which must always be borne in mind: that, whatever methods of sound reduction be used, the sound level



fibreboard 7, Tentest Rabbit Warren acoustic board. 8, Uniton tiles with irregularly spaced perforations. 9, Uniton mosaic tiles showing perforations of two different diameters.

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in an enclosed space cannot be less than that which would be emitted from the machinery in question if it were entirely isolated. When a machine which is emitting noise is placed in an enclosed space, a sound field will be built up by the multiple reflections from the walls, floor and ceiling and the more reflecting these surfaces are the greater will be the sound field. For example, the hard plaster wall finishing quite common in office buildings only absorbs about 3 per cent. of the sound incident upon it.

REVERBERATION

When the source of sound is stopped, the sound in the room decays at a rate which depends on the amount of absorption present. This decay is known as reverberation and the time taken for the sound to become inaudible is known as the reverberation time. The more precise definition is the time taken for a sound to decay through 60 decibels.

The original experiments in the control of reverberation were carried out by Professor Wallace C. Sabine, at Harvard University towards the end of the last

century. In order to obtain good listening conditions in lecture theatres, he found that he had to reduce the reverberation time by means of adding sound absorbing material; actually, in his original work by adding seating cushions of a certain standard type which was in use at the time and he was able to specify acoustical treatments in 'Yards of Standard Cushions.' As the use of cushions was by no means convenient he evolved a method of determining the absorption of various materials. He took as his unit of comparison one square foot of open window as having a coefficient of absorption of unity, which he called the Open Window Unit, and he expressed the coefficient of absorption of the various materials that he measured as a fraction of the Open Window Unit. This unit is now called the sabin, in recognition of the great pioneer work that Professor Sabine carried out.

Professor Sabine also expressed the reverberation time of a room as a function of its volume and the total absorption present. His formula is:—

$$T = \frac{0.05 V}{A}$$

Where: T is the reverberation time in seconds, V is the volume of the room in cubic feet and A is the total absorption present. The factor A can be subdivided and is:—

$$A = \alpha_1 S_1 + \alpha_2 S_2 + \alpha_3 S_3 + \dots + \alpha_n S_n$$

where $\alpha_1, \alpha_2, \alpha_3$ are the coefficients of absorption of materials whose areas are S_1, S_2, S_3 , etc.

Although the control of reverberation time is more connected with the acoustical correction of auditoria, it nevertheless has considerable bearing on the control of noise, for it follows that, knowing the reverberation time in any building, the absorption in sabins present can be calculated. If the number of sabins is known the reduction of sound caused by the introduction of further absorbing materials can be calculated as follows:—

Noise reduction

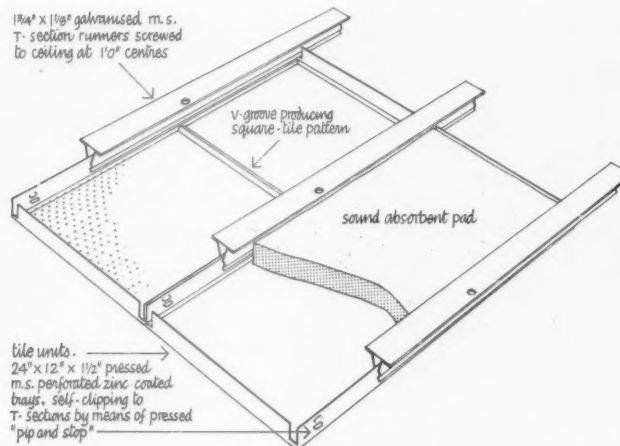
$$= 10 \log_{10} \frac{A \text{ after}}{A \text{ before}} \text{ decibels}$$

or:—

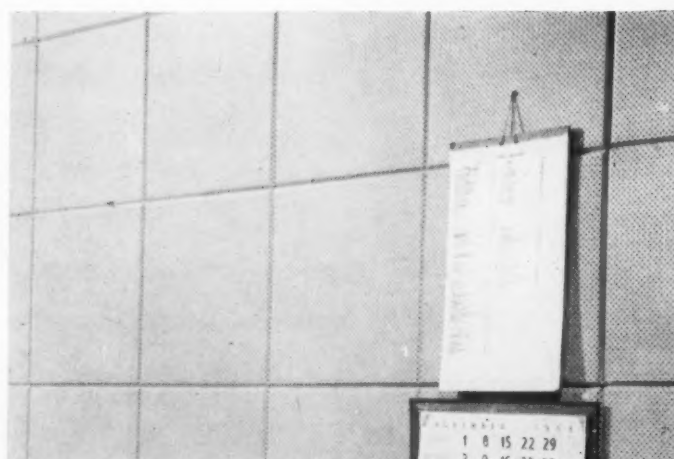
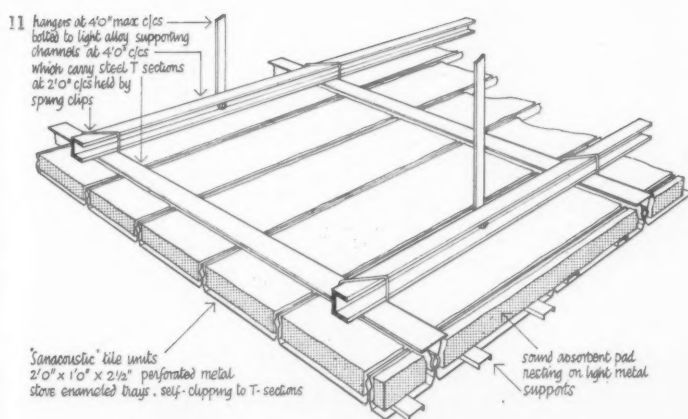
$$= 10 \log_{10} \frac{T \text{ before}}{T \text{ after}} \text{ decibels}$$

A noise reduction of 10 decibels is quite considerable, and is not easy to obtain,

10



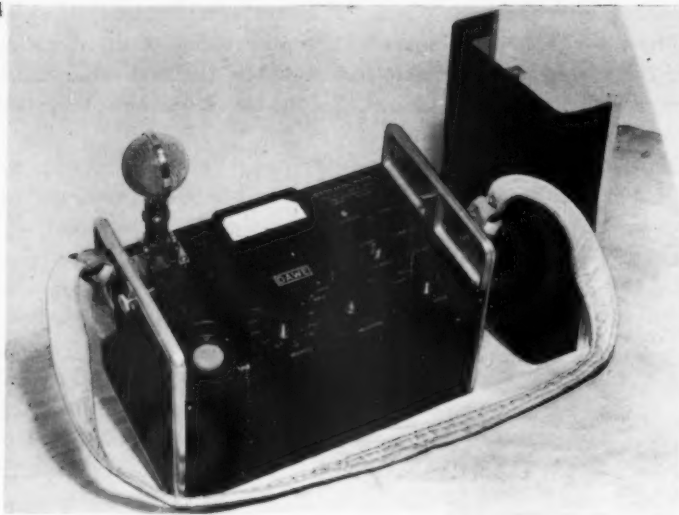
12



13

perforated metal 10 and 11, Sanacoustic perforated metal tiles and their method of fixing. 12, a method of fixing Burgess perforated metal tiles and 13, Burgess perforated tiles fixed to an office wall.

14



14, a Type 1400 sound level-meter manufactured by Dawe Instruments.

since it involves a tenfold increase in the amount of absorption present; a more usual figure in practice is about 5 to 6 decibels. As a point of interest a reduction of 9 decibels gives an impression to the ear of reducing the loudness by one half.

SURVEY OF NOISE PROBLEMS

When dealing with a problem of noise reduction it is always advisable to make a

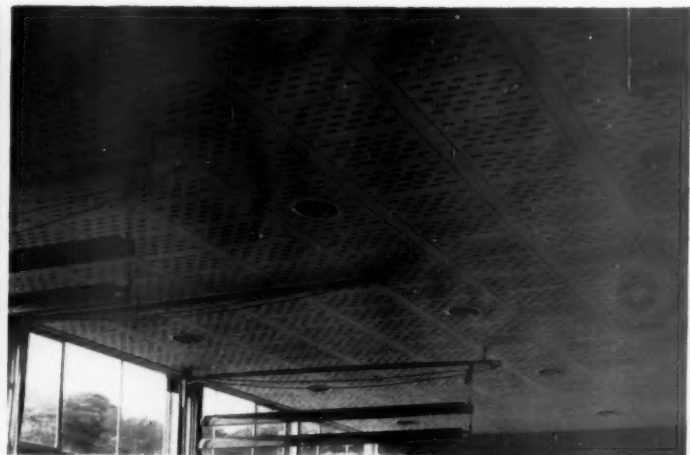
noise level survey using one of the sound level meters that are on the market. Such a one is illustrated above and is supplied by Messrs. Dawe Instruments. It is also of value to use a series of band pass filters which split up the frequency spectrum into bands of, usually, octave intervals and this enables the location of the predominant frequencies to be ascertained.

If possible, the reverberation time should be measured in order to ascertain the amount of absorption present. This can be simply done by means of a stop watch and an alarm pistol. The explosion from one of these pistols excites the whole of the frequency spectrum and, although the method is not highly accurate, experience has shown that it is perfectly satisfactory for all practical purposes.

Tables of acceptable noise levels have been given, in various types of rooms, but for the purposes of this article the acceptable sound level for offices, conference rooms and the like can be taken as between 45 and 55 phons, and the methods of measurement mentioned above should be used, so as to prevent an excessive amount of absorption being added. In factories, however, it is difficult to add too much absorbent, for the area available for treatment is generally limited to the roof or ceiling surfaces and parts of the wall surfaces. More usually the noise level is high and the maximum amount of sound reduction is always required.

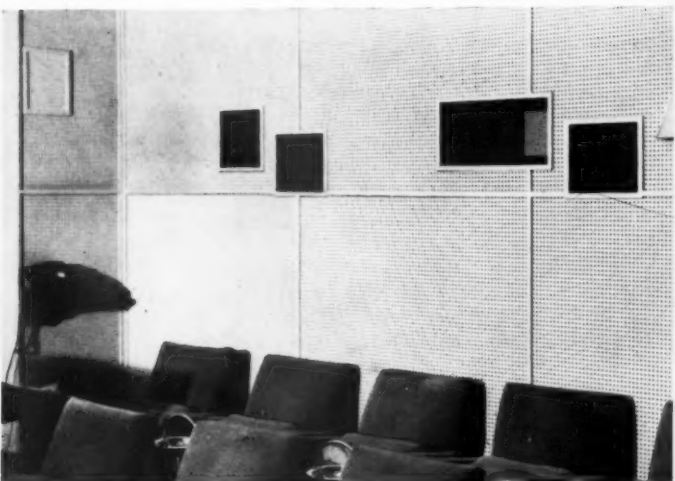
In all cases of noise reduction, par-

15



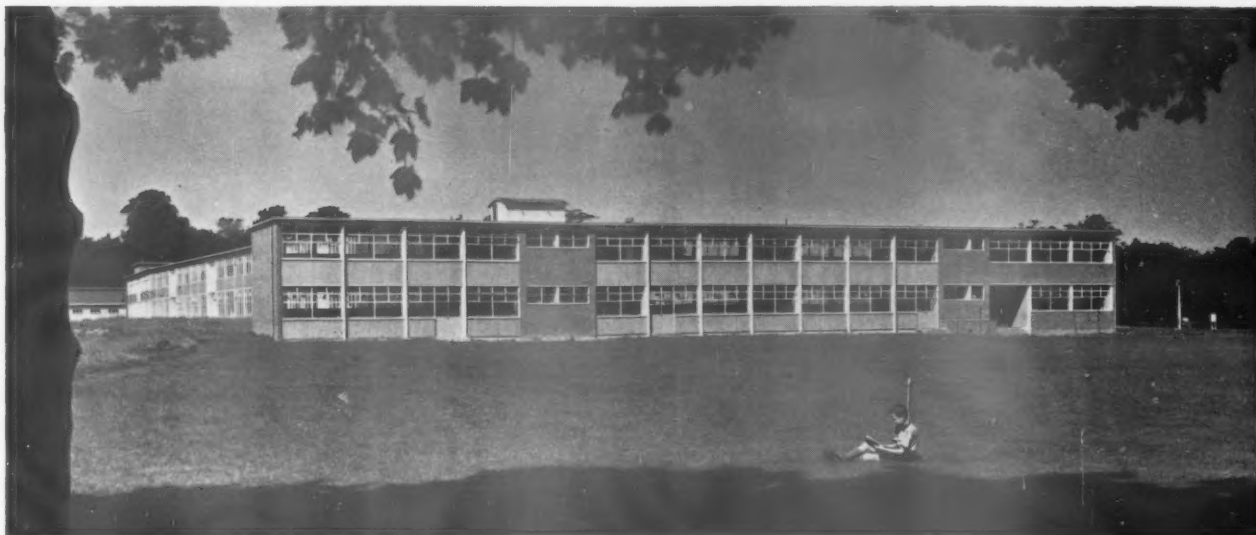
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16



18

plasterboard 15, Gyproc slotted acoustic plasterboard tiles. 16, acoustic Gyproc plasterboard panels. 17, Kent fibrous plaster panels. 18, Meta-Mica vermiculite plaster ceiling panels.

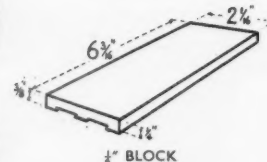
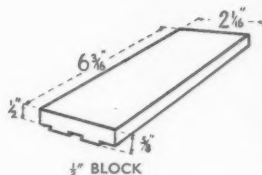


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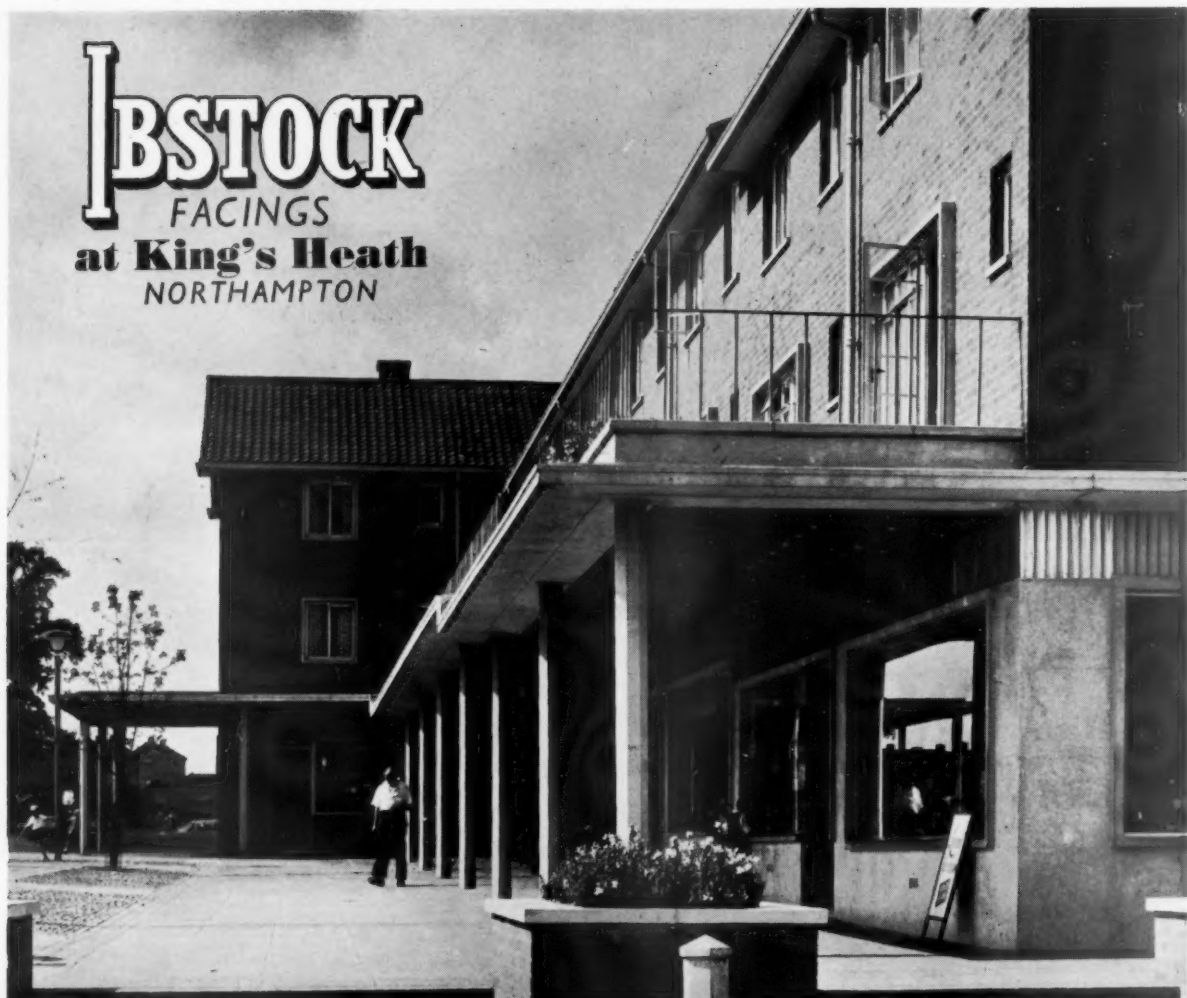
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King's Heath Estate, Dallington, for the Northampton Corporation. Designed by J. L. Womersley, A.R.I.B.A., A.M.T.P.I., lately Borough Architect, and Geoffrey Hopkinson, B.A. Arch., A.R.I.B.A., A.M.T.P.I., lately Deputy Borough Architect. Architectural Assistants: H. J. Rymill, Ivor Morris, A.R.I.B.A., P. C. R. Bryan.

Ibstock facings in a number of attractive colours are extensively used for five separate types of buildings on this important modern municipal estate described in this issue.

- **SHOPPING CENTRE.** Ibstock Golden-Brown hand-made are the facings for this centre feature of the estate layout.
- **THE CRESCENTS.** (Illustrated below.) One of a series of buildings faced with Ibstock Light Buff-Multi's. The plinths are in Ibstock Dark Brown bricks.
- **FLATS.** Built in open surroundings, the Ibstock Buff-Multi rustics used here, pleasantly enhance the bright aspect of the estate.
- **HOUSES.** Ibstock Buff-Multi and Red multi-colour bricks are used for many of the King's Heath Estate houses.
- **OLD PEOPLE'S DWELLINGS.** The separate living accommodation for the aged, a feature of the general plan, makes attractive use of Ibstock Brown-Multi facings.

Owing to present heavy demand, supplies of facing bricks of most types are booked for a long time ahead and reservations for 1954/5 are now being made.

IBSTOCK BRICK & TILE COMPANY LTD.

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ticularly when machinery is the cause of the trouble, the first steps should be to reduce the sound at its source to a minimum. This cannot in general be carried out by the architect, since the trouble is often inherent in the design of the machine. It is therefore a problem for the manufacturer. Although advances have been made in this direction in recent years, there is still room for considerable improvement.

Failing a reduction in the noise of the machine itself, it may be found possible to isolate some of the offending machines. Ideally, these should be enclosed in sound-insulating cubicles, but this state is seldom achieved on account of operational difficulties. It is sometimes possible, however, to use sound-absorbing screens to surround certain types of machinery. In this category can be included many types of office machinery, such as comptometers and teleprinters.

TREATMENT FOR NOISE REDUCTION

The next step is the acoustical treatment of the room or building itself. The areas of absorbent can be calculated after the

total absorption required has been ascertained by the methods described above, that is by dividing the total absorption by the coefficient of absorption of the selected acoustical material. It is recommended that for all normal purposes the coefficient of absorption at 1,000 c/s be used.

The most satisfactory area of treatment is always the roof or ceiling surface and the treatment can be applied either direct to the existing ceiling surfaces or by a suspended ceiling, of which there are several satisfactory proprietary makes, some of which will be described later. Should the required amount of absorbent be substantially less than the ceiling area—which is not a very frequent occurrence, it should, generally speaking, be evenly distributed over the ceiling surface. In factory treatment, where the noise level is invariably high, the whole of the ceiling area should be treated and in a great number of cases as large an area of the wall surface as possible, the object being to obtain the greatest area of acoustical absorbent, and so produce the greatest sound reduction.

Of necessity the theory and principles

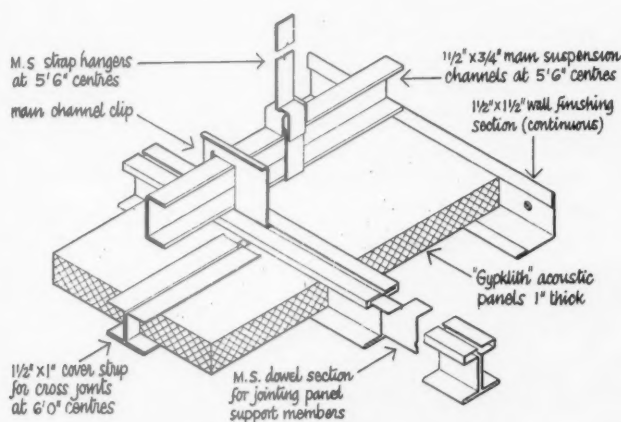
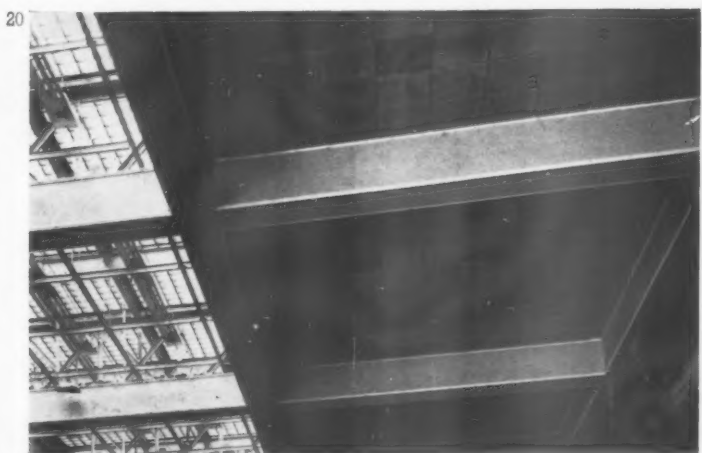
which have been given above have only been an outline of the subject; to do the subject justice would require far more space than is here available. The subject is by no means simple and it is recommended that the advice of a consulting engineer or a firm of contractors who specialize in this type of work should be sought when embarking on any project in which noise problems are likely to be encountered. In particular, it is recommended that when planning new buildings the problem of noise reduction should be considered in the early stages as considerable saving of money can often be effected than if the subject is left until the building is completed.

ACOUSTICAL ABSORBENTS

Acoustical absorbents can be divided into two main groups:—1. Porous absorbents; and 2. Resonant absorbents. Dealing with each in turn.

1. Porous Absorbents.

All materials in this group have interstices into which air can flow, and hence the sound energy stored in the vibrating air particles is dissipated in the form of



wood fibre 19, a Unilith acoustic ceiling. 20, Gyplith fire-resisting wood fibre tiles. 21 and 22, an Acoustele suspended ceiling and the method of fixing.

heat. The materials used are in general of a fibrous nature (with certain exceptions) and can be divided broadly into five groups which are:—

- I. Fibre Boards.
- II. Felts.
- III. Fibrous materials.
- IV. Acoustic plasters.
- V. Wood-wool slabs.

All these types of materials have their maximum absorption in the higher frequency range, from above 250 c/s. For frequencies below this value the absorption falls off fairly rapidly as the wave length increases. Each section will be discussed below:—

I. fibre boards

The simplest form of acoustical treatment consists in the use of one of the many proprietary brands of insulating boards. These boards are usually $\frac{1}{2}$ inch thickness and are made of wood pulp. The standard insulating boards are useful when a low degree of absorption is required, but they have the disadvantage of having a rising characteristic, from about 5 per cent. at 100 c/s rising to some 30 per cent. at 5,000 c/s. Since the absorption takes place by virtue of the porous surface of this material, it therefore follows that any form of painting or distempering will be detrimental to its acoustical properties and, hence, it has to be renewed after a few years' wear, as methods of cleaning fibre board have never been proved to be entirely satisfactory.

A considerable improvement in the absorption characteristic of fibre board was obtained by perforating the surface with small holes. A characteristic product of this type consists of 1 foot sq. tiles of

fibre board into which perforations are made of about $\frac{3}{16}$ inch in diameter and at spacings of some 421 holes per square foot. The depth of the holes varies from a $\frac{1}{4}$ inch, depending upon the thickness of the tiles. The absorption efficiency of this tile is quite high, being of the order of about 80 per cent. for frequencies above 500 c/s; for the absorption drops off at frequencies below 500 c/s to approximately the same value as that of the plain fibre board at 100 c/s. These tiles have the advantage of being capable of being decorated without detriment to their acoustical property. Great care, however, must be taken to see that the paint does not penetrate into the holes.

II. felts

Acoustic felts form a useful material which may be applied to wall or ceiling surfaces and is particularly useful in places where it is desired to conceal the appearance of the acoustical treatment. In such cases the felt can be covered with a scrim which can be distempered to match the surrounding plaster. Felts can be made from hair or asbestos or a combination of both. One objection to felts which has been made in the past was the liability of hair felts to become infested with insects. All modern hair felts are treated against this possible trouble and for tropical climates can be treated against termites.

III. fibrous materials

The materials generally used in this type of absorbent consist of glass silk, mineral wools or asbestos fibre, although other fibres such as coconut fibre and steel wool have been used. One other material which deserves special note is eel grass, a type of seaweed, which is supplied in quilt form.

The general method of applying this type of treatment is by fixing battens to the wall or ceiling surface between which the fibrous material is placed. Perforated panels, which may be of plaster board, hardboard or plywood, are attached to the battens, which at the same time provides a protective covering and a surface which can be decorated without detriment to the acoustical properties of the material. The coefficient of absorption of these materials is high, somewhere in the region of 80 per cent. for the upper frequencies.

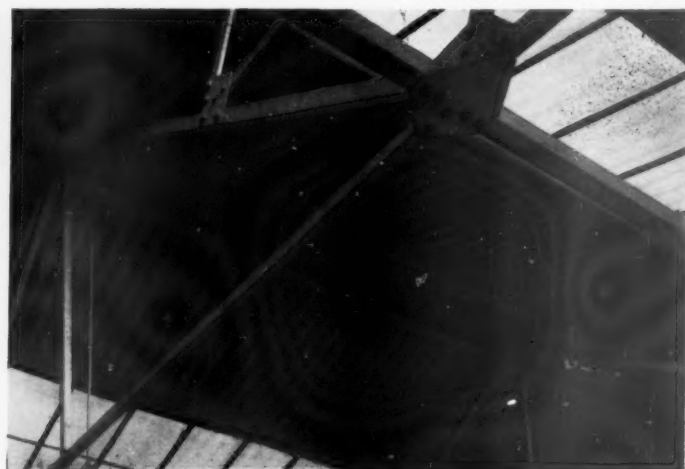
This material also lends itself readily to suspended ceiling construction. Broadly the method adopted is for a suspended ceiling to be constructed using perforated material over which one or two inches of the acoustical absorbent is laid. An incidental advantage of such ceilings is that they provide useful heat insulation in addition to acoustical properties.

The area of perforation plays an important part in the absorption characteristic of the finished treatment. The theory underlying this is complicated but it is sufficient to state that the percentage of the perforation of the board determines the point of maximum absorption. The order of perforation of most commercial boards is between 12 and 20 per cent., which is generally satisfactory for most purposes.

Although asbestos can be and is successfully used as a felt it is more usually sprayed on to the surface through a special spray gun using a suitable binder. This method of application has the advantage that it can be applied to irregular and awkward areas which would be difficult to treat by the more normal methods of fixing. A further important advantage lies in the ability to apply the asbestos to any required thickness and



23, covers for riveting machines comprising a core of glass silk with perforated metal on the inside and sheet metal outside, manufactured by Burgess Products. 24, sprayed Limpet asbestos fibre.

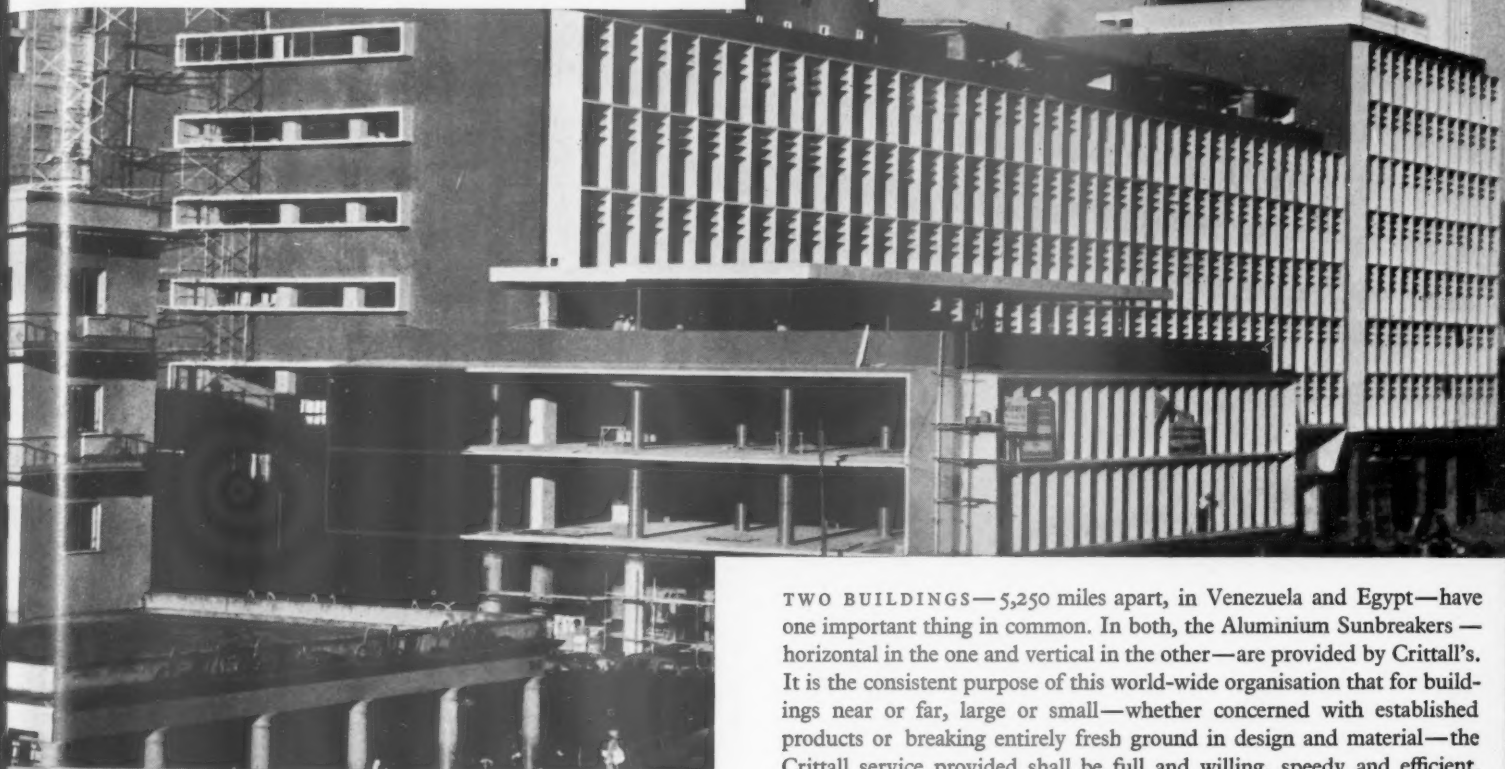


ALUMINIUM HORIZONTAL SUNBREAKERS

This illustration shows THE C. A. OBRAS BUILDING, Avenida Bolivar, Caracas

(Architect: Dr. Cipriano Dominguez)

which is fitted with CRITTALL HORIZONTAL ALUMINIUM SUNBREAKERS.



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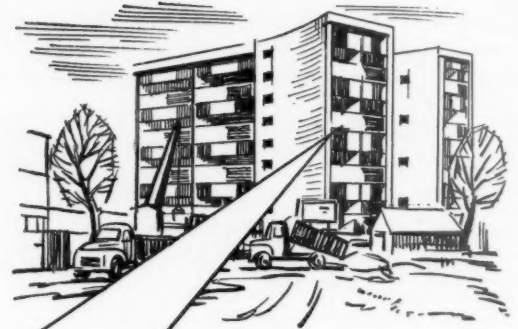


ALUMINIUM VERTICAL SUNBREAKERS

This illustration shows VICTORIA COLLEGE, CAIRO (Architect: J. W. Poltock, A.R.I.B.A.) which is fitted with CRITTALL VERTICAL ALUMINIUM SUNBREAKERS.

BUILT

TO BE BUILT IN



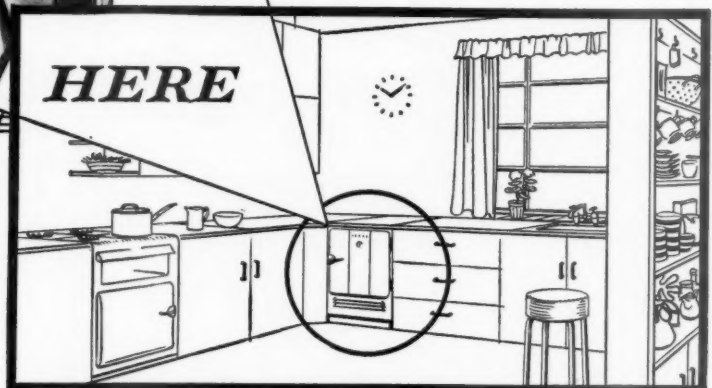
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thus obtaining a wide range of absorption coefficients.

IV. acoustic plasters

Acoustic plasters consist of a very porous type of plaster using a fine-grained aggregate combined with a binder, which can be used as a finishing coat instead of the normal lime or gypsum plaster. Acoustic plasters may be used in place of normal plaster. Their disadvantage is that since their absorptive properties depend on their porosity, great care must be taken in their application to see that the ratio of aggregate to binder is exactly right, as if too much binder is used the plaster will not be porous enough, and if too little it will not have sufficient strength to bond with the undercoat. It is inadvisable to apply acoustic plasters to areas which are subject to knocking or rubbing.

Unfortunately, in this country there is little knowledge of the coefficient of absorption and what figures that are available are rather vague and misleading. It can be said that they are more efficient for frequencies over 2,000 c/s and the average coefficient of absorption in that region is not normally greater than 0.4.

V. wood-wool slabs

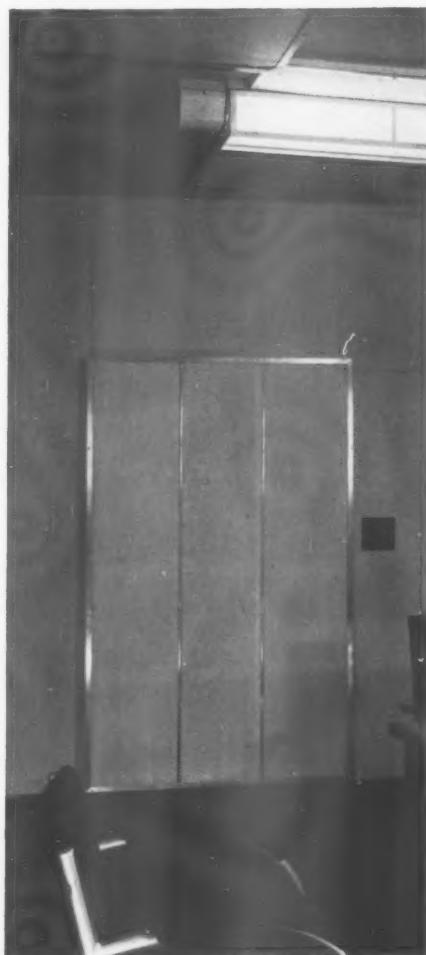
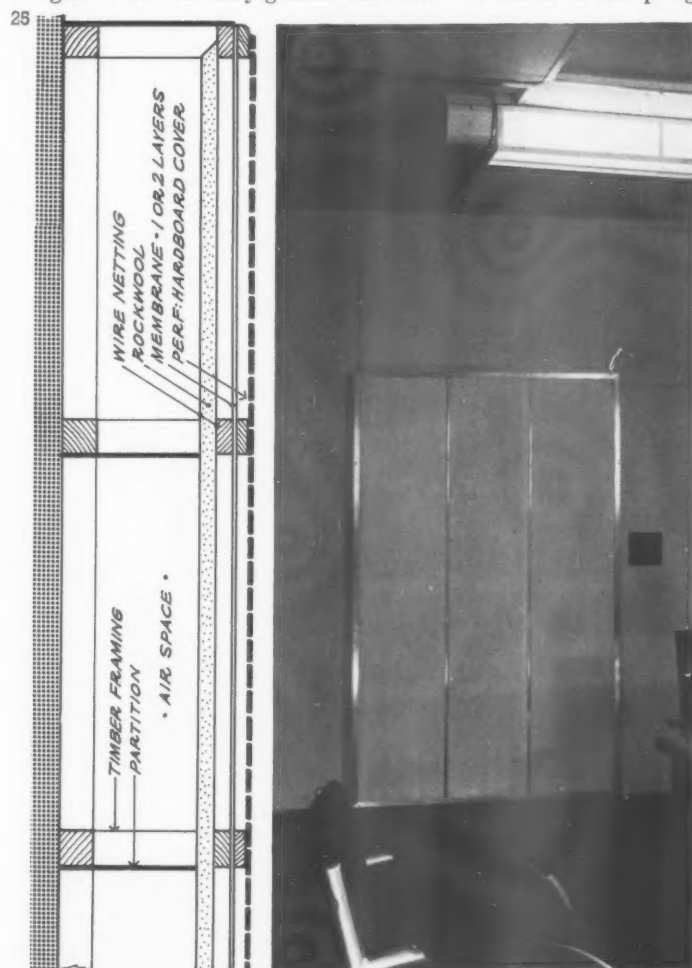
A further form of acoustical treatment consists of the familiar wood-wool slabs, which are made of fine-grain wood fibre bound together with cement. This type of material is familiar for the construction of partitions, but when unplastered makes a useful sound absorbent. It has the advantage that it can be decorated without in any way interfering with its acoustical properties.

2. resonant absorbers

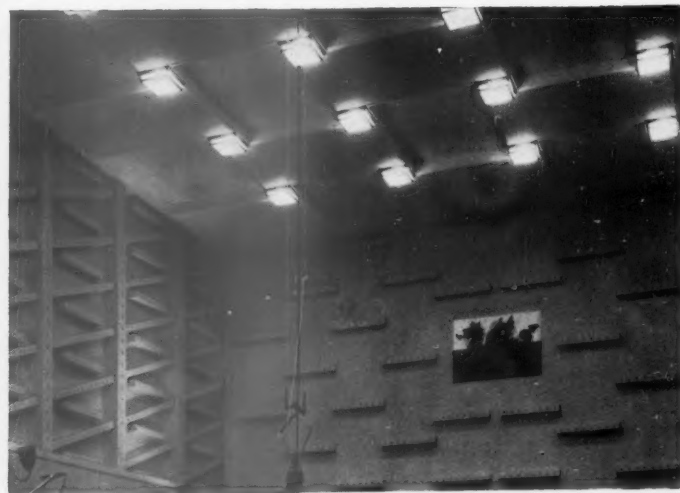
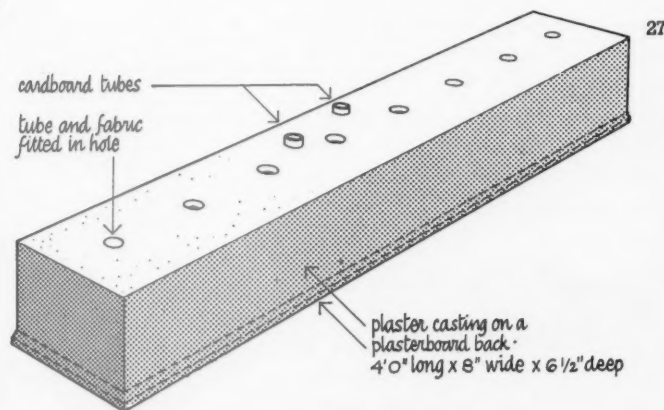
In any mechanical system which has a combination of mass and elasticity a resonant system will be set up and is capable of vibrating at some particular frequency which is a function of its mass and elasticity. A familiar example of a resonant system is a weight attached to a spring which, if set in motion, will oscillate at a frequency which is dependent on the weight and on the elasticity or compliance of the spring. This mechanical system will not continue to oscillate for an indefinite period, but the amplitude of the oscillation will gradually get smaller depending on the internal friction of the molecules of the metal of the spring.

The simplest form of a resonant system which is used in building construction is wood panelling, in which a panel of, say, plywood is fixed to battens spaced at convenient centres. Such a system is capable of resonating at some particular frequency which can be recognized by lightly striking the panels with the clenched fist. Such a resonant system is capable of absorbing sound in the region of its resonant frequencies, and the amount of absorption is determined by the internal damping of the panels. For example, a wood panel has more absorption than one of metal since the latter possesses a very little internal resistance.

The efficiency of such absorbers is comparatively low, about the order of 20 per cent. at the resonant frequency, and is not greatly used for noise reduction purposes, but there are highly efficient absorbers which make use of a diaphragm of some heavy flexible membrane such as roofing felt placed over an enclosed cavity which are more satisfactory. By virtue of the mass of the diaphragm and the elasticity of the air a resonant system is set up which has a coefficient of absorption of almost



26



25 and 26, section through and photograph of membrane absorber. 27, plaster unit containing eight resonators in line array. 28, membrane absorbers with glass fibre covers in a broadcasting studio.

100 per cent. at its resonant frequency.

This point of maximum absorption can be calculated from the weight of the material in lb. per sq. ft. and the distance in feet that it is spaced from the back of the enclosed volume.

This type of absorption is extremely useful when sounds of one particular frequency have to be absorbed, often the case with certain types of machinery.

The second useful type of resonant absorber can be found in the Helmholtz resonator which consists of a closed cavity with an aperture, e.g. a bottle. Indeed, the familiar milk bottle has on occasions been used as a Helmholtz resonator quite successfully. The action of this device is considerably more complex than that of the roofing felt absorbent mentioned above, and the peak absorption is a function of the volume of the neck of the resonator and of the internal volume. Damping can be achieved by some form of porous absorbent placed on or near the neck of the resonator. Its uses are the same as that of the roofing-felt absorbers, namely, the absorption of single unwanted notes.

The perforated panel which was mentioned as a finishing material to the fibrous absorbents acts as a Helmholtz resonator when it is used to cover an enclosed cavity.

All the resonator types of absorbents have to be specially designed and constructed since there are no proprietary brands on the market.

DESIGN REVIEW

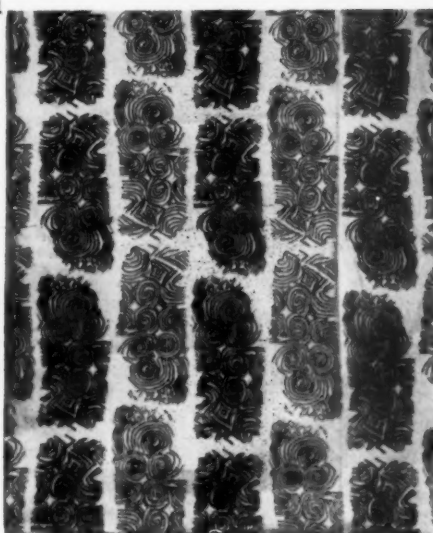
PAINTERS' FABRICS

At a time when printed fabrics tend more and more to rely for their effect on sensitive doodles, the announcement of a collection of printed Irish linen furnishing fabrics designed by four painters warrants more than casual interest. The announcement is made by John McGuire, of Dublin, and the designers are all Dubliners not unknown outside their own country.

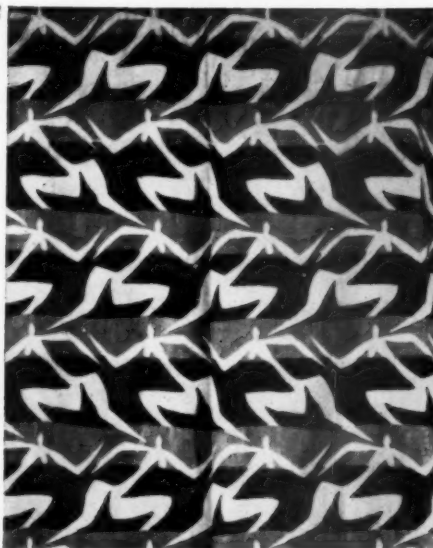
It is clear that the processes of colour printing and the essential requirements of a furnishing fabric impose upon a painter considerable limitations to which he is not normally accustomed. To some extent the success of a painter's textile design will depend upon the degree to which the quality of thought expressible in a canvas can be maintained and to what extent the

designer can turn the limitations to good account. The eight fabrics in the new collection are not all equally successful, but the collection as a whole is much more lively and may have a more lasting interest than one has come to expect of a single range of prints.

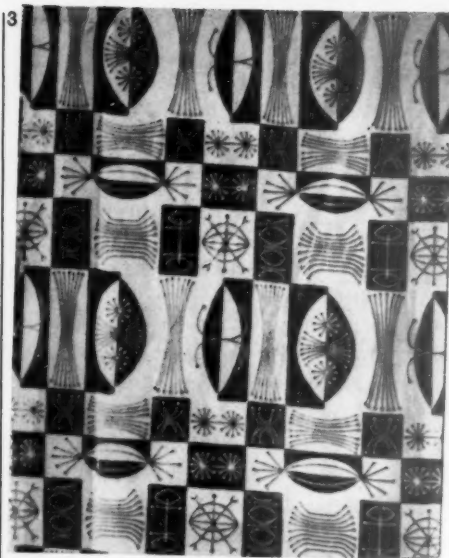
Louis Le Brocquy is responsible for two surprisingly different designs. 'Irish



Megolithic,' 1, derives from an ancient Irish stone carving. This device, ingeniously formed top to top, toe to toe, in alternating black and grey bands, seems, on first viewing, confused rather than enhanced by a ground pattern of horizontal

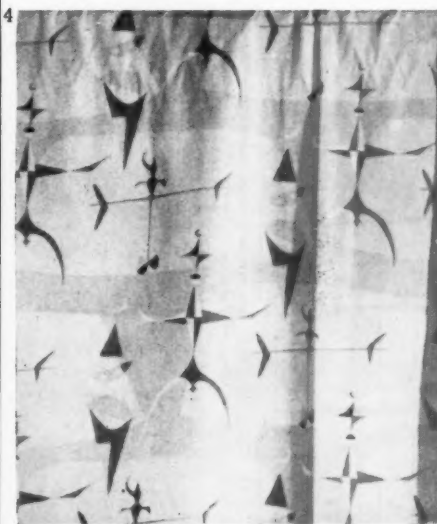


emphasis. 'Flight,' 2, is a much more emphatic composition of primitive human figures running endlessly from side to side of the fabric. Seen in a small piece the horizontal emphasis and the human allusion seem restless and disturbing. In large drops, for which the fabric was surely conceived, the emphasis of the hurried figures is reduced and the fabric becomes a lively abstract repeat which could sit happily in many large and spacious interiors.



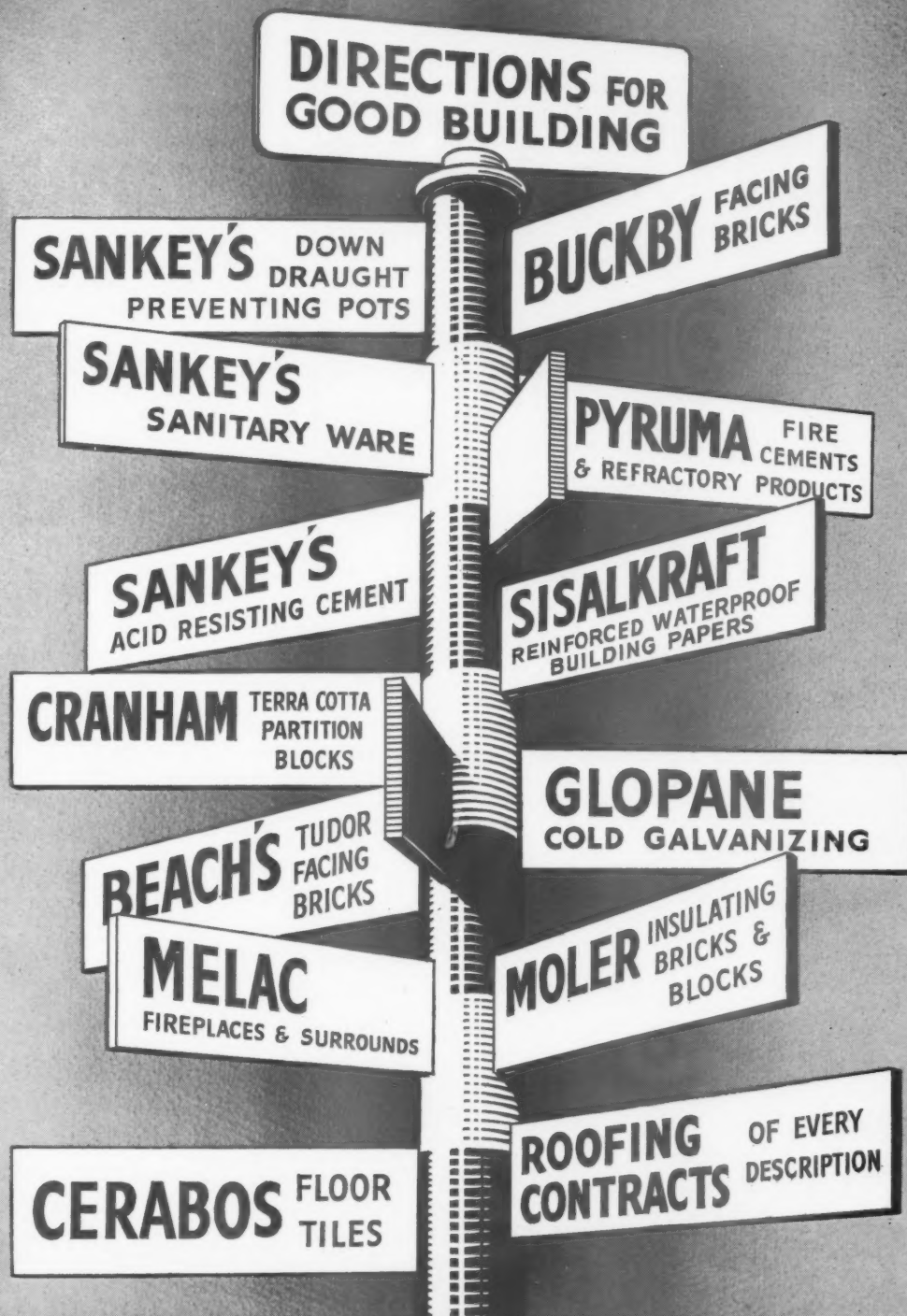
Thurloe Conolly's two colour 'Filament,' 3, may be designated as of the doodle class. But it is a doodle of peculiar and pleasing quality. The lively interest of the linked motifs avoids any disrupting stress when the fabric is seen in the piece. There seems to be a careful control of the units of the repeat much more important and valuable than any which has been imposed by the techniques of manufacture.

Nevill Johnson's gentle whimsies, of



which 'Cirque,' 4, is typical lose more than would be expected when contrived for fabrics. It is possible that the sculptural quality of his canvases, achieved in soft and unemphatic colour, cannot easily be applied in this field and one wonders, perhaps unjustly, whether the designer's knowledge of what is currently acceptable to fabric retailers had an undue influence on the finished compositions.

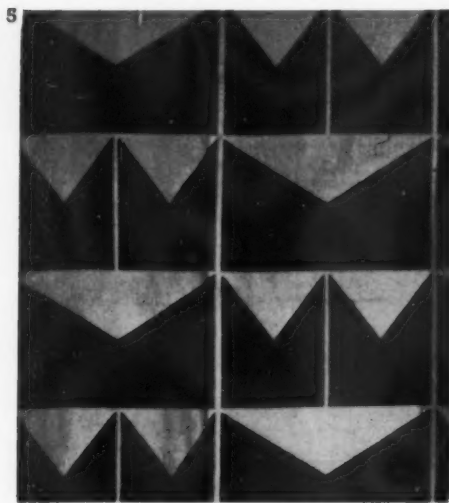
Patrick Scott, who is no newcomer to designing for buildings, has taken a now well-known motif in 'Irish Pubwall,' 5, and instilled in it a quality of line and colour which results in a particularly satisfying fabric. The first startling impact of this



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continued from page 64]

simple device is followed by more subtle pleasures to be found in the careful juxtaposition of colours and is an endless tracery of line calculated to beguile the eye



long after the pleasures of novelty are dispersed.

All the designs are on heavy linen 48 to 50 inches wide and are screen printed with fast vat dye colours. Approximate retail prices 25-30 shillings per yard. Distributors to the retail trade in Britain are Hille of London, 39-40 Albemarle Street, London, W.1.

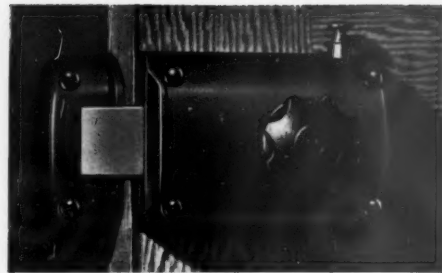
W. & A.

EQUIPMENT

THE REMLOCK NIGHT LATCH

This is a new kind of rim night latch which provides an improved degree of security against burglars. It is claimed that the mechanism used has not previously been employed in lock design. Nor is the lock made by any of the ironmongery firms known to architects—for it is made by REMPLOY, a company set up under the Disabled Persons Employment Act of 1944.

Its action is perhaps best described from the point of view of the householder. Assume that the door is shut. To open the door and go out of the house, he turns the knob to withdraw the bit from the box staple, and when he lets go of it again, the bit springs out the normal $\frac{1}{2}$ inch—with only the splayed end showing. Now outside, he slams the door shut, and this causes the bit to shoot into the box staple a full 1 inch. And here it is deadlocked, it cannot be pushed back into the lock by forcing a knife blade or sheet of mica between door and frame (which it seems is what burglars do).



Even if it were not deadlocked, the burglar's knife would encounter the flat of the bit and not the splay. So far then it acts like an ordinary deadlock. But burglars have the second resource of cutting a hole in the panel of the door (with a diamond ring if it is glass) and merely reaching inside to turn the knob. To foil this, there is a second cylinder lock operated from a keyhole in the knob. A quarter turn of this renders the knob immobile. Nor is this affected by operation of the key outside, for if a very late home-comer lets himself in after the double locking, when he slams the door shut the inside knob remains immobile.

The Remlock resembles the ordinary rim night latch in appearance and in the fact that it has two parts—the lock casing fixed inside the door, and the cylinder

[continued on page 68



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New Hydrosulphite Building
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Architect: Victor Bain, F.R.I.B.A.

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thermal insulation properties, and the fact that they are easy to clean are other important considerations.

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PILKINGTON BROTHERS LIMITED

Supplies are available through the usual trade channels. "INSULIGHT" is the British registered trade mark of Pilkington Brothers Limited.



continued from page 66]

outside held by four gimp pins passing through the door thickness to a backplate concealed by the lock casing. There is also a stop trigger to hold the bit back in the casing—as with the ordinary lock. The lock can be obtained through builders' merchants and ironmongers: Price 39s. 6d.

THE BUILDING INDUSTRY

Ian Colquhoun, recently attached to the Architects' Department of the British Transport Commission, has been appointed Architect to the Wall Paper Manufacturers Association, and will commence his duties this month.

Mr. Colquhoun will take charge of the Advisory Department which is to be set up at the London Office of the Company, 125 High Holborn, W.C.1, under the director in charge, Mr. E. A. Entwistle.

CONTRACTORS etc

Flats at Richmond. Architect: Eric Lyons. General contractor: Eden Residential Construction Co. Sub-contractors: tile-hanging: William Sand-

field. Dampcourses ('Astos'): The Ruberoid Co. Asphalt: Highways Construction Ltd. Roofing felt: The Neuchatel Asphalte Co. Spun concrete column-casings: Mono Concrete Co. Reinforced concrete: Eden Residential Construction Co. Glass: Frank Mayle & Sons; C. Clifford Ltd; Clement Brothers. Bricks: 'National' red facings: buff ripple facings: paving bricks: Candy & Co. Cork flooring: G. Stephenson & Co. Heating: Ducted warm air system in flats: Radiation Ltd. Gas convectors: William Sugg & Co. Door furniture: Stedall & Co.; Alfred G. Roberts Ltd. Casements, landing screens and kitchen fittings: Rippers Ltd. Electric light fixtures: Hiscock Appleby & Co.; Bernard Schottlander. Plumbing: Pinsent Brothers. Sanitary fittings: James W. Sergeant. Sunblinds (Quill venetian blinds) and furniture: H. G. Dunn & Sons. External render and plasters: Plastering Ltd. External balustrades: Light Steelwork (1925) Ltd. Lift enclosure, handrail, lowre screens and lift doors: F. W. Clifford Ltd. Entry screen: Clement Bros. Entry door: Leslie Bilsby Ltd. Terrazzo and marble: Marriott & Price Ltd. Tiling: Surrey Tile Co. Lifts: Bennie Lifts Ltd. Wallpapers: John Line & Sons; Arthur Sanderson & Sons. Signs: The Lettering Centre.

Reception Offices in London. General contractors: Holland & Hannen & Cubitts Ltd. Sub-contractors: electrical: Alliance Electrical Co. Light fittings: Merchant Adventurers Ltd.; Courtney Pope (Electrical) Ltd.; Troughton & Young (Lighting) Ltd.; Claude-General Neon Lights Ltd. Neon signs: Pearce Signs Ltd. Acoustic ceiling: Newalls Insulation Co. Rubber floor: Rummymede Rubber Co. Filing cabinets: Remington Rand Ltd. Paint: International Paints Ltd.

Venetian blinds: J. Avery & Co. Carpet: T. F. Firth & Sons. Furniture: E. Horace Holme Ltd.; Story & Co.; Thomas Glenister Ltd. Display features: Camden Joinery Mill & Display Co.; Exhibition & General Construction Co.; W. S. Chrystaline Ltd. Wallpaper: Cole & Son (Wallpapers).

House at High Beech, Essex. Architect: John Barton. Consultants (lattice trusses): Bottwood Engineering Co. Quantity surveyors: Mercer & Miller. General contractor: James Whiffen & Sons. Sub-contractors: dampcourses: Engert & Rolfe Ltd. Concrete blocks: Thermalite Ltd.; Cement Marketing Co. Bricks: Uxbridge Flint Brick Co. Slate sills: Bow Slate & Enamel Co. Shingles: W. H. Colt (London) Ltd. Roofing felt: Permanite Ltd. Patent glazing: Haywards Ltd. Patent flooring: Semtex Ltd.; Langley London Ltd.; Fitzpatrick & Son (Contractors). Water-proofing materials: Industrial Asphalte Co. Central heating: Radiation Ltd. Electric light fixtures: Merchant Adventurers of London Ltd.; Courtney Pope Electrical Ltd. Ventilation: Vent-Axia Ltd. Sanitary fittings: Adamsez Ltd. Door furniture: Yannedis Ltd. Casements: Crittall Manufacturing Co. Rolling shutters: Acrow Ltd. Sunblinds: J. Avery & Co. Metalwork: Universal Metal Furring & Lathing Co. Tiling suppliers: Carter & Co. (London). Wallpapers: Cole & Sons (Wallpapers).

Housing Estate, near Northampton. Architect: J. L. Womersley, formerly Borough Architect, County Borough of Northampton, assisted by Geoffrey Hopkinson, lately Deputy Borough Architect; H. J. Rymill, Ivan Morris and P. C. R. Bryan. Consulting engineers: Edward A. Pearce & Partners. Quantity surveyors: Ernest Howard &

[continued on page 70]

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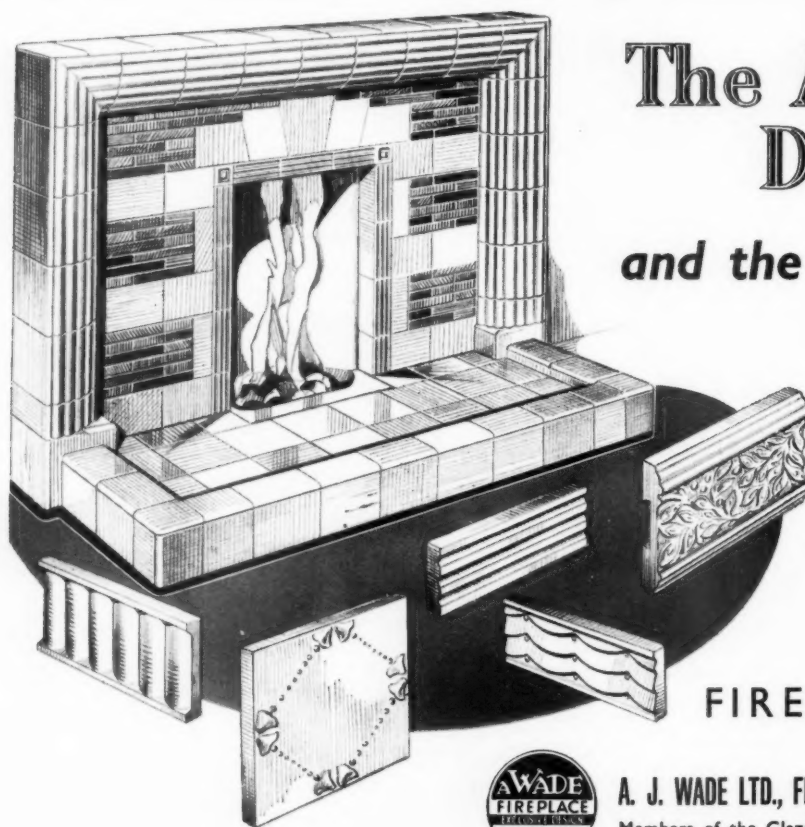
continued from page 68]

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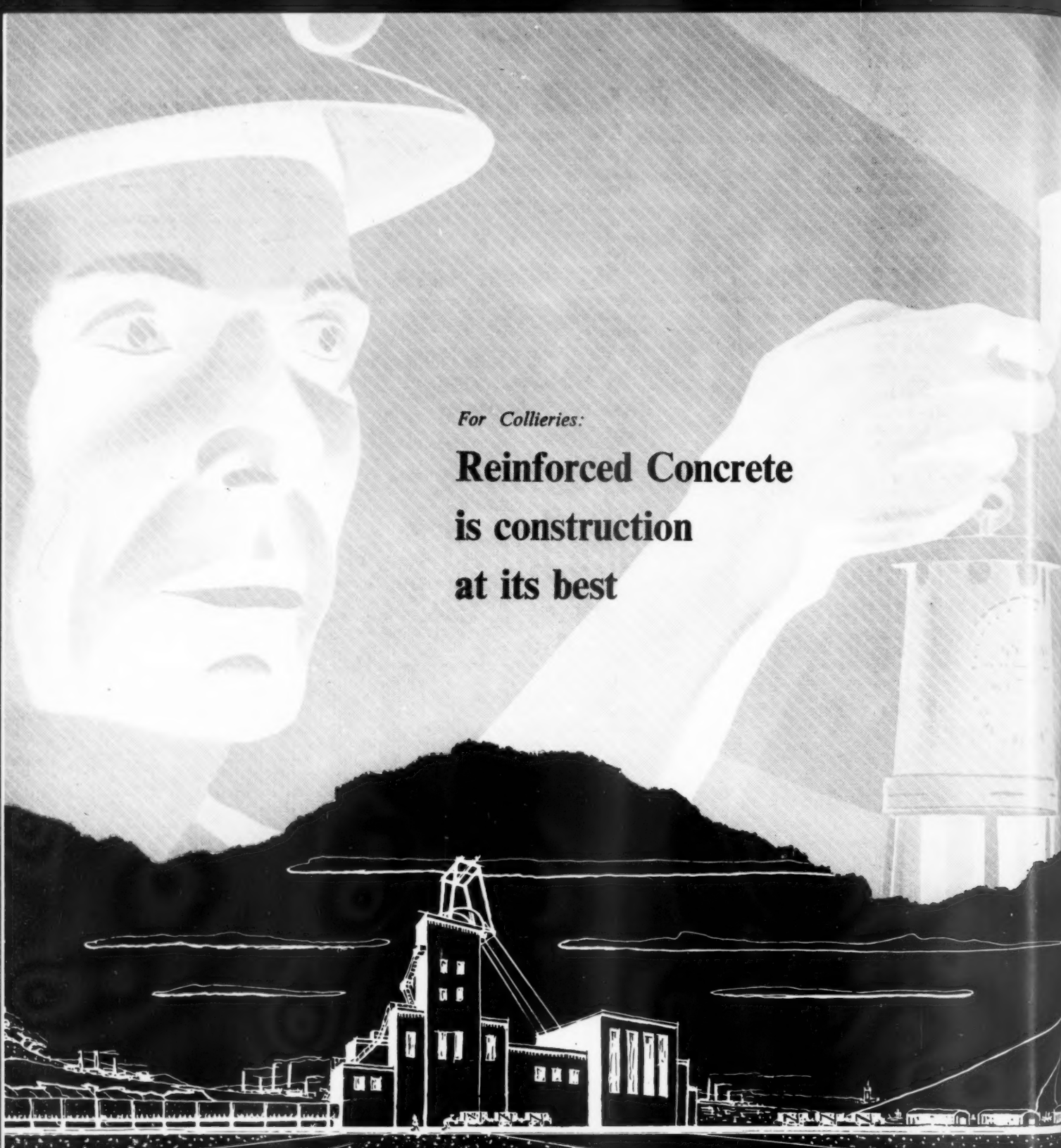
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