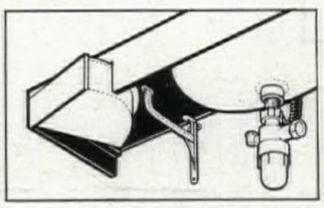
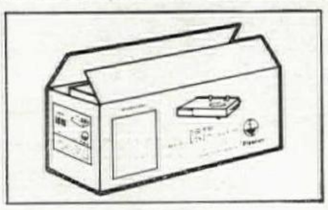
well designed

well made

the ISIS toilet table





Specialized fabrication "know how" is allied to a rare perfection of form in the ISIS toilet table. It arrives on site fully protected in a stout cardboard box—complete with drawer, taps, waste fitment, syphon trap, towel rail and alloy fixing brackets, all of which are integral parts of the design. All the builder has to do is screw its brackets to the wall and connect up the services.

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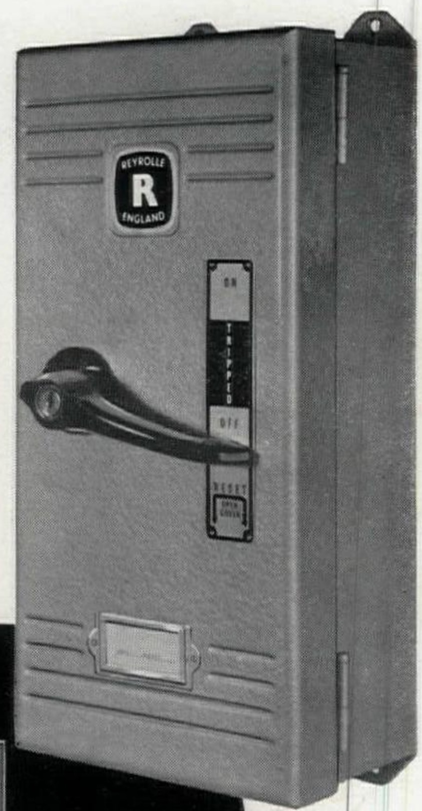
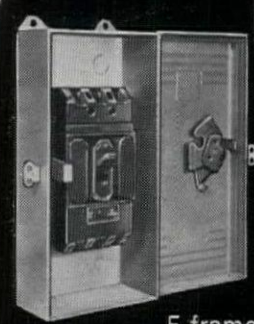


Reyrolle Moulded-case Circuit-breakers



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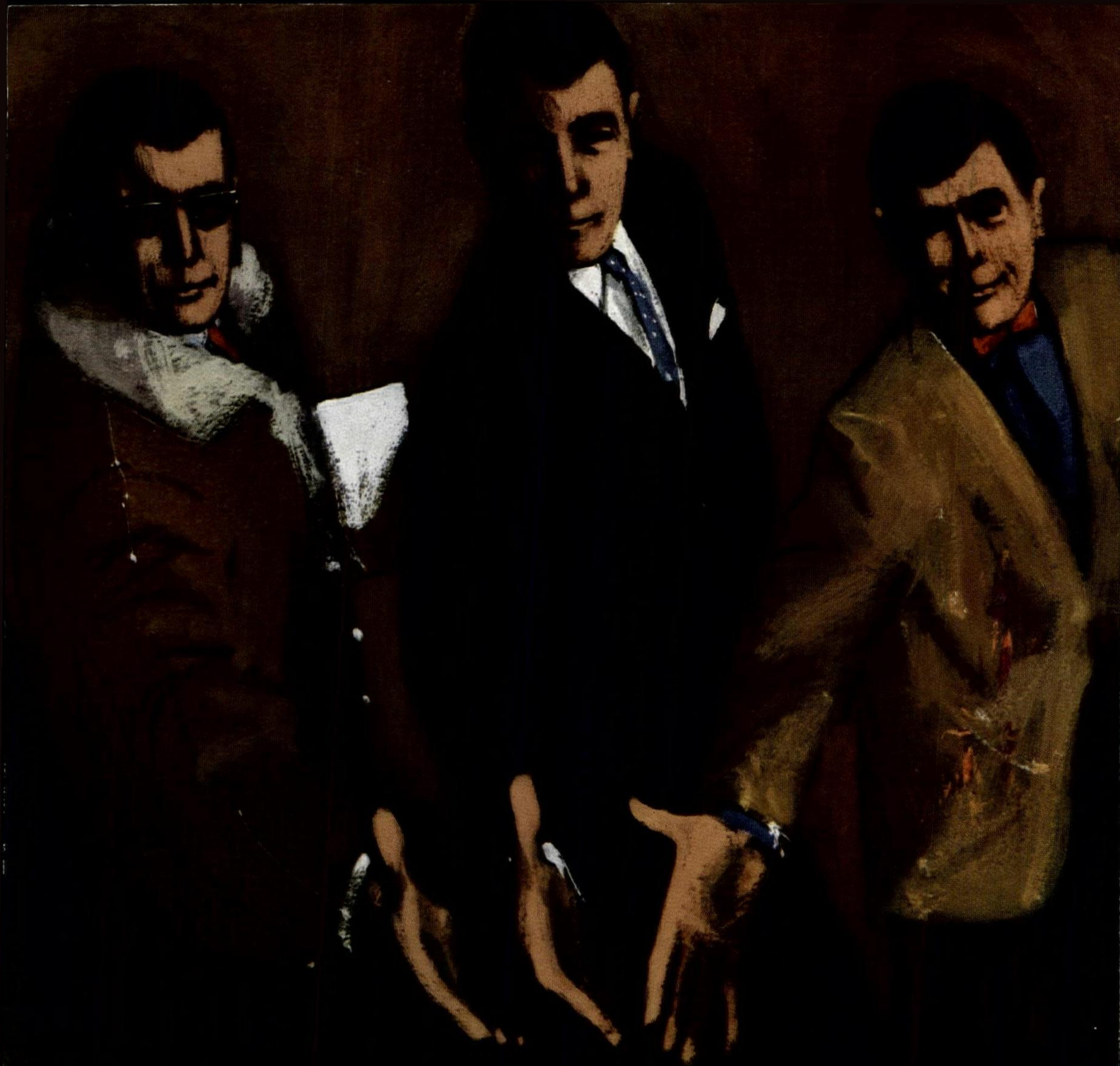

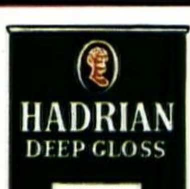

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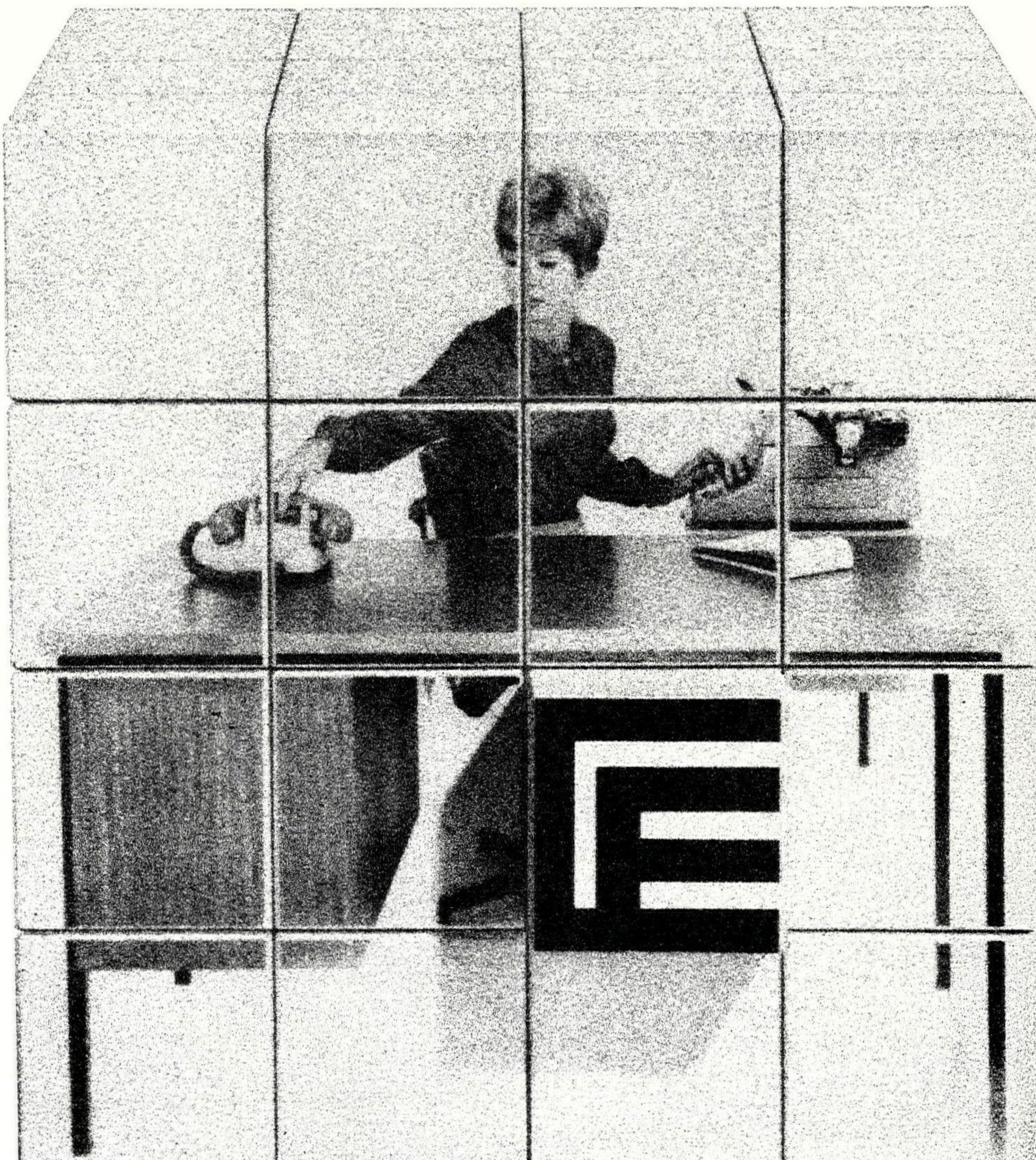

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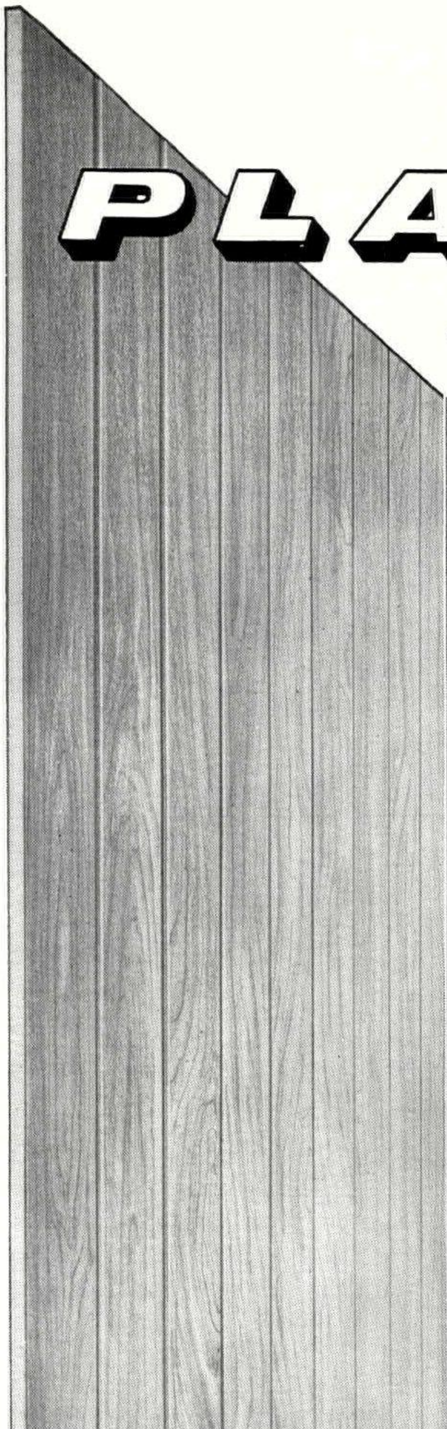

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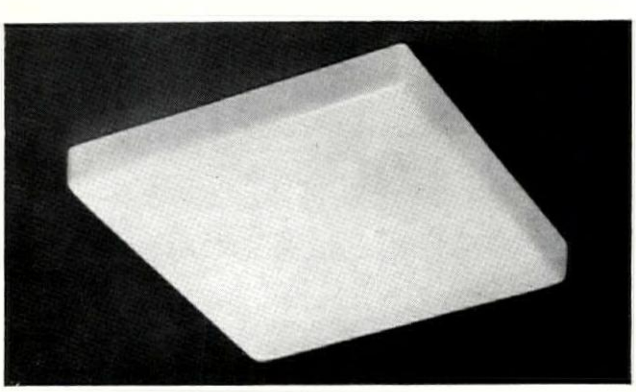

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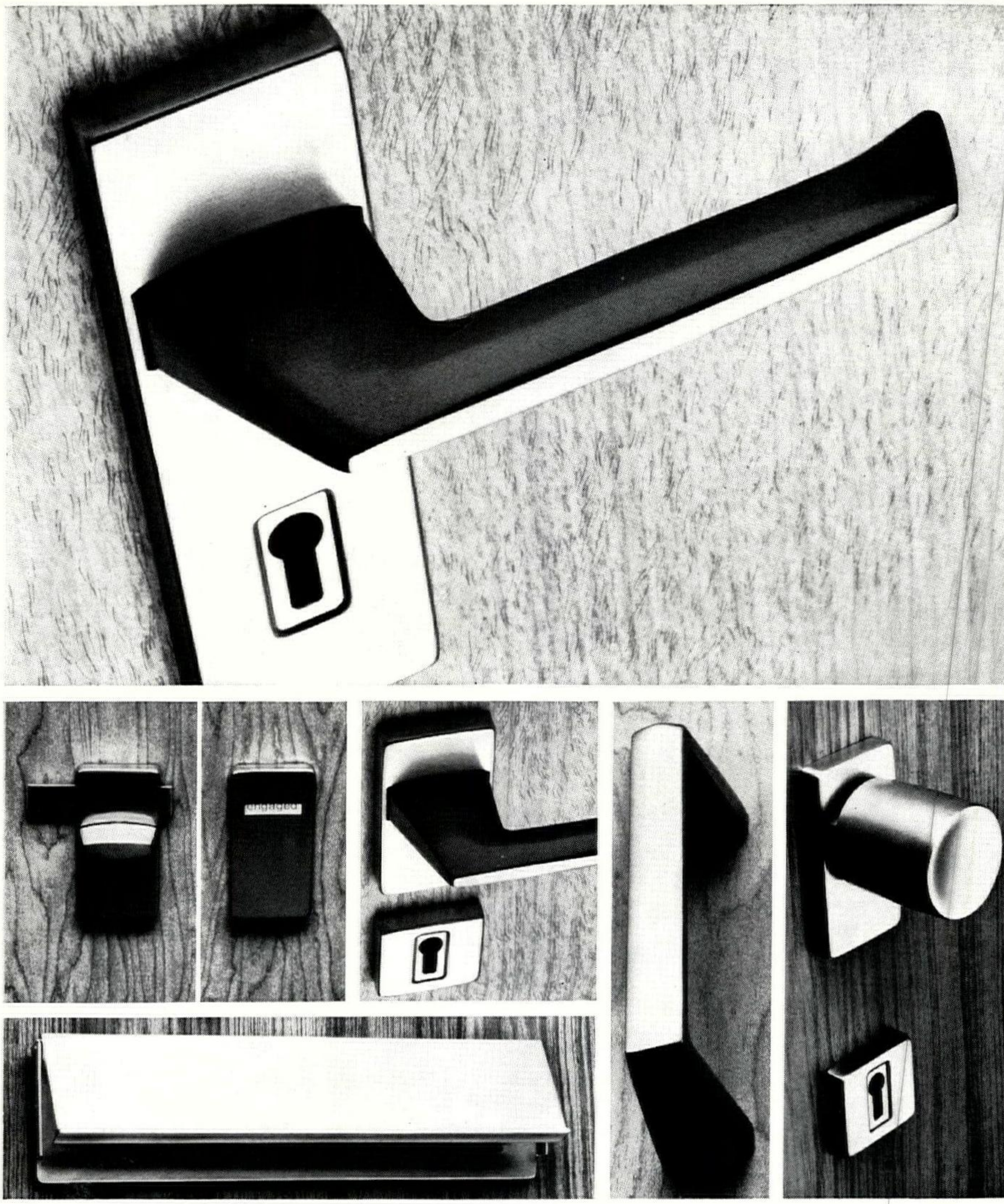

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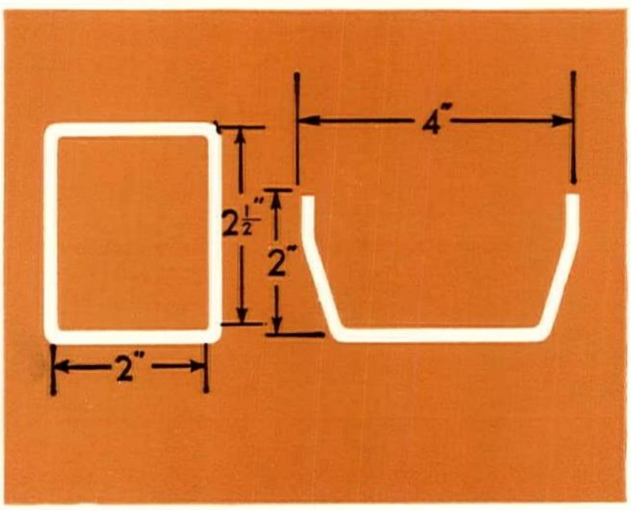

A new complete range of unique design.

Here, at last, is a superb range of high-quality PVC rainwater goods which, through its unique rectilinear design, provides new scope for distinctive elevational treatments. No longer need gutters and downpipes be 'hidden'; the LIMPET line is neat, good-looking . . . a very interesting architectural feature in itself. LIMPET rainwater goods have been exhaustively tested by the manufacturers, J. W. Roberts Ltd. – a company of the Turner & Newall Group. But its unique rectilinear design is not the only reason why its success is assured. Far from it. Consider all these other advantages!

* EASIER & QUICKER TO FIX. All gutter outlets, unions and fascia brackets are designed to allow gutters to be snapped into position. Built-in neoprene seals ensure water-tight joints and allow for expansion. Gutter unions and outlets act as support brackets and simplify erection, and with single screw fixing, easier alignment is achieved.

* AMAZINGLY LIGHT, STRONG & DURABLE. Made from specially formulated high-grade PVC. LIMPET rainwater goods will take normal ladder loadings and will withstand frost, ice, snow and anything the climate can produce.

* MORE WATER CAPACITY. 4" width gutter in the new rectilinear shape will handle more rainwater than a 4½" nominal half-round gutter. The new shape of the downpipe has a cross sectional area equivalent to a 2½" diam. downpipe and maintains the same discharge capacity.

* CONVERSION PIECES. A special change piece from rectangular to circular is available where downpipes are required to fit directly into a circular back inlet gully.

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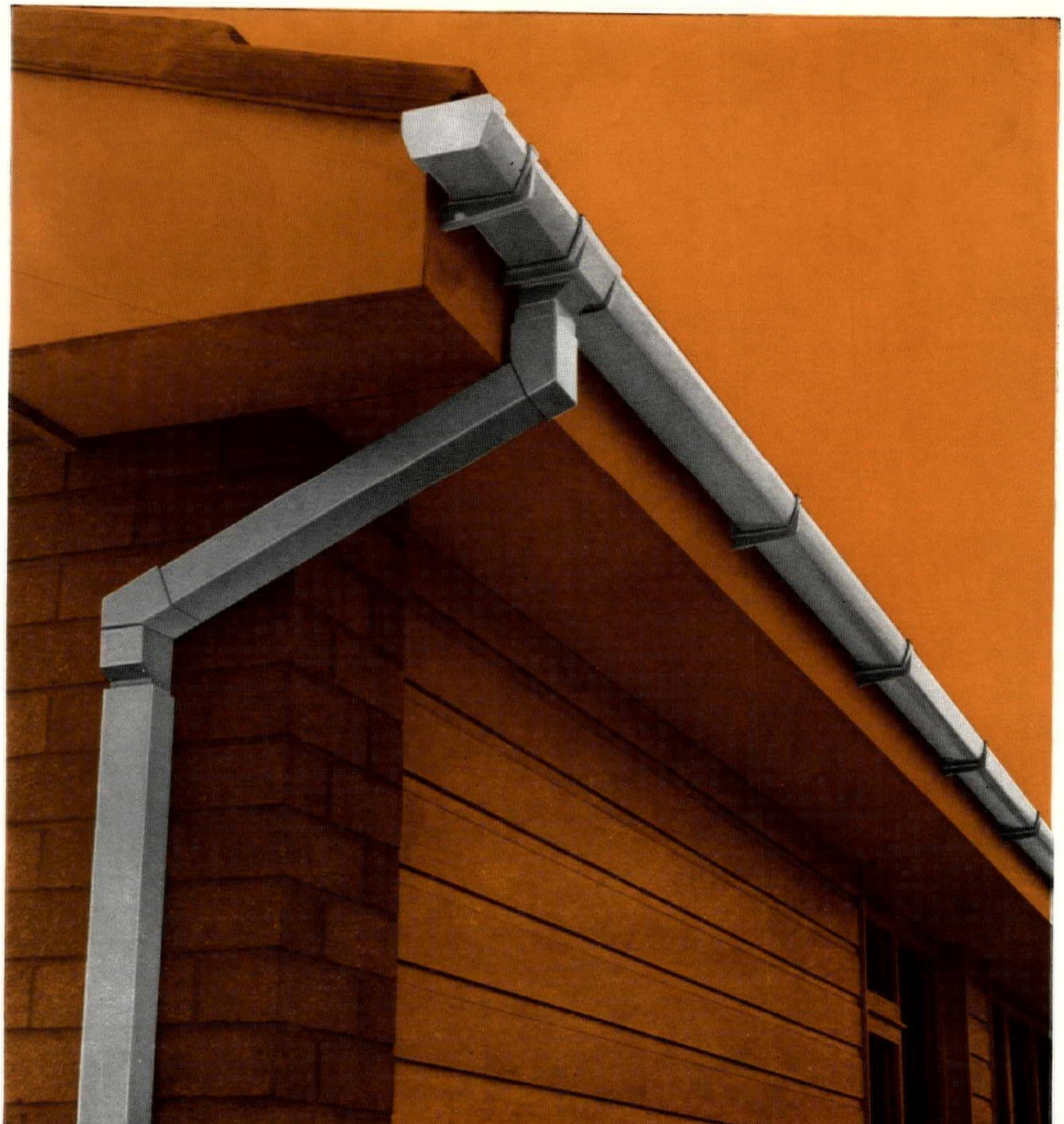
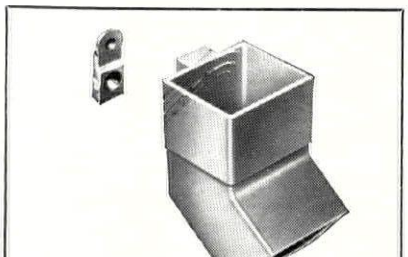
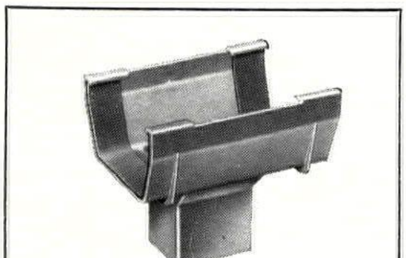
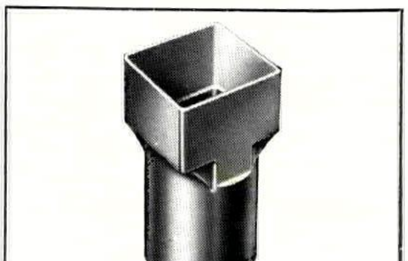




The wall clip is fixed by a masonry pin or screw, and the shoe is placed over it and snapped into position.



The gutter outlet has well radiused corners allowing for a smooth flow of water. This component also acts as a support.



The change piece is used when a downpipe is fitted directly into a back inlet gully, the circular section is cemented into the gully.

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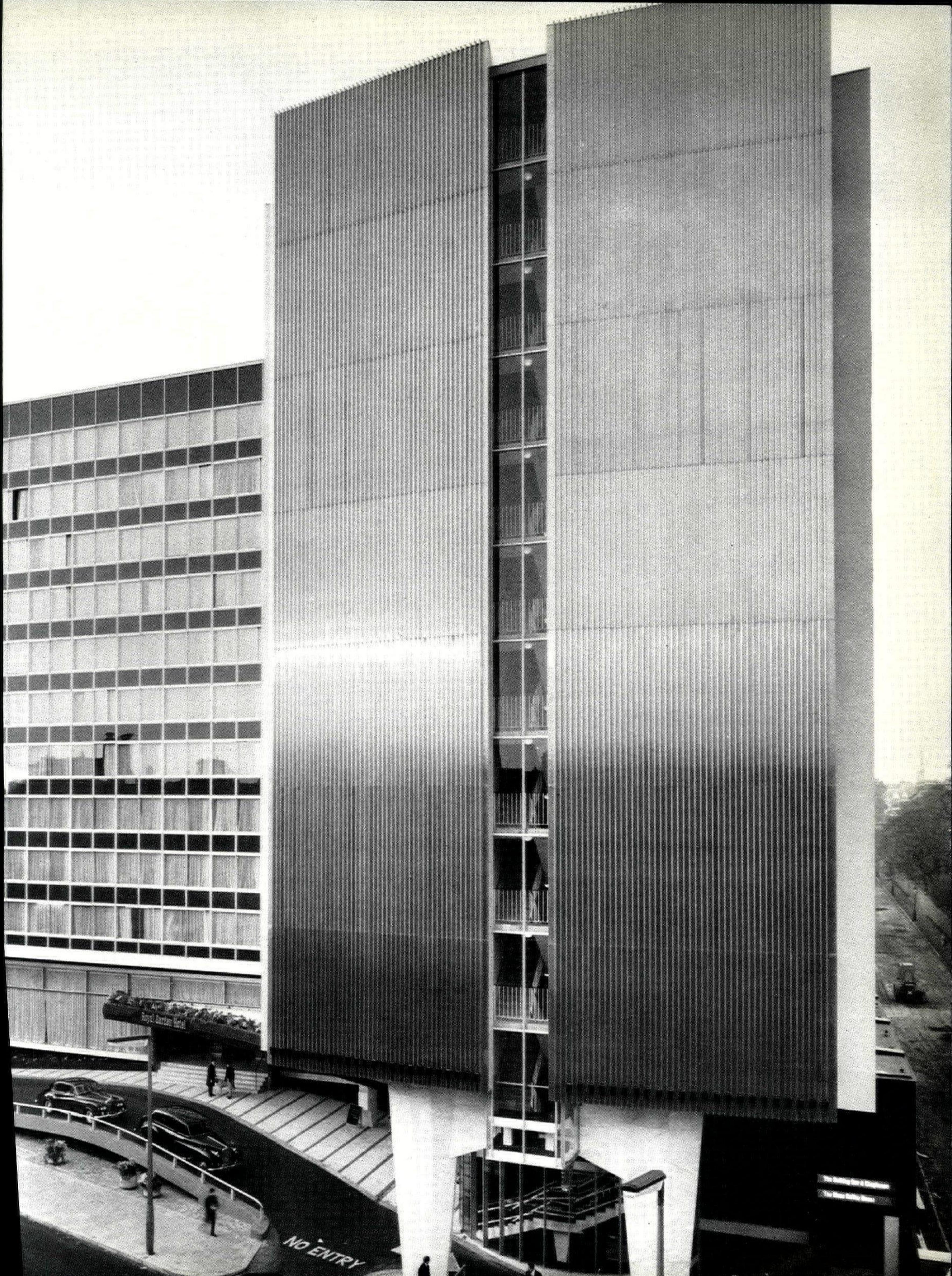
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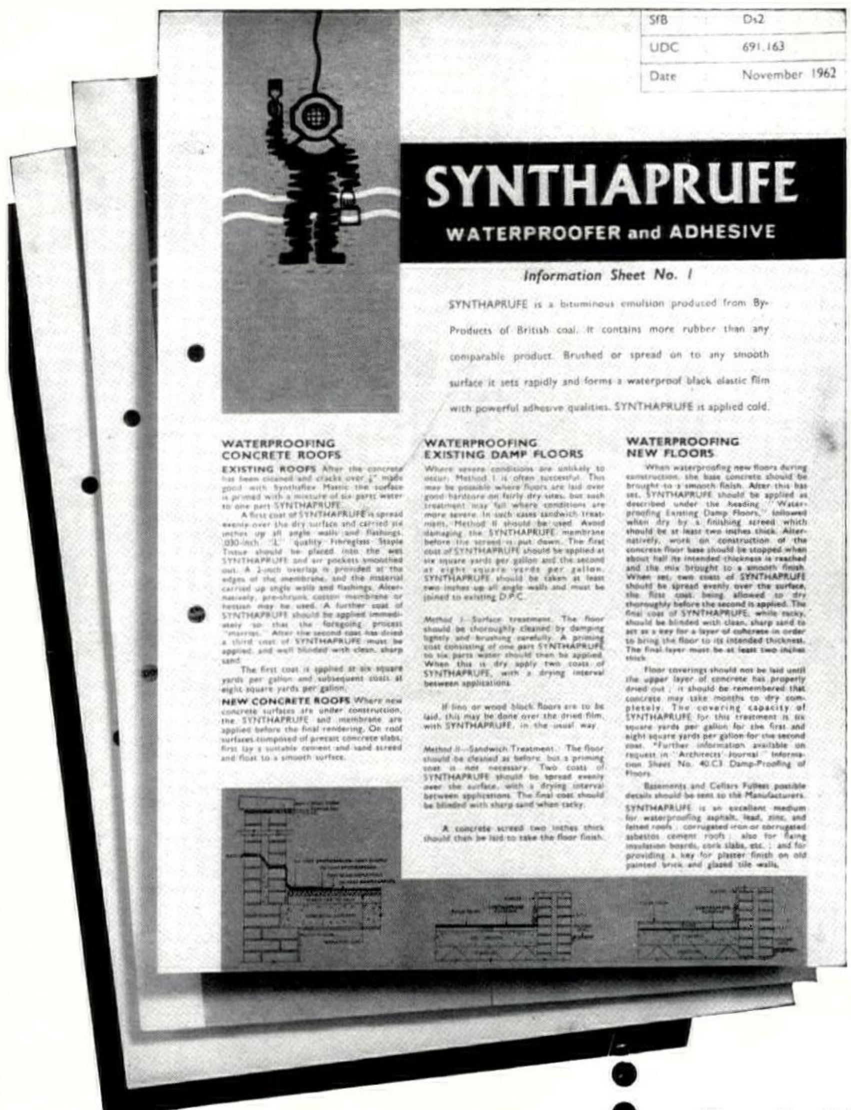

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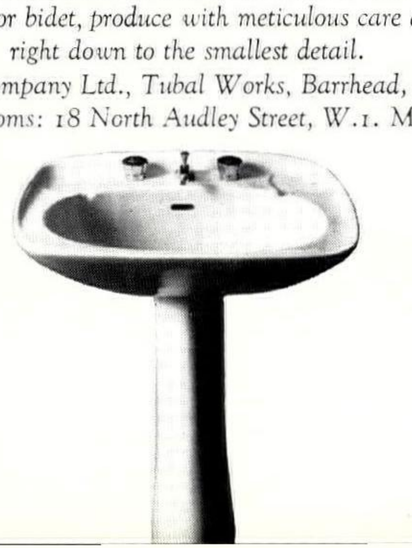

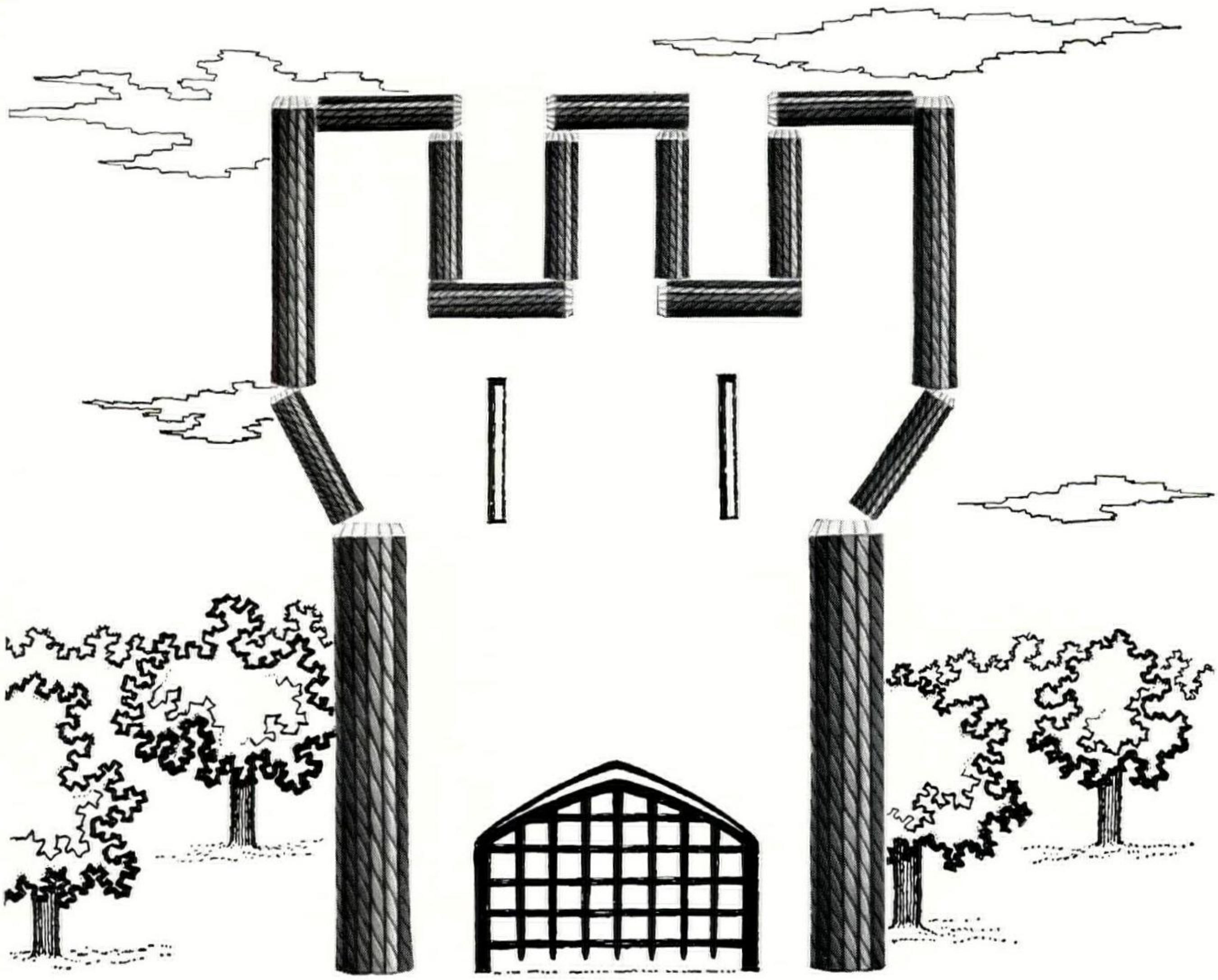

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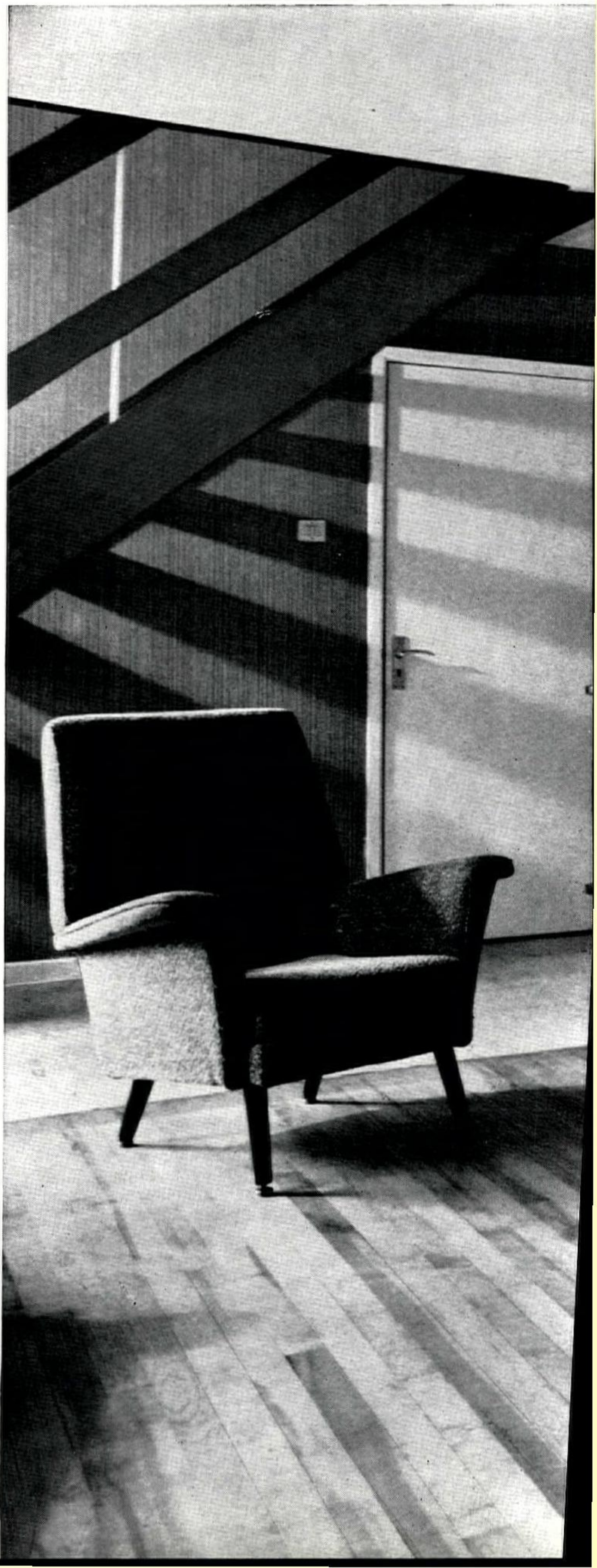

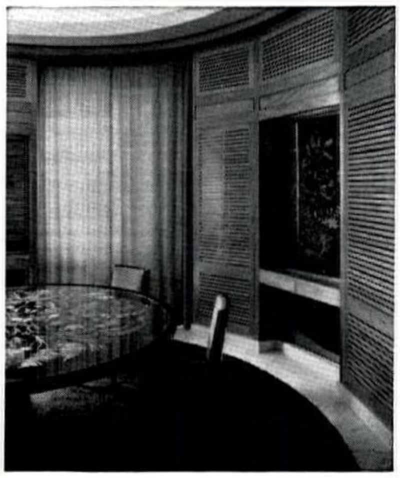

Elegant circular dining room at The Shell Centre, London

Open stairway leading to the Ballroom, Hotel Leofric, Coventry
(By courtesy Ind Coope Limited)

Hand-carved counter and decorative false ceiling at Norway Food Centre, London

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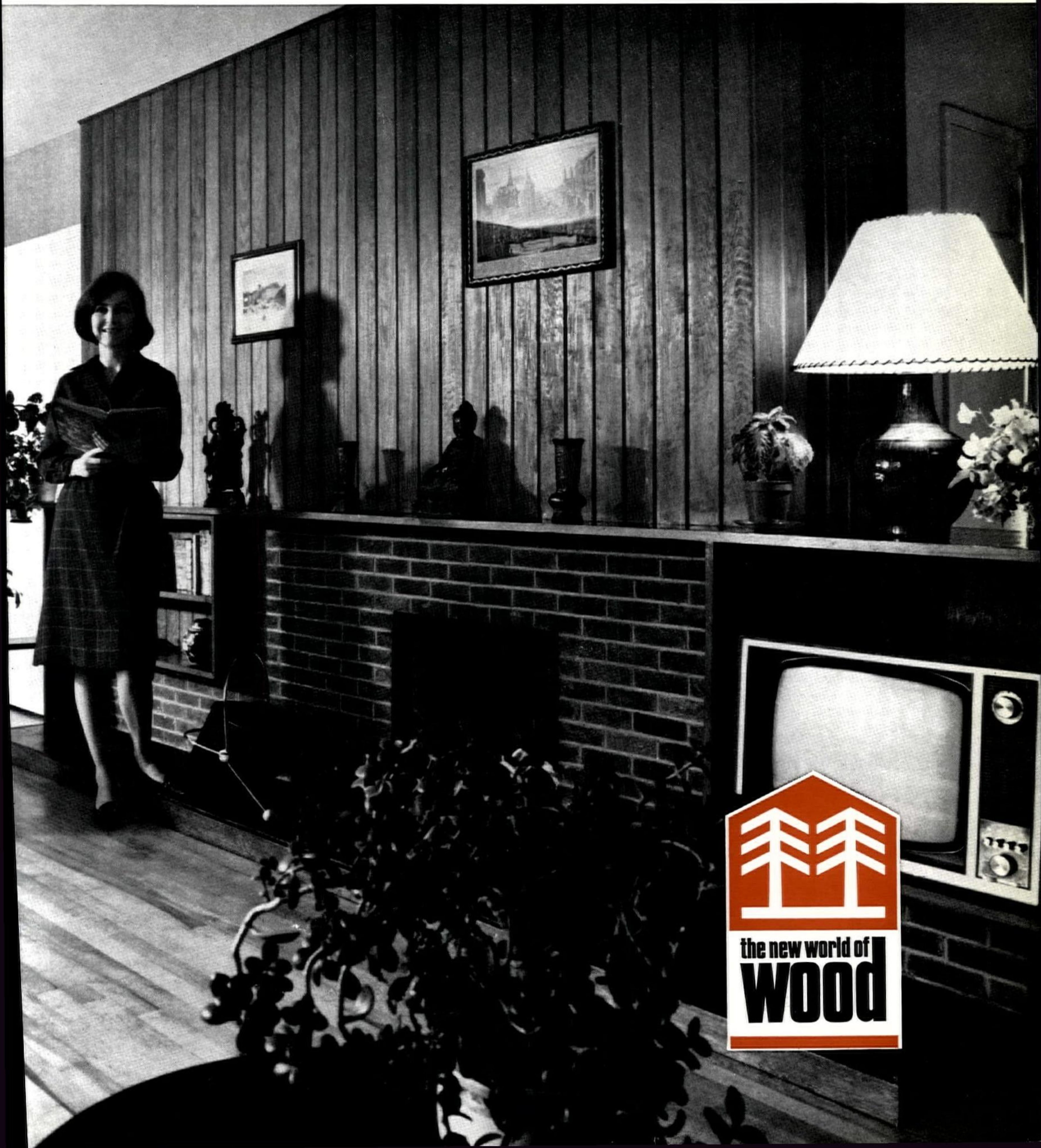

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Design Consultant: C. Hubbard, Wavy Line Design Dept.

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THE SCANNER: THREE

This is the third of a new series of Alcan broadsheets. 'The Scanner' represents a further and logical development of studies begun in 1964 which featured Gordon Cullen's original concept of the Circuit Linear Town. The business of Alcan Industries is not, of course, town planning. It is the production and sale of aluminium in semi-fabricated forms. In previous broadsheets we suggested practical applications for aluminium of special interest to architect or builder. The intention, in our new series, is to continue to do this, and to demonstrate the strength of Alcan's claim to serve the architect and the building industry. Our aim, however, is not to confine ourselves merely to building and aspects of service. It is to present a platform for new ideas relevant to the whole question of the planned environment, bearing in mind the effect of new building techniques on social and physical phenomena. We have, therefore, invited Gordon Cullen to extend his earlier studies under the title 'A Town Called Alcan.' In this broadsheet he presents an exercise demonstrating the use of 'The Scanner.'

Architectural Consultants:
ALUN JONES, WARD AND PARTNERS

ALCAN

In previous broadsheets we have outlined the bones of a technique which, taken to its full development, would act as a comprehensive check list for the planner. This we have called The Scanner. At this stage it is already possible to observe that the information does not fall under random headings but appears to create a series of chains of growth. It is in the interlocking of these chains or scales that the true environment can be created. To touch one part of The Scanner is to be led into the total field.

What follows is the first of two exercises demonstrating the application of The Scanner. It is here presented in broad outline as a plan for a village and is illustrated by two streams of drawings. These show the two main chains of The Scanner: the Optic Chain and the Integration Chain.

The Urban Village

The parish or village is the basic unit of local administration. There is a body of opinion which would prefer to see local government in the control of recognizable social and economic units—borough, urban district and parish—all of which have a corporate personality.

A climacteric population of about 2,500 has been chosen since this number is sufficient to generate enough shops and amenities for people to subsist between weekly visits to a town or city for specialized services.

A realistically high density has been chosen but this must be seen in its context of the Optic or space chain. What is intended is akin to Plymouth Barbican or to any compact small town centre.

The village, for this exercise, is sited on undulating ground both for economy of good agricultural land and scenic possibilities. The extra cost is regarded as a balanced use of wealth.

It is a walking village. Consequently while all buildings can be reached by car there are three communal garages at strategic places to reduce circulation. 'Club' workshops equipped with tools and hoists, together with coffee bar, facilitate social contacts at significant points in the village.

Also arising from density is the need for special noise insulation between dwellings. There is also provision for noisy areas (getting it out of the system), probably below ground for games, dancing, jazz and pop music.

We believe that by-laws concerning matters of opinion, such as daylighting, must be amended, especially if, with new building techniques, flexibility of the design of activity space within the unit is to be achieved. New techniques give higher standards of comfort in terms of noise and insulation and increased durability of finish.

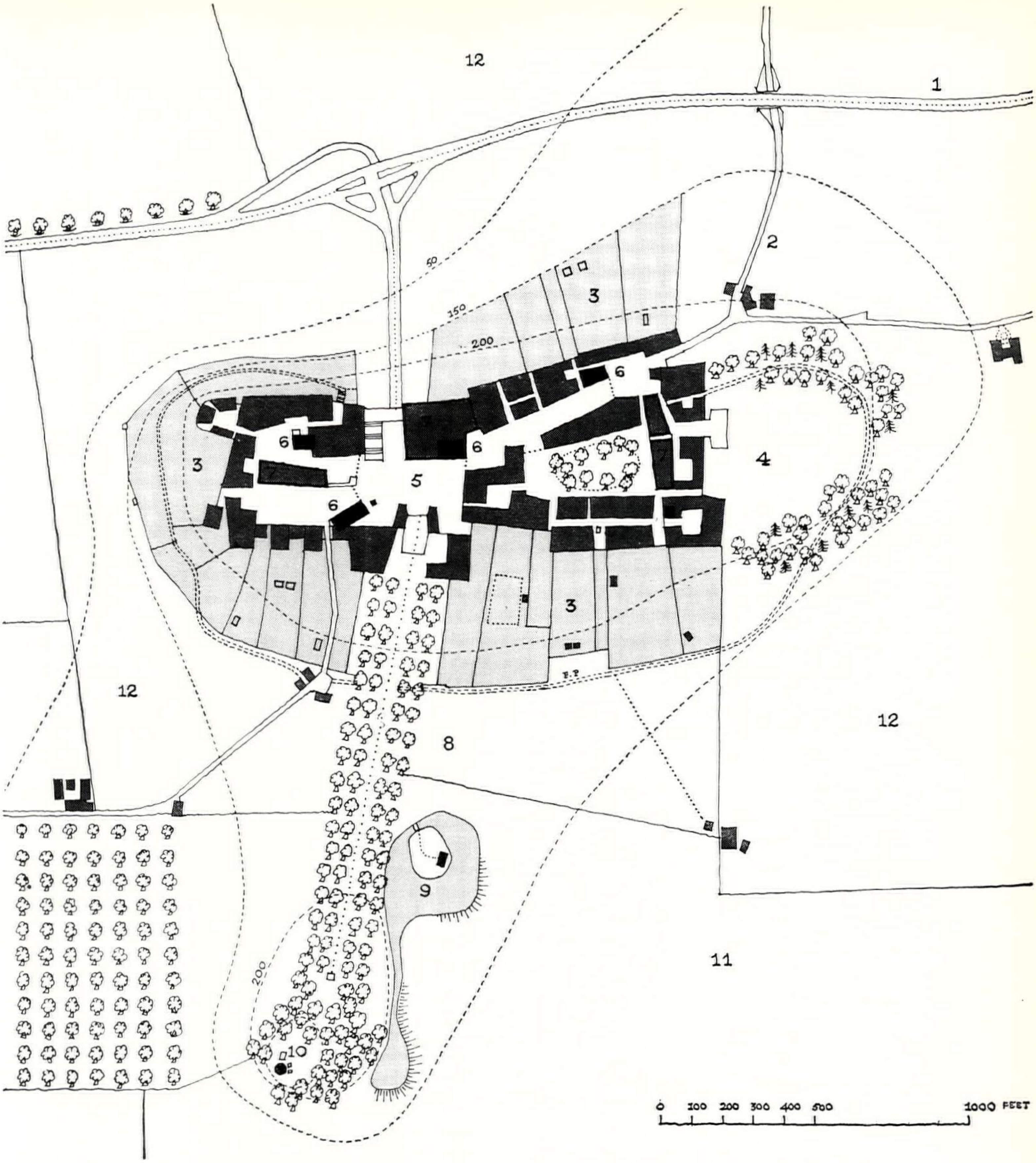
It is possible to trace the chain of optical progression or growth from the simple room, through the atrium, the courtyard, street, square and centre to the concept of the village having an OUTside and an INside. Then from the village centre to the horizon an avenue of trees links to some landscape feature—a hillock, lake or ruin. From this focal point one can look out into the world beyond or back to the village.

This is reflected on the human plane with the build-up of social contacts and events which are woven into the optical arrangements (i.e. the strategic placing of public buildings). The integration of age groups and varying incomes vitalizes the village pattern, while the subtle insinuation of the Maze Factor enables different people to find their own paths to the general unity.

The compactness of the village precludes the possibility of private gardens for all, but the alternative need not be the smashed-seat public park. Again there is a chain or scale of open spaces from the private balcony, the outdoor room, the public square (overlooked by protecting windows), out to the surrounding countryside which, since the urban village is small, is always near.

The important point here is the provision in the plan for a belt of open space around the village. This is not Public Open Space but is divided into parcels and allocated to the various churches, clubs, institutions and societies in the village. The parcels are private, 'for members only,' and are developed in whatever way the particular group thinks best: as a bowling green, as gardens or allotments, or as a club with its little clubhouse, bar and easy chairs set under the chestnut trees. In this way the dynamic of the village, visual and social, moves out from the private room to the horizon.

We have sketched out a finite and coherent village pattern. How then can it expand? The answer is that we have chosen a climacteric size. Any pressure to expand and grow should therefore be diverted away to create a new village when the time comes. A cluster of such villages, interconnected by rapid transport, would form a pattern familiar to our readers.

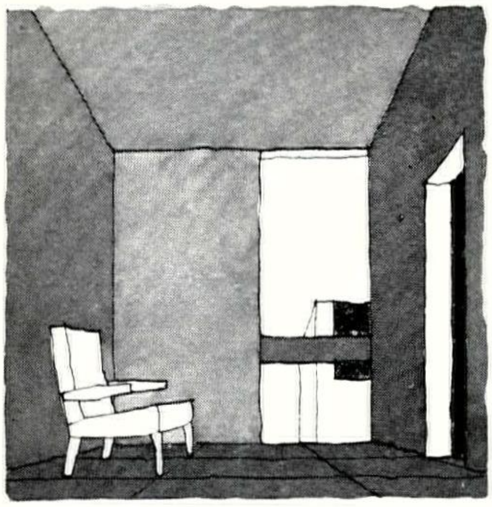


THE KEY

1. *Ministry of Transport Class I road*
2. *Local road*
3. *Club gardens*
4. *Playing field*
5. *Village centre and shops*
6. *Social buildings (churches, public houses, etc.)*
7. *Garages*
8. *Avenue of trees*
9. *Lake*
10. *Belvedere*
11. *Golf course*
12. *Agricultural land*

OPTIC CHAIN

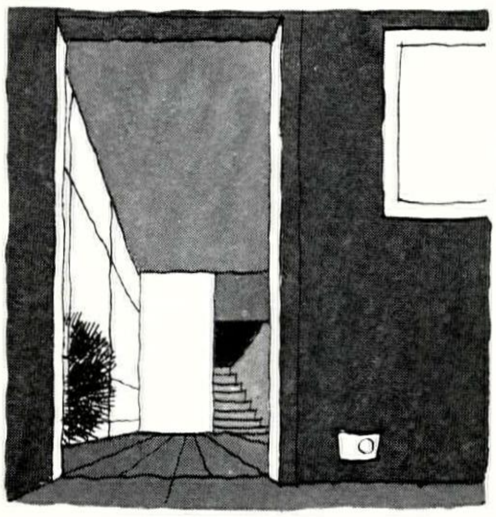
INTEGRATION CHAIN



1

The basic unit is the private room with its lock and key. This is the piece of space carved out by the individual in a big full world. In it he can put his feet up, hang his own pictures, be tidy or careless, and invite or exclude.

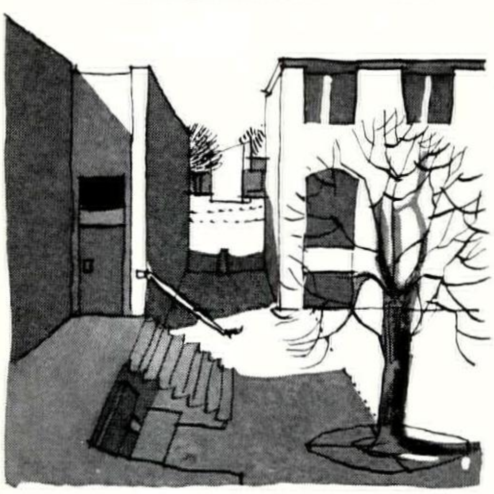
The room is hollow space, six planes of light, colour and texture. It is illuminated by its eye, the window which unfolds the greater world beyond.



2

But the room is part of the dwelling. No man is an island. He needs news, confidences, he is curious and must make arrangements.

When the door is opened one space confronts another. This simple act releases perspective, the outflow from constriction to space, and the beginnings of architecture.



3

What then? Is it the end when a man leaves his house and enters the great world? Current estate layout suggests this is so. All the little boxes are usually lined up on the common denominator – the road. The road is universal. Yet here children play, old people chat, and even housewives meet from time to time. Work does not last forever.

The local place is a neighbourhood, the next space after the room and the atrium. To be valid it need not function 24 hours a day, but like a friend it is there when wanted.

4

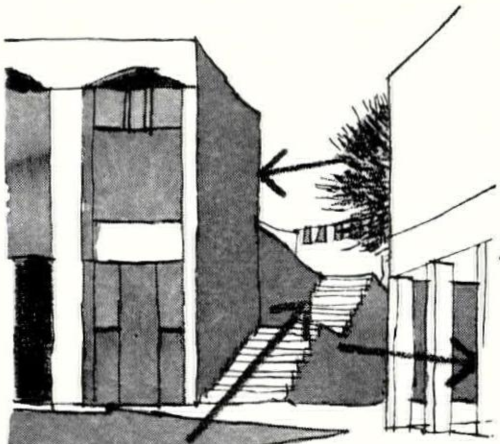
As the population grows the possibility of choice emerges. From purely local contacts we move to selective contacts. Yet some people are often afraid of contact; and some have no taste for church or pub. The motor-car, as a piece of machinery, is a common factor and clubs connected to a central garage would form a meeting place for motorists.

The space chain also probes out from the purely local place and picks up the strategically placed public buildings which organize the scene.

OPTIC CHAIN

INTEGRATION CHAIN

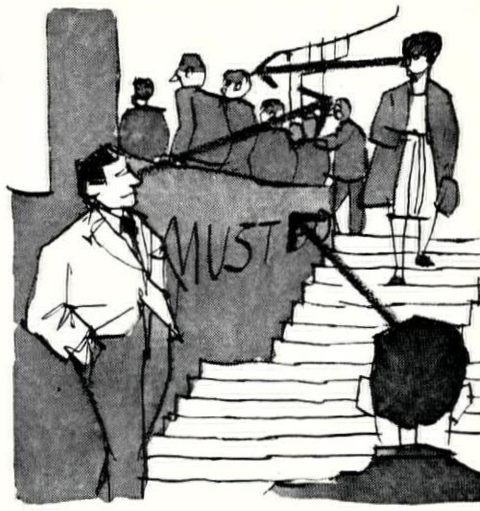
5



Yet beyond selective contacts there is always the possibility of random association inherent in community life—the accidental happenings or the possibility of discovering one's own path. This means places for loitering, for parade, for casual acquaintance.

In the optic chain this implies a degree of complexity or intricacy of layout allowing the individual to employ his initiative and therefore to enter into a personal relationship with his environment.

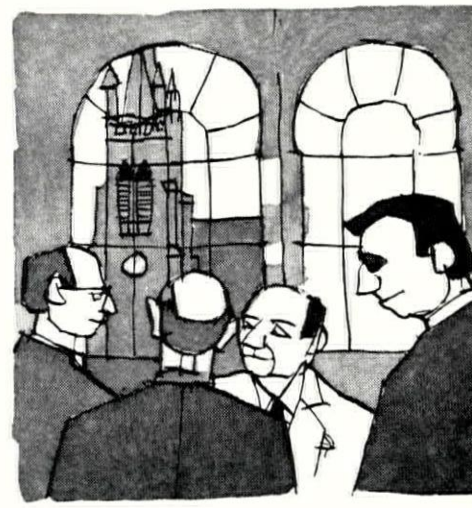
In both cases this is termed the Maze Factor.



6

But, since a community is finite, then there is bound to be some conclusion. The social pyramid, if all goes well, will be composed of worth; it will not rely entirely on snobbery or wealth. There is a sense in which a natural aristocracy can be formed through the mutual respect of worthy people, whatever their family or income—the cricket captain, the raconteur, the man who can get it wholesale, and the possessor of 'green fingers.'

It is the same with buildings. In the English urban scene there is a casual tolerance between buildings which makes the centre a complex space.



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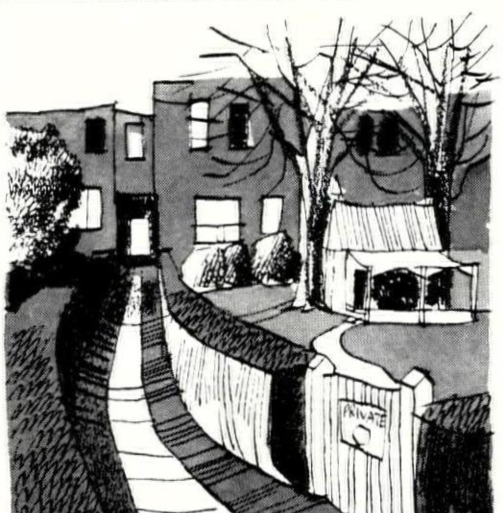
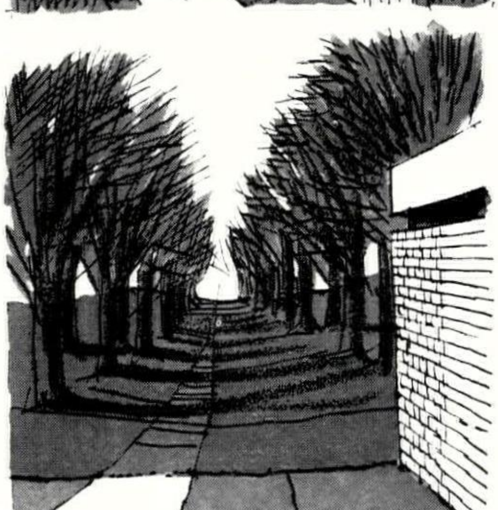


Since town and country are equal parts of our life the progression from the inside of the village outwards is of importance. The high density village precludes private gardens for all, but the alternative need not be the Public Park with its undertones of vandalism and impersonal flower beds. It is still possible to maintain a growth pattern if we move from the individual to the group and allocate space for clubs in the tiny 'green belt' around the village. This would retain the personal quality of being at home, of having a door to close. How pleasant to have the clubhouse under the trees, 'our little place,' and dance by moonlight.

8

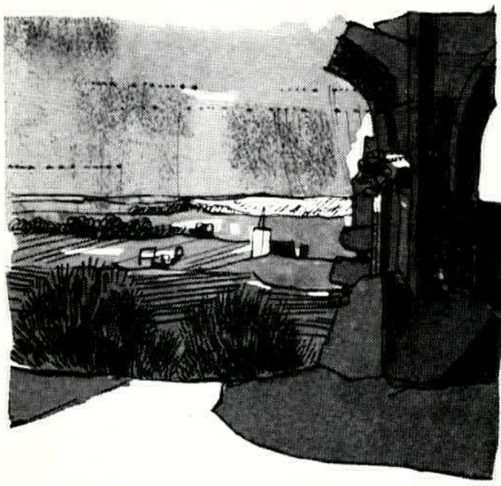


The green belt is set in the agricultural pattern of the landscape, but the main link in the space chain runs from the village centre out to the landscape. Most villages have some attractive natural feature close at hand: a hill, a lake, a ruin or a wood. Let this natural feature serve as a symbol of 'out there,' of escape, of opting out.

Join it to the village by a grove or avenue and the chain is complete.

OPTIC CHAIN

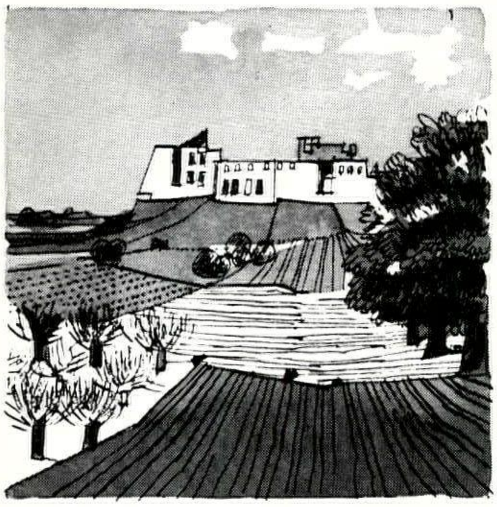
INTEGRATION CHAIN



9

Here our natural feature—with its belvedere—is the end of the umbilical cord. It is the limit of the village where we look out to other people's territory and to the horizon.

This is the truth, though we may see it only once in a twelve-month. It is the culmination of the space chain that started in a small 'room of one's own.'



10

Looking back to the village one can see it as a living entity, not an indeterminate sprawl but compact as a castle.

It is the visible expression of the social sense of belonging.

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Flexural strength	32-34,000 p.s.i.	28-29,000 p.s.i.
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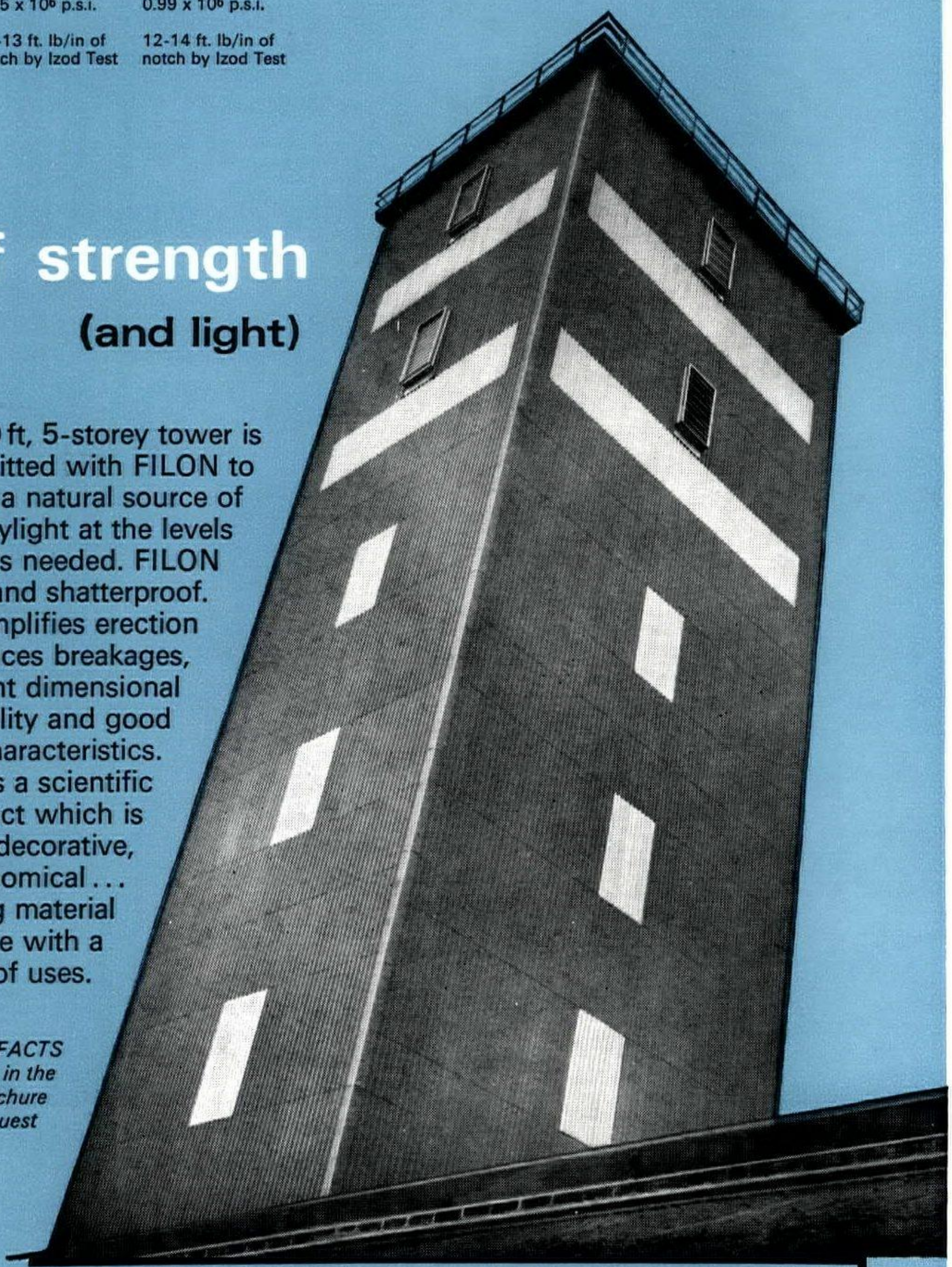
Impact strength	11-13 ft. lb/in of notch by Izod Test	12-14 ft. lb/in of notch by Izod Test



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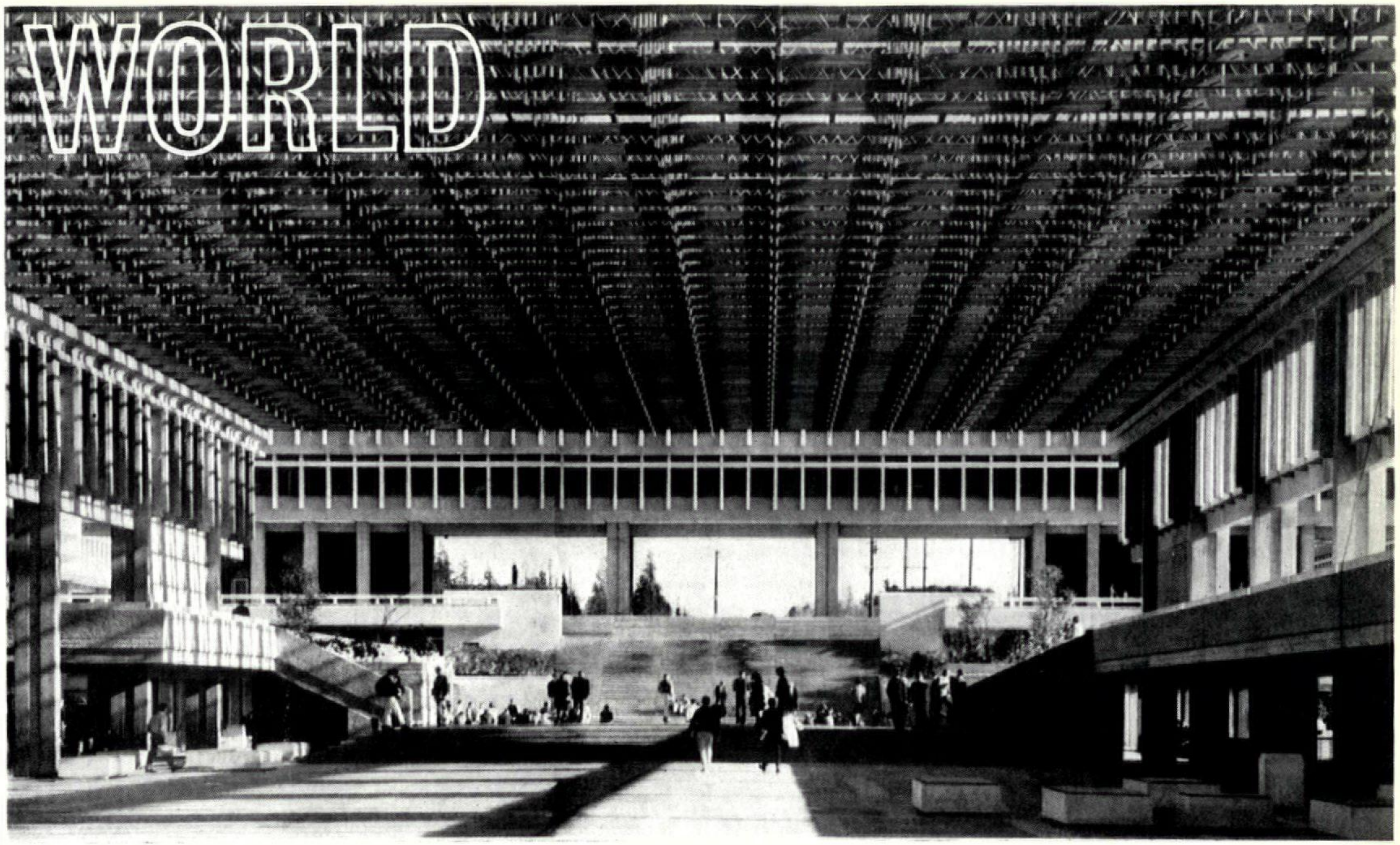
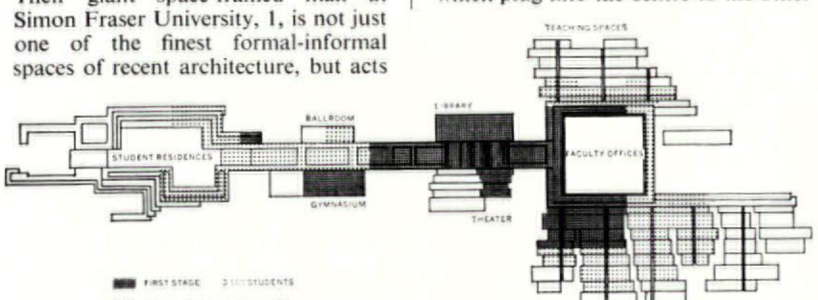
WORLD



1

SPACE FRAMES

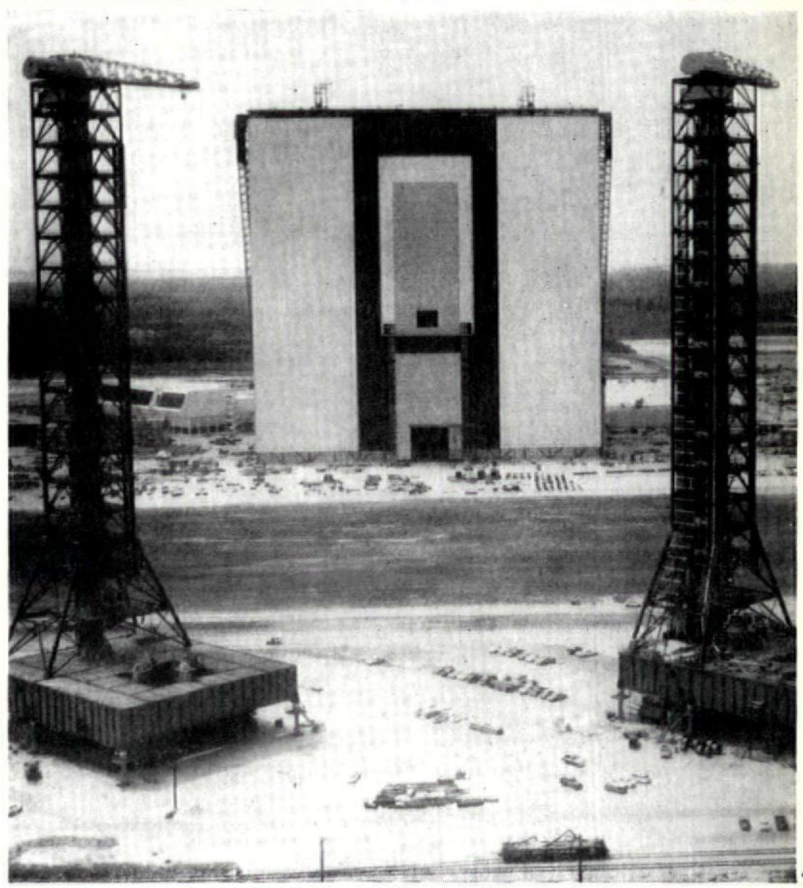
The gilded Exponents of architecture at Montreal next year will be hard put to match the best of local Canadian talent—not just the perennial Parkin's and Fairfield & Dubois but such comparative unknowns as Arthur Erickson and Geoffrey Massey. Their giant space-framed mall at Simon Fraser University, 1, is not just one of the finest formal-informal spaces of recent architecture, but acts as the lynch-pin of a single-structure linear campus, 2, which in its decisive clarity puts to shame the wordiness of English university development plans. Furthermore it has survived the fantastic speed of operation (competition summer of 1963, opening for 3,000 students October, 1965) ordained by the client, who proceeded to hand out the component buildings which plug into the centre to the other four finalists. Erickson/Massey were left with overall control plus the mall and the first dormitory block. If some of the resulting details are uninspired and lacking in unity, the overall conception still triumphs, 3, helped by the grandeur of a British Columbian fjord.



2

3

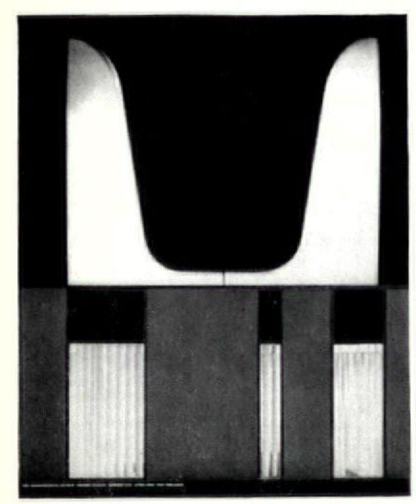
The world's largest single building has just been completed; a space frame to beat all space frames. The Vertical Assembly Building at Cape Kennedy, 4, encloses about 125 million cubic feet (178 million eventually), already 34 million more than the Great Pyramid of Cheops, its nearest rival in Opmost Art. Its four main doors, 5, are 456 feet high and the UN building could be slid safely in. Each Saturn rocket will be taken out



4

acknowledgments

WORLD, pages 245–248: 1–4, 6, 15, 17–20, 22–27, *Architectural Forum*; 7, *Bauwelt*; 8–10, *Architecture USSR*; 11–14, *Architektura CSSR*; 16, 21, *L'architecture d'aujourd'hui*; 27, *Progressive Architecture*; 28, 29, *Arts and Architecture*. VIEWS AND REVIEWS, pages 249–251: 1, *Radio Times* Hulton Picture Library; 2, T. P. Roskrow; 6, Dobos Lajos felvétele. FRONTISPIECE, page 252: Penelope Reed. INDUSTRIAL OFFICES, NEWCASTLE UPON TYNE, pages 256–261: 1–5, 7–9, 15, Philipson 6, 10–14, Galwey Arphot. CRITICISM: pages 262–270: 1, 4, 7, Y. Futagawa; 2, 3, 5, 6, O. Murai. THE EXPLORING EYE, pages 271-273: Stephen Harrison. BYZANTIUM IN BRIGHTON, pages 274–277, 1, 9, RIBA; 2, 4, 11, Eric de Maré; 3, 5–7, 12, 13, Galwey Arphot. SECONDARY SCHOOL, RICHMOND, YORKSHIRE, pages 278–280: Galwey Arphot. SECONDARY SCHOOL, HAMPSTEAD, LONDON, pages 281–286: Galwey Arphot. INTERIOR DESIGN, pages 289–292: 1–3, 9, Sam Cohen; 4–6, Galwey Arphot. COUNTRY HOUSE, HAMPSHIRE, pages 295–298: 1, 2, 10, James Dunbar-Nasmith; 3–9, 11, Henk Snoek. GALLERY, pages 301–304: 1–5, Royal Academy of Arts; 6, The Arts Council of Great Britain; 7, Ivor Kamlish. MISCELLANY, pages 305–312, Ellis Island, Adam Ritchie; Concrete Poetry, 1-2, 4, Jonathan Williams. Unheavenly Mansions, 1, 3, 4, Toomey Arphot; 7, National Monuments Record. STOP PRESS, pages 319–320: 1–3, 8–9, Nairn Arphot.



If there is a present-day equivalent of the folly, it is surely the thing. **This month's cover** *(photograph by Philipson Studios) pictures one of them. A sculptured roof-light of fibreglass skins stretched over a steel frame, it is on the restaurant block of the Northern Gas Board's new offices at Newcastle. Designed by Ryder and Yates and Partners, these are described and illustrated on pages 256–261.*

THE ARCHITECTURAL REVIEW

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

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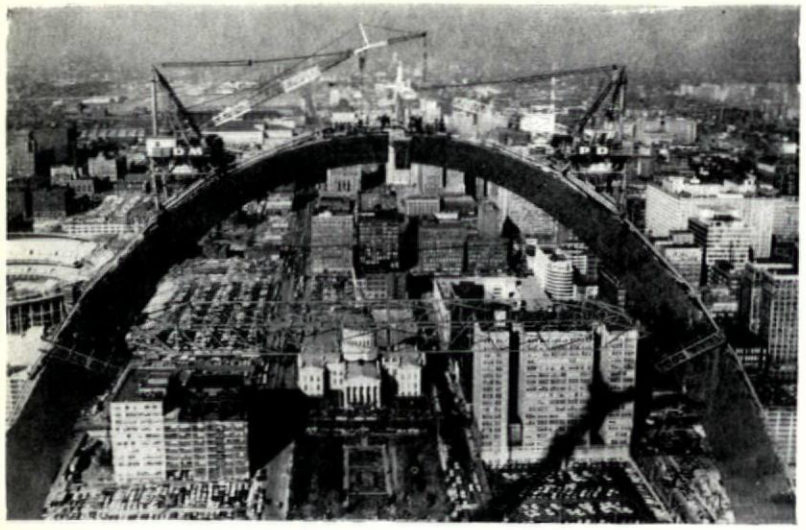


6

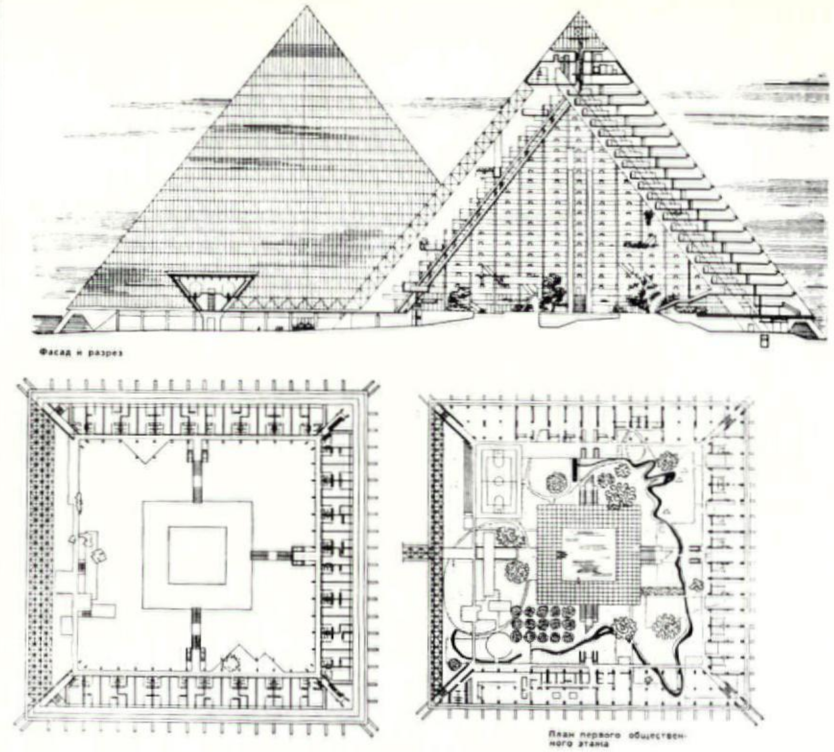
SPACE FRAMES

on a trailer as big as a football field to the flanking launch platforms 405 feet high. Designed by the URSAM consortium, the VAB is flanked by the Launch Control Centre (left in 5), happily called the LCC. Meanwhile . . . eighteen years after his competition success, the late Eero Saarinen's 630-foot gateway to the West at St. Louis has its keystone in place, 6.

5

SCHWEIKSPEER COUNTRY

A half of bitter and a half of timber tend to be thrown together in the murkier depths of the 'Come to Britain' movement and Tudor beams tend to be shunned by the sensitive. *Bauwelt* by contrast devoted its first number of 1966 to a serious presentation of the timber-framed vernacular architecture of the Siegerland area of Germany—including this engaging double-spread, 7. Three houses on the left show neat variations on the expandable dwelling theme. Germany's industrialization, it is easy to forget, is recent, and apart from those three houses and two others, all shown here date from 1880–1910. The crisp photographs are by Bernd Becher.

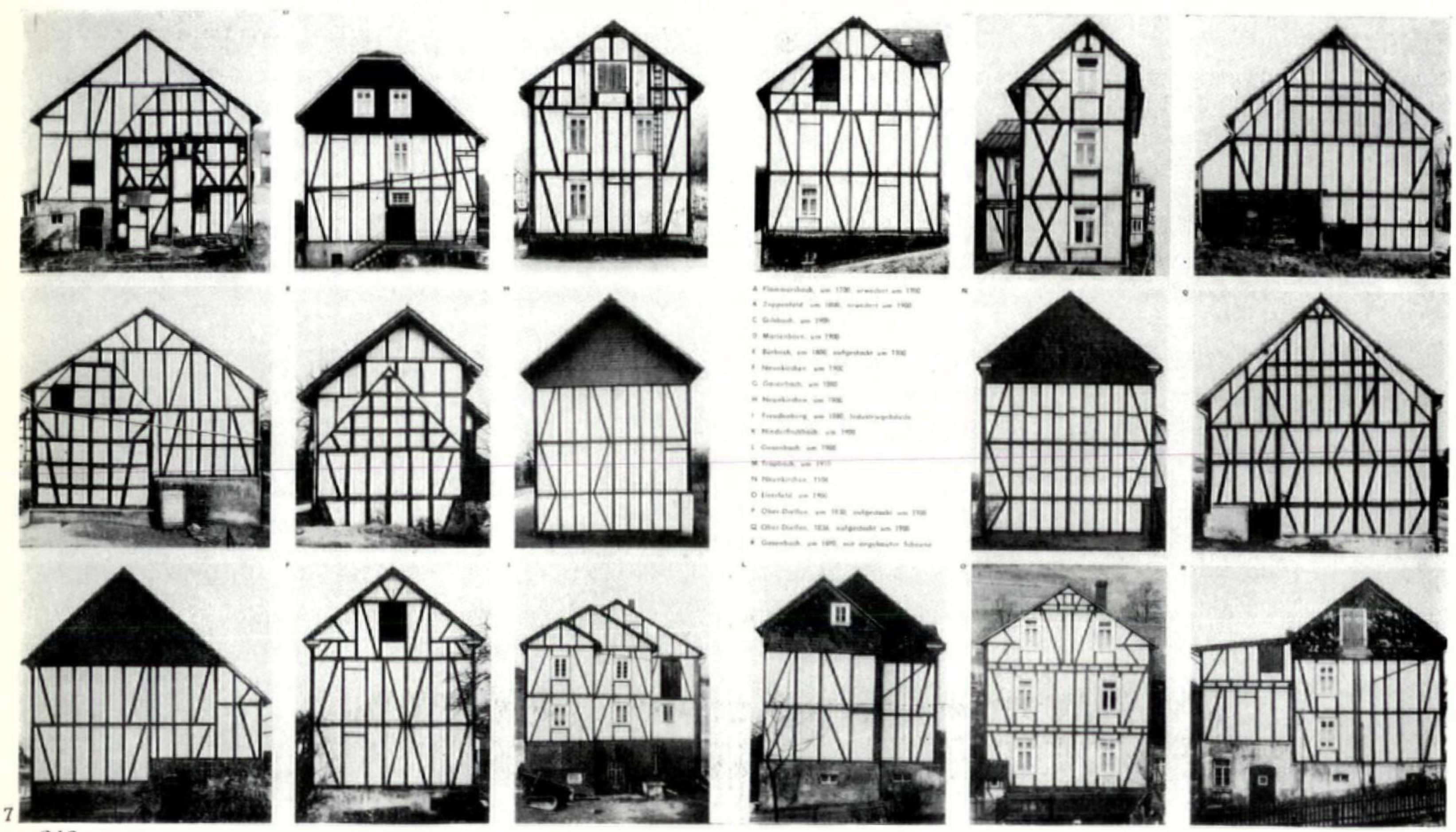


8

LENINIST LEDOUX

9

Utopianism recently re-appeared tentatively in the Moscow magazine, *Architektura CCCP*, in an article by S. Kibirev on 'Researches Aimed at Projecting New Perspective Types of Dwellings.' The stepped section of his pyramids, 8, no doubt reflects the same recent zigguratical tendencies as Moshe Safdie's original Expo 67 project (AR World, January, 1965),



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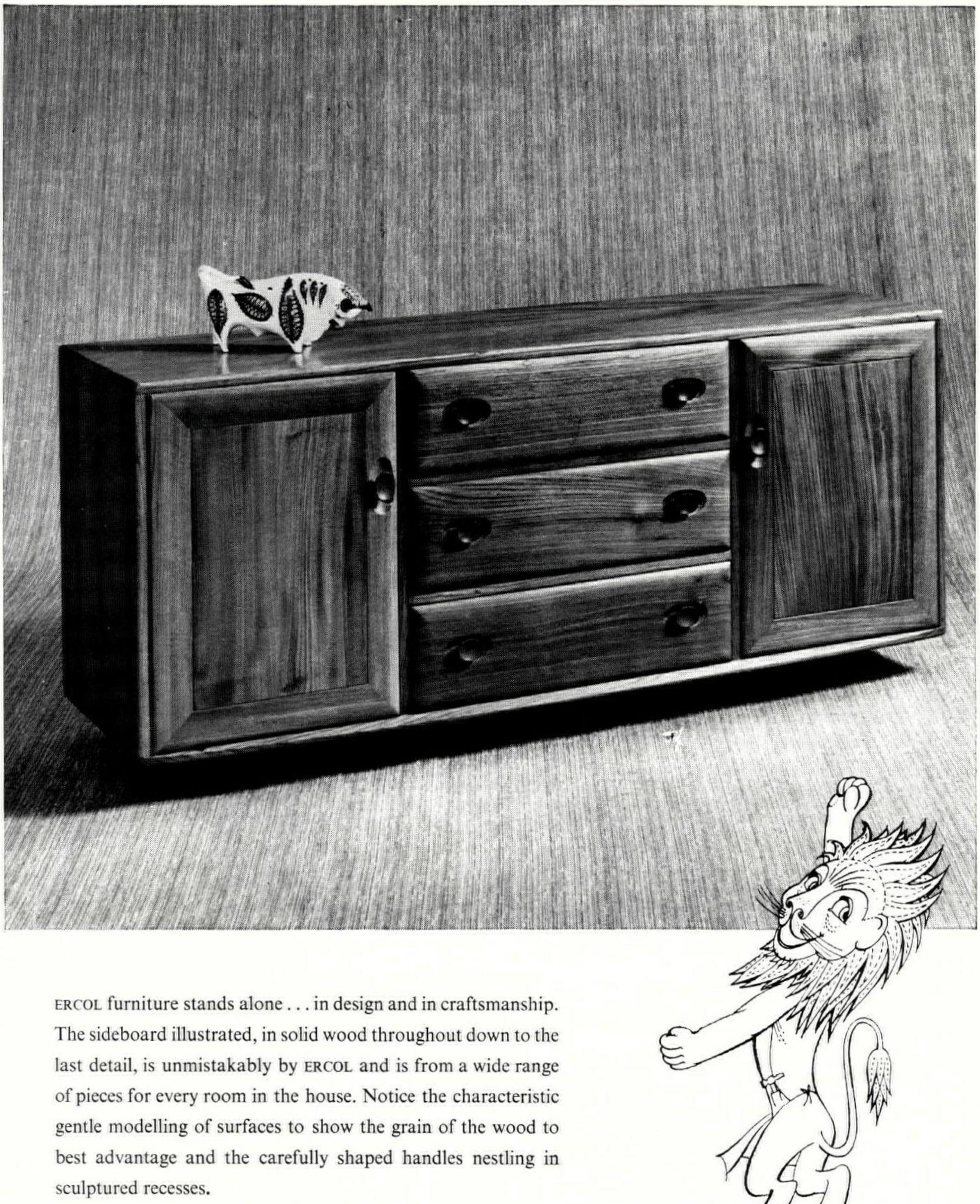

ERCOL furniture stands alone . . . in design and in craftsmanship. The sideboard illustrated, in solid wood throughout down to the last detail, is unmistakably by ERCOL and is from a wide range of pieces for every room in the house. Notice the characteristic gentle modelling of surfaces to show the grain of the wood to best advantage and the carefully shaped handles nestling in sculptured recesses.

Its natural colour waxed finish has the same impeccable perfection outside, inside and at the back as well so that it can be used at right angles to a wall or moved at finger's touch on its semi-concealed castors to tableside to carve or serve.

ERCOL

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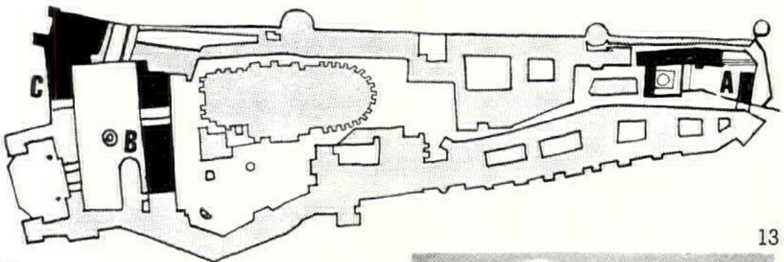
but the smooth sheen of his curtaining returns overtly to Boullée and Ledoux, particularly in the wickedly inverted inset pyramid. The plans appear to combine a rigid lack of orientation or variation with an intriguing suggestion of informality in the 'controlled' garden of the central space. Other projects illustrated by Kibirev included a more directly Constructivist procession of staggered towers, 9, and a memory of Park Hill, 10.

RUSSIAN FLATS

10

YOUTH AND BEAUTY



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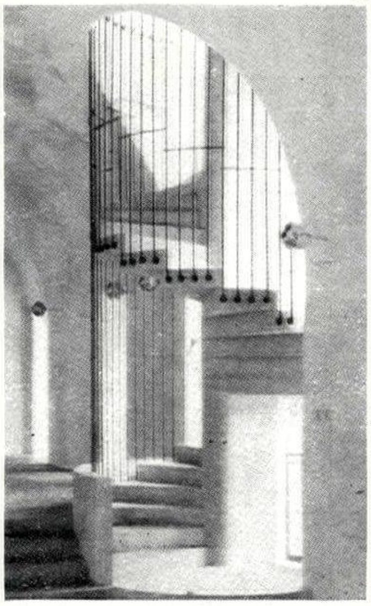

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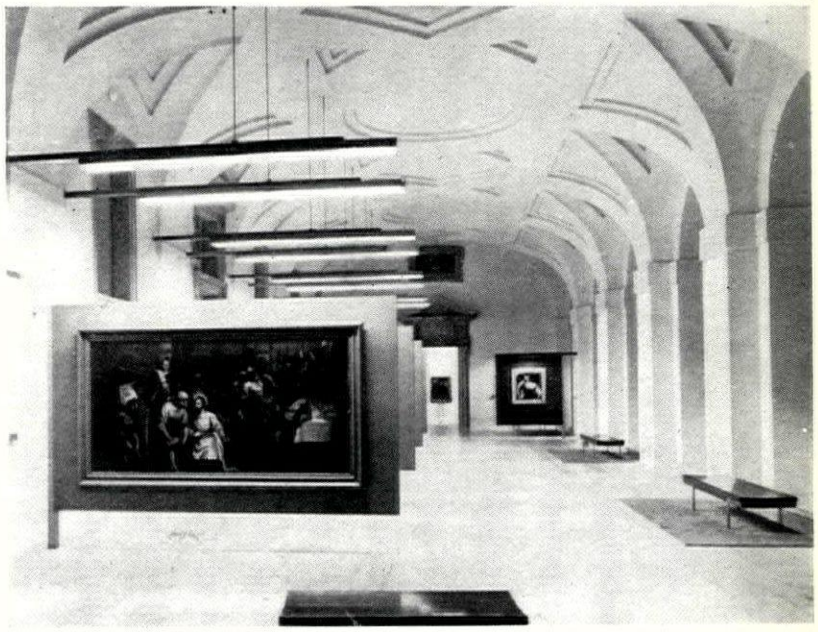
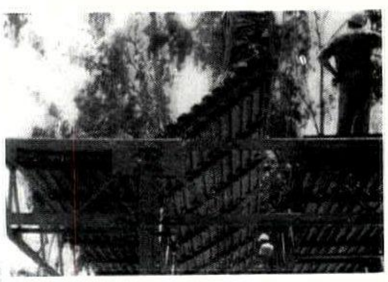


14

The vast interiors of the Castle at Prague, 11, have had sympathetic reclaiming recently. The former Burgrave's house (A on plan) has been turned into the House of Czechoslovak Youth, 12. It has a small glazed court with an exceedingly elegant staircase, 13. Presidential reception rooms, an information centre and a post office have been created (B). The Stables (C) have become an Art Gallery for the galaxy of recently resurrected paintings by Rubens, Veronese and others. The excellent layout is by Josef Hruby and Frantisek Cubr, joint architect of Czechoslovakia's Brussels and Montreal pavilions. In the Rudolf Stable, 14, the bigger paintings have been placed tactfully so as not to obstruct the Mannerist architecture (and the spectacular views) of the window wall.



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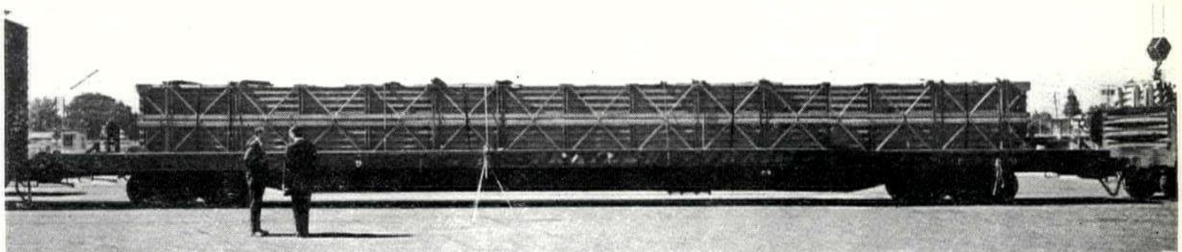

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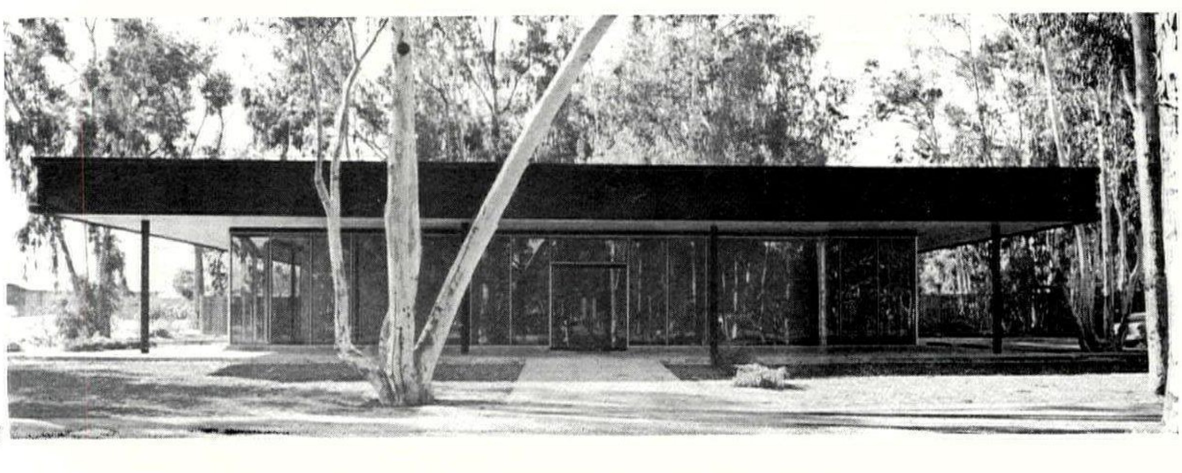
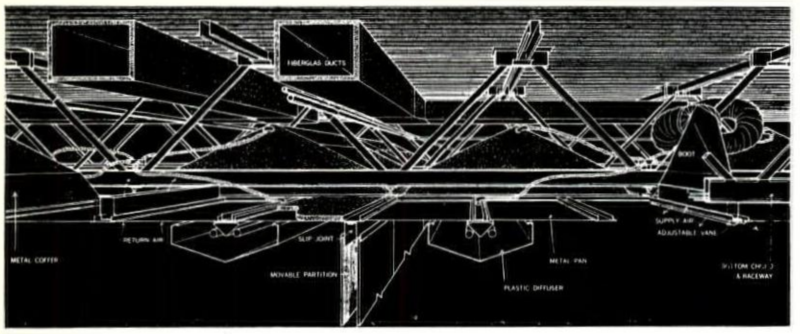
EZRA EHRENKRANTZ'S SCSD SUCCESS



17

America's first component system for schoolbuilding, SCSD, has some instructive lessons for its British forefathers, with whose work its chief architect, Ezra Ehrenkrantz, is familiar. These lessons range from the logistic boldness of carting the entire roof decking of a school on a single road trailer, 15, and then simply unfolding it on top of the 70-ft. span steel frame, 16, to the superbly elegant Chicago-school aesthetic of the broad-eaved prototype building, 17, at Palo Alto in California. There is no feeling here that the badge of Social Responsibility has to be worn on a ragged sleeve to be sincere. The Educational Facilities Lab of the Ford Foundation rounded up clients for twenty-two different schools—a suffi-



18

SCSD SYSTEM

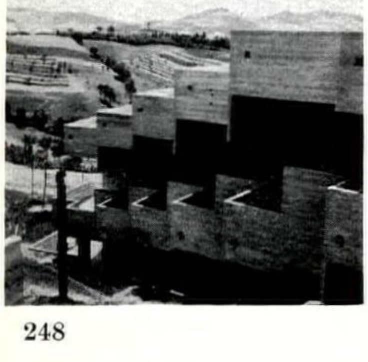
cient minimum to justify the intensive research and development that was then carried out between Ehrenkrantz, Robertson Ward and The Engineers' Collaborative, and the component manufacturers, principally Inland Steel. Services are fully integrated with the roof structure, 18, lighting being related to each five foot square ceiling unit and air conditioning to each group of eighteen such squares. Space within is entirely flexible apart from the off-centre sanitary block, 19, and the plans for the first few schools published in *Forum*, all by different architects, show an astonishing variety of layout. The first to be built is a middle school at Barrington, Illinois, by Cone & Dornbusch from Chicago.


19


20

CAPPUCCINO

The most attractive university residence of the past year is surely that by Giancarlo de Carlo for the Free University of Urbino. It clusters, 20, round an old Capuchin monastery on a hill just outside the city (of *Italian Townscape* fame). The central communal block (see plan, 22) is surrounded by staggered terraces in a straightforward brick crosswall and concrete slab treatment which yet achieves a remarkably subtle relationship, 21, both with the surrounding landscape and, as Peter Blake noted in *Forum*, with the urban texture of Urbino itself.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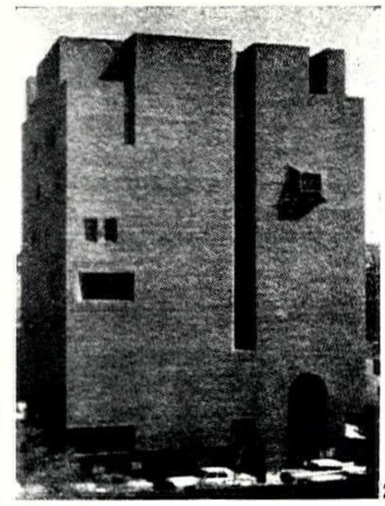
22

MOVING?

Schemes for mobile universities in railway rolling stock have been preceded by the real thing: a university in road hauliers' trailers, 24. This is the temporary accommodation, on the future athletics field, of the University of California's new campus at Santa Cruz. By contrast, most American permanent faculties are a moving experience only emotionally. Who could diagnose from the dark red brick exterior of Caudill, Rowlett & Scott's Larsen Hall at Harvard, 23, that it houses the Graduate School of Education? At the University of Colorado's campus at Boulder, the Team-X-style buildings, 25, by Architectural Associates and Pietro Belluschi are in fact a re-evocation of their rustic Tuscan neighbours. Similar 'keeping in keeping' has activated Marcel Breuer in his first building at Yale, 26, a massive laboratory in which the precast piers and mullions first seen at IBM La Gaude are revealed as spiritual heirs to the Tudor cloisters and mullions of the nearby Harkness tower. I. M. Pei's Earth Sciences tower at MIT, 27, may reflect the classicism of Welles Bosworth's 1916 campus, but in extending vertically in floors of an inflexibly small size he has sacrificed Bosworth's revolutionary use of non-loadbearing partitions beneath Grecian grandeur. In his elegant School of Journalism at Syracuse, 28, Pei has achieved in the hall, 29, the kind of heraldic, mystic glory required by powerful donors by putting most of the actual accommodation below ground, where it will form the podium or footstool for a new quadrangle.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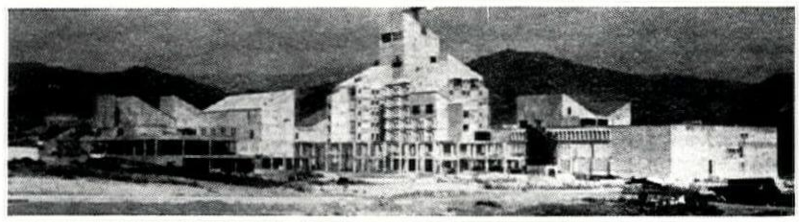
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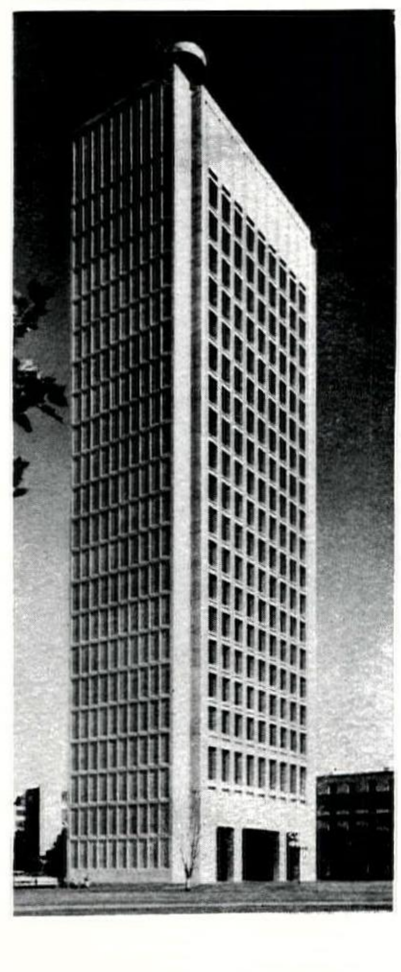


28


29

VIEWS AND REVIEWS

marginalia

PROGRESS AT CHARLES CENTER

Urban renewal is much talked about in the United States, but where plans have materialized or are materializing the results are disappointing, both visually and from the point of view of diversity of use. Charles Center at Baltimore is an exception. The Planning Council of the Greater Baltimore Committee was formed in 1956—as private enterprise, it need hardly be said. The area lies between the main retail streets and the main municipal buildings and was mostly warehousing. It was rapidly getting derelict. The new plan was drawn up by David Wallace. In charge now is William Potts with an advisory committee on which are Dean Perkins, of Penn, Dean Hudnut, formerly of Harvard, and Dean Belluschi, of MIT.

Land is acquired with federal money, but development is mostly private. The first buildings are now complete: Number One Charles Center, an immaculate Mies, T-shaped this time, and facing an interloper, the Blaustein Building of 30 storeys, erected in a Miesian style just across the street and outside the Center—the first striking example of the beneficial effects of renewal. If it had not been for Mies Mr. Blaustein would never have built in this neighbourhood. Next to the Mies building is a low building on a bridge across a sunk street; at the south end of the area a federal building is going on, and also an office building for Sun Insurance which was just getting ready to leave the city altogether. For a theatre by Johansen (chunky concrete) ground has been broken, and for the north end two high blocks of flats are projected. So the plan has proved already that it is viable. What distinguishes it from others is a sensitively designed and detailed system of open spaces large and small, of pedestrian passages and judiciously placed shops. This provides variety in plan. Variety in elevations is secured by retaining some existing high buildings.

Emboldened by this growing success the planning council (director David Wallace, principal planner William Potts) has now turned to the larger decaying area of the Inner Harbour. A brochure also exists written by the planning council and pleading for a linear park all along the Jones Falls Valley, over eight miles long and reaching right down to Pennsylvania Station. It would include the preservation of nineteenth-century mills in the vernacular and has many ideas in common with the Lea Valley plans of the Civic Trust. It looks lovely and is no doubt feasible, but will it be possible to convince an American city? Already one decision has been taken which contradicts the plan. Even so, Baltimore is clearly progressing along lines familiar here but exceptional in America.

CLIP-KIT

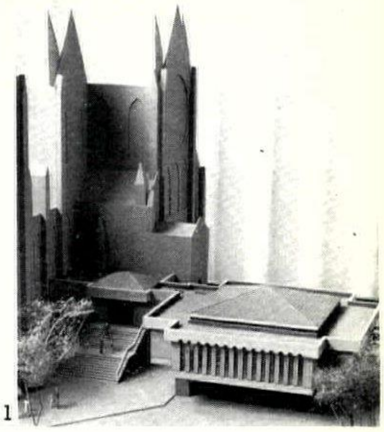
In contrast to the conventional architectural magazines, which show what is actually being built, student magazines show what might be built—and this is always interesting, as a symptom if not as a prediction. From two students at the Architectural Association School, Geoffrey Smyth and Peter Murray, has recently emerged the first issue—or rather, the first clip—of *Clip-Kit*, subtitled *Studies in Environmental Design*. This promising magazine takes the reader beyond the orthodox response of 'I don't read it, I file it' to the logical conclusion of providing just a brightly coloured pink-and-white file, into which pages can be inserted as they are made available month by month.

In terms of layout this is an accurate reflection of the magazine's content, which is concerned almost entirely with the kind of flexible and disposable architecture associated with Cedric (Fun Palace) Price and Michael (Plug-In City) Webb, who both contribute to the first set of pages. These, with *Clip-Kit's* big brother *Archigram*, are evidently the current gods of progressive student opinion. So also is Sant' Elia, one of whose *Citta Nuova* sketches forms the 'first in a series of *Clip-Kit* pin-ups,' accompanied by his *Messaggio* of 1914 in Reyner Banham's (unacknowledged) translation. A typical feature, with exciting if obscurely reproduced illustrations, is 'an introductory page to a series that will examine in detail certain aspects of car production, from construction techniques to the design procedure.' To this Motoring Page are later added the interests of Fashion and Romance: 'One of the students here has designed a suit that you permanently live in—you could take a bath in it just by filling it up with hot water and lying down—so it became a personalized bathroom as well as a suit. Perhaps in the future you won't have houses, just bubble suits which merge with someone else's when you want to get together.'

From the Edinburgh School of Architecture comes the first issue of *Environment*, a broadsheet (very broad) edited by Alastair Macdonald. Marred by an illegible superimposition of illustrations on text (and vice versa), it has an encouraging variety of approach, from a planning study of central Glasgow to an account by Edwin Johnston of a 'Victorian Fun Palace' (F. T. Pilkington's so-called Synod Hall in Edinburgh of 1875, soon to be demolished).

MUNICH COUNTER-ATTACK

The *Münchner Kulturkreis*, the Munich amenity or vigilantes society, has been conducting a campaign to save two buildings from demolition, the house of Ignaz Günther, the greatest German Rococo sculptor (we ourselves didn't save Joshua Reynolds's house, though we have recently saved Gainsborough's), and the Allerheiligen-Hofkirche by Klenze, begun in 1826. The latter is the prototype of all neo-Early-Christian basilicas and especially of Wilton. The campaign included letters of support from experts inside and even outside Germany. However, it proved in vain, and when the Senate of Munich had closed the proceedings by a 'Not to be pursued further,' the Kulturkreis decided to take an unusual step. They published a booklet with all the articles in facsimile. In a letter they say that this has cost them nearly £200, i.e. more than one year's annual subscription. The outcome of this courageous venture remains to be seen. Somehow, one feels that, if it had been done here for the Euston Propylaea, it would not have made any difference to the pigheadedness of British Transport. Among those who joined the plea are Professor Demus ('irresponsible'), Professor Gazzola, President of Icomos, Professor Gombrich ('to destroy is easier than to preserve'), Professor Pevsner ('disastrous and unnecessary'), Professor Sedlmayr ('wholly irresponsible').



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There are not yet many Anglican cathedral chapters, apart from Coventry, who dare employ 'modern' architects (George Pace at Llandaff, Robert Potter at Chichester and Bernard Feilden at Norwich are among the few)—and there are fewer still who would employ one to design their own meeting place. This has happened at Truro, 1, where the local firm of John Taylor has produced an idiosyncratic, slightly Spencean, design for the Chapter Hall, which will make sense of the untidy area to the north of J. L. Pearson's Gothic Revival cathedral. The new hall, with its tall windows of textured concrete, will stand on piers above an open cloister linking the existing Cathedral School to a new entrance for Pearson's north transept.

correspondence

PREVIEW 1966

To the Editors.

SIRS: Having read your latest Preview issue, I feel compelled to congratulate you on your fashion collection for 1966. The selection of current projects shown leaves the impression that this is the dullest outlook ever. This is surely the year of OBTUSE architecture.

It is depressing, but I suppose inevitable, that Stirling's masterpiece at Leicester should be used as an easy pattern for the wholesale production of sterile designs of the obtuse-angled variety. The new style, for such it is, deserves a definition which is readily found in the little Oxford Dictionary; 'Obtuse, a, of blunt form; not pointed:

American tourists who line the rails as their liner steams up Southampton Water are often excited by the mirage of a Royal Palace: a giant classical facade more than a quarter of a mile long, its three turrets looking landwards over 227 acres of pinewoods. The mirage is to fade soon, for the Ministry of Public Building and Works has decided to demolish the Royal Victoria Military Hospital at Netley, seen here, 2, from its private jetty in a photograph of 1880. Built in 1856–63 to the design of a Royal Engineers surveyor named Mennie, the hospital was from the first the subject of vituperative criticism, including a parliamentary inquiry. Palmerston wrote that 'the comfort and recovery of the patients has been sacrificed to the vanity of the architect, whose sole object has been to make a building which would cut a dash when looked at from the Southampton River'; in The Builder *George Godwin (see 'Another Blow for Life,' AR, December 1964) said that the proximity of the latrines to the wards ensured that 'more disease will be generated there than is cured.'*

2

greater than one right angle and less than two; dull, slow of perception.'

If architecture is so easily made, imagine the new horizons that could be opened up by the widespread use of transistorised set squares. Imagine it; architecture untouched by human hand, first previewed in THE ARCHITECTURAL REVIEW for January 1966.

Yours, etc.,
IAN BALE.
Elvington, York.

To the Editors.
SIRS: Looking through the section on housing in your January Preview issue, I find much to admire. Everywhere there is evidence of a real attempt to produce environments which are interesting and human. Unfortunately, in a desperate attempt to avoid the monotony which has been the main characteristic of housing since the war, architects have produced increasingly complex (and expensive) sections and plans. In many cases the functional side of the plans and sections seems to have been thrown overboard solely in order to achieve a three-dimensional complexity.

If built in new materials this sort of architecture might be excusable and welcome, but nine out of ten schemes are built with traditional load-bearing brick and timber floors and roofs. If we are honest with ourselves we ought to admit that it is neither cheap nor functional.

For a small house in traditional construction the simple brick box without the complexities of split level sections, rooflights, and L-shaped plans, is still the cheapest and most functional dwelling unit. With prices going up and up are we, as a profession, really doing our part by designing dwellings which cost, I suspect, 25 per cent to 50 per cent more than they need to?

Yours, etc.,
N. E. WIGG.
Teynham, Kent.

To the Editors.
SIRS: In the January issue of the REVIEW, the following question is put: 'And if the Farnham School of Art can manage a plan for growth, why not Cambridge or Bristol Universities?' You will be interested to know that Michael Grice, of Architects' Co-Partnership, is planning consultant for the general development of the University of Bristol precinct, and has been working on the university's 'plan for growth' since April, 1965.

Yours, etc.,
DOUGLAS JONES.
(RWA Professor of Architecture, University of Bristol).

IRISH INVENTORY
To the Editors
SIRS: Your survey (August 1965) of the situation in respect to ancient monuments in Northern Ireland needs some correction. The number of monuments that have been scheduled is not 172, but 372. Of these, 44 are in the care of county councils, and the rest are in private hands. *In addition*, there are 75 monuments in State care.

It is not true to say that the provisions of the N. Ireland Ancient Monuments Acts 'do not enable the Minister to prevent private owners from interfering with such buildings for more than a few weeks.' Section 6 of the 1926 Act empowers the Ministry of Finance to place a Preservation Order on any ancient monument thought to be in danger. If confirmed by Parliament (at Stormont), such a Preservation Order remains in effect until revoked by the Ministry, which may be never.

A concise preliminary survey of all the ancient monuments of Northern Ireland, based on pre-war work, was published by the Government in 1940. The Archaeological Survey of Northern Ireland was set up in 1950. Its first county inventory (Co. Down) will be published this year. The first systematic examination of the industrial archaeology of any region of the UK was published by HMSO Belfast in 1963, in the form of Dr. Rodney Green's *The Industrial Archaeology of County Down.*

Yours, etc.,
H. A. MEEK,
(Ancient Monuments Architect, Government of Northern Ireland).
Belfast.

The drawings of traditional buildings in Ceylon reproduced on pages 143 and 144 of the February AR were the work of Barbara Sansoni, not of the two architects whose work was illustrated earlier in the issue, as stated in the caption. Another of Miss Sansoni's drawings, showing Embekke Temple is reproduced above, 3.

POST OFFICE TOWERS
To the Editors.
SIRS: Surely the GPO should have been commended, not cautioned, for the two towers illustrated in your December issue. Judging from the pictures you have printed the Tottenham Court Road version may be amusing, but those at Stokenchurch and Cannock Chase are decidedly impressive and can represent the twentieth century on the hilltops just as well as follies and monuments to dead admirals represent the eighteenth and nineteenth centuries.

Yours, etc.,
ALISTAIR BEVINGTON
Yonkers, NY.

WATERWORKS IN LOS ANGELES
To the Editors.
SIRS: Your December issue refers to 'a rather grandiose project' in Beverly Hills, California, 'whose prospects of completion are rather dim' since at the time your photograph was taken early last year only a decorative fountain and two tall buildings had been completed. I have lately returned from a visit to that project and found the scene there one of intense building activity. In addition to the two office blocks, two 20-storey flats have been completed, a large luxury hotel is scheduled for opening this spring, a vast multi-storey shopping centre is in full operation, and ground has just been broken for a 24-storey office block and a theatre named in honour of the late Cole Porter.

Curiously, this project is not located in Beverly Hills, but is within the Los Angeles city limits. It is being wrongly advertised as a Beverly Hills attraction—possibly because of snob appeal. Furthermore, the Beverly Hills town by-laws prohibit the erection of buildings of over 12 storeys and of course several of the structures built and planned for this scheme are much higher.

I have been reliably informed that all the other buildings planned for the 180-acre project, known, as your article stated, as Century City, are in various stages of design, and that the entire scheme is moving forward according to the original schedule fixed by its sponsors, the Aluminium Corporation of America.

Yours, etc.,
GEORGE BETANCOURT.
Seattle, Washington.

book reviews

WORLD WIDE
L'ARCHITETTURA MODERNA IN GIAPPONE. *By Manfredo Tafuri.* L'ARCHITETTURA MODERNA NEI PAESI SCANDINAVI. *By Stefano Ray.* L'ARCHITETTURA CONTEMPORANEA IN FRANCIA. *By Giorgio Piccinato.* ARCHITETTURA SOVIETICA CONTEMPORANEA. *By Vieri Quilici.* ARCHITETTURA TEDESCA NEL SECONDO DOPOGUERRA. *By Giovanni Klaus Koenig. L. Cappelli, Bologna.* 1,000 *Lire each.*

These first five books of a series directed by Leonardo Benevolo are a commendable undertaking, especially because the conversion into paperback form of the historical records of the Modern Movement in architecture is an urgent necessity. Every generation needs perhaps to have certain concepts and theories, taken for granted by the initiated, repeated and translated into a different wavelength. It takes faith and enthusiasm to begin from the beginning an unpatronizing history of the Modern Movement for those who are approaching the subject and do not presume to know all. These texts are crammed with facts rather than criticism and opinions: no mean achievement in Italian architectural publishing.

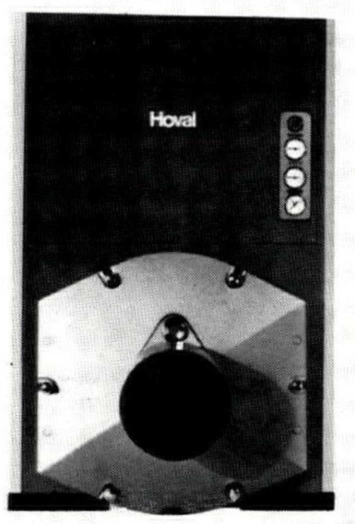
The limitations are obviously contained in the programme set by the editor: to make a short guide to the Modern Movement and its interrelated national and international strains. By providing an objective historical background to national architectural development, this series becomes complementary to the *Ullstein Bauwelt Fundamente*, the excellent reprints of original documents and monographs by Le Corbusier, Taut, El Lissitzky, etc. For instance the volume on contemporary Soviet architecture provides the points of historical reference of progressive art and architecture through the maze of political interference, seldom exposed in a satisfactory way. One is grateful to see gathered in one volume on modern Japanese architecture at least twenty years' worth of reporting and research. This volume also includes an extensive bibliography, which the other books of the series unfortunately lack. The proportion of pictures to text is approximately one third, but the text is also enriched by plans and sketches. At 1,000 lire per volume (11s. 3d.) they are excellent value for the student and the layman. MARY FACETTI

STORY OF THE SYNAGOGUE
THE ARCHITECTURE OF THE EUROPEAN SYNAGOGUE. *By Rachel Wischnitzer. Jewish Publication Society of America: Philadelphia* 1964. $6.

What is fascinating about Rachel Wischnitzer's scholarly study is the fact that to us, I mean to the common and garden architect—and even to the common and garden Jew—the subject is new. The great majority of us have only the vaguest idea of what a synagogue is, what distinguishes it from a Catholic church or from a Protestant temple, and which shapes it has assumed in the course of its long history. That this is so is only partly our fault. Our ignorance is, in fact, part of that long history; for most of the synagogues (belonging to the last or the present century) that we see are no longer synagogues in the true sense of the word.

Jewish emancipation, promoted by the French Revolution, brought in its wake the reform of the jewish service, and this reform is part of the assimilatory tendency of Jewry in the west, and, to a lesser extent, even in the east of Europe. Under its impact, the synagogue building approached the church: the organ, the pulpit, the apse, stained glass windows and seats facing the apse at the east end of the hall of worship—these are some of the innovations which destroyed the original shape of the jewish 'school,' and the substitution of the word 'temple' for the time-honoured 'school', put, so to speak, the seal upon this process. The only feature which is still retained is the women's gallery; but even this separation of female from male worshippers has become hardly more than a token in, for example, the Leghorn synagogue of 1962 with its open balustrade and staircases rising inside the hall of worship.

Yet the beginnings of the synagogue in antiquity are not dissimilar to its nineteenth century form. It has been,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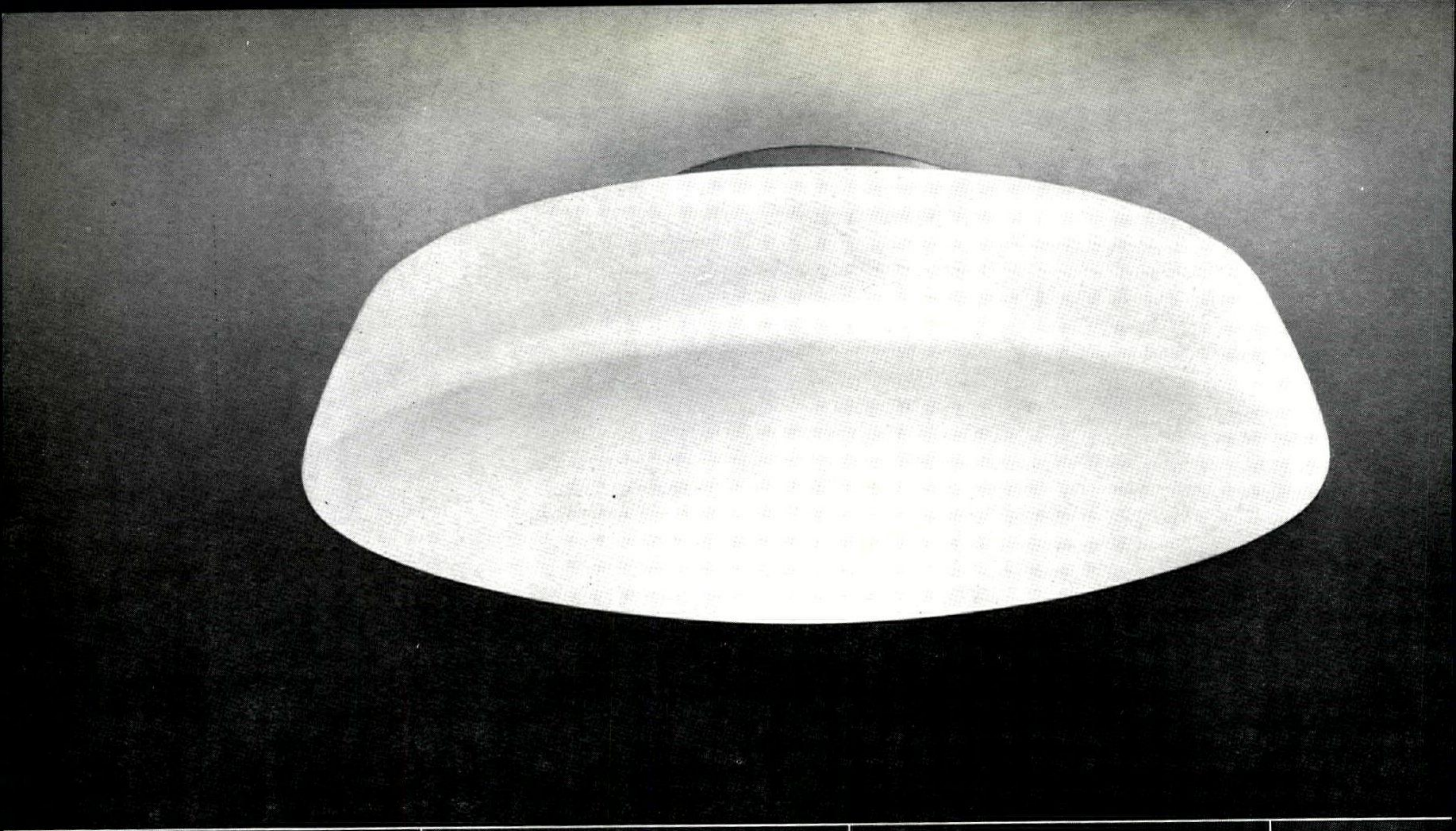

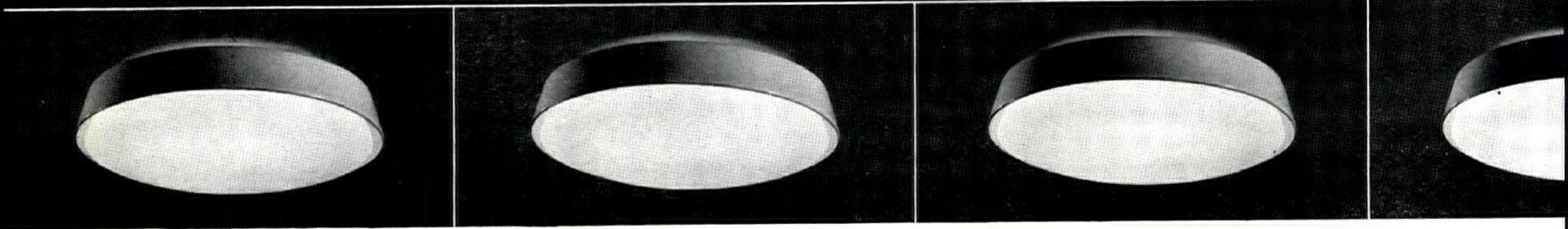

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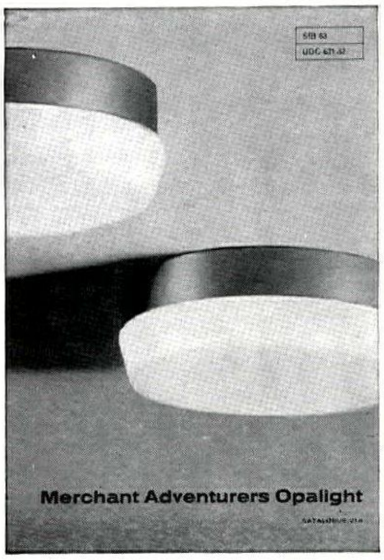

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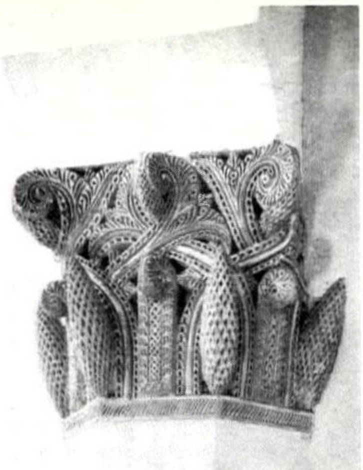

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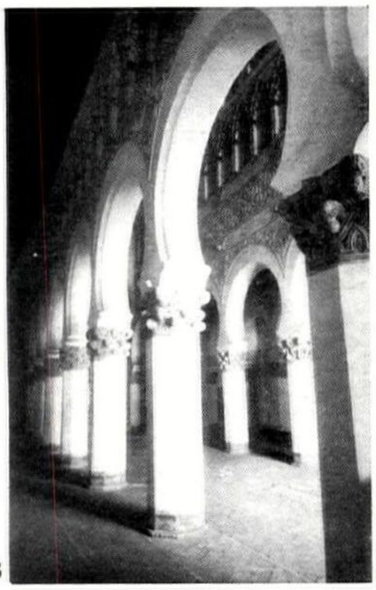
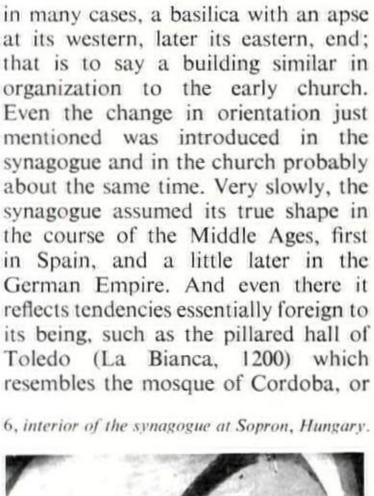


4 and 5, Toledo synagogue (La Blanca, 1200). 4, shows a capital, 5, the pillared hall.

in many cases, a basilica with an apse at its western, later its eastern, end; that is to say a building similar in organization to the early church. Even the change in orientation just mentioned was introduced in the synagogue and in the church probably about the same time. Very slowly, the synagogue assumed its true shape in the course of the Middle Ages, first in Spain, and a little later in the German Empire. And even there it reflects tendencies essentially foreign to its being, such as the pillared hall of Toledo (La Bianca, 1200) which resembles the mosque of Cordoba, or the Altneuschul of Prague which resembles a Gothic chapter house. This medieval type is no longer easy to study, as most of the buildings were in Central Europe, and they have been radically destroyed by the Nazis. This makes the survival all the more interesting of the synagogue in Sopron in Hungary, mentioned by Mrs. Wischnitzer only once and in passing. By the kindness of Dr. Kubinsky I am able to show an interior of this late thirteenth century building with fifteenth century alterations—to the best of my knowledge it has not been illustrated so far outside Hungary.

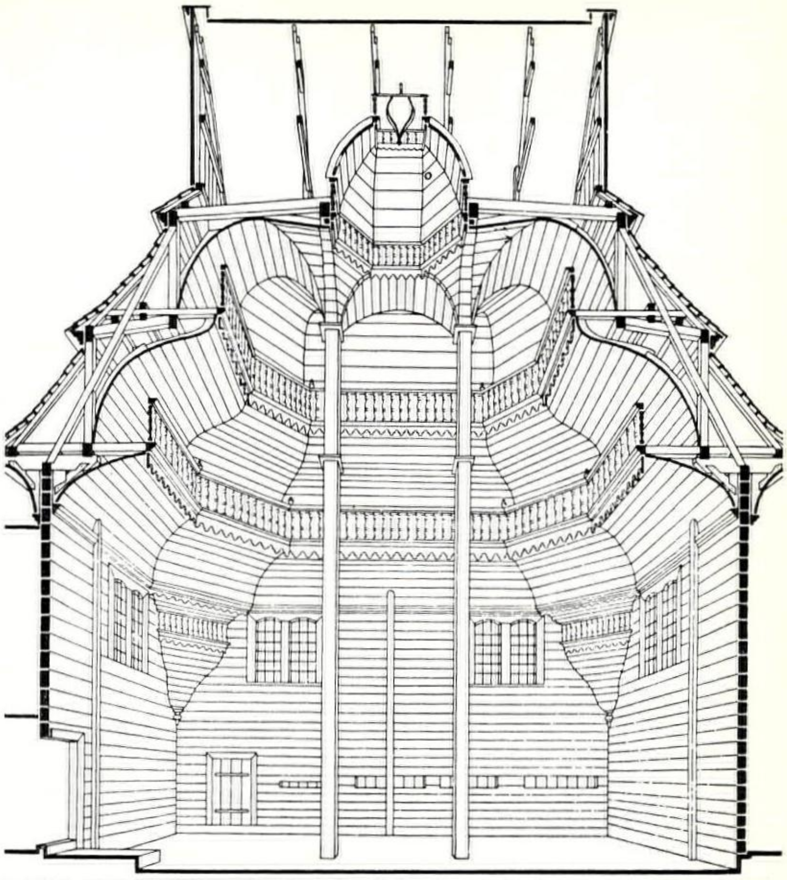
6, interior of the synagogue at Sopron, Hungary.



The synagogue is a school, that is to say a place of reading, and its centre is the raised bimah—the Hebrew word for stage. The location of the bimah may change. It may be quite close to the entrance, or it may be pretty close to the ark at the east end of the hall. Whichever its position, the benches of the worshippers run along the long sides of the hall; they face the bimah, *not* the ark. Therefore the apse, the culmination of the christian house of worship, has no place in the synagogue. It disappears in late Antiquity and is resurrected only in the nineteenth century. A shallow, curtained niche is all that is required, and in many cases the ark is simply placed against the east wall, and its curtain is attached to it. The floor of the main hall is lowered a few steps. This may have a symbolic meaning, the prophet Daniel's *de profundis*; or it may be a means of gaining height for the main room; for the medieval authorities would not permit a synagogue to rise as high as a neighbouring church. There are cases, in medieval Poland, where the ruler had to justify a high synagogue building on grounds of public utility, such as forming part of the city's fortifications. Women were strictly excluded from the hall. They were placed in adjacent rooms—or aisles—screened from the hall with a densely wrought lattice grille. Later, they were placed upon single or double-tier galleries which, again, were screened from the hall itself.

Stylistically, the synagogue building reflected the tendencies of the mosque or the church of its age: in Spain and Portugal, arabic or mudejar decoration was used; in the Holy Roman Empire, the hall had Gothic vaults. Sopron is an excellent example of this. This can be explained by the fact that jewish builders did not exist. We know the names of certain jewish carvers and painters, particularly in seventeenth- and eighteenth-century Poland. It remains an open question, if, in certain cases, a Jew has been responsible for the whole layout of a synagogue. On the matter of decoration, it may surprise some people that the commandment 'Thou shalt make no pictures' was at no time taken very seriously in synagogue building. We know of figured mosaics and paintings in antique synagogues (Dura Europos), of rich plant capitals in Spain and of symbolic paintings in Poland.

Once the synagogue building had liberated itself from the mosque or the church, its builders aimed at placing the bimah in the central position which is its due. In Germany—the Altneuschul—the hall of worship has two naves of equal height, and the bimah is placed between the two central columns. In Prague, this arrangement results in a curious five-partite vault. This, also has been interpreted as having a symbolic meaning, rather as avoiding the symbol of the cross. It seems more likely that the sexpartite vault of the early Gothic church had to be modified to suit the two columns dividing the two naves. For in the later synagogue at Kasimierz, in Poland (early fifteenth century), quadripartite rib vaults were used. The same is true of the earlier building at Sopron.



7, Wolpa synagogue, cutaway view. Illustrations 4, 5 and 7 are taken from Rachel Wischnitzer's book.

The bimah received its grandest and most significant architectural expression in seventeenth-century Poland. It was placed in a bay between four pillars in the centre of the hall, and these pillars supported the vault. Lublin (1567) and Lancut (late eighteenth century) are probably the most striking examples of this impressive arrangement. At Lwow, the four central pillars divide the hall into nine square bays, and the bimah was free standing in the centre square.

The women's gallery was probably first introduced in the sephardic (Portuguese) synagogues in Holland, and this gave rise to very impressive structures. The great Portuguese synagogue of Amsterdam (1639) is probably the finest; it is a space Auguste Perret would have enjoyed. Equally grand structures are certain wooden synagogues in eighteenth-century Poland, such as Wolpa, whose galleries and central dome—resting on four slim posts (again framing the bimah)—were masked by a succession of curved lean-to roofs.

In spite of official restrictions of the severest kind, such as the interdiction of a dome visible from the outside, or the placing of the synagogue away from the public street, communities, particularly in Poland, were able to create highly original, truly synagogal buildings. It may well be that the restrictions actually contributed to their success, for emancipation produced nothing to match them. Neo-classical, neo-Byzantine and romanesque and, during the nineteenth century, a host of neo-Moorish synagogues were erected, some of them of impressive size; but only certain halls of the 1850's and sixties are remarkable, because they used cast-iron columns. The most interesting of these halls is, to my mind, the Berlin synagogue in the Oranienburger Strasse of 1859-66, by Knoblauch and Stüler, a space of which the great Labrouste need not have been ashamed, except, possibly, for the fact that it was somewhat over-decorated.

It is a rather sad reflection that the synagogues of the inter-war period—not to mention those built after the second World War, are so insignificant. Sir Owen Williams's Cricklewood synagogue of 1938 is, at least, an interesting structure, and Meyer-Lévy's Strasbourg synagogue of 1958 has a quiet and pleasing interior following the Perret tradition. Rich possibilities are waiting to be exploited, mainly in the Dutch and the Polish traditions of the seventeenth century. But without reverting to the orthodox service of those days it will not be easy to renew those truly synagogal traditions; though I, for one, still think that it should be possible. The churchy synagogue is, after all, foreign to the jewish service, orthodox or reformed. With one exception—the complete exclusion of women from the service—those traditions have not lost their significance. Every architect who is to build a synagogue can be grateful to Rachel Wischnitzer for having, for the first time, placed their possibilities before him.

JULIUS POSENER

The name of Los Angeles is popularly associated more with film-making than with oil getting, but Southern California is a rich oil-bearing region and within the city itself there are oil fields on the hills and oil-pumps working day and night on the lots of film studios, in junk yards, beside fashionable restaurants, on golf courses and in the market. The only place where the oil is publicly visible is the La Brea tar-pits, photographed opposite by Penelope Reed and now preserved as a national curiosity. A park has been built round them and their verges fenced off, so that passers-by can stop to watch the slow rising oil bubbles pierce the glutinous surface and, as they break, leave sinister patterns between the green weeds. Beside the largest pit is the Los Angeles Art Museum (opened last summer) and on the banks are statues of the prehistoric animals whose bones have been found beneath the surface of the pits.

RAIL CLOSURES AND AFTER

It becomes increasingly necessary to look at transport as a whole. More cars on the road has resulted in dwindling revenue to the operators of buses and trains; the clamour to 'make public transport pay,' perhaps instigated by those with an interest in its demise, has caused drastic pruning of rail and bus services. This has happened particularly in rural areas, but the difficulty of finding staff at a wage compatible with revenue has caused cuts in the towns as well. The cost of subsidies to public transport might well be less than the cost of all the rebuilding the wasteful use of private cars involves.

Nevertheless the present picture is one of dwindling public transport services—a picture that deserves a close examination now that the rail closure programme has been in operation a couple of years. It was in 1959 that Ernest Marples became Minister of Transport and announced in the House of Commons his intention to curtail rail services: 'the whole railway system will have to contract; we have to have a smaller type of railway system than in the past.'* In 1963 the *Reshaping Report* was published to give effect to the decision. How has the implementation (149 closures approved by Mr. Marples and some 70 by his successor Mr. Tom Fraser) affected the life of the community?

The first impact of the closure programme was on the rural communities, and, in so far as the hopeless cases had already been weeded out before 1963, the effect was considerable. The trains taken off were found to be carrying not a dozen or so passengers but often several hundred, at least at certain periods of the day. The *Reshaping Report* had published a map of bus routes, and this had led to a general belief that the existing bus network was sufficient to cover the problems of the country folk. In practice the Minister has not authorized a single closure without laying down conditions for new bus services. These new services have in turn proved to be largely unremunerative; making good the deficit has become the responsibility of the Railways Board.

The problem is that the bus is never a true substitute for the train; each has its own well-defined sphere of operation. Always the journey time by bus is longer than by train, and even where the railway stations are poorly placed in relation to the communities they serve, there are always those who live and work close to the station and who are, therefore, remote from the bus. Those who formerly used the

*Hansard 613 C. 371.

train do not take easily to the substitute bus; it is not an adequate alternative. In the House of Lords on August 3, 1965, nine examples from a larger total were quoted where not only did the new bus fail to pay its way but patronage was so small that steps had been taken by the operators to have the service withdrawn as unnecessary. The passengers, hundreds of them, formerly using the trains had melted away because the new service did not match up to their needs. A combination of alternatives is possible; users may cease to travel, they may move residence or employment or they may take to travel by car. Usually the last is the case, but they have not necessarily become new car owners; quite often they have not previously used a motor car for commuting because the train was equally handy, comfortable or direct. Commuting even in rural areas has been shown by the census of users supplied to objectors to be considerable.

Another important daily user of rail transport (rural) is the scholar, both for elementary and for higher education. At the official public hearing of the Transport Users' Consultative Committee, the Railways Board countered suggestions that hardship would arise from this cause by saying that 'the provision of transport for school children is the responsibility of the county council.' In fact the responsibility is a qualified one; the county council are not responsible for distances under two miles (and two miles is quite a long walk), nor are they responsible for scholars attending private schools (still quite an appreciable number), nor for those attending evening classes.

Children are frequently scattered over a wide area. Before a rail closure they make their own way to their local station to travel to the various county centres; the fares are reimbursed. After a closure these children frequently become competitors for places on the workers' buses, no doubt after an earlier start from home and a longish walk to the bus stop. Alternatively a special bus may be hired by the county council, the cost of which to the ratepayers is considerable because all available vehicles are already in use and because of the scattered nature of the collecting operation. The number of occasions when a main road parallels a closed railway has been greatly exaggerated; bus times are 200 per cent or more longer than train times. At the end of the school day the problem is eased because school finishes before the workers start for home, but it is complicated because not all the children are ready to return at the same time. If all must use the same bus, then games and other after-school activities, which are important educationally, become very circumscribed.

A further complication with buses and children is the understandable reluctance of parents to allow their children to wait on the roadside and the added danger of road as compared with rail transit. At East Linton in Scotland, after the station was closed, the parents met together and arranged car transport for the children to another station, so determined were they that the children should not use the alternative service which had been provided by road into Edinburgh along a main road notorious for accidents. With regard to the evening educational classes, no statistics are available to show the effect of a reduction in public transport, but enquiries have demonstrated that a walk or cycle ride is a quite definite deterrent. Families with children are encouraged still further to forsake the country for the town.

A different class of traveller is the one who chooses his home near to transport services in order to avail himself of good communications. Businessmen, to take one example, with main interests in Birmingham but with occasion from time to time to visit London and Bristol, have made their homes at Stratford-on-Avon. In the past they enjoyed not only fast trains to Birmingham (29 minutes) and London (via Leamington) but frequent expresses to Cheltenham, Gloucester (for South Wales) and Bristol. No complete closure proposal has yet been announced to the public, but one has been discussed with the staff. In anticipation the service to Birmingham is now lengthened to 40 minutes and the day traveller to Gloucester has but one train each way and a change there if he wishes to proceed to Bristol.

Two effects are already noticeable: the search for new homes elsewhere by those who need this kind of transport, and still more congestion and confusion in Stratford's already overcrowded streets. It is not an isolated situation; a representative of a firm making steel structures lives in Basingstoke because most of his travelling is in the south of England. He must, however, go to Leicester from time to time. There is a through train, but when this is taken off next year he will not travel via London (as British Rail suggest he should) but go by car throughout. The journey via London is an inadequate alternative because it involves that most awkward of changes, from one terminal station to another. Maybe the sum of people diverted from rail to road in this kind of way is not great, but the fact that they will add to road traffic on certain roads already heavily loaded at awkward times of day is having its effect. Those of us whose main focus is London are all too apt to ignore the importance of inter-city travel on a route which is not to and from the metropolis.

In the conurbations the reshaping axe, which by its nature can only remove and never add on, has not fallen sharply except (poetic justice) in the motor-car manufacturing area of the West Midlands. About 100 miles of line have already closed to passengers and another 100 miles are immediately threatened. It was the railways that brought mobility to the labour force of the West Midlands conurbation. Congestion from the growing number of cars and a severe shortage of bus crews in Birmingham, Wolverhampton, Coventry, Dudley and Walsall is destroying that mobility. Buses were provided in place of the Birmingham-Walsall service by train via Penns; the residents associations complain that they either do not run because of lack of crews or they are full before they reach the intermediate places.

In the Cannock Chase area last summer an annual outing to Blackpool was organized for more than 2,000 people by road motor-coach in a convoy of 60 vehicles because the Railways Board refused to re-open the local station (still intact) for a special train.

Only five years ago lines which connect Dudley, Walsall, Wolverhampton, Rugeley, Burton-on-Trent, Nuneaton, Coventry, Leamington and other towns were included in the Midland Region's electrification scheme. Money had already been spent on raising bridges (for clearance of live wires), drainage and other civil engineering works; now the trains have gone. Hardly had a new colour light signalling scheme at Birmingham Snow Hill been completed, costing £250,000, than its impending closure was announced. This main station, in the most central area of England's second city, with the lattice of connecting suburban lines, appears ideal for reconstruction as part of a rapid transit off-street rail system.
While there is so far no move at Birmingham to make use of assets before they are ruthlessly torn up, the Merseyside conurbation has got off the mark. Liverpool proposes a wide railway loop line, fed by bus services, with a more restricted loop for the Mersey Railway (serving the main line termini) and platform communication between the two. Closure and threat of closure of rail services has brought home to Merseyside the need for action. It is not enough to defend the present, or even to get back to the more comprehensive facilities of the past; it is essential to plan progressively for the future. It is impossible in the larger cities to provide for complete motorization; all journeys by car. In Liverpool complete motorization would involve 85,000 parking places in the central area. New roads are essential and Liverpool is taking the sensible line of converting the present radial system into an irregular grid in order to increase capacity. But when all is said and done private transport cannot cope with the situation, and off-street rail transport has been demonstrated as the best medium in all respects to move the masses. It is fourteen years since Brussels connected its railway termini, by means of tunnels for six tracks, between one side of the city and the other, an arrangement that not only permits the free flow of international traffic (represented by Ostend to Istanbul) but also of suburban traffic across the city—suburb to suburb. Paris, Chicago, San Francisco, and a score of other cities are now doing the same thing. No city could be more road-minded than San Francisco but after studying all the alternatives, including monorail, they came to the conclusion that only a 70-mile rapid rail transport system could solve their problems.
Present rail services have proved inadequate because of frequency or location of terminals, or a combination of these things. We need to transform them from being a relic of the Victorian era into a symbol of twenty-first century Britain. In the cities new underground lines are needed to enable the trains to deposit their loads not on the perimeter but in the centre where men work. In the countryside trains also remain essential especially to avoid the overlong tedium of travel by bus and the traffic delays when the city is reached. But country trains must be delivered from the trappings of the past. Waiting rooms, station master's office, lamp room and even guards on trains must give place to bare necessities, such as waiting shelters as protection from the worst of the elements and provision for the traveller to pay his fare to the train officer, who may be the driver. Discussions at the level of the International Railway Congress Association (*Bulletin*, November 1963) have demonstrated that these things are done elsewhere; they can therefore be done here.
A better understanding is essential. A council may obtain a grant of up to 75 per cent for new road works in their area from the central government; no grant at all is available for a public transport scheme (including rail transport) which could provide a solution at a fraction of the cost of providing for more cars. But local authorities and operators must not just wait for grants; they need now to prepare the kind of scheme which demonstrates the need for grants; the operators need also to take all steps they can to reduce their own costs.

GAS BOARD HQ

INDUSTRIAL OFFICES, NEWCASTLE UPON TYNE AND PARTNERS

architects: **RYDER AND YATES AND PARTNERS**

photographs by Philipson Studios and H de Burgh Galwey

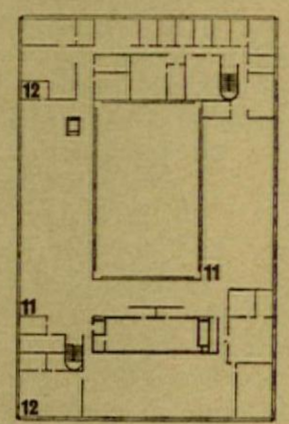
This is an office building to accommodate all the central activities of the Northern Gas Board—accounting, engineering, legal and administrative—which were previously scattered throughout Newcastle. It is called Norgas House and stands in parkland to the south of the artificial lake which forms the centre of the new township of Killingworth, an extension of the main urban area of Newcastle which will soon be directly linked by urban motorway, via the Tyne Tunnel, to the Durham seaboard.

Maximum flexibility was required since the Gas Board's activities are subject to change and extension. This has been achieved by planning the building on two main levels and leaving most of the ground floor temporarily open, with 12,000 sq. ft. of it available for use in the future without disturbing the remainder. The heating installation has been designed to allow for this future extension. In the office space demountable partitions are used throughout on a 5ft. 3in. modular grid. Modular ceiling panels ensure a unified interior.

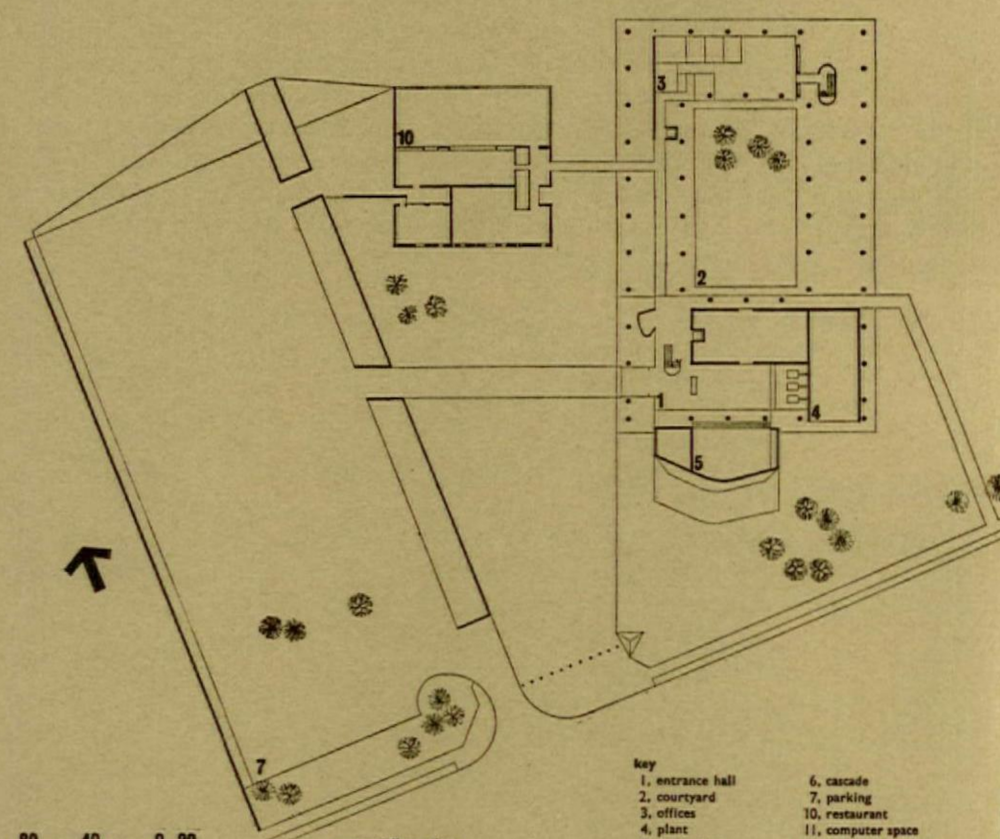
Construction is with a steel frame on pile foundations. The framing consists of two-storey single bay secondary frames carried on bridge beams of 21ft. span, themselves carried on three-storey main frames. The upper part of the main frames is similar to the secondary frames and the lower part consists of columns with deck beams, cantilevered out at either end and carrying the upper frame supporting the second floor and flat roof. The two upper floors are clad with anodized aluminium curtain walling with infill panels of vitreous enamelled steel sheet, backed by asbestos and expanded polystyrene. Cleaning is by a suspended cradle, with tracks at roof level.

The main office areas and control room are air conditioned. The restaurant and kitchen have forced warm air heating and mechanical extract ventilation. The conditioned air in the offices is distributed from induction units at each window cill. The boiler house, containing three gas-fired boilers, is placed at one end of the entrance hall and can be viewed by visitors through a plate-glass panel.

Consultants, R. W. Gregory and Partners. Quantity surveyors, Martin Sheffield and Bristow.

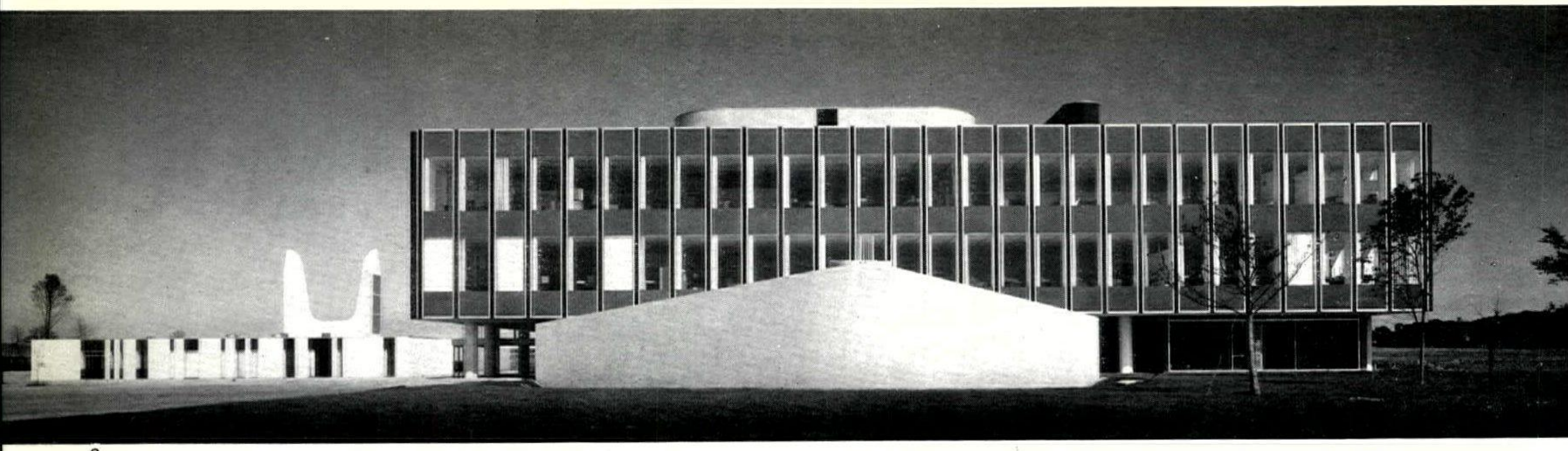


first floor plan



ground floor plan

1, opposite, the building from the n… with the artificial lake in the for…



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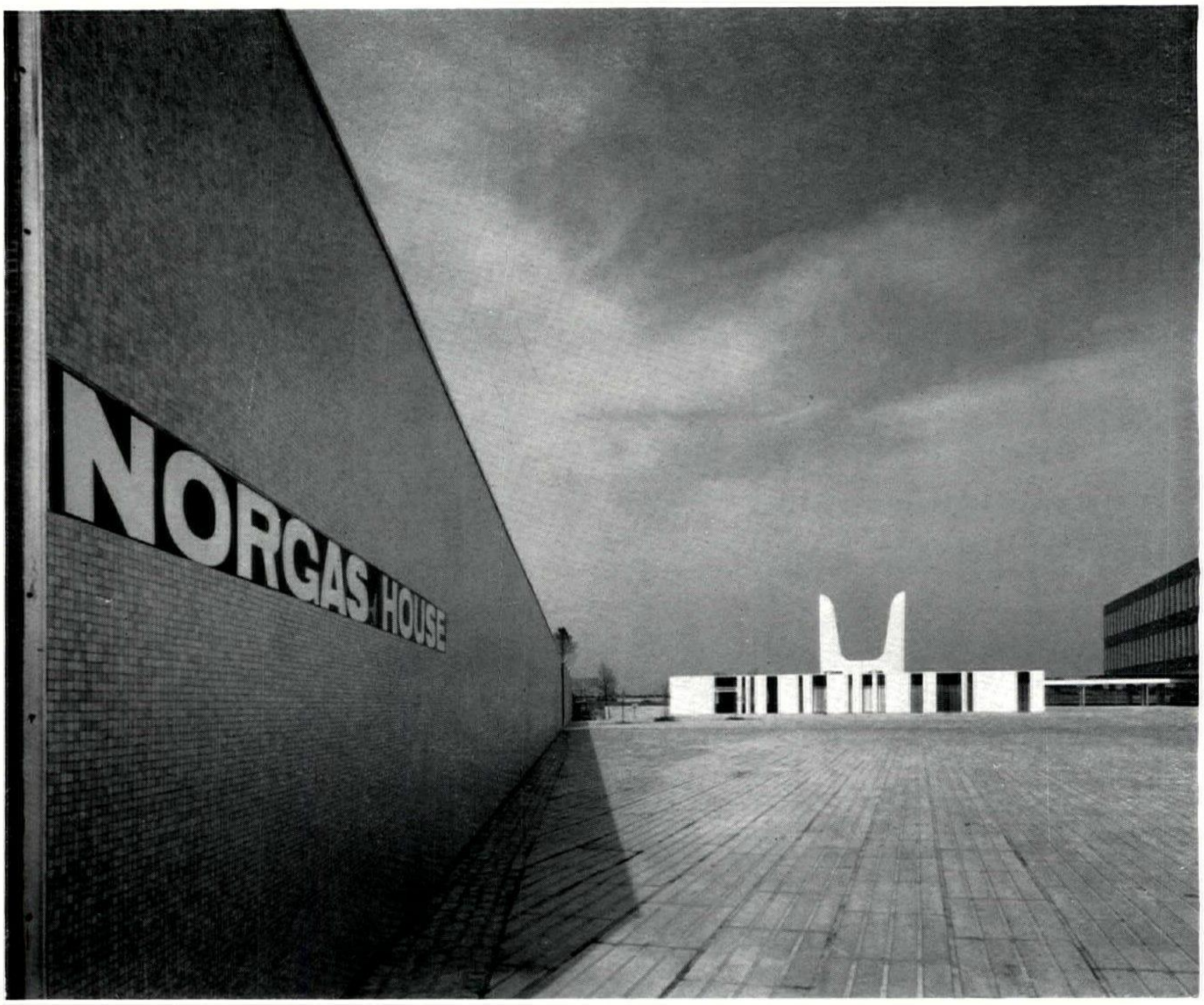
INDUSTRIAL OFFICES, NEWCASTLE UPON TYNE



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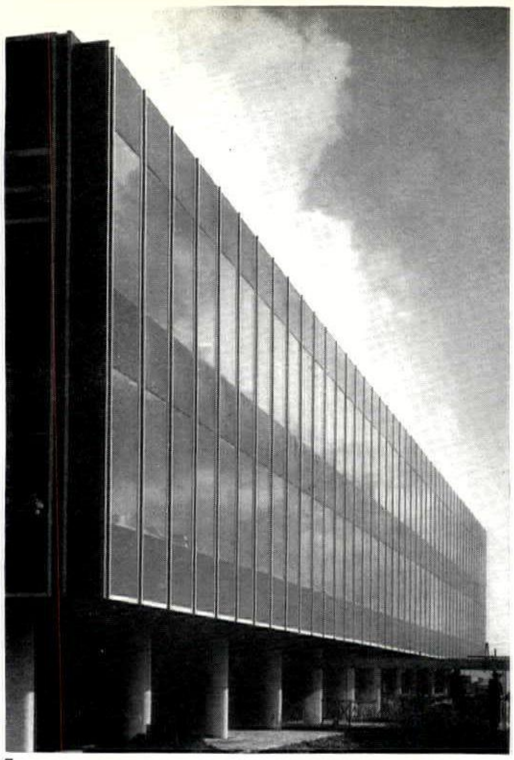

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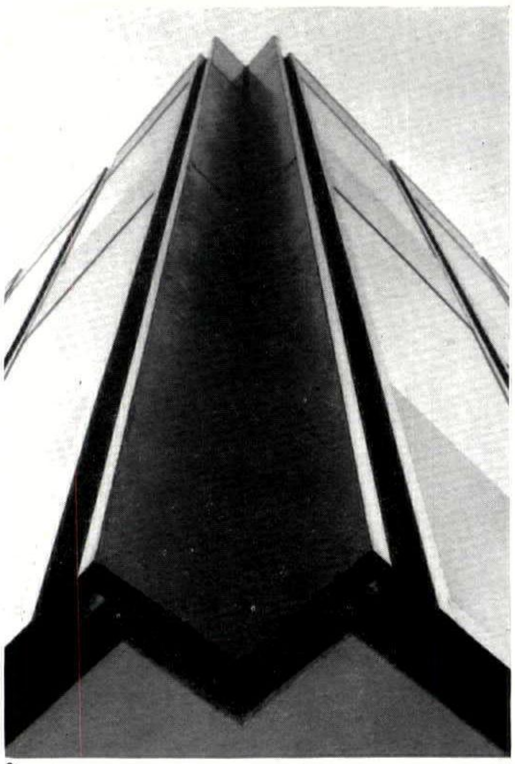
2. 3 and 4. opposite, sequential views of the south-west front. The lettering shown in 3 is used throughout for directional signs, another was illustrated in Stop Press, AR December 1965.



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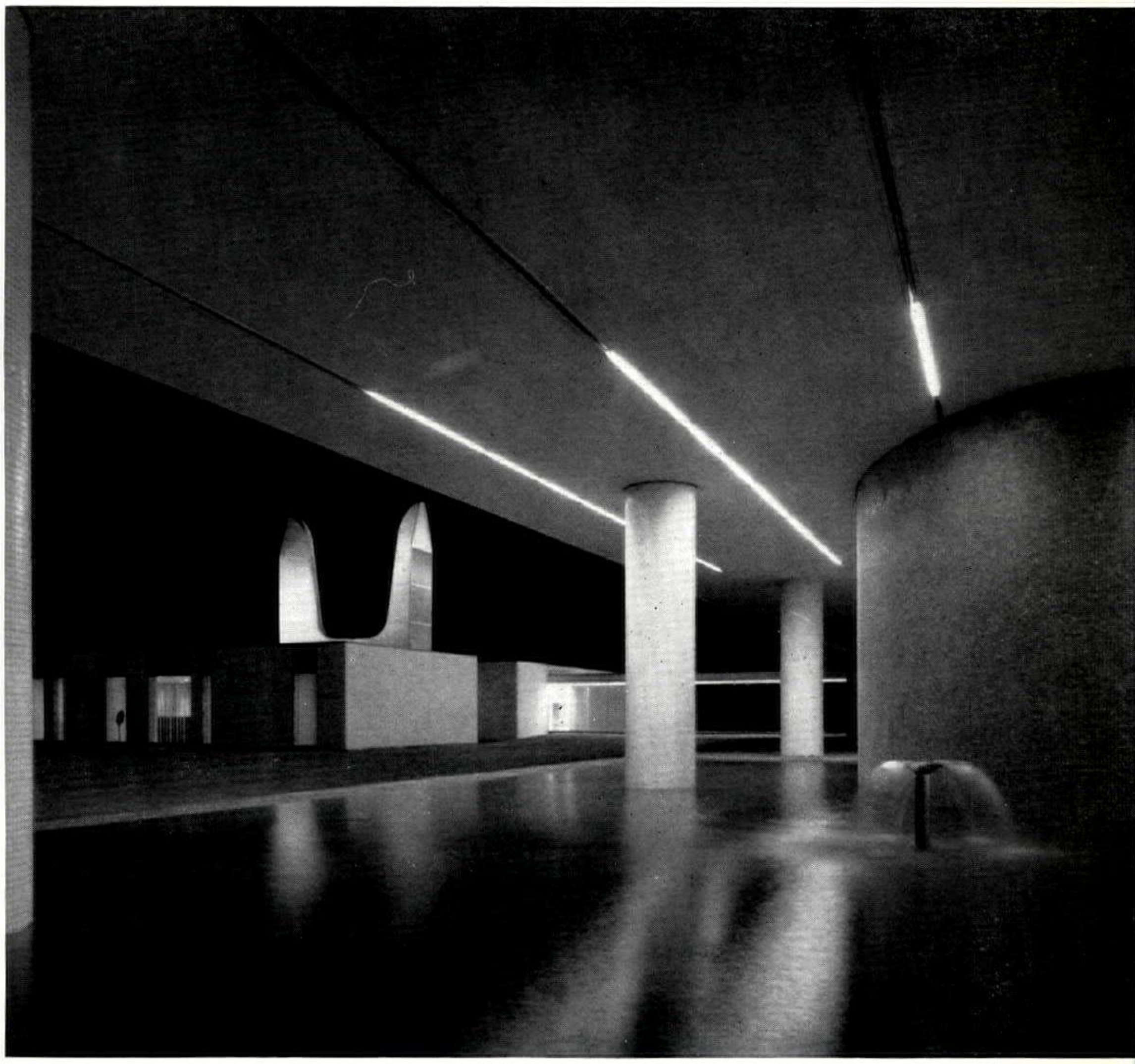

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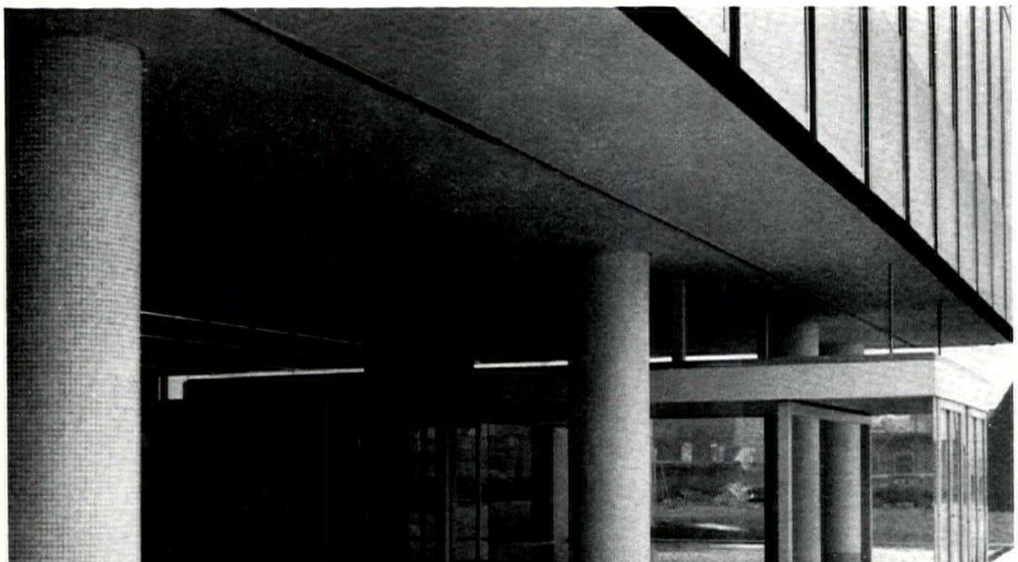
5, north-west side of the main block, 6, detail of recessed corner treatment.
7 and 8, night views of the offices, both showing the sculptured rooflight (also pictured on the cover) 7, from the lake side. 8, from the main entrance-lobby.

9

9, the courtyard seen from the west corner, showing how most of the ground-floor has been left open. 10, the pools on either side of the canopied entrance-lobby, the doors to which are shown in 11. 12, one of the offices on the second floor. 13, detail of demountable partitioning in the office space. 14, staircase on the ground floor with, beyond, the modular ceiling panels. 15, from the south-west.



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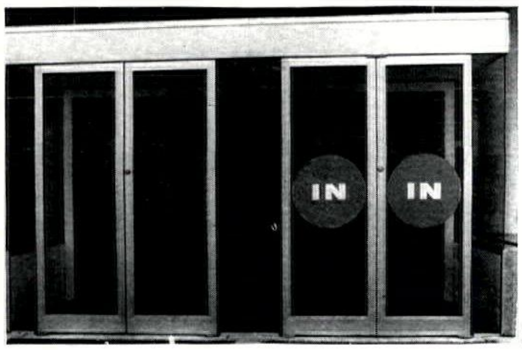

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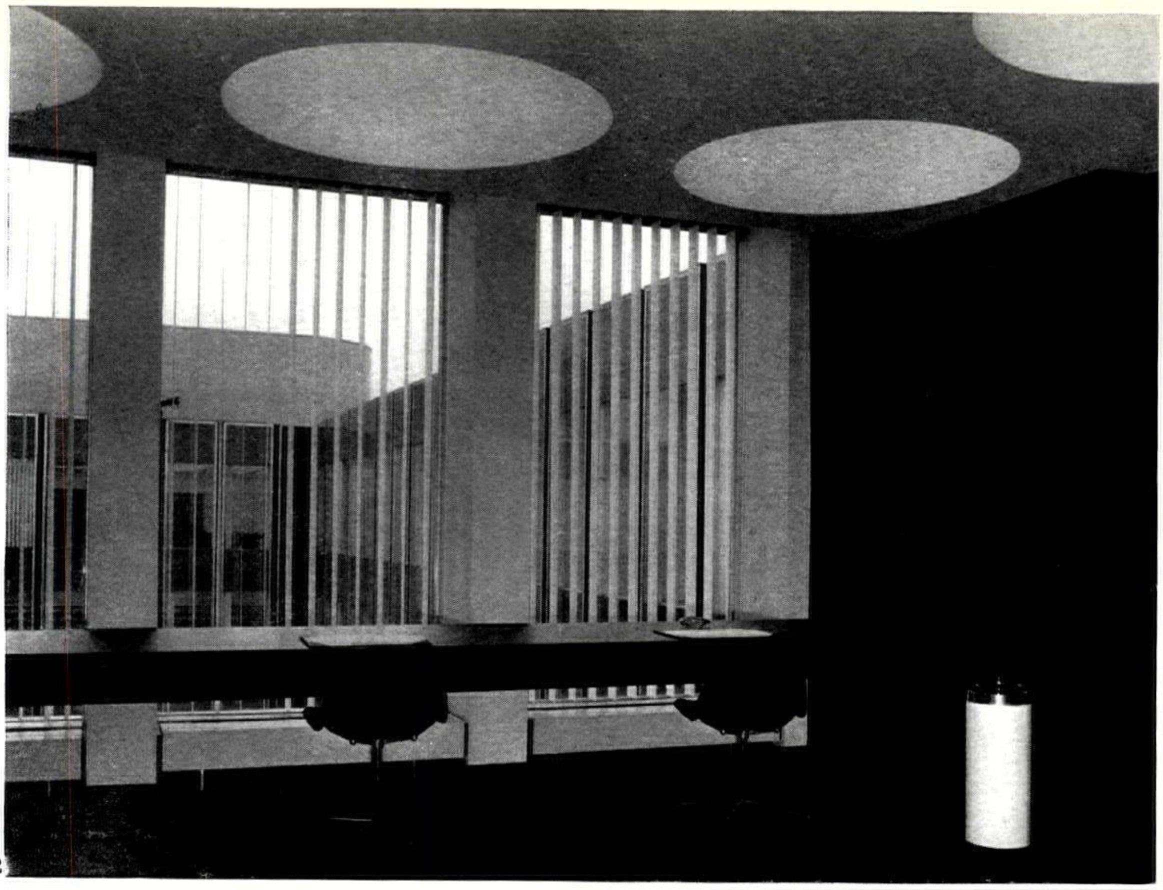

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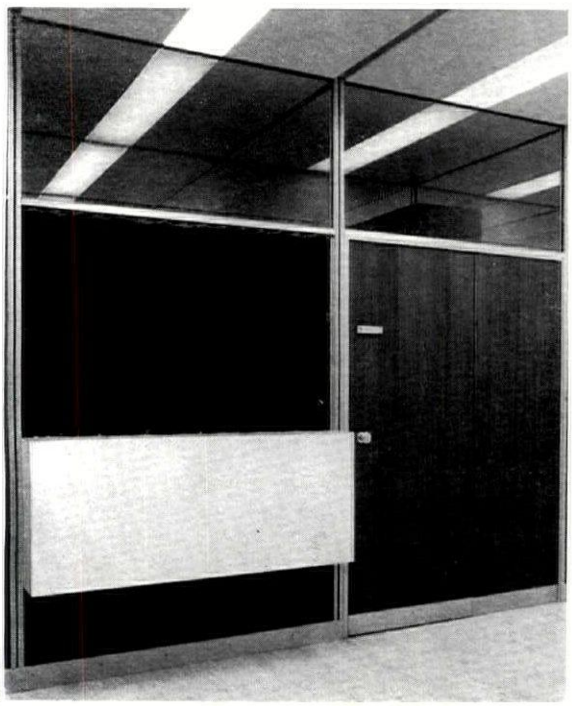

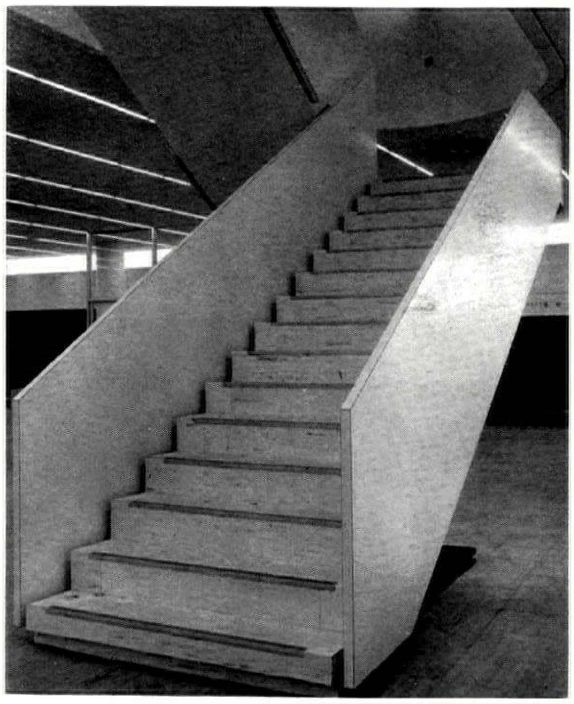

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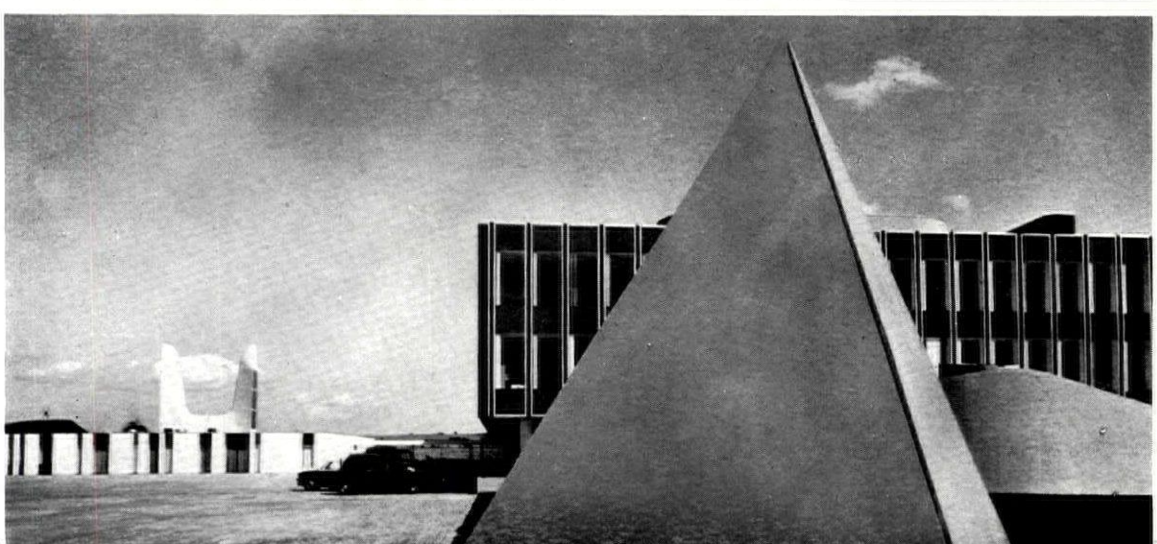


5

1

The architectural highlight of the last Olympic Games at Tokyo was the linked pair of covered stadiums. The major contribution they make to world architecture, both aesthetically and structurally, is discussed here by Robin Boyd. The team responsible for the buildings was: Kenzo Tange and the Urtec group, planners and and architects; Y. Tsuboi and Associates, structural engineers; U. Inoue and Associates, mechanical engineers. 1 (opposite) shows the end pylon and entrance to the main stadium.

criticism

Robin Boyd

Architect: Kenzo Tange

Olympic Buildings in Tokyo

By the end of 1963 the tensile movement in architecture was drawing to the close of its adolescent or probationary period. The circular roof had been done successfully a dozen times in saucer and bicycle-wheel and other variations, culminating in the biggest ever, panelled in primary-coloured plastic, over the New York State pavilion by Philip Johnson at the New York World's Fair. The simple saddle had been demonstrated beautifully in Nowicki's State Fair Pavilion at Raleigh, NC, eleven years earlier, and had been reworked three or four times since without promise of new discoveries in that direction. Eero Saarinen had tried to stretch out the ends of his twin saddles over the Yale hockey rink and to reverse their curves into a more sculptural form, and had run into a bit of trouble with the engineering. After that Saarinen had returned to a plain suspended roof for the Dulles Airport terminal at Washington. This he handled so confidently and at such monumental scale as to say practically the last word on the subject.

And so, despite (or because of) Frei Otto's continuing, exciting gymnastics with multiform tensioned tents, there was a rather dispiriting feeling in the air that the real promise of tensile construction to make the transcendental structures once expected of it lay in a future of better technology. The movement seemed to be waiting for a permanent building material as continuous and workable as canvas. Nevertheless, the tensile movement was only musing; it was not in anything like the state of shock suffered by the shell concrete movement after Sydney Opera House had had to change its early plans. For every problem involving the covering of a large area in a clear span, tension was still inevitably to be considered. But was it possible to do anything new and creative with it, pending the arrival of a miracle fabric?

Then Kenzo Tange built the National Gymnasium for the Tokyo Olympic Games, held in 1964. Fairly soon in the course of examining the problem, Tange relates, he elected to use tensile construction. He had three main reasons. The most compelling was simply his conviction that tension is heir to the future, that the natural evolution is from beam, to vault and dome, to suspension. His second reason was practical: the concave form of a suspended structure encloses a great deal less space per unit of floor area than the convex form of any vault or dome, thus reducing the load on air conditioning and the problems of acoustics. Thirdly, he likes tension's flexibility, its promise of spatial freedom. In his Tokyo buildings he wanted to avoid a closed form; he wanted free space to greet and to disperse the great numbers of visitors, to rid the enclosure of any sense of restriction, and to permit a spatial continuity between different elements in the complex. In the result he demonstrated that there were still unexplored avenues for spatial adventure in tension, even using the old steel web with the cables crossing at right angles and pulling against each other in contrary curves. Thus Tange brought the first tension period to a conclusion on a much happier note. Or, one is tempted to hope, he led it into a second, less experimental and more creative period.

The complex called the National Gymnasium consists of two separate gymnasiums, a building which connects them, and extensive ground works on a roughly triangular and rather limited site. It is alongside the Olympic Village in one of the more sightly suburbs of Tokyo. The main gymnasium contains Olympic swimming and diving pools, which convert to ice-skating rinks in winter, and seats for 15,000 spectators. The smaller gymnasium, seating 4,000, is quite separate. It was even built by a different contractor. It housed basketball during the Games and was designed to suit a variety of more intimate sports afterwards: table tennis at the time of my visit. The connecting building contains administrative offices, a dining hall, and a training pool at each end. It is long, straight and narrow, and its roof makes a promenade which is linked to a higher level of natural ground by a built-up podium, massively buttressed where the ground falls away. This low building, the stony concrete walks above and around it, the hard plazas, the snorkles to subterranean spaces—all the parts of the site development—make up an angular and robust foundation.

The two gymnasiums, despite their feeling of masterful strength and the monumental size of the bigger one, are feminine objects on that masculine base. They are unrelated to anything around them while being closely related to each other. This relationship deserves attention. They are not twins, which were in style at the time, and they are not mother and daughter—the same thing seen through alternate ends of a telescope. They are more like sisters, one big and capable, the other small and playful, both composed in softly rounded continuous curves with hardly one straight line in either of them. The bigger one, with its central pools and longitudinal tiers of seating, has a roof hung in two separate sections from either side of a central catenary lantern slung between two colossal masts. These masts are diametrically opposite across a circular plan. Branch cables which carry the roofs are attached below the lantern and run out, parallel, to the perimeter, where their ends are fixed to the concrete structure behind the last rows of seats. The seats naturally rise in the centre to follow sight lines, and the points of attachment thus form inclined arches which give the necessary counter curves to the sag of cables.

There are two main longitudinal or spinal cables. Each side roof clings to its own. The twin cables can be seen running parallel down the outside stays, but when they span between the masts they are pulled apart by the stress of the side roofs, and this opens up a slit eye or spindle shape to the sky, which becomes the shape of the central lantern.

The smaller building, with a comparatively modest circular arena and a concentric saucer of seating, has a roof which spirals up a single vertical mast set behind the back row of seating. The cables here are radial rather than parallel. In principle this smaller building is not unlike the Bavinger House of 1951, but in effect it could hardly be less like that earlier spiral. Whereas Bruce Goff's mood was rustic and romantic, Tange's is precise and formal.

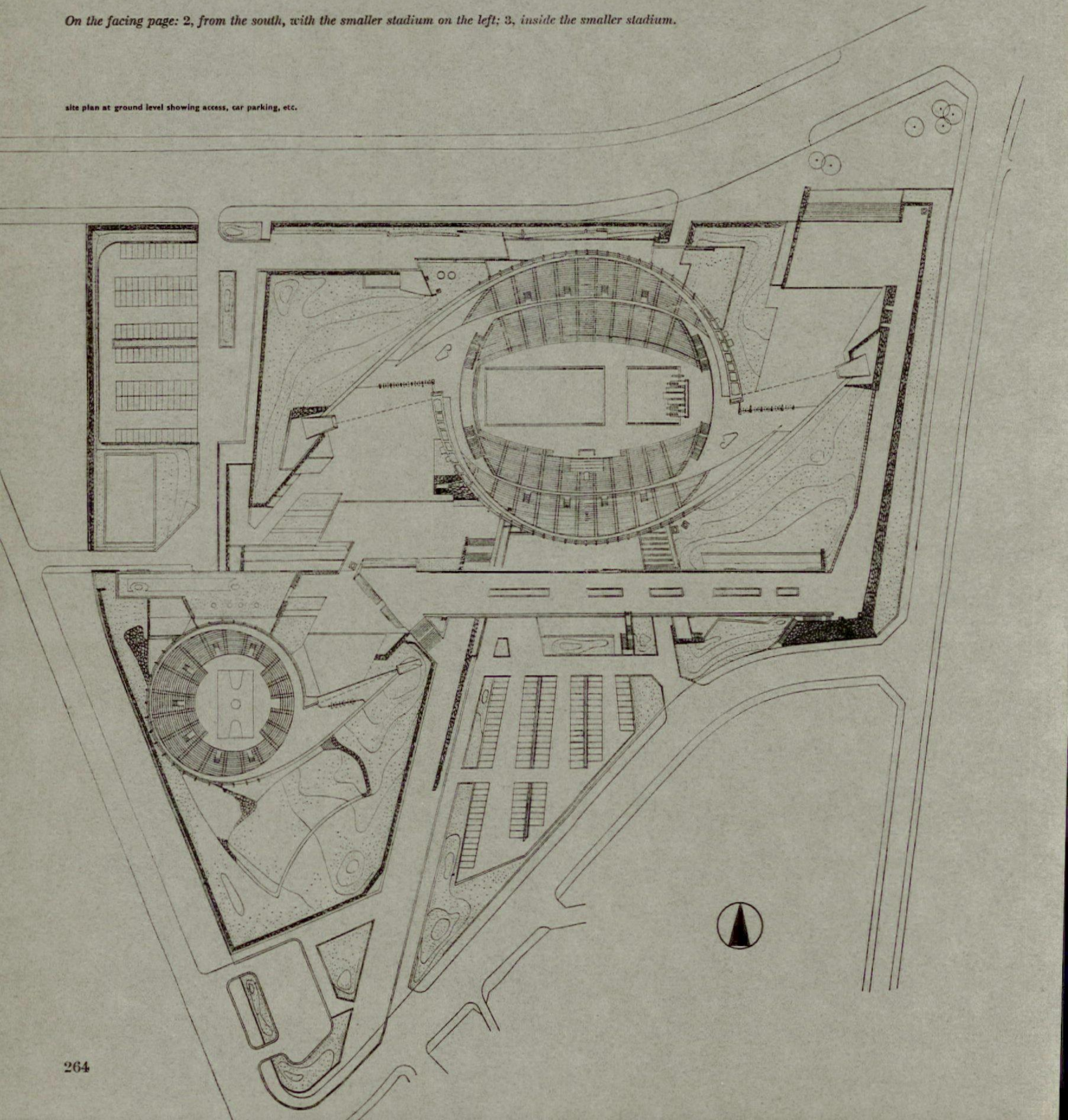
Apart from the different means of suspension, the two gymnasiums follow the same discipline in structural materials and details. In each case the perimeter ring to which the cables are attached is carried high above ground on a recessed undercarriage. Closely spaced columns, or fins, break the strip windows cut into these compression rings and mark the points of attachment of the roof cables. Tailored steel decking covers the cables. A corner of each roof membrane is stretched far out to a point like a jib-sail, staying the mast, and at the same time providing an opening underneath, which becomes the entrance to the building—two entrances, one at each end, in the case of the double-roofed pools building. Indeed, the structure and the functional plan of both buildings support each other so convincingly that a first impression of beautiful arbitrariness is soon dispelled and the interwoven logic of the forms, the structure and the function becomes apparent.

This interweaving of parts and problems into a whole solution was worked out consciously and conscientiously, step by step. 'Gradually,' Tange says, 'in the interplay between structure and space, we intensified these co-ordinations and we

[*continued on page* 269

On the facing page: 2, *from the south, with the smaller stadium on the left;* 3, *inside the smaller stadium.*

site plan at ground level showing access, car parking, etc.



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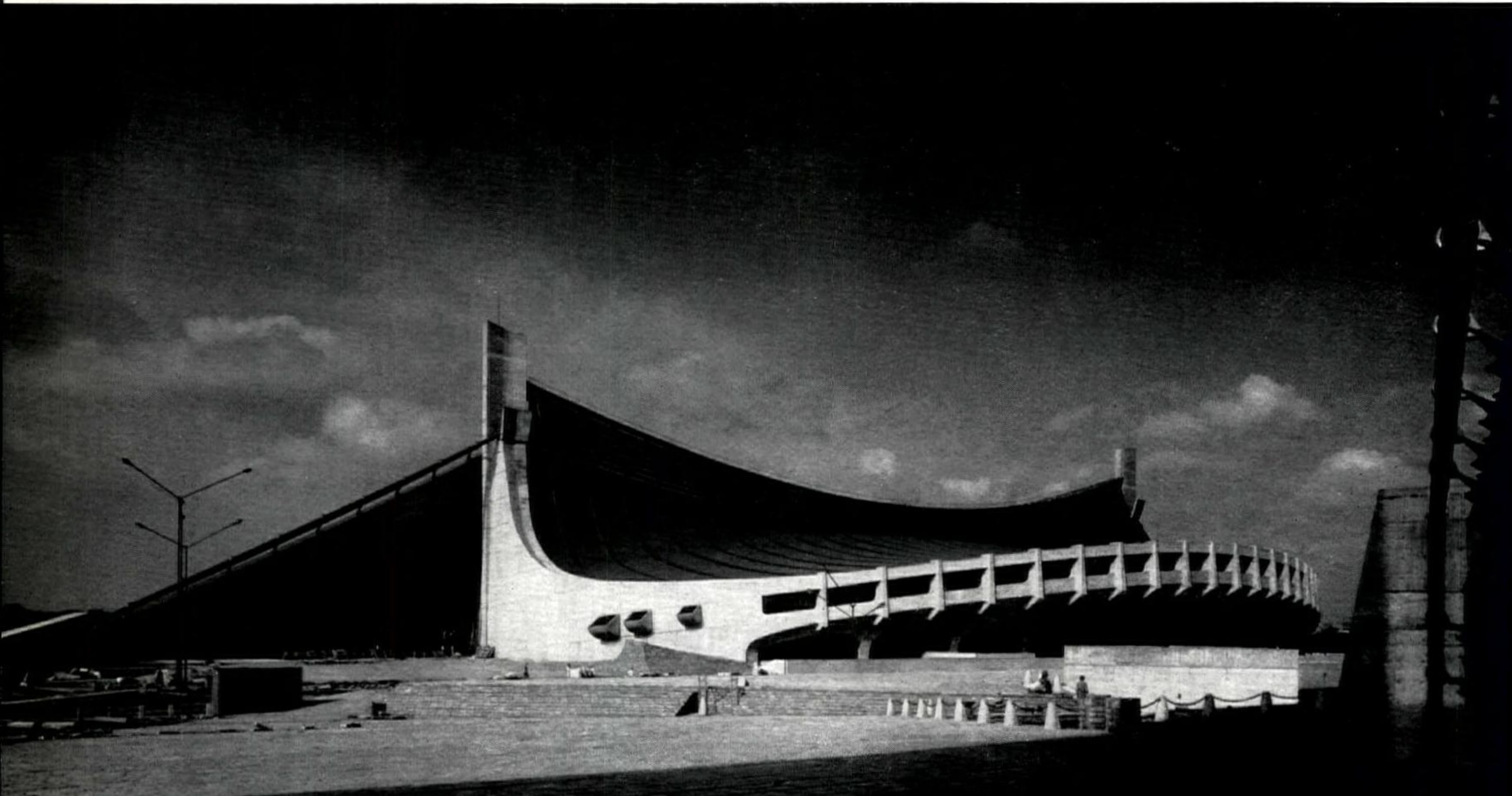
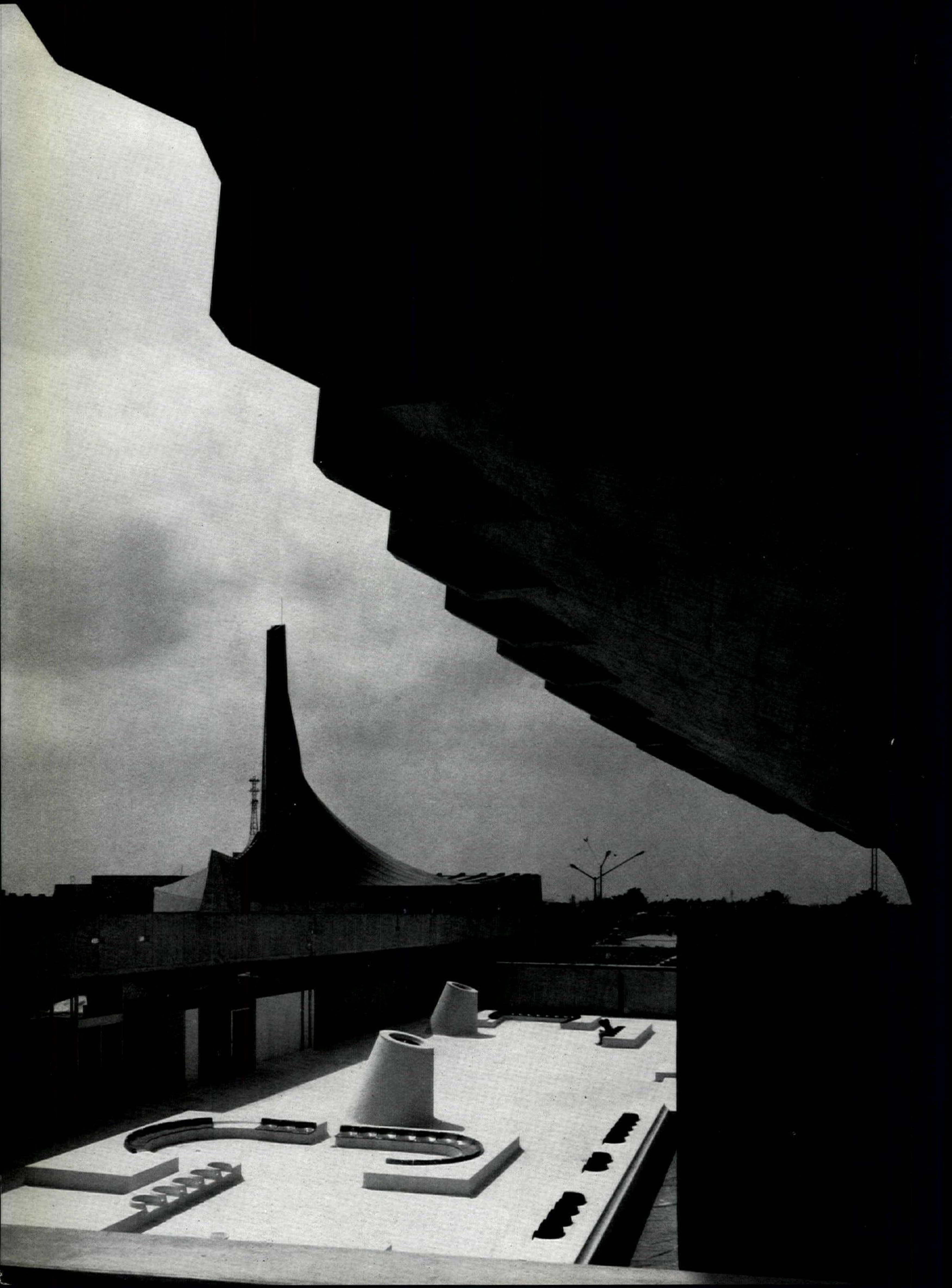
4, *the main stadium from the east.* 5, *from the direction of the smaller stadium, part of the structure of which can be seen on the right.*

6 (*facing page*), *interior of the main stadium, in use for swimming races. The pools become an ice-skating rink in winter.*

5





continued from page 264]

made it difficult to unravel the mutual connection between the various elements.' For instance, the determination of the slope of the seating tiers involved a study not only of sight lines but of the sag of the branch cables, the pull of the cross ropes and the drape of the main cable. None of these could be determined independently. More than twenty people were in the design team, and they found that if one man decided to change the amount of sag a little in the set of cables which he was studying, his action affected nearly all the others, even sometimes so critically as to endanger the lines of sight. Co-ordination was much more difficult than anticipated. The origin of the forms was almost literally sculptural. Tange and his team finally determined them after long work on large-scale study models. Yet the intense interrelation of structure and function, and the geometrical regularity of the shapes—circle, spindle and jib-sail—tie them to architecture in a way that was positively avoided at Ronchamp and has been unknown in most sculptural architecture, including the Giant Bird. For all its visual complexity, when the Tokyo buildings are viewed as a ground plan, or from the air, the order and exactness of the sisterly scheme is as clear as in any brainwave building of the 1950's or any glass box. They are seen to be formal buildings, ceremoniously acknowledging each other with their wide jib-sail openings parallel and opposite. The variety and complexity increases as one drops to earth, but the sense of formality is always present. Perhaps this is only because the exacting discipline of tension has been constantly observed, and is expressed again and again in the details.

In earlier examples of the tensile movement*, back in its adolescent period, the tension was often expressed in a rather crudely Brutalist way, great ham-fists on the ends of one set of cables gripping a bunch of cross cables, all under visible stress, as in the Melbourne music bowl. At other times more elegance was gained at the expense of eloquence. There was concealment, or less than frank explanation, of the tensile stresses. Even in the assured and adult Dulles terminal, Saarinen was ambiguous about the tension at the crucial points where the hung roof connected to the end beams. He curled the latter up in a continuation of the catenary so that it was hard to tell where the junction was between pulling and pulled elements. But the act of prehension is the essence of tensile construction, and if the architect is to put his occupants at ease he must ensure not only that prehension is done but that it is seen to be done. In the Tokyo gymnasium all the connections are explicit, and each of the main stay cables comes to a decisive termination in a massive concrete ground anchor which is pierced through, exposing the cable embedded there convincingly enough for the most suspicious and sceptical eye. These ground anchors also terminate the walls of the concrete structure, and this is typical of the way the compressive and tensile elements are integrated. Another nice example is to be found beside the mast in the smaller building. Cigar shaped steel spars, mounted on ball and socket ends, hold the spiralling main cable clear of the mast. Each member is almost as communicative about the stress it is undergoing as a jockey scales.

The concrete which makes up the major compressive, or conventional, building elements is bulky and immensely strong, as is to be expected in Japan, but it stops safely short of the muscle-bound condition which afflicted some of the best Japanese buildings of the 1950's. It complements precisely the lightness of the tensile members. It too has curves, but they are curves which relate first to concrete structure. They don't mock the tensioned curves or try to project these into more interesting sculptured shapes. On the contrary they are quite explicit about their equal and opposite stresses, not only in the ground anchors but also in the spectacular cantilever of the outer ring walls beyond their foundations, looking as if they might sag to the ground were they not being pulled up by the main roof cables attached so regularly to them.

There are other universal kinds of delight in this remarkable pair of buildings. The spaces, for instance, are just as moving as one expects from the first exterior view, given the presumption that they are true negatives of the external forms. The pools building is a majestic, almost symmetrical, enclosure under the long central lantern. It is a bland volume, soaring up a mast at each end, almost wholly revealed at once, though animated by the space which runs out under the jib-sail beyond each mast.

The royal suite, foyers and other rooms in the concrete ring structure are rounded, cornerless, and finished in a crunchy roughcast, stark white, which Tange has used before to good effect. But the greatest delight is in the smaller building. To enter this giant snail-shell is a unique experience. The materials here are warmer, mostly wood and a grey-brown paint on the steel that reflects both the wood and the concrete. Overhead the space is gathered in by the roof as in an inverted anti-clockwise whirlpool, and is finally sucked up the dark, narrow, up-ended well beside the mast, crossed by its twisted ladder of compression spars.

One of the main fascinations of these buildings, however, is even narrower than that space chute; it is the extraordinarily intense regional character—the strong scent of Japanese tradition—which these entirely modern and international buildings wear, with grace, like a kimono. Most of the scent comes surely enough from the strange ambiguity of the curves. Are they free or are they geometrical? The answer seems to be that they are only as free as is good for them, and they are bound by a geometrical conscience.

Tange has been working, or perhaps playing, with such shapes for years. Now the shapes follow rules; now they don't, like the pagoda's proliferative eaves. The central lantern which forms the spine of the pools building droops in a natural catenary, but after all there are taut catenaries and loose catenaries, and the point at which Tange called halt to the fellows operating the cable winch is a distinctly Japanese point. Then there are some extraordinarily evocative details. Where the twin cables of the main gym-

*See Robin Boyd: 'Under Tension', AR, November, 1963.

7 (facing page), the low-level courtyard between the two stadiums. 8, aerial view.

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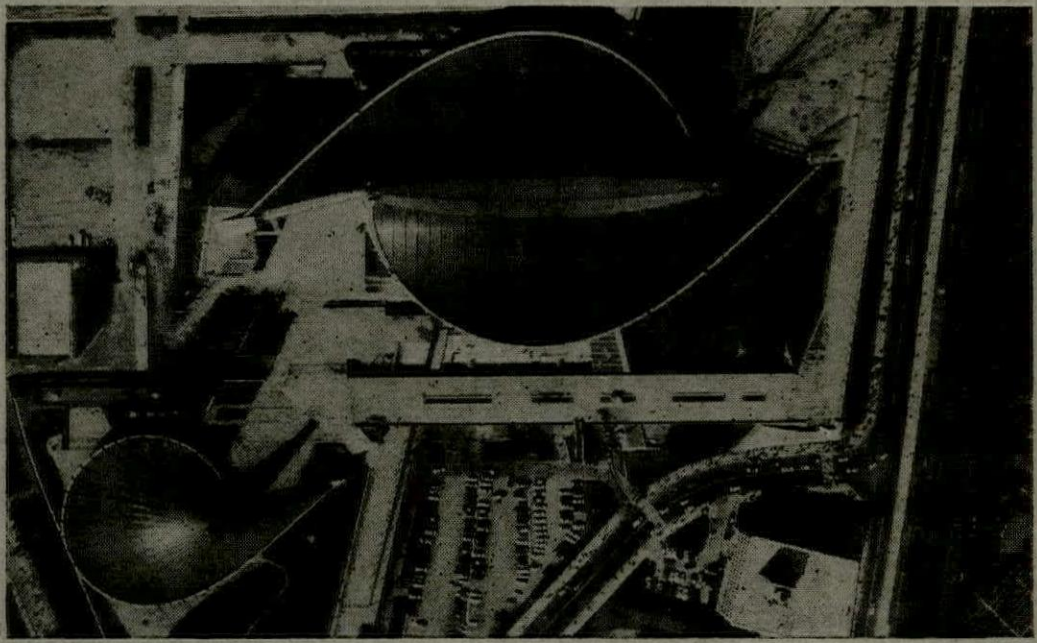
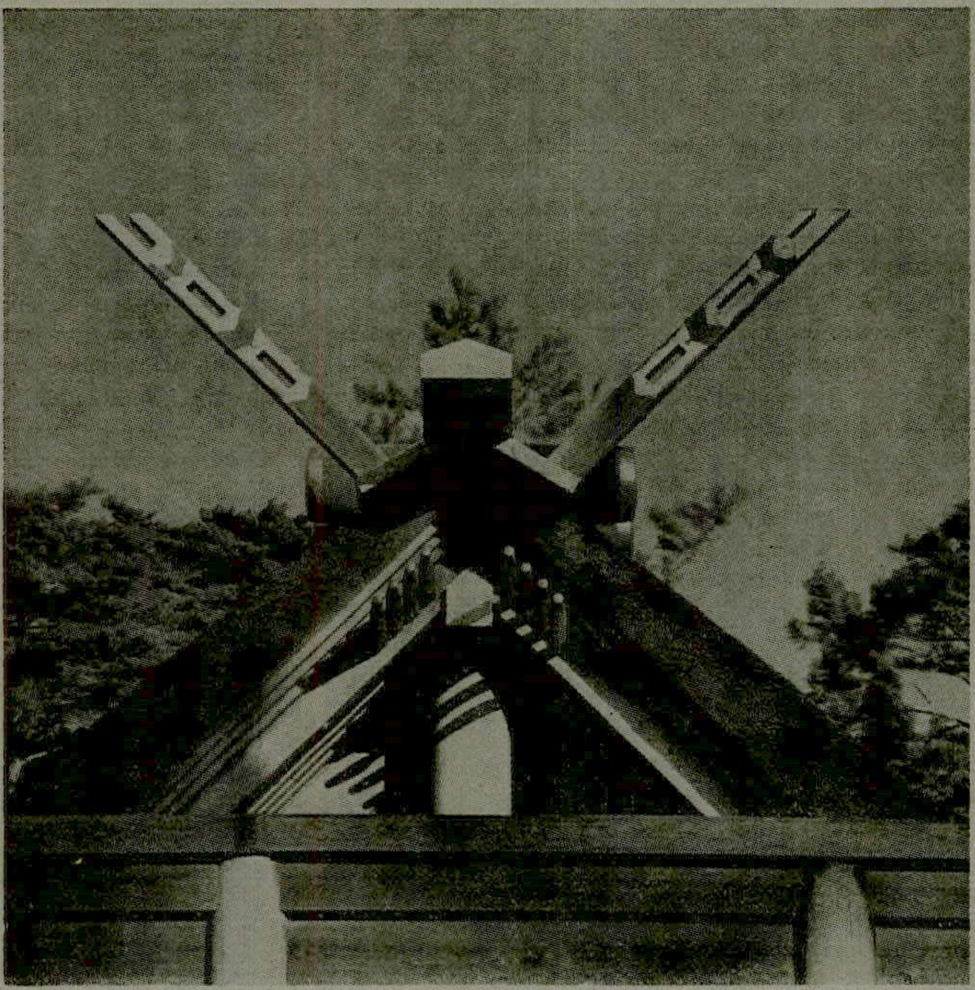




9, projecting rafters of the Ise shrine, from Tange's book on it.

nasium pass over the tops of their two great concrete masts they sit in cradles. A central finger of the mast shoots up between them; it carries the top of the lantern which sits above the cable web and then continues irrepressibly a little further, no doubt to establish the important identity of the masts. The outside member of the cradle on each side is a fin of concrete, canting out at a slight angle. Again, these fins are undoubtedly higher than absolutely necessary, yet their task deserves some celebration. They restrain the main cables from slipping off the shoulders of the mast in response to the side pull of the roof cables. And they look as if they are doing just this.

They also look remarkably like the symbolic *chigi*, or projecting rafters, which form V-signs above the gable ends of Shinto shrine buildings. The end view of the main gymnasium is a striking visual reflection of the gable end of the main sanctuary at Ise, a definitive book on which Tange was writing at the time he designed the gymnasium.* Then the plan of the main building, the circle with the two jib-sails—or the double snail shape, or the loosely gripping hands shape—reflects a symbol in the Tange family crest. There are other allusions to traditional shapes, and the more a Westerner will find the more Kenzo Tange is likely to repudiate them all, because none of his shapings is deliberately Japanese. The traditions which Tange has studied so thoroughly just constitute one of the moulds in which his ideas are formed.

How much higher than this can modern architecture aspire? For what else had the twentieth century been searching during sixty-four years? A functional stance, a consistent order, variety within unity, a compelling structure, a sculptural form, a transcendental space, universal principles but a regional flavour, all achieved simultaneously and with a spartan simplicity.

In a new edition of *Space, Time and Architecture*, Sigfried Giedion examines another exciting sculptural building of the 1960's in a new chapter called 'Joern Utzon and the Third Generation.' Giedion discusses the disturbing lack of relation between the inner theatres and the outer sails of the Sydney Opera House. They give rise, he writes, to a question of conscience which we must again answer. 'Are we prepared to go beyond the purely functional and tangible as earlier periods did in order to enhance the force of expression?' He explains that the sails, the ex-shells, are superfluous, non-functional, if one means by functional a direct coherence between cause and effect. Can Giedion approve such non-functioning superfluity? Yes. Not only approve it; he blesses it, 'After half a century of development,' he writes, 'contemporary architecture demands something more than [the functional]. The autonomous right of expression must again assert itself in building. . . .' Giedion warns that the independence of expression from function is only for master hands as yet and not for minor talents, but even with this proviso his statement seems to take us round full circle back to Chapter Two and the Late Baroque.

Do we have to capitulate yet? Do we have to admit the defeat of the revolution in order to explain a beautiful building, as the Opera House will be? There are other and better explanations for Utzon's apparent lapse of conscience; but that is another story. Tange's gymnasiums seem to me to be convincing proof that it is early yet to capitulate.

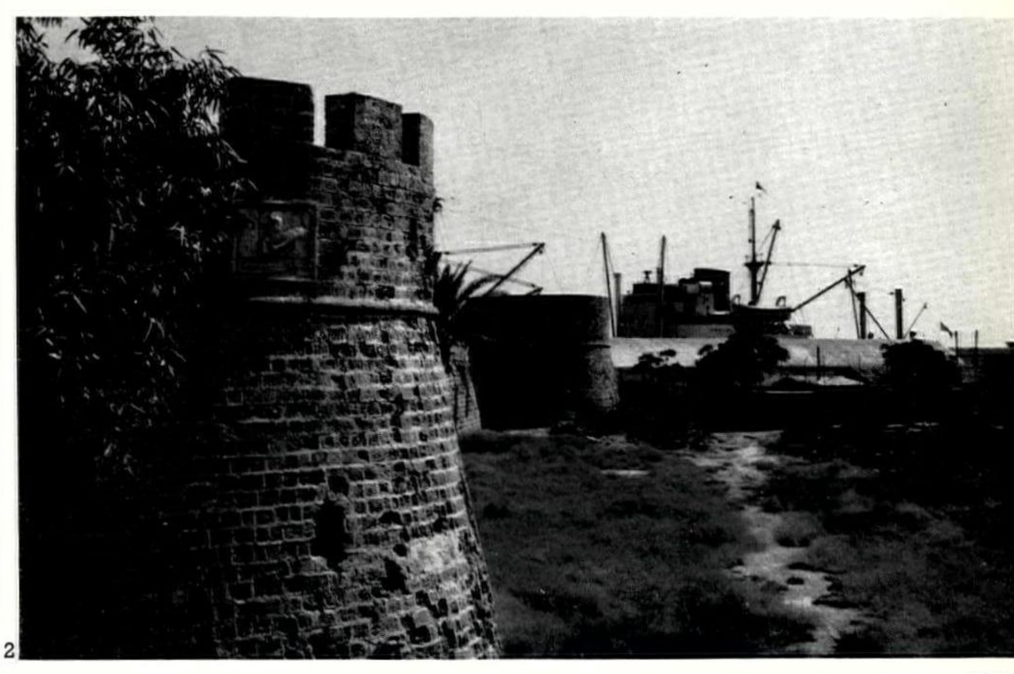
No doubt these sister buildings are not perfect. If there is a significant flaw in the functional logic it is in the height of the mast of the smaller, snail-like, sister. If there are no real structural flaws there may at least be some surface difficulties in the concrete cantilevers. If there is an aesthetic hitch it may occur in the roof of the pools building, at the centre where the side saddles pull a little too abruptly at the bottom of the lantern. Imperfect perhaps, yet in sixty-five years how very few buildings have come as close to the goal sought by at least half the modern movement: to be transcendental and soberly convincing at the same time.

* *Ise: Prototype of Japanese Architecture*, MIT Press, 1965

The old city of Famagusta on the east coast of Cyprus seems to have taken its present shape during the fourteenth century, while under the rule of the Lusignan kings. It is still completely surrounded by massive walls and bastions, which were largely remodelled by the Venetians in the late fifteenth century. After nearly a hundred years of Venetian occupation, the city fell in 1571 to a besieging Turkish armada, and for over 300 years it and the rest of the island were under Turkish rule. The Turks again repaired the walls, but towards the end of the period they permitted many churches and houses to be demolished, so that the stones from them could be used to help build Port Said, at the entrance to the Suez Canal. One of the few pieces of domestic architecture to survive—a Renaissance doorway—is still known as 'Biddulph's Gate,' after Sir Robert Biddulph (the High Commissioner for Cyprus after the transfer to Great Britain) who saved it from being pulled down in 1879.

Owing to this destruction most of the city contained within its two miles of walls is now wasteland. Its inhabitants are all Turkish Cypriots, living in a small town huddled near the cathedral and in a few outlying villas and tenement buildings. Some of the stony ground has been lightly ploughed; and small flocks of scavenging black goats wander between the isolated and derelict churches.

1



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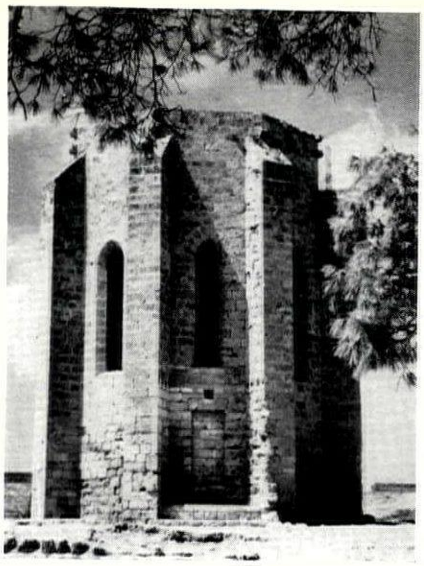
1, part of the wasteland inside the city walls with Tanners' Mosque on the left and the Carmelite church on the right. 2, the Citadel rebuilt in 1492 during the Venetian occupation, in the background the harbour.

3, church of Saint Anna. 4, the churches of Ayia Zoni (Holy Girdle) and Ayios Nikolaos. 5, Biddulph's Gate. 6, the early fourteenth-century cathedral which is now a mosque with a minaret added on the north-west tower. 7, Tanners' Mosque.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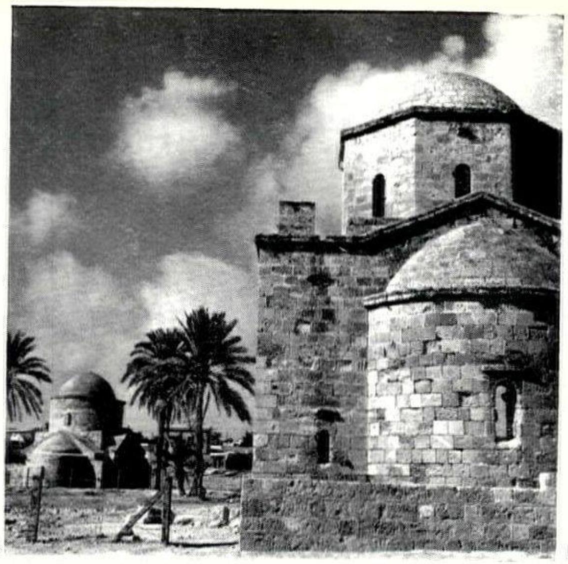
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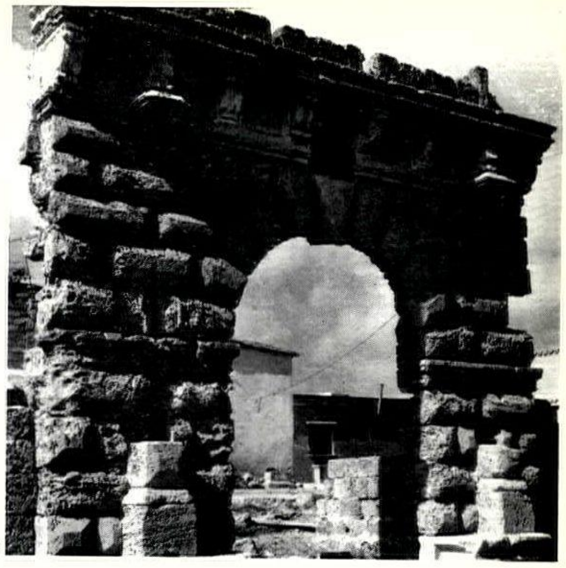
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6

BYZANTIUM IN BRIGHTON

NICHOLAS TAYLOR

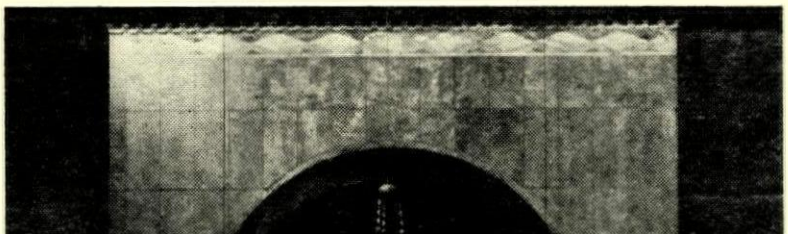
The furnishings designed in 1897-1908 for St. Bartholomew's, Brighton, by Henry Wilson, although incomplete, are the grandest example of English *Art Nouveau.* The church of 1872-4 (described in AR, March 1965), with its 135 ft. internal height and 58 ft. width, was the masterpiece in stock brick of a local High Victorian architect, Edmund Scott. By 1895, however, the church was as cosmopolitan as any rebel Anglican could wish: vast eclectic congregations worshipped at splendid services, augmented from 1896 by a permanent orchestra, and they were conducted to their seats by a Japanese verger, John Kendo Feudiekitchi, who had once worked in the stables of the Mikado. The work of the parish by then included a crêche, lending library, blanket loan society, invalid kitchen and sick relief centre, besides social, musical and sporting societies, and the more exclusively religious groups such as the Confraternity of the Blessed Sacrament and the Ward of St. Mary. The second vicar, who arrived in February 1895, was Arthur Reginald Carew Cocks, a flamboyant and capable leader who perfectly matched the confidence and decorative splendour which now overlaid (or enhanced) the simplicity and directness of Fr. Wagner's Tractarianism.

Henry Wilson was the ideal designer to realize Cocks's dreams. Born in Liverpool in 1864, he had been trained at Kidderminster Art School and apprenticed to an architect in Maidenhead. He went as assistant, first to the church architect John Oldrid Scott (Sir Gilbert's second son) and then to John Belcher, the free Classicist, in whose office at that time the design for the Chartered Accountants' building was being prepared, largely by the chief assistant, Beresford Pite. Finally, Wilson became chief assistant to J. D. Sedding, and on Sedding's early death in 1891 he succeeded to the practice. Wilson did much of the detailed design and furnishings of Sedding's great Arts and Crafts churches, including Holy Redeemer, Clerkenwell, Holy Trinity, Sloane Street, and St. Peter's, Ealing. Sedding was a master of spatial and liturgical design, and he kept Wilson's fancies within the bounds of constructional possibility. Like Beresford Pite, Wilson on his own had defects equal to his striking merits (their masters, Belcher and Sedding, were incidentally close friends). Immediately after Sedding's death, with the team of pupils kept together (Charles Nicholson, Arthur Grove, Alfred Powell, H. W. Finch, J. Paul Cooper, E. W. Meredith), Wilson did several complete, though abortive, church designs, including the Victoria (British Columbia) Cathedral competition and St. Andrew, Boscombe. But by 1895, with only Grove and possibly Cooper remaining, he had become an ecclesiastical stage designer, not a real architect. From Sedding, who in 1882-89 had been churchwarden at St. Alban's, Holborn, Wilson inherited connections with an increasingly Baroque, almost Firbankian, school of thought among the younger ritualist clergy—Ritual for Ritual's Sake. It is significant that beneath the brilliantly imaginative detail in his Victoria and Boscombe designs, there are completely conventional medievalist plans—not the broad congregational spaces exploited by Sedding.

1

It was therefore fortunate that at St. Bartholomew's, Brighton, Edmund Scott's decisive liturgical space already existed. Wilson's work there was his last on the grand scale: with his unofficial appointment in 1896 as the first editor of *The Architectural Review*, he began to withdraw from architectural practice, and within a few years, working at Hare Court in the Temple (as a tenant of E. S. Prior), at the Royal College of Art (as a lecturer) and at his cottage at Platt in Kent, he became essentially a metalworker and jewellery designer. He was an enthusiast, combining a love of natural flora and fauna à la Ruskin with an excitement for the exotic (he had a Japanese manservant, and his three children were called Guthlac, Orrea and Fiammetta). He had a colossal, sometimes menacing sense of scale, similar to Pite's. He was a close friend of Lethaby and collaborated with him on an extraordinary concrete-vaulted design in the Liverpool Cathedral competition in 1902.[1] President of the Art Workers' Guild in 1927 and of the Arts and Crafts Exhibition Society from 1915, he died at Menton in 1934.

Cocks commissioned Wilson to design a comprehensive scheme of extension and decoration for St. Bartholomew's. The strengthening of the existing east wall with tie rods was an admission that it was now semi-permanent. So in his overall scheme, which in its mature form of *c.* 1905 is shown in a splendid coloured drawing at the RIBA, 1, Wilson treated it as a dramatic backcloth to the ceremonial beneath. What survives can only be explained within this overall plan—the bareness of the baldachino, for instance, that was intended to be seen against the swirling rhythm of the Baroque *trasparente* above. The dominant theme—a self-consciously daring piece of Romanism for an Anglican church—was to be not Christ in Glory, but the Madonna in Glory. Wilson proposed to pierce the east wall behind the baldacchino as an openwork screen, then continue Scott's main structure for three further bays of the full height, and build a new straight-ended east wall, covered with murals, above a Lady Altar. The Madonna, presumably in mosaic, was to be a giant figure about 30 ft. high with arms outstretched, in a red and blue robe.[2] Above and below her arms on each side were to be bands of heavenly souls robed in white, and below her figure was to be a continuous frieze of souls terrestrial. The background was to be mainly of blue and gold. The roof was to have, not the simple tie-beams of the nave, but a rich barrel vault with the gold criss-cross pattern on blue familiar from the 'ceilures' over the high altars of fifteenth-century churches in the West Country.[3] Extra boldness was to be added by the convex (instead of concave) coving. The three giant arches of the upper screen, inlaid with green marble, were partially infilled on each side by yellow-brown railings, decorated with green and white inlay and in turn enclosing elaborate metal grilles with sculptured heads in relief. Splendid though this projected Queen of Heaven would have been, there is some doubt whether Wilson's figure drawing would have matched in quality his purely abstract conceptions. Spatially the effect would have been mag-



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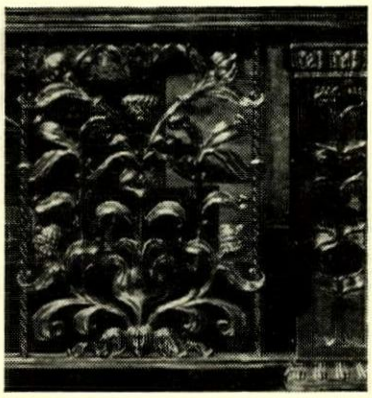
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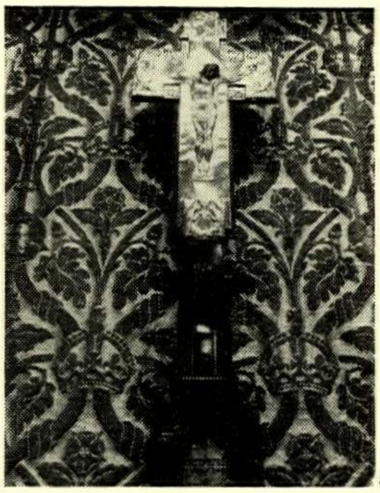
nificent and, incidentally, the semi-permanence of the east wall would have solved the problem of separating from the main body of the church the noise and confusion of years of building work.

What survives is a mighty fragment. The baldacchino, 2, 45 ft. high and raised twelve steps above the nave, was erected in 1899-1900 at a cost of over £2,000. It is grandly Byzantine, contrasting a stark outline with the richly abstract streakings of marble (Ruskin's influence). The square columns are reddish-brown,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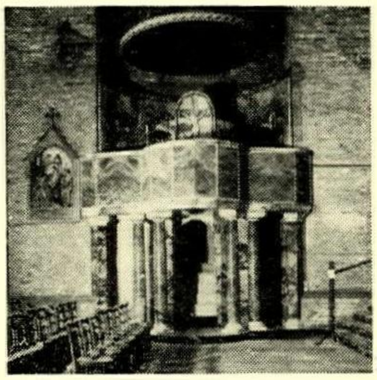
on green and black bases; the canopy is green, with capitals and thin arches of interlaced vine patterns in white alabaster. The sanctuary paving is of black and grey marble, with a central strip of red marble beneath the present carpet. In front of the altar, on either side, is a giant standard candlestick put up in *c.* 1908, consisting of a Tuscan column of grey-and-white marble on a black base (in the original drawing, red marble on a white base). This supports, 3, a curious bronze object, a hybrid between a flaming urn and a pineapple, forming a base for a thick candle. Beyond it can be seen the glittering vault of gold mosaic and mother-of-pearl of the baldacchino itself, with a dove in its centre. Next to each standard candlestick is a short two-bay altar rail, 4, not in the original design and added in *c.* 1905. The thick gilt columns, inlaid with red 'boiled sweet' medallions reminiscent of William Burges, reflect also the classicism of Beresford Pite (for example, the claws in their plinths). Between the columns is a thickly curvaceous thistle design. Against the side walls of the sanctuary are the simple oak choir stalls, with a round-arched motif at each end.


6

Above the altar itself, with its paintings of 1874 by S. Bell, is a tall gradine, supporting six superb candlesticks, the rippling brass stems of which are 4 ft. 9 in. high. In the centre is a large tabernacle, on the beaten silver doors of which 'a draped and crowned figure in the midst symbolizes perpetual youth, ever renewed and sustained by the true Vine to which it clings' (a very Ninetyish subject). This is now hidden normally by curtains. Wilson's central crucifix, seen in its original setting in 10, was unfortunately replaced in 1912 by a crude Oberammergau-style creation by one McCulloch of Kennington. Wilson's crucifix, 5, was removed to the Lady Altar in the third bay from the east on the south side, where it is quite out of scale with its surroundings. The silver-gilt crucifix in low relief stands on a tall ebony base; once again, Wilson's figure sculpture is inferior to his virtuoso handling of the background with its angels and vine branches. It is now seen in the incongruous setting of the canopy designed by an orthodox Goth, C. E. Kempe, in 1888 (the hangings in the same style are more recent). Kempe's Lady Altar was replaced in 1902 (it is now in St. Alban's, Brighton) by a silver-plated repoussé frontal and gradine 6, designed by Wilson, with a slab of red alabaster on top[4]. The frontal has the Adoration of the Magi in a central roundel, encircled by symbols of the seven planets. On either side, vigorously modelled swastikas (the ancient symbol of the Sun) are embossed in a manner reminiscent of the neo-Celtic book-illustrators of the Glasgow School. Above is a majestic superscription in Roman letters, commemorating a Mrs. Louisa Gilpin. It was in that same year, 1902, that Wilson gave Eric Gill his first letter-cutting job, at Holy Trinity, Sloane Street; it is thus an appropriate coincidence that against the adjoining pillar there is a tablet excellently carved in Gill's style in memory of Fr. Smallpiece, curate from 1896 to 1930.

The whole east end is undeniably spoilt by the mosaics, in an over-blown pre-Raphaelite manner, inserted in 1911, a year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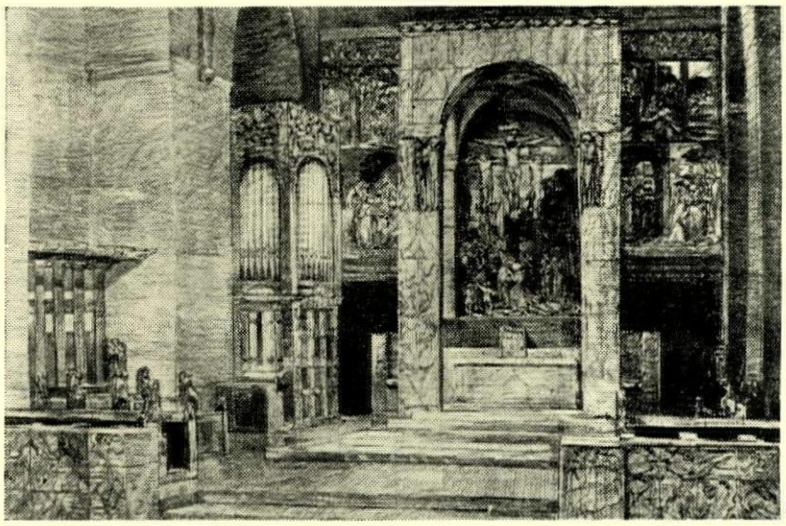
after Fr. Cocks had resigned and seceded to Rome. His successor, Henry Ross[5], no longer employed Wilson. The mosaic artist was F. Hamilton Jackson[6], who, as one of the art-workers in the Dixon-Paul Cooper circle at Birmingham (and an early contributor to the *Review*), must have known Wilson and might have been expected to respect his intentions. A relatively minute Christ in Glory was crushed into the space under the baldacchino, where Wilson intended a plainer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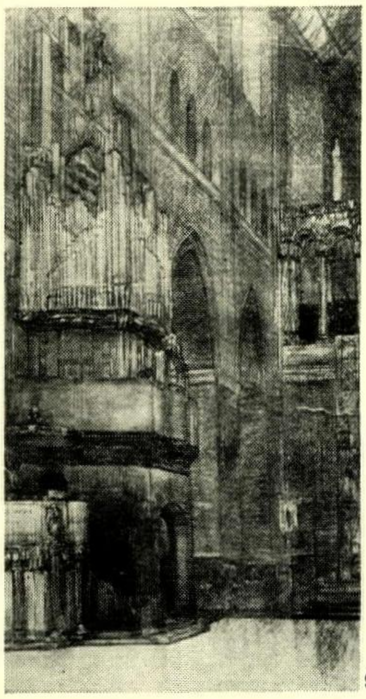
mosaic with a more youthful figure, and the side walls were filled with overlarge figures of Michael and Raphael (north) and Uriel and Gabriel (south), where there should have been the plain green marble panels seen in 1. After Wilson's dismissal, Fr. Ross went ahead with plans for completing the church (it is not clear who was the architect). In the parish magazine for 1912 he recommended 'the expenditure of about £2,500, including the building of an apsidal chapel eastward over the vestries, a new High Altar, and the putting of stained glass in the great west window. Since this would evidently have meant the destruction of Wilson's baldacchino it is fortunate that the 1914 war put a stop to it. Fortunately too, Scott's splendid circular west window was left unglazed, although a sentimental design of 1914 for glass by J. C. Bewsey hangs in the church (Bewsey did the glass in the four lancets below).[7] In 1924, Sir Giles Gilbert Scott (no relation of Edmund) prepared a design for building a new east end, with one and half more bays of the full height plus a polygonal apse. The baldacchino would have remained in the centre and the mosaics would have been replaced by low screens leading to the Lady Chapel in the apse.

At that moment, however, the whole roof had to be reslated at great cost and the remaining funds were exhausted on minor furnishings.[8]

Because the east end has been thrown out of balance by the mosaics, Wilson's most perfect design at St. Bart's is now the pulpit, 7. This is partly because an error of Wilson's own making was remedied. In his drawing shown at the Royal Academy in 1898, 8 (it is now hanging at St. Bartholomew's sanctuary), he proposed ornate stalls and a cancellum wall, with a comparatively small pupit and a new casing for the Holditch organ of 1874 in the north-east corner. Ambition soon changed this to the scheme shown in the second coloured drawing at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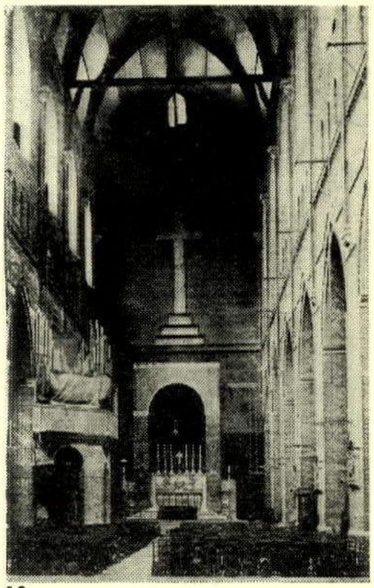
the RIBA, 9, in which the pulpit was to be displaced slightly to the west and a large organ by Walker erected in the recess next to the sanctuary on the north side. No doubt its stout red arches and strongly modelled yellow-brown gallery would have been attractive in themselves—but it is an example of Wilson's fatal concentration on detail to the exclusion of architectural qualities that he was oblivious of the extent to which the organ would have unbalanced Edmund Scott's noble single-minded space. As can be seen, 10, in a contemporary postcard,[9] the brick core of the gallery was actually built in 1901 and the organ erected on it in an unsightly wooden frame, nicknamed 'the cottage.' It was rightly condemned as an eyesore and in 1906 was demolished. The organ was removed instead to a gallery at the west end, where it is divided in two, with a central console. The west gallery, with its thick, primitive columns of wood, is clearly also by Wilson, though virtually undecorated.[10] It was designed for a choir and orchestra of 150 people.



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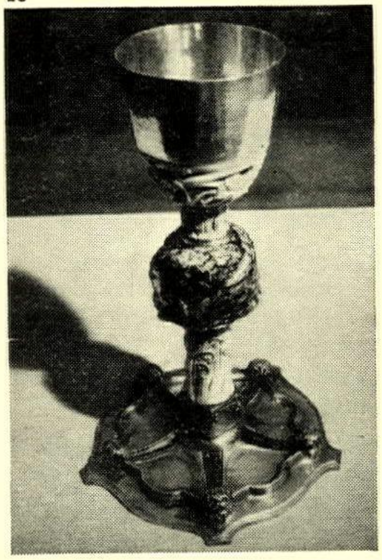
As finally erected in 1906 on the site of the abortive organ gallery, the pulpit is a triumph. Its bulging polygonal gallery, faced with panels of Irish green marble, stands on six piers of red African marble with white alabaster capitals and a plinth of black Tournai marble. The perfect circle of the wooden canopy is suspended in free space from two wall brackets of iron. The gallery has an apsidal dado of alabaster. The one weak link is the crucifix, which dates from 1888 and was salvaged from the previous wooden pulpit. Best of all—the quintessence of Wilsonism—is the scaling down of the spiral staircase to a minute size compared with the flanking columns in front, 11, so that there is the conceit of a kind of Aladdin's Cave. The Ravennesque capitals are excellently carved with inscriptions (the two end capitals were, by a mischance, transposed, so that they read *Pro Nobis/Orate*). At the west end of the church, in the second bay on the south side, is the baptistery, 12, also by Wilson and completed in 1908. It is a curious composition: on a semi-circular plinth of three black marble steps stands the octagonal font of dark green marble, bordered with beaten copper. Measuring 5 ft. 7 ins. across, it resembles an enormously enlarged casket or snuff-box. The recess behind is lined with light green marble to a height of 12 ft.; and on a pedestal stands an uninspired statue of St. John the Baptist designed by Sir Giles Gilbert Scott and made by W. D. Gough in 1925.

12

There is one more work of Wilson's in the church; a very pretty chalice, 13, presented in 1898 by the Ward of the Confraternity of the Blessed Sacrament. The silver cup and silver-plated base are connected by a richly carved ivory stem of vine tendrils in truly Art Nouveau twists and curves. Halfway up the stem is a globular hand-hold, made of green, blue and brown enamel and representing two interlacing dragons. The hexagonal base is also inlaid with green and blue enamel.

13



It may be questioned whether, apart from the chalice, Wilson's work at St. Bartholomew's justifies the title 'Art Nouveau.' It seems at first sight so formidably chunky. Yet this chunkiness is merely a necessary contrast to the flowing patterns of the marble and the beaten metal. It is the reliance on the curves and twists of natural materials, deriving ultimately from Ruskin, and their contrast with massive rectilinear shapes, that distinguishes English Art Nouveau from the work of Horta or Guimard. It was the *unnatural* quality of the French and Belgian work that the English stigmatized as irreverent and pagan—and which turned the English away from the brink of modern architecture. At St. Bartholomew's, there is of course an overall impression of the Byzantine[11]: Bentley's Westminster Cathedral (1895-1903) and Lethaby's and Swainson's book on St. Sophia (1894) are clear influences. Wilson, however, used the stylistic detail only as the starting point for a dream world of Byzantium—a rich, permanent, setting for worship towering above the mere mortals in the nave[12]—again a strong Contrast to the flimsiness of much continental *Art Nouveau*. Wilson's vitality and sense of scale were rejected by the 'good taste' of the next generation. His patron, Fr. Cocks, after his secession to Rome (he became a Monsignor), built another church, St. Peter's, Hove (1915), designed by Bentley's pupil and successor, J. A. Marshall. Although decently Byzantine outside, with a slim campanile, its heavily marbled interior has weakly Mannerist detail—the same contrast with the stock brick of St. Bart's as there is at Westminster between Marshall's decorations and Bentley's background.

[1] Illustrated and briefly described in John Brandon-Jones's article on Lethaby in the *RIBA Journal*, 1957, pp. 220-221.

[2] Presumably, if episcopal authority challenged her insertion, the Vicar could reply that she was merely conventional decoration for a Lady Chapel.

[3] A characteristic ornament in the work of Sedding, who practised at Penzance and Bristol for ten years, 1865-75.

[4] Presumably this altar was intended to be transplanted eventually to Wilson's great eastern Lady Chapel (see above, 1).

[5] Vicar of St. Alban's, Holborn, 1918-35, he died in 1963 aged 98.

[6] With Barkentin and Krall as executants. They also made the three Bologna-style sanctuary lamps.

[7] In the nave Cocks's one conventional choice, W. E. Tower, Kempe's successor, had previously completed four out of sixteen proposed windows on the themes of the Incarnation and the Atonement.

[8] Sir Walter Tapper's design of 1918 for a 'War Shrine,' mentioned by Goodhart-Rendel, does not seem to have been carried out either.

[9] I am grateful to Mr. W. W. Begley, an expert on Brighton's ecclesiology, for lending me this.

[10] Under the gallery is a conventionally Gothic Children's Chapel of 1929 by Harold Gibbons; on the wall are some good early photographs of the church.

[11] The architectural painter and draughtsman, William Walcot, used the baldacchino and other details of St. Bartholomew's in his painting 'Justinian weds Theodora'—the architecture, of course, being that of St. Sophia. Mr. Begley showed me this too.

[12] It was not Wilson's fault that this type of liturgical setting degenerated into the fashion for Baroque furnishings promoted by the Society of St. Peter and St. Paul after 1911.

SCHOOL 1, RICHMOND

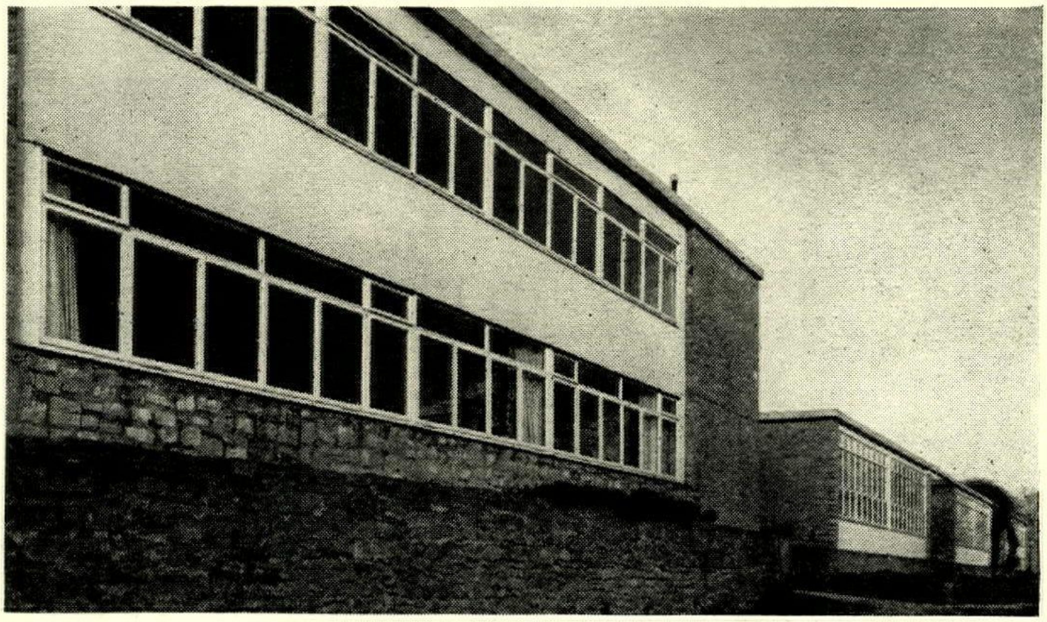
SECONDARY SCHOOL, RICHMOND, YORKSHIRE

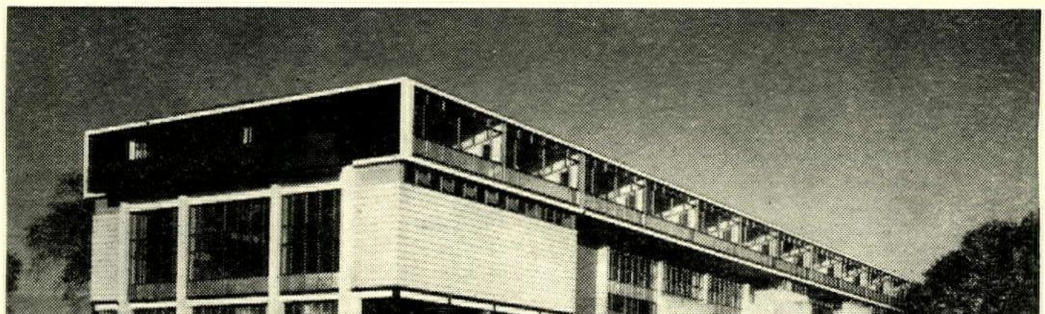
photographs by H de Burgh Galwey

architects: **DENIS CLARKE HALL AND PARTNERS**

site plan

key
1, girls' high school, 1940
2, county modern school, 1960
3, Roman Catholic secondary school, 1965





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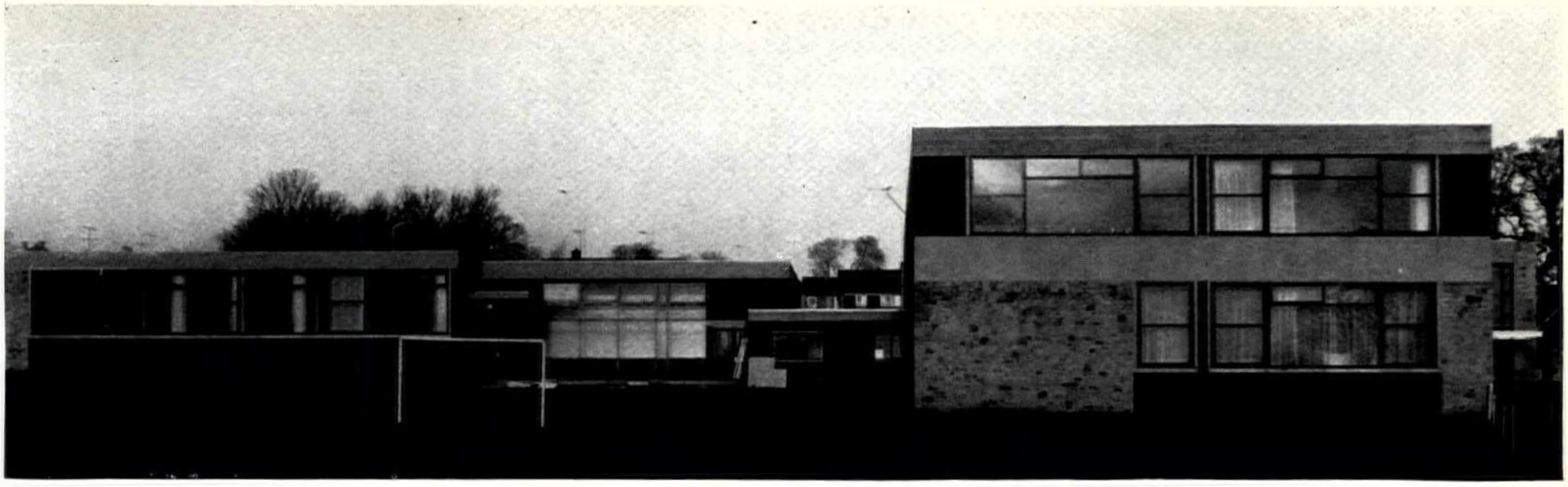
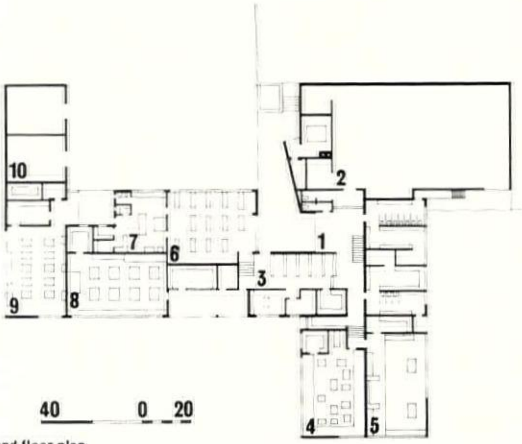
1, The open pavilions of the Girls' High School of 1939-40, photographed recently in their mature state. 2, The County Modern School of 1958-60 with its classrooms compactly double-banked on the steep site.

The names of Clarke Hall and Richmond have an assured and well-deserved place in any account of the development of the modern English school. It is unusual for a small country town to have received no less than three secondary schools by the same eminent London architect over a period of 25 years. An educational purist might suggest that it were better to have one comprehensive institution and an architectural purist might regret that, although the sites are contiguous, they hardly form a coherent campus. Nevertheless, each of these schools has an exceptional value on its own and no historian would wish to see them fused. The Girls' High School (AR, April 1944) is basically the design which won the *News Chronicle* competition for an ideal school in 1937 (only a year after Gropius's Impington was started). As built in 1939-40, 1, it was the pioneer example in this country (in effect, in Europe) of the open plan, in which pavilion classrooms defined clear and distinct zones of noise and quiet, and set new standards of comfort, daylight and visual perceptibility. It was for only 160 pupils. The County Modern School by contrast (AR, April 1960) was built in 1958-60 for 600 pupils in four-form entry, and it was a significant example, 2, built into a steeply sloping site, of the more compact planning demanded on both economic and visual grounds for larger schools—a type of planning Denis Clarke Hall himself had pioneered in his Cranford secondary school of 1954.

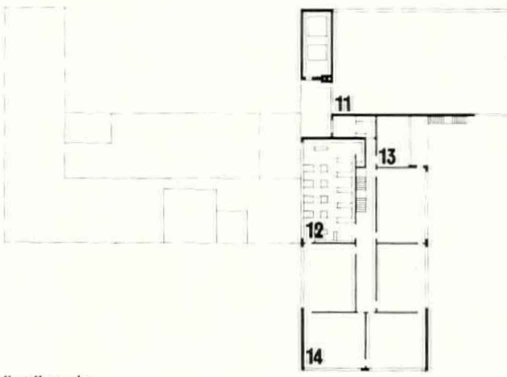
St. Francis Xavier Roman Catholic School, illustrated here, is less obviously significant. It is a good, ordinary, small, British, modern school—and that is its significance, in that our casual acceptance of this kind of quality in school building (as against other forms of building) shows how far the ideas of Clarke Hall and the other pioneers have come to be accepted as the conventional wisdom. In spite of diminished budgets, there can be no doubt that this school is, seen objectively, better detailed than its famous 1939 forebear—and yet it will not be mentioned in the books as something special. This is not likely to worry the local people who use and see it. To them the vital characteristic of the three Clarke Hall schools is probably that they do not look like key monuments of history but form a natural and unselfconscious part of the stone-walled hillside scenery of the Dales.



3. general view of the newest school from the south across playing fields, with housing estate behind (centre).



ground floor plan



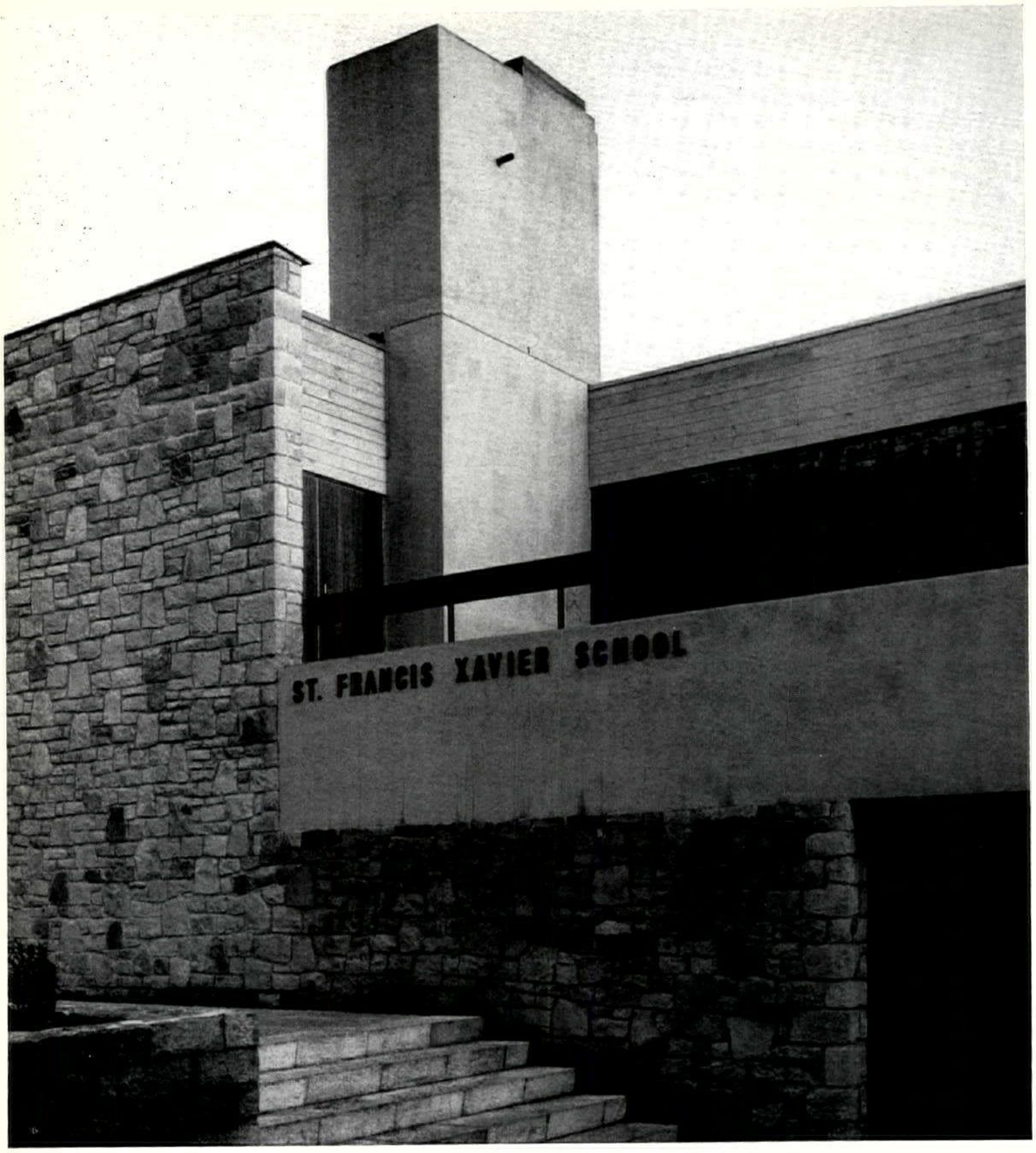
first floor plan

key
1. entrance hall
2. hall/gymnasium
3. cloaks
4. housecraft
5. arts/crafts
6. dining/needlework
7. kitchen
8. science
9. handicrafts
10. cycles
11. upper part of hall/gym
12. library
13. staff
14. classrooms

St. Francis Xavier Roman Catholic School in this first stage is a one-form entry secondary school for 180 pupils. It occupies a sloping site with excellent views to the south across playing fields to the Yorkshire Dales. Because of stringent limitations in cost, a compact plan with minimum areas was adopted in order to maintain the same standards of finish as in the two adjoining schools by the same architect. The structure is of reinforced concrete, with a roof of timber. As in the two earlier schools, the main walling material is local stone laid random, designed to harmonise with the neighbourhood. Hardwood floors are laid in all teaching areas.

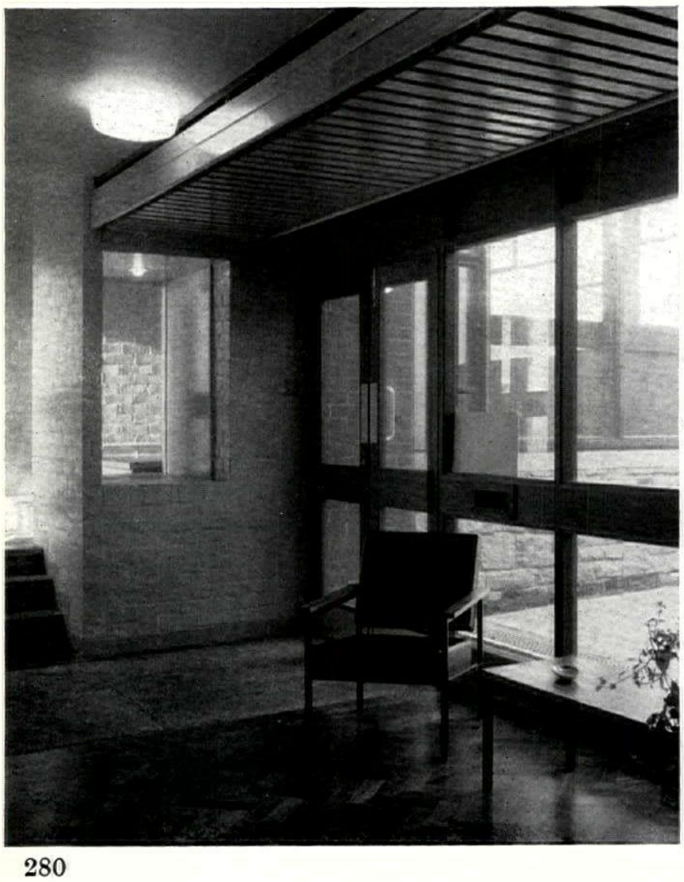
The two-storey section accommodates four classrooms, library and staff room on the first floor, with changing rooms, entrance hall and two practical rooms below. A single-storey west wing contains laboratory, handicraft room, kitchen and dining room. The assembly hall on the north side also serves as a gymnasium. Heating is provided by low pressure oil-fired boilers to radiators and convectors dispersed throughout the building. Work began on this first stage in April 1964, with occupation for the 1965 autumn term, and the total cost, including playing fields was £93,600. Quantity surveyor, Turner and Townsend. Clerk of works, R. Jaques.

4. entrance forecourt looking south.



5

5, northern side of entrance forecourt, with boiler house and (right) terrace in front of upper part of hall. 6, entrance hall. 7, handicraft room.



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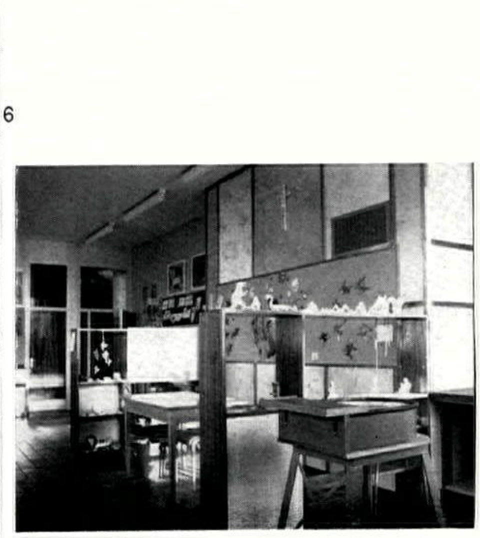


7

SCHOOL 2, HAMPSTEAD

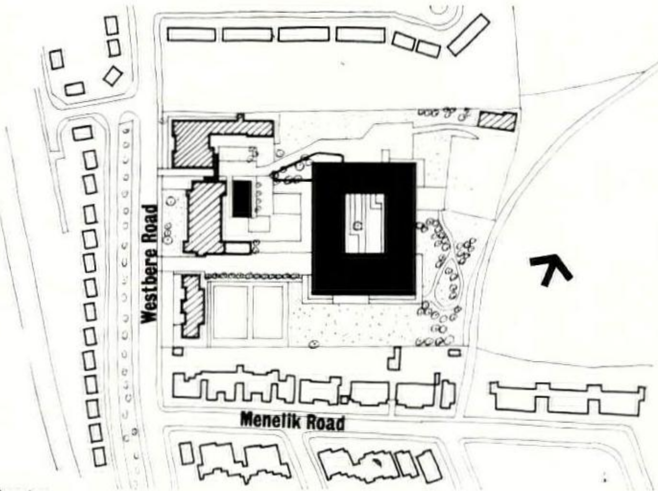
, the west side of the courtyard, showing steps to terraces and first-floor entrance.

ECONDARY SCHOOL, HAMPSTEAD, LONDON

photographs by H de Burgh Galwey

chitects **STILLMAN AND EASTWICK-FIELD**

Hampstead School, situated in West Hampstead, close to the mainline railway, occupies the site and former buildings of Haberdashers' Aske's School for Boys, bought by the LCC when Haberdashers' moved to Elstree. It is an eight-form entry mixed comprehensive for 1,335 pupils. Behind the three existing red brick buildings (1902 in the centre, 1910 to the north and 1930 to the south), which have been thoroughly modernised, a new two-storey and three-storey courtyard block has been built, providing in total a wide variety of accommodation. There are no less than six 'halls': the assembly hall and two gymnasia on the south side of the new courtyard, a secondary hall with proscenium stage in the 1902 block, and a third gymnasium and a swimming pool in the 1910 block. Dining is in houserooms: four of them grouped compactly round



site plan

a central kitchen on the north of the new courtyard, and two more on the ground floor of the 1902 block with a second kitchen, which has its own service yard next to the new boiler house.

The two 'public' wings of the new building are joined by two blocks of teaching and staff rooms, the falling ground on the west side enabling a third level to be introduced; this is designed as an open thoroughfare and covered play space linking the stepped internal courtyard with the main paved forecourt dividing the old from the new buildings. Besides administration and common rooms, there is specialised teaching accommodation in the new building for Art and Pottery above the houserooms (the only teaching rooms with north light), Housecraft (with a model flat), Needlework, History and Geography, Music and a Language Laboratory. In the 1902 building there are rooms for Metalwork, Woodwork and Library, while the 1930 Science block, designed for a direct grant school with much VIth Form work, has been adapted conveniently for this larger comprehensive school.

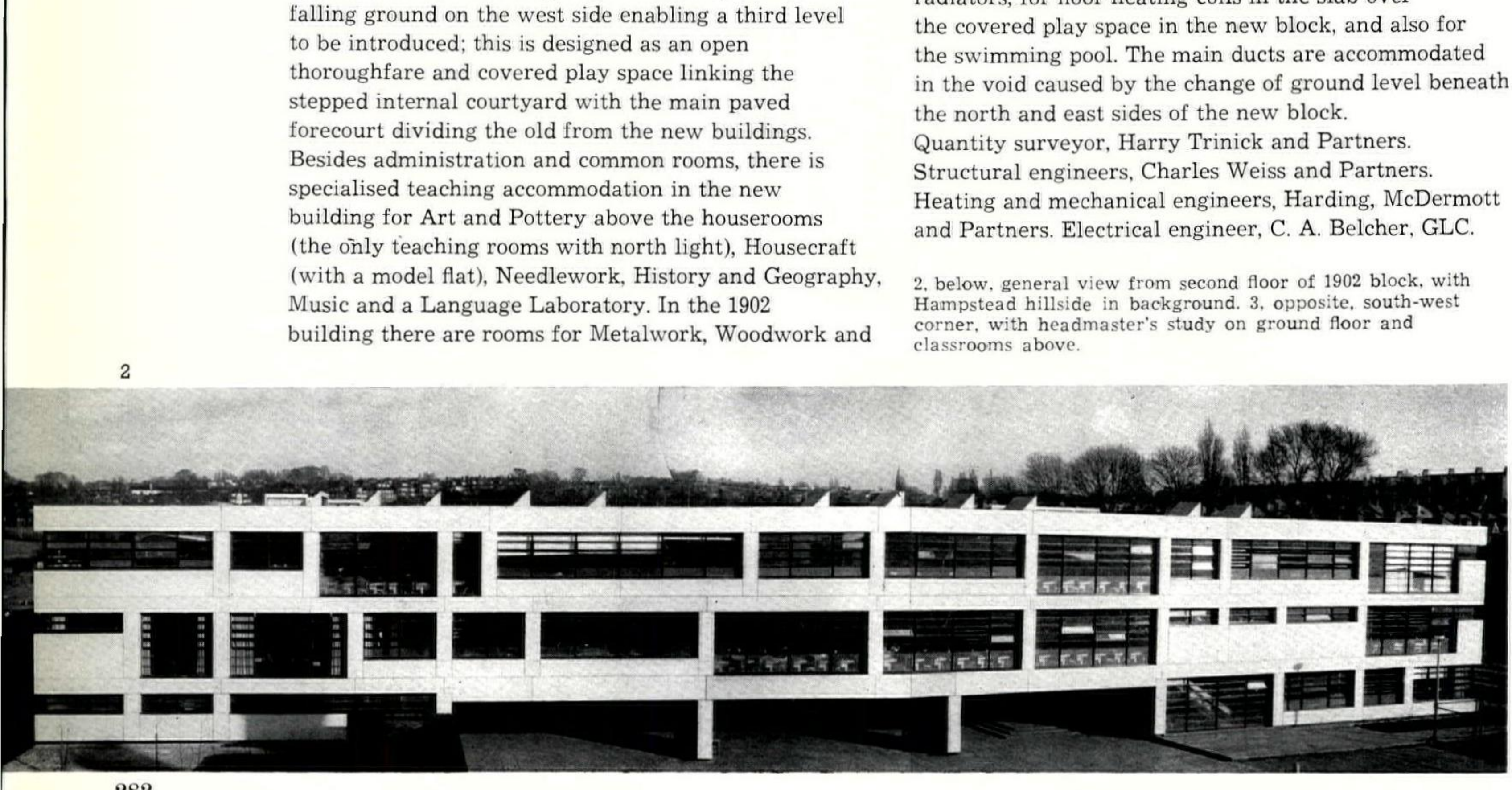
The diverse functions and room shapes of the new building have been unified by a consistent external treatment of precast concrete panels of five basic types —column, beam, spandrel, wall and fascia—and horizontal black-painted metal glazing. Joints between panels are caulked with black polysulphide rubber mastic. Room sizes are expressed by terminating each 9 in. cross wall or 4½ in. partition by a vertical panel, with variations in cill height or panel size where appropriate. Similar panels with a similar calcined flint aggregate form the internal finish to columns and balcony in the assembly hall. The structure is composite: 9 in. brick cross walls, supporting reinforced concrete floor slabs, are supplemented by reinforced concrete columns for the larger spaces and by intermediate beams in the double-height hall and gymnasia. The gymnasia roofs are of folded lightweight concrete with wood-float finished soft plaster ceilings; the assembly hall is spanned by steel lattice beams supporting lightweight roofing blocks, with a plastered suspended ceiling and acoustic tiles. Internal walls are plastered, with acoustic ceilings in perforated metal (corridors) and fibre tile (classrooms). Floors include lino, p.v.c. tile and cork tile in the classrooms, Gurjun wood strip in the gymnasia and teak block in the assembly hall. The steel staircases have precast terrazzo treads and 10 in. x 3½ in. hardwood handrails with steel core rails and balusters. There is a bridge link between the 1902 and 1910 blocks of exposed aggregate U sections with timber glazing bars.

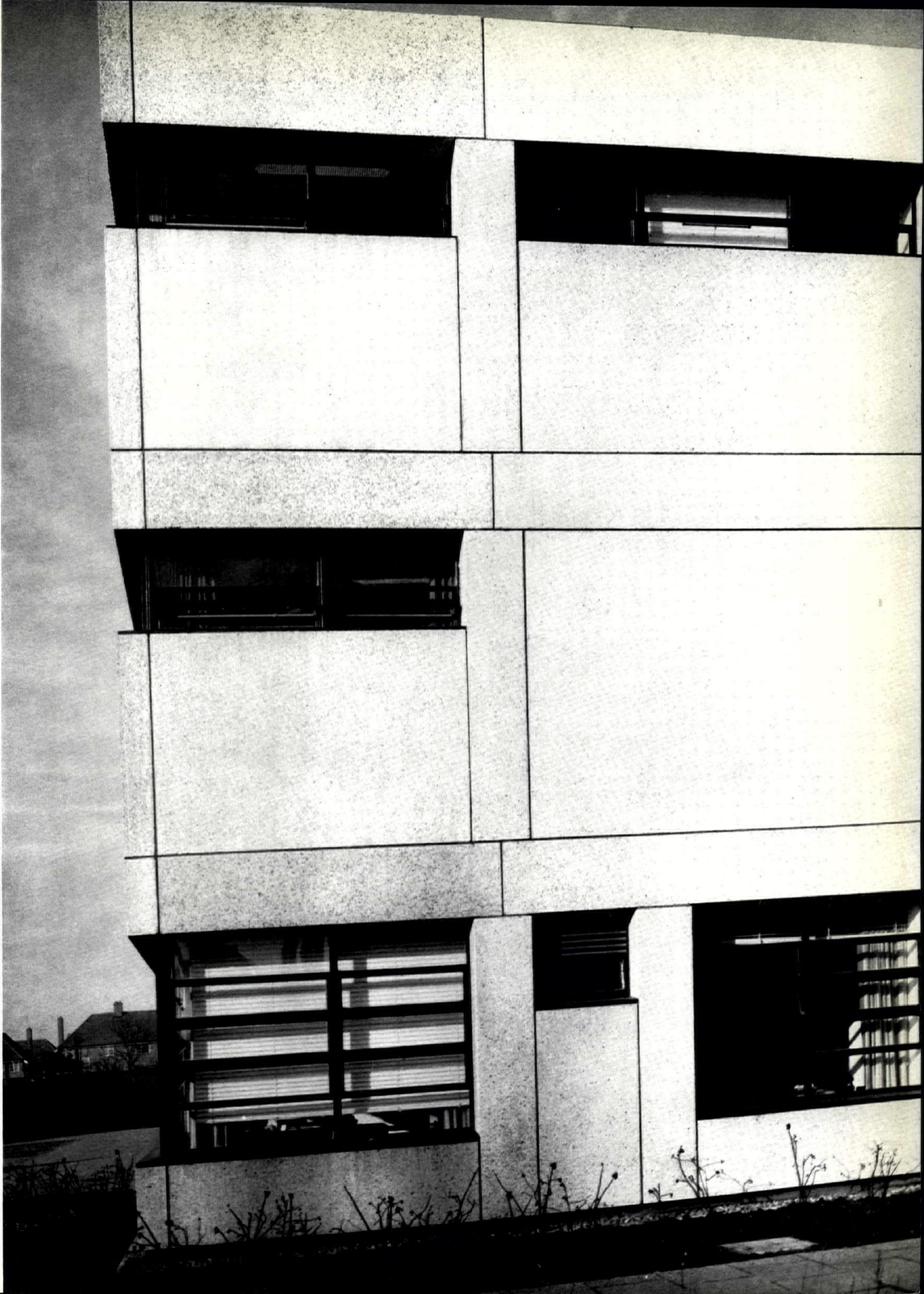
The boiler house, including fuel store and sub-station, forms a separate structure, faced with blue Uxbridge flint bricks and joined by screen walls to the old building. Three oil-fired boilers supply hot water for radiators, for floor heating coils in the slab over the covered play space in the new block, and also for the swimming pool. The main ducts are accommodated in the void caused by the change of ground level beneath the north and east sides of the new block.

Quantity surveyor, Harry Trinick and Partners. Structural engineers, Charles Weiss and Partners. Heating and mechanical engineers, Harding, McDermott and Partners. Electrical engineer, C. A. Belcher, GLC.

2, below, general view from second floor of 1902 block, with Hampstead hillside in background. 3, opposite, south-west corner, with headmaster's study on ground floor and classrooms above.

2





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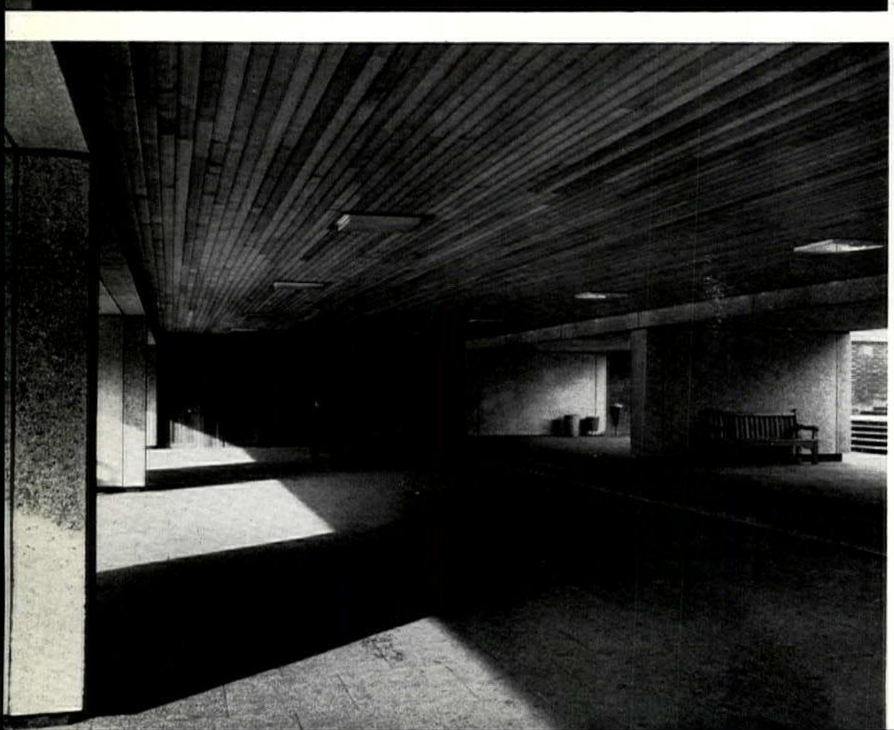

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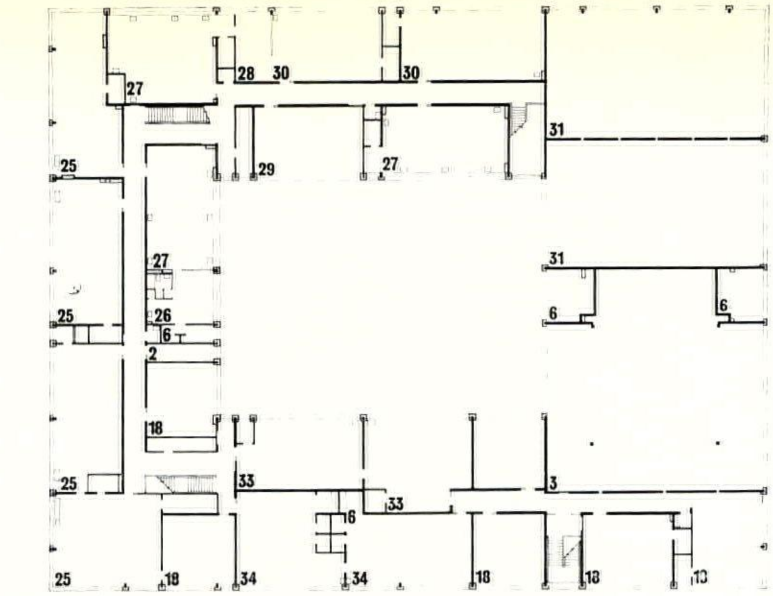
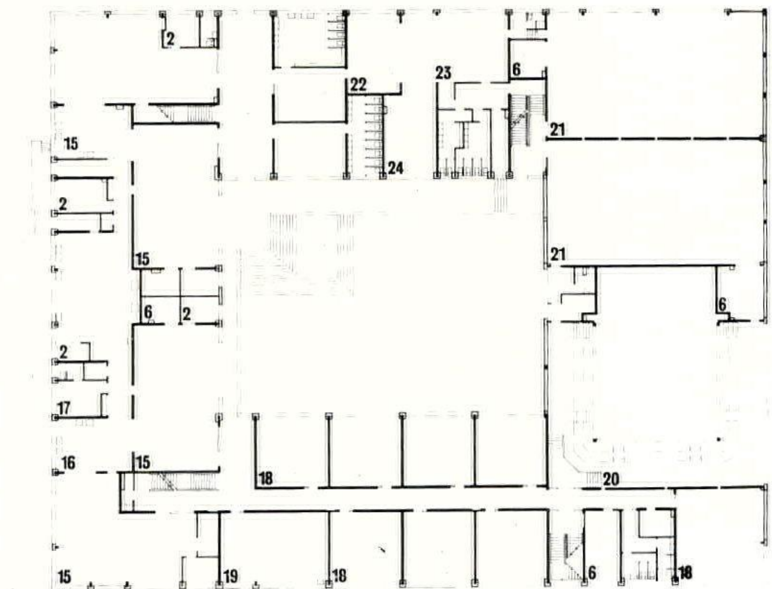
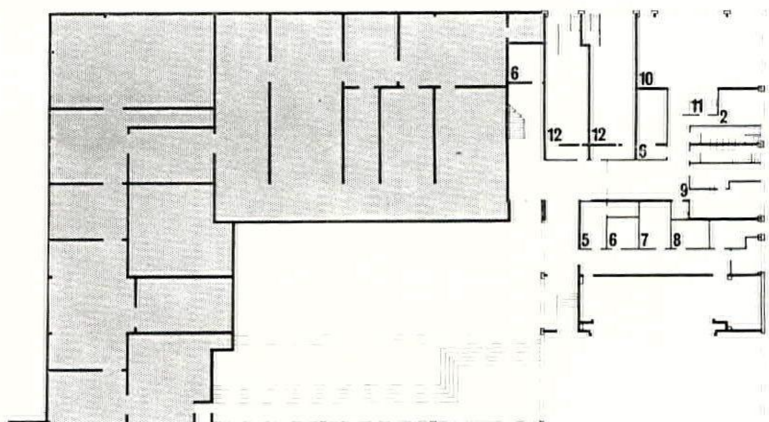


second floor plan



first floor plan

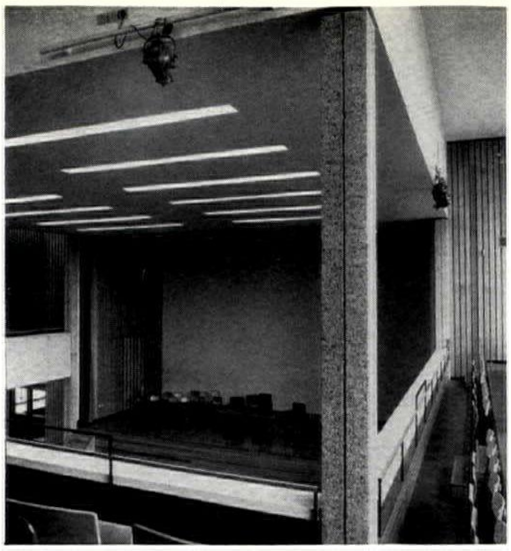


ground floor plan: tinted area, partially excavated void

key

1, main entrance hall
2, office
3, headmaster
4, assembly hall
5, radio room
6, store
7, music store
8, music practice
9, medical suite
10, general purpose
11, tea bar
12, changing
13, covered play area
14, entrance hall
15, houseroom
16, servery
17, domestic staff
18, classroom
19, history
20, gallery
21, gymnasium
22, staff dining
23, staff common room
24, marking room
25, arts and crafts
26, model flat
27, housecraft
28, model office
29, history/geography
30, commerce
31, upper part of gymnasium
32, upper part of assembly hall
33, geography
34, needlecraft

4, the vehicular approach to the service yard on the north side, seen from beneath the new bridge connecting the 1902 and 1910 blocks.
5, the space beneath the pilotis on the west side of the courtyard.



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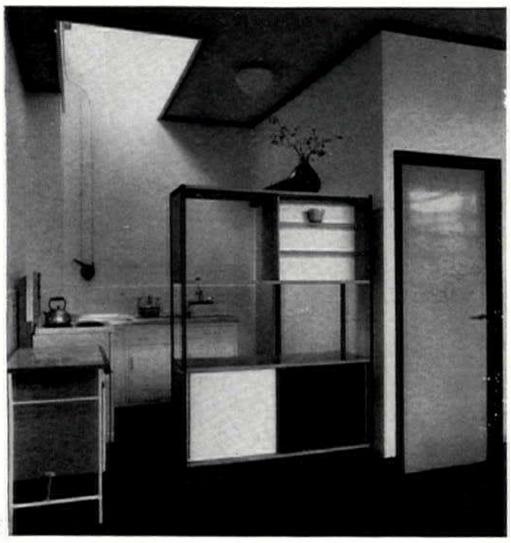
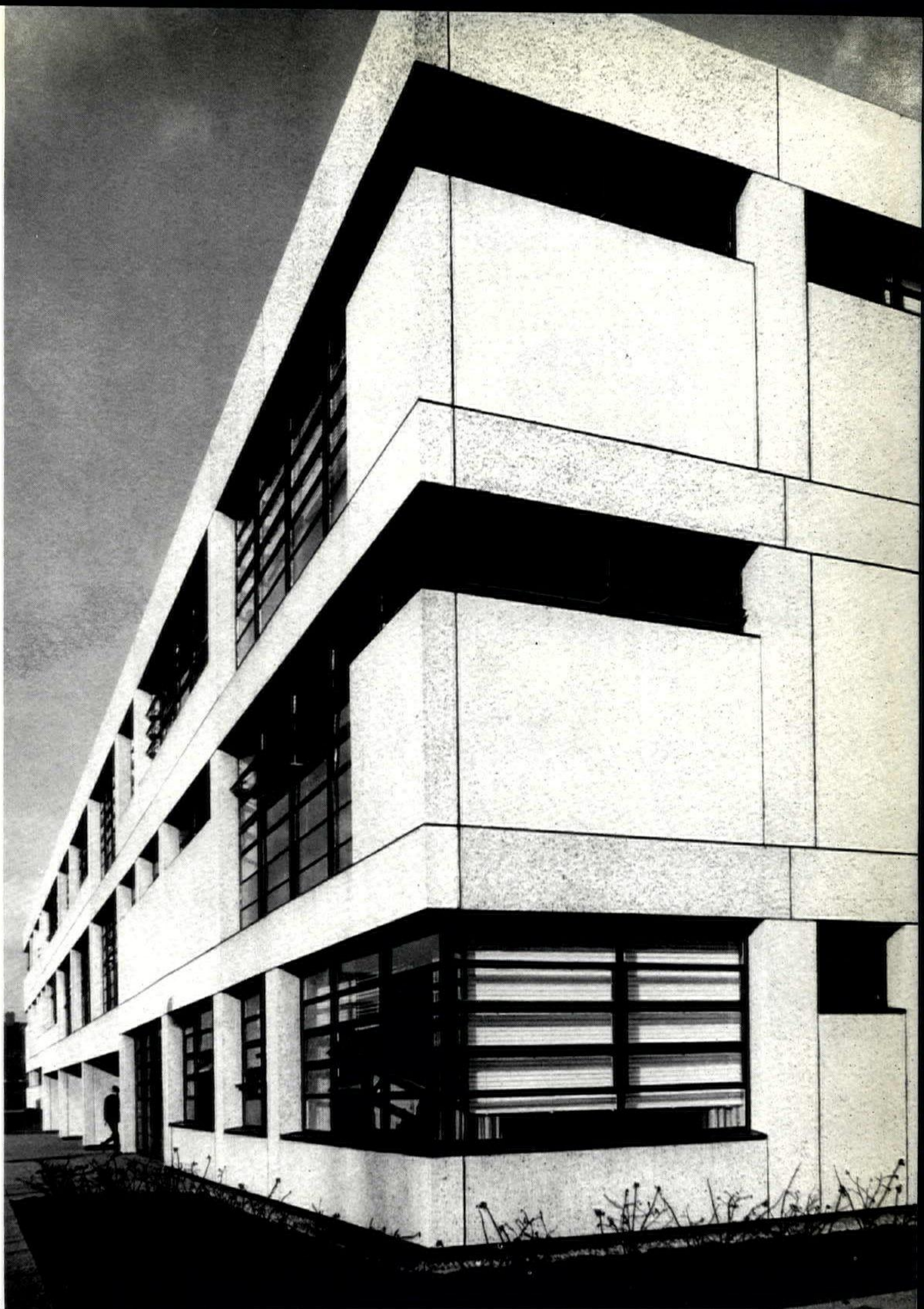


7

SECONDARY SCHOOL, HAMPSTEAD

6, asembly hall seen from gallery. 7, model flat in second-floor housecraft room. 8, oblique glimpse of west façade from viewpoint close to that for 3. 9, east façade, showing change of level with gymnasium on left. 10, south façade looking towards 1930 science block, showing fenestration of two gymnasia and assembly hall (landscaping unfinished).



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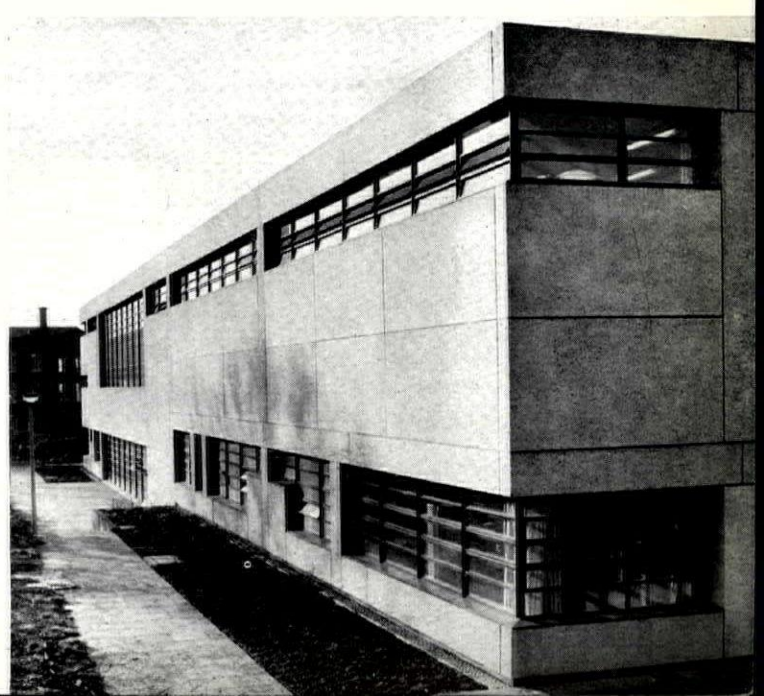
9 10



11. head-on view of west façade, giving epitome of cladding panels and horizontal glazing.

criticism

The outstanding interest of Stillman and Eastwick-Field's Hampstead School is that the architects have courageously tackled both the aesthetic and the educational problems of mingling closely within the same building the versatile requirements of a large school. The elementarist zoning of modern primary schools rapidly gets out of hand in a big comprehensive, where massive 'office blocks' of double-banked classrooms are usually given certain communal attachments in the form of halls and gyms and specialist blocks. Uninspiring aesthetically, these divisions have likewise proved frustrating educationally, with acute problems of 'tidal flow' between classes. The danger of social and visual anarchy was the more imminent at Hampstead, because there were three brick buildings of different heights and silhouettes already on the site: two in a dour Board School style (by Henry Stock, of Stock, Page and Stock) and the other in Post Office Georgian, all of them turning their swagger fronts to the main road and exposing their inadequacies of planning and plumbing towards the centre of the site where the new building had to go. The architects therefore boldly asserted order by packing all the new accommodation, with the exception of the boiler house, into a single rectangular courtyard building. Assembly hall and gymnasia on the south are linked by teaching blocks of identical height to the houserooms and art rooms on the north. The arrangement is analogous with a Cambridge college, where the special volumes of chapel, hall and library form part of a continuous court with the repetitive residential 'sets'.

Tightness of planning has been matched by a decisive unity of architectural treatment. The exterior is a continuous 'mosaic' of large precast concrete cladding panels, beautifully made by a traditional stone masonry firm from Suffolk in a sparkling white calcined flint aggregate. Within the five basic types of panel, the diversity of room sizes and functions has been fully expressed. The precast concrete units, with their deep reveals, and the horizontally stressed black metal glazing are sufficiently strong in themselves to triumph over any unease resulting from the apparent clash of solids placed irregularly over voids. Admittedly, the victory has had its cost, not so much in constructional or engineering problems, as in the abnormal quantity of joints between precast units which had to be detailed individually by the architects. Their statement that 'no partitions have to come up to the glazing' is not quite true (the plans reveal two or three such cases). More important is the lack of distinction made in the 'column' panels between those which cover the end of 9 in. cross-walls, those which express 4½ in. partitions and those which actually enclose structural columns. Thus, while smaller rooms are clearly expressed by one window only, larger spaces often appear deceptively to run past 'partitions' and it is not always easy to read them from outside in the way the architects must have intended. There is likewise an eerie 'henge-like' impression that the building has about five times more structure than necessary. This is the result of the composite use of both columns and cross walls, and, in particular, the result of having an insufficiently wide dry joint of rubber mastic between units—they appear to coalesce in a monolithic structure instead of separating out as individual clip-on panels.

Nevertheless, seen as a whole, this is a remarkably successful design. Its robustness and broad-limbed scale seem far more appropriate to teenagers than the delicate steelwork and pretty bourgeois colours usually served up for their use. The brick-stepped courtyard can appear forbiddingly sacrificial in photographs, but when acting as a backcloth in 'break' for random conversations and darting movements, the changes of level and sweeping descent beneath the pilotis are exhilarating and unconfined. Because of its open side the courtyard is not nearly as small as it appears on the plans; and overlooking at the inner corners has neatly been avoided.

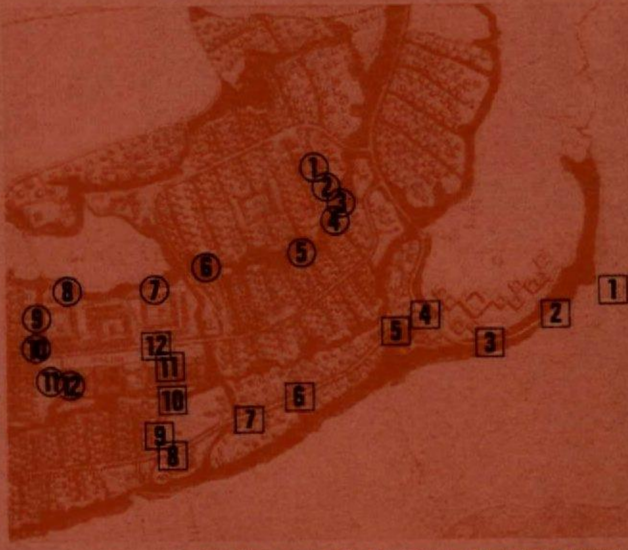
Inevitably the cost of the concrete has not left room for luxury inside, nor would it have been appropriate. Big spaces are given calm dignity by the simplest means: the hall with four slim columns (no excess of structure here), the gymnasium with polygonal baffles between the rooflights, the staircases with massive hardwood handrails. The classrooms and houserooms are kept as simple and flexible as possible. The glazing, however, while convincing enough outside and sensibly providing only small panes for replacement, seems from within like shades of the prison house, massive and incessant. This problem of glazing bars within large precast units seem intractable (cf. St. Katherine Dock House, AR, March 1965), when it is not practicable to provide vast single panes of glass in the SOM luxury office manner. Fortunately there is release from bars at Hampstead in the excellently modernized older buildings. The only point at which the superb precasting of the new seems to have caused imbalances of quality in converting the old is externally, in the carelessly wood-battened bridge across the service road and in the cement rendering of the matrix of a demolished wing. N.T.

CAVE HILL
BARBADOS

TOWNSCAPE

Project Architect/Planner: David Gosling
Town and Country Planning Officer: Peter Stevens
UN Planning Consultant: H. Thornley Dyer

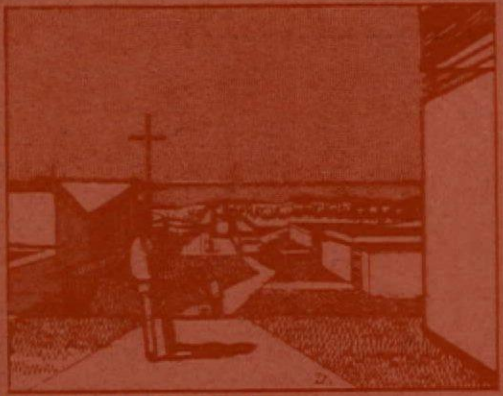
Bridgetown, of which Cave Hill is an extension, can best be described as a linear town stretching from Oistins in the south-east to Speightstown in the north-west and its shape is the natural outcome of a continuous coastal highway coupled with the attractions of a fine sea coast and many sandy beaches. Coastal cliff formations and the physical land pattern of rising terraces running parallel to the coast have emphasized this attenuated form. The logic of such an urban form under local conditions has been recognized and the Island Development Plan, now in course of preparation, is based on this concept of the linear city. The Cave Hill area forms an important part of this plan and its physical characteristics (a series of terraces parallel to each other, to the coastline and to the main highway system) lend themselves to a self-contained community in linear form. The plan for the area provides a skeleton and programme for the development of a new urban framework housing 12,000 people. In preparing it a primary consideration was the visual effect of movement, both by vehicle and on foot, bearing in mind that a district, unlike an individual building, needs to be experienced from a state of mobility. The visual aesthetic experience is then derived from passing through a series of interrelated spaces, in fact the effect described by Gordon Cullen as 'serial vision' The design basis of the Cave Hill plan is the linear park, which permits people to traverse the whole area by way of a pleasant and interesting sequence of spaces, right from their patio door to shop, school or other local destination. This system might well resemble that at Welchman Hall Gully, on the same island. There, a well defined path, slightly raised above the surrounding ground and almost in the form of a board walk, runs through a varying landscape of natural tropical growth. The roads also need careful consideration and should be designed in such a way as to provide a developing visual experience for the motorist, not a straight and monotonous line. This plan tries to ensure that the vehicle user is aware of a visual transition from one sub-district to another, not only by variation in the building density but also by a definition between districts created by transverse gullies transformed into strips of parkland.



plan of Cave Hill area. scale 1:7500- Numbers in circles refer to views on foot, those in squares to views from a car.

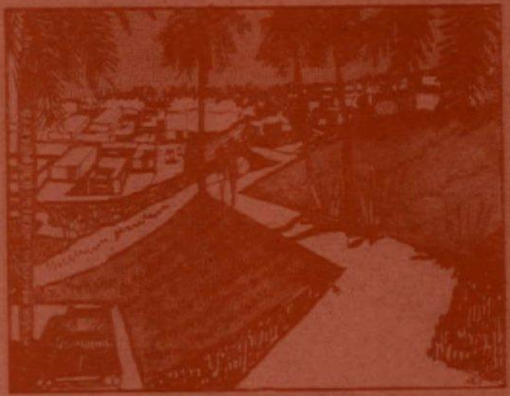
ON FOOT ○○○

1, start of walkfrom patio gate to walkway



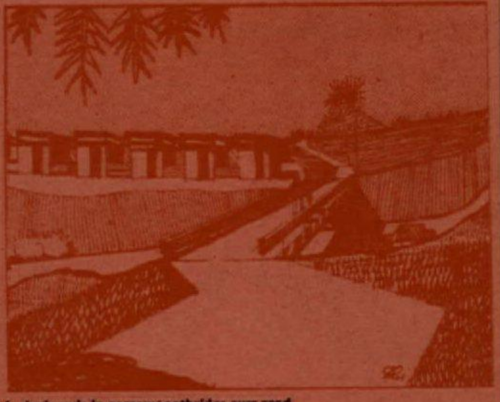
2, down walkway with distant view of sea

3, towards play area, school and linear park



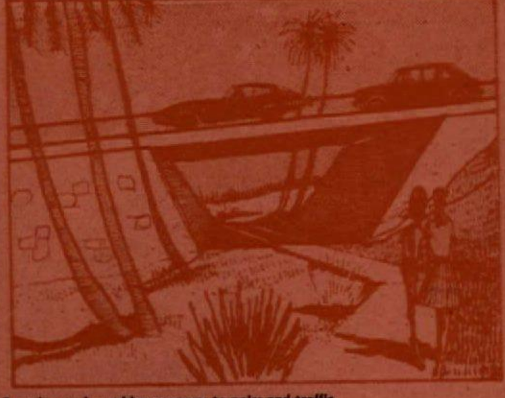
4, through linear park—shade and tranquil atmosphere

5, continuation of linear park, glimpses of houses

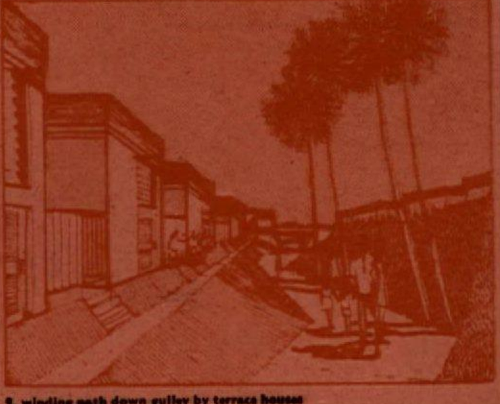


6, shade ends in narrow footbridge over road

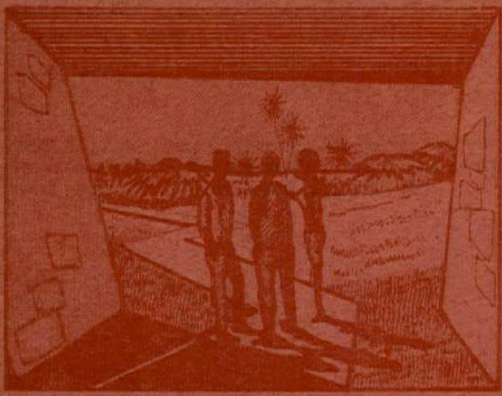
7, alongside of school fields and sports stand



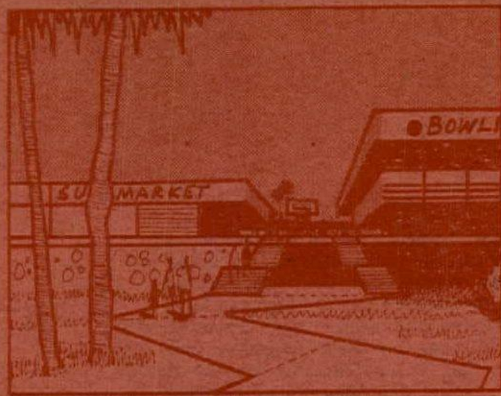
8, under road—sudden exposure to noise and traffic



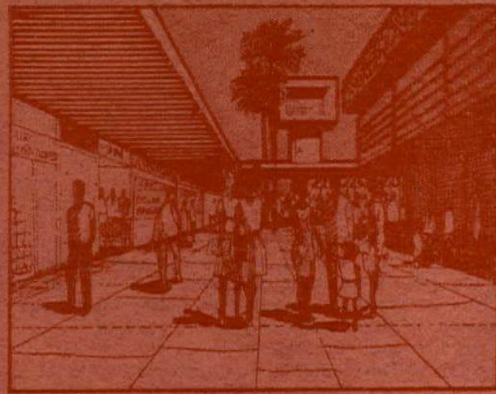
9, winding path down gulley by terrace houses



10, through tunnel, open park—vista by implication



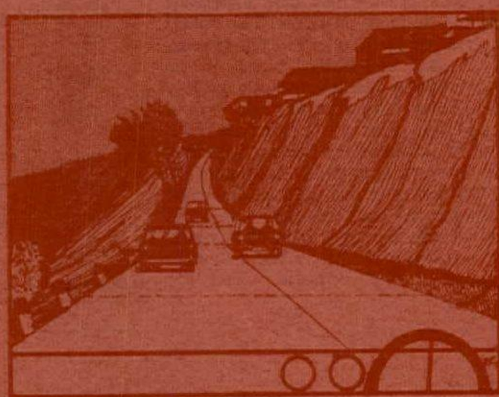
11, revelation of centre, busy platform in parkland



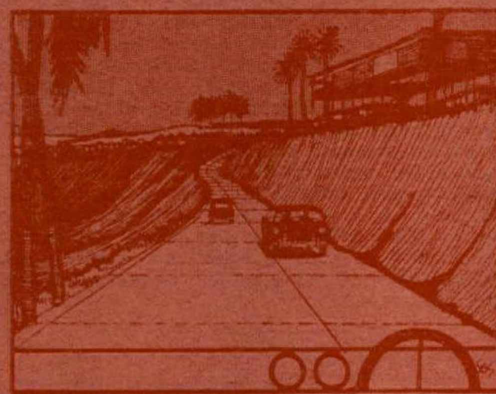
12, centre—intimacy, business, gaiety

BY CAR

1, start of journey, long road up cliff side



2, dramatic views—down to sea, up to campus



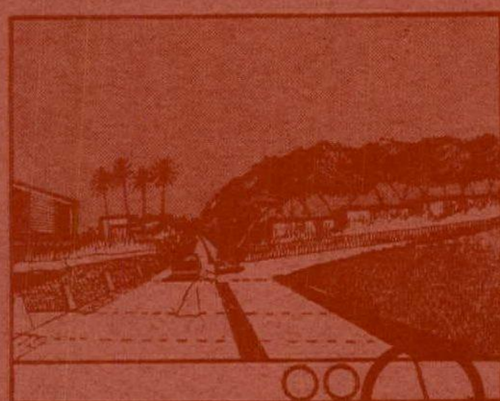
3, road turns suddenly between crack in cliff

4, across bridge, Cave Hill, university on right

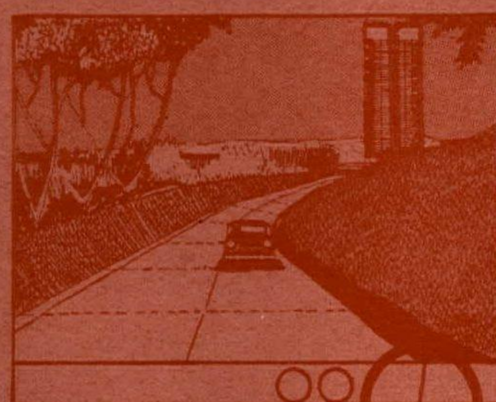
5, cliff-top spine road, housing on left

6, trough between banks, houses hidden

7, suddenly, across bridge, primary school fields

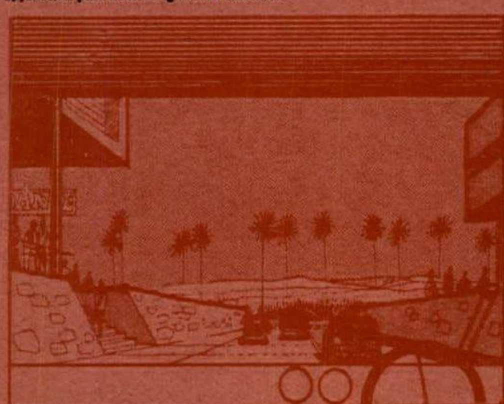


8, junction past hotel—right turn to centre



9, miniature valley road, tower marks centre

10, centre's revelation—liveliness, multi-level activity



11, under bridge to spine road, panorama of hill

12, arrival through tunnel into central area

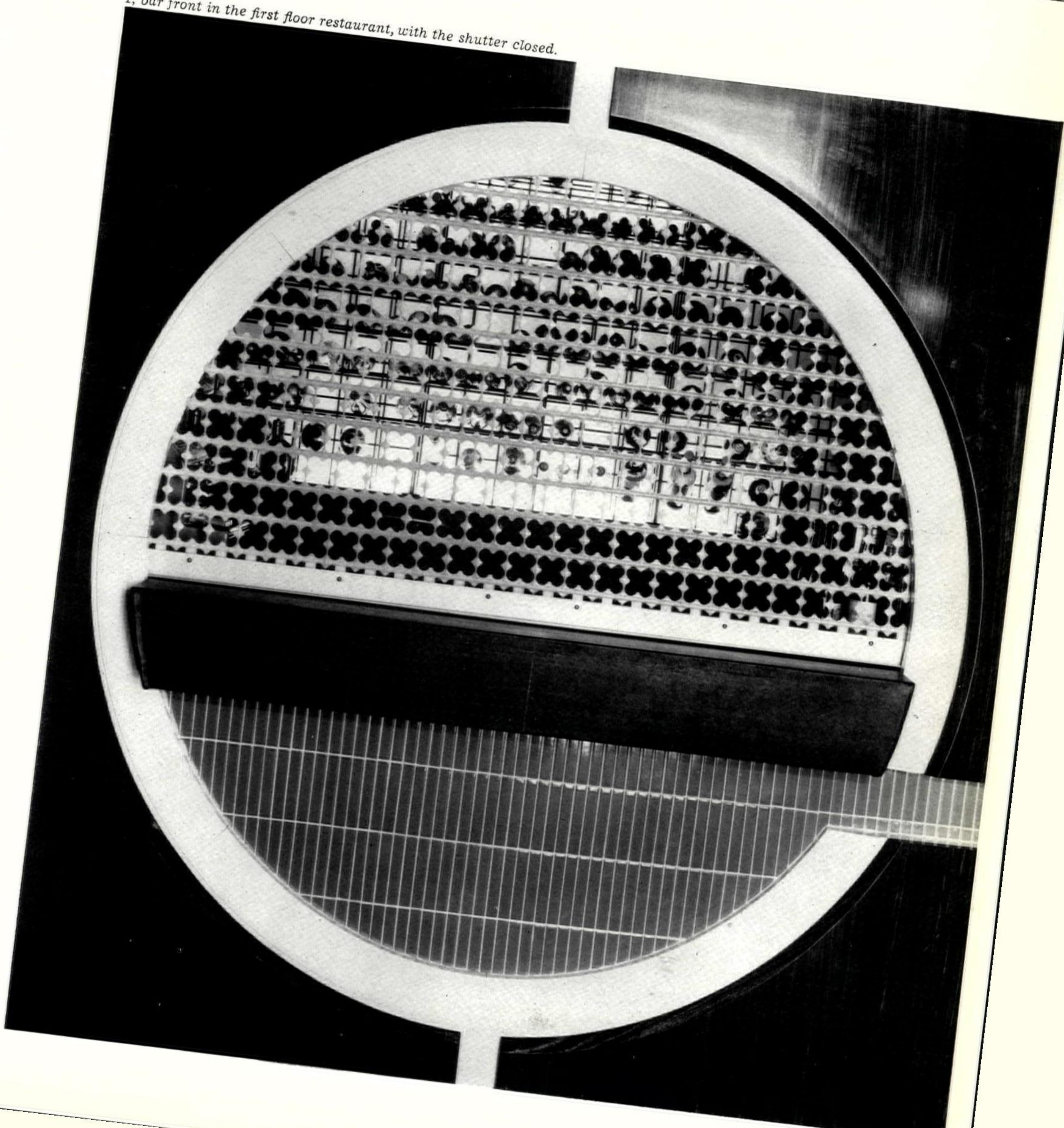
Restaurant, Leeds

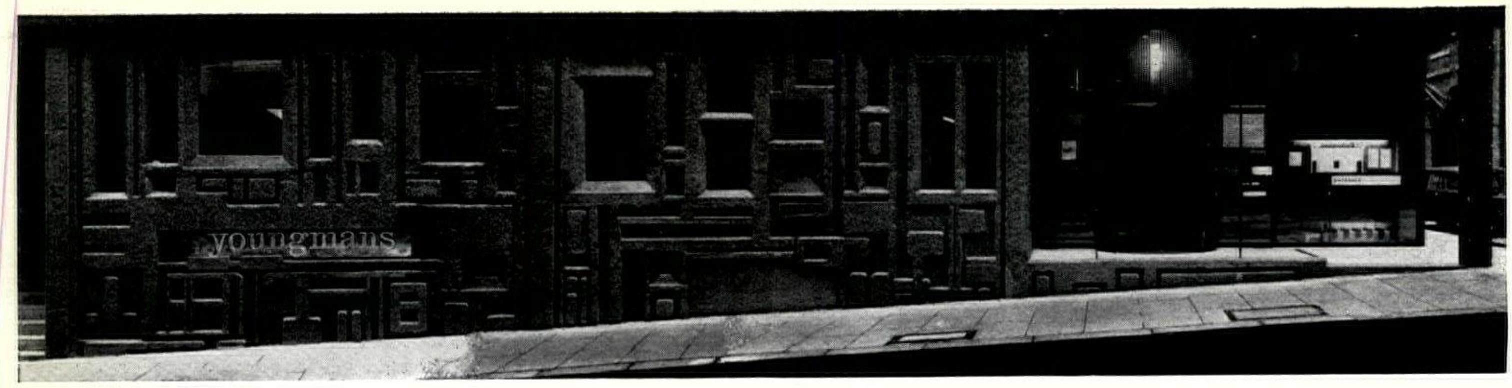
architect: Derek J. Walker

photographs by H. de Burgh Galwey and Sam Cohen

Interior Design

1, bar front in the first floor restaurant, with the shutter closed.





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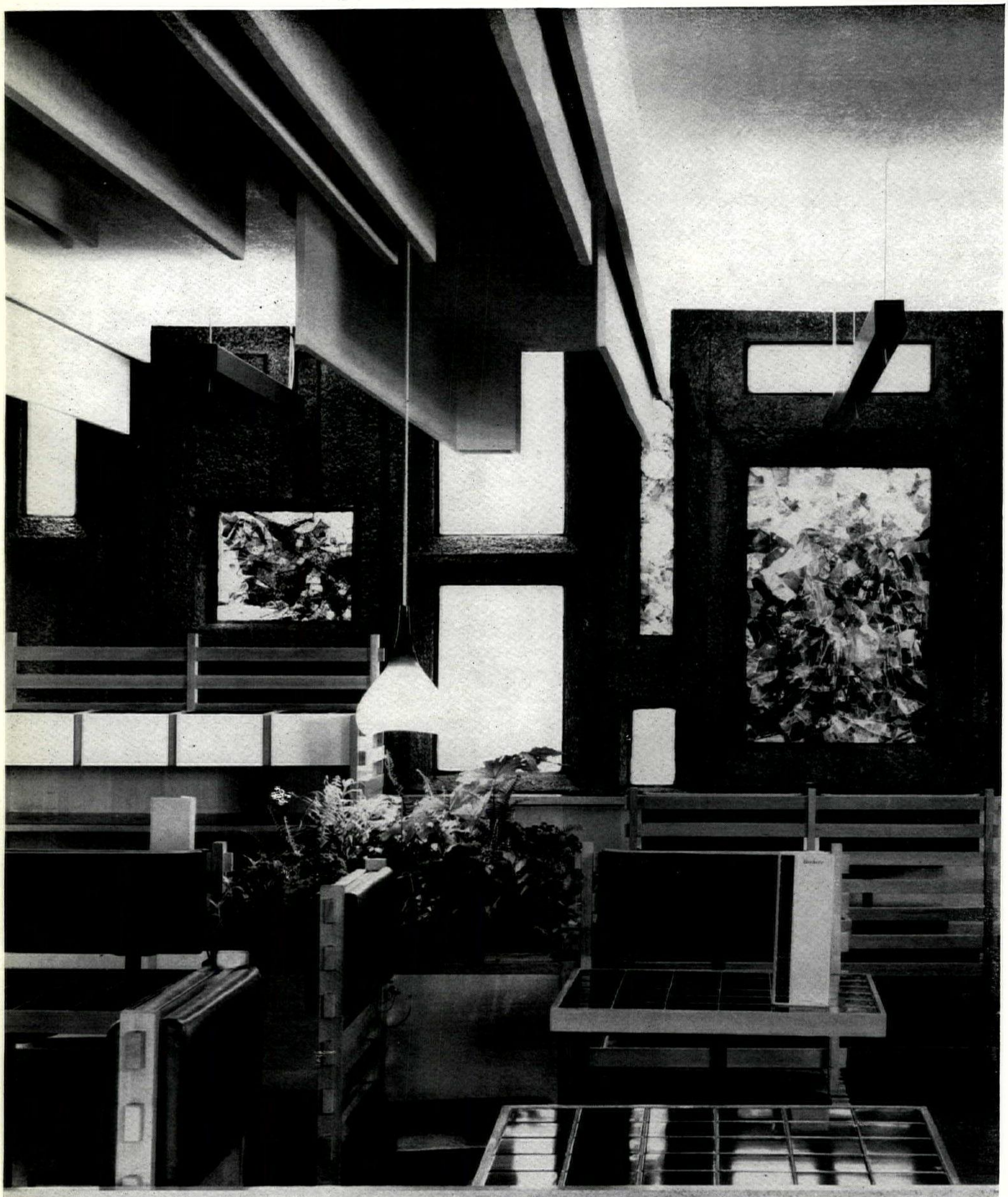
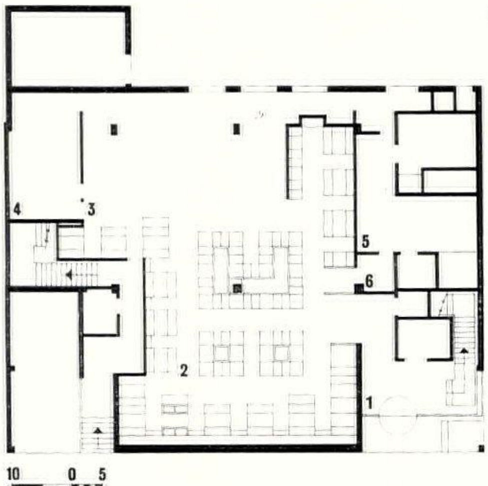


4

5

This restaurant for Youngman's is in fact a group of four, each on a different floor and each catering for different functions. The Beehive on the ground-floor is a quick service grill, the first-floor Quadrille provides business lunches and a night club, the new Kingfisher, second floor, is intended to maintain the existing fish trade and the Galleon on the third floor serves largely Jewish and Continental meals.

In order to distract from the existing building front, a strong relief concrete treatment is used for the ground floor area, while in contrast the entrance takes the form of a glass cylinder of revolving doors. The entrance hall, lift shaft and staircases are walled with white ceramic tiles, all metalwork in these areas being anodized black.



ground floor plan

key

1. entrance lobby
2. restaurant area
3. kitchen
4. wash-up
5. fish preparation
6. bar

6

2. *Exterior view of the restaurant. The pierced concrete wall is wirebrushed to expose the aggregrate and treated with polyurethane lacquer.* 3, *reverse side of the exterior wall in the ground-floor restaurant showing the inset glass mosaic panels by Christine Arnott, and the sculptured fibrous plaster ceiling. Floor tiles are dark brown, the upholstery on the fixed beech seating, designed by the architect, tan and blue.* 4, 5 *and* 6, *the first-floor restaurant.* 4, *general view across the missanda wood dance floor with right, a decorative ceramic screen by Bob Brumby, also shown in detail,* 5. 6, *the rosewood booth seating. Upholstery and carpets are peat brown.*

Restaurant, Leeds

ID

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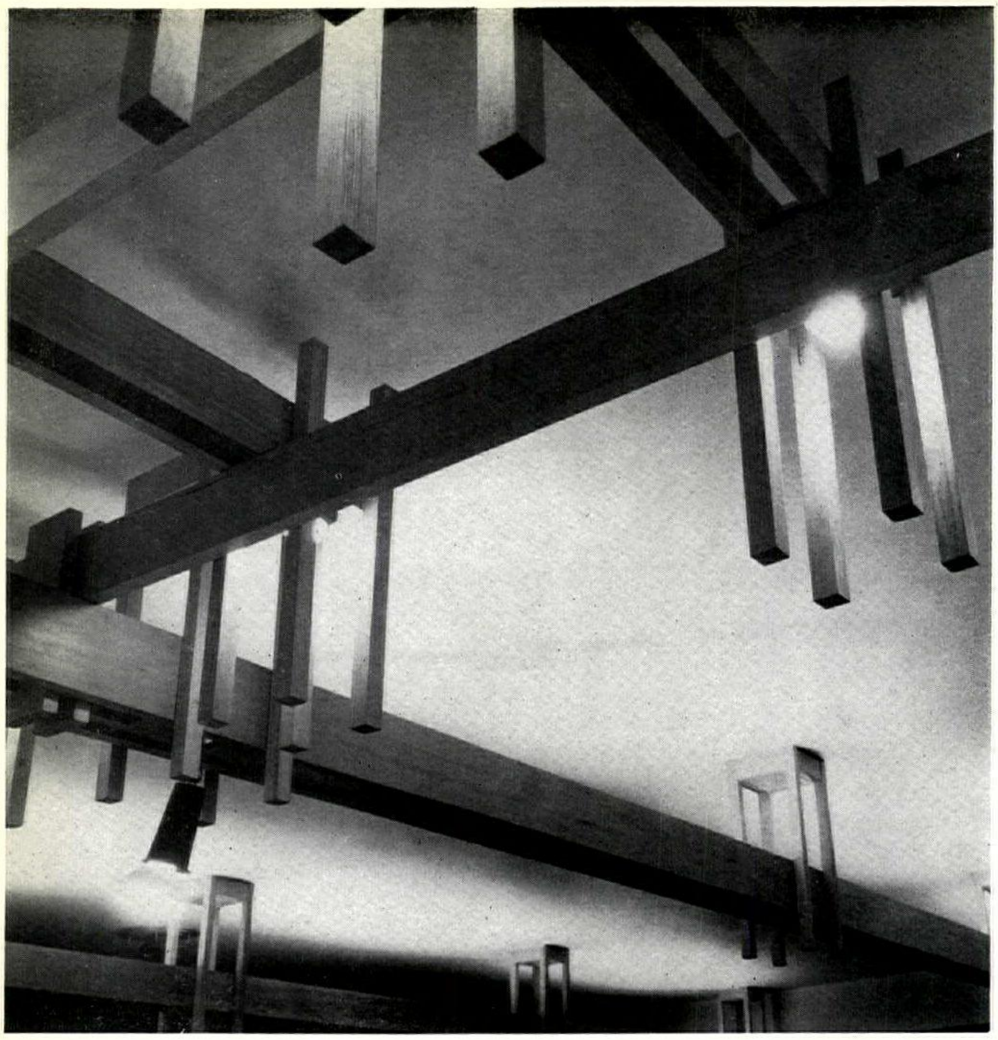
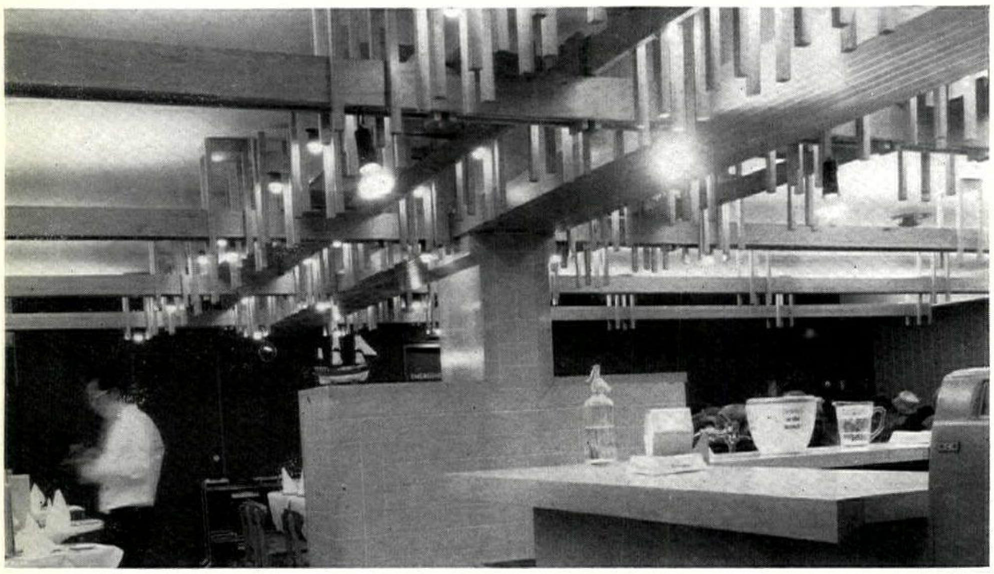


7. *decorative wood ceiling in the third-floor restaurant, shown also in the general view, 8. 9. the second floor. Colours here are brown and green with Bertoia chairs and Douglas fir ceiling.*

8



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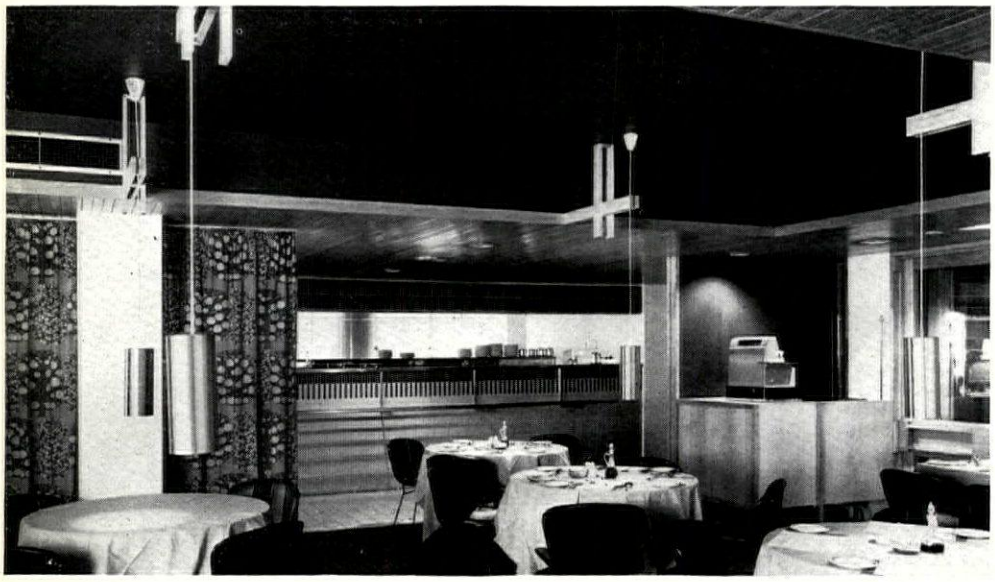
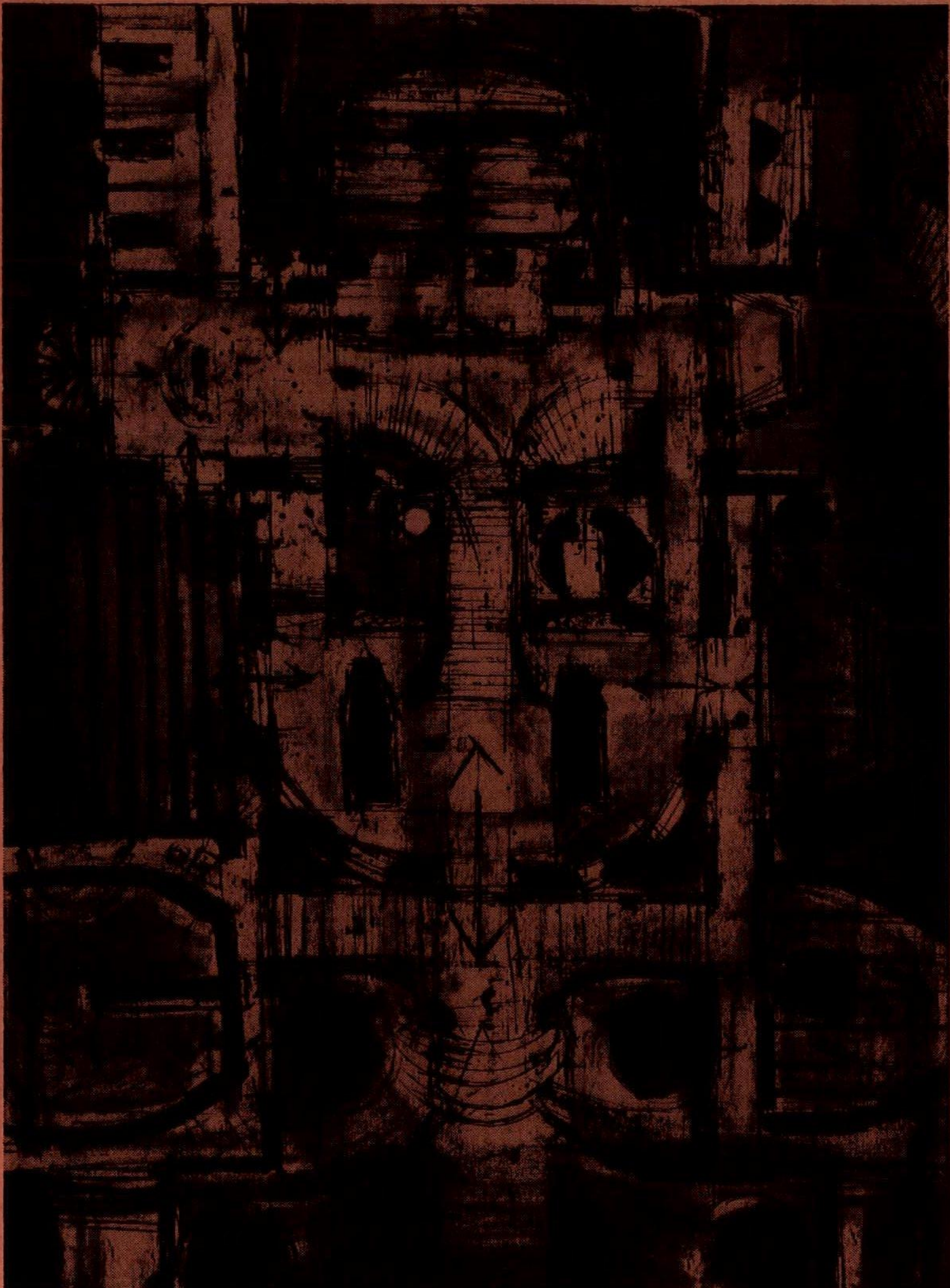


Restaurant, Leeds

contemporary draughtsmen:

15

Fred Zimmer



contemporary draughtsmen: Fred Zimmer

Fred Zimmer is an associate professor teaching environmental design in the School of Art, Ohio State University. His drawings are what he calls 'environmental plans' developed from an interest in the anthropomorphic qualities of existing or imaginary plans. He says, 'there is also a bit of a tongue-in-cheek variation in observing these plans where function is the form.'

1, the house from the south-east with, in the foreground, the terrace reached from the breakfast area.

COUNTRY HOUSE, EXBURY, HAMPSHIRE

photographs by Henk Snoek and James Dunbar-Nasmith

architects **LAW AND DUNBAR-NASMITH**

The site of this house was originally the kitchen garden of Exbury House and commands views to the south over the Solent and the Isle of Wight. It is sheltered by trees on the other sides. The house has been built for Mr. Leopold de Rothschild, whose family own the Exbury Estate, for occupation and entertaining at weekends and in particular for the performance of music. The owner, a bachelor, is a keen musician and wanted to be able to give, in his house, chamber music concerts to as many as 50 people.

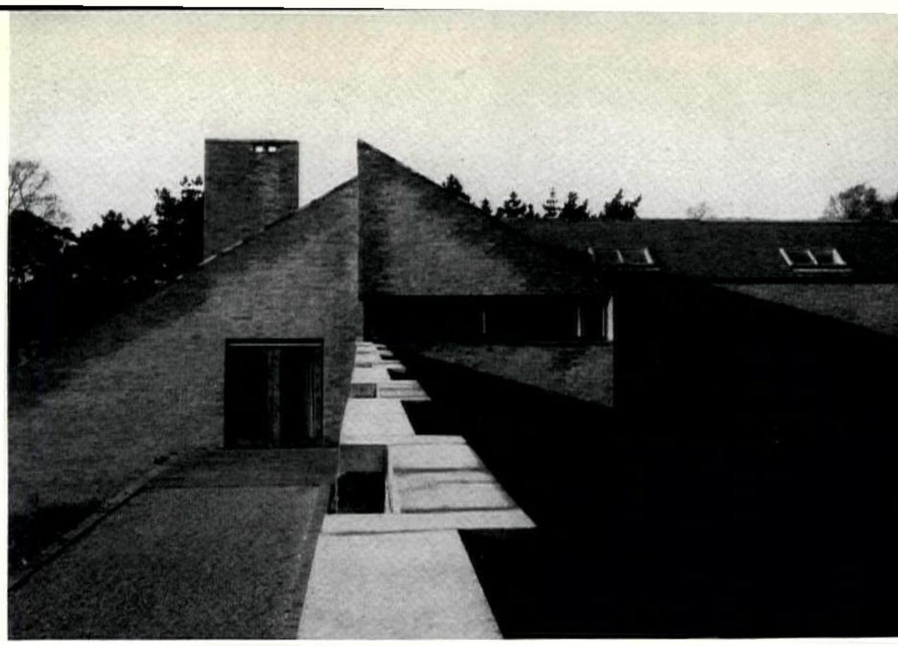
The music room, which serves also as the drawing-room, is large enough to accommodate two grand pianos, a clavichord (specially commissioned for the house from Tom Gough) and a hi-fi installation. The house also had to provide a suitable setting for the owner's collection of books, pictures, sculpture and gramophone records and for a large tapestry by Sax Shaw which he had commissioned for the dining-room. He stipulated that all living and bedrooms must face south, and this determined the east-west axis of the main block. A service wing projects from the centre of the main block towards the north, and at the junction of the two wings are a car underpass, the entrance and main staircase and a lift that opens on either side at the five different levels on which the house is planned.

The music room—forming the nucleus of the house—is itself on four levels: the sitting area, the concert platform, a breakfast area and a gallery. These are connected by stairs spiralling round a central chimney. The gallery houses the library, the clavichord and loud-speakers; the concert platform is big enough to take the two grand pianos and a string quartet; the breakfast area gives direct access to the terrace and the dining-room. A sitting-room which adjoins the music room is separated from it by a sliding wall which can be opened for concerts.

The house is of traditional construction, with walls of buff-coloured sand-faced bricks and pitched roofs covered with Delabole slates. Besides the tapestry already mentioned, other items commissioned from artists were the cast-aluminium balustrade supports (Ann Henderson) and the sculpted crystal door-knobs (Helen Weir).

Structural consultants, Blyth and Blyth. Heating consultants, Steensen, Varming, Mulcahy and Partners. Quantity surveyors, John Dansken and Purdie. Main contractors, J. F. Gamble & Sons (New Forest).

2



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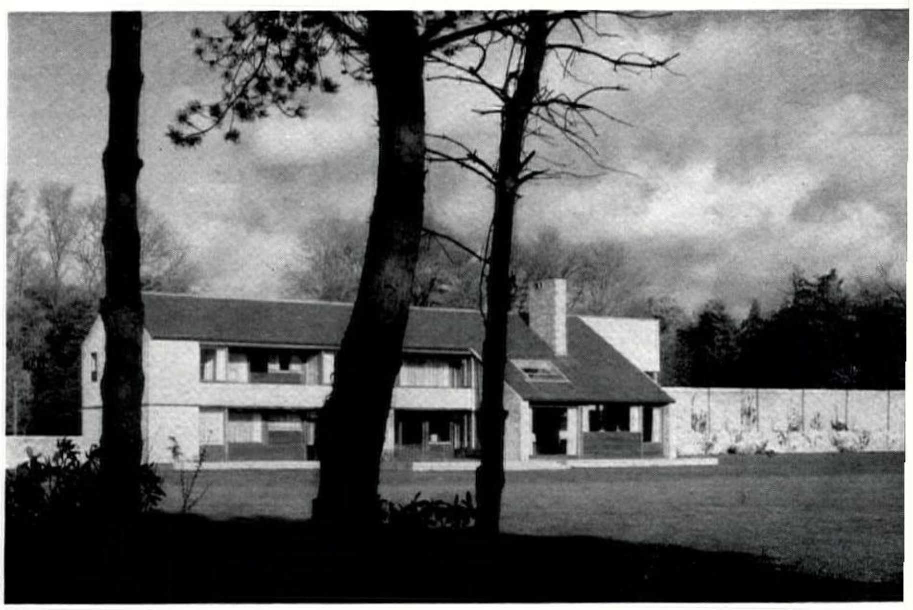
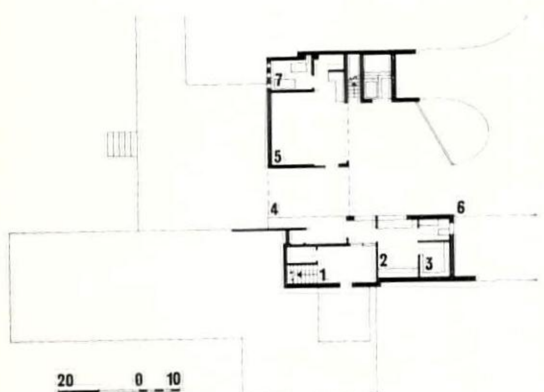
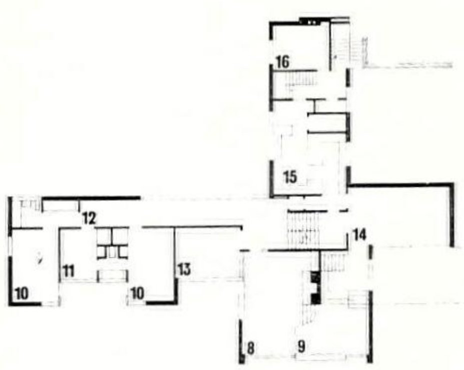


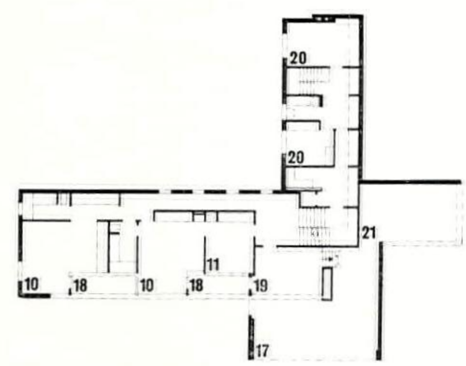
2, from the east, showing (left to right) the terrace and french window to breakfast area, the projecting dining-room with one-pitch roof and clerestory lighting, and the service wing with driveway underneath. 3, from the west, with the service wing on the left. 4, the south front facing the Solent.



Ground Floor Plan



First Floor Plan



Second Floor Plan

Key

1, hall
2, gun room
3, cellar
4, underpass
5, garage
6, parking
7, plant
8, music room
9, concert platform
10, bedroom
11, dressing room
12, picture gallery
13, sitting-room
14, dining-room
15, kitchen
16, staff sitting-room
17, upper part of music room
18, balcony
19, gallery
20, staff bedroom
21, upper part of dining-room

5

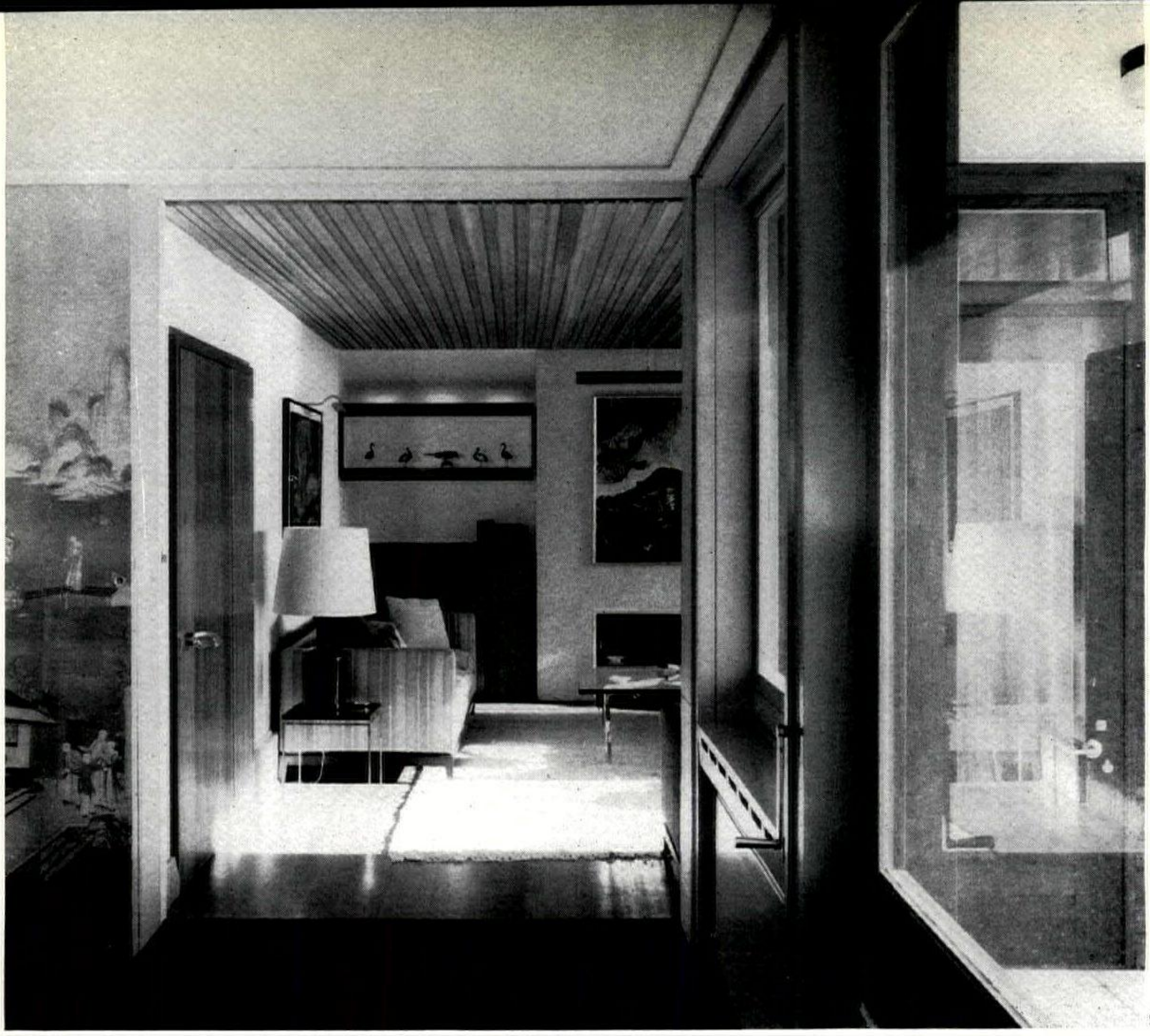
6

5. one of the sculpted crystal door-knobs by Helen Weir. 6. cast aluminium support by Ann Henderson along the balustrade of the music room gallery. 7. the sitting area of the music room beneath the gallery (painting by Alan Reynolds). 8. the music room from the top of the steps up to the concert platform; gallery on right.

7

COUNTRY HOUSE, EXBURY

8



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10

COUNTRY HOUSE, EXBURY

9, looking into the sitting area of the music room from the adjoining sitting-room. 10, looking up at night towards the music-room gallery from the concert platform. 11, the south-facing windows of the music room; concert platform on left.

11

What has 44 legs
but is very light on its feet,
a weatherproof shell
yet wears many different covers,
sometimes has arms – sometimes hasn't,
works alone, or in large groups,
can be seen all over the world
but is only three years old?

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NEW
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Design Review

New products chosen and annotated
by Ronald Cuddon

DR

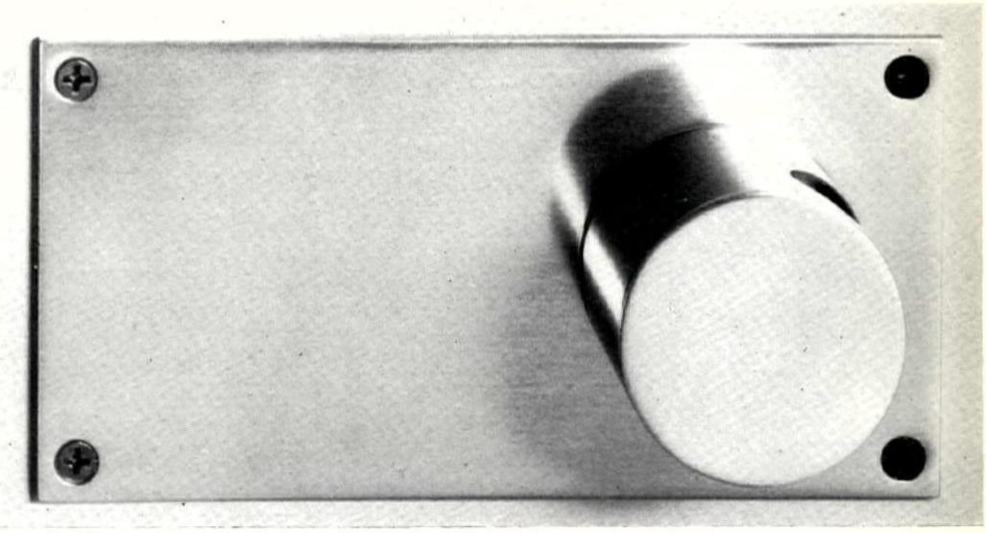
Ironmongery

Two new ranges of architectural ironmongery of British manufacture are both the work of industrial designers of calibre. Of the two, the 'Modric' range, introduced by G. & S. Allgood and designed by architects Holscher and Tye, is perhaps the more interesting because of the unique appearance of some of the items and the comprehensive nature of the range, which also embraces electrical components such as power sockets, rocker switches, 2, and bell pushes. Collaboration with the Britmac Electrical Co. helped with rationalization of the fittings, an obvious and necessary development which has hitherto been totally neglected. The relationship between the various fittings is obtained with the use of a standard 3 in. module and all the plates are proportioned by this module. All the items relate both aesthetically and ergonomically to these plates and to each other. The ergonomic concept however is strained to the utmost in some of the most visually satisfying items, their crisp, sharply delineated geometric forms being more in sympathy with the capabilities of the machines that produce them than with the human hand. Ergonomic theories are often crazily applied to many things that do not call for a mono-position or hold. The body is diverse in its requirements, demanding certain basic comforts yet infinitely adaptable in its use of equipment. For example to insist that the thumb should take up a position dictated by the groove in the cylindrical handle of the knob, 1, and yet not to recognize that the palm of the hand cupping the handle will react unfavourably to the sharp angles of the cylinder, illustrates the kind of confusion that an extreme and narrow application of ergonomics can create. Clearly, a rounding of corners would destroy the superb cylindrical form but this serves to emphasize the dilemmas and contradictions inherent in many design problems. A further criticism is that the desirable objective of thin backplates for the fittings has necessitated the use of exposed fixing screws. It would seem that this has been accepted by the designers, and they have exploited it by using Phillips' head-screws but the result is unfortunate; as the photographs show, their impact impairs what are otherwise sensitive designs. On the smaller plates, 2, and 3, the screw heads are even more disturbing, but the manufacturers state that all screws will be of stainless steel when available and that the present contrast between the steel heads and silver anodized aluminium in which all the fittings are made and finished will then be less apparent.

It is suggested by the manufacturers that many of the fittings lend themselves to being engraved, 3, 4 and 5, and for this purpose a Modric style of lettering is being evolved. It should be remembered that the lever handles, 6, are not spring-loaded and a special series of Modric locks with sprung followers is supplied.

Although it is the intention that this range of ironmongery should be all-embracing, it is as yet incomplete. Additional items are being designed and the range will be expanded as demand increases. The excellent catalogue designed by Dewar-Mills Associates is equal in quality to the high standard of the fittings, and its loose-leaf format enables additional sheets to be included as new items appear.

The Myron Hardware, 7, is manufactured by Henry Hope & Sons, and was designed by Kenneth Grange, working with Hope's engineers. While less comprehensive than the Modric range, it is



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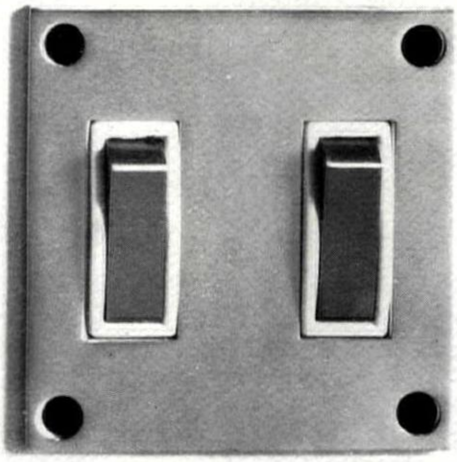

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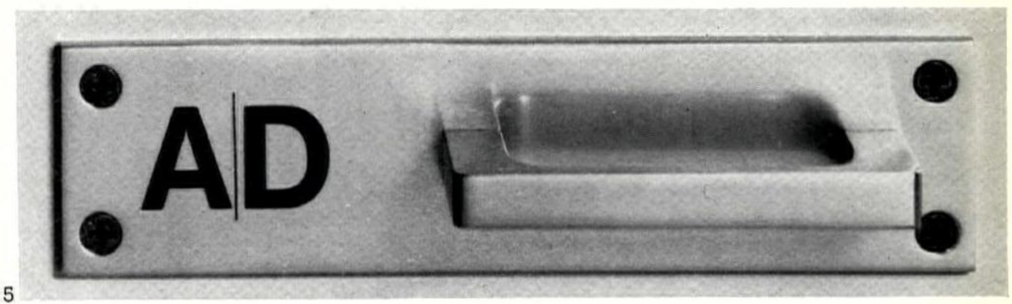
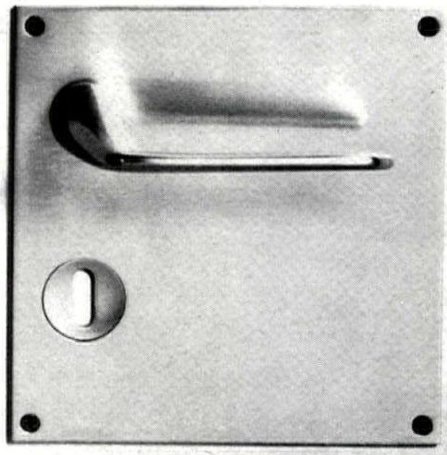


5

DR

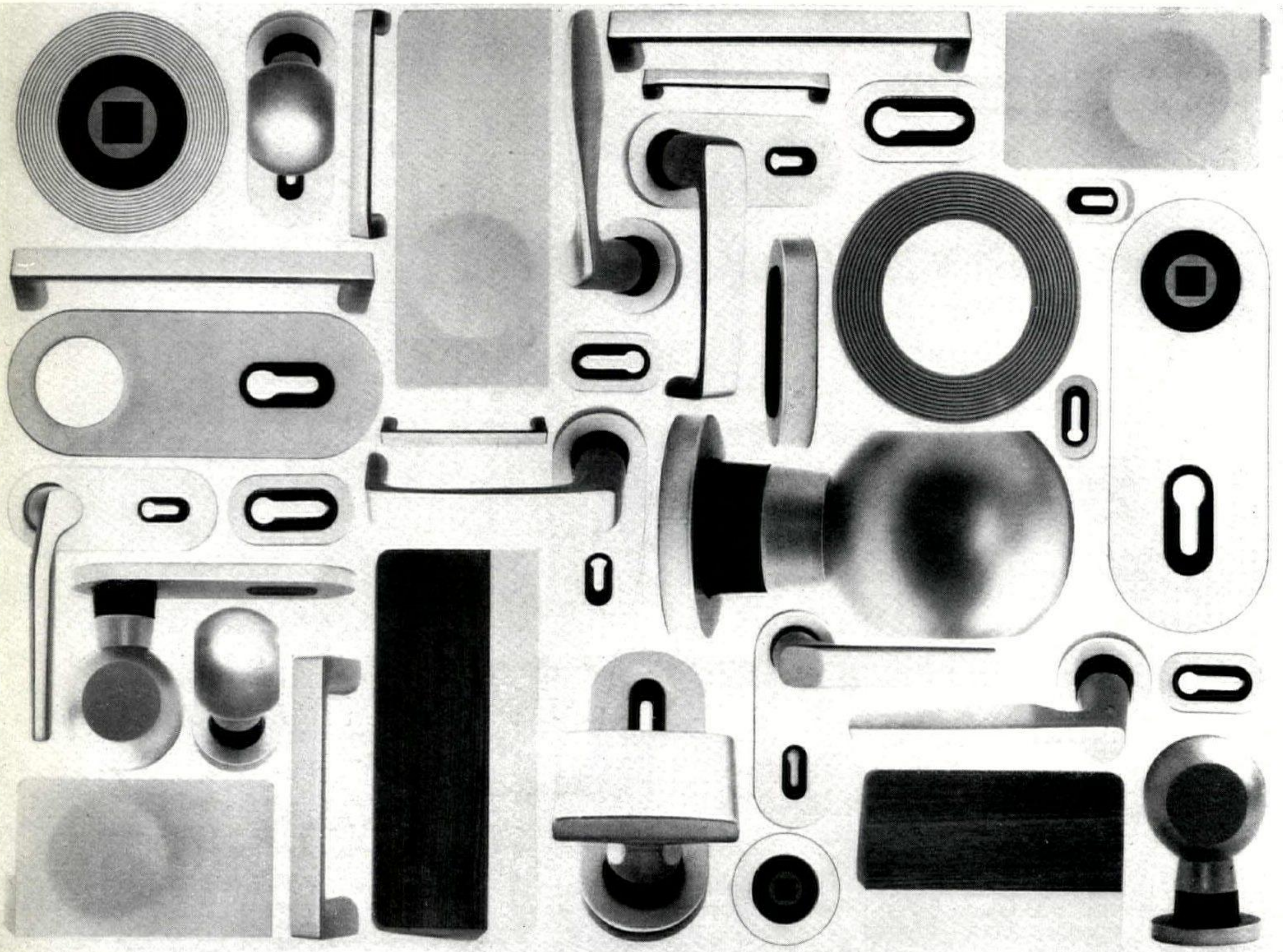
perhaps a more fundamental attempt to solve problems exposed in those fittings. Obviously the respective manufacturers and designers had different priorities, but in this case considerable thought has been expended on the method of concealed fixing and on the use of plastic and metal in combination. The range contains one Delrin—an acetal resin in light grey—and three aluminium levers, and two aluminium knobs which are fully interchangeable on a group of aluminium and polypropylene backplate assemblies. This gives a choice of twelve different lever sets, available with or without sprung action, and six different knob sets. Matching push pads and pull handles are included and future additions will provide, it is claimed, a complete range of visually compatible door and window hardware.

The backplate assembly, including escutcheon, is a nylon skeleton screwed to the door surface. This skeleton, coloured dark grey, projects through the cover plates to provide a bearing for levers and knobs and to act as a key guide for the escutcheon. The change of material is justified since the nylon provides a bearing surface which is quiet in action, does not need lubrication and isolates the more vulnerable finishes on the aluminium parts from wear and the abrasive action of keys searching for the lock. The change of colour however tends to make these fittings too obtrusive for situations where an anonymous character, or even the visual elimination of fittings, are being sought for by the architect.



6

Product: Ironmongery
Manufacturers: G. & S. Allgood Ltd.
Henry Hope & Sons Ltd.



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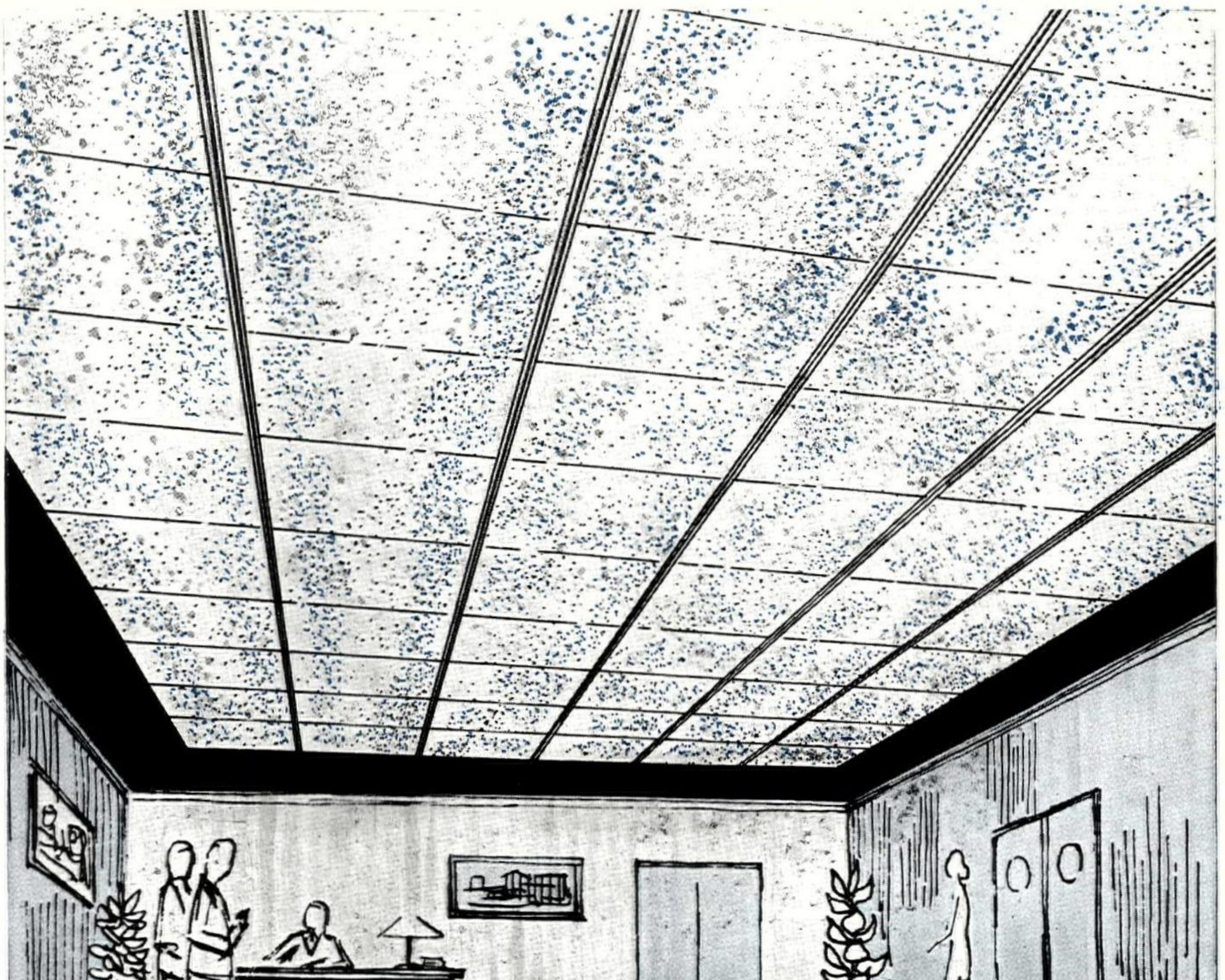

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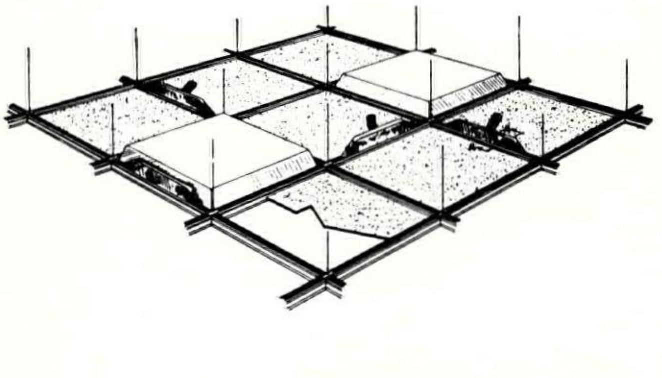

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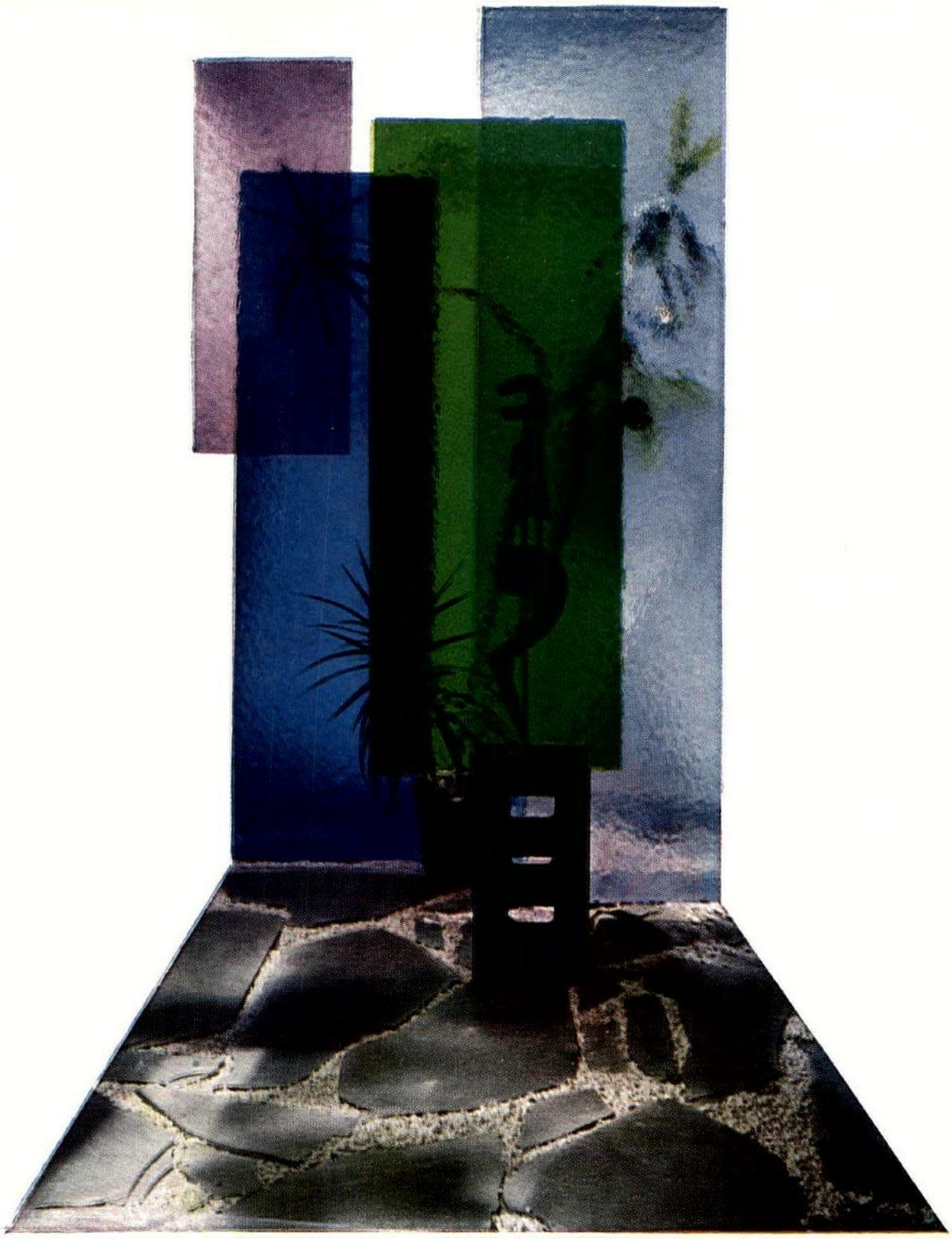

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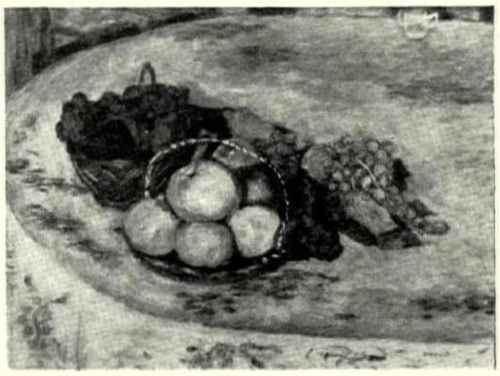
THE MASTER OF THE INDECISIONS

Robert Melville

'Bonnard's art is not for the masses,' says Raymond Cogniat, an admirer of Bonnard who is known to many thousands as a distinguished French writer of introductions to popular art books. I think he must have in mind the kind of mass that's composed of what used to be called the lower orders, and has overlooked a large and continually growing mass which admires Bonnard to distraction. He would only have to take the attendance figures for the Bonnard show at the Academy, add to them the figures for the Bonnard show held last year in New York, Chicago and Los Angeles and multiply the total by twenty (to arrive at an extremely conservative estimate of the number of people in all the cities of Europe and America who would have paid to see a Bonnard retrospective if they had been given the opportunity) to find that he is a unit in a bourgeois mass of several million, and I am sorry that he seems to be lacking in a sense of solidarity with his own kind.

It's true that for a period between the wars a section of the cultivated public entertained doubts about an art which appeared to be flogging the carcase of Impressionism in order to bring out richer reds, purples and yellows in the mother-of-pearl effects which accompany putrescence. But the advent of Abstract Expressionism quickly transformed the situation. No one could doubt that Abstract Expressionism was an important



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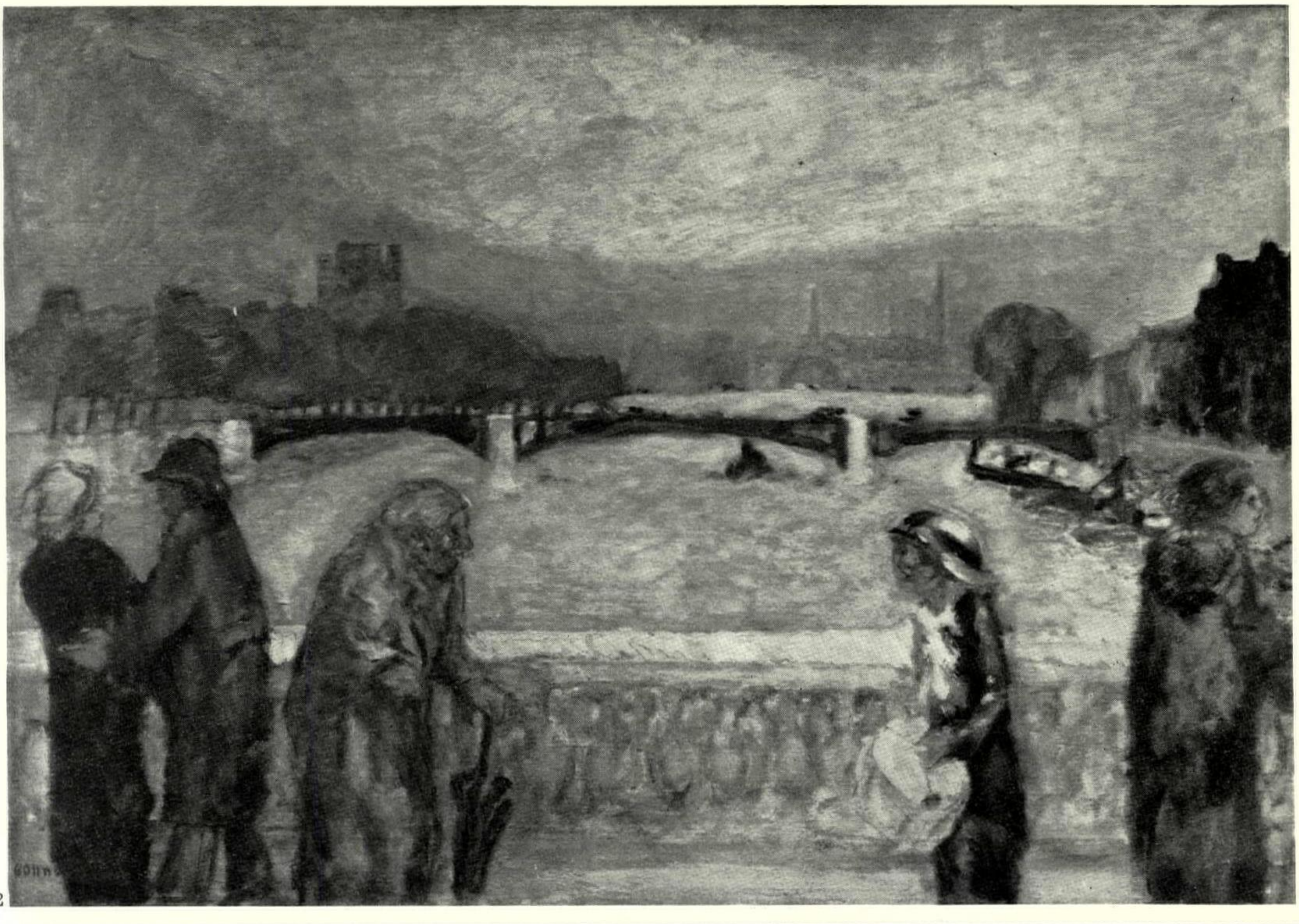
avant-garde movement; but although it came out of the last phase of Surrealist automatism



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it bore little resemblance to the work that had influenced it. It was closer in appearance to the last amorphous lily-pools of Monet, and it is one of the many ironies of the post-war situation that the American *avant-garde* painters were responsible for the rehabilitation of a style which had once seemed to stand for everything that modern art rejected. If we have a rather poor example of this period of Monet in the National Gallery, it's because we had to find some value in Abstract Expressionism before we could understand the enthusiasm of American critics for Monet, and by the time we got around to appreciating Abstract Expressionism, American museums had taken the pick of the limited number of big decorative panels that had become available.

Bonnard was on visiting terms with Monet, and it's more than likely that his paintings of nudes lying in the bath were influenced by Monet's studies of light reflected in water; so it became as easy as it had been with Monet to associate him with advanced art. Indeed, it was evident that Bonnard had more in common with the aims of advanced artists than a younger veteran like Picasso, and although it's difficult to call Picasso a reactionary, his post-war work is decidedly out of line.

But as I was saying, it was only a section of the cultivated public that needed to be assured that Bonnard was not a reactionary. It was enough for the great majority that he was the most seductive of colourists and never compromised the purity of his work with equivocal or enigmatic subject matter. In this respect, the English have been particularly staunch. It was their love for Bonnard that enabled them to be so immensely enthusiastic about De Stael's first London show. Quite rightly, I think, they treated those square-dab paintings not as contributions to abstraction but as *belle peinture*, or as a kind of Parisian perfume redolent of the art of Bonnard.

There is a specific reason for Bonnard's popularity. In referring to things associated with the notion of gracious living, his art lends support to the universal dream of graceful retirement. He painted a luxuriousness almost within our grasp: his work provides ravishing glimpses of a sumptuous, relaxed way of life which is at the same time unpretentious enough to convey the impression that one would not need a great deal of money—just a bit of capital behind one and a decent pension—to be able to spend one's last years living the same sort of life. All the meals on his table look as if they taste like nectar. The mistress of the house takes her regular bath as if it were the prelude to pleasantly habitual intercourse. Beyond the French windows, an acre of the South of France dissolves in sunlight, freed from Cézanne's anxiety and Van Gogh's hysteria.

3

All the same, his paintings are not a true reflection of the life he led at Le Cannet. John Berger, in his fascinating book on Picasso, remarks that 'the distinction between object and image is the natural starting-point for all visual art which has emerged from magic and childhood,' but suggests that Picasso's assertion that art is a lie and that it's the artist's task to convince others of the truthfulness of his lies, is a sign that he still believes in magic. But if it is a sort of magic to be able to convince others of the truthfulness of lies, Bonnard must be the most cunning magician of all. Picasso exaggerates the distinction between object and image and thereby makes the task of being convincing inordinately difficult. Bonnard, on the other hand, goes to great lengths to convince us that he has *reduced* the difference between object and image. The informality of his compositions, 1, and his deliberately undistinguished account of objects in themselves, 2, are the means to this end; but beyond a certain point his colour is cosmetic, and performs the functions of a mask as thoroughly as the daubing of the face for tribal rituals—with intent to seduce instead of to scarify. There's a story that whenever Bonnard mixed a colour that particularly pleased him he put some of it in every picture that happened to be in the studio.

The reality behind the mask of colour can be faintly discerned in an account of Bonnard's life by Annette Vaillant, recently translated from the French and published by Thames and Hudson in a handsomely illustrated edition. The author is a niece of Thadée Natanson, editor of *La Revue Blanche*, with whom Bonnard had lifelong associations, and her book is partly reminiscence. She has a good deal to say about Bonnard's wife, Marthe, whose neurotic suspicion of his friends compelled him to leave Paris and live with her in the country in uneasy solitude. A somewhat unprepossessing portrait emerges. She had 'pale hair and acid, inexpressive eyes,' and her speech was 'weirdly savage and harsh.'

'Marthe's ideas of personal adornment never rose higher than cheap finery. In furniture, a mixture of pitch-pine, wickerwork and folding canvas chairs satisfied a shared taste for eccentric discomfort; but she always felt the need to lather herself, scrub herself and massage herself with a sort of meticulous sensuousness for hours on end. When she finally achieved the only luxury she had ever longed-for, a real bathroom with running water, Pierre found a way—as he had with the galvanized tub, the jug and the little wooden towel rail—to transform the pipework, the new tiles, the little white stool, the aggressive ceramic fitments, into an opalescent setting for a fairy-tale.'

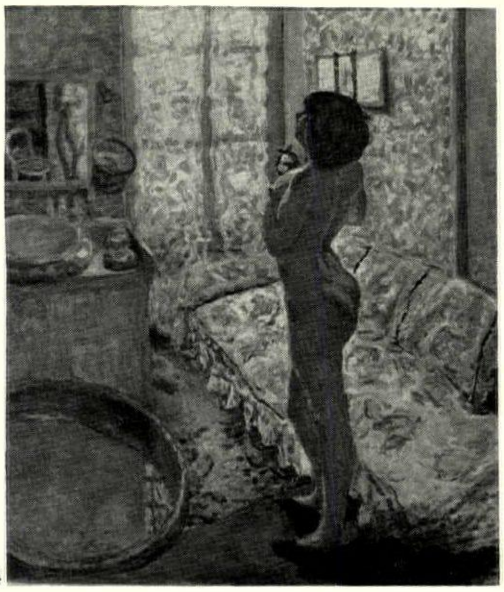
Vaillant says of Bonnard's relationship with Marthe that 'he looked after her, feared her, put up with her, loved her,' and that her presence was always at the heart of his work. She adds an interesting sidelight on what she calls his 'timid virility.'

'Pierre was too much aware of femininity not to have been attracted by other faces and other bodies, but as soon as he felt that Marthe suspected something, he put a stop to the affair by retreat and silence. This sometimes led to unhappiness and dramatic scenes. The secretive Pierre, touched by remorse, would confess to Thadée or another close friend: "You see, I haven't much courage."' The 'timid virility' is reflected in his way of mottling his surfaces with additive touches of colour, sometimes over a period of years—a method which Picasso called 'a pot-pourri of indecision,' but which often had resplendent results, as in the painting of a nude crouching in the bath, 3, where bright yellow streaks have been added to the edges of an orange-coloured arm, and a semi-transparent wash of mauve takes some of the blaze out of the vermilion of the left leg, and the hair is an astonishing mixture of colours, resembling the involuntary tachisme of the artist's palette, reproduced in colour in Vaillant's book.

The 'secretive Pierre' is also in the pictures. The number of passages in them which do not disclose their identity straight away is quite remarkable. It's partly because the predominant impact on the spectator comes from the quivering surface of colour; partly because the painter has seen certain things out of the corner of his eye and manages to convey the impression that he has not deliberately stared at them. In spite of the dominance of the figure in the half-tone photograph of *Nu a Contre-Jour*, 4, it's the froth of glowing curtain which first takes one's eye when looking at the actual picture. When I first saw it, the image in the mirror—not to mention the cat beside the dressing-table—entirely escaped my notice. The same was true of the human presence in *La Fenetre*, 5. It was only after a second visit to the Academy that I saw Marthe watching from a balcony. It was as if Bonnard himself were trying not to let on that he had caught sight of her.

In the nineties, Bonnard attended some of the meetings of the Nabis, and painted a few decorative panels which were partly the result of their influence although they were infinitely more elegant than anything Denis or Sérusier managed to contrive. He took no part in their programmes and apparently didn't share their enthusiasm for Gauguin: when they clubbed together to buy one of Gauguin's paintings, Bonnard paid his share, but didn't bother to claim his right to keep it for a time.

The Nabis were among the twenty-five painters chosen by the Arts Council to accompany Gauguin in the recent exhibition at the Tate that was called 'Gauguin and the Pont-Aven Group.' They were all represented in the exhibition because at one time or another they had something to do with Gauguin when he was painting in Brittany. Some of them were obviously influenced by him; a few like Sérusier and Denis were sensitive and intelligent but never of much consequence as painters. If Bonnard had 'timid virility,' this



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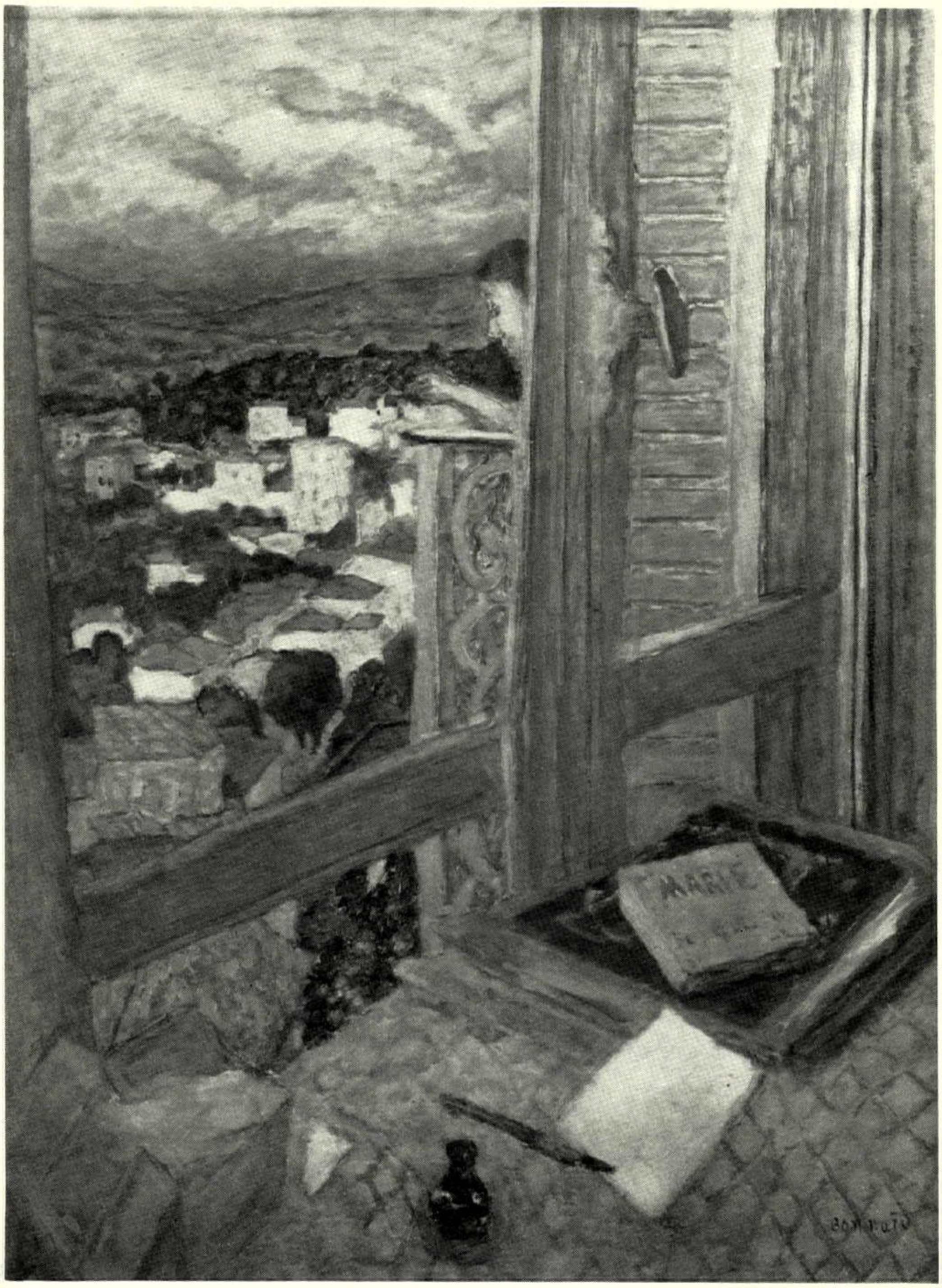

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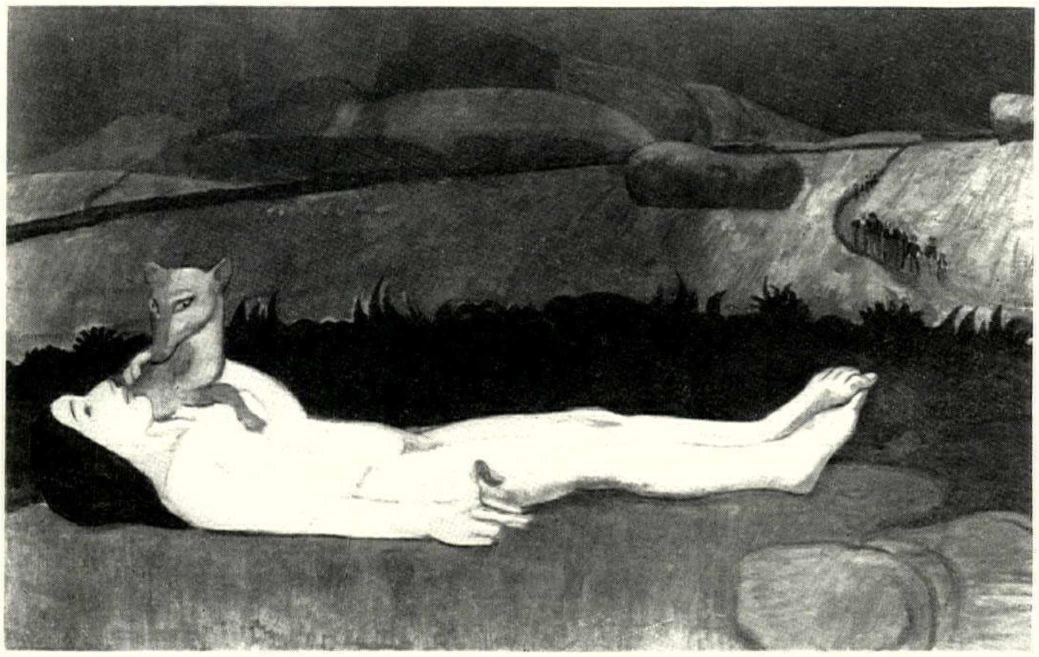
lot simply had timidity, and turned the exhibition into a rather freakish period show. There were, nevertheless, some very fine Gauguins to be seen.

At his greatest, Gauguin made forthright decisions of the kind that Picasso doesn't find in Bonnard. 'It's a matter of seizing the power,' he said to Françoise Gilot, 'taking over from nature, not expecting her to supply you with information and good advice,' and it could have been Gauguin talking. The model for the nude in his splendid *La Perte du Pucelage*, 6, was his mistress Juliette Huet, who has been described as a 'pale, thin seamstress with straggling black hair,' but it is evident from his bold transformation of her skinniness that he was already formulating in his mind's eye the kind of monumental nude he would paint in Tahiti. There is, however, one sense in which Gauguin in Tahiti was like Bonnard in the South of France: he had to *pretend* that he had found an earthly paradise.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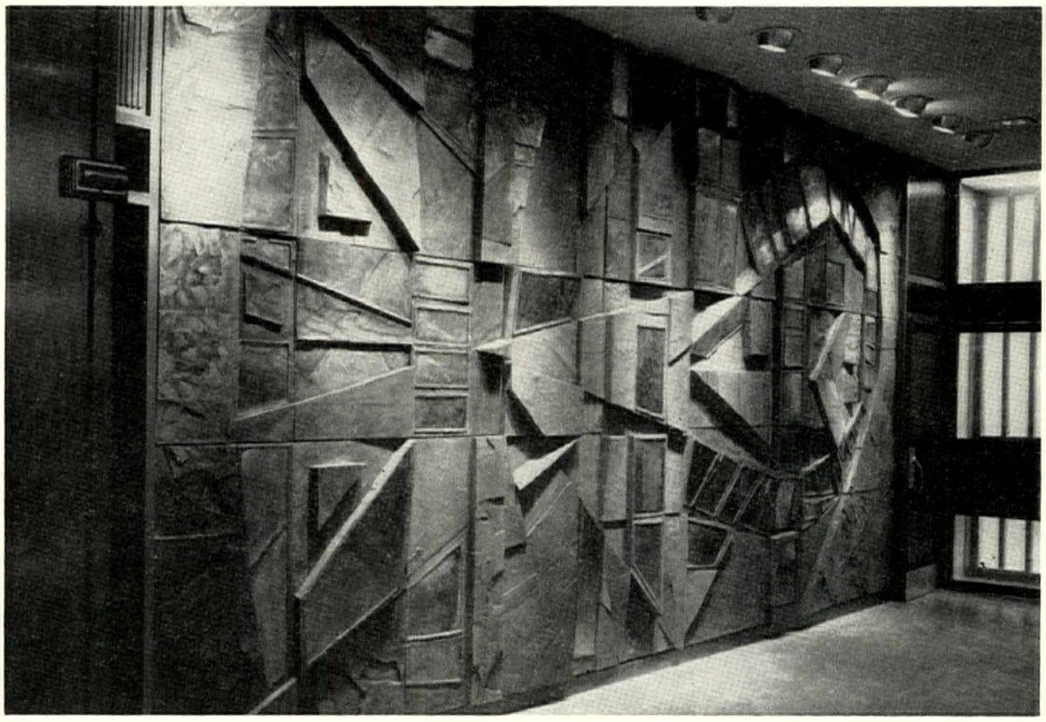
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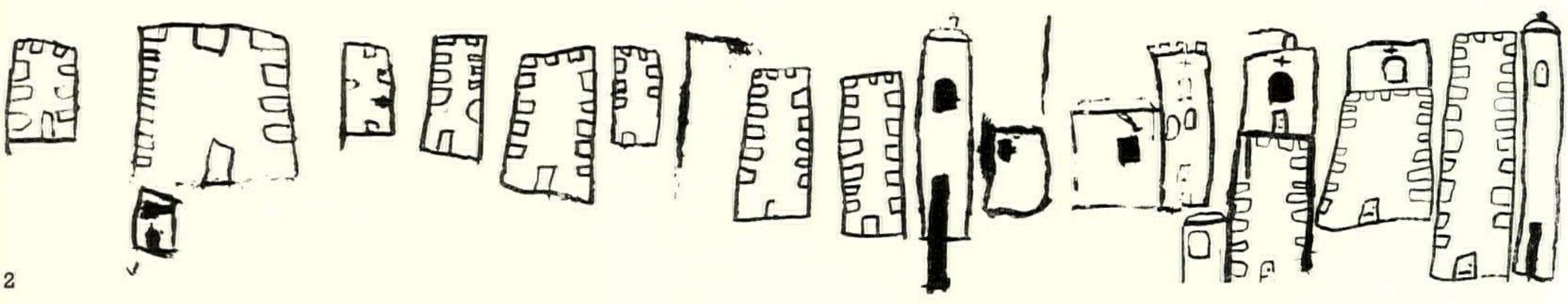
MYSTERY AND IMAGINATION

1, is a relief in metal compound and glassfibre by Antony Hollaway for the Eastbourne branch of Lloyds Bank (architects, Hammett and Norton). The designer writes '. . . it is based on the plan of a pre-Roman earthworks, which seems appropriate to a bank as it represents one of the earliest ways in which communities banded together to protect their property. Stainless steel inserts increase the feeling of impregnability associating themselves in the mind with armour.'

2, is a drawing 9ft. by 3ft. by Francis Tyler, aged five, a pupil of St. Leonard's Nursery School, Holborn, London. The title is 'I live in London' and the tall buildings with chimneys are churches. They have chimneys . . . 'because they are old.'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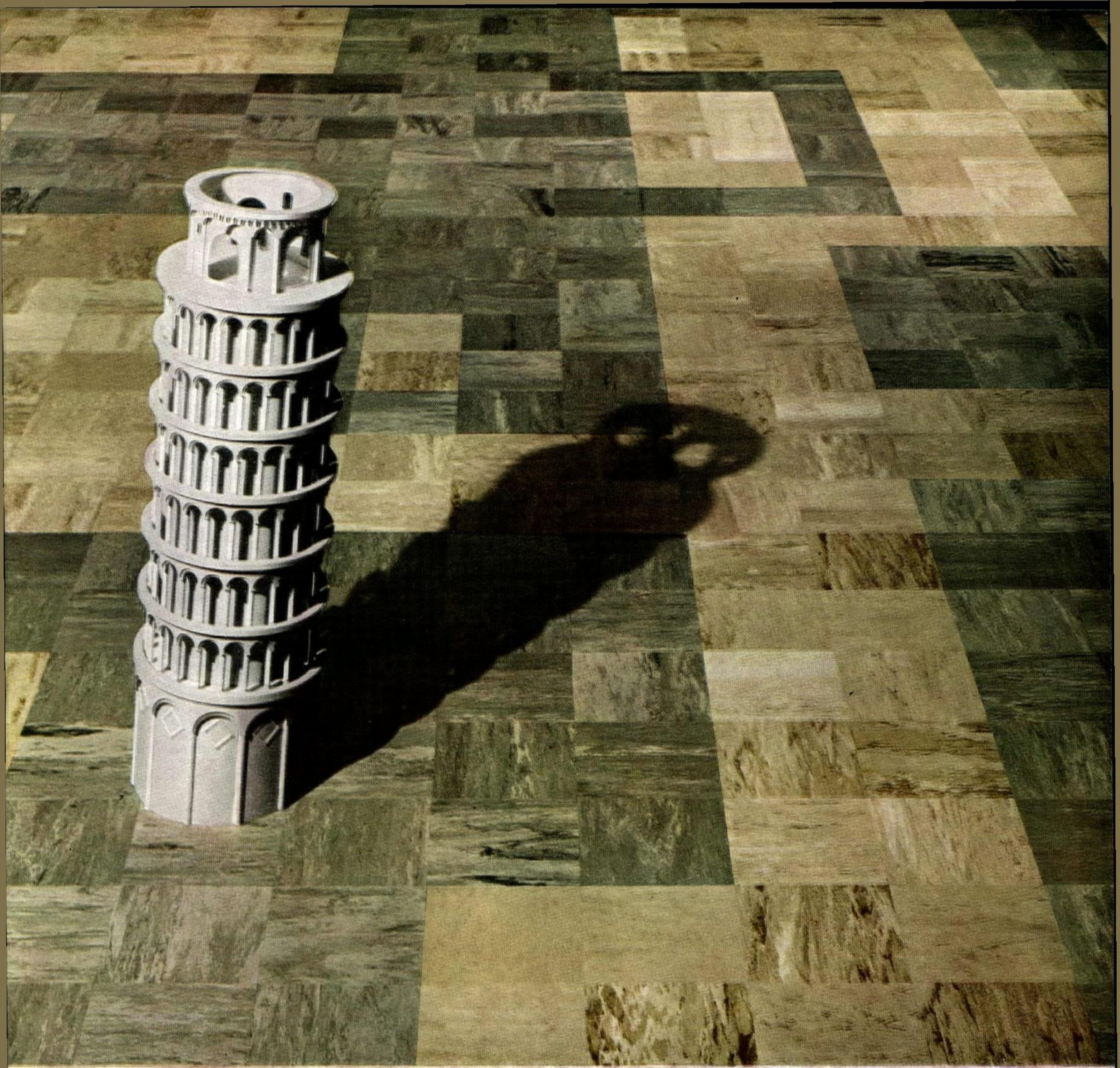

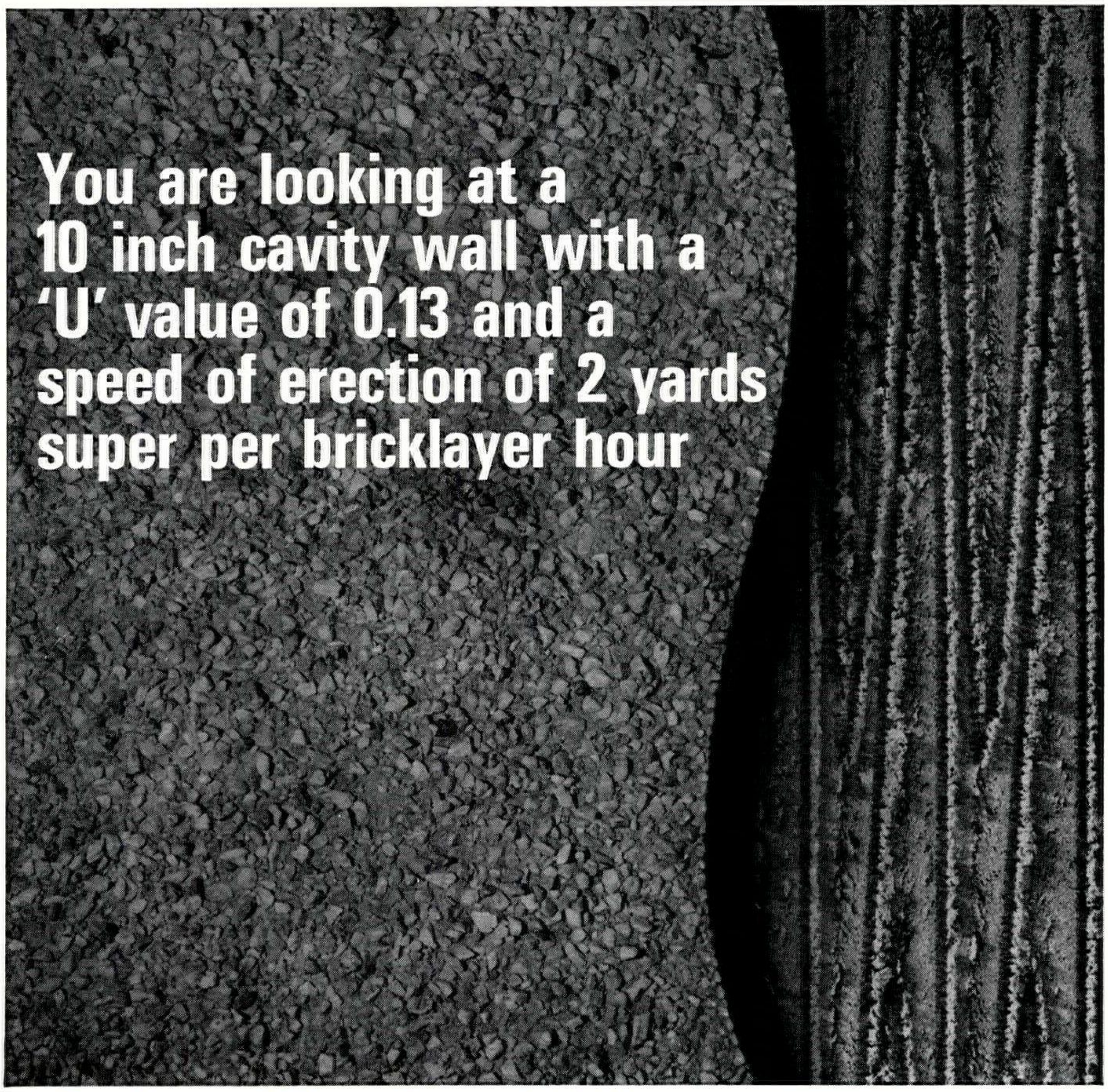

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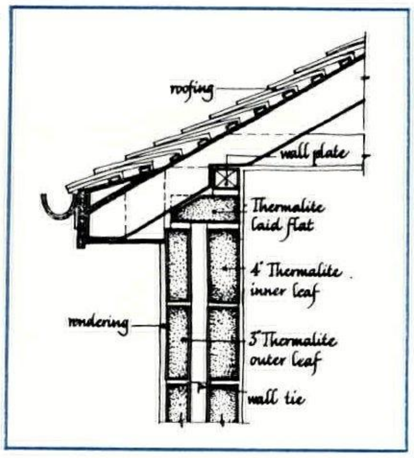

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ELLIS ISLAND

1

The news that Philip Johnson has been commissioned to convert Ellis Island, in New York Harbour, into a recreational park will bring back memories—often uncomfortable memories—to thousands of first-generation Americans. The name of Ellis Island is now almost forgotten, but for years it was notorious as the gateway through which would-be immigrants into the United States had to pass and the place where many of them endured delays, frustrations and disappointments.

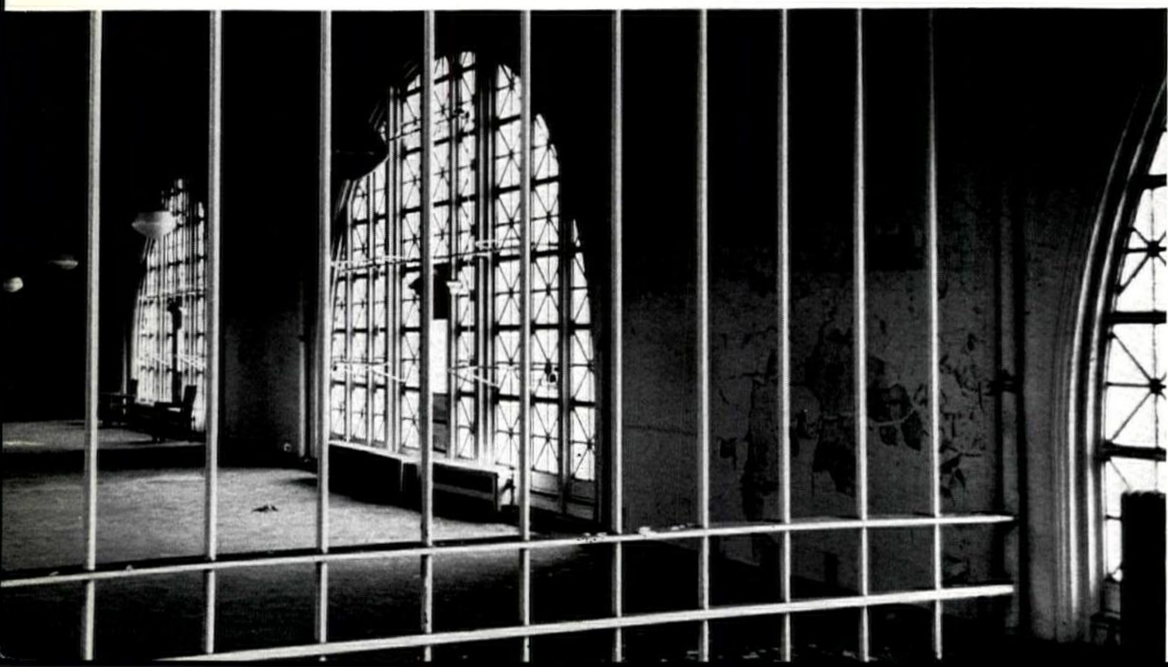
Its peak of activity as the U.S. immigration station was between 1900 and 1914. Every year three-quarters of a million new arrivals were cleared through Ellis Island—and sometimes more than 5,000 in one day. During the 1914–18 war it was used first for interned German sailors and then as an army hospital, but when the war ended it reverted to its earlier function. In 1921, however, the quota system for immigrants was introduced, their clearance was seen to in most cases by the U.S. consulates in their own countries, and the island's immigrant population diminished. It was given at this time the even more depressing role of detention centre for deportees, but the need for this too diminished and in 1954 the immigration station was closed.

Since then it has stood empty, decaying and seldom visited. Photographer Adam Ritchie recently obtained permission to visit it and took these pictures, revealing Ellis Island in all its forlornness and showing how the emotions of frustration and despair with which the place was filled half a century ago still linger in the ruined prison-like buildings. The photographs also

2 show the raw material Philip Johnson has been presented with from which to create a quite opposite atmosphere.
The island, of twenty-seven and a half acres, stands in upper New York bay, off the Jersey shore. 1 shows the view of it that is seen from the approaching boat. The main buildings were completed in 1900, replacing the timber building put up when the immigration centre was started in 1892 but destroyed in a fire that swept the island in 1897. The remaining photographs, 2–7, show the present desolation of their interiors. 8 shows rank vegetation taking over in their yards and intermediate spaces. Ellis Island has a history that goes back long before its notorious role as an immigration station. It was known to the Indians as Gull Island, when it was only three or four acres in extent—its size was increased after 1900 by infill. In early days it was also known as Oyster Island, Bucking

3

Island and Gibbet Island—after a celebrated pirate had been hanged there. It acquired its present name towards the end of the Colonial period when it came into the possession of one Samuel Ellis.
Its first official use was when earthworks were built on it after the war scare of 1794. These were replaced by masonry fortifications just before the war of 1812. They were named Fort Gibson, and were part of the system of defences against naval attack built by Colonel Jonathan Williams—other components of the system being Fort Wood on Bedloe's Island, Castle Williams and Fort Columbus on Governor's Island and the West Battery at the tip of Manhattan Island. When Fort



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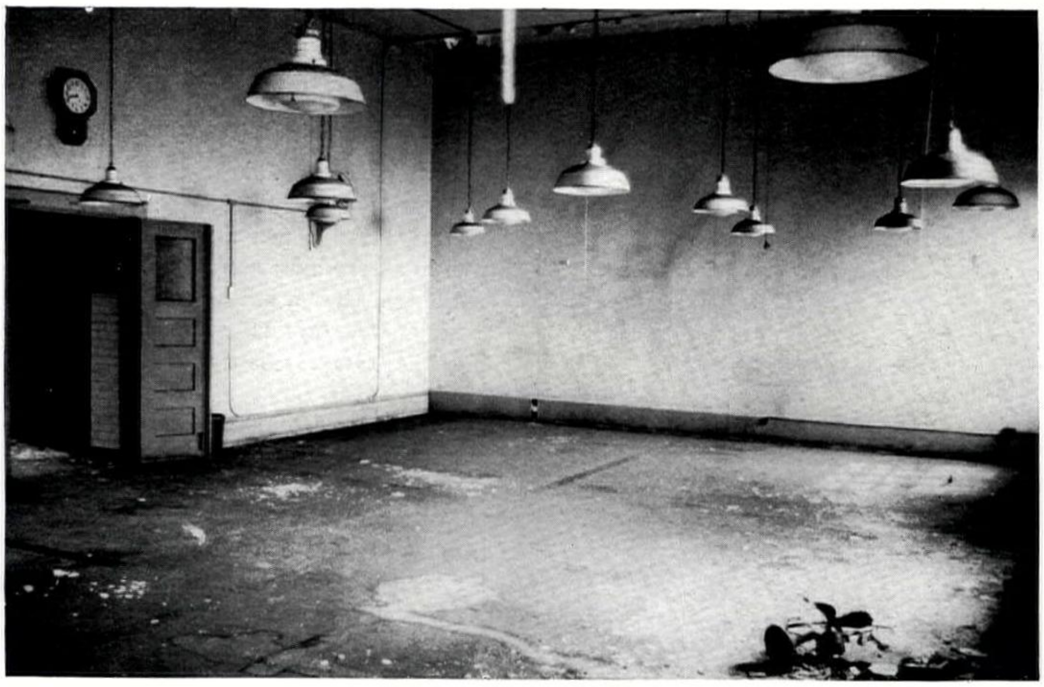

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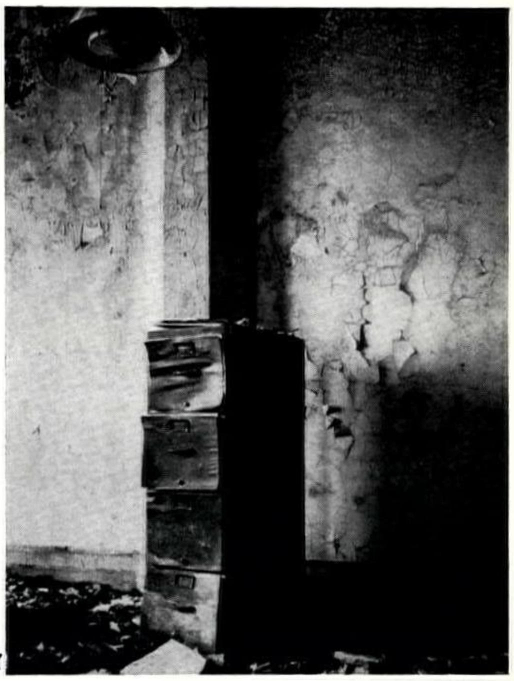

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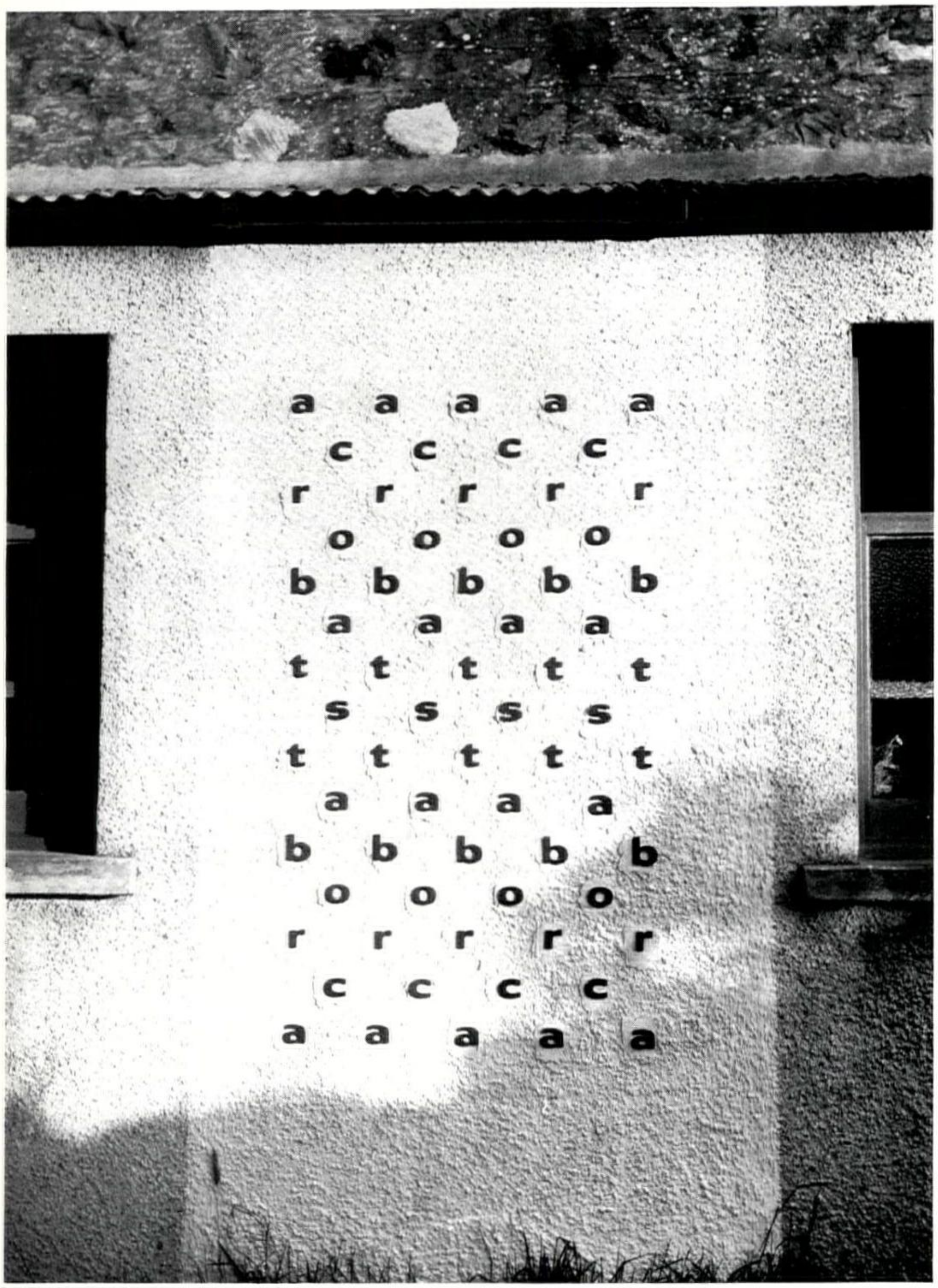
Gibson was being planned in 1808 the State of New York bought the island from Samuel Ellis and it became Federal property. The fortifications were dismantled at the beginning of the Civil War and it was in 1890, when the Federal Government took on the responsibility for receiving immigrants, that the island was chosen as the immigration centre. Other islands in New York harbour were considered as alternatives, but Governor's Island was wanted by the army and Bedloe's Island was thought unsuitable for the purpose of detaining would-be immigrants because the Statue of Liberty had been erected on it only a few years before.

concrete



1

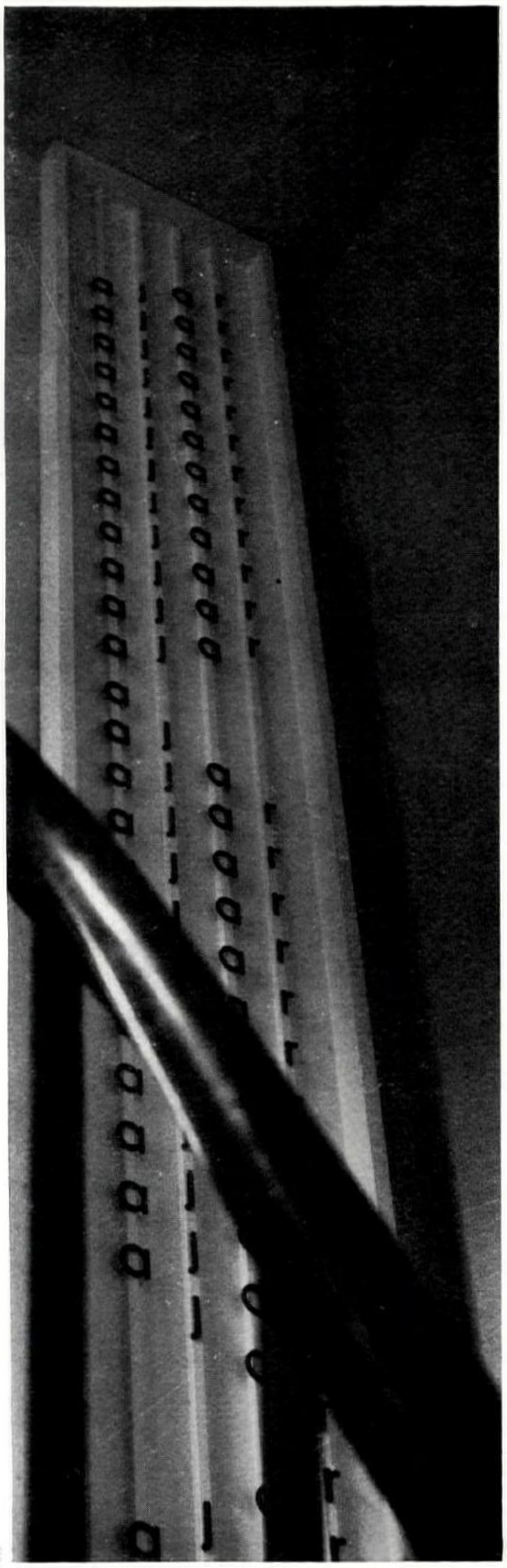
poetry

The term Concrete Art was first employed by Van Doesburg in 1930 to signify a new relationship between the work of art and the natural world. The artist's function was no longer to be interpretative—concerned with reproducing the particular and the individual—but was to be constructive—concerned with achieving a harmony of simple forms. The resultant movement in painting and sculpture, which swiftly attracted some of the most prominent European artists of this generation, is the direct ancestor of Concrete Poetry. The actual term originated with the Swiss poet Eugen Gomringer in 1956, and Gomringer intended it as a gesture of respect to two pioneers of Concrete Art, Arp and Bill. It was therefore natural that Concrete Poetry should reflect from the start an aesthetic theory which had been developed in relation to the plastic arts, especially sculpture. Already in 1954 Gomringer had spoken of the 'constellation' poem as 'an object to be seen and used . . . a reality in itself and not a poem about something or other.' He continued to emphasize the distinct and self-sufficient quality of the poem, explaining in 1960 that he had for several years considered it as a 'functional object' (*Gebrauchsgegenstand*). This was the essential formula adopted by concrete poets throughout the world. The *noigandres* group of Brazil, who had arrived at this type of poetry by a more exclusively literary path, wrote in their 'Pilot plan for concrete poetry' of 1958 that they were investigating 'a general art of the word: the poem-product: useful object.'

Although this aesthetic of solidity and function was originally applied to describing the characteristics of the concrete poem on the page, it led inevitably to experiments with media. The German poet Franz Mon has spoken of the ideal of a poem which 'subsists by itself in a manner so powerful that anyone can penetrate into it as if into a public building.' His impressive poem-print, from a series published by the Wild Hawthorn Press, approaches this ideal, since the poem has been given the scale and immediacy of the poster. Pierre Garnier, the French poet, has recently taken the problem of scale and function to its final conclusion in his *Textes pour une Architecture*. He views the poems in this collection as 'prototypes' which are no more than sketches for a wider application. Garnier's notion of a prototype which can be re-created on an architectural scale finds a close parallel in the writings of Vasarely, and Garnier clearly envisages applications of concrete poetry which correspond to the architectural projects of Vasarely and other kinetic artists.

It was, however, the Scottish poet, Ian Hamilton Finlay, who first began to

experiment with the possibilities of concrete poetry in an architectural setting. In company with Dick Sheeler he has already carried out a number of projects in which



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the poem is given a stable structure and designed for a more or less specific context. This question of context is particularly important with the poem construction. The individual letter has an intrinsic plastic quality which allows it to stand on a purely formal level. But the combination of letters into words involves a semantic element, which may be emphasized in the overall structure of the poem. The best way to demonstrate these features is to describe some projects which Finlay has already completed.

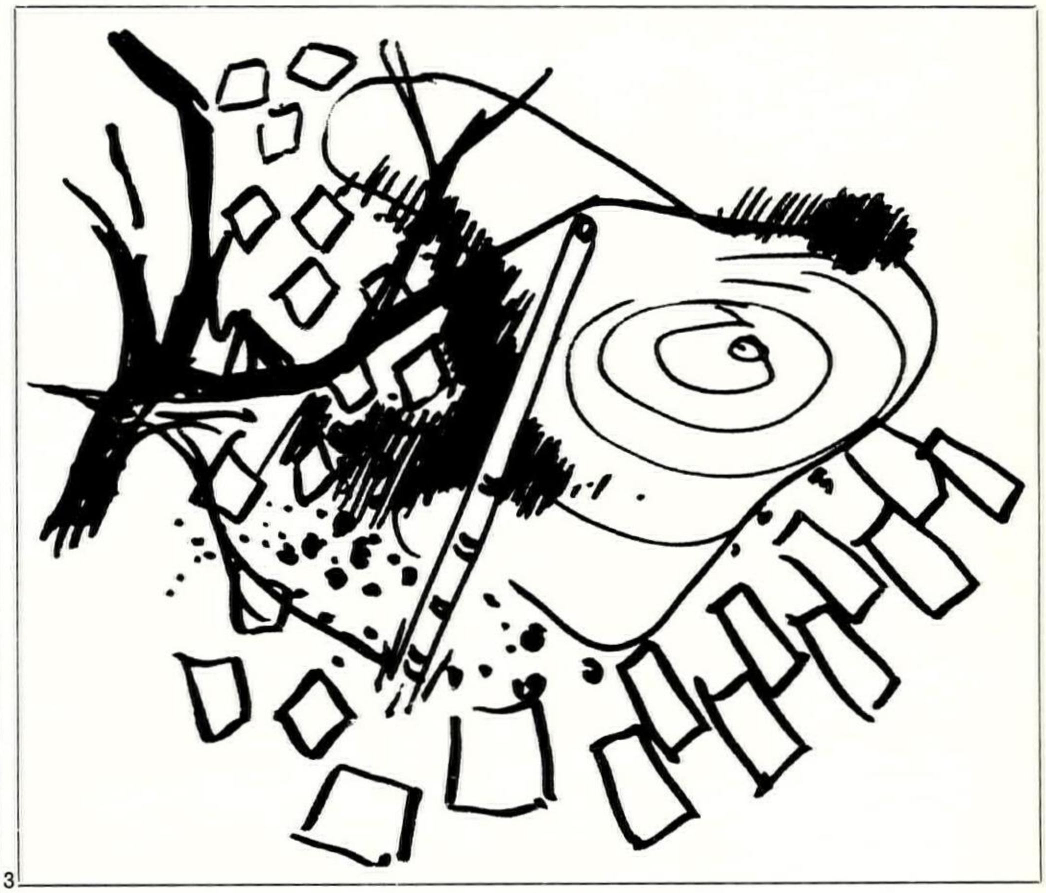
Finlay's 'acrobats' is a relevant example. It has been printed as a poem, with the letters dispersed over a large page. Recently Finlay has mounted it on the outside wall of the farmhouse where he lives in Ross-shire, 1. But it calls for a larger scale and a more particular context, possibly that of a children's playground. To this environment it would contribute not only the vibrancy of its overall pattern, but also the challenge to trace the keyword along the diagonals. The poem would tempt the eye to agility just as the playground invites the activity of the limbs.

Similar in the use of repetition, but distinct in purpose, is Finlay's 'ajar.' The word suggests a domestic interior, and the completed version, which is fifteen feet high, stands against the stairwall in Finlay's house, 2.

Both these poem constructions are essentially reliefs. Quite different in form is the 'column-poem' which was designed by Finlay, constructed by John Furnival, and shown recently in the exhibition 'Between Poetry and Painting' at the Institute of Contemporary Arts. This is almost a freestanding sculpture, with one side decorated by a sequence of coloured stripes, and the other side displaying a sequence of words which echoes the arrangement of the stripes. The subject of the poem is a parallel between the worlds of sea and land, which becomes most explicit in the juxtaposition of the blue-painted 'bow' and the single green word 'bough.' Finlay intends it to stand by a garden pond, where it could reflect the meeting of water and land, and it is illustrated here, 3, by a sketch by Peter Lyle of how it might appear in a garden setting.

Another poem construction which is also designed for a garden or park is his 'little fields,' in which the letters are mounted on a triangular frame, and each face presents a different episode of the poem. 4 shows the centre one of three panels. Here the poem is in wood, but Finlay would prefer it to be constructed with three low brick walls and letters of wrought-iron, protruding a little from the surface of the wall.

All these poem constructions are still prototypes, and the means of construction employed has been determined by limitations of money and materials. Finlay has recently given his first commission for a poem to be sandblasted on glass, an expensive technique which he has wanted to use for some time. But ultimately the potentiality of the poem construction can



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only be realized through the co-operation of architects and planners. Many of them have already accepted the principle that modern painting and sculpture can be used in close conjunction with architectural schemes. The poem construction can be used in the same way, but it introduces an additional standard of appropriateness to the environment. It does not mimic the forms of nature, yet it belongs intimately to a particular context. The letter is

4

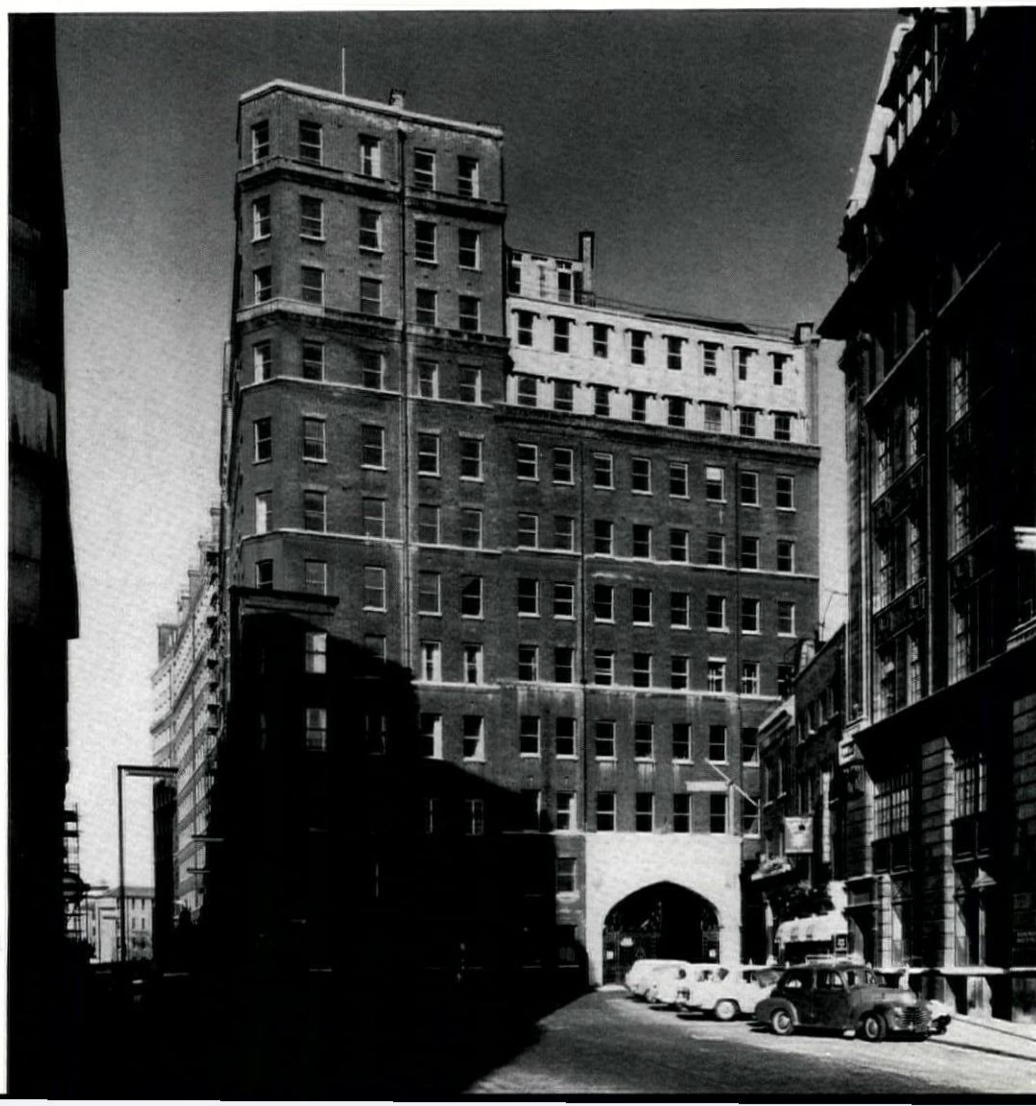
formally distinct, but the combination of letters evokes a range of images. Hence the poem is not simply a decorative project on a public scale, but also a field for private interpretation. We can trace its meaning, yet, because of its formal structure, it remains inexhaustible. The concrete poem in architecture offers us an entirely new standard of mediation between ourselves and the world in which we live.

STEPHEN BANN

history

UNHEAVENLY MANSIONS

In 1873–75 a ten-storey tower of stock brick flats shot up at the end of Broadway, Westminster, 1—more than twice as high as the conventional walk-up chambers, with none of the pretty 'Queen Anne' detail then becoming fashionable. This remarkable piece of private enterprise is soon to be demolished; unloved and unmourned, it nevertheless deserves an obituary, as a protean forerunner of the multi-storey towers which will no doubt replace it. Henry Alers Hankey, supposed to have started as a banker, was at first his own developer, builder and architect—'whether unwisely or not, it is unnecessary for us to say,' remarked *The Builder*. He was assisted by William Rushworth, a draughtsman who had worked with Street on the Law Courts. To add insult to injury he called his monstrous growth Queen Anne's Mansions.[1] The architectural magazines were dismissive: 'not a scintilla of architectural character and not a trace of artistic merit except what may result from



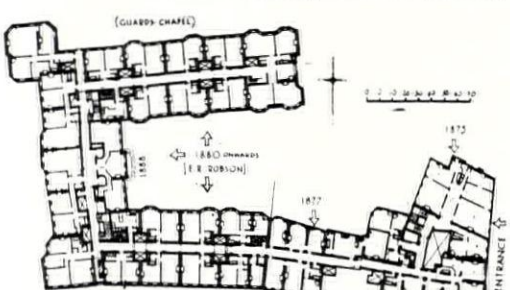
1

[1] Although I have used most of the obvious contemporary sources, I owe much of my information to Mr. S. E. Mangeot's invaluable article of 1939 in *The Architect & Building News*, to the Editor of which I am grateful for permission to use it. At that time the Mansions were in the last year of their original use (they have since 1940 been used as offices by the Admiralty) and there was much first-hand knowledge available. I am also grateful to Mr. H. Lowe, Secretary of Queen Anne's Hotels and Properties Ltd., the former owners, who lent me his scrapbook.

a large mass of light and another large mass of shade disposed vertically.' 'Had the Metropolitan Board of Works obtained the Building Act for which they applied last year,' said *The Builder*, 'Mr. Hankey would have been prevented from erecting

2

such a structure as that now in progress.' To the fashion for Model Dwellings for the Rich, and in particular for service flats of the Parisian kind, Hankey's hydraulic lifts—at least one is still in use today—were a revolutionary accessory. They enabled him to lay out his 2½-acre site with 240 service flats and a large hotel in 10–12-storey blocks around a courtyard, with common dining facilities, lounges, laundry and 'an elegantly appointed bijou theatre where elocutionary, dramatic and musical treats are afforded the residents, who, if they like, may at any time hire this superb little temple of Thalia to give an entertainment to their friends or for charitable purposes.' The Mansions were an immediate sell-out, at annual rents ranging from £60 to £200 (for the top floors), and the nobility and highest professional classes patronized them. 'The rents which these buildings command may



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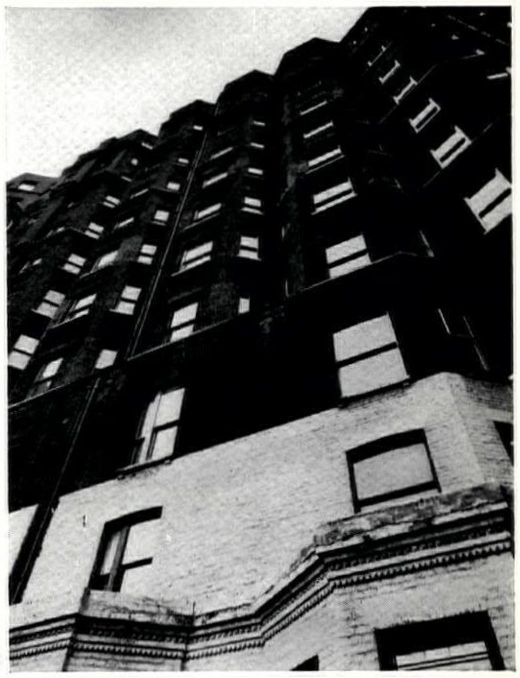
perhaps be regarded as another inducement to continue Babel-like structures.' Even Leonard Stokes, most puritanically sensitive of architects, had his *pied-a-terre* there. Hankey built himself a fantastic house, Garden Mansions, known as 'Hankey's Folly,' on the north-west side of the site, 2, between the Regency Queen Anne's Lodge and Hardwick's Wellington Barracks. It was a chateau pavilion with a tall polygonal tower sprouting out of it; from

4

the top Hankey indulged in astronomy and firewatching. He was obsessed with fires and was said to dash off in his carriage to watch those he spotted. Yet the half-envious professional attacks on the Mansions were based—unjustly—on his lack of fire precautions. As early as 1875, the almost completed first stage survived intact from flying sparks when his own 'Folly' went up in flames (it was rebuilt, but replaced by more Mansions in 1888). By 1877 Hankey had placed 40,000 gallons in water tanks on the roof, with hydrants, jets and hose connecting to every floor; *The Builder* said 'the entire building could be drowned, so to speak, in case of need, in a few minutes.'

Work was completed in three main stages (see plan, 3): first in 1875 the ten-storey 100 ft. high part facing Broadway, 1, with its zinc-sheeted mansard roof and its



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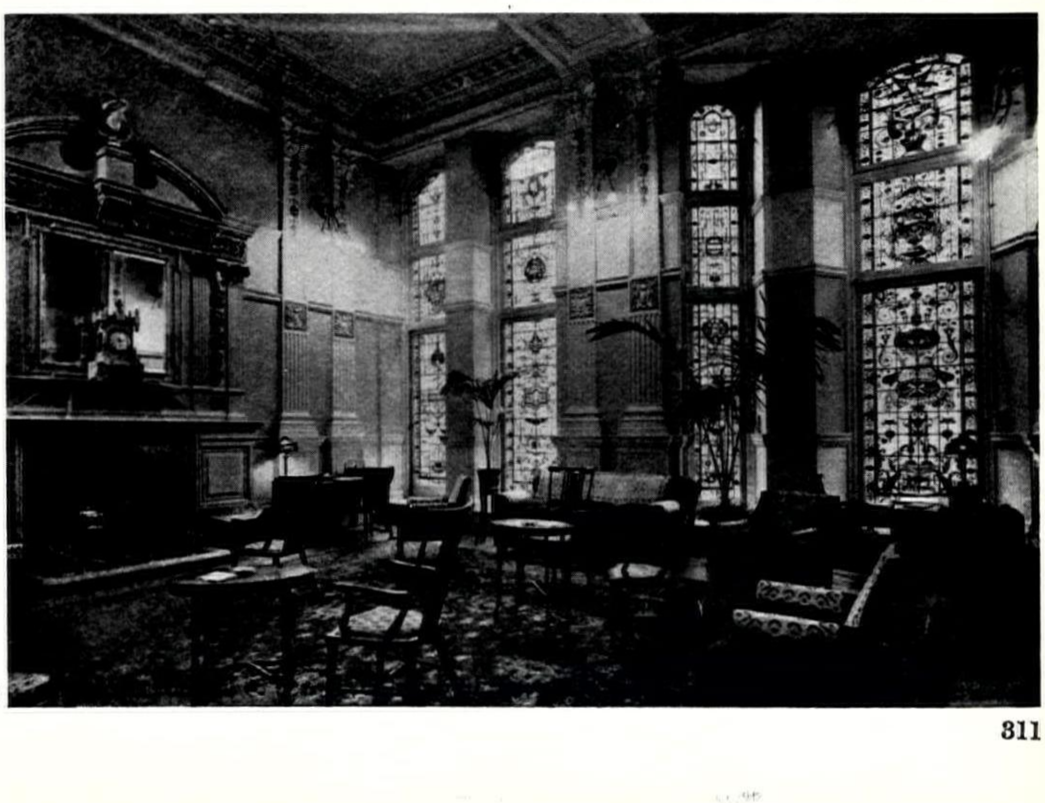

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baldly Italian medieval gateway, 4 (the gates are presumably of the later, 1889 work). Then in 1877 the Petty France side, 130 ft. high and twelve storeys, with the south-east tower added shortly after, to which eyrie Hankey himself eventually transferred. From 1888, after a ten-year delay, the rest of the courtyard followed, rising in places to thirteen storeys and 140 ft. The billiard room covered the site of Milton's house, where he dictated 'Paradise Lost,' and of Jeremy Bentham's next door. By now, Hankey had taken the measure of his critics and appointed as

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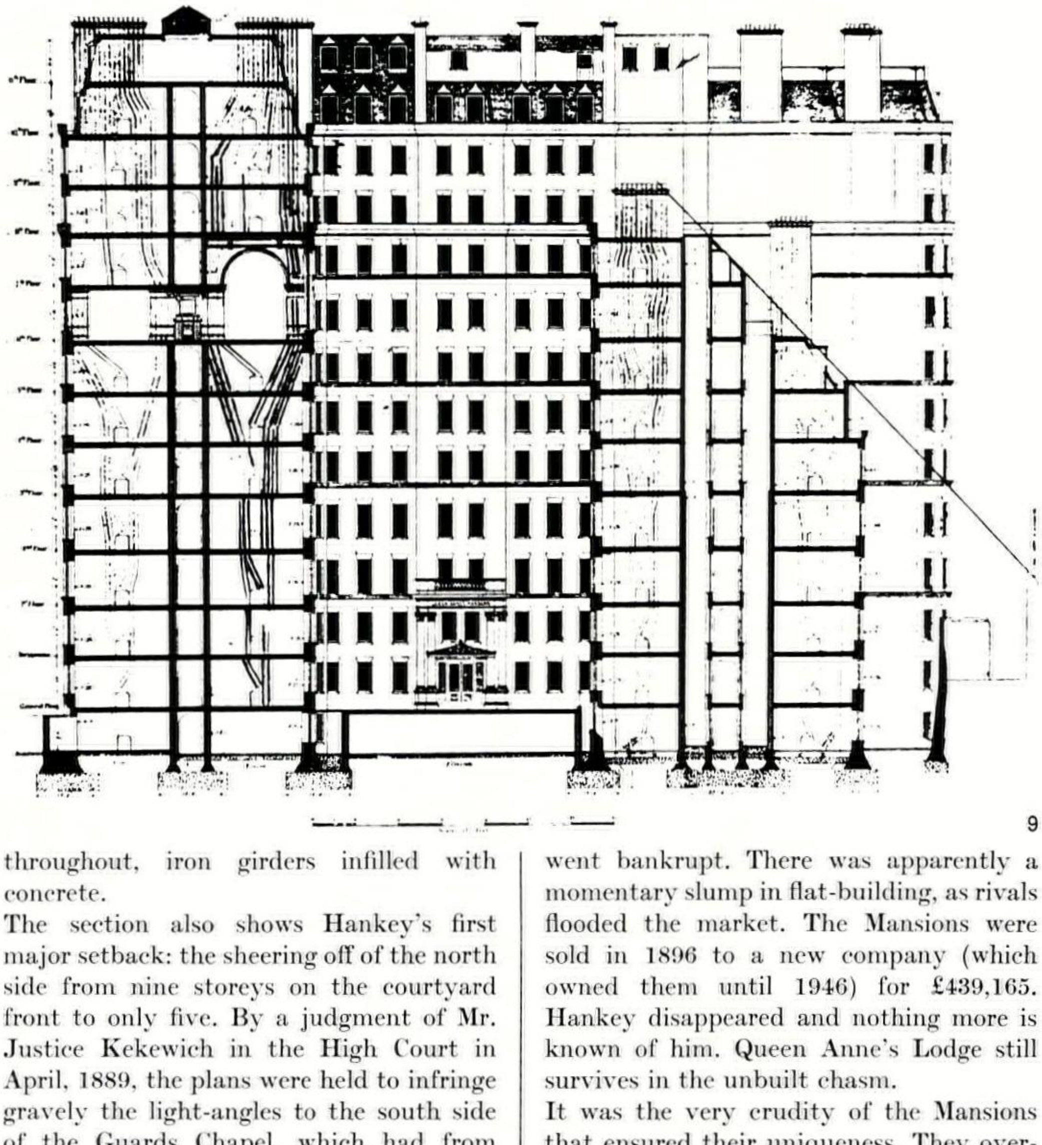

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architect E. R. Robson (1836-1917), who had retired from his post with the London School Board[2]. Robson's work is an enigma. Admittedly the plan was rationalized and the highly irregular internal face to the courtyard continued in regular polygonal bays, 5; but the main entrance is an outsize parody of Queen Anne, far from the delicacy of Robson's Board Schools or Royal Institute of Painters in Water Colours. Only inside was there a certain staid elegance, as in the lounge, 6, with its manorial windows.

Admittedly, for sheer technical expertise, Robson was a worthy recruit to skyscraper design[3]; his own drawings, 9, show the complexities of the layout. The walls, 2 ft. 6 in. at base, had been increased in 1877 to 4 ft. 6 in., tapering to 14 in. From 1877 floors were of fireproof construction throughout, iron girders infilled with concrete.

The section also shows Hankey's first major setback: the sheering off of the north side from nine storeys on the courtyard front to only five. By a judgment of Mr. Justice Kekewich in the High Court in April, 1889, the plans were held to infringe gravely the light-angles to the south side of the Guards Chapel, which had from 1878 been richly remodelled by Street. Various embarrassed professional witnesses were called by the defence, including Street's successor Sir Arthur Blomfield, J. P. Seddon and Henry Currey (Seddon saying that 'direct sunlight is not required for stained glass windows' and Blomfield, that north light was better for mosaics); but the judge was adamant that 'no damages would be adequate compensation for injury to the decorations of this chapel.' Even though the next piece beyond the chapel was built proudly once more to the full height, 7, it was to be the last. Hankey went bankrupt. There was apparently a momentary slump in flat-building, as rivals flooded the market. The Mansions were sold in 1896 to a new company (which owned them until 1946) for £439,165. Hankey disappeared and nothing more is known of him. Queen Anne's Lodge still survives in the unbuilt chasm.

It was the very crudity of the Mansions that ensured their uniqueness. They overlooked, 8, not only the centres of Church and State, but Buckingham Palace itself. Queen Victoria is said to have been furious. With or without royal intervention, the London Building Act of 1894 was emphatic: an 80 ft. limit was arbitrarily fixed for the vertical facades of London buildings, thereby determining the street pattern for 60 years.[4] London was not to rival Chicago and New York.

NICHOLAS TAYLOR

[2] For details of Robson and his School Board work, see David Gregory-Jones, 'Towers of Learning', AR, June 1958.

[3] Robson's Board Schools are important as ancestors of high buildings in London.

[4] Even Collcutt's seven-storey Gloucester House, Piccadilly (1907), itself now dominated by the Hilton, was enough for Edward VII to send furiously for the First Commissioner of Works, Lewis Harcourt.

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Metrics and Mystique

Great Britain was set on the path of adopting metric units of measurement by last year's Government statement of intent. Since then, apart from consultations being carried out with BSI, little has been heard of the matter. The general reaction however is one of apprehension. In this article Jan Sliwa discusses the problem, and attempts to dispel this feeling and to show that the mystique of metrics simply does not exist.

Development of the metre as a unit of linear measurement is historically an attempt to produce a logical standard unit of international acceptability and universal standardization. As society progressed, it first developed local standards of measurement necessary for trade, and these then tended to amalgamate into regional units and later into national units. Such units were naturally based on the human scale, but human beings are not an easily definable average. The result in terms of linear measure was a variety of units, all by name apparently interchangeable; but reference to Table 1 will indicate the confusion which could and did exist.

Table 1

Austria	1 Wiener Fuss	0.316 m.
Denmark	1 fod	0.314 m.
France	1 pied (Paris)	0.325 m.
Germany	1 Fuss (Rheinischer)	0.313 m.
Holland	1 Voet (Amsterdam)	0.283 m.
Italy	1 Piede liprando (Piemont)	0.513 m.
Mexico	1 pie	0.279 m.
Norway	1 fod	0.313 m.
Poland	1 stopa	0.288 m.
Russia	1 fut	0.304 m.
Switzerland	1 Fuss (pied)	0.300 m.
Sweden	1 fot	0.296 m.
UK	1 foot	0.305 m.

The growth of science in the seventeenth and eighteenth centuries, particularly in physics, demanded accurate measurement, and it is from this period that strictly defined standard units began to emerge. England chose the route of defining and refining the local standard units. France defined instead a new measure based not on human dimensions but on the circumference of the earth. In 1670 the metre was defined as the length of the arc subtended by one minute of a great circle of the earth.

This definition has, over the years, been refined and referred to other more easily measurable criteria, but it remains essentially the same. The acceptance of the metre throughout Continental Europe is generally attributed to Napoleon. No doubt this is why Britain avoided its use.

The statement of May 24, 1965, made by the British Government, announcing that Great Britain is to change within the coming ten years to the metric system of measurement, ended speculations about possible changes in the accepted pattern of weights and measures. By this announcement Great Britain set herself on a path to join the 85 per cent of the population of the world using the international system of units based on M/K/S (Metre/Kilogram/second). The decision is a brave one considering the economic involvement of the whole nation in its complexities. The task lying ahead is great and must not be underrated, nor can there be any illusions about the time required for it. Conversely, however, there must be no mystique created round the problem of transition. The simplicity of decimal division of metre/kilogram units does away with the necessity for creating yet another new elite of 'experts.' What is absolutely necessary is help and guidance towards the practical means of achieving the change without undue strain on national resources in the process of transition.

Education

The most important function of practical education will be to teach the British nation to think in terms of new units and to learn the notional values of dimension and distance without recourse to a translation process. The principle of 'no translation' must be insisted upon; otherwise whenever the two sets of dimensions are put alongside one another, the person seeking the right dimensions will only glance visually at the new metric equivalent without registering it notionally. He will retain the old dimension in his memory or at the best will only remember both for a brief moment, forgetting the new one quickly, as more difficult to comprehend, and reverting to the old unit of measurement as an easier way out. A mental process involving translation is wasteful and non-productive; instead, the mental impression of the new unit should be associated with the dimensional environment.

Learning the new system of weights and measures can find, to a certain extent, its analogy in the way one acquires the knowledge of a foreign language. The notional meaning of words is learned at the beginning and the translation process is used for a brief period only. After memorising the new notion of a word it must be used without translation if the language is to be spoken or written efficiently. Likewise, with the new metric language, one has to acquire and to think in it from the beginning. The principle of 'no translation' will not however invalidate the positive role of analog tables. These will be required at first for various technical and mathematical calculations. In time, however, the use of tables and comparative data will diminish as the concept of new values becomes embedded in the mind of the user. He must operate in the new units from the outset. All the dimensional data of objects, spaces, human stature, distances, etc., must be given only in metric values in direct association with the environment, to enable his mind to retain the visual notion of the physical object in relation to size and distance.

The heights of rooms should *not* therefore be 8 ft. (or 243.84 cm.) but rather 240 cm. only. Progressively, the user will mentally store the direct values of other units. The average man's height will be 170 cm.; door height 200 cm.; clear widths of door openings—80 cm. and 90cm.; minimum live load on floors in dwelling houses 200 kilogram per sq. metre (200 kg./m.^{2}); and the safe load-bearing capacity of soil (coarse sand, compact and dry) will be 45 tonnes/sq. m. It is clear from these few examples that a considerable burden would be imposed on the architect, engineer, quantity surveyor and builder if for every compound-unit calculation, multiplying and translating one set of values exactly into another had to be undertaken.

Concurrently with the immediate task of educating the professional man—there is the equally urgent task of educating the student. The period of ten years time allowed for the change is not a long one—if one looks at the overall task—and the introduction of the metric system of weights and measures into schools of architecture, building and engineering must start almost immediately.

Time factor

The overall problem of change must be carefully analysed and timed to avoid last minute decisions, which will almost certainly result in mistaken and irrational solutions. These in turn will mar the prospects of utilizing the whole machinery of changeover for rationalization of obsolete or incoherent standards. The recent example of India, which is completing its changeover this year, suggests that hesitancy and delay in some branches of industry may upset the work of co-ordination among the more progressive.

The Standard of Weights and Measures Act was put on the Indian Statute Book in December, 1956, allowing ten years for the completion of the changeover. The whole process was logically tackled by the Indian Standards Institution, with a separation of industry from trade and commerce owing to the varying backgrounds and problems involved. A transitional period of two years was allowed for the introduction of metric units of weight, capacity and length in parallel, 1963 being the year from which they became the only legal units of measurement.

Confirmation that problems are increased by delaying the practical changeover till the last, comes from an article 'How India Tackled the Metric Change' published in the *BSI News* for November, 1965, and based on a report by G. E. Dodd and G. J. Pearmain, members of the BSI Advisory Committee on metric conversion and standards. 'As might have been expected,' the article states, 'most people did not act until the last moment, and in practice the change was effected in the last few months of the period. No subsidies were offered to facilitate the change and no opposition was encountered.' The article also confirms that the simplicity of metric/decimal methods of measuring and counting are easily assimilable by everybody: 'Even kerbside traders readily adopted the new system. It was remarkable that so-called illiterates learned the new system and reconciled it with the old extremely quickly.'

The last statement suggests that many objections to the change are based on imagined difficulties of assimilation and are grossly exaggerated, and that given direct

[continued on page 31

kill

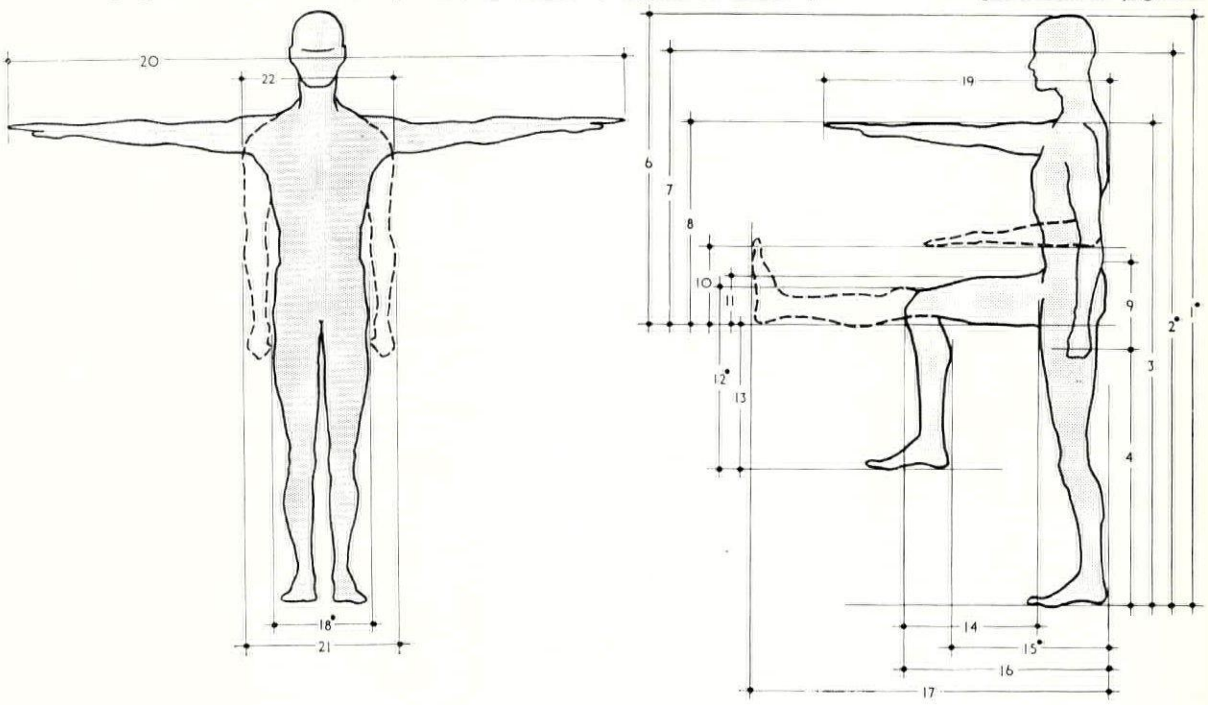
continued from page 314] guidance the nation will accept it readily. Even the pessimistic calculations of the cost of the changeover need not be as great as is predicted by some. Here again it is useful to quote the *BSI News*: 'Estimates of the probable cost of the change were made for various sectors of the economy, but actual costs were generally found to be much lower. A notable—but extreme—case was the petroleum trade, where the actual cost of changing pumps, tanker calibrations, etc., proved to be about 1 per cent of the estimate. The consensus of opinion is that cost estimates were usually highly misleading and not of great value.'

It appears from the appraisal of the problem that the human aspect of the changeover need not be exaggerated. All communications from official sources must be direct, clear and concise without suggesting that a training in higher mathematics is needed to understand them.

Technical problems of the changeover

The introduction of the metre will bring clarity and mathematical simplicity into the confusion of the present system of weights and measures. The saving in the educational and operational fields will be enormous. The Indian Educational Authorities estimate that the introduction of the metric system in primary education has saved about one year's study. Thus the sooner the start is made, the better it will be for the building industry. Architects, who will soon have to face the problem of metric measurements, can start a self-educating process now. The gradual introduction of new units and new scales into the drawing office will allow the professions to adjust themselves to new measurements, new scales and new notional values of dimensions. It is important however that architects should not be influenced by fast talking manufacturers offering quick 'metric' products without any reference to wider issues which may be involved when the same product is examined logically by BSI or other authoritative bodies. The questions to be asked by every manufacturer of a new or existing component should be—will it fit an overall dimensional pattern? How should the new metric dimensions be utilized for re-examination of the existing component functionally, technically and from the point of view of standardization? It is futile for a manufacturer just to translate the existing dimensions on a leaflet into metric terms and call it 'metric' without consultation with BSI, who may be producing quite different proposals for the same product. Taking a door as a typical example, to translate the existing size—6 ft. 6 in. by 2 ft. 6 in. by 1¾ in.—into metric units would result in 1,956 mm. by 762 mm. by 44.45 mm. To give it any logical metric shape, even without waiting for a new standard, one would make the door 2,000 mm. (or 2 m.) by 750 (or 800) mm. by 45 mm., the last dimension being governed by the existing standard thickness of continental timber or blockboard. Another typical example of malpractice in translating straight into metric dimensions comes from the newest steel tables. The innocent looking 4 in. by 3½ in. by $\frac{5}{16}$ in. by 7.6 lb. becomes an oddity in millimetres: 101.6 mm. by 88.9 mm. by 7.85 mm. by 11.30 kg./m., when it would be logical to make it 100 mm. by 90 mm. by 8 mm. It must be accepted, however, that even if the steel industry is willing to revise its sizes to conform to new metric standards, it will be some time before it will do so because of the high cost of changing the rolling mills to new sizes. For this reason some industries with rolling mills, die casting, mould casting and press moulding will take much longer to change than others where all that is needed is the adjustment of cutting, sawing, finishing processes or even simply of drawings.

The work of reappraising existing dimensional standards should be done by BSI and BRS and must establish authoritative criteria for dimensional co-ordination based on the 10 cm. [continued on page 316



Estimated dimensions, in centimetres, of the British population

Key	Dimension	*Men—18–40* *Mean*	*S.D.*	*90 per cent range*	*Women—18–40* *Mean*	*S.D.*	*90 per cent range*	*Elderly women—60–90* *Mean*	*S.D.*	*90 per cent range*
	STANDING									
1	Stature	170.9	2.6	160.0–181.6	160.7	2.6	149.9–171.5	152.7	2.5	142.2–163.1
2	Eye height	160.5	2.6	149.6–171.2	150.6	2.6	139.7–161.3	141.0	2.7	129.8–152.1
3	Shoulder height	140.0	2.4	132.1–147.3	129.3	2.3	119.6–138.9	125.7	2.1	117.1–134.4
4	Hand (knuckle) height	74.2	1.6	67.6– 81.0	—	—	— —	70.1	1.9	62.2– 78.0
5	Reach upwards	209.0	3.5	197.4–239.0	—	—	— —	182.1	3.4	165.6–198.6
	SITTING									
6	Sitting height	89.7	1.4	83.8– 95.3	84.6	1.4	78.7– 90.2	79.5	1.4	73.7– 85.3
7	Eye height	78.2	1.4	72.6– 83.8	73.2	1.4	67.6– 78.7	68.1	1.5	61.7– 74.4
8	Shoulder to seat height	58.4	1.2	53.3– 63.5	54.1	1.2	49.0– 59.2	52.6	1.2	47.8– 52.6
9	Lumbar height	25.4	—	20.3– 30.5	—	—	— —	—	—	— —
10	Elbow to seat height	22.4	1.1	17.8– 26.7	20.3	1.1	16.0– 24.9	19.3	1.2	14.5– 24.4
11	Thigh clearance	14.5	0.6	12.2– 16.8	14.2	0.6	11.9– 16.5	12.7	0.9	8.9– 16.5
12	Top of knees height	53.6	1.1	49.2– 57.9	49.5	1.1	45.2– 53.8	47.8	0.9	43.9– 51.6
13	Under-side of thigh to floor	41.9	0.8	38.9– 45.2	39.4	0.8	36.3– 42.7	38.4	0.9	34.5– 42.2
14	Abdomen to knee length	38.6	1.2	33.5– 43.7	—	—	— —	—	—	— —
15	Buttock to back of calf	47.8	1.0	43.2– 52.1	46.5	1.0	41.9– 50.8	47.0	1.1	44.7– 51.6
16	Buttock to knee length	59.4	1.1	54.6– 64.3	56.4	1.0	52.1– 60.5	55.9	1.4	50.0– 61.7
17	Extended leg length	105.7	2.2	96.8–114.6	—	—	— —	93.2	1.8	85.9–100.6
18	Seat width	35.1	0.9	31.3– 38.9	37.6	0.9	33.8– 41.4	37.3	1.6	30.7– 43.9
	SITTING AND STANDING									
19	Reach forward	83.8	1.8	76.5– 91.2	66.5	1.8	59.2– 73.9	72.6	1.7	65.5– 79.8
20	Reach sideways	176.8	3.2	163.6–189.7	164.3	3.2	150.9–177.5	—	—	— —
21	Elbow width	43.9	1.6	37.6– 50.3	40.1	1.6	33.8– 46.5	—	—	— —
22	Shoulder width	44.5	1.0	40.1– 49.0	40.1	1.0	35.6– 44.4	41.4	1.2	36.3– 46.5

Estimated heights, in centimetres, of children at various ages

Age	*Boys* *Mean*	*S.D.*	*90 per cent range*	*Girls* *Mean*	*S.D.*	*90 per cent range*
3	94.2	1.5	87.9–100.3	93.0	1.3	87.6– 98.3
6	114.3	1.8	106.9–121.7	113.8	1.9	105.9–121.7
9	131.1	2.3	121.4–140.7	130.0	2.3	120.4–139.7
12	145.8	2.7	134.4–157.0	146.8	2.7	135.6–158.0
15	163.3	3.1	150.4–176.3	160.3	2.3	150.6–169.9
18	175.5	2.5	165.1–191.0	162.6	2.2	153.4–171.7

Anthropometric data in metric units based on AJ Information Sheet 1185 (13.2.63)

continued from page 315]
module. Concurrently with the work on basic dimensional data, the BSI will be required to produce national standards of components and building materials based on M=10 cm. The standards could include performance specifications for each material, element, component or assembly and might relate to similar standards in Belgium (NBN), Denmark (DS), France (NF-P), Germany (DIN), Norway (NS), Poland (PN), Sweden (SIS) and many other countries. The outcome of these investigations may lead to startling changes in the hitherto accepted standards for materials and components. Great Britain is in the novel situation of having to start afresh and this may be an advantage rather than a handicap.

There is no doubt that the main burden of the changeover will rest on the BSI, BRS, Ministry of Technology and MOPBW in that order. All the professional institutes will have to share in the research work on the best means of providing new metric data to their members. The RIBA's new Technical Supplement is doing splendid work in this direction, since architects will be in the front line of the changeover. It will be therefore useful to examine salient points of the change as they affect the building industry in general and architects in particular. The drawing technique will not change at all in spite of some fears to the contrary. The metric drawing scales will produce drawings which will hardly differ from the present ones. In fact the use of scales in the preparation of working drawings will be mastered by architects, engineers and quantity surveyors within the first month, if not earlier. On the drawing board the metric proportional scales of measurement differ very little from the foot/inch scales now used. It should not be too troublesome to the quantity surveyor either. Drawing scales in the metric system are simple numerical ratios. Comparative data on scales is shown in Table 2 and indicates the minor differences which occur.

Table 2

English scales	Proportion	Equivalent Metric scales
Full size	1 : 1	1 : 1
½ full size	1 : 2	1 : 2
¼ full size	1 : 4	1 : 5*
⅛ full size	1 : 8	1 : 10*
1 in.–1 ft.	1 : 12	1 : 20*
½ in.–1 ft.	1 : 24	1 : 25*
¼ in.–1 ft.	1 : 48	1 : 50*
⅛ in.–1 ft.	1 : 96	1 : 100*
$\frac{1}{16}$ in.–1 ft.	1 : 192	1 : 200*
$\frac{1}{32}$ in.–1 ft.	1 : 384	1 : 480
1/500	1 : 500	1 : 500*
		1 : 1,000
		1 : 2,000
		1 : 10,000

* *Scales in use in metric countries for building drawings.*

Drawing practice

The worst problem of the metric conversion, as far as this country is concerned, will be the total lack of background data. The actual application of a metric scale on drawings will be accomplished very quickly. The greatest drawback will be a lack of confidence on the part of the designer through being unable to draw on memory for dimensional data. Every dimension will have to be learned afresh and new standards will have to supersede the old ones—appearing in an entirely new cloak. Again it is vital that all the new knowledge is acquired directly with the absolute minimum of translation. There is no doubt, however, that the designer will be faced with a transitional period, when he will have to convert dimensions quickly without the use of tables. To achieve quick adaptability, the designer will need some relatively simple means of arriving at his converted dimensions. The consultation of analog tables, conversion tables or any translating data will lead to protracted operations every time the room is planned, the detail is drawn, or a dimension is inserted. It is here that the module of 10 cm. plays a most important part as a quick mental conversion. The existing notional value of measurement which is retained in the designer's memory can be dissected into units of M=4 in., and mentally converted into centimetres via M=10 cm. This may lead to approximations, but it forms a simple way of learning metric values. Horizontal and vertical dimensions will be easily assimilated through this mental process. The metric dimensions of a 10 ft. by 15 ft. room will be arrived at as follows:

M=10 cm., 1 ft. =3M

$(10\times3)\times(15\times3)=30\times45$

$30M\times45M$

300 cm. × 450 cm.

The vertical height of a room of 8 ft. will quickly take a metric shape—$8\times3=24$ or 24M=240 cm. The resultant sizes, with the orderliness of rounded dimensions, will simplify the work of the designer. Once the values are acquired they can be read directly on the metric decimal division scale of millimetres with 1 : 100 scale having 1 mm.=1M=10 cm.

Building Practice

The accepted standards of measurement and the established practical conventions of specifying certain materials will cause some difficulties. It is in this sphere that BSI and BRS will have their greatest responsibility in educating the building industry—and in fact the whole country. Many present standards will become obsolete in the process of changeover and many new ones will be created, establishing fresh conventions and new codes of practice. For example lead sheet will probably be specified in future by thickness only and not by weight. Glass will be defined as a thickness in mm. and not as a mixture of weight and thickness as at present (32 oz. and ¼ in. plate). The complicated division between the two gauge systems in Great Britain (SWG and BG) for specifying the cross-sectional sizes of wires and sheets will no doubt give way to the specification of cross-sectional gauge expressed in millimetres or fractional values of a millimetre.

Other examples could be quoted, but they would do no more than underline the importance of getting on as soon as possible with providing information and guidance on new standards and new codes. The question of using common scales for engineers' and architects' drawings is another that must be settled. Scales must be unified, and the old engineers' favourite ⅜ in scale must give way to the metric 1 : 50 scale, which is the nearest to ¼ in. scale. This will enable master negatives to be made from the architect's drawings and used by the engineers.

Nomenclature and Units

The nomenclature for the metric system has been accepted by Great Britain in its original version of metre, centimetre, millimetre. Only the USA use the spelling *meter*. The next important item to arrive on a metric agenda—needing guidance from BSI very quickly—will be the problem of standardization of dimensioning on drawings, sizes of structure, engineering service pipes, etc. Decisions will be required a. the earliest possible moment concerning the use of millimetres, centimetres and metres as dimensions. It may be that Britain will be first to put this question in order, as most of the metric countries have not yet come to any final conclusions. It is perhaps not one of the most important issues, but nevertheless, if it is not settled, a chaotic state of affairs could result. The millimetre has been accepted for dimensioning by some of the Scandinavian countries (Sweden, Denmark), and some of the east European countries (Poland, Russia) favour the use of this unit throughout. Before the millimetre is accepted here, however, some points must be noted about its general use for dimensions.

The millimetre can safely be used for joinery, carpentry, bricklaying, engineering structural drawings, engineering services, some concrete work, general building arrangement and perhaps for components of wall-size dimensions. In general it is preferred to use millimetres for denoting dimensions on production drawings, where accuracy is essential. All tolerances must be set out in mm. The difficulty arises in using millimetres for large overall dimensions. The building worker will be at a loss presented with astronomical figures on site drawings, e.g. an overall dimension of 60,000 mm. by 40,000 mm. To add to his difficulties in reading the correct number of zeros, he is unlikely to have the measuring tape numbered in millimetres but in centimetres and metres. The more conversions he is made to perform, the more likely he is to make a mistake. He should therefore be able to use centimetres and metres for setting out.

There is also a reason why any decision to accept dm. (decimetre) as a unit of dimension is a retrograde one. Decimetre is an artificially contrived unit and will only add to confusion on site. Apart from being easily mistaken for cm. when badly written, it is in effect a dimension used more in theory than in practice. Whether it is an international or

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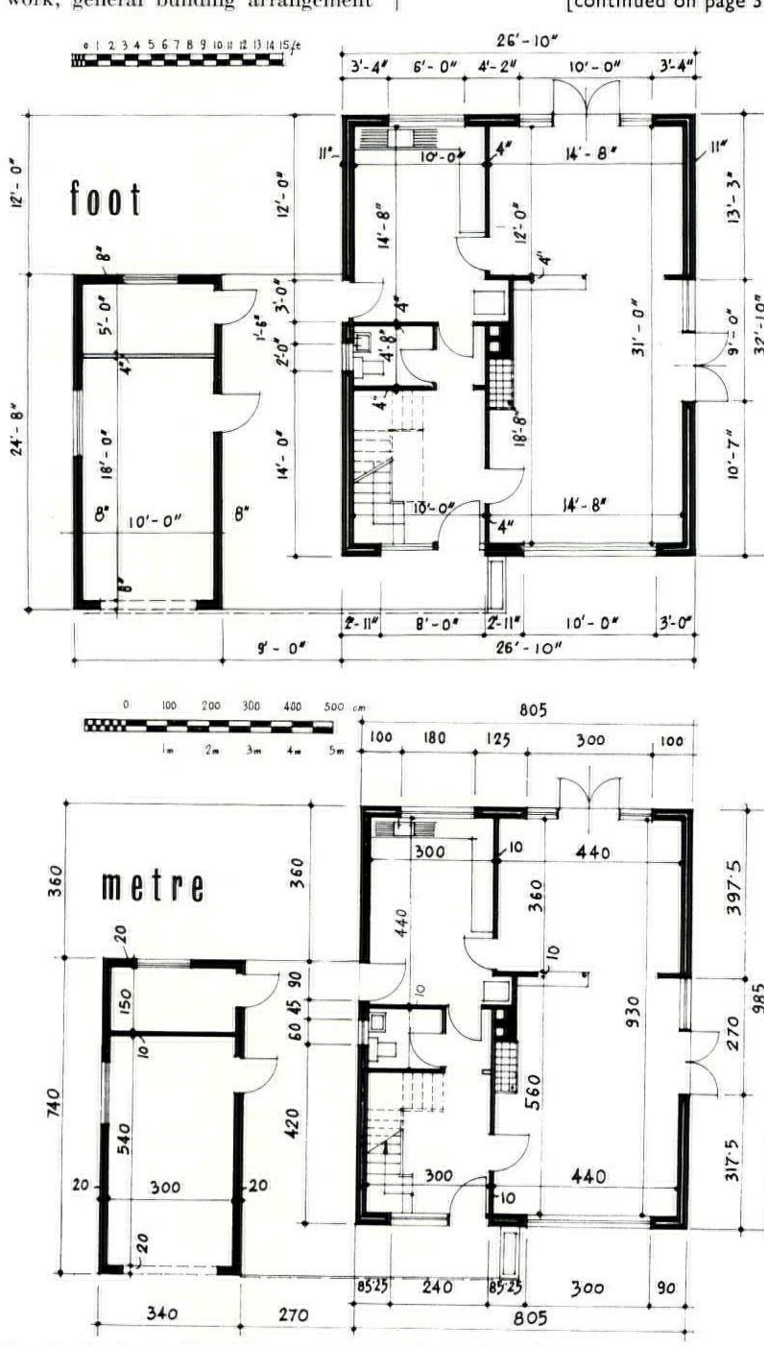


Plans showing the resemblance between comparative scales. ($\frac{1}{16}$ in. and 1:200)

continued from page 316]
national decision it certainly will not find a happy reception on site. It will mean yet another conversion into something else, and if the theoreticians prevail, there will be four units (millimetres, centimetres, decimetres and metres) used on the site instead of two as at present (inches and feet). Instead of simplification, we will be faced with the drudgery of superfluous conversions. Change to the metric system can and will provide a boost to that permanent goal, increased productivity, not least in the building industry. The entire advantage can however be lost by allowing theoreticians to build up a false mystique over the use of these logical units where length, volume, weight and time are all directly related by simple definitions. Difficulties exist but they are not the difficulties of a new philosophy but rather those of the junior classroom.

The Industry

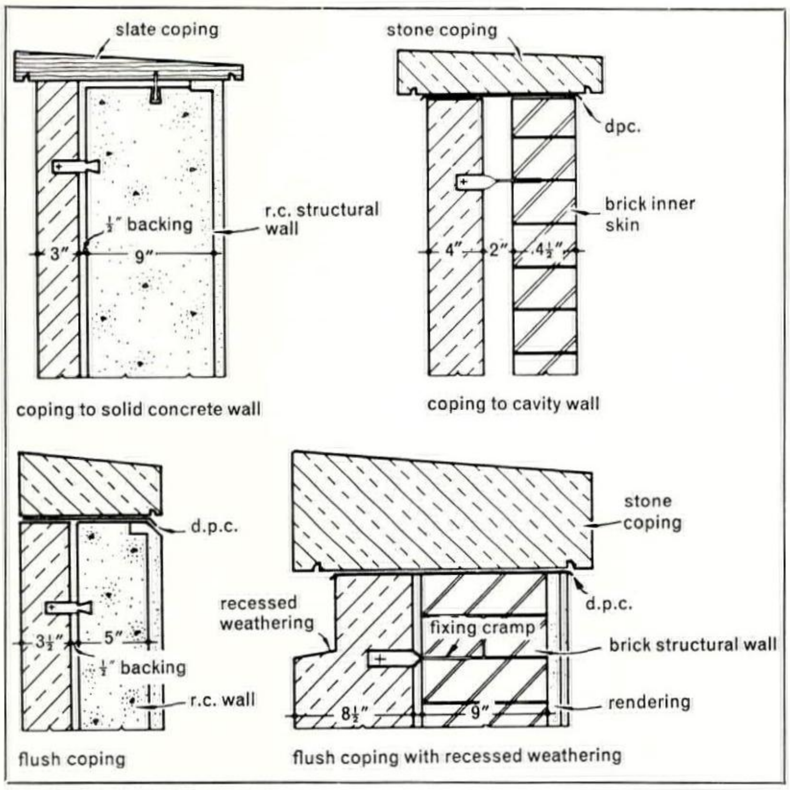
Stone

Natural stone suffered something of an eclipse as a building material in the recent past. Economy, of course, was a vital factor in this process but almost equally militant was the fact that the use of stone has tended to become equated with historical styles. In recent years the stone industry has been struggling to free itself from this aura of past glories. There are many reasons why this should happen. Stone is by its very nature an obvious building material. Within certain limitations it has definite advantages not least of which is the mellowing which occurs in a well-detailed facade with age and weather.

The present generation of architects have, however, grown up with almost no experience of using the material. Before consideration of stone as a material for building can be expected, it is essential to give the architect knowledge of the material, its advantages, its possibilities and its limitations.

The fourth edition of the booklet 'Stone,' published by the Stone Firms Ltd., sets out to achieve this end. This company has been well in the van in publicizing their material as suitable and amenable to architecture in the modern idiom. This booklet carries this forward in a very practical way. Naturally publicity for the company is included but this is largely confined to the technical and design services offered. The larger part of the publication is concerned with sound and comprehensive technical information fully illustrated both with photographs and drawings. Without doubt any architect thinking of using stone would be well advised to have this booklet by him and even if the use of stone is not an immediate problem, the availability of the publication in his information library would be valuable.

The Stone Firms Ltd., Horton Road, Colnbrook, Slough, Bucks.



1, *coping details from 'Stone'*

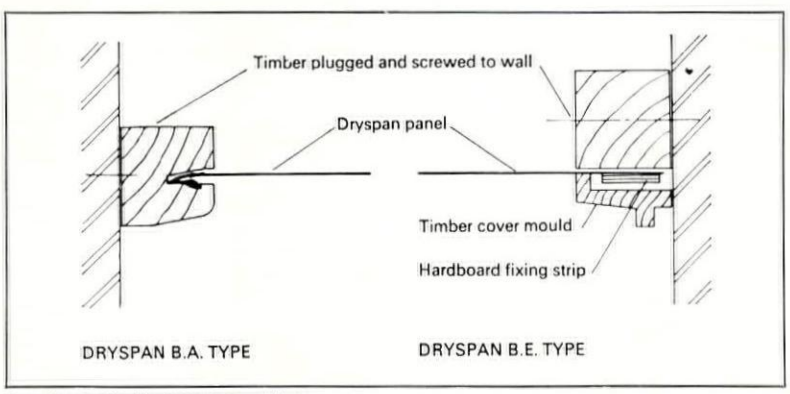
Ceilings

A completely new concept in dry construction for ceilings was recently introduced by the Expanded Metal Company Limited to the British market. Savings in both time and cost are claimed for the system which is applicable to new or existing buildings.

A lightweight p.v.c. film forms the basis of the ceiling which is called Expamet Dryspan. This film is specially formulated to meet conditions in use and more particularly in erection. Timber battens are first fixed to the perimeter walls to form a continuous line at the required ceiling level and suitable fixings are provided for light fittings. One edge of the film is then wrapped round a hardboard fixing strip and stapled to the appropriate batten. The opposite edge is then similarly wrapped and inserted into the holder of a pneumatic ram tool which stretches the film into position across the room. When this has been fixed the sides are then stretched and fixed by hand. Once all edges are fixed, openings are cut for light fittings, etc., and then a specially moulded cover section is fitted to the perimeter. In spite of the stretch imparted to the material, it is notable that punctures of this nature do not cause spreading tears as might be expected.

Installation is extremely rapid. In a demonstration a room 10 ft. by 14 ft. was completed, apart from the fixing of the initial battens, in 25–30 minutes. There is no doubt that the finished appearance compares favourably with a traditional plastered ceiling and the flexibility of the material should withstand any likely accidental damage. Resistance to staining is one of the virtues claimed for the film and surface dirt normal on ceilings should be easily cleaned off. Installation is carried out by teams of skilled technicians and costs are approximately 25s. a sq. yd.

Expanded Metal Company Ltd., 16 Caxton Street, London, S.W.1.



2, *perimeter details of Dryspan ceilings*

Contractors etc

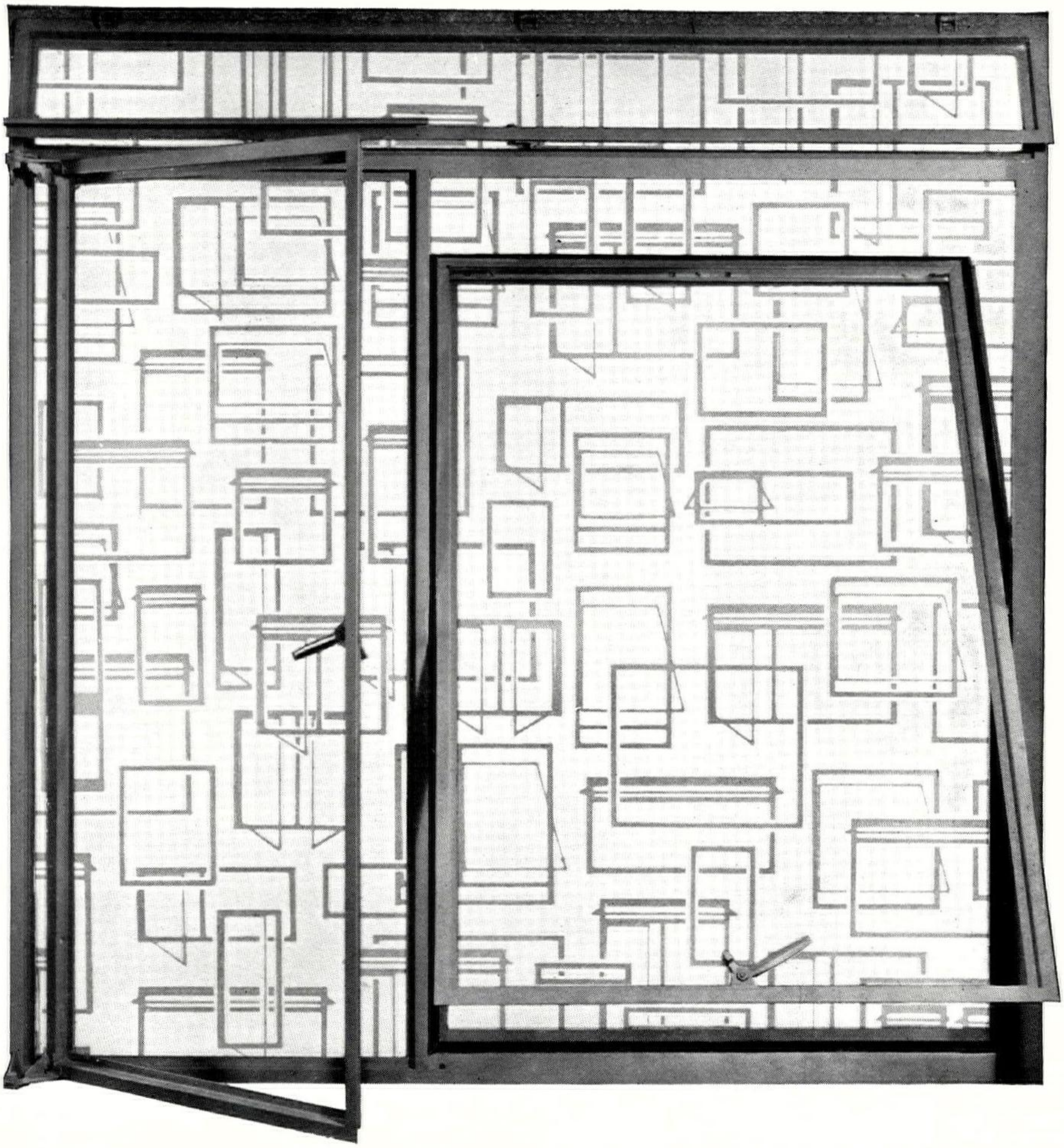
Industrial Offices, Newcastle upon Tyne. *Architects:* Ryder and Yates and Partners. *General contractors:* Brims & Co. *Sub-contractors: Ironwork:* M. Aynsley & Sons. *Blinds:* Stilsound Vertical Blinds Ltd. *Fibrous plastering:* R. W. Smiles & Co. *Shopfitting:* Haggie & Aitchison Ltd. *Lifts:* Otis Elevator Co. *Murals:* Pierre Boucher, Multiphoto. *Kitchen equipment:* Moorwood Vulcan Ltd. *Fibreglass work:* Freedman Bros. Ltd. *Flooring:* R. J. Morpeth (Contracts) Ltd. *Heating and lighting:* Brightside Heating & Engineering Co. *Partitioning:* Tenon Contracts Ltd. *Ceilings:* Lumenated Ceilings Ltd.; Newella Insulation Co. *Electrical engineering:* Campbell & Isherwood Ltd. *Curtain walling:* Crittall Manufacturing Co. *Telephone installation:* Communications Systems Ltd.

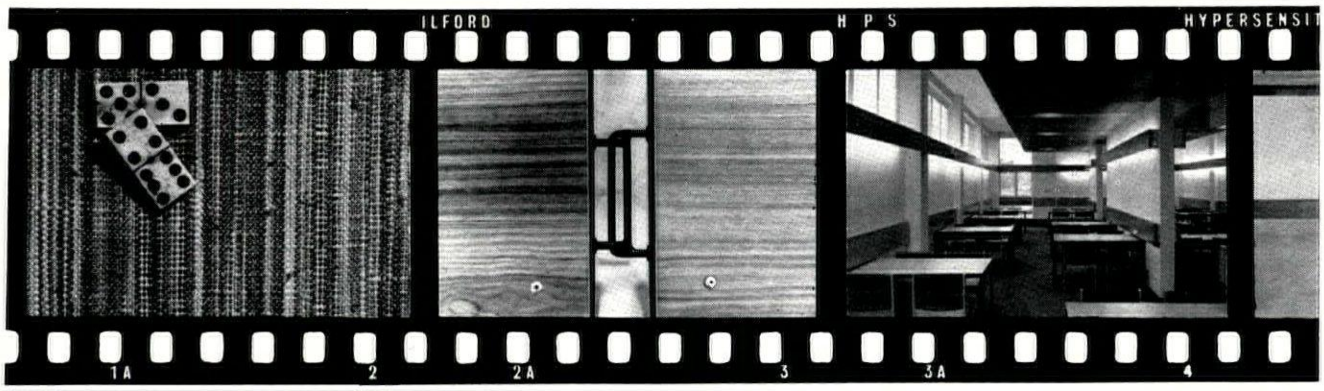
Secondary School, Richmond, Yorks. *Architects:* Denis Clarke-Hall and Partners. *General contractors:* C. Chapleo & Sons Ltd. *Sub-contractors: Tecton roofing:* Newsum Timber Engineering Ltd. *Metal windows:* Doodson & Bain Ltd. *Bricks:* Henry J. Greenham. *Mechanical services:* Norris Warming & Co. *Steel rod reinforcement:* Rom River Reinforcement Services. *Electrical installations:* Electrical Installations Ltd. *Doors:* F. Hills Ltd. *Sliding door gear:* Henderson Ltd. *Cloakroom fittings:* Amdega Ltd. *Wood block flooring:* Hollis Bros. *Planting:* R. V. Roger.

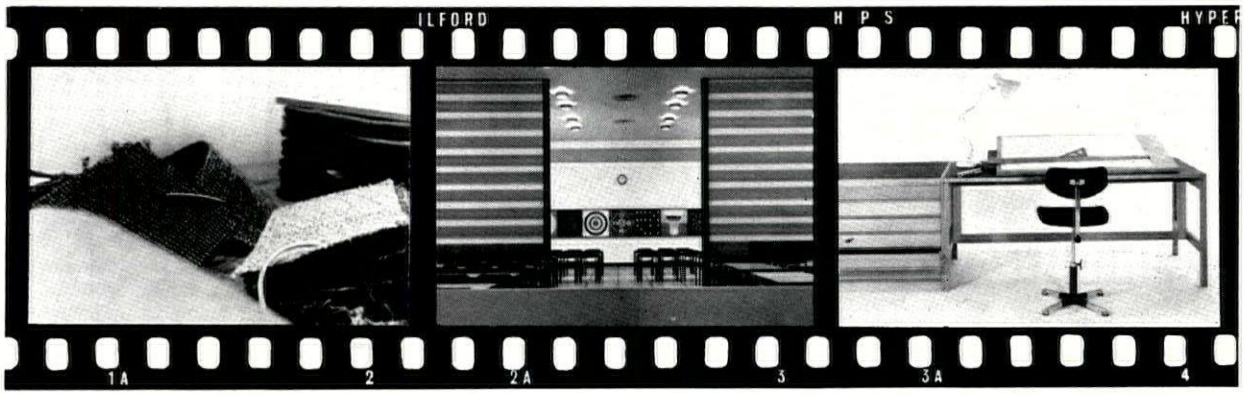
Secondary School, Hampstead, London. *Architects:* Stillman and Eastwick-Field. *General contractors:* J. Lawson & Co. *Sub-contractors: Site exploration:* Ground Exploration Ltd. *Heating and mechanical services:* A. D. Berry & Co. *Electrical installation:* W. J. Furze & Co. *Metal windows:* Williams & Williams & Co. *Hardwood flooring:* Acme Flooring & Paving Co. *Steel staircases:* Finch Engineering Ltd. *Terrazzo stair treads and w.c. partitions:* Art Pavements & Decorations Ltd. *Asphalting:* F. J. Prater Asphalte Co. *Lightweight structural aggregates:* Lytag Ltd. *Weatherban joint sealing:* Mastic Pointing Co. *Suspended ceilings:* Panther Ceilings Ltd.; Hall & Co. *Venetian blinds:* J. Avery & Co. *Precast concrete cladding panels:* Saunders (Ipswich) Ltd. *Ironmongery:* H. & C. Davis & Co.; Alpha Architectural Ironmongery Ltd. *Sanitary ware:* Ashley Brandon Ltd. *Sliding door gear:* E. Hill Aldam & Co. *Load bearing insulated building blocks:* Thermalite Ytong Ltd. *Flush doors:* Gliksten Ltd.

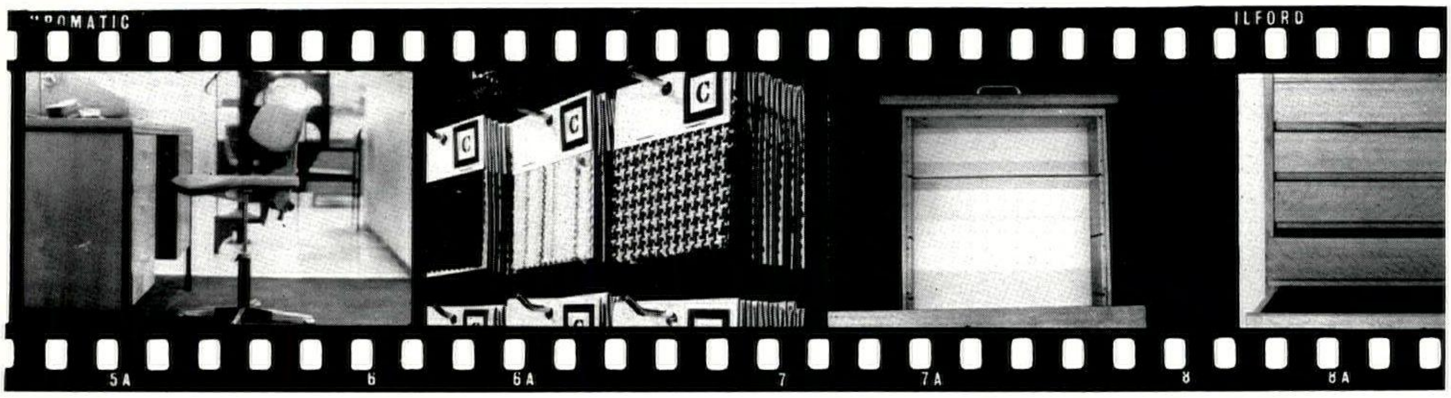
House, Exbury, Hampshire. *Architects:* Law and Dunbar-Nasmith. *General contractors:* J. F. Gamble & Sons (New Forest) Ltd. *Electrical contractors:* R. F. Webb Ltd. *Mosaics:* The Southampton Flooring & Paving Co. *Wall tiling:* Hooper & Ashby Ltd. *Drive work:* Roads Reconstruction Ltd. *French polishing:* G. P. Hollick & Sons Ltd. *Stone:* D. Banks. *Heating:* G. N. Haden. *Glazing:* James Clark & Eaton Ltd. *Roofing:* Roberts Adlard Ltd. *Asphalting:* Limmer & Trinidad Asphalt Co. *Lifts:* Etchells Congden & Muir Ltd. *Plastering:* A. C. V. Telling (Southern) Ltd.

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



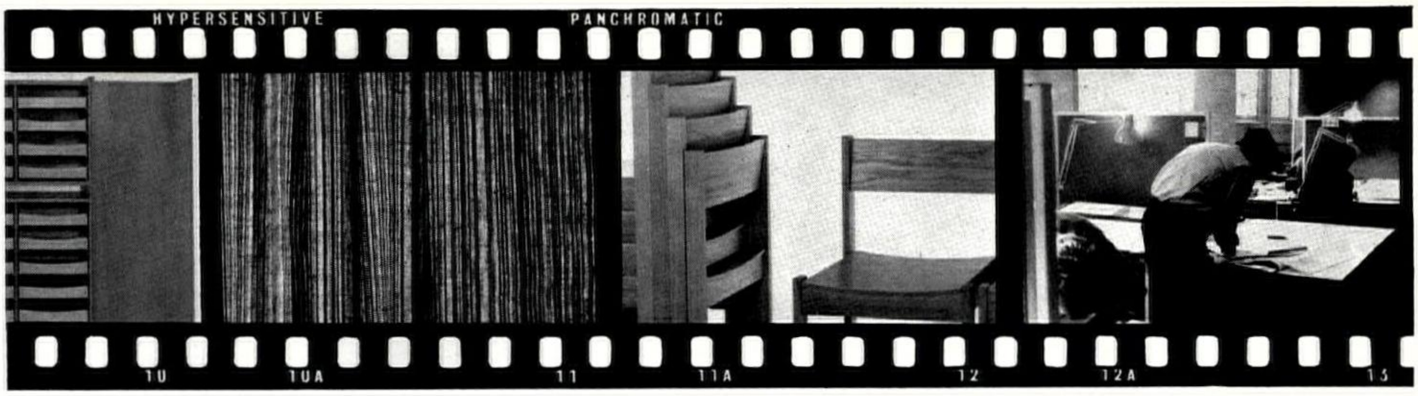


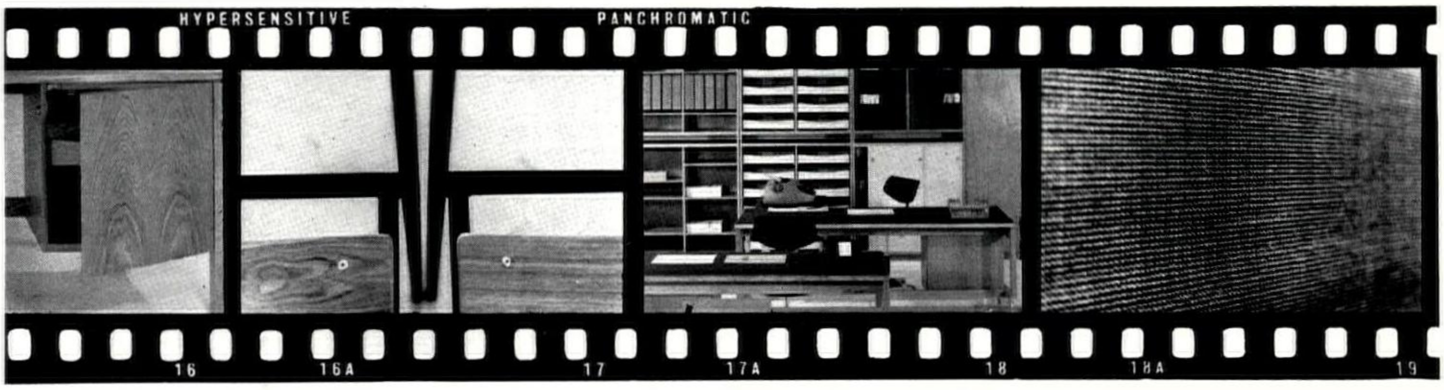


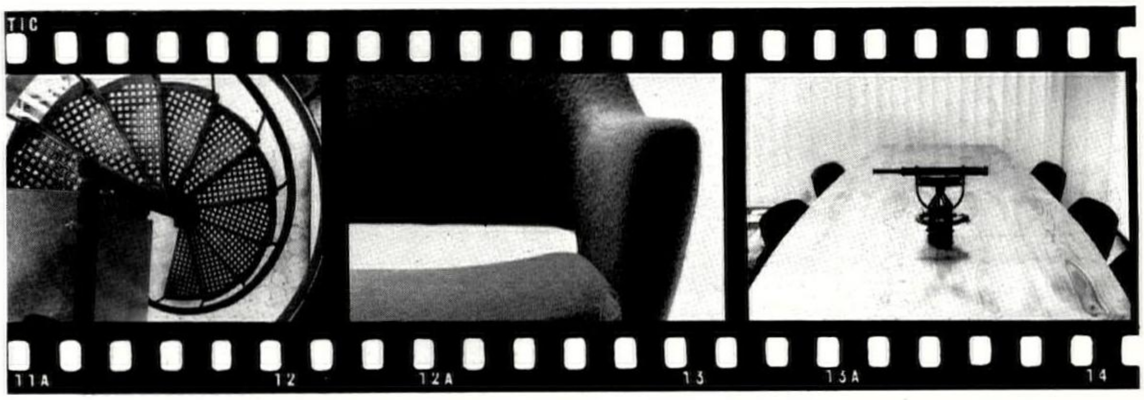


Conran in camera

As the pictures show — Conran are not only furniture manufacturers. With a wide range of exclusive carpets at their disposal, an enormous selection of fabrics (geared to contract needs), carpet and curtain making facilities and a skilled team of site fixers — Conran are throughly equipped to work on a very broad spectrum of contract furnishing requirements.







For the record — the furniture range covers all seating requirements, embraces 3 desk ranges (timber or metal framed) and will happily meet specifications as far apart as a study bedroom to a budget or the most elaborately fitted boardroom.
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A monthly anthology from all over Britain of townscape problems, outrages and opportunities, compiled by Ian Nairn with drawings by G.J.Nason.

OUTRAGE

NORWICH
. . . the latest in the town's series of disasters: 'Fifth Avenue' wrapped round a pre-war front, 1—the final solution to all those old buildings that have too much

1

character. Pearl Assurance, 2, a slice of the usual. A needless setback in a narrow street, 3, which must surely become pedestrian in the end; and the slow decay of the ordinary streets of Norwich (Pottergate), 4. What fine city?

PEEBLES
Lowland Scotland. Trees by the river Tweed, before and after the Parks Department attended to them, 5 and 6.

6

2

3

4

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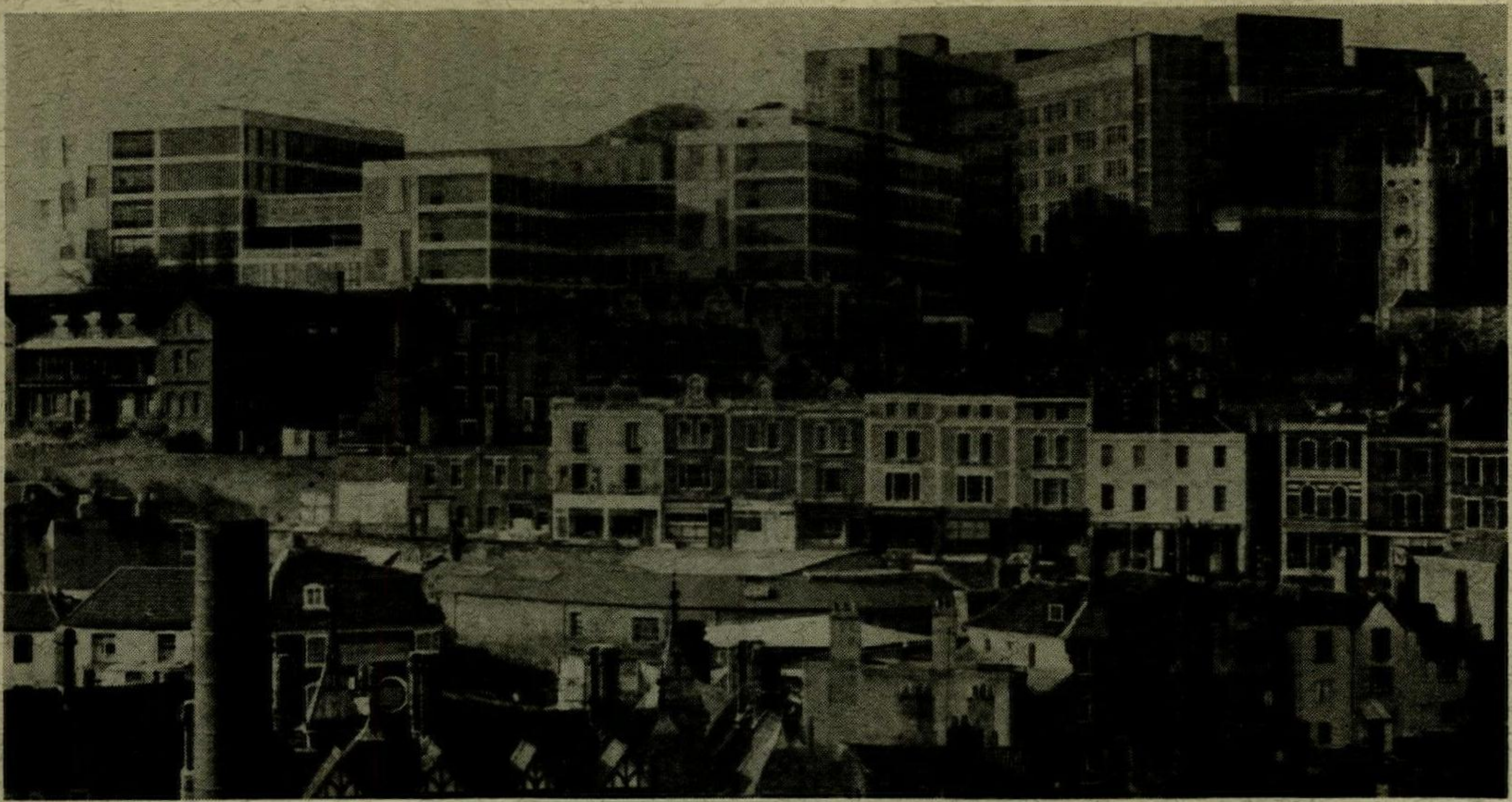


7

BRISTOL
Bristol's new skyline, illustrated by Cubitt's on the cover of their magazine, 7. I doubt if the city will be as pleased with it as the builders seem to be. The client was Bristol University.

8

9

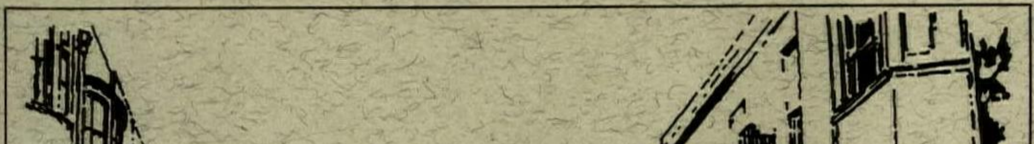
BRIGHTON
Two unhappily lumpish new buildings in the most sparkling of English towns: one on the front, 8, the other a tall slab overshadowing Brunswick Square, 9.

10

GUILDFORD
A notice six inches square is provided with a thumping great pole, 10, when it could have been attached to the church-yard railings anyway. This grotesque dissonance is worse than the disruption caused by the original signs, where the parts were at least related to each other.

OPPORTUNITY

BRIGHTON
A curved crescent on the way to the Lanes, 11, due to be demolished eventually for the Town Hall extension. If the buildings really can't be kept, the replacement should have the same shape, for it makes a splendidly inviting entrance. Square it all up and the effect will vanish.



11

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BARBOUR INDEX FILE No. 85

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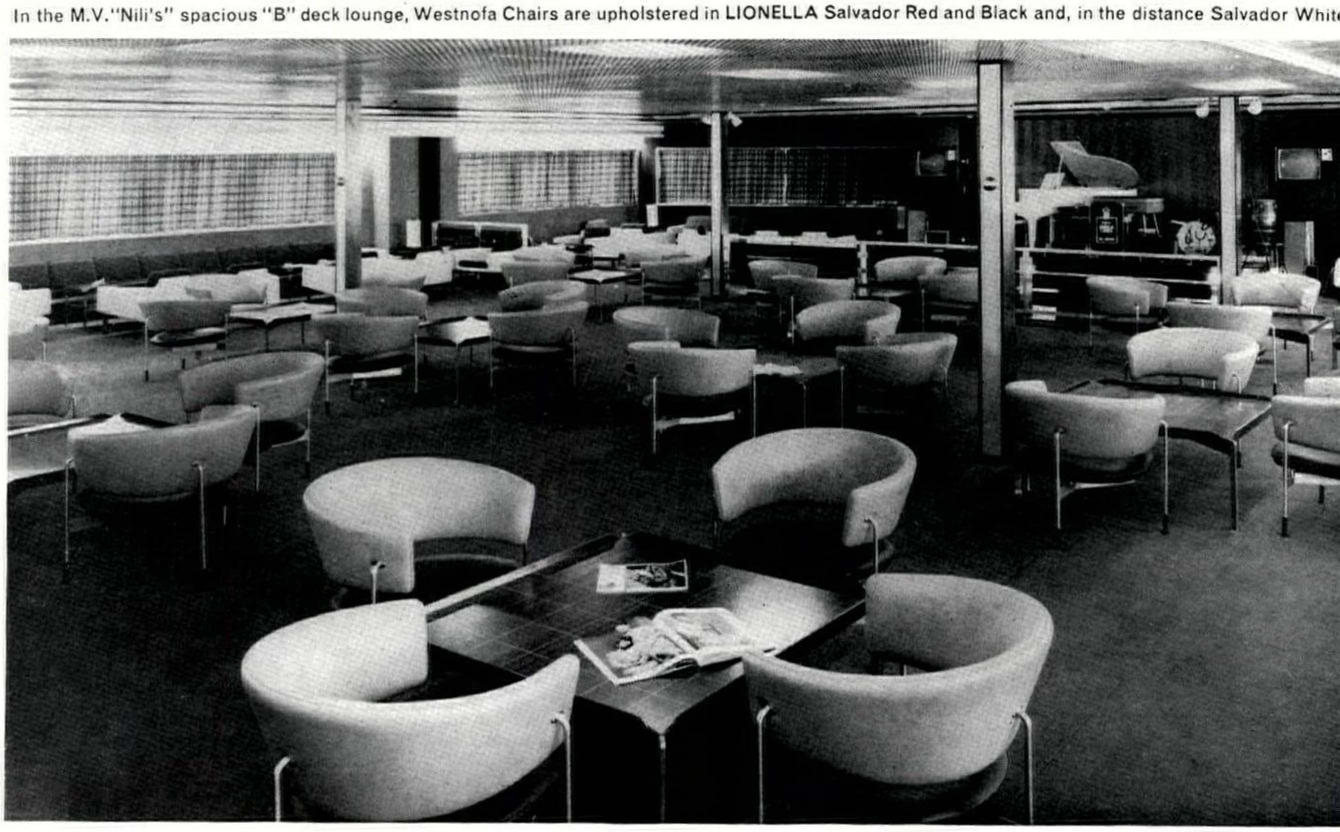

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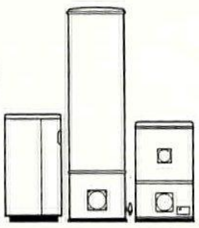

Not the water heating sort. Tucked away inside the Sadia heater is an insulation that for sheer efficiency leaves a mink wrap cold. Of course there's an excellent reason for Sadia's "extravagant" concern with the technical details of their electric water heaters—not only the insulation but every last component part from heating element to thermostat. It's this caring about detail that makes Sadia models so efficient in the smooth, even, inexpensive supply of hot water. They're very nearly 100% efficient, and owners find them agreeably economical in use (that insulation again!). Sadia make water heaters with capacities from 1.32 gallons to 120 gallons—but their quality construction doesn't change. *That's* why...

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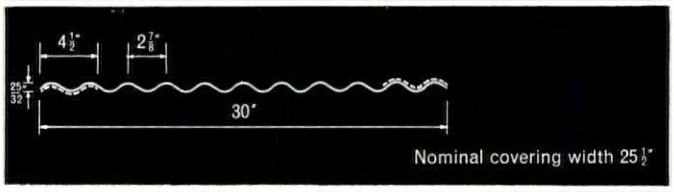

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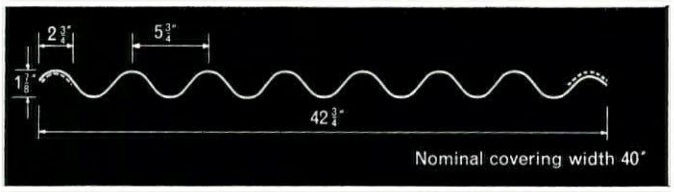
COLOURS: Natural Transparent, Natural Diffused, Green Transparent, Yellow Transparent, Grey Opaque.



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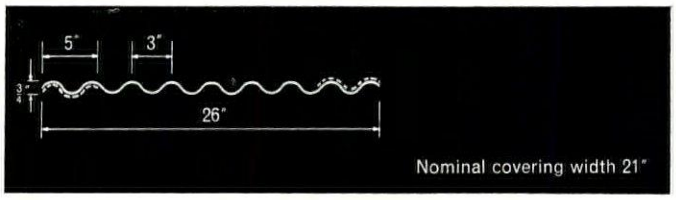
For use with standard 6″ corrugated asbestos cement sheeting complying with BS.690: 1963 (TYPE B).
COLOURS: Natural Transparent and Natural Diffused.



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For use with 3″ corrugated iron complying with BS.3083: 1959 and 3″ aluminium sheeting complying with BS.2855: 1959
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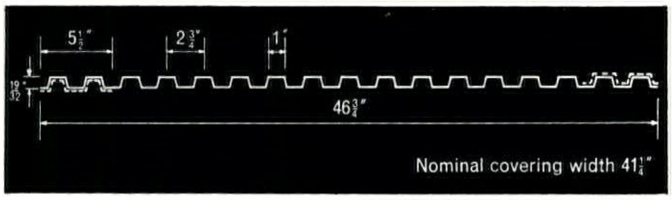

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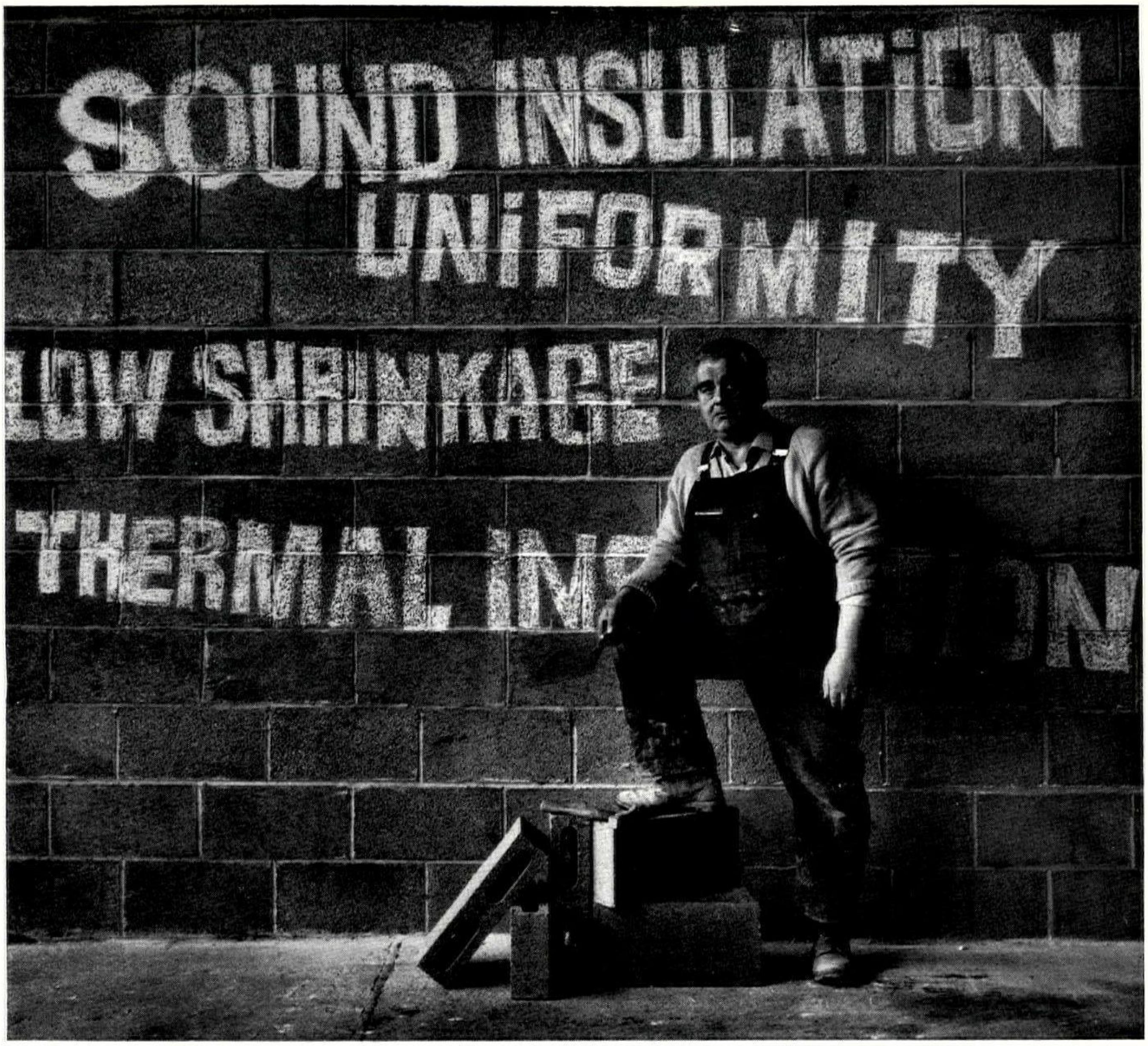

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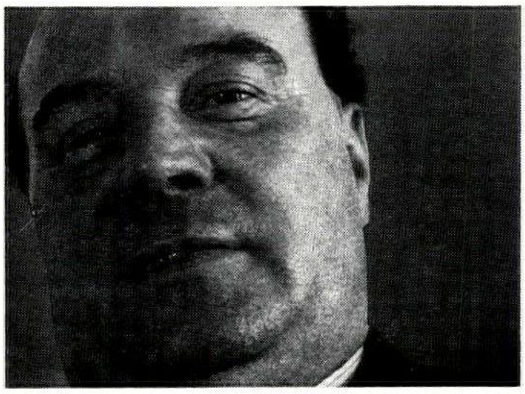

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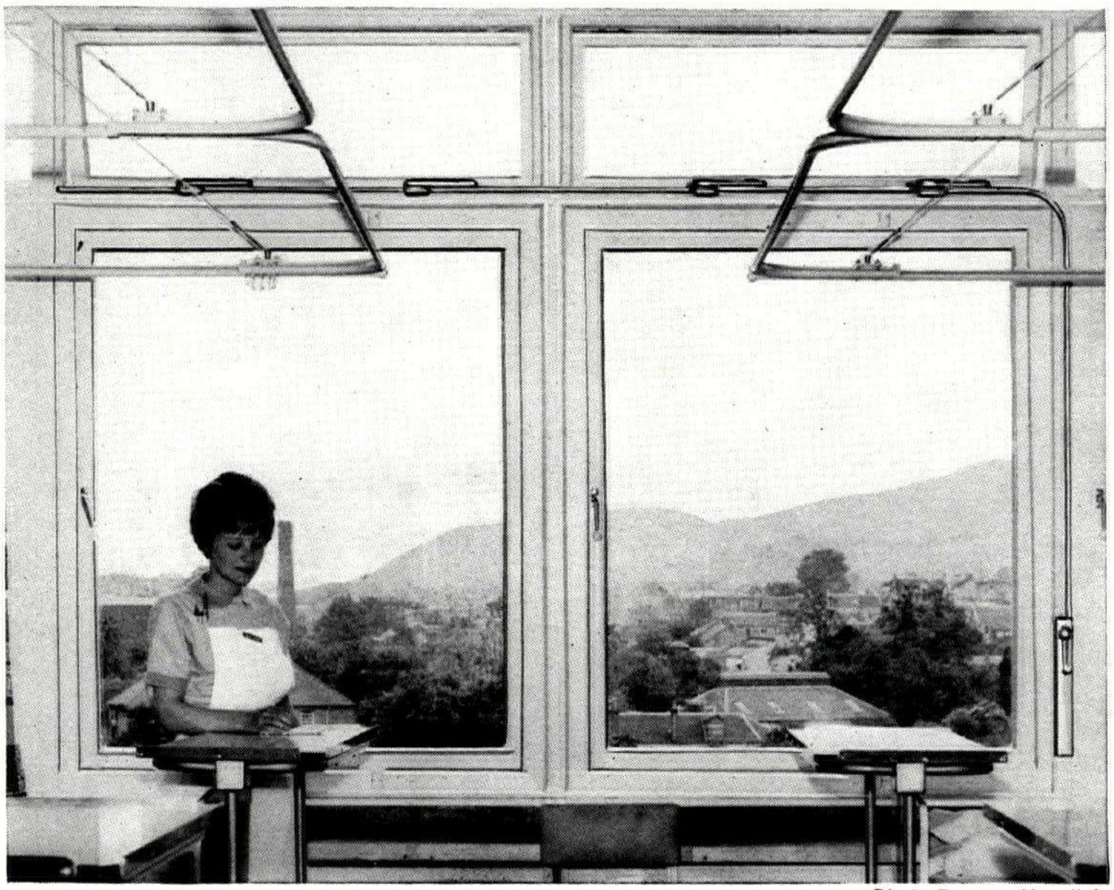

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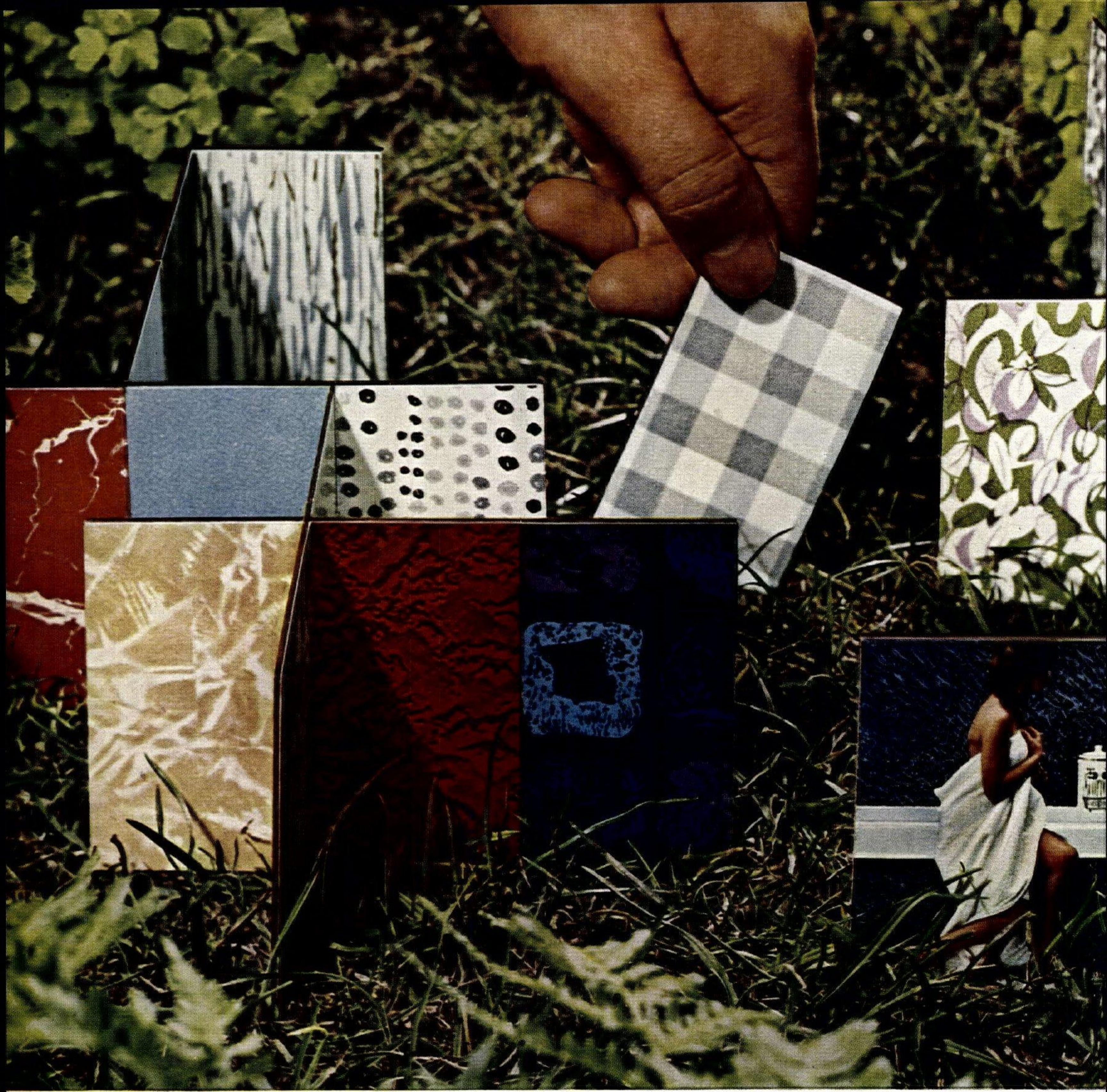

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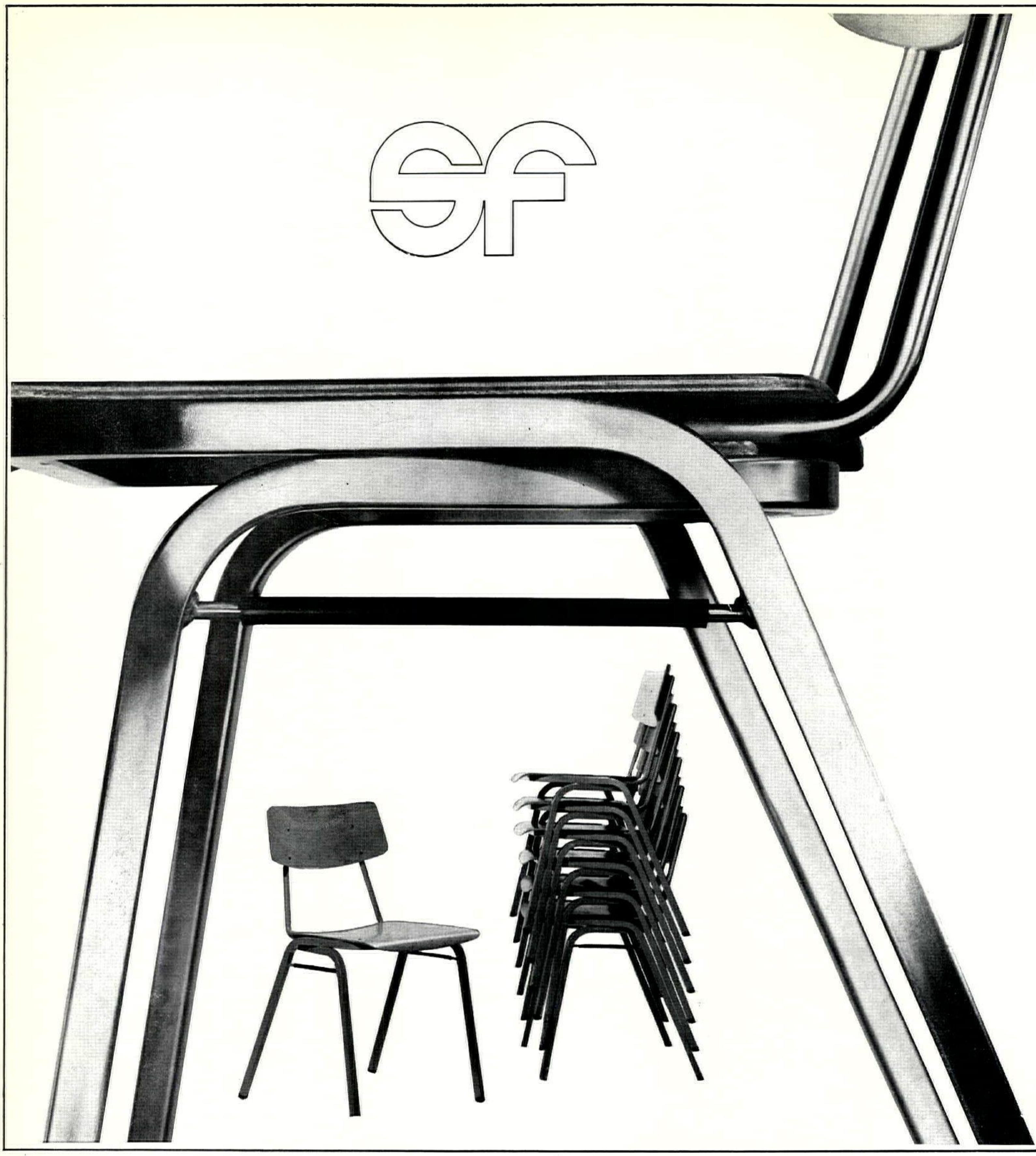
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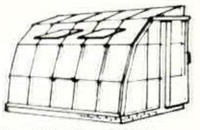

Hartley '7' (lean to)
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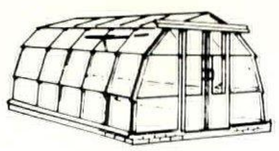
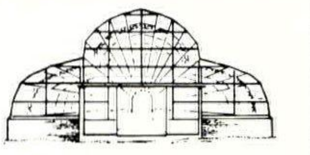
7′ 3″ Wide 7′ 9″ High



Hartley '10' 10′ 0″ Wide
7′ 1″ High



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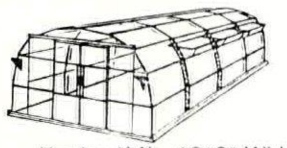
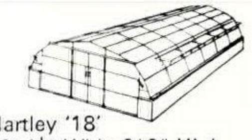


Hartley '14' 13′ 3″ Wide
8′ 6″ High, also available as planthouse



Hartley '18'
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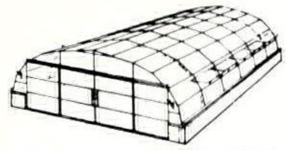
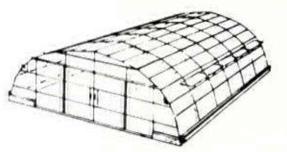


Hartley '21' 21′ 2½″ Wide
10′ 0″ High



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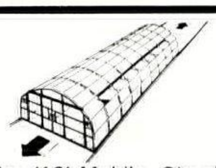

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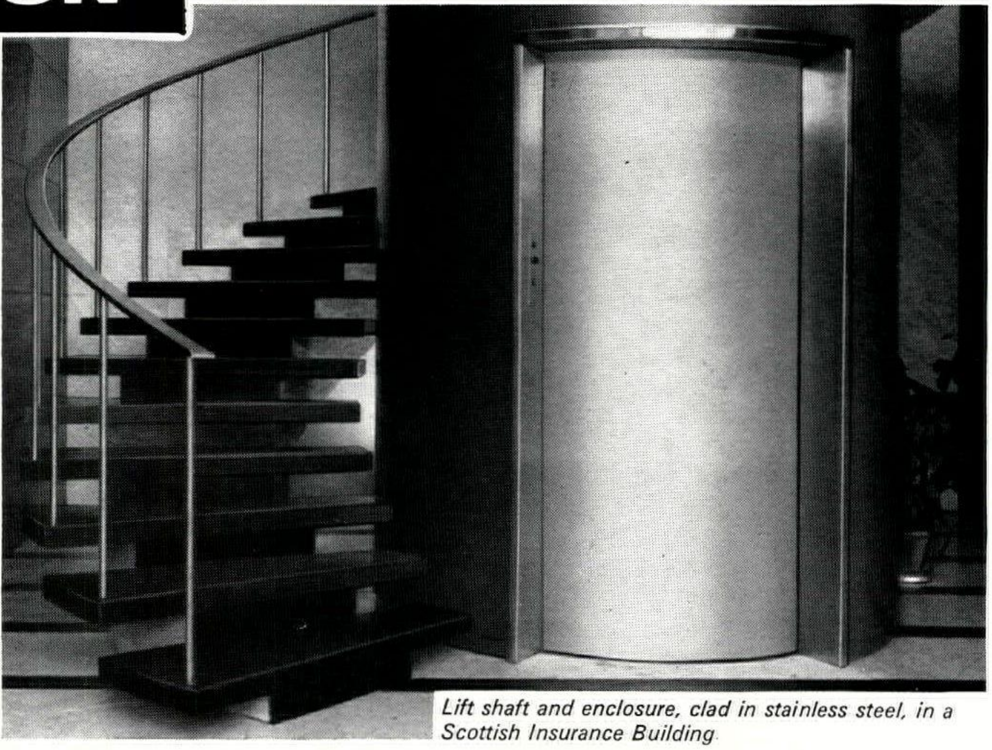

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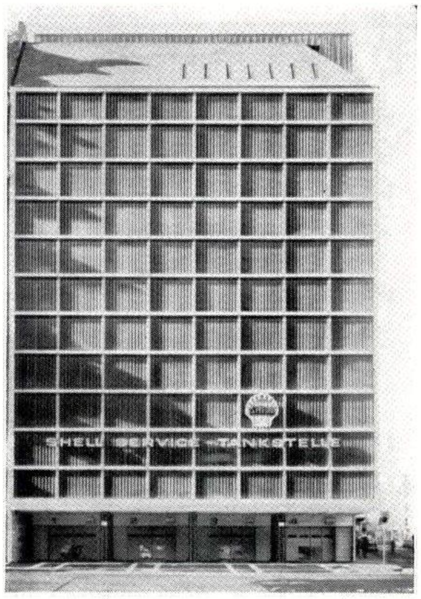

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